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Preface

This guide provides the installation and configuration tasks necessary for the implementation of IBM® Tivoli® Business Systems Manager.

Who should read this document

This document is written for system administrators and others who are responsible for installing and configuring Tivoli Business Systems Manager.

What this document contains

This document contains the following chapters and appendixes:

- **Part 1, “Specifications and Requirements,” on page 1** describes the hardware and software system requirements to install Tivoli Business Systems Manager.
- **Appendix A, “Configuring Network Communications Using Firewalls,” on page 337** provides configuration definitions of the ports that are used for communication between the Tivoli Business Systems Manager servers and its client environment through a firewall or router.

Publications

This section lists publications in the Tivoli Business Systems Manager library and related documents. It also describes how to access Tivoli publications online and how to order Tivoli publications.

IBM Tivoli Business Systems Manager Library

The following documents are available in the IBM Tivoli Business Systems Manager library:

- **Getting Started, GC32-0801**, provides an introduction to Tivoli Business Systems Manager.
• Messages, GC32-0797, describes the messages for Tivoli Business Systems Manager.
• Command Reference, SC32-1243, describes the commands available for use with the Tivoli Business Systems Manager product.
• Release Notes, GI11-0886, describes what is new for this release.
• Diagnosis Guide, SC23-4840, describes troubleshooting problems that might occur with the Tivoli Business Systems Manager product.

Prerequisite and related publications
The Tivoli Software Glossary includes definitions for many of the technical terms related to Tivoli software. The Tivoli Software Glossary is available, in English only, at the following Tivoli software library Web site:


Access the glossary by clicking the Glossary link on the left pane of the Tivoli software library window.

IBM publications
The following documents provide useful information:
• Tivoli NetView® for z/OS™: Command Reference, SC31-8857
• Tivoli NetView for z/OS: User’s Guide, GC31-8849
• Tivoli NetView for z/OS: Messages and Codes, SC31-8866
• Tivoli Distributed Monitoring User’s Guide, GC31-8382
• eNetwork CS IP: API Guide – System Error Return Codes
• OS/390® MVS™ Diagnosis: Tools and Service Aids
• IBM SMP/E for z/OS and OS/390: User’s Guide

Non-IBM Publications
• CA-7 Commands Guide
• MKS Toolkit: Reference Guide
• OMEGAMON II Realtime Commands Reference Manual
• The Monitor for CICS/ESA® 2.0: Reference Manual
• MAINVIEW for CICS® Online Services Reference Manual
• MVS for VM: User Guide and Reference

Accessing publications online
The documentation CD contains the publications that are in the product library. The format of the publications is PDF, HTML, or both.

IBM posts publications for this and all other Tivoli products, as they become available and whenever they are updated, to the Tivoli software information center Web site. Access the Tivoli software information center by first going to the Tivoli software library at the following Web address:


Scroll down and click the Product manuals link. In the Tivoli Technical Product Documents Alphabetical Listing window, click the Tivoli Business Systems Manager link to access the product library at the Tivoli software information center.
Note: If you print PDF documents on other than letter-sized paper, set the option in the File ➤ Print window that allows Adobe Reader to print letter-sized pages on your local paper.

Ordering publications
You can order many Tivoli publications online at the following Web site:


You can also order by telephone by calling one of these numbers:
• In the United States: 800-879-2755
• In Canada: 800-426-4968

In other countries, see the following Web site for a list of telephone numbers:

http://www.ibm.com/software/tivoli/order-lit/

Accessibility
Accessibility features help users with a physical disability, such as restricted mobility or limited vision, to use software products successfully. With this product, you can use assistive technologies to hear and navigate the interface. You can also use the keyboard instead of the mouse to operate all features of the graphical user interface.

Refer to IBM Tivoli Business Systems Manager: Getting Started for additional information about accessibility.

Contacting software support
If you have a problem with any Tivoli product, refer to the following IBM Software Support Web site:


If you want to contact software support, see the IBM Software Support Guide at the following Web site:

http://techsupport.services.ibm.com/guides/handbook.html

The guide provides information about how to contact IBM Software Support, depending on the severity of your problem, and the following information:
• Registration and eligibility
• Telephone numbers, depending on the country in which you are located
• Information you must have before contacting IBM Software Support

Participating in newsgroups
User groups provide software professionals with a forum for communicating ideas, technical expertise, and experiences related to the product. They are located on the Internet and are available using standard news reader programs. These groups are primarily intended for user-to-user communication and are not a replacement for formal support.
To access a newsgroup, use the instructions appropriate for your browser.

Use these instructions for a Microsoft Internet Explorer browser.
1. Open an Internet Explorer browser.
2. From the **Tools** menu, click **Internet Options**.
3. On the Internet Options window, click the **Programs** tab.
4. In the **Newsgroups** list, click the Down Arrow and then click **Outlook Express**.
5. Click **OK**.
6. Close your Internet Explorer browser and then open it again.
7. Cut and paste the newsgroup address of a product into the browser **Address** field, and press Enter to open the newsgroup.

Use these instructions for a Netscape Navigator browser.
1. Open a Netscape Navigator browser.
2. From the **Edit** menu, click **Preferences**. The Preferences window is displayed.
3. In the **Category** view, click **Mail & Newsgroups** to display the Mail & Newsgroups settings.
4. Select the **Use Netscape mail as the default mail application** check box.
5. Click **OK**.
6. Close your Netscape Navigator browser and then open it again.
7. Cut and paste the newsgroup address of a product into the browser **Address** field, and press Enter to open the newsgroup.

IBM Tivoli Business Systems Manager

```
```

**Conventions used in this guide**

This guide uses several conventions for special terms and actions, operating system-dependent commands and paths, and margin graphics.

**Typeface conventions**

This guide uses the following typeface conventions:

**Bold**

- Lowercase commands and mixed case commands that are otherwise difficult to distinguish from surrounding text
- Interface controls (check boxes, push buttons, radio buttons, spin buttons, fields, folders, icons, list boxes, items inside list boxes, multicolumn lists, containers, menu choices, menu names, tabs, property sheets), labels (such as **Tip:**; and **Operating system considerations:**)
- Keywords and parameters in text

**Italic**

- Words defined in text
- Emphasis of words (words as words)
- New terms in text (except in a definition list)
- Variables and values you must provide

**Monospace**
- Examples and code examples
- File names, programming keywords, and other elements that are difficult to distinguish from surrounding text
- Message text and prompts addressed to the user
- Text that the user must type
- Values for arguments or command options

**Operating system-dependent variables and paths**

This document uses the UNIX® convention for specifying environment variables and for directory notation.

When using the Windows® command line, replace $variable with %variable% for environment variables and replace each forward slash (/) with a backslash (\) in directory paths.

**Note:** If you are using the bash shell on a Windows system, you can use the UNIX conventions.
Part 1. Specifications and Requirements

This part describes the hardware and software system requirements to install IBM Tivoli Business Systems Manager. It includes:

- Chapter 1, “Server and Console Specifications,” on page 3
- Chapter 2, “Data Source Specifications,” on page 21

Due to the rapidly changing Information Technology environment, the hardware and software requirements for Tivoli Business Systems Manager can change. This part describes the minimum software requirements and includes hardware recommendations that are based on the server class systems that are currently available.
Chapter 1. Server and Console Specifications

This chapter describes the specifications required to install Tivoli Business Systems Manager. Please check fix pack readmes for any changes to current prerequisite software versions.

Note: Tivoli Business Systems Manager is not supported in a clustered environment. Both Enterprise and Distributed components should not be installed on clustered servers.

Enterprise Edition

Required Components for Enterprise Edition

The following table lists the components for Tivoli Business Systems Manager — Enterprise edition and whether they are required or optional.

Table 1. Tivoli Business Systems Manager components needed to run an Enterprise environment

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<th>Requirement</th>
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<td>Database</td>
<td>required</td>
</tr>
<tr>
<td>History (Reporting System)</td>
<td>optional</td>
</tr>
<tr>
<td>Console Server</td>
<td>required</td>
</tr>
<tr>
<td>Propagation</td>
<td>required</td>
</tr>
<tr>
<td>Event Handler</td>
<td>required</td>
</tr>
<tr>
<td>SNA Server/Host Integration</td>
<td>optional</td>
</tr>
<tr>
<td>Health Monitor</td>
<td>optional</td>
</tr>
<tr>
<td>Web Console</td>
<td>optional</td>
</tr>
<tr>
<td>Agent Listener</td>
<td>required if using Tivoli Enterprise Console®</td>
</tr>
<tr>
<td>Common Listener</td>
<td>optional</td>
</tr>
</tbody>
</table>

Server Specifications for Enterprise Edition

Installation of several Windows-based servers is critical to the success of Tivoli Business Systems Manager. Each of these installed servers performs specific processing or functionality in support of Tivoli Business Systems Manager.

Notes:

1. Windows Server 2003 is only supported with Tivoli Business Systems Manager 2.1.1 Fix Pack 6 and future releases of Tivoli Business Systems Manager 2.1.1 with later fix packs. Customers who wish to install Tivoli Business Systems Manager on Windows Server 2003 need to install Tivoli Business Systems Manager 2.1.1 and immediately upgrade to fix pack 6 in order for the product to function.

2. Microsoft SQL 7.0 is not supported on Windows Server 2003.

3. If you are an existing Tivoli Business Systems Manager customer and use Windows 2000 or NT and want to run Tivoli Business Systems Manager on Windows 2003, you will need to install Windows 2003 directly from the
Windows 2003 installation cds. Simply upgrading the operating system is not supported and a new installation of Tivoli Business Systems Manager base services is required.

**Database Server**

*Table 2. Supported hardware and software for the database server*

<table>
<thead>
<tr>
<th></th>
<th>Windows 2000</th>
<th>Windows 2003</th>
<th>Windows NT®</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Processor</strong></td>
<td>Dual Pentium® III Xeon, 866 MHz, 1 MB cache, quad processor capable</td>
<td>Dual Pentium III Xeon, 866 MHz, 1 MB cache, quad processor capable</td>
<td>Dual Pentium III Xeon, 866 MHz, 1 MB cache, quad processor capable</td>
</tr>
<tr>
<td><strong>Memory</strong></td>
<td>4 GB RAM</td>
<td>4 GB RAM</td>
<td>4 GB RAM</td>
</tr>
<tr>
<td><strong>System Drive</strong></td>
<td>Microsoft Windows 2000 operating system plus 2 GB free disk space</td>
<td>Microsoft Windows 2003 operating system plus 2 GB free disk space</td>
<td>Microsoft Windows NT 4.0 operating system plus 1 GB free disk space</td>
</tr>
<tr>
<td><strong>Data Drive</strong></td>
<td>72 GB free disk space for database backups and log files</td>
<td>72 GB free disk space for database backups and log files</td>
<td>72 GB free disk space for database backups and log files</td>
</tr>
<tr>
<td><strong>Required for connectivity to the mainframe</strong></td>
<td>Microsoft Host Integration Server Client 2000 <strong>Note:</strong> If you are installing Host Integration Server, Windows terminal server for remote administration must be installed. Otherwise Host Integration Server Client will not be able to be installed on the server.</td>
<td>Microsoft Host Integration Server Client 2000 <strong>Note:</strong> If you are installing Host Integration Server, Windows terminal server for remote administration must be installed. Otherwise Host Integration Server Client will not be able to be installed on the server.</td>
<td>Microsoft Host Integration Server Client 2000</td>
</tr>
</tbody>
</table>
### History Server

*Table 3. Supported hardware and software for the history server (reporting system)*

<table>
<thead>
<tr>
<th></th>
<th>Windows 2000</th>
<th>Windows 2003</th>
<th>Windows NT</th>
</tr>
</thead>
<tbody>
<tr>
<td>Processor</td>
<td>Dual Pentium III Xeon, 866 MHz, 1 MB cache, quad processor capable</td>
<td>Dual Pentium III Xeon, 866 MHz, 1 MB cache, quad processor capable</td>
<td>Dual Pentium III Xeon, 866 MHz, 1 MB cache, quad processor capable</td>
</tr>
<tr>
<td>Memory</td>
<td>4 GB RAM</td>
<td>4 GB RAM</td>
<td>4 GB RAM</td>
</tr>
<tr>
<td>System Drive</td>
<td>Windows 2000 operating system plus 2 GB free disk space</td>
<td>Windows 2003 operating system plus 2 GB free disk space</td>
<td>Windows NT 4.0 operating system plus 1 GB free disk space</td>
</tr>
<tr>
<td>Data Drive</td>
<td>108 GB free disk space for database backups and log files</td>
<td>108 GB free disk space for database backups and log files</td>
<td>108 GB free disk space for database backups and log files</td>
</tr>
</tbody>
</table>
| Required Software       | • Microsoft SQL Server 2000 Enterprise Edition with Service Pack 3  
                          | • MKS Toolkit for System Administrators, Version 8.0 or 8.1  
                          | • Windows 2000 Resource Kit and Windows 2000 Support Tools (See note 7 on page 10 below.)  
                          | • Microsoft Internet Information Server (IIS), Version 5.0 (supplied with Windows 2000 Server and Microsoft Windows Advanced Server 2000)  
                          | • Microsoft SQL Server 2000 Enterprise Edition with Service Pack 3  
                          | • MKS Toolkit for System Administrators, Version 8.0 or 8.1  
                          | • Microsoft Internet Information Server (IIS), Version 6.0 (supplied with Windows 2003 Server Enterprise Edition)  
                          | • Microsoft SQL Server 7.0 Enterprise Edition with Service Pack 4  
                          | • MKS Toolkit for System Administrators, Version 8.0 or 8.1  
                          | • Microsoft Windows NT Resource Kit, Version 4.0 Supplement 3  
                          | • Microsoft Internet Information Server (IIS), Version 4.0 with Microsoft Windows NT Option Pack |

### Console Server

*Table 4. Supported hardware and software for the console server*

<table>
<thead>
<tr>
<th></th>
<th>Windows 2000</th>
<th>Windows 2003</th>
<th>Windows NT</th>
</tr>
</thead>
<tbody>
<tr>
<td>Processor</td>
<td>Single Pentium III, 866 MHz, dual processor capable</td>
<td>Single Pentium III, 866 MHz, dual processor capable</td>
<td>Single Pentium III, 866 MHz, dual processor capable</td>
</tr>
<tr>
<td>Memory</td>
<td>1 GB RAM</td>
<td>1 GB RAM</td>
<td>1 GB RAM</td>
</tr>
<tr>
<td>System Drive</td>
<td>Windows 2000 operating system plus 2 GB free disk space</td>
<td>Windows 2003 operating system plus 2 GB free disk space</td>
<td>Windows NT 4.0 operating system plus 1 GB free disk space</td>
</tr>
</tbody>
</table>
Table 4. Supported hardware and software for the console server (continued)

<table>
<thead>
<tr>
<th>Data Drive</th>
<th>Supported Operating System</th>
<th>Required Software</th>
</tr>
</thead>
</table>
| 4 GB free disk space for data and log files | Windows 2000 Server with Service Pack 3 | • Data Direct Connect, Version 2.2, 3.0, 3.1 or Microsoft SQL Server 2000 Driver for JDBC  
  **Note:** Only available when using Microsoft SQL Server 2000 Server or Microsoft SQL Server 2000 Enterprise Edition)      |
|                     |                                       | • Windows 2000 Resource Kit and Windows 2000 Support Tools (See note [7](#) on page [10](#) below.) |
|                     |                                       | • Microsoft Internet Information Server (IIS), Version 5.0 (supplied with Windows 2000 Server and Microsoft Windows Advanced Server 2000) |
|                     | Windows NT 4.0 Server with Service Pack 6a | • Data Direct Connect, Version 2.2, 3.0, 3.1 or Microsoft SQL Server 2000 Driver for JDBC  
  **Note:** Only available when using Microsoft SQL Server 2000 Server or Microsoft SQL Server 2000 Enterprise Edition)      |
|                     |                                       | • MKS Toolkit for System Administrators, Version 8.0 or 8.1                         |
|                     |                                       | • MKS Toolkit for System Administrators, Version 8.0 or 8.1                         |
|                     |                                       | • Windows NT Resource Kit 4.0 Supplement 3                                           |
|                     |                                       | • Microsoft Internet Information Server (IIS), Version 4.0 with Microsoft Windows NT Option Pack |


**Propagation Server**

Table 5. Supported hardware and software for the propagation server

<table>
<thead>
<tr>
<th></th>
<th>Windows 2000</th>
<th>Windows 2003</th>
<th>Windows NT</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Processor</strong></td>
<td>Single Pentium III, 866 MHz, dual processor capable</td>
<td>Single Pentium III, 866 MHz, dual processor capable</td>
<td>Single Pentium III, 866 MHz, dual processor capable</td>
</tr>
<tr>
<td><strong>Memory</strong></td>
<td>1 GB RAM</td>
<td>1 GB RAM</td>
<td>1 GB RAM</td>
</tr>
</tbody>
</table>
Table 5. Supported hardware and software for the propagation server (continued)

<table>
<thead>
<tr>
<th>System Drive</th>
<th>Windows 2000 operating system plus 2 GB free disk space</th>
<th>Windows 2003 operating system plus 2 GB free disk space</th>
<th>Windows NT 4.0 operating system plus 1 GB free disk space</th>
</tr>
</thead>
<tbody>
<tr>
<td>Data Drive</td>
<td>4 GB free disk space for data and log files</td>
<td>4 GB free disk space for data and log files</td>
<td>4 GB free disk space for data and log files</td>
</tr>
</tbody>
</table>
| Required Software   | • MKS Toolkit for System Administrators, Version 8.0 or 8.1  
• Windows 2000 Resource Kit and Windows 2000 Support Tools (See note [7 on page 10 below.) | • MKS Toolkit for System Administrators, Version 8.0 or 8.1  
• Windows NT Resource Kit, Version 4.0 Supplement 3  

Event Handler Server

Table 6. Supported hardware and software for the event handler server

<table>
<thead>
<tr>
<th></th>
<th>Windows 2000</th>
<th>Windows 2003</th>
<th>Windows NT</th>
</tr>
</thead>
<tbody>
<tr>
<td>Processor</td>
<td>Single Pentium III, 866 MHz, dual processor capable</td>
<td>Single Pentium III, 866 MHz, dual processor capable</td>
<td>Single Pentium III, 866 MHz, dual processor capable</td>
</tr>
<tr>
<td>Memory</td>
<td>The larger of 1 GB RAM or 50 MB times the number of operating systems plus 300 MB.</td>
<td>The larger of 1 GB RAM or 50 MB times the number of operating systems plus 300 MB.</td>
<td>The larger of 1 GB RAM or 50 MB times the number of operating systems plus 300 MB.</td>
</tr>
<tr>
<td>System Drive</td>
<td>Windows 2000 operating system plus 2 GB free disk space</td>
<td>Windows 2003 operating system plus 2 GB free disk space</td>
<td>Windows NT 4.0 operating system plus 1 GB free disk space</td>
</tr>
<tr>
<td>Data Drive</td>
<td>8 GB free disk space for data and log files</td>
<td>8 GB free disk space for data and log files</td>
<td>8 GB free disk space for data and log files</td>
</tr>
</tbody>
</table>
Table 6. Supported hardware and software for the event handler server (continued)

<table>
<thead>
<tr>
<th>Required Software</th>
<th>MKS Toolkit for System Administrators, Version 8.0 or 8.1</th>
<th>MKS Toolkit for System Administrators, Version 8.0 or 8.1</th>
<th>MKS Toolkit for System Administrators, Version 8.0 or 8.1</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Microsoft SQL 2000 Client Utilities</td>
<td>Microsoft SQL 2000 Client Utilities</td>
<td>Microsoft SQL 7.0 Client Utilities</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Required for connectivity to the mainframe</th>
<th>Microsoft Host Integration Server Client 2000</th>
<th>Microsoft Host Integration Server Client 2000</th>
<th>Microsoft Host Integration Server Client 2000</th>
</tr>
</thead>
<tbody>
<tr>
<td>Note: If you are installing Host Integration Server, Windows terminal server for remote administration must be installed. Otherwise Host Integration Server Client will not be able to be installed on the server.</td>
<td>Note: If you are installing Host Integration Server, Windows terminal server for remote administration must be installed. Otherwise Host Integration Server Client will not be able to be installed on the server.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

SNA Server or Host Integration Server/Health Monitor

Table 7. Supported hardware and software for the SNA server or Host Integration Server/Health Monitor

<table>
<thead>
<tr>
<th></th>
<th>Windows 2000</th>
<th>Windows 2003</th>
<th>Windows NT</th>
</tr>
</thead>
<tbody>
<tr>
<td>Processor</td>
<td>Single Pentium III, 866 MHz</td>
<td>Single Pentium III, 866 MHz</td>
<td>Single Pentium III, 866 MHz</td>
</tr>
<tr>
<td>Memory</td>
<td>1 GB RAM</td>
<td>1 GB RAM</td>
<td>1 GB RAM</td>
</tr>
<tr>
<td>System Drive</td>
<td>Windows 2000 operating system plus 2 GB free disk space</td>
<td>Windows 2003 operating system plus 2 GB free disk space</td>
<td>Windows NT 4.0 operating system plus 1 GB free disk space</td>
</tr>
<tr>
<td>Data Drive</td>
<td>4 GB free disk space for data and log files</td>
<td>4 GB free disk space for data and log files</td>
<td>4 GB free disk space for data and log files</td>
</tr>
</tbody>
</table>
Table 7. Supported hardware and software for the SNA server or Host Integration Server/Health Monitor (continued)

<table>
<thead>
<tr>
<th>Required Software</th>
<th>Required for connectivity to the mainframe</th>
</tr>
</thead>
<tbody>
<tr>
<td>• MKS Toolkit for System Administrators, Version 8.0 or 8.1</td>
<td></td>
</tr>
<tr>
<td>• Windows 2000 Resource Kit and Support Tools. (See note 7 on page 10 below.)</td>
<td></td>
</tr>
<tr>
<td>• Microsoft SQL 2000 Client Utilities</td>
<td>Microsoft Host Integration Server Client 2000</td>
</tr>
<tr>
<td><strong>Note:</strong> If you are installing Host Integration Server, Windows terminal server for remote administration must be installed. Otherwise Host Integration Server Client will not be able to be installed on the server.</td>
<td>Microsoft Host Integration Server Client 2000</td>
</tr>
<tr>
<td><strong>Note:</strong> If you are installing Host Integration Server, Windows terminal server for remote administration must be installed. Otherwise Host Integration Server Client will not be able to be installed on the server.</td>
<td>Microsoft Host Integration Server Client 2000</td>
</tr>
</tbody>
</table>

**Web Console Server**

The web console and web console server are not supported with Windows 2003.

Table 8. Supported hardware and software for the web console server

<table>
<thead>
<tr>
<th>Windows 2000</th>
<th>Windows 2003</th>
<th>Windows NT</th>
</tr>
</thead>
<tbody>
<tr>
<td>Processor</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Single Pentium III, 866 MHz</td>
<td>Single Pentium III, 866 MHz</td>
<td>Single Pentium III, 866 MHz</td>
</tr>
<tr>
<td>Memory</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1 GB RAM</td>
<td>1 GB RAM</td>
<td>1 GB RAM</td>
</tr>
<tr>
<td>System Drive</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Windows 2000 operating system plus 2 GB free disk space</td>
<td>Windows 2003 operating system plus 2 GB free disk space</td>
<td>Windows NT, Version 4.0 operating system plus 1 GB free disk space</td>
</tr>
<tr>
<td>Data Drive</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4 GB free disk space for data and log files</td>
<td>4 GB free disk space for data and log files</td>
<td>4 GB free disk space for data and log files</td>
</tr>
</tbody>
</table>

**Notes:**

1. The JDBC drivers are only required to be installed on machines that have the console server or the common listener service installed.
2. IBM Tivoli NetView for OS/390 is required for many of the OS/390 data sources. See "Configuring Tivoli NetView for OS/390" on page 95 for details.
3. The VTAM® program is only required for configurations using the SNA server.
4. The VCRedit.exe file must be installed on every machine that uses Intelligent Monitoring for BMC PATROL, NetIQ AppManager, or Unicenter TNG.
5. Microsoft Internet Information Server (IIS) is only required for the history and console server.
6. Although the console server and web console server can be installed on a single machine, we strongly recommend you install each of them on dedicated machines (and not on the same physical machine as any other Tivoli Business System Manager server component.)
7. Support Tools can be accessed from the Windows 2000 Advanced Server CD in the following directory:
   `<CDROM>\Support\tools`
8. If you use Tivoli Data Warehouse and would like to use the Tivoli Business Systems Manager Warehouse Enablement Pack, you must make sure you are using the correct version of the Tivoli Business Systems Manager Warehouse Enablement Pack. If you are using Tivoli Business Systems Manager version 2.1.1 Fix Pack 6–10, you must upgrade the Tivoli Business Systems Manager Warehouse Enablement Pack to version 2.1.1. If you have not yet upgraded to Fix Pack 6–10, you may continue to use Warehouse Enablement Pack version 2.1.0. Please see IBM Tivoli Business Systems Manager: Warehouse Enablement Pack V2.1.1 Implementation Guide for more information.

## Distributed Edition

### Required Components for Distributed Edition

The following table lists the components for the distributed components of Tivoli Business Systems Manager and whether they are required or optional.

*Table 9. Tivoli Business Systems Manager components needed to run a distributed environment*

<table>
<thead>
<tr>
<th>Component</th>
<th>Requirement</th>
</tr>
</thead>
<tbody>
<tr>
<td>Database</td>
<td>required</td>
</tr>
<tr>
<td>History (Reporting System)</td>
<td>optional</td>
</tr>
<tr>
<td>Console Server</td>
<td>required</td>
</tr>
<tr>
<td>Propagation</td>
<td>required</td>
</tr>
<tr>
<td>Event Handler</td>
<td>n/a</td>
</tr>
<tr>
<td>SNA Server/Host Integration</td>
<td>n/a</td>
</tr>
<tr>
<td>Health Monitor</td>
<td>optional</td>
</tr>
<tr>
<td>Web Console</td>
<td>optional</td>
</tr>
<tr>
<td>Agent Listener</td>
<td>required if using Tivoli Enterprise Console</td>
</tr>
<tr>
<td>Common Listener</td>
<td>required</td>
</tr>
</tbody>
</table>

### Server Specifications for Distributed Edition

Installation of several Windows-based servers is critical to the success of Tivoli Business Systems Manager. Each of these installed servers performs specific processing or functionality in support of Tivoli Business Systems Manager.
Notes:
1. Windows Server 2003 is only supported with Tivoli Business Systems Manager 2.1.1 Fix Pack 6 and future releases of Tivoli Business Systems Manager 2.1.1 with later fix packs. Customers who wish to install Tivoli Business Systems Manager on Windows Server 2003 need to install Tivoli Business Systems Manager 2.1.1. and immediately upgrade to fix pack 6 in order for the product to function.
2. Microsoft SQL 7.0 is not supported on Windows Server 2003.
3. If you are an existing Tivoli Business Systems Manager customer and use Windows 2000 or NT and want to run Tivoli Business Systems Manager on Windows 2003, you will need to install Windows 2003 directly from the Windows 2003 installation cds. Simply upgrading the operating system is not supported and a new installation of Tivoli Business Systems Manager base services is required.

Database Server

Table 10. Supported hardware and software for the database server

<table>
<thead>
<tr>
<th></th>
<th>Windows 2000</th>
<th>Windows 2003</th>
<th>Windows NT</th>
</tr>
</thead>
<tbody>
<tr>
<td>Processor</td>
<td>Dual Pentium III Xeon, 866 MHz, 1 MB cache, quad processor capable</td>
<td>Dual Pentium III Xeon, 866 MHz, 1 MB cache, quad processor capable</td>
<td>Dual Pentium III Xeon, 866 MHz, 1 MB cache, quad processor capable</td>
</tr>
<tr>
<td>Memory</td>
<td>4 GB RAM</td>
<td>4 GB RAM</td>
<td>4 GB RAM</td>
</tr>
<tr>
<td>System Drive</td>
<td>Microsoft Windows 2000 operating system plus 2 GB free disk space or</td>
<td>Microsoft Windows 2003 operating system plus 2 GB free disk space or</td>
<td>Microsoft Windows NT 4.0 operating system plus 1 GB free disk space</td>
</tr>
<tr>
<td>Data Drive</td>
<td>72 GB free disk space for database backups and log files</td>
<td>72 GB free disk space for database backups and log files</td>
<td>72 GB free disk space for database backups and log files</td>
</tr>
</tbody>
</table>
Table 10. Supported hardware and software for the database server (continued)

Required Software

- Microsoft SQL Server 2000 Enterprise Edition with Service Pack 3
- MKS Toolkit for System Administrators, Version 8.0 or 8.1

Note: For small, distributed-only implementations (fewer than 30 events a minute), Microsoft SQL Server 2000 Standard Edition with Service Pack 3 is acceptable.

- Microsoft SQL Server 2000 Enterprise Edition with Service Pack 3
- MKS Toolkit for System Administrators, Version 8.0 or 8.1
- Windows 2000 Resource Kit and Windows 2003 Support Tools (Support Tools must be installed before the Resource Kit.)

Note: For small, distributed-only implementations (fewer than 30 events a minute), Microsoft SQL Server 2000 Standard Edition with Service Pack 3 is acceptable.

- Microsoft SQL Server 7.0 Enterprise Edition with Service Pack 3
- Windows NT Resource Kit, Version 4.0 Supplement 3
- MKS Toolkit for System Administrators, Version 8.0 or 8.1

Note: For small, distributed-only implementations (fewer than 30 events a minute), Microsoft SQL Server 7.0 Standard Edition with Service Pack 3 is acceptable.

Required for connectivity to the mainframe

Microsoft Host Integration Server Client 2000

Note: If you are installing Host Integration Server, Windows terminal server for remote administration must be installed. Otherwise Host Integration Server Client will not be able to be installed on the server.

Microsoft Host Integration Server Client 2000

Note: If you are installing Host Integration Server, Windows terminal server for remote administration must be installed. Otherwise Host Integration Server Client will not be able to be installed on the server.

Microsoft Host Integration Server Client 2000

History Server

Table 11. Supported hardware and software for the history server (reporting system)

<table>
<thead>
<tr>
<th></th>
<th>Windows 2000</th>
<th>Windows 2003</th>
<th>Windows NT</th>
</tr>
</thead>
<tbody>
<tr>
<td>Processor</td>
<td>Dual Pentium III Xeon, 866 MHz, 1 MB cache, quad processor capable</td>
<td>Dual Pentium III Xeon, 866 MHz, 1 MB cache, quad processor capable</td>
<td>Dual Pentium III Xeon, 866 MHz, 1 MB cache, quad processor capable</td>
</tr>
<tr>
<td>Memory</td>
<td>4 GB RAM</td>
<td>4 GB RAM</td>
<td>4 GB RAM</td>
</tr>
<tr>
<td>System Drive</td>
<td>Windows 2000 operating system plus 2 GB free disk space</td>
<td>Windows 2003 operating system plus 2 GB free disk space</td>
<td>Windows NT 4.0 operating system plus 1 GB free disk space</td>
</tr>
<tr>
<td>Data Drive</td>
<td>108 GB free disk space for database backups and log files</td>
<td>108 GB free disk space for database backups and log files</td>
<td>108 GB free disk space for database backups and log files</td>
</tr>
</tbody>
</table>
Table 11. Supported hardware and software for the history server (reporting system) (continued)

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Note: For small, distributed-only implementations (fewer than 30 events a minute), you may use Windows 2000 Server with Service Pack 3</td>
<td>Note: For small, distributed-only implementations (fewer than 30 events a minute), you may use Windows Server 2003 Standard Edition</td>
<td>Note: For small, distributed-only implementations (fewer than 30 events a minute), you may use Windows NT 4.0 Server with Service Pack 6a</td>
<td></td>
</tr>
</tbody>
</table>

Required Software

- Microsoft SQL Server 2000 Enterprise Edition with Service Pack 3
  Note: For small, distributed-only implementations (fewer than 30 events a minute), Microsoft SQL Server 2000 Standard Edition with Service Pack 3 is acceptable.
- MKS Toolkit for System Administrators, Version 8.0 or 8.1
- Windows 2000 Resource Kit and Windows 2000 Support Tools (see note 5 on page 15 below)
- Microsoft Internet Information Server (IIS), Version 5.0 (supplied with Windows 2000 Server and Microsoft Windows Advanced Server 2000)
- Microsoft SQL Server 2000 Enterprise Edition with Service Pack 3
  Note: For small, distributed-only implementations (fewer than 30 events a minute), Microsoft SQL Server 2000 Standard Edition with Service Pack 3 is acceptable.
- MKS Toolkit for System Administrators, Version 8.0 or 8.1
- Windows 2000 Resource Kit and Windows 2003 Support Tools (Support Tools must be installed before the Resource Kit.)
- Microsoft SQL Server 7.0 Enterprise Edition with Service Pack 3
  Note: For small, distributed-only implementations (fewer than 30 events a minute), Microsoft SQL Server 7.0 Standard Edition with Service Pack 3 is acceptable.
- MKS Toolkit for System Administrators, Version 8.0 or 8.1
- Microsoft Windows NT Resource Kit, Version 4.0 Supplement 3
- Microsoft Internet Information Server (IIS), Version 4.0 with Microsoft Windows NT Option Pack

Table 12. Supported hardware and software for the console server

<table>
<thead>
<tr>
<th></th>
<th>Windows 2000</th>
<th>Windows 2003</th>
<th>Windows NT</th>
</tr>
</thead>
<tbody>
<tr>
<td>Processor</td>
<td>Single Pentium III, 866 MHz, dual processor capable</td>
<td>Single Pentium III, 866 MHz, dual processor capable</td>
<td>Single Pentium III, 866 MHz, dual processor capable</td>
</tr>
<tr>
<td>Memory</td>
<td>1 GB RAM</td>
<td>1 GB RAM</td>
<td>1 GB RAM</td>
</tr>
</tbody>
</table>
### Table 12. Supported hardware and software for the console server (continued)

<table>
<thead>
<tr>
<th>System Drive</th>
<th>Windows 2000 operating system plus 2 GB free disk space</th>
<th>Windows 2003 operating system plus 2 GB free disk space</th>
<th>Windows NT 4.0 operating system plus 1 GB free disk space</th>
</tr>
</thead>
<tbody>
<tr>
<td>Data Drive</td>
<td>4 GB free disk space for data and log files</td>
<td>4 GB free disk space for data and log files</td>
<td>4 GB free disk space for data and log files</td>
</tr>
</tbody>
</table>
| Required Software | • Data Direct Connect, Version 2.2, 3.0, 3.1 or Microsoft SQL Server 2000 Driver for JDBC  
  **Note:** Only available when using Microsoft SQL Server 2000 Server or Microsoft SQL Server 2000 Enterprise Edition  
  • MKS Toolkit for System Administrators, Version 8.0 or 8.1  
  • Windows 2000 Resource Kit and Windows 2000 Support Tools (see note [5](#) on page [15](#) below)  
  • Microsoft Internet Information Server (IIS), Version 5.0 (supplied with Windows 2000 Server and Microsoft Windows Advanced Server 2000) | • Data Direct Connect, Version 2.2, 3.0, 3.1 or Microsoft SQL Server 2000 Driver for JDBC  
  **Note:** Only available when using Microsoft SQL Server 2000 Server or Microsoft SQL Server 2000 Enterprise Edition | • MKS Toolkit for System Administrators, Version 8.0 or 8.1  
  • Windows 2000 Resource Kit and Windows 2003 Support Tools (Support Tools must be installed before the Resource Kit.)  


### Propagation Server

**Table 13. Supported hardware and software for the propagation server**

<table>
<thead>
<tr>
<th></th>
<th>Windows 2000</th>
<th>Windows 2003</th>
<th>Windows NT</th>
</tr>
</thead>
<tbody>
<tr>
<td>Processor</td>
<td>Single Pentium III, 866 MHz, dual processor capable</td>
<td>Single Pentium III, 866 MHz, dual processor capable</td>
<td>Single Pentium III, 866 MHz, dual processor capable</td>
</tr>
<tr>
<td>Memory</td>
<td>1 GB RAM</td>
<td>1 GB RAM</td>
<td>1 GB RAM</td>
</tr>
</tbody>
</table>
Table 13. Supported hardware and software for the propagation server (continued)

<table>
<thead>
<tr>
<th>System Drive</th>
<th>Windows 2000 operating system plus 2 GB free disk space</th>
<th>Windows 2003 operating system plus 2 GB free disk space</th>
<th>Windows NT 4.0 operating system plus 1 GB free disk space</th>
</tr>
</thead>
<tbody>
<tr>
<td>Data Drive</td>
<td>4 GB free disk space for data and log files</td>
<td>4 GB free disk space for data and log files</td>
<td>4 GB free disk space for data and log files</td>
</tr>
<tr>
<td>Supported Operating System</td>
<td>Windows 2000 Server with Service Pack 3</td>
<td>Windows 2003 Server</td>
<td>Windows NT 4.0 Server with Service Pack 6a</td>
</tr>
<tr>
<td>Required Software</td>
<td>• MKS Toolkit for System Administrators, Version 8.0 or 8.1</td>
<td>• MKS Toolkit for System Administrators, Version 8.0 or 8.1</td>
<td>• MKS Toolkit for System Administrators, Version 8.0 or 8.1</td>
</tr>
</tbody>
</table>

Web Console Server
The web console and web console server are not supported with Windows 2003.

Table 14. Supported hardware and software for the web console server

<table>
<thead>
<tr>
<th></th>
<th>Windows 2000</th>
<th>Windows 2003</th>
<th>Windows NT</th>
</tr>
</thead>
<tbody>
<tr>
<td>Processor</td>
<td>Single Pentium III, 866 MHz</td>
<td>Single Pentium III, 866 MHz</td>
<td>Single Pentium III, 866 MHz</td>
</tr>
<tr>
<td>Memory</td>
<td>1 GB RAM</td>
<td>1 GB RAM</td>
<td>1 GB RAM</td>
</tr>
<tr>
<td>System Drive</td>
<td>Windows 2000 operating system plus 2 GB free disk space</td>
<td>Windows 2003 operating system plus 2 GB free disk space</td>
<td>Windows NT 4.0 operating system plus 1 GB free disk space</td>
</tr>
<tr>
<td>Data Drive</td>
<td>4 GB free disk space for data and log files</td>
<td>4 GB free disk space for data and log files</td>
<td>4 GB free disk space for data and log files</td>
</tr>
</tbody>
</table>

Notes:
1. The JDBC drivers are only required to be installed on machines that have the console server or the common listener service installed.
2. The VCRedist.exe file must be installed on every machine that uses Intelligent Monitoring for BMC PATROL, NetIQ AppManager, or Unicenter TNG.
3. Microsoft Internet Information Server (IIS) is only required for the history and console server.
4. Although the console server and web console server can be installed on a single machine, we strongly recommend you install each of them on dedicated machines (and not on the same physical machine as any other Tivoli Business System Manager server component.)
5. Support Tools can be accessed from the Windows 2000 Advanced Server CD in the following directory: `<CDROM>\Support\tools`
6. If you use Tivoli Data Warehouse and would like to use the Tivoli Business Systems Manager Warehouse Enablement Pack, you must make sure you are using the correct version of the Tivoli Business Systems Manager Warehouse Enablement Pack. If you are using Tivoli Business Systems Manager version 2.1.1 Fix Pack 6–10, you must upgrade the Tivoli Business Systems Manager Warehouse Enablement Pack to version 2.1.1. If you have not yet upgraded to Fix Pack 6–10, you may continue to use Warehouse Enablement Pack version 2.1.0. Please see IBM Tivoli Business Systems Manager: Warehouse Enablement Pack V2.1.1 Implementation Guide for more information.

## Console Specifications

The following table lists the hardware, software requirements, and system specifications for the console for Tivoli Business Systems Manager Enterprise edition and Distributed edition.

<table>
<thead>
<tr>
<th>Operating System</th>
<th>Version</th>
<th>Specifications</th>
</tr>
</thead>
</table>
| Windows NT       | Windows NT Version 4.0 with Service Pack 6a | Processor: 600 MHz  
|                  |         | Memory: Minimum 256 MB RAM / Recommended 384 MB RAM  
|                  |         | Available Disk Space: 100 MB |
|                  |         | Memory: Minimum 384 MB RAM / Recommended 512 MB RAM  
|                  |         | Available Disk Space: 100 MB |
|                  |         | Memory: Minimum 384 MB RAM / Recommended 512 MB RAM  
|                  |         | Available Disk Space: 100 MB |
| Windows XP Professional | Professional | Processor: 600 MHz  
|                  |         | Memory: Minimum 384 MB RAM / Recommended 512 MB RAM  
|                  |         | Available Disk Space: 100 MB |
| AIX®             | Version 4.3.3 or 5.1 | Processor: 500 MHz  
|                  |         | Memory: Minimum 384 MB RAM / Recommended 512 MB RAM  
|                  |         | Available Disk Space: 100 MB |
| Solaris Operating System Environment | Version 2.7 and 2.8 | Processor: 500 MHz  
|                  |         | Memory: Minimum 256 MB RAM / Recommended 384 MB RAM plus 38 MB RAM  
|                  |         | Available Disk Space: 100 MB |
Table 15. Console hardware and software specifications  (continued)

<table>
<thead>
<tr>
<th>Operating System</th>
<th>Version</th>
<th>Specifications</th>
</tr>
</thead>
<tbody>
<tr>
<td>Linux</td>
<td>Version 6.2</td>
<td>Processor: 600 MHz</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Memory: Minimum 384 MB RAM / Recommended 512 MB RAM</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Available Disk Space: 100 MB</td>
</tr>
</tbody>
</table>

Note: The minimum screen resolution specification is 1024 x 768

Web Console Specifications

The following table lists the software requirements and system specifications for the web console for Tivoli Business Systems Manager Enterprise edition and Distributed edition. The web console and web console server are not supported with Windows 2003.

Table 16. Web console software and system specifications

<table>
<thead>
<tr>
<th>Version</th>
<th>Specifications</th>
</tr>
</thead>
<tbody>
<tr>
<td>Microsoft Internet Explorer, Version 5.x or 6.0</td>
<td>Available Disk Space: 100 MB</td>
</tr>
</tbody>
</table>

Server Test/Quality Assurance Systems

A secondary set of three servers can be configured to support Testing and Quality Assurance (QA) operations for the Tivoli Business Systems Manager implementation.

Administrators use test systems to test new features of Tivoli Business Systems Manager before it is installed into the production environment.

Hardware

Table 17. Hardware and software requirements for Testing and Quality Assurance

<table>
<thead>
<tr>
<th>Hardware</th>
<th>Specifications</th>
</tr>
</thead>
<tbody>
<tr>
<td>Database server</td>
<td></td>
</tr>
<tr>
<td>Processor</td>
<td>Dual Pentium III Xeon, 866 MHz, 1 MB cache</td>
</tr>
<tr>
<td>Memory</td>
<td>4 GB RAM</td>
</tr>
<tr>
<td>System Drive</td>
<td>Windows 2000 operating system plus 2 GB free disk space</td>
</tr>
<tr>
<td></td>
<td>Windows NT 4.0 operating system plus 1 GB free disk space</td>
</tr>
<tr>
<td>Data Drive</td>
<td>50 GB free disk space</td>
</tr>
<tr>
<td>Console and Propagation server</td>
<td></td>
</tr>
<tr>
<td>Processor</td>
<td>Single Pentium III, 866 MHz</td>
</tr>
<tr>
<td>Memory</td>
<td>512 MB RAM</td>
</tr>
<tr>
<td>System Drive</td>
<td>Windows 2000 operating system plus 2 GB free disk space</td>
</tr>
<tr>
<td></td>
<td>Windows NT, Version 4.0 operating system plus 1 GB free disk space</td>
</tr>
<tr>
<td>Data Drive</td>
<td>18 GB free disk space</td>
</tr>
<tr>
<td>Event Handler, SNA or Host Integration server</td>
<td></td>
</tr>
</tbody>
</table>
Alternate Two Server Configuration for Tivoli Business Systems Manager — Enterprise

Tivoli Business Systems Manager — Enterprise version 2.1.1 currently recommends a standard six server environment. For certain customers, a two server environment is a viable supported alternative to the standard six server environment for those customers who meet the above requirements. This section explains the levels of event input and console use that is adequately supported by the two server environment.

The two server environment contains a database server and an additional server that holds the console server, event handler server, and propagation server. An additional evaluation was completed for a two server environment in which the propagation server and database server are combined, and another server that contains the event handler and console servers.

The two server configurations outlined here differ somewhat from the two server distributed configuration which is documented in the Tivoli Business Systems Manager Installation and Configuration Guide. The distributed configuration handles events from such feeds as the Agent Listener and Common Listener, and the two servers documented include the console and propagation server combined, with the database server on a separate machine. The two server configurations documented here evaluate how a two server environment would work with an enterprise environment in which events arrive from mainframe feeds. Some combinations of servers described here differ from the distributed environment. They are not necessarily better than the typical distributed environment, but present different options for designing two server system. Evaluations were completed for the two server configurations that included Java™ console measurements, and measurements using the DB2® feed to send events to Tivoli Business Systems Manager. Response time, throughput, and server CPU utilization information was collected. The following hardware was used for the measurements:

*Table 18. Minimum hardware and software configurations*

<table>
<thead>
<tr>
<th>Server</th>
<th>Machine Type</th>
<th>Processors</th>
<th>RAM</th>
<th>Operating System</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table 17. Hardware and software requirements for Testing and Quality Assurance (continued)

<table>
<thead>
<tr>
<th>Hardware</th>
<th>Specifications</th>
</tr>
</thead>
<tbody>
<tr>
<td>Processor</td>
<td>Single Pentium III, 866 MHz 1 MB cache</td>
</tr>
<tr>
<td>Memory</td>
<td>512 MB RAM</td>
</tr>
<tr>
<td>System Drive</td>
<td>Windows 2000 operating system plus 2 GB free disk space</td>
</tr>
<tr>
<td></td>
<td>Windows NT 4.0 operating system plus 1 GB free disk space</td>
</tr>
<tr>
<td>Data Drive</td>
<td>18 GB free disk space</td>
</tr>
</tbody>
</table>

Web Console server

| Processor | Single Pentium III, 700 MHz |
| Memory    | 512 MB RAM |
| System Drive | Windows 2000 operating system plus 2 GB free disk space |
|           | Windows NT 4.0 operating system plus 1 GB free disk space |
| Data Drive| 18 GB free disk space |
Table 18. Minimum hardware and software configurations (continued)

<table>
<thead>
<tr>
<th>Database and Propagation)</th>
<th>IBM xseries 360</th>
<th>4 x 1.5 GHz</th>
<th>4 GB</th>
<th>Windows 2000 Advanced Server</th>
</tr>
</thead>
<tbody>
<tr>
<td>Console, Event Handler (optional Propagation)</td>
<td>IBM xseries 360</td>
<td>2 x 1126 MHz</td>
<td>1 GB</td>
<td>Windows 2000 Advanced Server</td>
</tr>
</tbody>
</table>

This two server environment supported an input event rate of up to 30 events per minute. If your environment experiences occasional peak event rates above this threshold, you may have some degradation in console response time and throughput. In addition, this two server environment can support up to 15 consoles. These consoles should be primarily using Business System views; use of the All Resource view should be limited to needed maintenance functions.

In addition, you must use Windows 2000 Advanced Server and SQL Server 2000 Enterprise Edition. All normal prerequisite software, as described in the latest available Tivoli Business Systems Manager documentation for the 2.1.1 release, must be installed for each server. The hardware requirements for the console clients remain as documented in the Tivoli Business Systems Manager 2.1.1 documentation.

Certain factors must be considered when designing the two server configuration. The best throughput achieved during research for this paper was when the database and propagation servers were combined on one machine, and the event handler and console servers were combined on a separate machine. The recommended location of various Tivoli Business Systems Manager services for a two server configuration is as follows:

Table 19. Recommended two server configuration

<table>
<thead>
<tr>
<th>Server number</th>
<th>Included services</th>
</tr>
</thead>
<tbody>
<tr>
<td>Server 1</td>
<td>database server, propagation server, and, optionally, Agent Listener and Common Listener</td>
</tr>
<tr>
<td>Server 2</td>
<td>console server and event handler server</td>
</tr>
</tbody>
</table>

Should additional services such as History, Web console, Health Monitor, or SNA Services be required, a two server configuration is not possible and the following configuration is recommended:

Table 20. Recommended four server configuration

<table>
<thead>
<tr>
<th>Server Number</th>
<th>Included Services</th>
</tr>
</thead>
<tbody>
<tr>
<td>Server 1</td>
<td>database server, propagation server, and, optionally, Agent Listener and Common Listener</td>
</tr>
<tr>
<td>Server 2</td>
<td>console server, event handler server</td>
</tr>
<tr>
<td>Server 3(^1)</td>
<td>history server, health monitor server</td>
</tr>
<tr>
<td>Server 4(^1)</td>
<td>web console server and/or SNA services, if required</td>
</tr>
</tbody>
</table>

---

1. Please see the latest Tivoli Business Systems Manager 2.1.1 documentation for the hardware and software specifications for servers 3 and 4.
Note: The hardware and software configurations specified within this document are required to obtain Tivoli Business Systems Manager support for a 2 server configuration.

The design of the Business System structure to be used in Tivoli Business Systems Manager is another factor that should be considered when planning for a 2 server configuration.

The following characteristics of Business Systems can affect throughput of events:
- the number of Business Systems in which an affected object is included
- the level of nesting of the Business Systems themselves
- the overall number of Business Systems
- the method in which Business Systems are created

In the two server environment, the same object should not be included in more than five Business Systems, and those Business Systems should not be nested more than five levels deep. The total number of Business Systems to be supported in the two server environment should not exceed 3,000. (All objects dragged and dropped to a business system are considered to be Business Systems, regardless of whether they are logical or physical objects.)

Last of all, the insertion of new objects does have a database and console impact and large inserts using ABS, GUI, or event feeds causes performance degradation. No more than 100 resources per hour should be created (using ABS, Event, or GUI creation methods) in a two server environment.
Chapter 2. Data Source Specifications

Data Source Software Requirements

The following table lists the required data source software specifications.

Table 21. Data source software requirements

<table>
<thead>
<tr>
<th>Company</th>
<th>Product</th>
<th>Supported Release</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>IBM</td>
<td>CICS Transaction Server</td>
<td>Transaction Server, Version 1.3 and 2.2</td>
<td></td>
</tr>
<tr>
<td>IBM</td>
<td>IBM Tivoli NetView for OS/390 RODM</td>
<td>Version 1.3 and 1.4</td>
<td>Required for starting the NetView Management Console (NMC). NMC server and client must be on the Tivoli NetView Version 1.4 level.</td>
</tr>
<tr>
<td>IBM</td>
<td>IBM Tivoli NetView for z/OS RODM</td>
<td>Version 5.1</td>
<td></td>
</tr>
<tr>
<td>IBM</td>
<td>IBM Tivoli Enterprise Console</td>
<td>Version 3.6.2, 3.7.1, 3.8, 3.9</td>
<td></td>
</tr>
<tr>
<td>IBM</td>
<td>Tivoli Management Environment</td>
<td>Version 3.6.1 and later</td>
<td></td>
</tr>
<tr>
<td>IBM</td>
<td>IBM Tivoli Workload Scheduler for z/OS</td>
<td>Version 8.1 with APAR IY34282 or later</td>
<td>OS/390 and distributed</td>
</tr>
<tr>
<td>IBM</td>
<td>Tivoli Operations, Planning &amp; Control</td>
<td>Version 2.3</td>
<td></td>
</tr>
<tr>
<td>IBM</td>
<td>IMS™</td>
<td>Version 6.0 with PTF UQ23685, 7.0 and 8.0</td>
<td></td>
</tr>
<tr>
<td>IBM</td>
<td>DB2 Universal Database™ for z/OS and OS/390</td>
<td>Version 5.0, 6.0, 7.0</td>
<td></td>
</tr>
<tr>
<td>IBM</td>
<td>DB2 Performance Monitor</td>
<td>Version 5.0, 6.0, 7.0</td>
<td></td>
</tr>
<tr>
<td>IBM</td>
<td>WebSphere® for OS/390</td>
<td>Version 3.5, 4.0, 4.0.1</td>
<td>Version 3.5 limited function</td>
</tr>
<tr>
<td>IBM</td>
<td>System Managed Storage</td>
<td>Version 1.4.0, 1.5.0</td>
<td></td>
</tr>
<tr>
<td>IBM</td>
<td>Data Facility Systems Managed Storage Hierarchical Storage Manager</td>
<td>Version 1.5</td>
<td></td>
</tr>
<tr>
<td>IBM</td>
<td>Extended Remote Copy</td>
<td>See Data Facility Systems Managed Storage Hierarchical Storage Manager</td>
<td></td>
</tr>
<tr>
<td>IBM</td>
<td>Resource Object Data Manager</td>
<td>See Tivoli NetView for OS/390</td>
<td></td>
</tr>
<tr>
<td>IBM</td>
<td>System Automation for OS/390</td>
<td>Version 1.3, 2.1, 2.2</td>
<td></td>
</tr>
</tbody>
</table>
Table 21. Data source software requirements (continued)

<table>
<thead>
<tr>
<th>Company</th>
<th>Product</th>
<th>Supported Release</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>IBM</td>
<td>IBM Tivoli NetView</td>
<td>Version 7.1, 7.1.2, 7.1.3, 7.1.4</td>
<td></td>
</tr>
<tr>
<td>IBM</td>
<td>Tivoli Manager for BEA Tuxedo</td>
<td></td>
<td></td>
</tr>
<tr>
<td>IBM</td>
<td>Tivoli Manager for DB2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>IBM</td>
<td>Tivoli Manager for Domino™</td>
<td></td>
<td></td>
</tr>
<tr>
<td>IBM</td>
<td>Tivoli Manager for Message Queue Server</td>
<td></td>
<td></td>
</tr>
<tr>
<td>IBM</td>
<td>Tivoli Manager for Microsoft Exchange</td>
<td></td>
<td></td>
</tr>
<tr>
<td>IBM</td>
<td>Tivoli Manager for Microsoft SQL Server</td>
<td></td>
<td></td>
</tr>
<tr>
<td>IBM</td>
<td>Tivoli Manager for MQSeries®</td>
<td></td>
<td></td>
</tr>
<tr>
<td>IBM</td>
<td>Tivoli Manager for MQSeries Integrator</td>
<td></td>
<td></td>
</tr>
<tr>
<td>IBM</td>
<td>Tivoli Manager for Oracle</td>
<td></td>
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<tr>
<td>IBM</td>
<td>Tivoli Manager for PeopleSoft</td>
<td></td>
<td></td>
</tr>
<tr>
<td>IBM</td>
<td>Tivoli Manager for R/3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>IBM</td>
<td>Tivoli Manager for Siebel eBusiness</td>
<td></td>
<td></td>
</tr>
<tr>
<td>IBM</td>
<td>Tivoli Manager for Sybase</td>
<td></td>
<td></td>
</tr>
<tr>
<td>IBM</td>
<td>Tivoli Manager for Websphere Application Server</td>
<td></td>
<td></td>
</tr>
<tr>
<td>IBM</td>
<td>Tivoli Ready for IBM HTTP Server</td>
<td></td>
<td></td>
</tr>
<tr>
<td>IBM</td>
<td>Tivoli Ready for IBM SecureWay® Directory</td>
<td></td>
<td></td>
</tr>
<tr>
<td>IBM</td>
<td>Tivoli Distributed Monitoring</td>
<td>Version 3.6.2 or later</td>
<td></td>
</tr>
<tr>
<td>IBM</td>
<td>IBM Tivoli Monitoring</td>
<td>Version 4.1, 5.1, 5.1.1</td>
<td></td>
</tr>
<tr>
<td>IBM</td>
<td>IBM Tivoli Monitoring For Databases - Oracle</td>
<td>Version 5.1.0</td>
<td>Fix pack required ²</td>
</tr>
<tr>
<td>IBM</td>
<td>IBM Tivoli Monitoring For Databases - DB2</td>
<td>Version 5.1.0</td>
<td>Fix pack required ²</td>
</tr>
<tr>
<td>IBM</td>
<td>IBM Tivoli Monitoring For Databases - Informix®</td>
<td>Version 5.1.0</td>
<td>Fix pack required ²</td>
</tr>
<tr>
<td>IBM</td>
<td>IBM Tivoli Monitoring For Applications - mySAP.com</td>
<td>Version 5.1.0</td>
<td>Fix pack required ²</td>
</tr>
<tr>
<td>IBM</td>
<td>IBM Tivoli Monitoring For Applications - Siebel</td>
<td>Version 5.1.0</td>
<td>Fix pack required ²</td>
</tr>
</tbody>
</table>
Table 21. Data source software requirements (continued)

<table>
<thead>
<tr>
<th>Company</th>
<th>Product</th>
<th>Supported Release</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>IBM</td>
<td>IBM Tivoli Monitoring For Business Integration - WebSphere MQ</td>
<td>Version 5.1.0</td>
<td>Fix pack required ²</td>
</tr>
<tr>
<td>IBM</td>
<td>IBM Tivoli Monitoring For Business Integration - WebSphere MQI</td>
<td>Version 5.1.0</td>
<td>Fix pack required ²</td>
</tr>
<tr>
<td>IBM</td>
<td>IBM Tivoli Monitoring For Infrastructure - Apache</td>
<td>Version 5.1.0</td>
<td>Fix pack required ²</td>
</tr>
<tr>
<td>IBM</td>
<td>IBM Tivoli Monitoring For Infrastructure - WebSphere Application Server</td>
<td>Version 5.1.0</td>
<td>Fix pack required ²</td>
</tr>
<tr>
<td>IBM</td>
<td>IBM Tivoli Monitoring For Infrastructure - iPlanet</td>
<td>Version 5.1.0</td>
<td>Fix pack required ²</td>
</tr>
<tr>
<td>IBM</td>
<td>IBM Tivoli Monitoring For Infrastructure - IIS</td>
<td>Version 5.1.0</td>
<td>Fix pack required ²</td>
</tr>
<tr>
<td>IBM</td>
<td>IBM Tivoli Monitoring For Messaging and Collaboration - Domino</td>
<td>Version 5.1.0</td>
<td>Fix pack required ²</td>
</tr>
<tr>
<td>IBM</td>
<td>Tivoli Manager for MQSeries</td>
<td>Version 2.4.0</td>
<td></td>
</tr>
<tr>
<td>BMC</td>
<td>MAINVIEW for MVS</td>
<td>Version 2.5.1</td>
<td></td>
</tr>
<tr>
<td>BMC</td>
<td>MAINVIEW for CICS</td>
<td>Version 5.4</td>
<td></td>
</tr>
<tr>
<td>BMC</td>
<td>MAINVIEW for IMS</td>
<td>Version 3.2, 3.3</td>
<td></td>
</tr>
<tr>
<td>BMC</td>
<td>MAINVIEW for DB2</td>
<td>Version 7.1</td>
<td></td>
</tr>
<tr>
<td>BMC</td>
<td>PATROL</td>
<td>Version 3.4</td>
<td></td>
</tr>
<tr>
<td>BMC</td>
<td>CONTROL-M</td>
<td>Version 5.1.4</td>
<td></td>
</tr>
<tr>
<td>BMC</td>
<td>AutoOperator</td>
<td>Version 6.0, 6.1.0</td>
<td></td>
</tr>
<tr>
<td>Allen Systems</td>
<td>ASG-TMON for MVS</td>
<td>Version 2.0</td>
<td></td>
</tr>
<tr>
<td>Group</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Allen Systems</td>
<td>ASG-TMON for CICS</td>
<td>Version 2.0</td>
<td></td>
</tr>
<tr>
<td>Group</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Allen Systems</td>
<td>ASG-TMON for DB2</td>
<td>Version 3.2</td>
<td></td>
</tr>
<tr>
<td>Group</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Allen Systems</td>
<td>ASG-Zeke</td>
<td>Version 4.5, 5.1</td>
<td></td>
</tr>
<tr>
<td>Group</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Computer</td>
<td>CA-7</td>
<td>Version 3.2, 3.3</td>
<td></td>
</tr>
<tr>
<td>Associates</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Computer</td>
<td>Unicenter TNG</td>
<td>Version 2.1, 2.2, 2.4</td>
<td></td>
</tr>
<tr>
<td>Associates</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Computer</td>
<td>OPS/MVS</td>
<td>Version 4.2, 4.3, 4.4</td>
<td></td>
</tr>
<tr>
<td>Associates</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Candle</td>
<td>OMEGAMON II for MVS</td>
<td>Version 500, 520</td>
<td>only supported through the menu system</td>
</tr>
</tbody>
</table>

Chapter 2. Data Source Specifications 23
Table 21. Data source software requirements (continued)

<table>
<thead>
<tr>
<th>Company</th>
<th>Product</th>
<th>Supported Release</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Candle</td>
<td>OMEGAMON II for CICS</td>
<td>Version 500, 520</td>
<td>only supported through the menu system</td>
</tr>
<tr>
<td>Candle</td>
<td>OMEGAMON II for DB2</td>
<td>Version 500, 520</td>
<td>only supported through the menu system</td>
</tr>
<tr>
<td>Candle</td>
<td>OMEGAMON II for IMS</td>
<td>Version 500, 520</td>
<td>only supported through the menu system</td>
</tr>
<tr>
<td>Candle</td>
<td>AF/Operator</td>
<td>Version 3.1, 3.2</td>
<td></td>
</tr>
<tr>
<td>NetIQ</td>
<td>AppManager</td>
<td>Version 4.02 Agent</td>
<td></td>
</tr>
</tbody>
</table>

External Data Interface Supported Levels

The following products use the External Data Interface (EDI) and these supported levels of software:

Table 22. EDI supported software

<table>
<thead>
<tr>
<th>Company</th>
<th>Product</th>
<th>Version</th>
</tr>
</thead>
<tbody>
<tr>
<td>IBM</td>
<td>System Automation for OS/390</td>
<td>1.3, 2.1, 2.2</td>
</tr>
<tr>
<td>Computer Associates</td>
<td>OPS/MVS</td>
<td>4.4</td>
</tr>
<tr>
<td>Candle</td>
<td>AF Operator</td>
<td>3.2</td>
</tr>
<tr>
<td>BMC</td>
<td>MAINVIEW Auto Operator</td>
<td>6.1</td>
</tr>
</tbody>
</table>

2. There is a support knowledge item available describing a few installation and configuration issues when using the PACs with Tivoli Business Systems Manager 2.1.1. These issues will be fixed in the first available fix pack for each of the PACs, however if the fix pack is not yet available, the knowledge item contains all the required changes.
Part 2. Installing Prerequisite Software

This part describes how to install prerequisite software. It includes:

- Chapter 3, “Installing MKS Toolkit,” on page 27
- Appendix D, “Installing SQL Server 7.0 Client,” on page 351
- Chapter 5, “Installing HIS,” on page 31
Chapter 3. Installing MKS Toolkit

Install MKS Toolkit for System Administrators on all servers. To install MKS Toolkit for System Administrators, perform the following steps:

1. Insert the MKS Toolkit for System Administrators cd into the drive.
2. Click Install Toolkit.
3. From the Welcome dialog, click Next.
4. From the License Agreement dialog, read and click I accept. Click Next.
5. From the Please Register dialog, click Next.
6. From the Customer Information dialog, enter your user name, organization, serial number, and PIN. Click Next.
7. From the File Extensions dialog, keep the defaults (both selections checked). Click Next.
8. From the Setup Type dialog, select Typical. Click Next.
9. From the Destination Folder dialog, place these files in a directory on your system drive. Click the Change button to select a directory. After a preferred directory is selected, or to use the default directory, click Next.
10. From the Ready to Install the Program dialog, click Install.
11. When setup is completed, click Finish.
Chapter 4. Installing SQL Server

You must install either Microsoft SQL Server 7.0 Enterprise Edition (if you are using Windows NT as your operating system) or Microsoft SQL Server 2000 Enterprise Edition (if you are using Windows 2000 or 2003) on both your database server and your history server. You must also install the SQL Server client on the event handler server.

Installing SQL Server on the Database Server

Use one of the following Appendixes to install either Microsoft SQL Server 7.0 Enterprise Edition or Microsoft SQL Server 2000 Enterprise Edition on your database server:


Note: Follow the SQL Server instructions carefully to ensure the Sort Order is specified correctly. Otherwise Tivoli Business Systems Manager will not function correctly.

Installing SQL Server on the History Server

Use one of the following Appendixes to install either Microsoft SQL Server 7.0 Enterprise Edition or Microsoft SQL Server 2000 Enterprise Edition on your history server:


Note: Follow the SQL Server instructions carefully to ensure the Sort Order is specified correctly. Otherwise Tivoli Business Systems Manager Tivoli Business Systems Manager will not function correctly.

Installing SQL Server Client on the Event Handler

Install either Microsoft SQL Server 7.0 Client or Microsoft SQL Server 2000 Client on the event handler server using the following sections:

- If you are going to be using SQL Server 7.0 Client, refer to Appendix D, “Installing SQL Server 7.0 Client,” on page 351.
- If you are going to be using SQL Server 2000 Client, refer to Appendix E, “Installing SQL Server 2000 Client,” on page 353.
Chapter 5. Installing HIS

The Microsoft Host Integration Server is required only if SNA connectivity is used for event flow from the mainframe. If TCP/IP event flow is used, this server is not required.

This chapter describes how to install Host Integration Server. It includes:

- “Host Integration Server Security”
- “Installing LU6.2 Support”
- “Configuring Virtual Telecommunications Access Method Environment Using PU2.1 Node” on page 32
- “Installing the Host Integration Server” on page 32
- “Installing Host Integration Server Client” on page 38

If you are installing Host Integration Server on a Windows NT operating system, refer to the Host Integration Server readme document for information about installation prerequisites. Required prerequisites are available to download from the Microsoft Web site. If you are installing Host Integration Server on Windows 2000 Advanced Server or Windows Server 2003 Enterprise Edition, no additional prerequisites are required.

You can find information on configuring Host Integration Server in “The Host Integration Server” on page 192.

Host Integration Server Security

Host Integration Server client application programs access the source/390 object server task through the Host Integration Server machine. For this reason, the Host Integration Server client requires authority to access the Host Integration Server machine. To accomplish this, the following important Windows security issues must be addressed:

- The Host Integration Server and the Host Integration client must be installed with the same user ID and password.
- If you install the Host Integration Server and the Host Integration client with a user ID that already exists, you must manually give that user ID Windows access to act as part of the operating system.
- If you log on to the Host Integration client machine with a user ID and password that are different from what you used to install the Host Integration Server software, the user ID and password must exist with the same password on the Host Integration Server machine.

Installing LU6.2 Support

The APPC transport mechanism for sending data between source/390 and Windows NT uses LU6.2 services over the Microsoft Host Integration Server.

To use Host Integration Server with the Microsoft Windows operating system, the following tasks require configuration setup.

- Configure the VTAM environment
- Install and configure Host Integration Server
• Install and configure Host Integration Client

Your system administrator should be familiar with MVS/VTAM and Windows NT operating system environments.

---

### Configuring Virtual Telecommunications Access Method Environment
#### Using PU2.1 Node

PU 2.1 end node is required to be defined with an independent LU that can be accessed by all OS/390 systems within the enterprise between source/390 and the Windows NT operating system environment.

Consult your Virtual Telecommunications Access Method (VTAM) system programmer to provide a physical configuration using an ILU between VTAM and Microsoft Host Integration Server. A sample configuration for a switched VTAM connection follows. This example can be used in a Token Ring or Ethernet environment. Be sure to code unique names and IDNUM when configuring the VTAM definitions.

**Installation Steps:**

```plaintext
/* *---------------------------------------------------------------*
| */ SNASERVER PU FOR TM/390                                   |
| *---------------------------------------------------------------*
|*/ SWTM3901 VBUILD TYPE=SWNET                               |
|/* TM390PU1 PU PUTYPE=2, ADDR=C1, MAXDATA=1456,             |
|   IDBLK=05D, IDNUM=00002, CPNAME=TM390CP1,                 |
|   DLOGMOD=DYNAMIC, USSTAB=USSS                             |
|/* TM390LU1 LU LOCADDR=0                                     |
```

Microsoft Host Integration Server can support Token Ring, Ethernet, and FDDI connections within a VTAM (SNA) environment. Open System Adapters (OSA) and 3172 Nways® controllers can also be used with the listed protocols.

---

### Installing the Host Integration Server

To install the Microsoft Host Integration Server:

1. Run the Microsoft Host Integration 2000 Setup program and select **Install Server**. Depending on the configuration of your operating system, you can receive an error message stating that prerequisites for MQ Series bridge and Security Integration are not in place. If you get an error for these specific options, select **Yes** to continue.

2. Follow the instructions on each dialog as you proceed through the installation. Unless otherwise noted, use the default installation options for each dialog.

3. From the Select Features dialog, clear the following options by clicking the icons and selecting **X Entire Feature will be unavailable**.
   - Data Integration
   - Application Integration
   - Under Application and Tools: **5250 client, AFTP Client**, and **Host Accounts**.

4. Refer to the **Host Integration Server Security** topic for information on what to type in the Services Account dialog.

5. In the **SNA Resource Location Wizard**, click **Next**, and type a **SNASUBDOMAIN** that is different from your Windows domain or computer...
name, such as **computer nameSNA**. If you do not type a unique name on this dialog, you can have difficulty configuring Microsoft Host Integration Server. Select **Primary** as the server role. Select the default settings for the remaining wizard dialogs.

You are now ready to configure Microsoft Host Integration Server. After you complete the configuration, you must set the service SNASERVR to automatically begin once you restart. You can do this through the system services manager.

**Configuring Host Integration Server 2000**

The SNA Server Manager is the managing component that hosts sessions on behalf of users between Microsoft Host Integration Server 2000 and VTAM on OS/390. If you have questions, you can find information about configuring the SNA Server Manager in the help facility provided by the Host Integration Server.

**Note:** Before you begin, work with your VTAM systems programmer to complete the following chart. Many of these values are required during the configuration of the Host Integration Server and client.

The following table lists the configuration values for the Host Integration Server.

**Table 23. Host Integration Server configuration values**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value*</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>VTAM Major Node Names</td>
<td>Your defined names</td>
<td>The APPLID and PU major node names</td>
</tr>
<tr>
<td>Network Name</td>
<td>Your defined name</td>
<td>NETID(D NET,VTAMOPTS,OPTION=NETID)</td>
</tr>
<tr>
<td>Control Point Name</td>
<td>Your defined name</td>
<td>The CPNAME in PU major node</td>
</tr>
<tr>
<td>PU Name</td>
<td>Your defined name</td>
<td>The name of PU as defined to VTAM</td>
</tr>
<tr>
<td>Local Node ID (XID)</td>
<td>Your defined name</td>
<td>IDNUM/IDBLK from PU major node**</td>
</tr>
<tr>
<td>Local/Partner LU alias/LU name</td>
<td>Your defined name</td>
<td>The LU with LOCADDR=0 in PU major node</td>
</tr>
<tr>
<td>Remote LU alias/LU name</td>
<td>Your defined name</td>
<td>The APPLID name for Tivoli Business Systems Manager (one for each host)</td>
</tr>
<tr>
<td>Remote Network Address</td>
<td>Your defined name</td>
<td>The MAC address of network interface card**</td>
</tr>
<tr>
<td>Remote SAP address</td>
<td>Your defined name</td>
<td>The SAPADDR of mainframe network interface (default value is 4)**</td>
</tr>
<tr>
<td>SNA Server Machine Name</td>
<td>Your defined name</td>
<td>The name of Windows operating system machine where SNA Server is installed</td>
</tr>
</tbody>
</table>

* Indicates that these values are entered site specific

** Indicates parameters for switched connections

Install the Microsoft Host Integration Server on the Windows NT operating system console that is physically connected with a Token Ring or Ethernet card. This workstation should be locally or remotely attached to MVS.
The following steps identify the tasks involved in configuring the Host Integration Server sections. The Host Integration Server is designed like Windows Explorer, using a tree view hierarchy. Each section requires an insertion of a resource that you need to create and configure.

A token ring network configuration is provided in this section to show a sample of how to configure the Host Integration Server. (For additional information, refer to the Host Integration Server help facility.)

To configure the Host Integration Server:

1. Under Servers, locate the name of the server in which the Host Integration Server is installed and make the following configuration changes. The Host Integration Server is a traditional Windows application program and you can access the Properties menu by right-clicking any resource and then clicking Properties.

2. Update the SNA Service. You are required to provide the Network Name and Control Point Name of the VTAM environment that the SNA manager is connected too. Edit SNA Service properties to add the Network Name and Control Point Name. The following table lists the names to enter in the SNA Service properties dialog.

<table>
<thead>
<tr>
<th>Title</th>
<th>Name for SNA Service</th>
</tr>
</thead>
<tbody>
<tr>
<td>Comment is optional</td>
<td>Customer defined name</td>
</tr>
<tr>
<td>Network Name is required</td>
<td>Customer defined name</td>
</tr>
<tr>
<td>Control Point Name is required</td>
<td>Customer defined name</td>
</tr>
</tbody>
</table>

3. Insert a Link Service on behalf of the SNA Service created using the protocol that supports the type of physical connection being used. For example, Token Ring or Ethernet can use the DLC 802.2 protocol.

   The protocol used must be installed on the machine. If it is not, you receive an error message indicating that the protocol is not installed on the computer. The following table lists the link service names needed for the the SNA Service.

<table>
<thead>
<tr>
<th>Title</th>
<th>Name for Link Service</th>
</tr>
</thead>
<tbody>
<tr>
<td>Adapter name of Token Ring / Ethernet</td>
<td>Customer defined name</td>
</tr>
<tr>
<td>SAP</td>
<td>x04</td>
</tr>
<tr>
<td>Check</td>
<td>Fixed SAP</td>
</tr>
<tr>
<td>Do not check</td>
<td>Allow Link Service to be distributed</td>
</tr>
</tbody>
</table>

4. Insert a Connection for the Link Service. Right-click SNA service and select New -->802.2.

   The following table lists the General tab fields and the connection service names.

<table>
<thead>
<tr>
<th>Title</th>
<th>Name for Connection Service</th>
</tr>
</thead>
<tbody>
<tr>
<td>Name</td>
<td>Name for connection (Physical Unit name is often a useful name here).</td>
</tr>
<tr>
<td>Select service name of link service</td>
<td>Customer defined name</td>
</tr>
</tbody>
</table>
Table 26. The General tab fields and connection service names (continued)

<table>
<thead>
<tr>
<th>Title</th>
<th>Name for Connection Service</th>
</tr>
</thead>
<tbody>
<tr>
<td>Comment is optional</td>
<td>Customer defined name</td>
</tr>
<tr>
<td>Remote End</td>
<td>Host System</td>
</tr>
<tr>
<td>Allowed Directions</td>
<td>Both Directions</td>
</tr>
<tr>
<td>Activation</td>
<td>On Server Startup</td>
</tr>
</tbody>
</table>

The following table lists the Address tab fields and the connection service names.

Table 27. The Address tab fields and connection service names

<table>
<thead>
<tr>
<th>Title</th>
<th>Name for Connection Service</th>
</tr>
</thead>
<tbody>
<tr>
<td>Remote Network Address</td>
<td>12 Byte Mac Address</td>
</tr>
<tr>
<td>Remote SAP address</td>
<td>Remote SAP address from VTAM</td>
</tr>
</tbody>
</table>

The following table lists the System Identification tab fields and the connection service names.

Table 28. The System Identification tab fields and connection service names

<table>
<thead>
<tr>
<th>Title</th>
<th>Name for Connection Service</th>
</tr>
</thead>
<tbody>
<tr>
<td>Local Node Name options:</td>
<td>Customer defined name</td>
</tr>
<tr>
<td>Network Name</td>
<td>See #1, Insert a SNA Service</td>
</tr>
<tr>
<td>Control Point Name</td>
<td>Cp name defined on the PU2.1 node</td>
</tr>
<tr>
<td>Local Node ID</td>
<td>IDNUM and IDBLK defined on the PU2.1 node</td>
</tr>
<tr>
<td>XID type</td>
<td>Format 3</td>
</tr>
<tr>
<td>Remote Node Name options</td>
<td>Do not fill in.</td>
</tr>
<tr>
<td>Compression Type</td>
<td>None</td>
</tr>
</tbody>
</table>

The default settings are sufficient.

If the physical connection is set up and the definitions within the SNA server are correct, the connection should activate when starting the SNA Service. There is an Active status displayed on the SNA Service and Connection name when started.

5. Insert a Local APPCLU name.

The following table lists the General tab fields and the local APPCLU names.

Table 29. The General tab fields and the local APPCLU names

<table>
<thead>
<tr>
<th>Title</th>
<th>Name for Local APPCLU</th>
</tr>
</thead>
<tbody>
<tr>
<td>LU Alias</td>
<td>The name of the Independent LU</td>
</tr>
<tr>
<td>Network Name</td>
<td>same name as provided in #1</td>
</tr>
<tr>
<td>LU Name</td>
<td>same name as LU Alias</td>
</tr>
<tr>
<td>Comment is optional</td>
<td>Customer defined</td>
</tr>
</tbody>
</table>

The following table lists the Advanced tab fields and the local APPCLU names.

Table 30. The Advanced tab fields and the local APPCLU names

<table>
<thead>
<tr>
<th>Title</th>
<th>Name for Local APPCLU</th>
</tr>
</thead>
<tbody>
<tr>
<td>Member of default outgoing local APPC LU Pool</td>
<td>Check</td>
</tr>
</tbody>
</table>
Table 30. The Advanced tab fields and the local APPCLU names (continued)

<table>
<thead>
<tr>
<th>Title</th>
<th>Name for Local APPCLU</th>
</tr>
</thead>
<tbody>
<tr>
<td>Timeout for starting TPs</td>
<td>600 seconds</td>
</tr>
<tr>
<td>Implicit Remote LU</td>
<td>None</td>
</tr>
<tr>
<td>LU6.2 Type</td>
<td>Independent</td>
</tr>
<tr>
<td>LU6.2 Resync Service</td>
<td>Do not fill in.</td>
</tr>
</tbody>
</table>

There is only one Local APPC LU defining the PU2.1 node residing in VTAM.

6. Insert a Remote APPC LU name.

The following table lists the General tab fields and the remote APPCLU names.

Table 31. The General tab fields and the remote APPCLU names

<table>
<thead>
<tr>
<th>Title</th>
<th>Name for Remote APPCLU</th>
</tr>
</thead>
<tbody>
<tr>
<td>Connection</td>
<td>Assign connection name to be used</td>
</tr>
<tr>
<td>LU Alias</td>
<td>Remote APPC LU</td>
</tr>
<tr>
<td>Network Name</td>
<td>same name as provided in #1</td>
</tr>
<tr>
<td>LU Name</td>
<td>same name as LU Alias</td>
</tr>
<tr>
<td>Uninterpreted Name</td>
<td>same name as LU Alias</td>
</tr>
<tr>
<td>Comment is optional</td>
<td>Customer defined</td>
</tr>
</tbody>
</table>

The following table lists the Options tab fields and the remote APPCLU names.

Table 32. The Options tab fields and the remote APPCLU names

<table>
<thead>
<tr>
<th>Title</th>
<th>Name for Remote APPCLU</th>
</tr>
</thead>
<tbody>
<tr>
<td>Parallel Sessions</td>
<td>Check</td>
</tr>
<tr>
<td>Implicit Incoming Mode</td>
<td>None</td>
</tr>
<tr>
<td>Session level security</td>
<td>No</td>
</tr>
<tr>
<td>Enable SyncPoint</td>
<td>Do not check.</td>
</tr>
</tbody>
</table>

Set up one remote APPC LU definition for each APPC APPLID defined for the OS/390 server address spaces. If there are eight MVS systems in which Tivoli Business Systems Manager for the Windows operating system is to collect data from, then there should be eight remote APPC LU definitions defined within this section.

7. Insert a APPC Mode. Insert the modes name defined in the VTAM.

The following table lists the General tab fields and the APPC Mode names.

Table 33. The General tab fields and the remote APPC Mode names

<table>
<thead>
<tr>
<th>Title</th>
<th>Name for Modetab</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mode Name</td>
<td>The VTAM mode entry name for your installation</td>
</tr>
<tr>
<td>Comment is optional</td>
<td></td>
</tr>
</tbody>
</table>

The following table lists the Limits tab fields and the VTAM APPLID definitions.

Table 34. The Limits tab fields and the VTAM APPLID definitions

<table>
<thead>
<tr>
<th>Title</th>
<th>Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Parallel Session Limit</td>
<td>4</td>
</tr>
</tbody>
</table>
Table 34. The Limits tab fields and the VTAM APPLID definitions (continued)

<table>
<thead>
<tr>
<th>Title</th>
<th>Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Minimum Contention Winner Limit</td>
<td>1</td>
</tr>
<tr>
<td>Partner Minimum Contention Winner Limit</td>
<td>1</td>
</tr>
<tr>
<td>Automatic Activation Limit</td>
<td>0</td>
</tr>
</tbody>
</table>

The following table lists the Characteristics tab fields and the RU sizes. The RU sizes must match the VTAM mode table.

Table 35. The Characteristics tab fields and the RU sizes

<table>
<thead>
<tr>
<th>Title</th>
<th>Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pacing Send count</td>
<td>7</td>
</tr>
<tr>
<td>Pacing Receive count</td>
<td>7</td>
</tr>
<tr>
<td>Max Send RU size</td>
<td>1024</td>
</tr>
<tr>
<td>Max Receive RU size</td>
<td>1024</td>
</tr>
</tbody>
</table>

For the Partners tab, follow the Add instructions to associate the LU pairs, local and remote LU names.

For the Compression tab, the default settings are sufficient.

8. Insert a CPIC Symbolic Name. There are two symbolic names:
   - ACC1RCV
   - ACC1RECV

The ACC1RCV name is associated with the process name for data, which is received by the client on behalf of SNA Manager.

The ACC1RECV name is associated with the process name for data sent by the client to OS/390. The ACC1RECV name is only used for the APPC Upload function. Clients using the FTP upload function do not require the ACC1RECV name.

The following table lists the General tab fields and the CPIC symbolic name for ACC1RCV.

Table 36. The General tab fields for the ACC1RCV CPIC symbolic name

<table>
<thead>
<tr>
<th>Title</th>
<th>Name for CPIC Symbolic name</th>
</tr>
</thead>
<tbody>
<tr>
<td>Name</td>
<td>ACC1RCV</td>
</tr>
<tr>
<td>Comment is optional</td>
<td>(Optional)</td>
</tr>
<tr>
<td>Conversation Security</td>
<td>None</td>
</tr>
<tr>
<td>Mode Name</td>
<td>The VTAM mode entry name for your installation</td>
</tr>
</tbody>
</table>

The following table lists the Partner Information tab fields and the CPIC symbolic name for ACC1RCV.

Table 37. The Partner Information tab fields for the ACC1RCV CPIC symbolic name

<table>
<thead>
<tr>
<th>Title</th>
<th>Name for CPIC Symbolic name</th>
</tr>
</thead>
<tbody>
<tr>
<td>Check Application TP</td>
<td>Type ACC1RCV in the box to the right</td>
</tr>
<tr>
<td>Partner LU Name Alias</td>
<td>Local APPC LU name</td>
</tr>
</tbody>
</table>

The following table lists the General tab fields and the CPIC symbolic name for ACC1RECV.
Table 38. The General tab fields for the ACC1RECV CPIC symbolic name

<table>
<thead>
<tr>
<th>Title</th>
<th>Name for CPIC Symbolic name</th>
</tr>
</thead>
<tbody>
<tr>
<td>Name</td>
<td>ACC1RECV</td>
</tr>
<tr>
<td>Comment is optional</td>
<td>Customer defined</td>
</tr>
<tr>
<td>Conversation Security</td>
<td>None</td>
</tr>
<tr>
<td>Mode Name</td>
<td>The VTAM mode entry name for your installation</td>
</tr>
</tbody>
</table>

The following table lists the Partner Information tab fields and the CPIC symbolic name for ACC1RECV.

Table 39. The Partner Information tab fields for the ACC1RECV CPIC symbolic name

<table>
<thead>
<tr>
<th>Title</th>
<th>Name for CPIC Symbolic name</th>
</tr>
</thead>
<tbody>
<tr>
<td>Check Application TP</td>
<td>Type ACC1RECV in the box to the right.</td>
</tr>
<tr>
<td>Partner LU Name Alias</td>
<td>Remote APPC LU name</td>
</tr>
</tbody>
</table>

The SNA Server Manager is now configured and ready to be used by a SNA Manager Client. When you make changes to the SNA server, the connection and SNA Service must be stopped. After the changes are made, you must save the configuration before restarting the SNA service and connection name.

Installing Host Integration Server Client

The Host Integration Server Client is required on the event handler server for code page translation and EPCIDIC to ASCII conversion. To install the Microsoft Host Integration Server Client:

1. Run the Microsoft Host Integration 2000 Setup program and select Install Server. Depending on the configuration of your operating system, you can get an error message stating that prerequisites for MQ Series bridge and Security Integration are not in place. Select Yes to continue if you get an error for these specific options.

2. Follow the instructions on each dialog as you proceed through the installation. Unless otherwise noted, use the default installation options for each dialog.

3. On the Select Features dialog, ensure that the following options are the only ones that are selected for installation:
   - SNA Application support (Note that all options underneath this must not be installed.)
   - Applications and Tools
   - 3270 Client

4. On the Services Account dialog, type the same user ID and password used during the Host Integration Server installation.

5. On the Locate Servers dialog, select Locate servers by name and Add the name of your Host Integration Server.

6. Select the default values for the remaining dialogs.

Configuring the Host Integration Server Client

After installation, there are two steps to configure for establishing communication to each MVS system.

Step 1
• Install the TPSTART.exe program to run on the client when the Windows NT console is started.
• The TPSTART program is a background task that must be running. It enables the SNA client to communicate with the SNA Manager using LU6.2 Services.
• The TPSTART program can be found in the SNA\System folder where the SNA Client is installed. Set up a shortcut in the Startup folder for the console.

Step 2
• Install the OS/390 components on the event handler server.
• Before attempting to configure the OS/390 components for your Tivoli Business Systems Manager environment, the operating systems you want to add must be in the Tivoli Business Systems Manager database. Additionally, to send data from Tivoli Business Systems Manager Windows operating system environment to the OS/390 platform, you must check the Source/390 check box on the Source/390 tab for each operating system.
Part 3. Installing Tivoli Business Systems Manager — Enterprise Edition

There are three Tivoli Business Systems Manager installation methods:

- If you will be monitoring OS/390 data sources (and optionally, distributed data sources), follow the instructions in Part 3, “Installing Tivoli Business Systems Manager — Enterprise Edition.”

- If you will be monitoring distributed data sources only, follow the steps in Part 4, “Installing Tivoli Business Systems Manager — Distributed Edition,” on page 261.

- If you are upgrading from a previous version of Tivoli Business Systems Manager, follow the instructions in Part 5, “Upgrading Tivoli Business Systems Manager,” on page 291.

This part explains how to install Tivoli Business Systems Manager - Enterprise edition. It includes:

- Chapter 6, “Installing and Configuring Base Services,” on page 43
- Chapter 7, “Installing the Console,” on page 67
- Chapter 8, “Installing and Configuring Source/390 Components,” on page 71
- Chapter 9, “Installing and Configuring Data Sources,” on page 95
- Chapter 10, “Optional Components,” on page 179
- Chapter 11, “National Language Support,” on page 225
- Chapter 12, “The Failover Process,” on page 239
Chapter 6. Installing and Configuring Base Services

This chapter describes the installation and configuration tasks for Tivoli Business Systems Manager (Enterprise edition) base services, which are the services and components of the product.

This chapter includes:

- “Important Notes and Considerations”
- “Prerequisites” on page 44
- “The Database Server” on page 44
- “The History Server” on page 49
- “The Console Server” on page 56
- “The Propagation Server” on page 61
- “The Event Handler Server” on page 63

To install base services, we recommend the following steps:

1. Install all prerequisite operating system software on each server. (Part 1, “Specifications and Requirements,” on page 1)
2. Install and configure Microsoft SQL Server on the database server and the history server. (Chapter 4, “Installing SQL Server,” on page 29)
3. Install SQL Server client on the event handler server. (Chapter 4, “Installing SQL Server,” on page 29)
4. Install and configure Tivoli Business Systems Manager off the BaseServices folder on the installation CD on each server.

Important Notes and Considerations

- Exit all Windows programs before beginning the Setup program.
- When you double-click the Setup.exe icon from the BaseServices folder, the Tivoli Business Systems Manager InstallShield guides you through the installation process.

Note: When prompted for an installation drive, select the largest data drive on the machine. Tivoli Business Systems Manager stops processing if it fails to find space for logs or data queues. Microsoft Structured Query Language (SQL) Server 7.0 Enterprise Edition and SQL Server 2000 Enterprise Edition jobs can be used to maintain the Tivoli Business Systems Manager logs.

- If you are installing with InstallShield, when you select the server components to install, InstallShield might return the wrong value for the available space on the machine.

If you are installing on a Windows machine, use Microsoft utilities to determine the available space on the machine. To determine the available space:

1. Double-click My Computer.
2. Right-click the icon for the drive on which you are installing the product.
3. Click Properties on the context menu.

- To exit the Setup program at any time before installation is complete, click Cancel. To continue with each step of the installation, click Next.
• All Tivoli Business Systems Manager servers should be located in the same Windows Domain to ensure proper communication between the servers.
• Tivoli Business Systems Manager communicates to the console using the IP address or Domain Name Server (DNS) name of the console as provided when the console starts the session. The host file for the Windows operating system in C:\winnt\system32\drivers\etc\hosts can also be used for name resolution. Tivoli Business Systems Manager does not resolve host names using Windows Internet Name Services (WINS). Take appropriate measures to ensure that the Tivoli Business Systems Manager servers can communicate to the consoles using the customer selected network methodology.
• To enable communication between Tivoli Business Systems Manager servers and the console environment through a firewall or router, see Appendix A, “Configuring Network Communications Using Firewalls,” on page 337.
• If you decide to change the logon for Tivoli Business Systems Manager services from the default value of LocalSystem to a user ID, then that user ID must have administrative rights for the Windows operating system environment.

Prerequisites

See Part 1, “Specifications and Requirements,” on page 1 and confirm that all prerequisites have been installed on all servers.

The Database Server

Prerequisites

• Install the prerequisite software listed in Chapter 1, “Server and Console Specifications,” on page 3.
• Install either SQL Server 7.0 Enterprise Edition or SQL Server 2000 Enterprise Edition. (Be sure to follow the detailed directions in Chapter 4, “Installing SQL Server,” on page 29 to ensure SQL Server is configured to work with Tivoli Business Systems Manager.)

Note: The Tivoli Business Systems Manager installation program installs a copy of the IBM Object REXX program on the Tivoli Business Systems Manager database server. If you are running Windows 2000 or Windows Server 2003 or if you are not using the copy of the REXX program shipped with Windows NT, the PATH environment variable must be updated to include this program. The IBM Object REXX program is installed in the %SystemDrive%\Program Files\ObjREXX directory. After updating the PATH environment variable, the system must be restarted.

Installation

To install Tivoli Business Systems Manager on the database server:

1. Stop all Tivoli Business Systems Manager services that are running.
2. Insert the Tivoli Business Systems Manager Base Services CD into the database server. Double-click the BaseServices folder.
3. Double-click the Setup.exe icon.
4. From the Choose Setup Language dialog, confirm the language to use for your installation. Click OK.
6. From the Choose Destination Location dialog, place these files in a temporary directory. Click the Browse button to select a directory. After a preferred directory is selected, or to use the default directory, click Next.

7. When the System File Upgrade is complete, click Finish. If you are prompted to start the computer again, do so now.

8. From the Choose Setup Language dialog, confirm the language to use for your installation. Click OK.

9. The Welcome dialog opens. The text in this dialog is basic information about the Setup program, including how to discontinue the installation. Read the information and then click Next.

10. The Software License Agreement dialog opens. Read the agreement. To accept the agreement and continue the installation process, click Yes.

11. When the Choose Destination Location dialog opens, select a directory to install Tivoli Business Systems Manager and click the Browse button. The Choose Folder dialog opens. Select your directory and click OK. Please install to a directory on a hard drive other than your system drive.

   The following message is displayed if the directory path you selected does not exist:

   "The folder: \<your destination path\> does not exist. Do you want the folder to be created?"

   Click Yes. The selected path is displayed in the Destination. When you select the preferred path or the default destination folder, click Next.

   **Note:** To avoid the possibility of the log and working files becoming full and stopping the Windows operating environment, install the application program on a drive other than the operating system default drive of C.

12. From the Setup Type dialog, select Custom and click Next.

13. When the Select Components dialog opens, select both of the following:

   - **Database Server**
   - **NetView for OS/390 Command Processor** (automatically selected)

   (If you also want the distributed components, select Distributed TEC Listener in addition to the Database Server component.)

   **Note:** If you previously installed components by selecting them from the Select Components dialog, do not clear them from the list.

14. Click Next.

15. The host name should appear in the host name field. If not, type the host name of the local server and click Next.

16. Type the host name of the database server machine, the SQL Administrator Username, and SQL Administrator Password. Click Next.

17. If you are upgrading from Version 1.5 or 2.1 to Version 2.1.1 and want to upgrade your existing databases from the Database Upgrade dialog, select Upgrade existing databases. If you are installing Tivoli Business Systems Manager for the first time or you do not want to keep your databases, select Do not upgrade databases from the Database Upgrade dialog. The upgrade process can vary from four to 12 hours or more depending on the size of your database. Upgrading is the only way to keep the data that is in your existing databases.

   If you decide to upgrade your databases, the setup program performs a brief check of your databases to ensure it has the service from fix pack 1.5-BSM-0040, Version 1.5. If the check fails, the setup program alerts you. Exit
the setup program and check that you have fix pack 1.5-BSM-0040 installed. Contact IBM Customer Support for Tivoli products if you need assistance. Do not proceed with the upgrade until you have discussed the problem with IBM Customer Support.

**Note:** Prior to upgrading your database to Tivoli Business Systems Manager 2.1.1, you should verify that the SQL server has enough free space. Make sure the disk drive on which you have installed SQL Server is at least double the size of the object database.

18. Click **Next**.
19. From the Start Copying Files dialog, verify that your information is correct under the **Current Settings** grouping and click **Next** to begin copying the files.

The setup program runs for a few minutes. If you do not have Microsoft Host Integration Server Client or Microsoft SNA Client, Version 4.0 Service Pack 2 installed, a window is displayed while the setup program is running with the message:

Error: SNA Client is not installed. Some services might not be configured correctly.

If you get this message, the Tivoli BSM MVSIPListener service does not get installed.

Click **OK** to close the window and continue the installation.

Click **Cancel** to end the installation if you receive the error message, so you can uninstall Tivoli Business Systems Manager, install the Microsoft Host Integration Server Client or Microsoft SNA Client, Version 4.0 Service Pack 2, and reinstall Tivoli Business Systems Manager.

20. When the Setup Complete dialog opens, if you are prompted to restart, click **No**. Then click **Finish**.

If the Setup Complete dialog does not prompt you to restart, click **Finish**.

**Verification**

After installing the database server, the following services should be verified.

- Tivoli BSM Database Validater
- Tivoli BSM Event Enablement
- Tivoli BSM MVSIPListener
- Tivoli BSM Propagation Agent Dispatcher
- Tivoli BSM Staged Event Loader
- Tivoli BSM Task Server
- Tivoli BSM TSD Event Handler

If you also selected the Distributed TEC Listener component, the following additional service is available:

- Tivoli BSM Agent Listener

Determine if these services are on your computer by doing the following:

- Windows NT: From the Start menu, launch the Services applet. Click **Settings --> Control Panel --> Services.**
- Windows 2000 or Windows 2003 (using the Classic Start menu): From the Start menu, click **Settings --> Control Panel--> Administrative Tools --> Services.**
Installing the Default SQL Databases

Install and configure the default SQL databases on the database server by doing the following:

- running the detachdatabases script
- unzipping the default database devices
- modifying and running the attachdatabases script

The detachdatabases script clears the URL values from the MenuItem table. If you have customized the URL host names in the MenuItem table, you must perform step 1 in order to save your URL host name changes. MenuItem URLs may be modified after installation. See IBM Tivoli Business Systems Manager: Administrator’s Guide for more information.

1. If you have customized the URL host names in the MenuItem table, you must modify the following lines to map the customized host name to an internal host name. If you have not, skip this step and go to step 2.
   a. Open a copy of the \Detachdatabases.sql script.
      To open it, go to the Query Analyzer. Select File —> Open the Tivoli Manager\sql folder and select the \Detachdatabases.sql script. Select Open.
   b. Update the USER_DEFINED_HOSTNAMEX to the customized host name that is used in the control_id parameter of the Object Menu Item table. Leave the second column INTERNAL_NAMEX unchanged.
   c. There is no need to map the websvr_host name that is specified in the Attachdatabases.sql script.
   d. The URL host name is updated from the USER_DEFINED_HOSTNAMEs to INTERNAL_NAMEs when the database is detached.
   e. The URL host name is updated from INTERNAL_NAMEs to USER_DEFINED_HOSTNAMEs when the database is attached.
      ```sql
      INSERT INTO #mappingURLHost (definedHost, pseudoHost VALUES
      ('USER_DEFINED_HOSTNAME1', 'INTERNAL_NAME1')
      INSERT INTO #mappingURLHost (definedHost, pseudoHost VALUES
      ('USER_DEFINED_HOSTNAME2', 'INTERNAL_NAME2')
      INSERT INTO #mappingURLHost (definedHost, pseudoHost VALUES
      ('USER_DEFINED_HOSTNAME3', 'INTERNAL_NAME3')
      f. Save the \Detachdatabases.sql script but do not run it at this time.

2. Open a copy of the Attachdatabases.sql script.
3. Edit the AttachDatabases.sql script and make the following changes as necessary.

- **SQL Server 7.0 users:** If you used D:\MSSQL\ as your installation directory for Microsoft SQL Server 7.0 Enterprise Edition (see step 8 on page 339), no changes are necessary. If you did not use D:\MSSQL\, you must modify the script to point to the appropriate drive where the database server is installed.

- **SQL Server 2000 users:** If you used D:\MSSQL\ as your installation directory for Microsoft SQL Server 7.0 Enterprise Edition (See step 10 on page 345), no changes are necessary. If you did not use D:\MSSQL\, you must modify the script to point to the appropriate drive where the database server is installed.

- Enter the host name of the database server (replace XXXX in the SQL code).

**Note:** There are three instances of XXXX. Only replace the first instance of XXXX. Do not change the others.
• Enter the host name of the propagation server (replace YYY on in the SQL code. YYY only occurs once in the script).
• Enter the host name of the web server (replace ZZZZ in the SQL code. ZZZZ only occurs once in the script).
Save the Attachdatabases.sql script.
4. If you are upgrading from V1.5 or V2.1 and are only upgrading existing databases, you are finished with this installation and do not perform the remaining steps. Restart the computer. If you do not have existing databases from previous versions of Tivoli Business Systems Manager, go to step 5.
5. Launch the SQL Server Service Manager and stop the SQL Server Agent and the MSDTC Server (Microsoft SQL Server 7.0 Enterprise Edition) or Distributed Transaction Coordinator (Microsoft SQL Server 2000 Enterprise Edition) service.
6. Ensure that the MSSQL7 or MSSQL2000 server service is started.
7. Use the Microsoft SQL Server 7.0 or Microsoft SQL Server 2000 Query Analyzer and apply the <install_dir>\sql\DetachDatabases.sql script to your database server.

Note: If the DetachDatabases.sql script encounters an error, stop and restart the MSSQL7 or MSSQL2000 server service and run the DetachDatabases.sql script again. Also check that the post installation SQL client-side options have been disabled.
8. Expand the database devices from the Tivoli Business Systems Manager Base Services CD (\DBDevices\DBDevices_V2.1.1.exe) to the D:\MSSQL7\Data\ or D:\MSSQL\Data\ subdirectory. (These are database devices, not backup devices and they can be attached to the server without you having to create database devices, create the databases or restore database.)
You can extract the files by changing to the target directory and running the following executable files:
• Microsoft SQL Server 7.0 Enterprise Edition: Extract files from:
  <CD-ROM PATH>:\\DBDevices\DBDevices_V2.1.1.exe to D:\MSSQL7\DATA\n• Microsoft SQL Server 2000 Enterprise Edition: Extract files from:
  <CD-ROM PATH>:\\DBDevices\DBDevices_V2.1.1.exe to D:\MSSQL\DATA\n9. Use the Query Analyzer and apply <install_dir>\sql\AttachDatabases.sql script to the database server.
10. Restart the computer.

Configuring the Database Server
The following sections provide the necessary configuration information for the database server.

For OS/390 task support configuration details, see the following sections:
• “Setting the User ID for OS/390 Tasks” on page 207
• “Configuring OS/390 Task Authentication” on page 213
• “Defining the Logical Unit Name” on page 214
• “Starting Task Server Manually or Automatically” on page 207
• “Configuring the Server. Properties File” on page 208
• “Enabling Task Server OS/390 Support” on page 215
The History Server

The history server uses the **bcp** command to copy data (events) out of the database server. The **bcp** command transfers data to the history server and then into the database table. The history server database is synchronized with the database on the database server. The reporting system is set up to retrieve historical data from the history server.

Once installed, the history server performs the following tasks:

1. Moves BCP events from the database server to the history server at five (selectable) minute intervals.
2. Periodically restores the Tivoli Business Systems Manager object, meta, and RODM databases on the history server from the database server.
3. Performs cleanup on events transferred from the object database on the database server to the history server.

**Prerequisites**

- **Install the prerequisite software listed in** Chapter 1, “Server and Console Specifications,” **on page 3.**
- **Install either SQL Server 7.0 Enterprise Edition or SQL Server 2000 Enterprise Edition.** (Be sure to follow the detailed directions in Chapter 4, “Installing SQL Server,” **on page 29** to ensure SQL Server is configured to work with Tivoli Business Systems Manager.)
- You have installed the Internet Information Server Version 4.0 or later.
- You have created a backup plan for the object, meta and RODM databases on the database server. To do this, run SQL Server Enterprise Manager. Expand the **Management** folder by clicking the plus sign (+). Right-click **Database Maintenance Plans** Click **New Maintenance Plan** and follow the wizard instructions. When you have finished, you should see this job on Enterprise Manager under **SQL Server Agent-> Jobs DB Backup Job for DB Maintenance Plan 'DB Maintenance Plan1.**
- The network connections and the necessary permissions between the database server and the history server are configured properly. (An easy way to do this is to map a network drive from the history server to the database server and vice versa. This allows the Object, Meta and RODM databases to be copied over from the database server to the history server every night.)
- Ensure that the database server and SQL agent start/login accounts on the database server have write permission to the history server. One way to do that is the following:
  1. Create the userid **SQLAgentCmdExec** on both the history and database server with the same passwords and as a member of Administrators.
  2. Run **Service Control Manager** and change the login user for **SQLServerAgent** to **SQLAgentCmdExec** by selecting **Programs->Administrative Tools-> Services.**
  3. Right-click on **SQLSERVERAGENT** and select **Properties.** Click on the **Log On** tab.
  4. Click on **This Account** and enter **\SQLAgentCmdExec** for the account and fill in the password.

(See your Windows NT system administrator if you have any security questions.)
Installation

You must install your history server on a separate machine from the database server. The single server option (having both the database server and the history server on the same machine) is not supported.

To install the history server:

1. Be sure IIS is up and running on the history server.
2. Insert the Tivoli Business Systems Manager Base Services CD in the history server computer. Double-click the BaseServices folder.
3. Double-click the Setup.exe icon.
4. From the Choose Setup Language dialog, confirm the language to use for your installation. Click OK.
5. When the System File Upgrade dialog opens, read the text and click Next.
6. From the Choose Destination Location dialog, place these files in a temporary directory. Click the Browse button to select a directory. Once a preferred directory is selected or to use the default, click Next.
7. When the System File Upgrade is complete, click Finish. If you are prompted to restart the computer, do so now.
8. From the Choose Setup Language dialog, confirm the language to use for your installation. Click OK.
9. The Welcome to the Setup program dialog opens. The text in this dialog is basic information about the Setup program, including how to cancel the installation. Read the information and click Next.
10. The Software License Agreement dialog opens. Read the agreement. To accept the agreement continue the installation process, click Yes.
11. When the Choose Destination Location dialog opens, select a directory to install Tivoli Business Systems Manager and click the Browse button. The Choose Folder dialog opens. Select your directory and click OK.
   The following message is displayed if the directory path you selected does not exist:
   The folder: <your destination path> does not exist. Do you want the folder to be created?
   Click Yes. The selected path is displayed in the Destination Folder. When you select the preferred path or the default destination folder, click Next. To avoid the possibility of the log and working files becoming full and stopping the Windows operating environment, install the application program on a drive other than the operating system default drive of C.
12. From the Setup Type dialog, select Custom and click Next.
13. From the Select Components dialog, select History Server. Click Next. If you previously installed components by selecting them from the Select Components dialog, do not clear them from the list.
14. Type the host name of the local server machine. (The default host name should be in the host name field, If it is not, type it in the field.) Click Next.
15. The Select Program Folder dialog opens. Select Program Folder to host all application programs. (The default value is IBM Tivoli Business Systems Manager.) Click Next.
16. From the Start Copying Files dialog, verify that your information is correct under the Current Settings grouping and click Next to begin copying the files.
17. From the Setup Complete dialog, if you are prompted to restart the computer, select **No** and click **Finish**.
   If the Setup Complete dialog does not prompt you to restart, click **Finish**.

**Configuring SQL on the History Server**

**Note:** Before you configure SQL on the history server, stop and start the MSSQL server to ensure no services block the configuration functions.

Use the following steps to configure SQL on the history server:

1. Using the Query Analyzer, apply `<install_dir>`\sql\detachhistorydatabases.sql file to your history server.
   If the detachhistorydatabases.sql script encounters an error, stop and restart the SQL server service and run the detachhistorydatabases.sql script again.

2. Create the following databases if they do not exist. You can extract the files to `<MSSQL Install Dir>`\Data (for example):
   - **Object** - Same as Live Server. Either copy the Object_Data.MDF file from the database server or extract the file from the \DBDevices\DBDevices_V2.1.1.exe file.
   - **Meta** - Same as Live Server. Either copy the Meta_Data.MDF file from the database server or extract the file from the \DBDevices\DBDevices_V2.1.1.exe file.
   - **RODM** - Same as Live Server. Either copy the RODM.MDF file from the database server or extract the file from the \DBDevices\DBDevices_V2.1.1.exe file.
   - **WebServer** - Same as Live Server. Either copy the WebServer_Data.MDF file from the database server or extract the file from the \DBDevices\DBDevices_V2.1.1.exe file.

3. Edit a copy of the `<install_dir>`\sql\attachhistorydatabases.sql file and make the following changes as necessary:
   - If you did not use D:\MSSQL7 as your installation directory for Microsoft SQL Server 7.0 Enterprise Edition (See step [8 on page 339](#)) modify the script as necessary to point to the appropriate drive where the database server is installed.
   - If you did not use D:\MSSQL as your installation directory for Microsoft SQL Server 2000 Enterprise Edition (See step [10 on page 345](#)) modify the script as necessary to point to the appropriate drive where the database server is installed.

4. Apply the edited copy of the `<install_dir>`\sql\attachhistorydatabases.sql file to the history server.
   If this is a new installation, expect to see Device activation error messages that state the database history does not exist. A new history database is manually created in a subsequent step.

5. Apply the `<install_dir>`\SQL\SchemaTypes.sql file to the master database.
6. Apply the `<install_dir>`\SQL\SchemaTypes.sql file to the model database.
7. Apply the `<install_dir>`\SQL\SchemaTypes.sql file to the tempdb database.
8. Apply the `<install_dir>`\SQL\MasterDBChanges.sql file and the `<install_dir>`\SQL\SchemaMessages.sql file to the master database.
   Ignore the following informational message that is displayed:
Creating procedure sp_printScheduledTasks. Cannot add rows to sysdepends for the current stored procedure because it depends on the missing object 'master..xp_enumqueuedtasks.' The stored procedure will still be created.

9. Create the following database if it does not exist:
   • History - Use the SQL Enterprise Manager to create an empty database.

10. Use the SQL Server Service Manager on the history server to start the SQLServerAgent. Select the **Auto-start service when OS starts** check box in the dialog.

### History Server Setup

To set up the history server remotely, issue the following command from the TivoliManager\bin directory on the database server:

```
sh historyserversetup.ksh -N <HistoryServerName> -R <History_db_userid> -W <History_db_password>
```

During the running of the historyserversetup.ksh script, two History Server Setup using BCP Approach dialogs are displayed. The first asks the installer to verify that the server names for the database and history servers are correct. Be aware the names are case sensitive. If the response is **No** to this first dialog, the installation stops.

The second History Server Setup using BCP Approach dialog asks the installer to verify the server directories that are used during installation. If you click **No** to the second dialog, the **History server installation continues**, but one or more of the SQL jobs found in "[Description of the History BCP Jobs](page 54)" needs to be altered to complete the installation. If it is necessary to end the installation at this time, click **Cancel**.

The following messages generated during the running of the historyserversetup.ksh script can be ignored.

Non-existent step referenced by @on_success_step_id.

Non-existent step referenced by @on_fail_step_id.

During an upgrade the following messages are displayed:
   • Caution messages following "Obsolete <dbname.tablename> TABLE discovered"
   • Rename scheduled messages might be generated

They can be ignored. These messages are generated because the upgrade discovered table attributes that needed to be corrected. This correction process involves renaming the current table, creating a new table, and migrating the existing table data to the new table.

During an upgrade, to preserve local history maintenance schedule definitions, the `Historieserversetup.ksh` script does not replace any previously defined jobs. Therefore, the job `<history-maintenance-jobname>` is already defined. These messages are produced. These messages are followed by instructions to manually delete the job in order for updates to be applied. You should review and record the current schedule settings for these jobs using SQL Enterprise Manager on the database server or the history server. Delete them and run the `Historieserversetup.ksh` script again to apply any updates.
Moving Data from the Database Server to the History Server

The following steps move data from the database server to the history server. You need to follow these steps before using the reporting system for the first time:

1. Check to see if the following previously installed jobs are present on the history server. Delete these jobs if they are present.
   - Copy Backups to History Server
   - Update Object and Meta Databases

   You can search for these jobs on the history server by using SQL Enterprise Manager. Click Management folder --> SQL Server Agent --> Jobs.

   **Note:** Do not confuse these job names with the job names that were just installed (Copy Backups from Live DB Server and Restore Databases for Reporting System).

2. Run a database backup job on the Tivoli Business Systems Manager server, if one has not already been run.

3. Ensure that the user ID under the SQLServerAgent on the database server and history server has **TBSM_Administrator** authority. If this is not done, the Move events to History Database job on the database server fails with a Unable to bcp eventbcp TABLE out message, and the Copy Backups from Live DB Server job on the history server fails with an FAILURE: Directory [$src_dir] does not exist, or access authority is insufficient message.

4. Run the Copy Backups from Live DB Server job on the history server. Verify that the database backups have arrived on the history server. Currently these are the backup files of the meta, object, and RODM databases.

5. Run the Restore Databases for Reporting System job on the history server.

Configuring the Reporting System

Use the Reporting System Database Configuration program found in the Tivoli Manager programs folder to set up the DefaultData and PrimaryData databases with the following parameters. The following table lists the parameters for the DefaultData and PrimaryData databases.

**Table 40. Default Data Database parameters**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Default Data</th>
<th>Live Data</th>
<th>Web Server</th>
</tr>
</thead>
<tbody>
<tr>
<td>Connection Name</td>
<td>DefaultData</td>
<td>LiveData</td>
<td>WebServer</td>
</tr>
<tr>
<td>Driver</td>
<td>(SQL Server)</td>
<td>(SQLServer)</td>
<td>(SQL Server)</td>
</tr>
<tr>
<td>Server Name</td>
<td>&lt;HistorySQLServerName&gt;</td>
<td>&lt;PrimarySQLServerName&gt;</td>
<td>&lt;HistorySQLServerName&gt;</td>
</tr>
<tr>
<td>User ID</td>
<td>&lt;TBSMsaUID&gt;</td>
<td>&lt;TBSMsaUID&gt;</td>
<td>&lt;TBSMsaUID&gt;</td>
</tr>
<tr>
<td>Password</td>
<td>&lt;TBSMsaPassword&gt;</td>
<td>&lt;TBSMsaPassword&gt;</td>
<td>&lt;TBSMsaPassword&gt;</td>
</tr>
<tr>
<td>Database Name</td>
<td>Object</td>
<td>Object</td>
<td>WebServer</td>
</tr>
</tbody>
</table>

Customers Installing the Reporting System on Windows Server 2003 Editions

If you are installing the reporting system on Windows Server 2003 Editions (using the Classic Start menu), you need to perform the following steps for Active Server Pages and Parent Paths to operate correctly.

See “Description of the History BCP Jobs” on page 54 for the history maintenance-related jobs.
To enable Active Server Pages:

1. From the Start menu, click Programs -> Administrative Tools -> Internet Information Services (IIS) Manager.
2. On the left side of the window, select Internet Information Services -> Your Server -> Web Service Extensions.
3. On the right side of the windows select Active Server Pages. Click Allow.

To enable Parent Paths:

1. From the Start menu, click Programs -> Administrative Tools -> Internet Information Services (IIS) Manager.
2. On the left side of the window, select Internet Information Services -> Your Server -> Web Sites-> Default Web Site--> asi.
3. Right-click on asi and select Properties.
4. Select the Virtual Directory tab.
5. Click Configuration.
6. In the Application Configuration dialog, select the Options tab.
7. Check the box next to Enable Parent Paths. Click OK.
8. Click OK again to exit the asi Properties dialog.

Description of the History BCP Jobs

The following jobs are scheduled during the installation of the history server using the BCP approach. To access the jobs, go to the SQL Enterprise Manager, select the appropriate server, and expand the Management folder. Then expand the SQL Server Agent folder, click Jobs, locate the job name and select Properties. Select the Steps tab, and edit the appropriate command step.

History Server Jobs

- Copy Backups from Live DB Server – This job copies the latest available backup files from the database server to the history server for use by the reporting system. Currently these are the backup files of the meta, object, and RODM databases.
  - **Schedule tab**: The default setting is daily at 12:40 a.m. Because the object database can be extremely large, the Copy Backups to History Server job can be scheduled for the off-hours. In addition, the interval of this job should be determined based upon how dynamic the monitored configuration has been. The less dynamic, the longer the interval required. For example, this might be once every other day or once a week.
  - **Steps tab**: If changes to the default configuration are necessary, edit the Copy Live Backups to History job. The default command is:

```sh
    -c
    './<HistoryServerName>/<TBSMInstallationDriveShare>/TivoliManager/bin/copylivebackupstohist.ksh
    '//<DBServerName>/',/MSSQLInstallationDriveShare>/MSSQL7/backup
    '//<HistoryServerName>/',/MSSQLInstallationDriveShare>/MSSQL7/backup'
```
1. Change '//<HistoryServerName>/',/TBSMInstallationDriveShare>/ to the history server shared drive name of the location where the Tivoli Business Systems Manager system files were installed.
2. Change '//<DBServerName>/',/MSSQLInstallationDriveShare>/ to the location where the database server shared drive name of where MSSQL was installed.
3. Change \<HistoryServerName>/\<MSSQLInstallationDriveShare> to the history server shared drive name of the location where MSSQL was installed. You must use the forward slash (/) because of the use of the sh command. For example:

```
sh -c '/TBSMHIST/D$/TivoliManager/bin/copylivebackupsstohist.ksh //TBSMAIN/D$/MSSQL7\backup //TBSMHIST/D$/MSSQL7\backup'
```

- **Restore Databases for Reporting System** – This job updates the databases on the history server from the backup files retrieved by the Copy Backups from Live DB Server job.
  - **Schedules tab**: The default setting is daily at 2:40 a.m. This job depends upon the Copy Backups from Live DB Server job. The start time should be adjusted based upon the scheduled interval and run length of the Copy Backups from Live DB Server job.
  - **Steps tab**: If changes to the default configuration are necessary, edit the Restore Databases for Reporting System job. The default command is:

```
asisp_historyinit "<HistoryServerMSSQLBackupPath>\", "BAK"
```

Change `<HistoryServerMSSQLBackupPath>` to specify the history server SQL backup directory. 
You must use the backslash (\) because of the use of the SQL procedure. For example:

```
asisp_historyinit "D:\MSSQL7\backup\", "BAK"
```

- **Delete Old History Events** – This job is installed disabled so that it will not automatically run. It performs a purge of obsolete event data based upon the age of the event. As installed, events on the history server are kept indefinitely. However as events are copied from the database server to the history server, the history database will grow, and reporting system response time will increase. If periodic backup and archiving of the history databases are performed, you can choose how long to keep historical events information online by enabling this job.
  - **Schedules tab**: The default setting is every 60 days at 2 AM. Note that the job is installed disabled so that it will not automatically run.
  - **Steps tab**: If change to the default configuration is necessary, edit the Delete Old History Events job step. The default command is:

```
asisp_deleteldeventhist @daystokeep=60, @hist_db='History'
```

Change the @daystokeep= parameter to the number of days to keep event records on the history server.

The following example keeps events on the history server for one year:

```
asisp_deleteldeventhist @daystokeep=366
```

**Database Server Jobs**

- **Move Events to History Database** – This job copies events from the database server to the history server on a periodic basis.
  - **Schedules tab**: The default setting is daily every five minutes.
  - **Steps tab**: If changes to the default configuration are necessary, edit the Move events to History Database job. The default command is:

```
asisp_moveevent '<HistoryServerName>', '\\<DBServerName>\\<MSSQLInstallationDriveShare\\MSSQL7\backup', 'History', 'eventhist'
```

**Chapter 6. Installing and Configuring Base Services**
1. Change <HistoryServerName> to the name of the history server.
2. Change \\<DBServerName>\<MSSQLInstallationDriveShare> to the database server shared drive name where SQL was installed.
   You must use the backslash (\) because of the use in the SQL procedure.
   For example:
   ```
   asisp_moveevent 'TBSMHIST', '\\TBSMMAIN\D$\MSSQL7\backup', 'History', 'eventhist'
   ```
   If the SQL user ID of the database on either the database server or the history server is not "sa," it may be specified by adding @fromsauser= and/or @tosauser= parameters. Further, if the passwords are not in the form sa_<servername>, they can be specified by adding @frompassword= and/or @topassword= parameters.
   For example:
   ```
   asisp_moveevent 'TBSMHIST', '\\TBSMMAIN\D$\MSSQL7\backup', 'History', 'eventhist', @fromsauser='tbsmprimary', @tosauser='tbsmhistory', @frompassword='terces', @topassword='drowssap'
   ```

- Delete Old History Events – This job deletes entries from the eventhist table in the history database or from the event table in the event history database that are older than 60 days. The default setting is Disabled. You must enable or run it manually using SQL Enterprise Manager.
  - Schedules tab: The default setting is once every 30 days at 2:00 a.m.
  - Steps tab: If a change to the default configuration is necessary, edit the Delete Old History Events job. The default command is:
    ```
    asisp_deleteoldevent@daystokeep=60,@hist_db='History'
    ```
    1. Change the @daystokeep=n parameter, which specifies the number of days to keep entries in the table.
    2. Change the @hist_db=<database> parameter to History to identify which reporting table to trim.

- Delete old entries in event Table – This job deletes event table entries that are older than seven days which have been copied to the history server.
  - Schedules tab: The default setting is daily at 1:00 a.m. It maintains a local history of the past seven days on the Tivoli Business Systems Manager server, while deleting older entries, which have already been copied to the history server.
  - Steps tab: If a change to the default configuration is necessary, edit the Delete Old entries in event Table job. The default command is:
    ```
    asisp_deleteoldevent
    ```
    1. Add or change the @daystokeep=n parameter
       For example:
       ```
       asisp_deleteoldevent @daystokeep=14
       ```

---

### The Console Server

**Note:** The 2.1.1 console server will work with both version 2.1 and 2.1.1 of the console; however, to take full advantage of all features of the console you must upgrade the console to version 2.1.1.

### Prerequisites

Install the prerequisite software listed in [Chapter 1, “Server and Console Specifications,” on page 3](#).
Installation

To install the console server:

1. Insert the Tivoli Business Systems Manager Base Services CD in the console server. Double-click the BaseServices folder.
2. Double-click the Setup.exe icon.
3. From the Choose Setup Language dialog, confirm the language to use for your installation. Click OK.
4. The System File Upgrade dialog opens. Read the text and click Next.
5. From the Choose Destination Location dialog, place these files in a temporary directory. Click the Browse button to select a directory. Once a preferred directory is selected or to use the default directory, click Next.
6. When the System File Upgrade is complete, click Finish. If you are prompted to restart the computer, do so now.
7. From the Choose Setup Language dialog, confirm the language to use for your installation. Click OK.
8. The Welcome to the Setup program dialog opens. The text in this dialog is basic information about the Setup program, including how to cancel the installation. Read the information and click Next.
9. The Software License Agreement dialog opens. Read the agreement. To accept the agreement and continue the installation process, click Yes.
10. When the Choose Destination Location dialog opens, select a directory to install Tivoli Business Systems Manager and click the Browse button. The Choose Folder dialog opens. Select your directory and click OK.
    The following message is displayed if the directory path you selected does not exist:
    The folder: <your destination path> does not exist. Do you want the folder to be created?
    Click Yes. The selected path is displayed in the Destination Folder. To avoid the possibility of the log and working files becoming full and stopping the Windows operating environment, install the application program on a drive other than the operating system default drive of C. When you select the preferred path or the default destination folder, click Next.
11. From the Setup Type dialog, select Custom. Click Next.
12. From the Select Components dialog, select Console Server and Common Listener. Click Next.
    If you have previously installed components by selecting them from the Select Components dialog, do not clear them from the list.
13. Type the host name of the local server machine. (The default setting, host name, should be in the host name field. If it is not, type it in the field.) Click Next.
14. On the parameters for the database server, type the host name of the SQL Server machine, the SQL Administrator Username, and SQL Administrator Password. Click Next.
    This information is stored in the Servers.properties file on the console server, so that it can access the databases. You should ensure this file is a protected file using Windows operating system file security, if necessary.
15. From the Choose JDBC Driver dialog, select the driver you want to use to connect to the SQL database. The selection, Microsoft SQL Server 2000 Driver for JDBC can only be used if you are using Microsoft SQL Server 2000 Enterprise Edition. Click Next.
16. Confirm the Web alias that is used by the console server. You can select TBSM. Click Next.

17. From the Create local groups? dialog, choose whether the setup program creates local Windows user groups for use by the console server.

If you have instructed the setup program to create local groups and you already have local groups, your existing local groups are not changed. If you do not instruct the setup program to create local groups, you must either create the local groups yourself or you must create global groups on your domain controller. See the section on security in *IBM Tivoli Business Systems Manager: Administrator’s Guide* for more information.

Make your decision and click Next.

18. If you instructed the setup program to create local groups, bypass this step and proceed to the following step. If you instructed the setup program not to create local groups, the Delete local groups? dialog is displayed and you can choose whether the setup program deletes local Windows user groups for use by the console server. If you are using global groups, have the setup program delete local groups. Make your decision and click Next.

19. From the Start Copying Files dialog, verify that your information is correct under the Current Settings grouping and click Next to begin copying the files.

20. From the Setup Complete dialog, if you are prompted to restart the computer, select No and then click Finish.

If the Setup Complete dialog does not prompt you to restart, click Finish.

21. Review the <installation directory>\ConsoleServer\Servers.properties file for any additional required changes.

Review the <installation directory>\CommonListener\ASI CommonListener.Properties file for any additional required changes.

If you installed the JDBC driver in a directory other than the default location, you must do the following:

a. Update the classpath property in the <installation directory>\ConsoleServer\Servers.properties file. For example, if you installed Microsoft SQL Server 2000 Driver for JDBC on your D drive, your classpath should change from:

   ```
   com.tivoli.tbsm.server.DBManager.Driver.classpath=c:\Program Files\Microsoft SQL Server 2000 Driver for JDBC\lib\msbase.jar;c:\Program Files\Microsoft SQL Server 2000 Driver for JDBC\lib\msutil.jar;c:\Program Files\Microsoft SQL Server 2000 Driver for JDBC\lib\mssqlserver.jar;
   ```

to:

   ```
   com.tivoli.tbsm.server.DBManager.Driver.classpath=d:\Program Files \Microsoft SQL Server 2000 Driver for JDBC\lib\msbase.jar;d:\Program Files \Microsoft SQL Server 2000 Driver for JDBC\lib\msutil.jar;d:\Program Files \Microsoft SQL Server 2000 Driver for JDBC\lib\mssqlserver.jar;
   ```

b. Update the classpath property in <installdir>\CommonListener\ASI CommonListener\Properties file. For example, if you installed Microsoft SQL Server 2000 Driver for JDBC on your D drive, your classpath should change from:

   ```
   com.tivoli.tbsm.commonlistener.DBManager.Driver.classpath=c:\Program Files\Microsoft SQL Server 2000 Driver for JDBC\lib\msbase.jar;c:\Program
   ```
Verification
After installing the console server, the following services should be on this computer:

- Tivoli BSM Console Server V2
- Tivoli BSM Database Validator
- Tivoli BSM Common Listener

Configuration
The following sections provide you with information to configure the console server.

Configuring TCP/IP Port Numbers for the Console Server
The following parameters control TCP/IP usage by the console server. In a typical configuration where the console is used as an intranet application program from a single server, you can use the default values for these parameters.

Configuring the RMI Registry Host
Use the RMIRegistryHost parameter to specify the host name of the RMI Registry. If you want to use the same RMI Registry for the console and other Java programs, specify the host name for the registry using the following property in the \ConsoleServer\Server.properties file:

```
com.tivoli.tbsm.server.Servers.RMIRegistryHost=localhost
```

The default value, localhost, specifies that the RMI Registry exists on the same console as the console server. Typically, in this default configuration the RMI Registry is hosted within the console server, Java Virtual Machine (JVM). You can specify a different value if you want to share the RMI Registry with other application programs.

Configuring Port Usage
Specify the ports used by the RMI Registry and exported RMI resources using the RMIRegistryPort and RMIXportPort parameters. You might need to specify these values if the console and server are separated by one or more firewalls. The firewall on the server side needs to be configured to accept incoming unsolicited traffic to all of these ports, as well as port 80 (http). The console expects incoming traffic on the exported RMI resources. (RMIXportPort) port.

The com.tivoli.tbsm.server.Servers.RMIRegistryPort parameter specifies a comma separated list of port numbers to use for the RMI registry. During its initialization, the console server attempts to contact a RMI registry using ports from this list in successive order. If all of these contact attempts fail, the server attempts to create its own RMI registry, again using ports from this list in successive order.
The first default value in this list is 1099, which is a common port number for the RMI registry. The additional values are fallback values in case of a port conflict with another application program.

The default setting for this parameter is:

```
com.tivoli.tbsm.server.Servers.RMIServicePort=1099,2099,3099,4099
```

There are corresponding client parameters for the `RMIServiceHost` and `RMIServicePort` values. You must specify the `--host hostname` command line parameter, where `hostname` specifies the host running the RMI Registry.

If you specify any values other than the `1099,2099,3099, or 4099` parameters for the `RMIRegistryPort` property, you must specify the `--port number,number,number` command line parameter for the client program. In this case, you must specify a value for the number corresponding to each port number you specified on the `RMIRegistryPort` property of the server.

The format of the `--port` parameter is:

```
--port nnnn[,nnnn]...
```

where `nnnn` is a port number.

For example, if you specify the `com.tivoli.tbsm.server.Servers.RMIServicePort=1101,1102,1103` parameter in the `Servers.properties` file, then clients must be started with the `--port 1101,1102,1103` parameter.

The `com.tivoli.tbsm.server.Servers.RMIExportPort` parameter controls the port number used by the Console server to communicate to the consoles. The default value of 0 indicates that the Java runtime should use an anonymous port.

Specify a port number (1023<n<65565) if you need to control port usage by the application program:

```
com.tivoli.tbsm.server.Servers.RMIExportPort=0
```

### Configuring Server Host Name

If you operate the console server on a host with more than one network interface, you need to explicitly set the server host name or IP address to enable the console to access the server. The console server places this name into the RMI Registry, where the console can retrieve it. On server consoles with a properly configured single network interface, you do not need to specify a value for this property.

The `java.rmi.server.hostname` parameter specifies the fully qualified host name (for example: `www.ibm.com`) or IP address (for example: `129.42.17.19`) that the console should use to connect to the console server. In most situations, you do not have to specify this value because the host name returned by the operating system is sufficient. However, if the console hosting the console server has multiple IP addresses, you need to use this property to specify which address the console should use as the connection. The default address is the primary host name returned by the operating system.

For example,

```
java.rmi.server.hostname=tbsmsserver.yourcompany.com
```
Specifying the Host name Behind a Network Address Translation Router

Use the -clienthost command line argument on the console to specify the host name or IP address of the console, as seen by the server. This is not required in most situations, because the console automatically passes an IP address to the server. However, you need to use this argument in situations where the IP address that the server machine uses is different than the one the console machine reports as its IP address.

In some network configurations, the IP address that the server machine uses to access the console is different than the console machine that reports its IP address. This situation can occur when the console is located behind a router or firewall that uses Network Address Translation (NAT). The network topology might look like the following:

<table>
<thead>
<tr>
<th>Client</th>
<th>&lt;----&gt;</th>
<th>NAT Router</th>
<th>&lt;----&gt;</th>
<th>Server</th>
</tr>
</thead>
<tbody>
<tr>
<td>(client.abcinsurance.com resolves to 192.168.0.2)</td>
<td>(Translates internal address 192.168.0.2 to external address 1.2.3.4)</td>
<td></td>
<td>(client.abcinsurance.com resolves to 1.2.3.4)</td>
<td></td>
</tr>
</tbody>
</table>

The default setting ensures the console passes its IP address (192.168.0.2) to the server. The NAT router handles translation of the IP packet addresses transparently, but does not look inside the packets where Java Remote Method Invocation (RMI) is passing the host address of the client (192.168.0.2). In this situation, the server attempts to contact the console using the IP address 192.168.0.2, which is the incorrect address. If this happens during console operations, the GTMJC0598E message is displayed: The connection to the server has been lost.

The Propagation Server

Prerequisites

Install the prerequisite software listed in Chapter 1, “Server and Console Specifications,” on page 3.

Installation

To install the propagation server:

1. Insert the Tivoli Business Systems Manager Base Services CD in the propagation server. Double-click the BaseServices folder.
2. Double-click the Setup.exe icon.
3. From the Choose Setup Language dialog, confirm the language to use for your installation. Click OK.
4. When the System File Upgrade dialog opens, read the text and click Next.
5. From the Choose Destination Location dialog, place these files in a temporary directory. Click the Browse button to select a directory. After a preferred directory is selected or to use the default directory, click Next.
6. When the System File Upgrade is complete, click Finish. If you are prompted to restart the computer, do so now.
7. From the Choose Setup Language dialog, confirm the language to use for your installation. Click OK.
8. The Welcome to the Setup program dialog opens. The text in this dialog is basic information about the Setup program, including how to discontinue the installation. Read the information and click Next.

9. The Software License Agreement dialog opens. Read the agreement. To accept the agreement and continue the installation process, click Yes.

10. When the Choose Destination Location dialog opens, select a directory to install Tivoli Business Systems Manager and click the Browse button. The Choose Folder dialog opens. Select your directory and click OK.

    The following message is displayed if the directory path you selected does not exist:
    The folder: <your destination path> does not exist. Do you want the folder to be created?
    Click Yes. The selected path is displayed in the Destination Folder. When you select the preferred path or the default destination folder, click Next.
    To avoid the possibility of the log and working files becoming full and stopping the Windows operating environment, install the application program on a drive other than the operating system default drive of C.

11. From the Setup Type dialog, select Custom and click Next.

12. From the Select Components dialog, select Propagation Server. If you have previously installed components by selecting them from the Select Components dialog, do not clear them from the list.

13. Click Next.

14. The host name is displayed in the host name field of the local server machine. If it is not, type the host name of the local server and click Next.

15. Type the host name of the SQL Server machine, the SQL Administrator Username, and SQL Administrator Password Click Next.

16. From the Start Copying Files dialog, verify that your information is correct under the Current Settings grouping and click Next to begin copying the files.

17. From the Setup Complete dialog, if you are prompted to restart the computer, select No and click Finish.
    If the Setup Complete dialog does not prompt you to restart, click Finish.

Verification

After installing the propagation server, the following services should be on your computer:

- Tivoli BSM Database Validator
- Tivoli BSM Enqueue Proxy Server
- Tivoli BSM Remote Execution Server

Determine if these services are on your computer:

Windows NT: From the Windows toolbar, click Start, click Settings --> Control Panel--> Services.

Windows 2000 or Windows 2003 (using the Classic Start menu): From the Windows toolbar, click Start, click Settings --> Control Panel--> Administrative Tools --> Services
The Event Handler Server

Prerequisites

- Install the prerequisite software listed in Chapter 1, “Server and Console Specifications,” on page 3.
- Install either SQL Server 7.0 Client or SQL Server 2000 Client. Be sure to follow the detailed directions in “Installing SQL Server Client on the Event Handler” on page 29 to ensure SQL Server is configured to work with Tivoli Business Systems Manager.

Installation

To install the event handler server:

1. Insert the Tivoli Business Systems Manager Base Services into the event handler. Double-click the BaseServices folder.
2. Double-click the Setup.exe icon.
3. From the Choose Setup Language dialog, confirm the language to use for your installation. Click OK.
4. When the System File Upgrade dialog opens, read the text and click Next.
5. From the Choose Destination Location dialog, place these files in a temporary directory. Click the Browse button to select a directory. After a preferred directory is selected or to use the default directory, click Next.
6. When the System File Upgrade is complete, click Finish. If you are prompted to restart the computer, do so now.
7. From the Choose Setup Language dialog, confirm the language to use for your installation. Click OK.
8. The Welcome to the Setup program dialog opens. The text in this dialog is basic information about the Setup program, including how to cancel the installation. Read the information and click Next.
9. The Software License Agreement dialog opens. Read the agreement. To accept the agreement and continue the installation process, click Yes.
10. When the Choose Destination Location dialog opens, select a directory to install Tivoli Business Systems Manager and click the Browse button. The Choose Folder dialog opens. Select your directory and click OK.

The following message is displayed if the directory path you selected does not exist:

The folder: <your destination path> does not exist. Do you want the folder to be created?

Click Yes. The selected path is displayed in the Destination Folder. When you select the preferred path or the default destination folder, click Next.

To avoid the possibility of the log and working files becoming full and stopping the Windows operating environment, install the application program on a drive other than the operating system default drive of C.

11. From the Setup Type dialog, select Custom and click Next.
12. From the Select Components dialog, select the Event Handler Server. If you have previously installed components by selecting them from the Select Components dialog, do not clear them from the list.
13. Click Next.
14. The host name is displayed in the host name field of the local server machine. If it is not, type the host name of the local server and click Next.
15. Type the host name of the SQL Server machine, the SQL Administrator Username, and SQL Administrator Password. Click Next.

16. From the Start Copying Files dialog, verify that your information is correct under the Current Settings grouping and click Next to begin copying the files.

17. On the Setup Complete dialog when asked if you want to restart the computer, select No and click Finish.

Verification
After installing the event handler server, the following services should be on your computer.

- Tivoli BSM Database Validator
- Tivoli BSM Enqueue Proxy Server
- Tivoli BSM MVSIPOSListener
- Tivoli BSM MVSUpload Rule Server
- Tivoli BSM Remote Execution Server

Determine if these services are on your computer:

Windows NT: From the Windows toolbar, click Start, click Settings --> Control Panel--> Services.


Configuration
The following sections provide the necessary configuration information for the event handler server.

Running `makemvscomponents`
For each OS/390 LPAR to which you are going to connect, you must call the `makemvscomponents` command. See “Configuring Communication Services” on page 193 for SNA connectivity and “Installing Event Handler Server Using IP Communication Services” on page 196 when using Internet Protocol.

Configuring the ASITECLocalListenerSvc Service
The ASITECLocalListenerSvc service is used to receive OS/390 events from the Tivoli Enterprise Console and then pass the events to Tivoli Business Systems Manager.

Note: The ASITECLocalListenerSvc service must be installed on the same machine where you are running the event handler services.

The following steps are required for enabling the ASITECLocalListenerSvc service for Tivoli Business Systems Manager.

1. Configure the registry settings for the ASITECLocalListenerSvc.ksh script. At least one MVShost name and Tivoli Enterprise Console Host is required.

2. Start the ASITECLocalListenerSvc service in the Windows operating environment.

Using the ASITECLocalListenerSvc Service Script: Run the following script:

```sh
sh ASITECLocalListenerSvc <options>
```
Usage:

ASITECListenerSvc -M<mvs_name> | -T<event_enabler> [-i | -r] [options...]

The following parameters are required:

The -M <mvs_name> parameter is the name of the MVS instance.

The -n <netid> parameter is the VTAM Qualified Netid for the OS/390 Instance. You can obtain the Netid from your network system programmer or you can run program GTMINFO from TSO or ISPF to retrieve the fully qualified Netid. The Netid is required for each OS/390 operating system that you configure to receive data from Tivoli Enterprise Console. This is required only with the -M parameter.

Use the GTMINFO program to obtain key information concerning the MakeMVSCComponents.ksh and asiteclistenersvc.ksh scripts.

When running GTMINFO in TSO, you might have to use the CALL command if SGTMMODS is not configured in the LINKLIST for MVS. If the SGTMMODS library is in the LINKLIST, then you can call the program directly in TSO or ISPF.

TSO CALL 'sgtmods_library(GTMINFO)'

The -T <event_enabler> parameter is the Tivoli Enterprise Console name. Specify a host name or IP address.

The -i parameter installs the OS/390 instance or Tivoli Enterprise Console Event Enabler. The ASITECListenerSvc service is installed.

The -r parameter removes the OS/390 instance or Tivoli Enterprise Console Event Enabler.

The optional parameters are:

The -A <local_dir> parameter is the Local Directory Name. The default value is obtained from the Tivoli Business Systems Manager registry key.

The -p <port_number> parameter is the port number for the Tivoli Enterprise Console. If the port is not specified, port 4030 is used. The port number must match the port number used by the Tivoli BSM Event Enablement service.

The l <log_level> parameter is the log level values used by Tivoli Business Systems Manager. The log level values are [0 - 5].

The -c <cell_size> parameter is the maximum size of a Tivoli Business Systems Manager and Tivoli Enterprise Console entry element placed on the Tivoli Business Systems Manager queue. The default value is 1024.

The -x <max_entries> parameter is the maximum number of Tivoli Business Systems Manager and Tivoli Enterprise Console entries that the queue can contain at a given time. The default value is 32000.

The -o <retry_count> parameter is the number of connection attempts to the Tivoli Enterprise Console [EE] before it ends. When the 0 value is used, the service retries forever. The default value is 4294967295.
The -w <retry_wait> parameter is the time interval between connection attempts in seconds [1 - 86400]. The default value is 30.

The -u <DebugCollect> parameter is the value that indicates when the Tivoli Enterprise Console Listener generates a file containing the OS/390 Tivoli Enterprise Console events that are received from the specified Tivoli Enterprise Console host. This file is used for internal usage. The values are 0 or 1 to disable or enable this option. The default value is 0. The -T parameter is required with the -u parameter. For example, -Ttechost -u1 enables the Tivoli Enterprise Console logging file.

The -d parameter disables the Tivoli Enterprise Console for the -T<event_enabler> parameter.

The -e parameter enables the Tivoli Enterprise Console for the -T<event_enabler> parameter.

The -s parameter restarts the ASITECLtsvc service.

Sample Configuration for the ASITECLtsvc Service: The following steps provide a sample configuration for the ASITECLtsvc service.

1. Install a OS/390 instance for the Operating System: E003
   Sh ASITECLtsvc -ME003 -nUSASI01.NJ1TM390 -i

2. Install a MVS instance for the Operating System: E003 and setup the Tivoli Enterprise Console Event Enabler using port number 4030.
   Sh ASITECLtsvc -ME003 -nUSASI01.NJ1TM390 -TTEC7 -p4030 -i

3. Delete MVS instance for the Operating System: CPUA
   Sh ASITECLtsvc -MCPUA -r

4. Change log level from the number 2 to 0 to enable the highest level of diagnosis
   Sh ASITECLtsvc -l0

   Uninstalling the ASITECLtsvc Service: To uninstall the ASITECLtsvc service, perform the following steps:

1. Stop the ASITECLtsvc service.
2. Run the ASITECLtsvc /unregserver command.

If you plan to uninstall Tivoli Business Systems Manager, remove the ASITECLtsvc service by following the preceding steps.
Chapter 7. Installing the Console

The primary objective of the Tivoli Business Systems Manager console is to provide various views for monitoring the critical resources of your enterprise. The console is used to perform administrative and operator tasks.

Note: The 2.1.1 console server will work with both version 2.1 and 2.1.1 of the console; however, to take full advantage of all features of the console you must upgrade the console to version 2.1.1.

This chapter provides the necessary criteria to install the console in your operating system environment. It includes:

- “Installing the Console”
- “Uninstalling the Console” on page 69

Installing the Console

The installation process uses the default directory as a working directory. If there is not enough disk space in your file system containing that directory, install using the following command:

```
setup -is:tempdir <name of another directory>
```

To install the console:

1. Run the Setup program located in the ConsoleInstalls\platform directory on the Tivoli Business Systems Manager Base Services installation CD.

   The following directories are on the CD:
   - ConsoleInstalls/aix_power
   - ConsoleInstalls/linux
   - ConsoleInstalls/sol_sparc
   - ConsoleInstalls/sol_x86
   - ConsoleInstalls\win32

2. To start the installation, run setup from the appropriate directory.

3. When the InstallShield program opens, a Welcome dialog is displayed. Click Next to continue or Cancel to exit the program.

4. The Software License Agreement dialog opens. From the Software License Agreement dialog, select I accept the terms in the license agreement. Click Next.

5. From the Directory Name text box, select the directory for your installation or click the Browse button to install in a different directory.

   The default installation directories are:
   - For UNIX: /opt/tbsm
   - For Windows: \Program Files\tbsm

   Click Next.

6. From the Server host name text box, type the name of the console server host. For users upgrading from previous versions of Tivoli Business Systems Manager, the name of the server that was selected in the previous installation will appear in this text box. Update as necessary. Click Next
7. The pre-installation summary panel opens and informs you of the total size of the installation and where it will be installed. Click **Next**.

8. An installation panel appears, informing you of the progress of the installation.

9. After the installation process completes, you have the option to automatically start the console. Select the **Start console** check box. (The default action is to start the console.) Click **Next**.

10. The Installation Summary dialog opens, which lists any errors. Click **Finish**. For the UNIX operating environment, click **Next**.

11. For the UNIX operating environment, you must log out and then log on before the environment variable takes effect. Before the installation program closes, a dialog reminding you to log out opens. Click **Finish**.

12. To run the console after installation, either click on the icon, or, from a command window, make the console installation directory the **active** directory and then enter

```
TBSMConsole
```

**Note:** A user environment variable is created, Tivoli/TBSMDIR, which is set to the installation directory and can be used to start the console.

**Note:** For the Solaris operating system environment only, no icon is created on your desktop during the installation.

---

**Silent Installation**

The ConsoleInstalls directory contains a subdirectory called SilentInstall. Within this directory is a sample script, which can be used for a silent installation.

The script is: `TBSMConsoleInstall.scr`

To perform the silent installation:

1. Copy the `TBSMConsoleInstall.scr` script, from the ConsoleInstalls/silentInstall directory on the Tivoli Business Systems Manager Base Services installation CD to a directory on your console. For example, `c:\temp`.

2. Follow the instructions in the file. Modify the `TBSMConsoleInstall.scr` script using any text editor by updating the installation location, the server host name and whether to start the console automatically upon completion of the installation.

3. Save the file when you complete all the modifications.

4. Start the installation using the updated file. From the command prompt, enter:

```
setup -options c:\temp\TBSMConsoleInstall.scr
```

The installation begins.

5. The installation is complete when the desktop icon is created. For Solaris only, a desktop icon is not created. When the _uninst directory has been created and contains three files, the installation is complete.

If an error occurs during installation, the following message is displayed:

```
Errors occurred during the installation.
```

Examine the tbsm_jc_install.log file to determine the problem.

**Note:** Silent installation of the console is not supported on Linux.
Troubleshooting Console Installation

Windows
If the installation is not successful, the log tbsm jc_install.log, is available for troubleshooting in the system TEMP directory. From the command prompt, enter cd/d %TEMP%

When using the console on Windows operating system environments in Traditional Chinese, bold and italic characters can be displayed distorted. Both the user interface and the User Assistant are affected.

See “Traditional Chinese Bold and Italic Font Display Problems” on page 236, “Simplified Chinese Bold and Italic Font Display” on page 237 and “Japanese Bold and Italic Font Display Problems” on page 238 for further details.

The console installation on the Windows operating system requires that your system have a minimum of 256 colors.

UNIX
If the installation is not successful, the log tbsm jc_install.log, is available for troubleshooting within the /tmp directory.

For UNIX operating system environments, ensure that you have applied the current fix packs for the operating system that are required to run Java 1.3.1. To get those fix packs, go to the Web site of the vendor for that operating environment, download the fix packs and install them before installing the console. You need to log on as ROOT or have ROOT authority.

Uninstalling the Console
Use the following steps to uninstall the console:

Note: For UNIX operating system environments, log on as ROOT or have ROOT authority.

1. From the Windows desktop, click Start -- Control Panel --> Add/Remove Programs.
   From the UNIX desktop, open the command prompt, change to the directory where the console was installed and run: _itbsmUninst/uninstall.
2. The uninstallation Welcome dialog opens. Click Next.
3. The Destination Location dialog displays the location of the uninstallation. Click Next.
4. The Summary dialog opens, which lists any errors. Click Finish.

Silent Uninstallation
To silently uninstall the console (without manual intervention), open a command prompt and change the directory to:

tbsmInstallationDirectory/_itbsmUninst

Enter uninstall -silent

The uninstallation is complete when the icon is not displayed on your desktop or when the uninstall.jar file is deleted from the _itbsmUninst directory.
Note: Silent uninstallation is not supported on Linux.
Chapter 8. Installing and Configuring Source/390 Components

This chapter describes how to configure the source/390 components. It includes:

- “System Modification Program Extended”
- “Virtual Telecommunications Access Method”
- “OS/390 Performance” on page 72
- “JES3 Support” on page 73
- “Startup Parameter Considerations” on page 73
- “Source/390 Security” on page 86
- “Custom Version of the IRXANCHR Table” on page 88
- “Source/390 Object Server Startup Parameters” on page 81
- “Handling the Subsystem Max Threads Condition” on page 89
- “Bulk Discovery” on page 90

System Modification Program Extended

To install the programs, samples, messages, and JCL members that enable discovery, event processing, and command processing for the source/390 components, follow the instructions found in the program directory for Tivoli Business Systems Manager. These data sets are installed using the System Modification Program Extended (SMP/E) tool.

Virtual Telecommunications Access Method Definitions

The following Virtual Telecommunications Access Method (VTAM) definitions are required only when using Systems Network Architecture (SNA) communications to the Windows operating system environment. The definition is required by source/390 on each OS/390 image on which it runs.

**APPL Definitions**

<table>
<thead>
<tr>
<th>name</th>
<th>VBUILD</th>
<th>TYPE=APPL</th>
<th>ACBNAME=WTSKapp1,</th>
</tr>
</thead>
<tbody>
<tr>
<td>WTSKapp1</td>
<td>APPL</td>
<td>MODETAB=modetab,</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>AUTH=(ACQ),</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>APPC=YES,</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>AUTOSES=2,</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>DRAINL=ALLOW,</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>DMINWNL=1,</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>DMINWNR=1,</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>DRESPL=ALLOW,</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>DSESLim=4,</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>PARSESS=YES,</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>DLOGMOD=LU62PS,</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>VPACING=0</td>
<td></td>
</tr>
</tbody>
</table>

Ensure that this APPLID has access to the Host Integration Server LU (for example, add any CDRSCs needed or update the session management exit (SME) as required). The APPLID and the LU should both be able to initiate sessions with one another.

The WTSKapp1 APPLID is the VTAM APPLID defined for the source/390 object server on this OS/390 image.
Mode Table

The following definition is required only when using SNA communications to Tivoli Business Systems Manager for the Windows operating system environment. Tivoli Business Systems Manager LU 6.2 communications require a mode table containing the LU62PS and SNAVCMG entries. This mode table should be named on the MODETAB=modetab parameter of the APPL statements required for Tivoli Business Systems Manager. The following shows an example of a mode table for use with source/390, which can be assembled and placed in your VTAM library. Please note that the RUSIZES parameter in the mode table represents a maximum RU size of 1024 bytes. This parameter is also configured on the Host Integration Server and must match the mode table. Otherwise, unpredictable results can occur.

```
MODETAB

MODEENT     LOGMODE=LU62PS,
            FMPROF=X'13',TSPROF=X'07',
            PRIPROT=X'80',SECPROT=X'80',COMPROT=X'D0B1',
            RUSIZES=X'8787',ENCRC=B'0000',TYPE=0,
            PSERVIC=X'06020000000000000000000000300'
MODEENT     LOGMODE=SNASVCMG,
            FMPROF=X'13',TSPROF=X'07',
            PRIPROT=X'80',SECPROT=X'80',COMPROT=X'D0B1',
            RUSIZES=X'9797',ENCRC=B'0000',TYPE=0,
            PSERVIC=X'060200000000000000002300',
            APPNCOS=SNASVCMG
MODEEND
END
```

OS/390 Performance

Source/390 Address Spaces

The source/390 address spaces are automatically marked non-swappable through the SYSEVENT macro within the code. Do not mark the programs NON-SWAPPABLE through the OS/390 Program Properties table. The address spaces should, however, be given a dispatching priority similar to an online CICS Region. If source/390 does not have adequate performance levels, communication problems can occur.

Running Multiple Copies of Source/390 on a OS/390 Image

To run multiple copies of source/390 on an OS/390 image (for example to test service while the current version is still running) you must add an additional DD card to each startup JCL member of the three address spaces.

The DD card should be coded as follows:
```
//ACC1IDxx DD DUMMY
```

Where the xx parameter can be any two characters valid for a DD name. When this DD card is omitted, the ID used by Source/390 defaults to 01. Therefore, when you run only one copy of source/390 on an OS/390 image, this DD card is not required.
JES3 Support

In a JES3 environment, started tasks console (STC) messages are the same as batch job console messages. Because of this, Tivoli Business Systems Manager cannot distinguish between a message from an STC and one from a batch job. If an administrator adds batch jobs and STCs to an operating system with identical names under JES3, unpredictable results can occur.

Special Processing for IEFC452I JCL Error Message Required for both JES2 and JES3

One of the limitations of JES3 is that all resource types are the same. This causes Tivoli Business Systems Manager to place the message on the wrong resource. The IEFC452I message must be handled the same in Tivoli Business Systems Manager for both JES2 and JES3 environments.

When the JCL error message for IEFC452I is received, Tivoli Business Systems Manager performs actions in the following manner:

• If the resource is found in Tivoli Business Systems Manager’s database, the event message is posted to that resource.
• If the resource is not found, or the resource is identified as a duplicate name, Tivoli Business Systems Manager does not know where to post the event.

A generic object named "JCL ERRORS FOR IEFC452I ON <onname>" is automatically generated under the OS that received the message. This resource is created only upon the first IEFC452I JCL error message received. After the generic object is created, an exception message is posted to this resource identifying the JCL error that occurred.

If the generic object is already created, then it is reused to continue to post exception messages for these IEFC452I JCL errors. Additionally, an entry is added to a table named MVS_ErrorLog to record the error that provides the explanation why the exception was posted to the generic object. This table retains the most recent 3 days of errors.

The SQL job Clear JCL Error exceptions is provided in enterprise manager and is set up to run daily at midnight. This job clears the exceptions that are posted to the generic object created under each OS. Each of these generic object resources retains a current day’s worth of these IEFC452I JCL error exceptions.

Startup Parameter Considerations

This section discusses continuing parameters and system variables for source/390 object pump and source/390 object server.

Note: An asterisk (*) in column 1 indicates a comment.

• Continuing Parameters

  If a parameter needs to be continued onto one or more cards, then specify a comma (,) followed by a space at the end of the data and start the continued data in column one of the next card.
  The KEYWORD=partof, the data parameter is the same as the KEYWORD=partof the data parameter.

  Notice that the comma is not part of the data for the keyword. If you want a comma to be part of the data, code two commas. Either of the following is valid: KEYWORD=part1,, part2 or KEYWORD='part1', 'part2'. And both of these are the same as KEYWORD=part1,part2.
The data for KEYWORD is part1, part2.
The first comma is included in the data. The last comma indicates that the data is continued on the next card.

- System Variables
  You can use system variables within the parameter data within the source/390 object pump parameter input stream; for example, &SYSNAME. When using system variables, you must code a trailing period after the variable name; for example, CONSOLE_NAME=&SYSNAME.

### Source/390 Object Pump Startup Parameters

The Source/390 object pump startup parameters are input through the AOPSYSIN DD card (LRECL=80, RECFM=F or FB). Most startup parameters are optional and the default settings are used if not supplied. Some, however, are required and some functions of source/390 object pump are not available if these are omitted.

Copy the GTMPUMP started task from the SGTMSAMP library to a user-defined system PROCLIB.

Place the following parameters in the SGTMSAMP library, (PARMPUMP) member, referenced by the source/390 object pump startup JCL:

```
* ** Comments start with an asterisk in Column One
SUBSYSTEM_NAME=TM.. | name | NO
CONSOLE=TM390.. | name
CONSOLE_MSCOPE=LOCAL | ALL
MAX_TRAPS=2016 | number
TERMINAL_PREFIX=TM390 | prefix
NUMBER_OF_TERMINALS=0 | n
MODEL2_LOGMODE=DA4A32782 | name
MODEL3_LOGMODE=DA4A32783 | name
MODEL4_LOGMODE=DA4A32784 | name
MODEL5_LOGMODE=DA4A32785 | name
LOG_SCREENS=NO | YES
EDI_BUFFER_SIZE=2048 | size
EXEC_REFRESH=YES | NO
SUBSYSTEM_MAXTHREADS=2 | threads
MAXTHREADS_PROMPT=YES | NO
OMEGAMON_REFRESH_PERIOD=00:04:00 | hh:mm:ss
TRAP_REPORT=SYSOUT(A) | syout(class) | dsname
LOG_FILE=SYSOUT(A) | syout(class) | dsname
LOG_FILE_RECORD_LENGTH=200 | length
LOG_SPIN_INTERVAL=04:00:00 | hh:mm:ss
TRACE=YES | NO
COMMAND_PREFIX=substring_name | prefix
CA7_JOBNAME=taskname
OPC_JOBNAME=taskname
SA390_JOBNAME=jobname
AUTOOPER_JOBNAME=jobname
AFOPER_JOBNAME=jobname
OPSMVS_JOBNAME=jobname
SHUT_OBJECT_SERVER=YES | NO
SHUTDOWN_DELAY=n | 0
SHUTDOWN_CONFIRM=YES | NO
RMF_SERVER_IP=ip address
TCP_IP_TASKNAME=taskname
RMF_SERVER_PORT=8802 | port
RMF_SERVER_TIMEOUT=5 | nn
RMF_SERVER_INTERVAL=100 | nn
WTOR_ALERTS=NO | YES
WTOR_DELAY=30 | nnn
WTOR_CLEANUP=900 | nnn
```
Where the SUBSYSTEM_NAME=TM.. | name | NO parameter specifies the four character name of the MVS subsystem that source/390 object pump is to use. If NO is coded, then no subsystem is used and you can only communicate with the source/390 object pump through MVS modify commands. The.. characters in the default name are replaced by the ID characters from the AC11Dxx DD card or default value to 01 (resulting in a name of TM01) if no AC11Dxx DD card is coded in the source/390 object pump JCL member.

The CONSOLE_MSCOPE=LOCAL | ALL parameter specifies the scope of the source/390 console. LOCAL specifies that only messages from the MVS image on which the source/390 object pump is running are captured. ALL specifies that the message from all images in the Sysplex are captured.

The MAX_TRAPS=2016 | number parameter specifies the number of trap slots that Tivoli Business Systems Manager source/390 is to reserve for message traps. The number required varies depending upon the number of traps created and the resource you are monitoring.

The TERMINAL_PREFIX=TM390 | prefix parameter specifies the fixed part of the terminal names used as a pool of terminals for 3270 communications. See “Defining Virtual 3270 Pool Terminals” on page 147 for more information.

The NUMBER_OF_TERMINALS=0 | n parameter specifies the number of terminals in the terminal pool. If 0 is coded, 3270 communications are not available. Together with TERMINAL_PREFIX, this operand defines terminal names to be used for 3270 communications with OMEGamon sessions. See “Defining Virtual 3270 Pool Terminals” on page 147 for more information.

The MODEL2_LOGMODE=D4A32782 | name parameter specifies the logmode name to be used when simulating VTAM sessions using 3270 model 2 (24 x 80) terminals.

The MODEL3_LOGMODE=D4A32783 | name parameter specifies the logmode name to be used when simulating VTAM sessions using 3270 model 3 (32 x 80) terminals.

The MODEL4_LOGMODE=D4A32784 | name parameter specifies the logmode name to be used when simulating VTAM sessions using 3270 model 4 (43 x 80) terminals.
The **MODEL5_LOGMODE=**D4A32785 | **name** parameter specifies the logmode name to be used when simulating VTAM sessions using 3270 model 5 (27 x 132) terminals.

The **LOGSCREENS=NO | YES** parameter specifies whether screen images should be written to the AOPLOG DD. This option can be turned on and off dynamically using the OS/390 Modify Pump, LOGSCREENS option command.

The **EDI_BUFFER_SIZE=2048 | size** parameter specifies the size of the External Data Interface (EDI) buffer within the source/390 object pump address space in kilobytes. The size of the buffer required depends upon the amount of data being received by EDI and how fast the EDI can process the received messages within the source/390 object pump address space.

The **EXEC_REFRESH=YES | NO** parameter specifies whether or not the changed REXX EXEC program should be refreshed automatically. If YES is coded, the REXX program checks each EXEC every time it is run, to see if it has changed on disk. If NO is coded, the REXX program does not check for changed EXECs. In addition, the source/390 object pump holds the REXX EXEC programs in storage, even when the use count is zero, to improve performance. The changed EXECs can be reloaded using the MVS Modify source/390 object pump, REFRESH exec name command.

The **SUBSYSTEM_MAXTHREADS=2 | threads** parameter specifies the maximum number of concurrent operator commands that the source/390 object pump processes.

The **MAXTHREADS_PROMPT=YES | NO** parameter specifies whether the source/390 object pump should issue a message to the operator (which requires a reply), indicating that the maximum number of subsystem threads has been used and giving the operator the opportunity to increase the current number of threads.

The **OMEGAMON_REFRESH_PERIOD=00:04:00 | hh:mm:ss** parameter specifies how often the source/390 object pump should poll OMEGAMON sessions for exception information. All fields must be specified and leading zeros must be coded.

The **TRAP_REPORT=SYSOUT(A) | sysout(class) | dsname** parameter specifies where trap reports should be sent.

The **LOG_FILE=SYSOUT(A) | sysout(class) | dsname** parameter specifies where messages logged by source/390 object pump should be sent. These are in addition to the AOPLOG messages.

The **LOG_FILE_RECORD_LENGTH=200 | length** parameter specifies the LRECL for the log file.

The **LOG_SPIN_INTERVAL=04:00:00 | hh:mm:ss** parameter specifies how often the source/390 object pump should release the log file for printing.

The **TRACE=YES | NO** parameter specifies that the debug messages are to be written to the console. The default value is NO. This is an optional operand.

The **COMMAND_PREFIX=subsystem_name | prefix** parameter specifies a command prefix that source/390 object pump uses to detect commands intended for the source/390 object pump. This is in addition to the standard Modify
interface. If the COMMAND_PREFIX parameter is not coded, or allowed to accept the default setting, then the subsystem name becomes the command prefix for this copy of source/390.

The OPC_JOBNAME=jobname parameter is specified only if the Tivoli Operations, Planning & Control EDI interface is required. Specify the name of the Tivoli Operations, Planning & Control Controller and the Tracker started task, separated by commas if multiple names are used.

The CA7_JOBNAME=taskname parameter specifies the name of the CA-7 central control task.

The SA390_JOBNAME=jobname parameter is specified only if the System Automation for OS/390 EDI interface is required. Specify the name of the Tivoli NetView for OS/390 started task, where the System Automation for OS/390 is running and is separated by commas if multiple names are used.

The OPSMVS_JOBNAME=jobname parameter is specified only if the OPS/MVS EDI interface is required. Specify the name of the OPS/MVS started task, separated by commas if multiple names are used.

The AFOPER_JOBNAME=jobname parameter is specified only if the AFOPER EDI interface is required. Specify the name of the AFOPER started task, separated by commas if multiple names are used.

Note: The JOBNAME parameter coding specification for the following:

- OPC_JOBNAME
- CA7_JOBNAME
- SA390_JOBNAME
- OPSMVS_JOBNAME
- AFOPER_JOBNAME

Keyword=Jobname

Keyword=Jobname,Jobname

No brackets around multiple jobnames.

The Jobname specification can be specified as a specific jobname. For example, CICSPROD, or as a generic jobname, that is a jobname containing the source/390 object pump specific mask characters.

The mask characters that can be used as part of a Jobname are:

- * - Matches anything at this location (including NULL). For example, CICS* would match jobnames of CICS, CICSPROD, CICS123, CICSTEST.
- ? - Matches any single character at this location, but there must be at least one character. For example, CICS?123 would match CICSP123, CICST123, but not CICS123 (the question mark is matched by the 1 but then the remaining characters, 23 do not match the rest of the mask 123).

The AUTOOPERS_JOBNAME=jobname parameter is specified only if the MAINVIEW Auto Operator EDI interface is required. Specify the name of the Auto Operator started task, separated by commas, if you use multiple names.
The SHUT_OBJECT_SERVER=YES | NO parameter determines if the source/390 object server is shutdown as a result of the source/390 object pump being stopped.

The SHUTDOWN_DELAY=n parameter specifies the number of seconds the source/390 object pump should wait before continuing a shutdown after a stop command is issued. The default value is 0.

The SHUTDOWN_CONFIRM=YES | NO parameter specifies whether you must confirm before shutting down. The default value is YES.

The RMT_SERVER_IP=ip address parameter specifies the IP address of the RMF™ DDS server address space. This is the IP address of the system on which the RMF DDS server resides. If this value is not supplied, the default value of the local MVS systems IP address is used.

The WTOR_ALERTS=NO | YES parameter specifies whether or not the WTOR (Write to Operator with Reply) alerts are required. The default value is NO.

The WTOR_DELAY=30 | nnn parameter specifies the number of seconds that a WTOR message must be outstanding before an alert is raised. The default value is 30 seconds.

The WTOR_CLEANUP=900 | nnn parameter specifies the number of seconds before a cleanup action is taken to delete old variables from the WTOR shared variable pool. The default value is 900 seconds (15 minutes).

The RDM_NAME=name parameter specifies the name assigned to the RDM address space that the source/390 object pump connects to for network status information. If this parameter is not coded, then no network status data is collected.

The RDM_USERID=userid | object server jobname parameter specifies the user ID used to sign on to the RDM selected by the RDM_NAME parameter. If this parameter is omitted, the source/390 object pump STC name is used as the RDM user name. If the System Authorization Facility (SAF) is providing security to RDM, you can code RDM_USERID='1' to force a blank user ID to be used.

The RDM_NOTIFY_METHOD=EKGAOPNF | Method name parameter specifies the name of the RDM method that is used to send status change data from RDM resources to the source/390 object pump. You can change this name if the default name conflicts with an existing RDM method in your installation. You must rename the supplied RDM method in the Tivoli NetView for OS/390 SEKMOD2 library or copy it to your own library to match the new name that you specify.

The RDM_NOTIFY_QNAME=AOPNOTFQ | Notify queue name parameter specifies the name of the RDM notify queue that is used to transfer data from the RDM address space to the source/390 object pump. You can specify this parameter if the default name conflicts with a name you are using in your installation.

The RDM_QUERY_MODEL_TIME=180 | nnnn specifies the amount of time in seconds that the RDM interface will wait after it receives acknowledgement that the SNA Topology Data Model was loaded before sending the RODMSTATUS UP message to Tivoli Business System Manager. The default value is 180 seconds. The minimum time supported is 30 seconds and the maximum time supported is 9999.

The RODMSTATUS UP message is the event message that is sent from the Object Pump to inform Tivoli Manager Business System that the RODM task has initialized and is ready to receive registration requests for the RODM resources.
The PPI=NO | YES parameter specifies whether the NetView PI receiver should be started. The default value is NO.

The PPI_BUFFER_SIZE=512  | nnn parameter specifies the size in bytes of the receive buffer for the PPI receiver. The default value is 512 bytes. The valid range is 256 to 32768 bytes.

The PPI_BUFFER_QUEUE_LIMIT=1000 | nnn parameter specifies the maximum number of records that the PPI buffer can hold. The default value is 1000. The valid range is 100 – 10000.

The PPI_TRACE=NO | YES parameter specifies whether the records received by the PPI receiver should be written to the AOPLOG file. The default value is NO.

The TCPIP_TASKNAME=taskname parameter specifies the task name of the TCPIP address space to be used. If this is not supplied, the first active TCP/IP address space is used.

The RMF_SERVER_PORT=8802 | port parameter specifies the port number on which RMF responds. This corresponds to the DM_PORT parameter in the IEFSPARM member of the IEFPARM library used by the GPMSEVR procedure.

The RMF_SERVER_TIMEOUT=5 | seconds parameter specifies the RMF value, in seconds, that the source/390 object pump waits before assuming that the DDS server is unavailable. If a request times out, future collections are not attempted until at least one RMF_SERVER_INTERVAL has passed.

The RMF_SERVER_INTERVAL=100 | mintime parameter corresponds to the MINTIME option for RMF Monitor III and should be set to the same value as that set for MF Monitor III.

The SBCS_CODEPAGE=0037|single byte character set codepage ID parameter specifies the single byte character set code page in use on the OS/390 system. The following table lists the valid IBM SBCS code page values.

Table 41. Values for IBM SBCS Code Page

<table>
<thead>
<tr>
<th>Language</th>
<th>IBM SBCS Code Page</th>
<th>With Euro</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Without Euro</td>
<td></td>
</tr>
<tr>
<td>US English (default language)</td>
<td>0037</td>
<td>1140</td>
</tr>
<tr>
<td>UK-English</td>
<td>0285</td>
<td>1146</td>
</tr>
<tr>
<td>Italian</td>
<td>0280</td>
<td>1144</td>
</tr>
<tr>
<td>Spanish</td>
<td>0284</td>
<td>1145</td>
</tr>
<tr>
<td>French</td>
<td>0297</td>
<td>1147</td>
</tr>
<tr>
<td>German</td>
<td>0273</td>
<td>1141</td>
</tr>
<tr>
<td>Brazilian Portuguese</td>
<td>0275 0037</td>
<td>1140 1140</td>
</tr>
<tr>
<td>Traditional Chinese</td>
<td>0835</td>
<td>9027</td>
</tr>
<tr>
<td>Simplified Chinese</td>
<td>0836</td>
<td></td>
</tr>
</tbody>
</table>
Table 41. Values for IBM SBCS Code Page (continued)

<table>
<thead>
<tr>
<th>Language</th>
<th>IBM SBCS Code Page</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Without Euro</td>
</tr>
<tr>
<td>Korea</td>
<td>0833</td>
</tr>
<tr>
<td>Japan (Katakana)</td>
<td>0290</td>
</tr>
</tbody>
</table>

The DBCS_CODEPAGE=double byte character set codepage parameter specifies the double-byte character set code page in use on the OS/390 system. The following table lists valid IBM DBCS code page values.

Table 42. Values for IBM DBCS CodePage

<table>
<thead>
<tr>
<th>Language</th>
<th>IBM DBCS Code Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Simplified Chinese</td>
<td>0837</td>
</tr>
<tr>
<td>Traditional Chinese</td>
<td>0935</td>
</tr>
<tr>
<td>Korea</td>
<td>0834</td>
</tr>
<tr>
<td>Japan (Default)</td>
<td>0300</td>
</tr>
</tbody>
</table>

The LANGUAGE_ID=ENU|language id parameter specifies the language being used on the OS/390 system. The following table lists the valid Language ID values.

Table 43. Values for Language ID

<table>
<thead>
<tr>
<th>Language</th>
<th>Language ID</th>
</tr>
</thead>
<tbody>
<tr>
<td>US English (Default)</td>
<td>ENU</td>
</tr>
<tr>
<td>Italian</td>
<td>ITA</td>
</tr>
<tr>
<td>Spanish</td>
<td>ESP</td>
</tr>
<tr>
<td>French</td>
<td>FRA</td>
</tr>
<tr>
<td>German</td>
<td>DEU</td>
</tr>
<tr>
<td>Brazilian Portuguese</td>
<td>PTB</td>
</tr>
<tr>
<td>Traditional Chinese</td>
<td>T-CH</td>
</tr>
<tr>
<td>Simplified Chinese</td>
<td>CHS</td>
</tr>
<tr>
<td>Korea</td>
<td>KOR</td>
</tr>
<tr>
<td>Japan (Katakana)</td>
<td>JPN</td>
</tr>
</tbody>
</table>

The Sysplex=name parameter specifies the one to eight character sysplex name that the source/390 object pump reports to Tivoli Business Systems Manager. If it is omitted, then the sysplex name is obtained from the system.

The GTFTRACE=YES | NO parameter specifies the the source/390 object pump address space to write data about the Generalized Trace Facility (GTF) as a diagnostic aid. You can print the trace data using the standard IPCS GTFTRACE printing facilities.

If the GTF trace keyword is not coded or is coded to NO then the GTF is inactive. If GTFTRACE=YES is coded the source/390 object pump calls the GTF trace facility at various times during the cycle. Data is not collected unless the GTF trace facility is running with the appropriate parameters in a separate address space.
The REGISTRATION_WAIT_TIME=00:00:00 | hh:mm:ss parameter specifies how long the Object pump will wait for the shared variables to be registered. The default value of zero indicates that the object pump should not take any action if the shared variables are not registered.

The REGISTRATION_TIMEOUT=INFORM|RETRY parameter specifies the action to be taken when the shared variables are not registered within the REGISTRATION_WAIT_TIME. The default action is to inform the user with the GTM1785I message. If retry is specified then in addition to the message the shared variables are requested again by the object pump. If the shared variables are received within the specified time then no action is taken.

Source/390 Dataspace Startup Parameters
Copy the started task GTMDSPC from the SGTMSAMP library to a user-defined system PROCLIB.

Place the following parameters in the SGTMSAMP library referenced by the source/390 dataspace startup JCL member:

- OSQUEUESIZE=osqueuesize
- OPQUEUESIZE=opqueuesize
- LOGQUEUESIZE=logqueuesize

Where the osqueuesize parameter is the size of the source/390 object server queue in pages (4096 bytes). The queue is used to send data between the source/390 object pump and the source/390 object server. One page can hold approximately 1000 records.

The opqueuesize parameter is the size of the source/390 object pump queue in pages (4096 bytes). The queue is used to send data between the source/390 object server and the source/390 object pump. One page can hold approximately 1000 records.

The logqueuesize parameter is the size of the source/390 object server queue in pages (4096 bytes). The queue is used to hold data that is written to the source/390 object server log data sets.

Source/390 Object Server Startup Parameters
Place the following parameters in the SGTMSAMP library referenced by the source/390 object server startup JCL member.

There are two members in the SGTMSAMP library that can be used with the GTMSRVR PROC. PARMSRIP member, which contains a sample set of IP control cards, and the PARMSRVR, which contains a sample set of LU6.2 control cards.

Copy the started task GTMSRVR from the SGTMSAMP library to a user-defined system PROCLIB.

*Comments start with an asterisk in column one

PROTOCOL=LU62 | IP
REMOTE_APPLID=remote_applid
LOCAL_LUNAME=local_luname
LOGMODE=LU62PS | logmode
TCPIP_ADDRESS=tcpip_address
*TCP/IP_NAME=tcpip_name
TCP/IP_PORT=port_number
Where the PROTOCOL=LU62 | IP parameter specifies the protocol that is used for the communication between source/390 and Tivoli Business Systems Manager that runs on the Windows operating system environment. The default value is LU62.

Common Parameters for LU6.2 and TCP/IP Interfaces
The following parameters are commonly used for the LU6.2 and TCP/IP interfaces.

The LOG1=log_dataset1 and LOG2=log_dataset2 parameters specify the LOG data sets used to receive the Tivoli Business Systems Manager events for event tracking and diagnostic purposes. These are required parameters.

You can allocate these files to contain any file attributes you prefer. After the source/390 object server starts, the attributes are set to Unblocked Variable - V, LRECL of 32756, and BLKSIZE of 32760. The amount of space you allocate is your choice. Only one LOG file is active at a time. The LOG file that is inactive becomes active when the other LOG file has no available space.

The TRACE=YES | NO parameter. The YES parameter specifies that the debug messages are to be written to the console. The default value is NO. This is an optional operand.

The REQUEST_RESPMSG=YES | NO parameter. The YES parameter specifies that the resource registration messages received from Tivoli Business Systems Manager are written to A0PL06. The default value is NO. This is an optional operand.

LU6.2 Interface
The following control cards are required for the LU6.2 interface.

The REMOTE_APLID=remote_applid control card specifies the APLID used by source/390 object server. The APLID name must match the remote APLID used in the Host Integration Server.

The LOCAL_LUNAME=local_luname control card specifies the LUNAME used by the Host Integration Server Client. The local LUNAME must match the local LUNAME used in the Host Integration Server.

The LOGMODE=LU62PS | logmode control card specifies the logmode that is used to define the parameters for the LU6.2 connection.
TCP/IP Interface
The following control cards are used for the TCP/IP interface.

The TCPIP_ADDRESS=nnn.nnn.nnn.nnn TCPIP_NAME=hostname control card specifies the IP address or host name for the machine on which that NT server is running. If the TCPIP_SERVER_NAME parameter is used, the source/390 object server attempts host name resolution to locate the IP address. Both keywords are optional. However, only one of these parameters must be specified.

The nnn operand of the ADDRESS parameter is to be separated by periods (.) and can be any number in the range from 1 - 255.

The hostname operand is alphanumeric and the length can range from 1 - 255 characters long.

The TCPIP_PORT=nnnnn control card specifies the port number to be used on behalf of the connection. The nnnnn operand can be in the range from 1 - 32767. This is a required operand.

The TCPIP_SERVER_ADDRESS=nnn.nnn.nnn.nnn TCPIP_SERVER_NAME=hostnamecontrol card specifies the IP address or host name for the machine that source/390 object server is running on. The IP address is obtained dynamically if these cards are not specified. If the TCPIP_SERVER_NAMEparameter is used, the source/390 object server attempts host name resolution to locate the IP address. These are optional operands. However, only one of these parameters must be specified.

The nnn operand of the ADDRESS parameter is to be separated by periods (.) and can be any number in the range from 1 - 255.

The hostname operand is alphanumeric and the length can range from 1 - 255 characters long.

If the traceresolver parameter is set on in the TCP/IP parameters, TCP/IP debug messages are issued to the job log when host name resolution is attempted. These messages are issued whether or not the IP Address is found.

The resolvertimeout and resolverudpreties parameters of TCP/IP control the time specifications for Host Name Resolution processing within the TCP/IP network.

Refer to the OS/390 TCP/IP manuals for more information regarding the TCP/IP parameters that are described here.

Note: If the IP address of the Listener is setup in the Network Address Table (NAT) configuration, the NAT IP address must be used. If the NAT IP address is not used, the source/390 object server does not connect to Tivoli Business Systems Manager Windows operating system server.

The TCPIP_SERVER_PORT=nnnnn control card specifies the server port number to be used for the IP Listener that receives registration data from Tivoli Business Systems ManagerWindows operating system servers. This is a required operand.

The VALIDCLIENT=nnn.nnn.nnn.nnn | client_hostname control card specifies an IP address or host name of the Windows operating system server that is authorized to send data to the source/390 object server. This IP address or host name identifies the machine where the IP Sender Services are running. This is a required operand.
When specifying an address, the nnn operand of the ADDRESS parameter is to be separated by periods (.) and can be any number in the range from 1 – 255.

The client host name is alphanumeric and the length can range from 1 – 255 characters.

If it is required to support multiple Windows operating system servers, as for example, when implementing failover, a separate VALIDCLIENT control card should be used for each value.

The VALIDCLIENT_HOSTRES=YES | NO control card specifies NO to disable the VALIDCLIENT function from attempting to resolve the host name specified on the VALIDCLIENT card. The default value is YES.

Refer to the section titled, “Installing Event Handler Server Using IP Communication Services” on page 196 for information about installing Tivoli Business Systems Manager to use IP communication services.

Optional Parameters for TCP/IP Interface

The following parameters are optional for the TCP/IP interface.

The REQUEST_RESPMSGs=NO | YES parameter informs the IP Listener service to send response messages back to the object server. This is an optional operand. The default value is NO.

The TCPIP_JOBNAME=tcpip_jobname parameter specifies the TCP/IP address space that is to be used to provide TCP/IP services. When not specified, the TCP/IP address space is dynamically retrieved. The TCP/IP Jobname cannot exceed eight characters in length. This is an optional operand. Use this parameter when you run multiple TCP/IP stacks on a OS/390 image.

The TIMEOUT=30 | seconds parameter specifies the timeout value in seconds in which the TCP/IP services ends if there is no response. The default is 30 seconds. The maximum value is 86400 seconds. This is an optional operand.

This parameter works in conjunction with the TCP/IP resolvertimeout parameter. For example, when the value of this parameter is less than the resolvertimeout parameter, the IP service requests a time out prior to TCP/IP stopping the outstanding service request.

Refer to the TCP/IP manuals for more information regarding the resolvertimeout TCP/IP parameter.

The CODEPAGE=037 | codepage parameter specifies the code page number to be used by the ASIMVSIPSOLENCIP4 service to convert the data to the appropriate ASCII symbols. This is an optional control card. The default value is US code page 037.

The BUFFERSIZE=1 | size parameter specifies the size (X1000 in bytes) of the buffer used for sending and receiving data over the TCP/IP connection. The default value is 1 (1000 bytes). This is an optional parameter. The size can be in the range from 1 - 32 (1000 –32000 bytes).

Use the following optional backup parameters if you want to use recovery.
The TCP/IP_ADDRESS_BACKUP=nnn.nnn.nnn.nnn
TCP/IP_NAME_BACKUP=hostname parameter specifies the IP address or host name for a backup connection that is to be used to communicate with the ASIMVSIPOSListenerSvc service in the event the primary connection fails. If the TCP/IP_NAME_BACKUP parameter is used, the source/390 object server attempts host name resolution to locate the IP address. These are optional operands. However, only one of these parameters is required to be specified for the backup resource.

The nnn operand of the ADDRESS parameter is to be separated by periods (.) and can be any number in the range from 1 - 255.

The computer_name operand is alphanumeric and the length can range from 1 - 255 characters.

If the traceresolver parameter is set on in the TCP/IP parameters, TCP/IP debug messages are issued to the job log when host name resolution is attempted. These messages are issued regardless of whether the IP address is found.

The resolvertimeout and resolverudpretries parameters of TCP/IP control the time specifications for host name resolution processing within the TCP/IP network.

Refer to the TCP/IP manuals for more information regarding the TCP/IP parameters described here.

Note: If the IP address of the Tivoli Business Systems Manager Listener is setup in the NAT configuration, the NAT IP address must be used. If the NAT IP address is not used, the source/390 object server does not connect to Tivoli Business Systems Manager.

The TCP/IP_PORT_BACKUP=nnnnn parameter specifies the backup port number to be used for the connection. The nnnnn operand can be in the range from 1 - 32767. This is a required operand.

The RETRY_INTERVAL=30 | seconds parameter specifies the retry interval in seconds that a connection is attempted to Tivoli Business Systems Manager. This operand applies to both the primary or backup IP resource. The default value is 30 seconds. This is an optional operand.

The RETRY_COUNT=0 | retry_count parameter specifies the number of retry attempts before switching to the alternate IP resource specified on the TCP/IP parameters. The default value is 0 and indicates that automatic switching does not occur in the event the connection fails. The maximum value that can be specified is 999999.

Optional DD Names for the Source/390 Object Server
You can use optional DD names in the source/390 object server started task (GTMSRVR) when you run the TCP/IP interface.

The following JCL control card is used when the TCP/IP is not configured properly or you are experiencing host resolution problems.

//SYSTCPD DD DSN=tcip_dataset(TCPDATA),DISP=SHR
The following TRACE and LOG DD names provide you with additional diagnostic data that shows the Tivoli Business Systems Manager messages that were transmitted over an IP address.

//TRACE DD SYSOUT=* //LOG DD SYSOUT=*  

**Setting Parameters for Language Support**

Set the following parameters for language support:

- For Windows NT:
  
  ```plaintext
  [HKEY_LOCAL_MACHINE\SOFTWARE\Accessible Software, Inc. \Access1\1.0\Settings]
  - DefaultLanguage=<language id>
    The valid language IDs are the directory names available in tivolimanager\lang
  - LocalCodePage=<NT code page id>
    For example, 1252 for Danish.
  - RemoteCodePage=<mainframe code page>
    For example, 20277 for Danish.
  ```

If you are using a code page other then 437 on your servers, you should review the comments in the cconv.tbl file in the tivolimanager\lang<language id>directory. The console code page is set by the `SetConsoleCodePage` command.

Issue the `SetConsoleCodePage` command from a command prompt and note the value of Current Console Code Page:

- OS/390:
  
  ```plaintext
  LANGUAGE_ID = SBCS_CODEPAGE=
  ```

  Refer to the section in this chapter on the source/390 object pump parameters for more details.

### Source/390 Security

A user ID must be assigned to source/390 started tasks upon startup. The assigned user IDs must have the necessary authority to update the source/390 log data sets and read all other data sets coded in the source/390 JCL member. In addition to this authority, the source/390 object pump also requires OPERCMS, if used in your environment, and OMVS security definitions.

### Defining an OMVS Segment

The user ID associated with the batch job that runs the GTMAOPE0 utility requires an OMVS Segment be defined in Resource Access Control Facility (RACF®).

**Note:** The tasks, examples, and references in this section assume that you are using the OS/390 Security Server, RACF. If you are using a security product from another vendor, read the documentation for that product for instructions on task performance.

One way of satisfying the requirement for defining an OMVS segment in RACF is to define an OMVS RACF segment for the associated user ID. Another way is to take advantage of the default OMVS segment support provided by RACF and OS/390, UNIX for users and groups.
Note:

1. An HFS must be defined for the OMVS segment, and the home directory must exist.
2. If you use a trusted or privileged started task in ICHRIN03 or the STARTED class (especially a generic entry), be careful in assigning a default User ID (UID) and Group ID (GID) with facility class BPX.DEFAULT.USER. Whenever trusted or privileged is specified, all default tasks have super user authority.

The default OMVS segments reside in the USER profile and GROUP profile. The installation identifies the names of these profiles, using the BPX.DEFAULT.USER facility class profile. The application data field in the class profile contains the user ID, or the user ID/group ID, that is used to access the default OMVS segments for users and groups, respectively.

To configure default OMVS segments:

1. Define a Group ID (GID) to the system to be used as an anchor for a default OMVS group segment.
   Issue the following command:
   
   ADDGROUP OEDFLTG OMVS(GID(777777))

   Make the GID unique so that it is easily identified. The GID can be either very high or very low. The other fields related to the GID are not likely to be used for anything.

2. Define a user ID (UID) to be used as an anchor for the default OMVS user segment.
   Issue the following command:
   
   ADDUSER OEDFLTU DFLTGRP(OEDFLTG) NAME('OE DEFAULT USER')OMVS(UID(999999))
   HOME('/') PROGRAM('/bin/sh')

   When defining a UID, consider the following:
   • UID - Make the UID unique so that it is easily identified. The number can be very high or very low. To avoid giving super user authority, do not use 0 as the UID.
   • HOME - Select one of the following options when defining the home directory for the default user:
     - Define the HOME directory as the ROOT(/). The users do not have write access, but do not need to update their home directory.
     - Define the HOME directory in the/tmp directory.
     - Define a directory as you would for any other user. This directory is then used concurrently by many users that do not have an OMVS segment. (We do not recommend this directory option.)
   • PROGRAM - Define the default shell in this field.

   The other fields related to this UID are not likely to be used.

3. Set up a default for the USER OMVS segment or set up a default UID and GID.
   To set up a default for the USER OMVS segment only, create a facility class profile named BPX.DEFAULT.USER, and then specify the default UID in the application data field.
   Issue the following commands:
   
   RDEFINE FACILITY BPX.DEFAULT.USER APPLDATA('OEDFLTU')
   SETROPTS RACLIST(FACILITY) REFRESH
Note: You cannot set up a default GROUP OMVS segment alone.
To set up a default UID and GID, create a facility class profile named
BPX.DEFAULT.USER, and then specify the default UID and GID in the
application data field.
Issue the following commands:
RDEFINE FACILITY BPX.DEFAULT.USER APPLDATA('OEDFLTG')
SETROPTS RACLIST(FACILITY) REFRESH
The FACILITY class must be activated. In addition, the USER profile of the
default UID and the GROUP profile of the default GID must exist, and must
contain OMVS segment with a UID and GID, respectively.

Note: RACF does not check to ensure that the application data points to a
valid UID or UID and GID, or that the USER and GROUP profiles
contain OMVS segments with the required UID and GID.

The following process explains how the BPX.DEFAULT.USER facility
class profile works:
a. You request a UNIX service, which is serviced by the kernel.
b. The kernel calls the security product to extract the UID, GID, HOME,
   and PROGRAM information.
c. The security product attempts to extract the OMVS segment
   associated with the user. If the user is not defined, the security
   product attempts to extract and use the OMVS segment for the
default user that was listed in the BPX.DEFAULT.USER profile.

A similar process is followed to obtain a GID, when the user default group
does not have an OMVS segment.

**OPERCMDS Security Definition**

If the Resource Access Control Facility (RACF) class OPERCMDS is active, the
MVSMONITOR resource must be defined and the source/390 object pump address
space must have read access to this resource.

Use the following command to achieve these requirements:
PERMIT MVS.MONITOR CLASS(OPERCMDS) ID(pump_userid) ACCESS(READ)
Where the pump_userid parameter is the RACF user ID assigned to the PUMP
address space.

**Custom Version of the IRXANCHR Table**

The version of the IRXANCHR table shipped with Tivoli Business Systems
Manager is a customized version of the standard IRXANCHR table shipped with
the REXX environment, which enables the source/390 object pump to run many
REXX programs concurrently (2000) than the standard version of the IRXANCHR
table (40).

The use of the Tivoli Business Systems Manager version of the IRXANCHR table
by other products instead of the standard version or their own customized version
is only a concern if the Tivoli Business Systems Manager version provides fewer
REXX environments than the product or user-custom version.
In such a case, the SGTMMODS library must be inserted into the other products’ load library concatenation after any libraries that contain their own version of the IRXANCHR table. This ensures that the product’s own version of the IRXANCHR table is used.

### Source/390 Commands

#### Source/390 Object Pump Modify Commands
You can find information about the source/390 object pump modify commands in IBM Tivoli Business Systems Manager: Command Reference.

#### Source/390 Object Server Modify Commands
You can find information about the source/390 object server modify commands in IBM Tivoli Business Systems Manager: Command Reference.

#### Source/390 Object Pump Commands
When running the source/390 object pump with a subsystem, the COMMAND_PREFIX parameter defines a text string that the source/390 object pump recognizes as a command intended for the source/390 object pump. The string can be any suitable character string and the default setting is the subsystem name. For example, if COMMAND_PREFIX=S390 is specified, then any operator command starting with the string S390 would be identified as a command string for the source/390 object pump. In the following text, the string prefix represents the COMMAND_PREFIX character string.

You can find information about the source/390 object pump commands in IBM Tivoli Business Systems Manager: Command Reference.

### Handling the Subsystem Max Threads Condition

Each OS/390 operator command that is issued is trapped by the source/390 object pump subsystem and passed to the source/390 object pump using an available thread. The maximum number of concurrent commands that can be processed is defined by the source/390 object pump startup parameter:

```plaintext
SUBSYSTEM_MAXTHREADS=n
```

If an operator command is trapped and there are no available threads, then the source/390 object pump can, depending upon the setting of the MAXTHREADS_PROMPT startup parameter, issue a Write to Operator with Reply (WTOR) message. The WTOR message gives the operator an opportunity to increase the maximum number of threads.

This WTOR message is only issued if MAXTHREADS_PROMPT=YES was coded.

If MAXTHREADS_PROMPT=NO was coded, then no message is issued and the operator command is missed by the source/390 object pump. The source/390 object pump also misses any commands that occur when all the subsystem threads are in use in the future.

The WTOR message has the format:

```plaintext
GTM7560I AOP: subsystem_name: MAX THREADS REACHED, REPLY 0-9 TO INCREASE
```
If the operator replies 0, maximum threads are not increased and if maximum threads is again reached, this message is not issued again.

In effect, replying 0 changes to the MAXTHREADS_PROMPT=YES option to MAXTHREADS_PROMPT=NO, for future maximum threads events.

If the operator replies with a single digit number in the range 1 – 9, then max threads is increased by the specified number. If the maximum number of threads is again reached, the source/390 object pump again outputs the GTM7560I message requesting an increase in the number of maximum threads. This mechanism prevents the subsystem from depleting ECSA storage in the event of a problem (each thread takes 168 bytes of ECSA).

**Bulk Discovery**

The GTMAOPE0 utility, a Tivoli Business Systems Manager utility, and the ASIMVSIPListener service, are used for bulk discovery of OS/390 data sources. Use bulk discovery to batch load information from a specific interface (for example, Tivoli Operations, Planning & Control or RODM) into the Tivoli Business Systems Manager resource repository. The output of bulk discovery is used as the input for the two SQL jobs used in discovery.

**Configuring the GTMAOPE0 Utility**

GTMAOPE0 is a standalone MVS TCP/IP Application that sends data to the Tivoli Business Systems Manager server that runs the ASIMVSIPListenerSvc service. The GTMAOPE0 utility transmits any non-VSAM file to Tivoli Business Systems Manager.

The following parameters are used with the GTMAOPE0 Utility JCL:

- The `TCPIP_ADDRESS=nnn.nnn.nnn.nnn | TCPIP_NAME=host_name` parameter specifies the Internet Protocol (IP) address number or computer name for the connection you use to communicate with the ASIMVSIPListenerSvc service. If the `TCPIP_NAME` parameter is used, GTMAOPE0 attempts host name resolution to locate the IP address. These are required operands. However, only one of these specified parameters is required.

- The `nnn` operand of the `ADDRESS` parameter is to be separated by periods (.) and can be any number in the range from 1 – 255. The `host_name` is alphanumeric and the length can range from 1 – 255 characters long. If the `traceresolver` parameter is set on in the TCP/IP parameters, TCP/IP debug messages are issued to the job log when host name resolution is attempted. These messages are issued regardless of whether the IP address is found. The `resolvertimeout` and `resolverudpreties` parameters of TCP/IP control the time specifications for host name resolution processing within the TCP/IP network.

Refer to the OS/390 TCP/IP manuals for more information regarding the TCP/IP parameters.

If the IP address is set up in the NAT configuration, the NAT IP address must be used. If the NAT IP address is not used, the GTMAOPE0 utility does not connect to Tivoli Business Systems Manager and therefore does not transmit the bulk data.

The `TCPIP_PORT=nnnn` parameter specifies the port number to be used for the connection. The required operand, `nnnn` can be in the range from 1 – 32767.
The `TCP/IP_JOBNAME=tcnip_jobname` parameter specifies the TCP/IP address space that is used to provide TCP/IP services. When not specified, the TCP/IP address space is dynamically retrieved. The TCP/IP Jobname cannot exceed 8 characters in length. This is an optional operand. It can be used when you run multiple TCP/IP stacks on a OS/390 image.

The `TIMEOUT=30 | seconds` parameter specifies the timeout value in seconds in which the TCP/IP services end if there is no response. The default setting is 30-seconds. The maximum value is 86400 seconds. This is an optional operand. This parameter works in conjunction with the TCP/IP `resolvertimeout` parameter. For example, when the value of this parameter is less than the `resolvertimeout` parameter, the IP service requests time out prior to TCP/IP ending the outstanding service request.

Refer to the OS/390 TCP/IP manuals for more information regarding the `resolvertimeout` TCP/IP parameter. Depending on the volume of data received, you can increase the `TIMEOUT` value.

The `CODEPAGE=codepage_number | 037` parameter specifies the codepage number that the ASIMVSIPListenerSvc service uses to convert the data to the appropriate American National Standard Code for Information Interchange (ASCII) symbols. This is an optional control card. The default setting is US codepage 037.

The `TEXT=YES | NO` parameter specifies that the transmission protocol is either binary or text mode. When `NO` is specified, the data is transmitted as binary data. When `YES` is specified, the `DATA_SEPARATOR` byte value is used to separate each logical record. This is an optional control card. The default setting is `NO`.

The `DATA_SEPARATOR=byte_value | x'25'` parameter specifies the byte value to be inserted between every logical data record when running with the `TEXT=YES` parameter. This is an optional operand.

When not specified and the `TEXT=YES` parameter is requested, the default byte value is x 25. A decimal value can be specified to identify this byte value. The range is from 1 - 255.

The `COMMAND=command_name` parameter specifies a command name sent to the ASIMVSIPListenerSvc service for triggering the command on the Windows operating system environment to process the data after all the data is received.

The `command_name` parameter is an alphanumeric string that can range from 1 - 72 characters long. This is a required operand.

**Note:** Control cards can be continued on the next line by inserting a comma (,).

Individual member names for each data source that uses the GTMAOPE0 utility can be found in the JCL member that is contained in the SGTMSAMP library.

The `COMMAND` names for the initial discovery data sources are:
- `AFOPERDISCOVERY`
- `AUTOOPERDISCOVERY`
- `CA7DISCOVERY`
- `CICSDISCOVERY`
- `CPSMDISCOVERY`
Configuring the ASIMVSIPListenerSvc Service

The ASIMVSIPListenerSvc service runs on the database server. The ASIMVSIPListenerSvc service is responsible for receiving data sent from the GTMAOPE0 utility. This service is automatically configured when Tivoli Business Systems Manager is initialized by the source/390 object pump identification message that is received after source/390 object pump is started.

The default settings for this service are established during installation. The ValidClient entry is configured when the source/390 object pump identification message is received. Once the GTMAOPE0 utility is configured, you can run any of the discovery jobs on the same OS/390 host where the source/390 object pump is running.

If the GTMAOPE0 utility must be run to perform a bulk discovery on an operating system other than the one where the source/390 object pump initialized or the GTMAOPE0 utility must be run prior to source/390 object pump starting, then you must configure the ASIMVSIPListenerSvc service manually.

Use the configurebulkdatautility.ksh script to manually change the settings for this service. If you need to change a setting, such as the port number or log level, you can use the configurebulkdatautility.ksh script to change a setting and then you must restart the service in order to activate the change. The ASIMVSIPListenerSvc service is automatically restarted when the -r parameter is specified. Refer to the following instructions for the correct usage.

Running the configurebulkdatautility.ksh Script

Run the configurebulkdatautility.ksh script as follows:

```
sh configurebulkdatautility <options>
```

Usage:

```
sh configurebulkdatautility -a<validclient> ... | -d<validclient> ...
[-lloglevel] [-glocalcodepage] [-pport] [-r]
```

The -a <validclient> parameter specifies the IP addresses or host names of the MVS client machines where the GTMAOPE0 utility runs. You can specify more than one ValidClient.
The \texttt{-d <validclient>} parameter removes a MVS client IP address or host name representing the ValidClient. You can specify more than one ValidClient.

For the \texttt{-a} and \texttt{-d} parameters, you can obtain the ValidClient IP address or host name by running the GTMINFO program under TSO or ISPF of the operating system where GTMAOPE0 utility runs.

The \texttt{-g <localcodepage>} parameter changes the local code page value. The default value is 1252.

The \texttt{-l <loglevel>} parameter changes the log level value \([0 - 5]\). The default value is 2.

The \texttt{-p <port>} parameter changes the listening port number. If you change the port number, the TCPIP_PORT value used by the GTMAOPE0 utility must also be changed to use the same port number. The default value is 1021.

The \texttt{-r} parameter restarts the ASIMVSIPListenerSvc service.

The \texttt{-?} parameter provides usage.

Examples:

Add two ValidClients and restart the ASIMVSIPListenerSvc service:

\begin{verbatim}
sh configurebulkdatautility -a200.30.100.50 -atest.machine.T01.com -r
\end{verbatim}

Delete two ValidClients. The ASIMVSIPListenerSvc service is not restarted:

\begin{verbatim}
sh configurebulkdatautility -d200.30.100.50' -dtest.machine.T01.com
\end{verbatim}

Change log level to 0 and restart the ASIMVSIPListenerSvc service:

\begin{verbatim}
sh configurebulkdatautility -l0 -r
\end{verbatim}

Restart only the ASIMVSIPListenerSvc service:

\begin{verbatim}
sh configurebulkdatautility -r
\end{verbatim}

\section*{Configuring SQL Server Jobs}

The following SQL server jobs are used for support and discovery of various data source resources:

- \textbf{Discovery Load} — takes any Discovery Batch that is in the ENQUEUED State and loads the associated file into the SQL server database
- \textbf{Discovery Process} — performs the processing required on any Discovery Batch that is in the LOADED state

\section*{Discovery Load job}

The \texttt{CreateDiscoveryBatch.ksh} script defined in the registry moves and renames the downloaded file and assigns it a state of ENQUEUED in the \textit{DiscoveryBatch} table. This occurs each time the GTMAOPE0 utility is used to download files to the SQL server.

If a system-variable \texttt{TEMP} is not defined to the Windows operating system where this script runs, the files are moved to the WINNT directory.
Define a system-variable of TEMP.

**Note:** Automatic deletion of TEMP files is managed by a Registry setting. 

`ASIMVSIPListenerSvc/Settings Var "AutoDeleteTempFiles"` should be set to 0 to retain the TEMP files; set to 1 to enable AutoDelete.

The administrator uses SQL Enterprise Manager to define a schedule for this job. This is a polling-based job and should be run on intervals of several minutes during the course of time that is designated. If there is no Discovery Batch that is in the ENQUEUED State, the job logs a message and ends. If it does find a Discovery Batch in the ENQUEUED state and the job is successful, the Discovery Batch is marked as LOADED. A failure causes the Discovery Batch to be selected as being in the LOAD ERROR state.

**Discovery Process job**

The Discovery Process job performs the processing required on any Discovery Batch that is in the LOADED state. Similar to the Discovery Load job, the administrator does have to define a schedule for this job. When a Discovery Batch is processed, it can place significant load on the database. Therefore, if possible, the job should be scheduled for low-activity periods.

It is required that the Discovery Load job runs first and is successful before starting the Discovery Process job.

For further details on how to run SQL server jobs, refer to the appropriate version of the SQL server documentation from Microsoft.

The Discovery Load and Discovery Process jobs are prefixed with the specific data source that relates to it for all configurations. For example, DB2 Discovery Load and DB2 Discovery Process.
Chapter 9. Installing and Configuring Data Sources

This chapter includes the following topics:

- “Configuring Tivoli NetView for OS/390”
- “IMS” on page 106
- “DB2 Universal Database for z/OS and OS/390 and DB2 Performance Monitor” on page 115
- “Automation” on page 122
- “Job Schedulers” on page 128
- “OMEGAMON II for MVS, CICS, DB2 and IMS” on page 147
- “Resource Management Facility” on page 150
- “CICSPlex System Manager” on page 151
- “Tivoli NetView for OS/390 RODM” on page 158
- “Storage Management” on page 161
- “ASG–TMON for CICS” on page 166
- “ASG–TMON for DB2” on page 167
- “ASG-TMON for MVS” on page 169
- “MAINVIEW for CICS” on page 172
- “MAINVIEW for DB2” on page 173
- “MAINVIEW for OS/390” on page 174
- “MAINVIEW for IMS” on page 175
- “WebSphere for OS/390” on page 176

### Configuring Tivoli NetView for OS/390

Some Tivoli Business Systems Manager data sources operate within a NetView for OS/390 started task. This section describes the installation and customization steps required for this started task.

The data sources that use Tivoli NetView for OS/390 are the following:

- System Automation for OS/390
- CICSPlex® Systems Manager for OS/390
- DB2 and DB2 Performance Monitor
- IMS
- BMC Software MAINVIEW for OS/390, CICS, DB2, and IMS
- ASG-TMON for CICS, DB2, and MVS
- Tivoli NetView for OS/390 RODM

For Tivoli NetView for OS/390 configuration details for specific data sources, please refer to the various data source sections in this guide.

Note that the source/390 address spaces (Pump, Server and Dataspace) are still required, even if a Tivoli Business Systems Manager data source runs within NetView for OS/390.
Table 44. NetView Installation Overview

<table>
<thead>
<tr>
<th>Step Overview</th>
</tr>
</thead>
<tbody>
<tr>
<td>&quot;1. Install Tivoli Business Systems Manager Components&quot;</td>
</tr>
<tr>
<td>&quot;2. Determine NetView for OS/390 Started Tasks to be Used&quot;</td>
</tr>
</tbody>
</table>

| 3. Customize every NetView for OS/390 Started Task on page 97 |
| "a. Update NetView for OS/390 Started Task JCL" on page 97 |
| "b. Configure NetView Parameter Members" on page 97 |
| "c. Modify Security Settings for NetView" on page 100 |
| "d. Define Program to Program Interface Connection" on page 101 |
| "e. Define NETCONV Link" on page 101 |
| "f. Review Tuning Considerations for NetView for OS/390" on page 101 |

| 4. Perform Data Source-specific Customization on page 102 |
| "a. IMS Data Source" on page 103 |
| "b. DB2 Data Source" on page 103 |
| "c. DB2 PM Data Source" on page 103 |
| "d. MainView Data Sources" on page 103 |
| "e. ASG-TMON Data Sources" on page 104 |
| "f. CICSPlex/SM Data Source" on page 104 |
| "g. Systems Automation V2.1 Data Source" on page 104 |
| "h. Coexistence Issues with SA and CICSPlex/SM Data Sources" on page 105 |

| 5. Start NetView for OS/390 on page 106 |

| 6. Continue with Data Source Installation and Customization Steps on page 106 |

1. Install Tivoli Business Systems Manager Components

You must install the Tivoli Business Systems Manager REXX executables, samples, messages, and sample members. These data sets are installed as part of the SMP/E installation of the program. Installation instructions can be found in the Program Directory for Tivoli Business Systems Manager.

2. Determine NetView for OS/390 Started Tasks to be Used

Depending on site configuration, there can be more than one NetView started task running on each z/OS system, for example, one for network management and one for systems automation.

Ideally, the Tivoli Business Systems Manager data sources that run under NetView for OS/390 would all be loaded within a single NetView for OS/390 started task on each z/OS system from which resources are to be monitored. This could be an existing NetView for OS/390 started task or one that may be dedicated to Tivoli Business Systems Manager.

Under some circumstances, specific data sources might influence the choice of which NetView started task is to host the Tivoli Business Systems Manager data sources:

- The Tivoli Business Systems Manager System Automation for OS/390 V2.1 data source must run on the same NetView started task as the System Automation for OS/390 program (referred to as a systems automation NetView).

This restriction exists because the data source registers as an SA Status Observer.
3. Customize every NetView for OS/390 Started Task

For every NetView started task running Tivoli Business Systems Manager, perform the following customization tasks:

a. Update NetView for OS/390 Started Task JCL

Add the Tivoli Business Systems Manager libraries shown in the following table to the specified DD concatenations within the Tivoli NetView for OS/390 started task:

<table>
<thead>
<tr>
<th>Procedure DD concatenation</th>
<th>Tivoli Business Systems Manager Library</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>STEPLIB</td>
<td>tbsmhlq.SGTMMODS</td>
<td>Tivoli Business Systems Manager modules</td>
</tr>
<tr>
<td>DSICLD</td>
<td>tbsmhlq.SGTMEXEC</td>
<td>Tivoli Business Systems Manager REXX execs</td>
</tr>
<tr>
<td>DSIPARM</td>
<td>tbsmhlq.SGTMSAMP</td>
<td>Tivoli Business Systems Manager sample members</td>
</tr>
<tr>
<td>DSIMSG</td>
<td>tbsmhlq.SGTMMSGS</td>
<td>Tivoli Business Systems Manager message files</td>
</tr>
<tr>
<td>CNMPNL1</td>
<td>tbsmhlq.SGTMPNL1</td>
<td>Tivoli Business Systems Manager message help files</td>
</tr>
</tbody>
</table>

b. Configure NetView Parameter Members

Customization for the Tivoli Business Systems Manager application consists of two major phases:

- **Table 46 on page 98** through **Table 48 on page 99** describe the generic changes to NetView parameter members to enable support for Tivoli Business Systems Manager within a NetView started task.

- **Table 49 on page 103** through **Table 55 on page 104** describe more specific changes to NetView parameter members to activate (or deactivate) support for individual Tivoli Business Systems Manager data sources within a NetView started task.
If Step "2. Determine NetView for OS/390 Started Tasks to be Used" on page 96 or other site considerations have determined that your Tivoli Business Systems Manager data sources will be running on multiple NetView started tasks on any z/OS system, then Table 56 on page 105 must also be referenced when configuring NetView parameter members.

Some of the customization steps are dependent on the release of NetView that is in use for any particular NetView started task, as well as on site conventions and configuration.

The SGTMSAMP library was added to the DSIPARM DD concatenation as referred to in Table 45 on page 97. The DSIPARM library is supplied with the NetView for OS/390 program.

Table 46. Customization steps for NetView V1.3

<table>
<thead>
<tr>
<th>DSIPARM Members</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>DSIDMNK</td>
<td>%INCLUDE IHS$MAT in the MAT specified in DSIDMNK. Ensure that MVSPARM MVSIFAC=CMDONLY is not specified; the NetView must be able to receive unsolicited messages.</td>
</tr>
<tr>
<td>DSIDMNB</td>
<td>Optional. Ensure that the PPI receiver task name matches the name used by the CICSpix/SM program.</td>
</tr>
<tr>
<td>DSIOPFU</td>
<td>%INCLUDE IHS$OPF in the DSIOPFU member</td>
</tr>
<tr>
<td>DSICMDU</td>
<td>%INCLUDE IHS$CMD in the DSICMDU member</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>SGTMSAMP Members</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>IHS$DISC</td>
<td>Review and customize</td>
</tr>
<tr>
<td>IHS$EXCL</td>
<td>Review and customize</td>
</tr>
<tr>
<td>IHS$PARAM</td>
<td>Review and customize</td>
</tr>
<tr>
<td>DSIICLD members</td>
<td></td>
</tr>
<tr>
<td>CNME1034</td>
<td>Optional. Specify: DEFAULTS AUTOLOGN=YES</td>
</tr>
</tbody>
</table>

Table 47. Customization steps for NetView V1.4

<table>
<thead>
<tr>
<th>DSIPARM Members</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>CxxSTYLE</td>
<td>AUTOCMD.IHS$MAT.ORDER = statement in STYLE sheet. Ensure that MVSPARM MVSIFAC=CMDONLY is not specified; the NetView must be able to receive unsolicited messages. Optional. Specify: DEFAULTS AUTOLOGN=YES. Optional. Ensure that a PPI receiver task name matches the name used by the CICSpix/SM program.</td>
</tr>
<tr>
<td>DSIOPFU</td>
<td>%INCLUDE IHS$OPF in the DSIOPFU member</td>
</tr>
<tr>
<td>DSICMDU</td>
<td>%INCLUDE IHS$CMD in the DSICMDU member</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>SGTMSAMP Members</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>IHS$DISC</td>
<td>Review and customize</td>
</tr>
<tr>
<td>IHS$EXCL</td>
<td>Review and customize</td>
</tr>
<tr>
<td>IHS$PARAM</td>
<td>Review and customize</td>
</tr>
</tbody>
</table>
Table 48. Customization steps for NetView V5.1 and higher

<table>
<thead>
<tr>
<th>DSIPARM Members</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>C.xxSTYLE</td>
<td>AUTOCMD.IHS$MAT.ORDER = statement in STYLE sheet.</td>
</tr>
<tr>
<td></td>
<td>Ensure that MVSPARM MVSIFAC=CMDONLY is not specified; the NetView must be able to receive unsolicited messages.</td>
</tr>
<tr>
<td></td>
<td>Optional. Specify: DEFAULTS AUTOLOGN=YES.</td>
</tr>
<tr>
<td></td>
<td>Optional. Ensure that a PPI receiver task name matches the name used by the CICSPlex/SM program.</td>
</tr>
<tr>
<td>DSIOPFU</td>
<td>%INCLUDE IHS$OPF in the DSIOPFU member</td>
</tr>
<tr>
<td>DSIICMDU</td>
<td>%INCLUDE IHS$CMD in the DSIICMDU member</td>
</tr>
<tr>
<td>CNMSCALL1</td>
<td>%INCLUDE IHS$CAT2 in the CNMSCALL1 member</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>SGTMSAMP Members</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>IHS$DISC</td>
<td>Review and customize</td>
</tr>
<tr>
<td>IHS$EXCL</td>
<td>Review and customize</td>
</tr>
<tr>
<td>IHS$PARAM</td>
<td>Review and customize</td>
</tr>
</tbody>
</table>

Review and configure the following members defining the NetView operation:

- **Automation Table Member** (For NetView v1.3): Insert the following line at the beginning of the active Message Automation table (MAT) source:

  ```
  %INCLUDE IHS$MAT
  ```

  This defines the Tivoli Business Systems Manager Message Automation Tables to the NetView program. (The Tivoli NetView for OS/390 command AUTOTBL STATUS lists the active Message Automation tables.)

- **Automation Table Member** (For NetView v1.4 and above): With NetView v1.4 and above, the active Message Automation tables (MAT) are specified in the CNMSTYLE member of DSIPARM. You can have more than one MAT entry specified. Insert the following line in the section on Automation tables:

  ```
  AUTOCMD.IHS$MAT.ORDER
  ```

  This defines the Tivoli Business Systems Manager Message Automation Tables to the NetView program.

- **IHS$MAT** As supplied by Tivoli Business Systems Manager, the SGTMSAMP member IHS$MAT (included in the NetView MAT in previous steps) enables message traps for all Tivoli Business Systems Manager IMS, DB2, CICSPlex Systems Manager for OS/390, BMC MAINVIEW, ASG-TMON and System Automation for OS/390 data sources. If you do not use one or more of these data sources, comment out the corresponding %INCLUDE statement. This will reduce Tivoli Business Systems Manager processing overhead.

- **DSICMDU** This is a NetView member that can be tailored by customers. If you do not have a site-customized copy of this member, you can use the sample member supplied by Tivoli NetView for OS/390. Insert the following line in DSICMDU:

  ```
  %INCLUDE IHS$CMD
  ```

  This defines the Tivoli Business Systems Manager commands to NetView.
• **DSIOPFU** This is a NetView member that can be tailored by customers. If you do not have a site-customized copy of this member, you can use the sample member supplied by Tivoli NetView for OS/390.

Insert the following line in DSIOPFU:

```
%INCLUDE IHS$OPF
```

This defines the Tivoli Business Systems Manager auto-operators to NetView.

• **IHS$PARM** The IHS$PARM member contains various tuning parameters used by the Tivoli Business Systems Manager data sources that run within the NetView program. The IHS$PARM member is shipped in the Tivoli Business Systems Manager SGTMSAMP data set, and read at NetView startup. Refer to the IHS$PARM member for details on each parameter. Review each parameter.

• **IHS$DISC** This SGTMSAMP member contains a template JCL member that sends bulk discovery records to the Tivoli Business Systems Manager distributed server through the GTMAOPE0 utility. This job is used by the following data sources:
  - DB2
  - IMS
  - System Automation for OS/390, Version 2.1

If using any of these data sources, customize this JCL as appropriate. This sample member holds more information on the IHS$DISC batch job, or refer to "Bulk Discovery" on page 90.

• **IHS$EXCL** This SGTMSAMP member contains exclude rules for the Tivoli Business Systems Manager IMS and DB2 data sources. If using either of these data sources, review and modify this member as appropriate.

• **Defaults Setting** If using right-click commands to be issued from the Graphical User Interface (GUI) (used by IMS, DB2 and SA data sources), and AUTOLOGN is set to NO, the following command will need to be issued at NetView for OS/390 startup:

```
DEFAULTS AUTOLOGN=YES
```

Use the NetView for OS/390 command LIST DEFAULTS to find out the value of AUTOLOGN.

### c. Modify Security Settings for NetView

Use the following steps to modify the security settings for NetView:

1. Define the user ID IHSAUT01 to your security software.

2. If the **OPERSEC=SAFCHECK** or **OPERSEC=SAFDEF** parameters are being used for the NetView for OS/390 started task, then ensure the IHSAUT01 user ID has sufficient authority to perform the following:
   - Use the TCPIP FTP utility (for example, has a RACF OpenMVS segment or similar). This is required for the IHS$DISC batch job (see the SGTMSAMP member IHS$DISC for more information).
   - Execute the IHS$DISC batch job.

3. If the **OPERSEC=SAFCHECK** or **OPERSEC=SAFDEF** parameters are not being used for the NetView for OS/390 started task, then ensure the following:
   - The user ID under which the NetView for OS/390 started task runs has authority to use the TCPIP FTP utility.
   - The user ID under which the NetView for OS/390 started task runs has authority to run the IHS$DISC batch job.
4. Ensure the IHSAUT01 autotask has sufficient access to issue all NetView for OS/390 commands within NetView for OS/390. This can be achieved as follows:
   - If you are using the CMDDAUTH=SCOPE parameter for your NetView security options (only for Tivoli NetView for OS/390, Version 1.4 and earlier) ensure the IHSAUT01 autotask has an operator class of 1.
   - If you are running Tivoli NetView for OS/390, Version 5.1 or later and using the CNMSCAT2 sample for command security, insert the following line in the CNMSCAT2 sample:
     ```
     %INCLUDE THS$CAT2
     ```
   - If you are using the CMDDAUTH=SAF parameter, customize your security product to give the IHSAUT01 autotask access similar to an operator, with an operator class of 1.
   - If you are using the CMDDAUTH=TABLE parameter, customize your NetView command authorization table to give the IHSAUT01 autotask access similar to an operator with an operator class of 1.

5. Perform NetView for OS/390 customization to allow all autotasks for other Tivoli Business Systems Manager data sources running under NetView for OS/390 the same access to NetView for OS/390 commands as the IHSAUT01 autotask. The names of these autotasks are in the SGTSAMP member included in the SGTSAMP member IHS$OPF. See the Tivoli Business Systems Manager data source sections for more information on these autotasks.

d. Define Program to Program Interface Connection
   Define the program-to-program interface (PPI) link between the NetView started task and the source/390 Object Pump Receiver. For details on how to perform this configuration, see “Source/390 Object Pump Startup Parameters” on page 74 and the relevant NetView documentation.

e. Define NETCONV Link
   For the Focal Point NetView started task, a NETCONV link must be defined to the Tivoli Business Systems Manager distributed server. For details on how to perform this configuration, see “Enabling Task Server OS/390 Support” on page 215 and the relevant NetView documentation.

   **Note:** Tivoli Business Systems Manager does not use any NetView Focal Point functionality (which involves entry point NetViews sending events to a central Focal Point NetView). However, the right-click commands from Tivoli Business Systems Manager for the IMS and DB2 feeds do require a NETCONV session from one NetView to the Tivoli Business Systems Manager Task Server NT service. This NetView needs RMTCMD (LU 6.2) access to NetView on each operating system that has Tivoli Business Systems Manager feeds enabled. It is a NetView requirement that the NETCONV command can only be issued if the NetView CNMTAMEL task has a DUWisfp configuration member. This configuration member is the one that is used when the NetView is set up as a Focal Point.

f. Review Tuning Considerations for NetView for OS/390
   Review the following tuning considerations when you run the NetView program with the Tivoli Business Systems Manager data sources:
   - **NetView Started Task Region Size** The discovery process for the IMS and DB2 data sources can periodically require a large amount of private storage in the NetView address space. The amount of storage required varies, depending on the following:
- The size and number of the subsystems being discovered.
- The number of concurrent discoveries occurring.
- Whether the discoveries are FULL or PARTIAL.
- The existence of entries in the IHS$EXCL SGTMSAMP member list.

Consider changing the REGION size to 0M, or to a minimum of 256M.

Processor consumption by Tivoli Business Systems Manager auto tasks can also be significant under the same circumstances.

**IRXANCHR** The IRXANCHR table is a Time Sharing Option Extensions (TSO/E) table used to reserve storage for REXX environments. The NetView program and the TSO/E table refer to the IRXANCHR table when allocating storage for each REXX environment that are activated. Tivoli Business Systems Manager uses the REXX environment extensively. Once you activate Tivoli Business Systems Manager, review the number of REXX environments that are used and increase the number if necessary. See the *IBM NetView for z/OS Installation: Configuring Additional Components* manual for further information on how to increase the number of environments.

Tivoli Business Systems Manager contains a version of the IRXANCHR table in the SGTMMOD library that has 4000 entries. If another version of this module is being run, due to the STEPLIB or LNKLST concatenation order, then it can be customized to increase the number of entries. See "Custom Version of the IRXANCHR Table” on page 88 for more information.

**DSICTMOD** This is the NetView constants module. Issue the **QRYGLOBL** COMMON command from the command facility when you activate Tivoli Business Systems Manager, to receive output similar to:

```
BNH031I NETVIEW GLOBAL VARIABLE INFORMATION
BNH031I COMMAND ISSUED AT:06/10/02 12:28:57
BNH061I
BNH032I COMMON GLOBAL VARIABLES
BNH061I ----------------------------------------
BNH034I EXPECTED NUMBER OF VARIABLES:100
BNH035I NUMBER OF VARIABLES FOUND:13172
BNH061I
BNH037I NETVIEW GLOBAL VARIABLE INFORMATION COMPLETE
```

Compare the expected number in BNH034I with the number found in BNH035I. To increase the expected number, review the sample CNMS0055 in the NetView CNMSAMP library, the *Tivoli NetView for z/OS: Tuning Guide*, and refer to the individual data source documentation in this chapter. For example, to change the default value of 100 to a more appropriate value of 10000, define the following in CNMS0055:

```
DC F 100000 NUMBER OF COMMON GLOBAL VARIABLES
```

4. **Perform Data Source-specific Customization**

The following tables summarize the Tivoli Business Systems Manager data source specific customization steps required for NetView for OS/390. For every NetView for OS/390 region used, add data sets and review and update members as described.

The **SGTMSAMP library** was added to the DSIPARM DD concatenation as referred to in Table 45 on page 97. The DSIPARM library is supplied with the NetView for OS/390 program.

Note that the customization instructions describe how to activate each specific data source, typically by ensuring that one or more %INCLUDE statements are
executed. As supplied by Tivoli Business Systems Manager, the %INCLUDE statements for all data sources are activated. To deactivate any specific data source, ensure that the relevant %INCLUDE statements are commented out.

### a. IMS Data Source

*Table 49. Customization steps for IMS data source*

<table>
<thead>
<tr>
<th>SGTMSAMP Members</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>IHS$MAT</td>
<td>%INCLUDE IHSIMAT</td>
</tr>
<tr>
<td>IHS$OPF</td>
<td>%INCLUDE IHSIMOPR</td>
</tr>
<tr>
<td>IHS$CMD</td>
<td>%INCLUDE IHSICMD</td>
</tr>
<tr>
<td>IHS$DISC</td>
<td>Review and customize</td>
</tr>
<tr>
<td>IHS$EXCL</td>
<td>Review and customize</td>
</tr>
<tr>
<td>IHS$MPF</td>
<td>Review and customize</td>
</tr>
</tbody>
</table>

### b. DB2 Data Source

*Table 50. Customization steps for DB2 data source*

STEPLIB | DB2 SDSNLOAD must be added to the NetView STEPLIB. See [Table 59 on page 118](#) for further instructions.

<table>
<thead>
<tr>
<th>SGTMSAMP Members</th>
</tr>
</thead>
<tbody>
<tr>
<td>IHS$MAT</td>
</tr>
<tr>
<td>IHS$OPF</td>
</tr>
<tr>
<td>IHS$CMD</td>
</tr>
<tr>
<td>IHS$DISC</td>
</tr>
<tr>
<td>IHS$EXCL</td>
</tr>
<tr>
<td>IHS$MPF</td>
</tr>
</tbody>
</table>

### c. DB2 PM Data Source

*Table 51. Customization steps for DB2 Performance Monitor data source*

<table>
<thead>
<tr>
<th>SGTMSAMP Members</th>
</tr>
</thead>
<tbody>
<tr>
<td>IHS$MAT</td>
</tr>
<tr>
<td>IHS$OPF</td>
</tr>
<tr>
<td>IHSBPMTH</td>
</tr>
</tbody>
</table>

### d. MainView Data Sources

*Table 52. Customization steps for MainView data source*

**MainView for DB2**

<table>
<thead>
<tr>
<th>SGTMSAMP Members</th>
</tr>
</thead>
<tbody>
<tr>
<td>IHS$MAT</td>
</tr>
<tr>
<td>IHS$OPF</td>
</tr>
</tbody>
</table>

**MainView for IMS**

<table>
<thead>
<tr>
<th>SGTMSAMP members</th>
</tr>
</thead>
<tbody>
<tr>
<td>IHS$MAT</td>
</tr>
</tbody>
</table>
Table 52. Customization steps for MainView data source (continued)

<table>
<thead>
<tr>
<th>MainView for DB2</th>
</tr>
</thead>
<tbody>
<tr>
<td>SGTMSAMP Members</td>
</tr>
<tr>
<td>IHS$OPF</td>
</tr>
<tr>
<td>%INCLUDE IHSIMVOP</td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td>MainView for CICS</td>
</tr>
<tr>
<td>SGTMSAMP members</td>
</tr>
<tr>
<td>IHS$MAT</td>
</tr>
<tr>
<td>%INCLUDE IHSCMVAT</td>
</tr>
<tr>
<td>IHS$OPF</td>
</tr>
<tr>
<td>%INCLUDE IHSCMVOP</td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td>MainView for z/OS / MVS</td>
</tr>
<tr>
<td>SGTMSAMP members</td>
</tr>
<tr>
<td>IHS$MAT</td>
</tr>
<tr>
<td>%INCLUDE IHSZMVMA</td>
</tr>
<tr>
<td>IHS$OPF</td>
</tr>
<tr>
<td>%INCLUDE IHSZMVOP</td>
</tr>
</tbody>
</table>

e. ASG-TMON Data Sources

Table 53. Customization steps for ASG–TMON data source

<table>
<thead>
<tr>
<th>ASG-TMON for DB2</th>
</tr>
</thead>
<tbody>
<tr>
<td>SGTMSAMP Members</td>
</tr>
<tr>
<td>IHS$MAT</td>
</tr>
<tr>
<td>%INCLUDE IHSBTMAT</td>
</tr>
<tr>
<td>IHS$OPF</td>
</tr>
<tr>
<td>%INCLUDE IHSBOPR (already done in Table 50 on page 103).</td>
</tr>
<tr>
<td>ASG-TMON for CICS</td>
</tr>
<tr>
<td>SGTMSAMP members</td>
</tr>
<tr>
<td>IHS$MAT</td>
</tr>
<tr>
<td>%INCLUDE IHSCSTMAT</td>
</tr>
<tr>
<td>IHS$OPF</td>
</tr>
<tr>
<td>%INCLUDE IHSCSTMOP</td>
</tr>
<tr>
<td>ASG-TMON for z/OS / MVS</td>
</tr>
<tr>
<td>SGTMSAMP members</td>
</tr>
<tr>
<td>IHS$MAT</td>
</tr>
<tr>
<td>%INCLUDE IHSZTMIN</td>
</tr>
<tr>
<td>IHS$OPF</td>
</tr>
<tr>
<td>%INCLUDE IHSZTMIN</td>
</tr>
<tr>
<td>IHSZTMIN</td>
</tr>
<tr>
<td>Review and customize</td>
</tr>
</tbody>
</table>

f. CICSPlex/SM Data Source

Table 54. Customization steps for CICSPlex/SM data source

<table>
<thead>
<tr>
<th>SGTMSAMP Members</th>
</tr>
</thead>
<tbody>
<tr>
<td>IHS$MAT</td>
</tr>
<tr>
<td>%INCLUDE IHSCMAT1 in the IHS$MAT member</td>
</tr>
<tr>
<td>DSIOPARM members</td>
</tr>
<tr>
<td>DSIOPF/B</td>
</tr>
<tr>
<td>The CICSPlex Systems Manager for OS/390 data source requires that the AUTOAMI auto operator is defined. The definition is in the DSIOPF or DSIOPFB NetView sample.</td>
</tr>
</tbody>
</table>

g. Systems Automation V2.1 Data Source

Table 55. Customization steps for Systems Automation V2.1 data source

<table>
<thead>
<tr>
<th>SGTMSAMP Members</th>
</tr>
</thead>
<tbody>
<tr>
<td>IHS$MAT</td>
</tr>
<tr>
<td>%INCLUDE IHSSMAT</td>
</tr>
</tbody>
</table>
Table 55. Customization steps for Systems Automation V2.1 data source (continued)

<table>
<thead>
<tr>
<th>SGTMSAMP Members</th>
<th>NETVT</th>
<th>NETVS</th>
<th>NETVT</th>
</tr>
</thead>
<tbody>
<tr>
<td>IHSSOPF</td>
<td>%INCLUDE IHSSOPF</td>
<td>N/A</td>
<td>%INCLUDE IHSSOPF</td>
</tr>
<tr>
<td>IHSDISC</td>
<td>Review and customize</td>
<td>N/A</td>
<td>%INCLUDE IHSSOPF</td>
</tr>
<tr>
<td>IHSEXCL</td>
<td>Review and customize</td>
<td>N/A</td>
<td>%INCLUDE IHSSOPF</td>
</tr>
<tr>
<td>PARMPUMP</td>
<td>Review and customize</td>
<td>N/A</td>
<td>%INCLUDE IHSSOPF</td>
</tr>
</tbody>
</table>

h. Coexistence Issues with SA and CICSPlex/SM Data Sources

In Step 2. Determine NetView for OS/390 Started Tasks to be Used” on page 96, coexistence issues between the Systems Automation and CICSPlex/SM data sources were described. If these, or other site-specific issues require the use of multiple NetView started tasks, there are some fundamental principles to be followed:

1. All NetView started tasks must include the IHSSMAT, IHSSCMD, and IHSSOPF members. See Table 46 on page 98 through Table 48 on page 99.

2. The MAT for any specific Tivoli Business Systems Manager data source must only be active on one NetView started task; it must be commented out or deleted on all other NetView started tasks. See Table 49 on page 103 through Table 55 on page 104.

A sample scenario for the process is to assume that the Tivoli Business Systems Manager data sources are to be distributed among the following NetView started tasks:

- NETVN, a NetView 1.3 started task used for Network Automation and the Tivoli Business Systems Manager CICSPlex/SM data source.
- NETVS, a NetView 1.4 started task used for Systems Automation and the Tivoli Business Systems Manager Systems Automation V2.1 data source.
- NETVT, a NetView 5.1 started task, used for the remainder of the Tivoli Business Systems Manager data sources.

Table 56. Example parameter changes for multiple NetView started tasks

<table>
<thead>
<tr>
<th>DSIPARM Members</th>
<th>NETVN</th>
<th>NETVS</th>
<th>NETVT</th>
</tr>
</thead>
<tbody>
<tr>
<td>DSIDMNK</td>
<td>%INCLUDE IHSSMAT</td>
<td>N/A</td>
<td>%INCLUDE IHSSMAT</td>
</tr>
<tr>
<td>CxxSTYLE</td>
<td>N/A</td>
<td>Insert IHSSMAT 2 on page 106</td>
<td>Insert IHSSMAT 2 on page 106</td>
</tr>
<tr>
<td>CNMSCAT2</td>
<td>N/A</td>
<td>%INCLUDE IHSSCAT2</td>
<td>N/A</td>
</tr>
<tr>
<td>DSIOPF/B</td>
<td>Ensure AUTOAMI is defined</td>
<td>N/A</td>
<td>%INCLUDE IHSSCMD</td>
</tr>
<tr>
<td>DSIOPFU</td>
<td>N/A</td>
<td>%INCLUDE IHSSPF</td>
<td>%INCLUDE IHSSPF</td>
</tr>
<tr>
<td>DSIICMDU</td>
<td>%INCLUDE IHSSCMD</td>
<td>%INCLUDE IHSSCMD</td>
<td>%INCLUDE IHSSCMD</td>
</tr>
<tr>
<td>IHSSMAT</td>
<td>%INCLUDE IHSMAT1</td>
<td>%INCLUDE IHSSMAT</td>
<td>Deactivate IHSCMAT1</td>
</tr>
<tr>
<td></td>
<td>Deactivate all remaining MAT entries.</td>
<td>Deactivate all remaining MAT entries.</td>
<td>Deactivate all remaining MAT entries.</td>
</tr>
</tbody>
</table>
Table 56. Example parameter changes for multiple NetView started tasks (continued)

<table>
<thead>
<tr>
<th>DSIPARM Members</th>
<th>NETVN</th>
<th>NETVS</th>
<th>NETVT</th>
</tr>
</thead>
<tbody>
<tr>
<td>IHSSOPF</td>
<td>N/A</td>
<td>Review</td>
<td>Review</td>
</tr>
<tr>
<td>IHSSCMD</td>
<td>Review</td>
<td>Review</td>
<td>Review</td>
</tr>
</tbody>
</table>

Notes:
1. The DSIPARM member is not applicable to this version of the NetView software.
2. The IHSS MAT table is inserted at an appropriate point in the active MAT, using the following command:
   `AUTOCMD.IHSSMAT.ORDER`
3. The DSIPARM member is not applicable to this Tivoli Business Systems Manager data source.
4. The %INCLUDE statements for inactive data sources might be left in or commented out without affecting product functionality.

5. Start NetView for OS/390

To implement the above changes, each NetView for OS/390 region must be restarted.

6. Continue with Data Source Installation and Customization Steps

Once the above steps are completed, refer back to each of the individual Tivoli Business Systems Manager data source chapters to complete customization.

IMS

Use the following sections to install and configure the IMS database management program to integrate with Tivoli Business Systems Manager.

Table 57. IMS Installation Overview

<table>
<thead>
<tr>
<th>Step Overview</th>
</tr>
</thead>
<tbody>
<tr>
<td>“1. Install Tivoli Business Systems Manager for IMS Components” on page 107</td>
</tr>
<tr>
<td>“2. Perform IMS Region Configuration for IMS Regions” on page 107</td>
</tr>
<tr>
<td>“a. Install IMS AO Exit” on page 107</td>
</tr>
<tr>
<td>“b. Modify IMS Setup” on page 110</td>
</tr>
<tr>
<td>“i. Enable OTMA” on page 110</td>
</tr>
<tr>
<td>“ii. Configure IMS Security Parameters” on page 110</td>
</tr>
</tbody>
</table>
### Table 57. IMS Installation Overview (continued)

<table>
<thead>
<tr>
<th>Step Overview</th>
</tr>
</thead>
<tbody>
<tr>
<td>“3. Perform Initial Discovery (optional)” on page 111</td>
</tr>
<tr>
<td>This step can be performed before Step 2, if required.</td>
</tr>
<tr>
<td>“a. Review Initial Discovery Requirements” on page 111</td>
</tr>
<tr>
<td>“b. Set Up a Sysplex Business System View” on page 111</td>
</tr>
<tr>
<td>“c. Customize and Run IHSIPJCL (optional)” on page 111</td>
</tr>
<tr>
<td>“i. Review IHSIPJCL Requirements” on page 112</td>
</tr>
<tr>
<td>“ii. Convert OPERLOG to SYSLOG Format (optional)” on page 112</td>
</tr>
<tr>
<td>“iii. Customize and Run IHSIPJCL” on page 112</td>
</tr>
<tr>
<td>“d. Customize and Run IHSIIJCL” on page 113</td>
</tr>
<tr>
<td>“i. Update Sample IHSIDATA Member (optional)” on page 113</td>
</tr>
<tr>
<td>“ii. Customize and Run IHSIIJCL” on page 113</td>
</tr>
<tr>
<td>“e. Transfer Discovery File to Windows NT Environment” on page 113</td>
</tr>
<tr>
<td>“4. Configure NetView Components” on page 113</td>
</tr>
<tr>
<td>“a. Configure NetView for OS/390” on page 113</td>
</tr>
<tr>
<td>“5. Configure z/OS Components (optional)” on page 113</td>
</tr>
<tr>
<td>“a. Install IHS$MPF exit” on page 113. Benefit if running IMS DBCTL regions.</td>
</tr>
<tr>
<td>“6. Modify Tivoli Business Systems Manager Windows Settings” on page 114</td>
</tr>
<tr>
<td>“a. Configure SQL Server Jobs” on page 114</td>
</tr>
<tr>
<td>“7. Start NetView for OS/390” on page 114</td>
</tr>
<tr>
<td>“8. Verify Installation” on page 114</td>
</tr>
<tr>
<td>“a. Verify IMS Rediscovery” on page 114</td>
</tr>
<tr>
<td>“b. Verify IMS Event Monitoring” on page 114</td>
</tr>
<tr>
<td>“c. Verify Poll Monitors” on page 114</td>
</tr>
<tr>
<td>“d. Verify Console Commands” on page 114</td>
</tr>
<tr>
<td>“9. Disable IHSMSG Logging” on page 115</td>
</tr>
</tbody>
</table>

### 1. Install Tivoli Business Systems Manager for IMS Components

You must install the IMS REXX executables, messages, and sample members. These data sets are installed as part of the SMP/E installation of the product. Installation instructions can be found in the Program Directory for Tivoli Business Systems Manager.

### 2. Perform IMS Region Configuration for IMS Regions

The following configuration steps will be required for every IMS control region that you want to monitor using Tivoli Business Systems Manager.

#### a. Install IMS AO Exit

Many messages issued by IMS that are required for Tivoli Business Systems Manager monitoring are only issued to the IMS Master Terminal (MTO). In order to monitor these messages, Tivoli Business Systems Manager requires that they be displayed in the z/OS syslog, and accomplishes this by using an IMS AO type 2 exit (IHSIAOE0) that is installed in every IMS region.

i. **Determine if IMS Controller Exit (IHSIAOEC) is Required:** If you already have an IMS AO type 2 exit in use, you can install the optional Tivoli Business
Systems Manager for IMS controller exit (IHSIAOEC). This exit enables up to four other IMS AO type 2 exits to coexist with the IHSIAOE0 exit.

**ii. Determine Coexistence Issues with Third Party Products:** The following exit configurations are used when coexisting with certain third party products. All references to AO exits are related to Type 2 AO exits only.

*Coexisting with BMC MAINVIEW for IMS:* The MAINVIEW for IMS (previously IMF) product provides a method of linking AO exits so that multiple exits can coexist. However, the MAINVIEW for IMS AO exit, when calling the next AO exit, does not provide the first initialization call, which is expected for a Type 2 AO exit.

This lack of an initialization call breaks the Tivoli Business Manager AO exits because they use this first call to allocate storage and load tables. Because of this restriction, do not use this function of MAINVIEW for IMS. Use the IHSIAOEC controller exit to provide the exit stacking function.

Perform the following configuration steps:

1. Install the IHSIAOEC exit as described in step “iii. If IMS Controller Exit is Required, Install IHSIAOEC” on page 109.

2. The MAINVIEW for IMS BBLINK data set contains the DFSAOE00 load module. The main module CSECT is called IBAOE00. This load module must be renamed (for example, IBAOE00), or a rename alias of IBAOE00 can be assigned, provided that the BBLINK data set is allocated after the load library that contains the IHSIAOEC exit. This action is required so that when IMS loads the DFSAOE00 exit, it loads the IHSIAOEC exit.

3. Modify the IHSIAOEE exit control table (described in step “iii. If IMS Controller Exit is Required, Install IHSIAOEC” on page 109) so that IHSIAOEC drives both IHSIAOE0 and the MAINVIEW for IMS IBAOE00 exits. Set the flag so that the MAINVIEW for IMS IBAOE00 exit has control over the reply value to be returned to IMS:

   D C X'00',CL8'IHSIAOE0'
   D C X'00',CL8'IBAOE00'

4. Install the IHSIAOE0 exit to coexist with the IHSIAOEC controller exit.

*Coexisting with CA-OPS/MVS II:* The CA-OPS/MVS II program has an optional feature called IMS Operations Facility (IOF), which dynamically inserts an AO exit into an IMS when IMS is started. The AO exits are displayed as OPIMAOEH and perform a controlling function.

The OPIMAOEH AO exit is inserted between IMS and the standard AO exit DFSAOE00, from where it performs the functions required by IOF, which drives another AO exit OPSAOE00, and then calls DFSAOE00. This enables the coexistence of the IOF AO exit with another AO exit.

If CA-OPS/MVS II and Tivoli Business Systems Manager are the only two products to have AO exits that need to coexist, then the Controller exit (IHSIAOEC) does not need to be installed. Install the Tivoli Business Systems Manager Exit IHSIAOEC0 as described in “v. Install the IMS AO Exit IHSIAOE0” on page 109.

If there are additional AO exits other than those supplied by CA-OPS/MVS II and Tivoli Business Systems Manager to be installed, perform the following steps:

1. Install IHSIAOEC as described in this section. However modify the IHSIAOEE exit control table so that IHSIAOEC is driving IHSIAOE0 first, followed by the
additional AO exits. Set the flag so that one of the additional AO exits has control over the reply value to be returned to IMS. For example:

```
DC X'00',CLB'IHSIAOE0'
DC X'00',CLB'DFSAOE01'
DC X'80',CLB'DFSAOE99'
```

The IOF AO exits OPIMAOEH and OPSAOE00 do not need to be in the IHSIAOE0 exit control table as these exits are run prior to IHSIAOEC being started.

2. Install the IHSIAOE0 exit to coexist with the IHSIAOEC controller exit, as described in this section.

iii. If IMS Controller Exit is Required, Install IHSIAOEC:

1. Determine the order of all IMS AO type 2 exits. The Tivoli Business Systems Manager exit IHSIAOE0 can be the first called (and it is recommended that it is the first one called), followed by other exits in an order determined by the administrator. The IHSIAOE0 exit does not suppress or modify any messages, and the next exit called by IHSIAOEC will see all messages originally passed to the IHSIAOE0 exit.

2. Determine if the exit reply flag is returned to IMS. Only one exit can have its reply value (passed back in field AOE0RPLY) returned to IMS. The IHSIAOE0 exit does not require this field.

3. Update the IHSIAOEE member in the SGTMSAMP library as described in the member to indicate the IMS AO exits, their order, and whether their reply value is passed back to IMS.

4. Configure and submit the IHSIAOE0 job supplied in the SGTMSAMP library to assemble and link-edit the IHSIAOEE table.

5. Configure and submit the IHSIAOCJ job to assemble and link-edit the controller exit IHSIAOEC, using the instructions provided in the member.

iv. Link-Edit the IHSIAOMT Table: Configure and submit the IHSIAOML job supplied in the SGTMSAMP library. This link-edits the table of IMS messages that will be echoed to the z/OS syslog by the AO exit IHSIAOE0. This table can be modified if required; however it is recommended that this table not be changed.

v. Install the IMS AO Exit IHSIAOE0: Configure and submit the IHSIAO0J job supplied in the SGTMSAMP library. Note that if the IHSIAOEC controller exit is being used, the ALIAS DFSAOE00 link-edit statement must be removed (so as to not replace the alias DFSAOE00 pointing to the IHSIAOEC controller exit).

vi. Verify the AO Exit Installation: Once the Tivoli Business Systems Manager IMS AO Exits have been installed, check for the following messages within the syslog of the IMS region on startup that indicate a successful installation:

```
IHS3631I SUCCESSFULLY LOADED EXIT IHSIAOE0
IHS3701I AO EXIT IHSIAOE0 INITIALIZED FOR IMS version type SYSTEM
IHS3711I SUCCESSFULLY LOADED MESSAGE TABLE IHSIAOEM
```

In addition, if you have installed the IHSIAOEC exit, the following messages indicate a successful installation:

```
IHS3601I AO CONTROLLER EXIT IHSIAOEC INITIALIZED FOR IMS version type SYSTEM
IHS3611I SUCCESSFULLY LOADED EXIT CONTROL TABLE IHSIADEE
```
b. Modify IMS Setup

i. Enable OTMA: For TM/DB and DCCTL IMS regions, Tivoli Business Systems Manager uses the OTMA Callable Interface to issue IMS commands. If the OTMA and OTMA Command Interface have not been enabled, perform the following steps:

1. In the IMS startup parameter member (DFSPBxxx) or in the override parameters on IMS startup, specify the following parameters and restart IMS:

   OTMA=Y,
   GRNAME=OTMA XCF Groupname
   OTMANM=IMS_XCF_Membername (Optional. If not specified, the IMS APPLID is used.)

2. Install and enable the OTMA command interface. Refer to the *IMS OTMA Guide and Reference* (IMS V6R1 and IMS V7R1) or the *IMS Open Transaction Manager Access Guide* (IMS V8R1) for more information. This usually includes running the DFSYSV10 OTMA stand-alone program immediately after every z/OS IPL.

   **Note:** The DFSYSVIO program must run before monitoring of any IMS region can commence and should be executed before the startup of the Tivoli NetView for z/OS region operating Tivoli Business Systems Manager. Refer to the OTMA Callable Interface section in the *IMS OTMA Guide and Reference* or *IMS Open Transaction Manager Access Guide* for more information.

ii. Configure IMS Security Parameters: Configure your security software to enable the following access:

- The IMS integration uses the NetView operators IHSIAUT0, IHSIAUT1, IHSIAUT2, and IHSIAUT3. You will require user IDs of the same name to be defined to your security software.

- The NetView program issues commands using the OTMA Command Interface. If you want to secure the OTMA interface using the RACF IMSXCF,group,member FACILITY class member, then a generic definition IMSXCF,group.IHSI* (where group is the XCF group name used for OTMA communication) must be defined for the IMS integration to have sufficient access.

- The following security access must be defined to the user ID under which the NetView region runs, and the user IDs IHSIAUT0, IHSIAUT1, IHSIAUT2, and IHSIAUT3:

  - Access to issue all IMS display commands through the OTMA interface for TM/DB and DCCTL regions, and for the MCS interface for DBCTL regions. To enable the OTMA interface access, set the IMS startup parameter OTMASE=F (full security) and tailor your security product to have access to IMS display commands. If OTMASE=N (none), then the IMS default is to NOT allow OTMA access to IMS display commands. In this case, a user-written command exit (DFSCCMD0) will be required to allow this access.

  - Access to allocate temporary data sets.

  - READ access to all IMS ACBLIB, MODBLKS, STEPLIB, and PROCLIB data sets.

  - If you are securing the interface OTMA and have defined READ access to the IMSXCF,group.IHSI* RACF profile.

  - CONTROL access to the RECON data sets (to run the DSPURX00 utility).

  - Access to run the DBRC utility DSPURX00.

- The user ID IHSIAUT01 must be defined to your security product and will require access to TCP/IP FTP (this requires an Open MVS RACF segment or similar).
• The user ID under which the NetView region runs, and the IHSAUT01 user ID, will require access to submit batch jobs.

• Any users that want to use the Tivoli Business Systems Console to display IMS resources and status will require access to OTMA/MCS for the target IMS region, and to IMS display commands similar to that mentioned for the IHSAUT* user IDs above.

3. Perform Initial Discovery (optional)

Initial Discovery enables IMS subsystems and their subcomponents to be discovered and viewed on the console before installing Tivoli Business Systems Manager on an OS/390 image. This is done by running batch jobs (possibly on a separate OS/390 image) against information obtained from the OS/390 images. This process discovers IMS control regions (including programs, transactions and databases, esaf connections, and IMS logs), dependant regions (for example, BMPs, MPPs, IFPs), FDBR regions, IMS Connect regions, IRLM regions, and CQS regions.

Initial discovery is an optional step and is not required for regular Tivoli Business Systems Manager monitoring of IMS and related regions. If initial discovery is not run, all IMS and related regions are automatically discovered the first time Tivoli NetView for OS/390 is started. When this occurs, you can create business systems.

**Note:** Run a separate initial discovery job suite for every OS/390 system you want to manage.

a. Review Initial Discovery Requirements

To successfully run the initial discovery jobs, the following requirements must be met:

• The IMS startup job JCL member cannot be overridden when IMS is started.

• The IMS job STEPLIB DD data sets cannot be in the OS/390 linklist.

• The IMS database areas and logs must be dynamically allocated.

• The IMS startup parameter in DFSPBxx for every IMS requires OTMA=Y, GRNAME=OTMA_xcf_grpname. Also, if the OTMANM parameter is not specified, the default value is the IMS control region VTAM APPLID (not required for DBCTL region).

• If you are running initial discovery on a different OS/390 system; for HALDB database partitions to be discovered, the IMS SVC routines present on the OS/390 image where the IMS region runs must be present (with the same SVC number) on the system where initial discovery is running.

b. Set Up a Sysplex Business System View

If not already done, set up a Sysplex business system view for your sysplex containing the OS/390 operating system for which the initial discover is to be run. Refer to the *IBM Tivoli Business Systems Manager: Administrator’s Guide* for more information about creating a Sysplex business system view.

c. Customize and Run IHSIPJCL (optional)

The IHSIPJCL job is an optional job that analyzes the following:

• The OS/390 system log.

• The data sets holding the IMS Control Region, IMS Connect, and DBRC region JCL members.

• The IMS Control Region STEPLIB DD concatenation data sets.
The IHSIPJCL job produces a data file that can be used by the IHSIIJCL job described in “d. Customize and Run IHSIIJCL” on page 113. However, this data file can also be created manually, thereby removing the need to customize and run the IHSIPJCL job.

i. **Review IHSIPJCL Requirements:** For the initial discovery to be successful, the following requirements must be met:

- The OS/390 system log must be of a standard format as specified in the OS/390 MVS system messages manual. The layout cannot be modified by any automated operations product.
- The OS/390 system log must cover the start of all IMS regions.
- If you are running JES3, the SYSLOG format must include the R=jobname message prefix.
- The operator log for JES2 and JES3 is supported through the IHSIPOPE sample job. The JES3 DLOG is not supported.
- The IMS system must run as a started task, because IHSIPJCL assumes that the IMS job name is the same as the IMS JCL member job name.
- Nested JCL member procedures are not supported.
- The following messages cannot be suppressed from the system log by the z/OS MPF facility, or an automation product:
  - CQ50020I CQS region start message
  - DFS0001 IMS generic message
  - DFS0578I IMS READ message
  - DFS0579W IMS FIND FAILED message
  - DFS3139I IMS DCCTL initialization message
  - DFS3613I IMS DBRC initialization message
  - DFS3838I IMS DBCTL (XRF) initialization message
  - DFS3839I IMS DCCTL (XRF) initialization message
  - DFS4161I FDBR region start message
  - DFS551I IMS dependant region start message
  - DFS810A IMS TM/DB initialization message
  - DFS989I IMS DBCTL initialization message
  - DFS994I IMS START message
  - DXR009I IRLM start message
  - DXR117I IRLM start message
  - HWSC000I ITOC region start message
  - IEF403I MVS job start message
  - $HASP373 JES2 Job Started (only required if JES2 is installed)
- The system log must cover the start of all IMS and related regions (usually, a system log covering the entire system startup is taken).

ii. **Convert OPERLOG to SYSLOG Format (optional):** If you are using the z/OS OPERLOG format instead of the SYSLOG format, customize and run the IHSIPOPE SGTMSAMP job to convert the OPERLOG format to the JES2 SYSLOG format. Instructions on how to customize and run the IHSIPOPE job can be found in the comments of this sample job.

iii. **Customize and Run IHSIPJCL:** Customize and run the IHSIPJCL job.
d. Customize and Run IHSIIJCL

i. Update Sample IHSIDATA Member (optional): If the IHSIPJCL job has not been run, then update the sample IHSIDATA member as described in the comments within the member.

ii. Customize and Run IHSIIJCL: Customize and run the IHSIIJCL job.

e. Transfer Discovery File to Windows NT Environment

Use one of the following methods to transfer the discovery file:

i. Customize and submit sample job IHSIDJCL: If initial discovery is being run on an OS/390 image with TCP/IP access to the Windows NT environment, then customize and submit the IHSIDJCL job to transfer the discovery file. See “Configuring the ASIMVSISPLListenerSvc Service” on page 92 for further details.

ii. Manually Transfer the Discovery File: If you are not running initial discovery on an OS/390 image with TCP/IP access to the Windows NT environment, perform the following:

1. Transfer the BCP file to the database server as a binary file service with no format changes. Any standard file transfer method can be used.

2. From a Windows operating system command prompt on the Microsoft Windows 2000 SQL Server Enterprise Edition, issue the following command:
   ```sh
   sh CreateDiscoveryBatch.ksh -F18 -A1 -C37 file_path
   ```

   The `file_path` is the full file path, including drive and directory, of the downloaded data set. For example, `c:\temp\ims.bcp`. The Windows operating system configuration must be completed before a batch job on the Windows operating system can be scheduled to load the BCP file into the database server.

4. Configure NetView Components

Tivoli Business Systems Manager for IMS runs within a NetView started task. This section details customization necessary for this started task.

a. Configure NetView for OS/390

Complete all steps in “Configuring Tivoli NetView for OS/390” on page 95.

5. Configure z/OS Components (optional)

a. Install IHS$MPF exit

Tivoli Business Systems Manager for IMS uses the MCS interface to issue commands to IMS DBCTL regions. Output from these commands is displayed in the NetView for z/OS syslog, which can flood the syslog for large DBCTL regions. If you are using large DBCTL regions, you can install the sample IHS$MPF exit to prevent this output from being displayed in the NetView for z/OS syslog.

To install the sample IHS$MPF exit:

1. Review the sample IHS$MPF exit in the SGTMSAMP library.

2. Modify and submit the job in SGTMSAMP member to assemble and linkedit the IHS$MPF exit.

3. Modify the MPFLSTxx member of the z/OS sys1.parmlib to implement this exit (refer to the z/OS MVS Initialization and Tuning Reference for more information about sys1.parmlib).
Note: The IHS$MPF member in the SGTMSAMP library contains more detailed instructions on assembling this exit. If you are not running IMS DBCTL regions, you receive no benefit from installing this exit.

6. Modify Tivoli Business Systems Manager Windows Settings

a. Configure SQL Server Jobs
   The following SQL server jobs are used for support and discovery of IMS resources:
   • IMS Discovery Load
   • IMS Discovery Process
   For details on the configuration of these jobs, see “Bulk Discovery” on page 90.

7. Start NetView for OS/390
   When all customization steps are complete, NetView for OS/390 will need to be restarted. If this is the first time NetView has started with Tivoli Business Systems Manager for IMS installed, it will automatically detect and rediscover all IMS and related regions.

8. Verify Installation

a. Verify IMS Rediscovery
   • View the Tivoli Business Systems Manager console and confirm all IMS systems currently running are present. Check that all Dependant regions and other IMS resources (including IMS OLDS and WADS) are present and correct.
   • View the Tivoli Business Systems Manager console and confirm all IMS related regions (for example, CQS, IRLM, FDBR, and IMS Connect) are present.

b. Verify IMS Event Monitoring
   • Shut down an IMS system or related region. Confirm that the status of that region on the Tivoli Business Systems Manager console changes correctly.
   • Shut down an IMS dependant region and confirm the status change on the Tivoli Business Systems Manager console. Restart the IMS dependant region. This checks that the IMS AO exit is trapping messages correctly.

c. Verify Poll Monitors
   Stop a program for an IMS region. Wait for the time specified in the IHS$PARM IHS$PFMINT parameter. Confirm the status change on the Tivoli Business Systems Manager console for that program.

d. Verify Console Commands
   Attempt to perform an IMS command from the Tivoli Business Systems Manager console and confirm it is correct.

Note: If any issues have resulted from the previous steps, issue either of the following commands in NetView:

   IHS$DEBUG SHOW
   IHS$DEBUG SHOW > netview.temp.ihs$debug

   The outdsn file will be allocated if it does not already exist. NetView must have RACF write access. This will collect data about the DB2 feed in NetView and the data will be written to the NetView log. Save the NetView log for Customer Support when reporting the issues.
9. Disable IHSMSG Logging

The IHS$PARM IHS_DEBUG.IHSMSG parameter is set to ON as the default value. This will result in all Tivoli Business Systems Manager events being logged to the NetView netlog.

When installation has been completed and verified, the IHS_DEBUG.IHSMSG parameter in the IHS$PARM member should be modified to a value of OFF.

DB2 Universal Database for z/OS and OS/390 and DB2 Performance Monitor

Use the following sections to install and configure the DB2 database management product to integrate with Tivoli Business Systems Manager.

Table 58. DB2 Installation Overview

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1. Install Tivoli Business Systems Manager for DB2 components

You must have installed the DB2 programs, REXX executables, messages, and sample members. These elements were installed as part of the SMP/E installation of the product. Installation instructions can be found in the Program Directory for Tivoli Business Systems Manager.

2. Confirm z/OS security configuration

The DSNR resource class controls access to DB2 subsystems. If this class is enabled, then for each DB2 subsystem to be monitored there needs to be a db2id.BATCH resource profile defined. This resource profile enables an access level of READ for each user ID that can be presented by the NetView.
If **OPERSEC=SAFCHECK** or **OPERSEC=SAFDEF** is defined in the NetView program, then the AutoTask user IDs for Tivoli Business Systems Manager named IHSBAT00 - IHSBAT09 must be defined to the OS/390 security product. If the AutoTask user ID defined to the OS/390 Security Server belongs to a GROUP, then this GROUP name can be given the access level of READ instead of the user ID.

The IHSAUT01 user ID must be defined to your security product and will require access to TCP/IP FTP (this requires an Open MVS RACF segment or something similar).

The IHSAUT01 user ID and the user ID under which the NetView region runs will both require access to submit batch jobs.

Users that want to use the Tivoli Business Systems console to display DB2 resources and status will require authorization to issue DB2 display commands.

### 3. Perform DB2 configuration for each DB2 subsystem or data sharing group

The following configuration steps must be performed once for each standalone DB2 subsystem or once for any one DB2 subsystem that is a member of a data sharing group that you wish to monitor using Tivoli Business Systems Manager.

**Note:** The customization is only required once for each data sharing group.

**Run the IHSBTBND job from the SGTMSAMP library.**

There is documentation in the IHSBTBND job. This documentation describes specific steps to customize the JCL to meet site standards, as well as information regarding the potential need for changes to the DB2 connection exit sample, DSN3SATH.

Read the Comments section carefully and consult your system administrator and other systems personnel before running this job.

If the same DB2 subsystem or data sharing group is to be monitored from different NetView programs and these NetView programs have different NetView Started Task User IDs, then the GRANT step in the IHSBTBND job must be run separately using each of the NetView Started Task User IDs as the authid. See examples below for different scenarios.

**Example 1** – Standalone Subsystems (NetView programs with identical Started Task user IDs)
- NetView NETV1 is configured to support DB2 subsystem DB2X (NetView Started Task user ID is NV1)
- NetView NETV2 is configured to also support DB2 subsystem DB2X (NetView Started Task user ID is NV1)
- Then the IHSBTBND job must be run once from DB2X using authid of NV1.

**Example 2** – Standalone Subsystems (NetView programs with different Started Task user IDs)
- NetView NETV11 is configured to support DB2 subsystem DB5B (NetView Started Task user ID is NV11)
- NetView NETV22 is also configured to support DB2 subsystem DB5B (NetView Started Task user ID is NV22)
• Then the GRANT step in the IHSBTBND job must be run twice from DB5B.
  Once using authid of NV11 and once using authid NV22.

Example 3 – Data Sharing Subsystems (NetView programs with identical Started
Task user IDs)
• NetView NETV3 is configured to support DB2 subsystem DB6A (NetView
  Started Task user ID is NV3)
• NetView NETV4 is configured to support DB2 subsystem DB6B (NetView
  Started Task user ID is NV3)
• Then the IHSBTBND job must be run once using authid of NV3. The IHSBTBND
  job can be run either from DB6A or DB6B.

Example 4 – Data Sharing Subsystems (NetView programs with different Started
Task user IDs)
• NetView NETV33 is configured to support DB2 subsystem DB7A (NetView
  Started Task user ID is NV33)
• NetView NETV44 is configured to support DB2 subsystem DB7B (NetView
  Started Task user ID is NV44)
• Then the GRANT step in the IHSBTBND job must be run twice — once using
  authid of NV33 and another using authid NV44. The IHSBTBND job can be run
  either from DB7A or DB7B.

DB2 Security
The BIND step in the job creates a DB2 plan called IHSBSQL. Running the BIND
step requires special DB2 authorization. Check with your database administrator.

Authid (authorization ID) is a DB2 term that can describe user IDs, sign on IDs or
group IDs (depending on how a process connects to or signs on to DB2).
Irrespective of how NetView security is defined, the authid for this instrumentation
is always the NetView Started Task user ID.

If in NetView security, either OPERSEC=SAFCHECK or OPERSEC=SAFDEF is
defined and the NetView started task user ID contains eight characters, only the
first seven characters will be recognized by DB2. The eighth character is truncated.
To accommodate the eighth character, the DB2 connection exit needs to be
modified. Refer to the IHSBTBND job for more details.

If a DB2 subsystem is started in Maintenance mode, monitoring is severely
restricted. No discovery will take place and events will not be monitored

4. Configure Tivoli NetView for OS/390 Components
Tivoli Business Systems Manager for DB2 runs within a Tivoli NetView for OS/390
started task. This section details customization necessary for this started task.

a. Configure Tivoli NetView for OS/390
Complete all steps in Chapter 9, “Configuring Tivoli NetView for OS/390” on page 95.

b. Make the DB2 modules available to Tivoli NetView for OS/390
The following table lists the DB2 load library versions to specify in a STEPLIB DD
statement:
**Table 59. DB2 load library versions**

<table>
<thead>
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<th>DB2 Subsystems to be managed</th>
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<tr>
<td>Version 7.1.0 Version 6.1.0</td>
<td>Version 7.1.0</td>
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<td>a</td>
</tr>
<tr>
<td>Version 7.1.0 Version 6.1.0</td>
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<tr>
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<tr>
<td>Version 6.1.0 Version 5.1.0</td>
<td>Version 6.1.0</td>
<td>Version 5.1.0</td>
<td>b</td>
</tr>
<tr>
<td>Version 5.1.0</td>
<td>Version 5.1.0</td>
<td>Version 5.1.0</td>
<td></td>
</tr>
</tbody>
</table>

a) DB2 Universal Database for z/OS and OS/390, Version 6.1.0 must have maintenance applied, to be upwardly compatible with DB2 Universal Database for z/OS and OS/390, Version 7.1.0, as documented in informational APAR II12653.

b) DB2 Universal Database for z/OS and OS/390, Version 5.1.0 must have maintenance applied, to be upwardly compatible with DB2 Universal Database for z/OS and OS/390, Version 6.1.0, as documented in informational APAR II11442.

c. Additional steps for DB2 data sharing support

If your DB2 configuration includes multiple DB2 subsystems participating in data sharing groups, and those subsystems are to be monitored by multiple Tivoli NetView domains, then the following additional steps must be performed for those domains:

1. The domains must authorize the autotask user IDs IHSBAT00 through IHSBAT09 to issue commands to each other using the RMTCMD command.
2. For those users of the RMTCMD command, ensure that there are functioning communications links among all of the domains at all times. The communications links must be LU 6.2; IP links are not supported.

The specific process varies, depending on site configuration options and the release level or levels of Tivoli NetView for OS/390. Refer to your Tivoli NetView support staff for assistance.

5. Modify Tivoli Business Systems Manager Windows Settings

a. Configure Database Server Jobs

The following database server jobs are used for support and discovery of DB2 resources:

- DB2 Discovery Load
- DB2 Discovery Process

For details on the configuration of these jobs, see “Bulk Discovery” on page 90.

6. Perform Initial Discovery (optional)

**Set Up Sysplex Business System View**

If not already done, set up a Sysplex Business System view for your sysplex containing the OS/390 operating system for which the initial discover is to be run. Refer to the *IBM Tivoli Business Systems Manager: Administrator’s Guide* for more information about creating a Sysplex Business System view.
Customize and Run Initial Discovery Jobs

The sample jobs are found in the SGTMSAMP target library. Copy each job from the SGTMSAMP target library to a working data set, perform your configuration, and submit the job. Configure the JCL member to comply with your installation standards, as detailed in the Comments section within the JCL member.

The expected return code from each job is zero (0).

The sample jobs are:
- IHSBDSCA
- IHSBDSCB
- IHSBDSCC

To configure initial discovery:

1. The IHSBDSCA job uses REPRO to off load DB2 system catalogs from DASD to TAPE.
   DB2 system catalogs are processed in sets, where a set belongs to either a single data sharing group or a standalone DB2 subsystem (if data sharing is not in use).
   Each off load step processes the system catalogs for a single data sharing group or subsystem; a data sharing group only needs to be processed once, no matter how many DB2 subsystems participate in the group or on which OS/390 image those subsystems might run.
   The following values are required for each DB2 data sharing group or subsystem that is to be processed Consult your system administrator to obtain the correct information.
   - DSGDB2ID - data sharing group name or DB2 subsystem ID
   - VCAT - HLQ of the DB2 system catalog data sets
   Security access required is READ access to the DB2 system catalogs, and where appropriate, access to create user data sets on tape.

2. For one or more DB2 subsystems, the IHSBDSCB job uses IEBGENER to copy the unloaded DB2 system catalogs from TAPE to DASD.
   The following value is required for each DB2 subsystem that you process:
   - DSGDB2ID - data sharing group name or DB2 subsystem ID
   The space allocations for the SYSDBASE, SYSDBAUT and SYSVIEWS files need to be significantly increased (space allocations should approximate the sizes of the DB2 Catalog table spaces with identical names) for very large systems.
   Security access required is READ access to the tape data sets and ALTER access to enable the creation of user data sets on DASD.

3. The IHSBDSCC job runs the IHSBDSCO REXX program, which processes the unloaded DB2 system catalogs for a single data sharing group or subsystem. The process creates a single discovery file, which contains a record for every resource discovered. The process then downloads the file to the Tivoli Business Systems Manager server by using the GTMAOPE0 utility. Run this job once for each DB2 data sharing group or subsystem that is discovered. The space allocation for the output BCP file needs to be significantly increased for very large systems.
   Configure the following parameters. Consult your systems administrator to obtain the correct information for each DB2 data sharing group or subsystem to be processed:
   - DSGDB2ID – data sharing group name or DB2 subsystem ID for substitution in the JCL DD statements
- PARAMETER#1 – substitute this parameter with the data sharing group name or with the keyword STAND-ALONE if it is a standalone DB2 subsystem.
- PARAMETER#2 – substitute this parameter with NETID.SSCPNAME, where NETID is the VTAM Network ID to which the OS/390 image of this DB2 program belongs, and SSCPNAME is the VTAM Control Point Name of this DB2 OS/390 image.
- DSGMBRS - following this DD statement, list all member names belonging to the data sharing group, or that of the standalone DB2 subsystem.

4. When the BCP file has been created by IHSBDSCC, transfer this file to the NT Listener (usually the Windows server with the SQL server database) using the final step in the IHSBDSCC job. However, this job can only be used if you run initial discovery on an OS/390 image that has the following:
- TCP/IP connectivity (using Port 1021, or the port specified in the job) to the database server.
- Tivoli Business Systems Manager installed and running.
- The TCP/IP address defined in the ASIMVSIPListenerValidClients registry entry. See “Configuring the ASIMVSIPListenerSvc Service” on page 92 for further details.

Otherwise perform the following steps:

a. Transfer the BCP file to the ASIMVSIPListener service with no format changes (that is, as a binary file). Any standard file transfer method can be used.

b. From a Windows command prompt on the Windows 2000 SQL Server, issue the following command:

```
sh CreateDiscoveryBatch.ksh -F17 -A1 -C37 file_path
```

The `file_path` is the full file path, including drive and directory, of the downloaded data set. For example, `c:\temp\db2.bcp`.

The Windows operating system configuration must be completed before a batch job in the Windows operating system is scheduled to load the BCP file into the database server.

7. Start NetView for OS/390

When all customization steps are complete, NetView for OS/390 must be restarted. If this is the first time NetView has started with Tivoli Business Systems Manager for DB2 installed, it will automatically detect all defined DB2 subsystems and rediscover low level objects for all active DB2 subsystems.

8. Verify Installation

   a. Verify DB2 Rediscovery
      - View the Tivoli Business Systems Manager console, and confirm all DB2 subsystems currently running are displayed.
      - View the Tivoli Business Systems Manager console, and confirm all DB2 related tasks (for example, SPAS, DIST) are present.

   b. Verify DB2 Event Monitoring
      - Shutdown a DB2 subsystem. Confirm that the status of that subsystem on the Tivoli Business Systems Manager console correctly changes.
      - Restart the DB2 subsystem. Check that the status of that subsystem on the Tivoli Business Systems Manager console has been correctly updated.
c. Verify Poll Monitors
- Stop a database for a DB2 subsystem.
- Confirm the status change on the Tivoli Business Systems Manager for that database.

d. Verify Console Commands
Attempt to perform a DB2 command from the Tivoli Business Systems Manager (see the IBM Tivoli Business Systems Manager: Getting Started for instructions), and confirm that is has been processed.

Note: If any issues have resulted from the previous steps, issue either of the following commands in NetView:

```
IHS$DEBUG SHOW
IHS$DEBUG SHOW > netview.temp.ihs$debug
```

The outdsn will be allocated if it does not already exist. NetView must have RACF write access. This will collect data about the DB2 feed in NetView and the data will be written to the NetView log. Save the NetView log for Customer Support when reporting the issues.

9. Disable IHS$MSG Logging

The IHS$PARM IHS_DEBUG.IHS$MSG parameter is set to ON as the default value. This will result in all Tivoli Business Systems Manager events being logged to the NetView netlog.

When installation has been completed and verified, the IHS_DEBUG.IHS$MSG parameter in the IHS$PARM member should be modified to a value of OFF.

10. Configure DB2 Performance Monitor
If DB2 Performance Monitor is installed, use the following steps to generate events to Tivoli Business Systems Manager:

1. Update the Data Collector parameters during setup with the following: 
   SET™
   EXCEPTIONEVENT=(value,value,value) Refer to the DB2 Performance Monitor for 
   OS/390 Online Monitors User’s Guide for a list of options.

2. Install and configure the exception threshold values for DB2 Performance Monitor.
   The IHSBPMTH installation job receives the predefined DB2 Performance Monitor data set, which contains sample exception threshold values, to a user-specified data set. For detailed instructions on how to install this data set, read the prologue of this job. The IHSBPMTH installation job is found in the SGTMSAMP library.

3. Start the Data Collector address space.
   Each Data Collector is linked to a previously started DB2 subsystem. Associated with the Data Collector is a default DB2 plan, which is part of each DB2 Performance Monitor installation. This default plan name is used for the instrumentation; so do not bind to a different name.
   The default plan name for each supported version of DB2 Performance Monitor is listed in Table 60.

<table>
<thead>
<tr>
<th>Default Plan Name</th>
<th>Version</th>
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<tbody>
<tr>
<td>DB2PMOM</td>
<td>DB2 Performance Monitor, Version 5.1</td>
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Table 60. Default plan name for supported version of DB2 Performance Monitor (continued)

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<tr>
<th>Default Plan Name</th>
<th>Version</th>
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<tr>
<td>DGOPMOM</td>
<td>DB2 Performance Monitor, Version 6.1</td>
</tr>
<tr>
<td>DGOPMOM</td>
<td>DB2 Performance Monitor, Version 7.1</td>
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</table>

4. DB2 Performance Monitor Version 6.0 and 7.0 introduced a new function called Automatic Enterprise Wide Periodic Exception Processing. DB2 Performance Monitor, Version 6.0 requires PTF UQ60121 and Version 7.0 requires UQ61689. This new function enables exception processing to be activated at the Data Collector startup time. Use this new functionality with the Tivoli Business Systems Manager and DB2 integration.

Alternatively activate Automatic Enterprise Wide Periodic Exception Processing:

a. From the DB2 PM Online Monitor Exception Processor dialog, select the Periodic and Exception event notification fields, and then the User Exit field.

b. Update the Periodic units, Periodic interval, and supplied Exception threshold data set fields on the DB2 PM Online Monitor Exception Processor dialog.

c. After updating these fields, exit from the dialog to activate Automatic Enterprise Wide Periodic Exception Processing.

5. The supplied DGOMUPX sample exit is used. The default layout of the DGOV0100 message did not change. If you customized the sample exit that results in the layout of this message being changed, then the Tivoli Business Systems Manager integration with DB2 Performance Monitor might not work. Refer to the DB2 Performance Monitor for OS/390 Online Monitors User’s Guide for additional information.

Automation

Use the following sections to install the automation product data sources that integrate with Tivoli Business Systems Manager.

The automation data sources for Tivoli Business Systems Manager require no configuration steps. They do, however, require customization. See the automation section in the IBM Tivoli Business Systems Manager: Administrator’s Guide.

The automation data sources are:

- System Automation for OS/390, Version 1.3
- System Automation for OS/390, Version 2.1 or 2.2
- Computer Associates CA-OPS/MVS
- Candle AF/Operator
- MAINVIEW Auto OPERATOR

System Automation for OS/390, Version 1.3

Tivoli Business Systems Manager interfaces directly with System Automation for OS/390, Version 1.3 through the implementation of the External Data Interface (EDI). The EDI enables an external application program to pass text-based messages directly into the source/390 object pump on the same OS/390 system. When a status for a resource managed by System Automation for OS/390 changes, Tivoli Business Systems Manager notifies you of this status change by modifying the Tivoli Business Systems Manager resource that represents that resource.
The following modifications are required to install the System Automation for OS/390 EDI to Tivoli Business Systems Manager interface:

1. Edit System Automation for OS/390 exit AOFEXSTA to add the following code. If this exit is not already installed, you can find it in the System Automation for OS/390 SINGSAFP data set member INGEXSTA. Copy the code to a data set available in the System Automation for OS/390 DSICLD DD and rename it AOFEXSTA. If the Tivoli Operations Planning and Control to System Automation for OS/390 interface is in use, edit exit EVJEXSTA instead of AOFEXSTA.

After the Parse Arg ... statement, add the following code:

```plaintext
'GTMEDISA' START_OF_DATA
Token = "GTM"||rc
'GTMEDISA' TOKEN 07 01 /* SA390 STATE CHANGE EVENT */
'GTMEDISA' TOKEN 05 sysname /* SMF ID */
'GTMEDISA' TOKEN 06 restype /* RESOURCE TYPE */
'GTMEDISA' TOKEN 03 resource /* OBJECT NAME */
'GTMEDISA' TOKEN 08 status /* STATE CHANGE */
'GTMEDISA' TOKEN END_OF_DATA TRACEOFF
```

If you use an unmodified version of AOFEXSTA (System Automation for OS/390 user exit), add the GTMEDISA calls after "Parse Arg restype ", resource ", status ", sysname." statement.

If you have modified AOFEXSTA (System Automation for OS/390 user exit) from the original version, please add the GTMEDISA calls after the following variables have been assigned with proper values in the exit:

- Restype (resource type - for example, SUBSYSTEM)
- Resource (resource name - for example, VTAM)
- Status (status of resource - for example, UP)
- Sysname (system where resource comes up - for example, ASYS)

If you use the Tivoli Operations, Planning & Control to System Automation for OS/390 interface, edit exit EVJEXSTA instead of AOFEXSTA (this exit is typically found in the AOCOPC.SEVJNCL1 data set) and add the GTMEDISA calls after the following code:

"parse varParms Restype ", Resource ", Status ", Source ", X"

2. After the exit is modified, save it in a data set that is in the DSICLD DD of the System Automation for OS/390 started task. This is preferably the first data set in the concatenation.

3. The hlq.SGTMEXEC library must also be added to the DSICLD DD System Automation for OS/390 started task.

4. The hlq.SGTMMSDS library must be added to the System Automation for OS/390 started task STEPLIB concatenation.

5. Ensure that the following statements reside in the source/390 object pump startup parameters:

   ```plaintext
   SA390_JOBNAME=stcname
   (where stcname = started task name for the System Automation task)
   EDI_BUFFER_SIZE=2048 | size
   (Increase the EDI buffer size based on your use of EDI.)
   ```

6. If you are using the ACCIDxx card as described in "Running Multiple Copies of Source/390 on a OS/390 Image" on page 72, add this card to your System Automation for OS/390 started task.

To have Tivoli Business Systems Manager track messages or exceptions passed from console-written System Automation for OS/390 REXX programs, perform the following steps:
1. Edit System Automation for OS/390 client specific REXX program and include the necessary REXX program calls as documented in the IBM Tivoli Business Systems Manager: Administrator's Guide.

2. Once the exit is modified, save it in a data set that is in the DSICLD DD of the System Automation for OS/390 started task. This is preferably the first data set in the concatenation.

3. The hlq.SGTMEXEC library must also be added to the System Automation for OS/390 started task DSICLD DD.

4. The hlq.SGTMMODS library must be added to the System Automation for OS/390 started task STEPLIB concatenation.

5. Ensure that the following statements reside in the source/390 object pump startup parameters:
   
   SA390_JOBNAME=stcname
   
   Where stcname is the started task name for the System Automation for OS/390 task.

   EDI_BUFFER_SIZE=2048 | size
   
   A size value of 5000 is needed for the System Automation for OS/390 interface implementation.

6. If you are using the ACC1IDxx card as described in “Running Multiple Copies of Source/390 on a OS/390 Image” on page 72, add this card to your System Automation for OS/390 started task.

**System Automation for OS/390, Versions 2.1 and 2.2**

Tivoli Business Systems Manager interfaces directly with System Automation for OS/390, Versions 2.1 and 2.2 through the program-to-program interface (PPI) and the External Data Interface (EDI). The PPI is the primary interface for this instrumentation.

Use the following sections to install and configure the interface.

**Table 61. System Automation for OS/390 Installation Overview**

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</table>
1. Install Tivoli Business Systems Manager Components
You must install the System Automation for OS/390 REXX execs, samples, messages, and sample members. These data sets are installed as part of the SMP/E installation of the product. Installation instructions can be found in the *Program Directory for Tivoli Business Systems Manager*.

2. Perform System Automation for OS/390 Customization
a. Define Auto Operators, IHSSAUT1, and IHSSAUT2: Modify your automation control file using the System Automation for OS/390 Customization Dialogs using the following steps:
1. From the Entry Type Selection list, select option 37 and press *Enter*.
2. From the Entry Name Selection list, type *new* on the command line and press *Enter*.
3. From the Define New Entry list, type TBSM_AUTO_OPS on the Name line and *Tivoli Business Systems Manager Autotasks* on the Short Description line. Press F3.
4. From the Policy Selection list, select OPERATORS and press *Enter*.
5. From the Automation Operator Definitions list, define the IHSSAUT1 and IHSSAUT2 operators. Press *Enter*.
6. From the Automation Operator NetView Userids list, type IHSSAUT1 as the primary operator and press F3. Repeat this step for the IHSSAUT2 operator.
7. Update the Where Used field.
8. Rebuild your automation control file and issue the INGAMS command from the NetView command line facility on your System Automation for OS/390 agent.

3. Perform Initial Discovery (Optional)
Tivoli Business Systems Manager provides the IHSSDISC command to gather System Automation for OS/390 data, which is then processed by the IHSSBCPJ batch job to provide Discovery Records. This enables Business System creation before the product is completely installed.

For more information about the discovery process, refer to the *IBM Tivoli Business Systems Manager: Administrator's Guide*.

4. Configure NetView Components
Tivoli Business Systems Manager for System Automation for OS/390 runs within the NetView started task. This section details the customization necessary for this started task.

a. Configure NetView for OS/390: Complete all steps in “Configuring Tivoli NetView for OS/390” on page 95.

b. Running multiple copies of Source /390: If you are using the ACC1Dxx card as described in “Running Multiple Copies of Source/390 on a OS/390 Image” on page 72, add this card to your System Automation for OS/390, V2.1 or V2.2 started task.

5. Configure z/OS components
a. Program-to-Program Interface (PPI): Ensure the following statement resides in the source/390 OBJECT pump parameters:
PPI=YES
b. External Data Interface (Optional):

**Note:** The EDI was used in the instrumentation of System Automation for OS/390 V1.3 and has not been used in the instrumentation of System Automation for OS/390 V2.1 and V2.2.

If the EDI is used for System Automation for OS/390 customer-developed instrumentation, ensure the following statements reside in the source/390 pump parameters:

```
SA390_JOBNAME=stcname
```

Where `stcname` is the started task name for the System Automation for OS/390 agent.

```
EDI_BUFFER_SIZE=2048 | size
```

A size value of 5000 is required for this implementation.

6. Start NetView for OS/390

When you complete all customization steps, you must restart NetView for OS/390. If this is the first time that NetView has been started with the installed Tivoli Business Systems Manager program, it will automatically rediscover all System Automation for OS/390 resources for that system.

7. Verify installation

a. Verify the Tivoli Business Systems Manager-System Automation for OS/390 interface is started: View the current NetView netlog on the System Automation for OS/390 agent and check for the AOFT540I message. Tivoli Business Systems Manager-System Automation for OS/390 is started using a NetView message trap for this message and, when initialization is complete, the IHS078I message is issued. Check that this message has been sent to your NetView netlog.

b. Verify System Automation for OS/390 Event Logging: Recycle an insignificant System Automation for OS/390-managed resource using System Automation for OS/390, for example, the resource measurement facility (RMF). Check the NetView netlog for the following records:

```
IHS708I IHS$EVTQ 07\01 02=APL|03=RMF
```

8. Disable IHSMSG Logging

The IHS$PARM IHS_DEBUG.IHSMSG parameter is set to ON as the default value. This will result in all Tivoli Business Systems Manager events being logged to the NetView netlog.

When installation has been completed and verified, the IHS_DEBUG.IHSMSG parameter in the IHS$PARM member should be modified to a value of OFF.

**OPS/MVS**

Tivoli Business Systems Manager interfaces directly with Computer Associates CA-OPS/MVS through the implementation of the External Data Interface (EDI), which enables an external application program to pass text-based messages directly into the source/390 object pump on the same MVS system.

The following modifications are required for the installation of the OPS/MVS EDI interface:

1. Edit the OPS/MVS client-specific REXX program and include the REXX calls as documented in the *IBM Tivoli Business Systems Manager: Administrator's Guide*.  


2. Save the REXX code in a library available to the SYSEEXEC DD of the OPS/MVS started tasks (both the server and main tasks). This is preferably the first data set in the concatenation.

3. The Tivoli Business Systems Manager REXX program GTMEDIOP must be copied from the SGTMSAMP library to a library available within the OPS/MVS started tasks (both the server and main tasks) SYSEEXEC DD. If applicable, GTMEDIOP must be updated starting at the pipe symbol (|) to the appropriate concatenation symbol for your environment. For example, change the pipe to an exclamation point (!) if you are using the German code page on your OS/390 system.

4. The hlq.SGTMMODS library must be added to the OPS/MVS started tasks (both the server and main tasks) STEPLIB concatenation.

5. Ensure that the following statements reside in the source/390 object pump startup parameters:

   - **OPSMVS_JOBNAME**=stcname,stcname
   - **EDI_BUFFER_SIZE**=2048

   Where stcname = started task name for the OPS/MVS server and main task, the server task name requires the server task prefix followed by an asterisk (*) to allow for all task names launched by the server task. For example, if your server task name is OSFSRV and your main task name is OPSMVS, code

   - **OPSMVS_JOBNAME**=OPSMVS,OSFSRV
   - **EDI_BUFFER_SIZE**=2048 | size

   A size value of 5000 is needed for the OPS/MVS interface implementation.

6. If you are using the ACC11Dxx card as described in the section, "Running Multiple Copies of Source/390 on a OS/390 Image” on page 72, add this card to your OPS/MVS Started task.

### AF/Operator and Auto OPERATOR

Make the following modifications to install the Candle AF/Operator or MAINVIEW Auto OPERATOR EDI interface or both:

1. Edit the client specific REXX program and include the REXX calls as documented in the *IBM Tivoli Business Systems Manager: Administrator’s Guide.*

2. Save the REXX code in a library available to the SYSEEXEC DD of the AF/OPERATOR or Auto Operator started task, preferably the first data set in the concatenation.

3. Edit the AF/OPERATOR or AUTO OPERATOR started task and add these libraries:
   - hlq.SGTMEXEC to the SYSEEXEC DD concatenation.
   - hlq.SGTMMODS to the STEPLIB DD concatenation.

4. Ensure that the following statements reside in the source/390 object pump startup parameters:

   - **AFOPER_JOBNAME**=stcname for AF/OPERATOR or
   - **AUTOOPER_JOBNAME**=stcname for Auto Operator
   - **EDI_BUFFER_SIZE**=2048 | size

   A size value of 5000 is needed for the Automation EDI interface implementation.

5. If you are using the ACC11Dxx card as described in "Running Multiple Copies of Source/390 on a OS/390 Image” on page 72, add this card to your OPS/MVS Started task.

Chapter 9. Installing and Configuring Data Sources 127
Job Schedulers

Use the following sections to install and configure the job scheduler data sources that integrate with Tivoli Business Systems Manager.

The job scheduler data sources are:
- Tivoli Operations Planning and Control
- Tivoli Workload Scheduler for z/OS
- Computer Associates CA-7
- Allen Systems Group, ASG-Zeke
- BMC CONTROL-M for OS/390

Tivoli Operations, Planning & Control

There are two points of integration with Tivoli Operations, Planning & Control. The first point provides a source for capturing updates made to the current plan outside the daily planning process. These updates can then be applied to the baseline snapshot created during the initial discovery process (through processing of the Daily Plan report). This reduces the need for continually running reports to gather the changes to the current plan. This is implemented through Tivoli Operations, Planning & Control Exit 7, modified to call the Tivoli Business Systems Manager EDI.

The second point is to capture and process alert conditions recognized by Tivoli Operations, Planning & Control and forward the information to Tivoli Business Systems Manager. Included in this are the meaningful started and ended messages that are Tivoli Operations, Planning & Control-specific, which are replacements for the generic IEF403I and IEF404I operating system messages and include Tivoli Operations, Planning & Control-specific information used to capture exception situations through WTO traps. This point is implemented using both the modified Tivoli Operations, Planning & Control Exit 7, and console monitoring of Tivoli Operations, Planning & Control WTOs.

Installing Tivoli Operations, Planning & Control

To install this process, perform the following steps:

1. Ensure that the ALERTS initialization statement in the Tivoli Operations, Planning & Control parmlib has WTO specified as the alert action for all conditions. For example:
   
   ```
   ALERTS  WTO(DURATION
   ERRORPER
   LATEOPER
   RESCONT
   OPCERROR
   QLIMEXCEED)
   ```

2. Install the Tivoli Business Systems Manager version of Tivoli Operations, Planning & Control Exit 7. Possible scenarios are:
   a. You are not currently using Tivoli Operations, Planning & Control Exit 7:
      - Copy program EQQUX007 from the Tivoli Business Systems Manager SGTMODS data set into an APF authorized library in the LNKLST concatenation or as defined by the STEPLIB DD statement in the Tivoli Operations, Planning & Control JCL procedure.
      - Update the Tivoli Operations, Planning & Control EXITS initialization statement in parmlib to call the exit.
   
   ```
   EXITS  CALL07(YES)
   ```
b. You are currently using the Tivoli Operations, Planning & Control feature of System Automation for OS/390 and are using the System Automation for OS/390/ Tivoli Operations, Planning & Control feature supplied version of Exit 7. That includes the exit driver module, EQQUX007, and two other modules UX007001 and UX007002. As shipped, the System Automation for OS/390 version of EQQUX007 calls up to 10 programs at that exit point, as if Tivoli Operations, Planning & Control called them directly. Refer to the AOC/MVS V1R4 OPC Automation Programmer’s Reference for more information on Exit 7 integration:

- Rename module EQQUX007 in the Tivoli Business Systems Manager SGTMMODS data set to UX00700n (n = next sequential suffix for module name). Using the above example of two existing modules, UX007001 and UX007002, you rename the EQQUX007 module in the SGTMMODS data set to UX007003.

- Copy renamed module UX007003 from SGTMMODS data set to an APF authorized library in the LNKLST concatenation or as defined by the STEPLIB DD statement in the Tivoli Operations, Planning & Control JCL procedure.

c. You are currently using Tivoli Operations, Planning & Control Exit 7 for functions other than System Automation for OS/390 – Tivoli Operations, Planning & Control interface.

- Contact IBM Customer Support for Tivoli products for a copy of the EQQUX007 exit driver module to enable multiple exit 7 modules if this exit is not already available to you through System Automation for OS/390.

3. Ensure that the following statements reside in the source/390 object pump startup parameters:

   **OPC_JOBNAME=OC0F**
   Where **OC0F** is the started task name for the Tivoli Operations, Planning & Control Controller and tracker on the system where the source/390 object pump runs.

   **EDI_BUFFER_SIZE=2048 | size**
   Increase the EDI buffer size based on your use of EDI. Use the Source/390 object pump modify command EDI described in *IBM Tivoli Business Systems Manager: Command Reference* for more information.

4. If you are using the ACC1IDxx card, add this card to your Tivoli Operations, Planning & Control Controller started task.

**Configuring Tivoli Operations, Planning & Control**

Tivoli Business Systems Manager integrates with Tivoli Operations Planning and Control by applying a source for capturing updates made to the current plan (outside of the daily planning process) during the initial discovery and processing alert conditions recognized by Tivoli Operations, Planning & Control. See the *IBM Tivoli Business Systems Manager: Administrator’s Guide* for further details on customization.

**Tivoli Workload Scheduler for z/OS**

**Installing Tivoli Workload Scheduler for z/OS**

To install the Tivoli Workload Scheduler for z/OS interface with Tivoli Business Systems Manager, you must disable USER EXIT 7 (EQQUX007) and the WTO processing that you used for Tivoli Operations, Planning & Control.
1. For Tivoli Workload Scheduler for z/OS to successfully integrate with Tivoli Business Systems Manager, remove the WTO alerts from the ALERTS initialization Tivoli Operations, Planning & Control statement. If you were using Tivoli Operations, Planning & Control, Version 2.2 or Version 2.3 to integrate with Tivoli Business Systems Manager, you included WTO alerts as follows:

```
ALERTSWTO(DURATION ERROROPER LATEOPER RESCONT OPCERROR QLIMEXCEED)
```

Do not remove these preceding WTO alerts if they are being used for purposes other then Tivoli Business Systems Manager.

2. Remove the Tivoli Business Systems Manager version of EQQUX007 from your data set.
   a. If you were using Tivoli Operations, Planning & Control, Version 2.2 or Version 2.3 integration with Tivoli Business Systems Manager, you copied program EQQUX007 from SGTMMODS data set into an APF authorized library in the LNKLST concatenation or as defined by the STELIB DD statement in the Tivoli Workload Scheduler for z/OS JCL procedure. This was done to successfully integrate with Tivoli Business Systems Manager, by removing the program EQQUX007 from this library. The LLA UPDATE statement is required if you remove the EQQUX007 program from LNKLST. Refer to the appropriate document in the OS/390 MVS library for more details on the LLA UPDATE statement.
   b. If you were using the Tivoli Operations, Planning & Control feature of System Automation for OS/390 and are using the System Automation for OS/390 Tivoli Operations, Planning & Control feature supplied version of Exit 7 (includes the exit driver module, EQQUX007, and two other modules UX007001 and UX007002), you may have to perform the following steps. As shipped, the System Automation for OS/390 version of EQQUX007 calls up to 10 programs at that exit point, as if Tivoli Operations, Planning & Control called them directly. Refer to the AOC/MVS V1R4 OPC Automation Programmer's Reference for more information on Exit 7 integration.
      - Locate module UX00700n (n = number suffix of module name) that was originally added to allow the integration to Tivoli Business Systems Manager (this module was originally shipped as EQQUX007 on the Tivoli Business Systems SGTMMODS data set, before it was renamed to UX00700n). Please note that the module in the LNKLST would have to have a higher module number than 2 as the UX007001 and UX007002 are existing modules (as shipped by System Automation for OS/390).
      - Remove or rename the module UX00700n (that corresponds to the Tivoli Business Systems Manager module you previously installed) from the LNKLST to prevent it from being called, as it is no longer needed with this installation option.

3. Update the Tivoli Operations, Planning & Control EXITS init statement to the following:

```
EXITS CALL07(NO)
```

**Configuring Tivoli Workload Scheduler for z/OS**

Perform the following steps to configure Tivoli Workload Scheduler for z/OS for monitoring by Tivoli Business Systems Manager.

**Note:** You do not use Tivoli Business Systems Manager USER EXIT 7 or activate the WTO options in the ALERT initialization statement for this current interface.
1. Include the Tivoli Business Systems Manager SGTMMODS data set in the STEPLIB concatenation of the Tivoli Workload Scheduler task procedures or include the SGTMMODS data set in the LNKLST.

2. Ensure that the following statements reside in the source/390 object pump startup parameters and that it names each of the Tivoli Workload Scheduler started task procedures currently running on the MVS system.
   - OPC_JOBNAME=TWSC,TWST Where TWSC/T is the started task name for the Tivoli Workload Scheduler on the system where the source/390 object pump runs.
   - EDI_BUFFER_SIZE=2048  |  size Increase the EDI buffer size based on your use of EDI. Use the Source/390 object pump modify command EDI described in IBM Tivoli Business Systems Manager: Command Reference for more information.

3. Specify the EXTMON (YES) parameter on the OPCOPTS initialization statement. This statement defines the run time options to Tivoli Workload Scheduler for z/OS and the tracker, controller or the standby controller that uses this statement. Refer to the appropriate manual in the Tivoli Workload Scheduler for z/OS library for OPCOPTS statement information.

4. At initialization, if the EXTMON start parameter is set to YES (Y), Tivoli Workload Scheduler for z/OS loads the Tivoli Business Systems Manager module AOPEDI. This module must be present in a library and available to the tracker or controller.
   If the load fails, the EXTMON start parameter is automatically set to NO (N) and message EQQZ232 is displayed in the Tivoli Workload Scheduler for z/OS message log.

5. In order to monitor jobs using Tivoli Business Systems Manager, the external monitor job parameter of an operation must be set to YES (Y). This option is changed in the application program description database and in the current plan. You can use the ISPF panels, or the Tivoli Workload Scheduler for z/OS programming interface to set the option or browse it. Tivoli Business Systems Manager does not monitor jobs unless set up to do so.

Disabling Write To Operator (WTO) Traps and Duplicate Events: When Tivoli Workload Scheduler for z/OS is installed on an OS/390 system, disable the message descriptions for Tivoli Operations, Planning & Control started task resources so that WTO messages are no longer trapped. If this is not done, events are delivered in the old and new methods and duplicate messages or exceptions are created. Tivoli Business Systems Manager accepts events in both types, but this is primarily for you to install or test Tivoli Workload Scheduler on some host systems while still receiving WTO traps from other hosts. A specific batch resource can only receive Tivoli Workload Scheduler-type or WTO-type events.

You can disable event processing of WTO traps in one of two ways:
   - Delete from Tivoli Business Systems Manager the Tivoli Operations, Planning & Control started task resource. This is the simplest method, but you are not able to monitor Tivoli Operations, Planning & Control as a started task in Tivoli Business Systems Manager, unless you add the resources back into Tivoli Business Systems Manager.
   - Delete the message descriptions. This retains the Tivoli Operations, Planning & Control started task resource, but you cannot simply select the resource from the Tivoli Business Systems Manager console and you must run a stored procedure from the SQL Server Query Analyzer.

To select the started task, run the following command from the Query Analyzer:
USE Object EXEC asisp_tws_disable_wto_traps

From the STC id column of the output from the previous command, select the object id parameter of the started task that you want to disable in the WTO traps.

Run the following command, substituting the object id parameter for the STCid parameter:

USE Object EXEC asisp_tws_disable_wto_traps STCid

If the started task you want is not listed by the first command and there are no message descriptions defined for it, Tivoli Business Systems Manager does not trap for Tivoli Operations, Planning & Control WTOs.

Installing CA-7

Perform the following maintenance to successfully install the Computer Associates CA-7 data source:

1. The SMP/E tool installs CA-7 usermod SASSXX17. A sample is provided as member GTMCA7EX in the SGTMPSAMP library as part of the installation.
2. Include the Tivoli Business Systems Manager SGTMMODS data set in the STEPLIB concatenation in the CA-7 Central Control task procedure or include the SGTMMODS data set in the linklist.
3. Include the following statement in the CA-7 Central Control task initialization statements:

   APPLCTN_NAME=SASSXX17,ATTR=RESQ

4. Download the CA-7 forecast file to the console environment. A sample JCL member for downloading CA-7 forecast files is located in the SGTMPSAMP data set as a member of GTMCA7DB.

Notes:

1. The CA-7 data source delivers late messages for all defined processor jobs. If you want to reduce the number of events to Tivoli Business Systems Manager, or if there are jobs for which late messages are not needed, change the definition for the job within the CA-7 program to include PROMPTS: N on the MESSAGES line of the CA-7 CPU JOB DEFINITION window.

2. The CA-7 data source does not suppress SIRD-11 messages. You can optionally suppress these messages by coding ABR=YES in the SCHEDULE initialization statements. The SIRD-11 message is required for the Tivoli Business Systems Manager implementation, therefore verify that you are using the default value of ABR=NO.

Configuring CA-7

This section explains the steps for enabling message and event flow from the CA-7 program to Tivoli Business Systems Manager.

Configuring OS/390 Components: To configure the OS/390 components:

1. Use the System Modification Program Extended (SMP/E) tool to install the appropriate Tivoli Business Systems Manager maintenance.
2. Update the source/390 object pump startup parameters to include the following statement:

   CA7_JOBNAME=taskname

   Where taskname is the name of the CA-7 central control task.

Configuring Windows Discovery Components: The GTMAOPE0 utility and the ASIMVSSIPListenerSvc service are used for bulk discovery of the CA-7 data source.
Before you run the GTMAOPE0 utility, you must configure the ValidClient entries for the ASIMVSIPListenerSvc service on the database server and then restart the service.

For details on the configuration of the ASIMVSIPListenerSvc service, see “Configuring the ASIMVSIPListenerSvc Service” on page 92 and “Running the configurebulkdatautility.ksh Script” on page 92.

The BJDiscoveryEnqueue.ksh script provides a –r parameter that truncates the specified prefix from the name of the data set on its creation in the Windows operating system. Follow your own OS/390 environment naming conventions and enable the root file name to be created on the Windows operating system.

For example, a forecast file is created with the following name: CA7.TBSM.DEV.ALL.TXT

However, the preferred naming convention in the Windows operating system is: DEV.ALL.TXT

To provide for this transformation, the –r parameter is specified as -rCA7.TBSM. If no transformation is required, omit the –r parameter entirely.

The -c parameter is the local code page, which is used to configure Tivoli Business Systems Manager. This parameter is optional. If it is not supplied, the default code page (1252) is used.

**Configuring the CA-7 File name to Schedule Set Name:** On a server running Microsoft SQL Query Analyzer connected to the Tivoli Business Systems Manager object database, create the records used for translation of CA-7 forecast root file name prefixes to your business systems. The following paragraphs explain the process for creating SQL commands for the appropriate schedule set.

Each unique root file name prefix has only one schedule set listed under the CA7 COMPLEXES business system directly under the All Resources view.

The root file name prefix is the section of the file name that is not used for OS/390 naming convention prefixing and is not used for Windows operating system naming convention suffixing. For clarity, the following OS/390 data set names have been broken down into their respective parts. The following table lists the OS/390 data set names and their definitions.

**Table 62. Data set names**

<table>
<thead>
<tr>
<th>File example</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>CA7.TBSM.DEV.ALL.TXT</td>
<td>OS/390 data set name</td>
</tr>
<tr>
<td>CA7.TBSM.</td>
<td>OS/390 naming convention prefix</td>
</tr>
<tr>
<td>DEV.ALL.TXT</td>
<td>Root file name</td>
</tr>
<tr>
<td>DEV</td>
<td>Root file name prefix</td>
</tr>
<tr>
<td>.ALL.TXT</td>
<td>Windows NT operating system naming convention suffix</td>
</tr>
</tbody>
</table>

For each unique root file name prefix run the following SQL command:

Exec asip_setCA7bcysnamelookup '<Root>', '<ScheduleSetName>'
Where <Root> is the root file name prefix and <ScheduleSet Name> including spaces is the name of the schedule set.

For example, to place a root file name prefix of DEV to the schedule set name of: Development Environment, run the following SQL command:

`Exec asip_setCA7bcysnamelookup 'DEV', 'Development Environment'`

**Configuring the Windows Operating System Directory for File Processing:** On the server running the Tivoli Business Systems Manager database, configure the appropriate directory or directories where you perform file processing.

The following action prepares the file system to receive CA-7 forecast files.

In the Tivoli Business Systems Manager installation directory create the following directory:

For example, if the installation directory is C:/TivoliManager, create the directory:

C:/TivoliManager/Data/Ca7

**Configuring SQL Server Jobs:** The following SQL server jobs are used for support and discovery of CA-7 resources:

- CA7 Discovery Load
- CA7 Discovery Process

The first task, CA7 Discovery Load, parses and loads those files marked as enqueued. Files are enqueued by the CA7Enqueue.ksh script specified in the preceding Windows operating system registry modification section. When it receives the `<ssn>.READY.TXT` file for a schedule set, it selects the file as enqueued in the database.

The second task, CA7 Discovery Process, takes the data that has been manipulated by the load job and updates the resources within IBM Tivoli Business Systems Manager.

It is required that CA7 Discovery Load runs first and is successful before starting the CA7 Discovery Process.

You can view the status of the discovery process within the `DiscoveryBatch` SQL table. The `pstep` and `pstat` values in the following table for your CA-7 load file indicate where you are within the bulk discovery process.

The following table lists the possible values.

<table>
<thead>
<tr>
<th>Value</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>pstep = 0, pstat = 0</td>
<td>ASIIMVSPListenerSvc service received ready file for the schedule set</td>
</tr>
<tr>
<td>pstep = 1, pstat = 1</td>
<td>parsing forecast file</td>
</tr>
<tr>
<td>pstep = 1, pstat = 0</td>
<td>*.bcp file ready to load</td>
</tr>
<tr>
<td>pstep = 2, pstat = 1</td>
<td>start to load *.bcp file into the database</td>
</tr>
<tr>
<td>pstep = 2, pstat = 0</td>
<td>finish to load *.bcp file into database and ready for process</td>
</tr>
</tbody>
</table>
Entries are deleted after processing is successful. If there is an error in any step, `pstat` is set to 1, and `error` and `errtext` are used to post error messages for each step.

**Discovery and Event Tuning:** Use the following functions to tune CA-7 event processing and resource discovery.
- `autodiscoveryflag`
- `keep_unknown`
- Naming convention filter and key or non-key job specification

When an event is sent by SIRD-11 for a resource that is unknown to Tivoli Business Systems Manager, Tivoli Business Systems Manager checks the `autodiscoveryflag`. If `autodiscoveryflag`=1 and SYSTEM field is not equal to NULL, Tivoli Business Systems Manager creates the resource. If `autodiscoveryflag` is set to 0, all the events for non-existing resources are discarded. The default value is `autodiscoveryflag`=1

The `keep_unknown` variable applies to event and resource bulk discovery. When the `keep_unknown`=1, and SYSTEM field is NULL, the *UNKNOWN* schedule is created under the schedule set. All batch job resources with the SYSTEM = NULL or SYSTEM = "" are created under the *UNKNOWN* schedule. When the `keep_unknown`=0 variable is created, no resource with SYSTEM = NULL or SYSTEM = "" is created. The default value is `keep_unknown`=0.

The CA-7 program has the same filtering for naming conventions and key or non-key job specification functions on the Windows operating system as ASG-Zeke. You can use the naming conventions of schedule set, schedules, and job name to exclude resource creation during event and bulk discovery. It is also possible to use the naming conventions of schedule set, schedules, and job name, to specify key jobs during event and bulk discovery.

**Configuring the autodiscoveryflag Variable:** To view system configuration variables for the CA-7 program:
```plaintext
_GetSystemConfiguration @cid = 'ROOT',
@id = 0,
@grouppname = 'CA7'
```

To update or insert the `autodiscoveryflag`:
```plaintext
_SetSystemConfiguration @cid = 'ROOT',
@id = 0,
@grouppname = 'CA7',
@propertyname = 'autoDiscoveryFlag',
@propertyvalue = 1,
@propertydatatype = 'INT'
```

**Configuring the keep_unknown Variable:** To update or insert the `keep_unknown` variable:

<table>
<thead>
<tr>
<th>Value</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td><code>pstep = 3, pstat = 1</code></td>
<td>start to process data in database</td>
</tr>
</tbody>
</table>
Configuring the Naming Convention Filter and Key Job Specification: You can use the naming conventions for schedule set, schedules, and job name to filter out CA-7 events and resources and specify key jobs for bulk and event discovery. The key job specification in the Windows operating system adds the OS/390 key file. All the naming conventions are applied to the bulk or event data exclusively by their priority. They are set from high to low.

There is no naming convention default setting used for the CA-7 data source. You can view, add, delete, and modify the entries from a SQL query. For example, to view the list run:

_DoBJDiscoverFilters_

To exclude all schedules and jobs under a schedule set Test, run:

EXEC _SetBJDiscoverFilter @name_schedule_set = 'Test', @data_source = 'CA7', @add_entry = 1, @excluded = 1, @enabled = 1, @priority = 1

To exclude all jobs under a specific schedule Test1 in the enterprise, run:

EXEC _SetBJDiscoverFilter @name_schedule = 'Test1', @data_source = 'CA7', @add_entry = 1, @excluded = 1, @priority = 1

To exclude all jobs with a specific name pattern in the enterprise, run:

EXEC _SetBJDiscoverFilter @name_job = '%Test%', @data_source = 'CA7', @add_entry = 1, @excluded = 1, @priority = 1

To select all jobs with a specific schedule job name like, %Test_key% in the enterprise as a key job:

EXEC _SetBJDiscoverFilter @name_job = '%Test_key%', @data_source = 'CA7', @add_entry = 1, @key_flag = 1, @priority = 1

To remove a filter, run:

EXEC _SetBJDiscoverFilter @name_job = '%Test%', @data_source = 'CA7', @add_entry = 0

To disable a filter, run:

EXEC _SetBJDiscoverFilter @name_job = '%Test_key%', @data_source = 'CA7', @enabled = 0
**Note:** Use as few types of filters as possible. The more filter types you employ, the larger the performance impact. The _SetBJDiscoverFilter_ procedure can only add or remove an entry. The columns that can be updated are, enable, priority, excluded, and the key flag.

In order to filter out all events from a specific operating system, you can create a dummy batch schedule set and then move all unwanted operating systems under this batch schedule set.

You then add a filter entry as:

```plaintext
/SetBJDiscoveryFilter @name_schedule_set = '<dummy 'Batch Schedule Set>',
@data_source = 'CA7', @add_entry = 1
```

Creating a dummy batch schedule and adding a filter entry helps an operating system that was not monitored from receiving a missing schedule set exception.

**Resource and Event Clean Up:** You can use the SQL scheduled task, 'Cleanup Batch Jobs' daily, to clean up the CA-7 audit table and old resources. Non-monitored batch jobs and old audit events can be cleaned up after a certain number of days. The default setting provides no cleanup for CA-7.

You can view, add, delete, and modify the CA-7 clean up with the following SQL queries.

To view the clean up configuration, run:

```plaintext
EXEC _GetBatchCleanUPS
```

To add a cleanup configuration entry for CA-7 resources that did not receive events for 30 days and for audit table events older than 15 days, run:

```plaintext
EXEC _SetBatchCleanUP @cid = 'ROOT
@id = 0,
@data_source = 'CA7',
@obj_days_to_keep = 30,
@audit_table = 'ca7_audit_events',
@audit_days_to_keep = 15,
@enabled = 1,
@priority = 1,
@add_entry = 1
```

To update a clean up configuration entry, run:

```plaintext
EXEC _SetBatchCleanUP @cid = 'ROOT
@id = 0,
@data_source = 'CA7',
@obj_days_to_keep = 30,
@audit_table = 'ca7_audit_events',
@audit_days_to_keep = 30,
@enabled = 1,
@priority = 1,
@add_entry = 1
```

To delete a clean up configuration entry, run:

```plaintext
EXEC _SetBatchCleanUP @cid = 'ROOT',
@id = 0,
@data_source = 'CA7',
@add_entry = 0
```
Installing ASG-Zeke

These sections provide information on the Tivoli Business Systems Manager integration with Allen Systems Group, ASG-Zeke, an automated real-time scheduling and dispatching system that monitors time and activities for OS/390 operating systems.

Perform the following maintenance to install the ASG-Zeke data source:

1. The SMP/E tool installs the ASG-Zeke PTFs. These PTFs issue START/STOP/ABEND/LATE messages to the MVS console.

   **Note:** The following ASG-Zeke PTFs for Version 4.5 are required:
   - Z450A280
   - Z450ATMR

   The following ASG-Zeke PTFs for Version 5.1 are required:
   - Z510A030
   - Z510ATEC

2. Download the discovery file containing data from ASG-Zeke events listing and plan listing reports to the Windows operating system environment. Refer to the sample JCL member in the SGTMSAMP (GTMZEKBD) library.

   **Note:** A system variable, `useVersionNumber`, must be configured before running the Zeke bulk discovery and event process. The default value for `useVersionNumber` is 0. Refer to the *IBM Tivoli Business Systems Manager Administrator’s Guide* for information about how to update system variables.

Configuring ASG-Zeke

To configure the ASG-Zeke data source you must prepare the report listing files, which include the key job specifications and filters using the ASIMVSIPListenerSvc service.

**Registry Modifications:** The ASG-Zeke data source has the same resource bulk and event discovery process as CA-7. Bulk discovery is based on the ASG-Zeke report listing file sent from OS/390 to the Windows operating system using the ASIMVSIPListenerSvc service. A BCP file is created in the TEMP directory on the database server and an entry in `DiscoveryBatch` table is inserted for this ASG-Zeke format type.

The GTMAOPE0 utility and the ASIMVSIPListenerSvc service are used for bulk discovery of the ASG-Zeke data source.

Before you run the GTMAOPE0 utility, you must configure the ValidClient entries for the ASIMVSIPListenerSvc service on the database server and then restart the service.

For details on the configuration of the ASIMVSIPListenerSvc service, see [“Configuring the ASIMVSIPListenerSvc Service” on page 92](#) and [“Running the configurebulkdatautility.ksh Script” on page 92](#).

**Creating Write to Operator Traps for ASG-Zeke Messages:** To create WTO traps for `<subsystem name>Z0320I` and `<subsystem name>Z0320I` messages, you must open the `zeke_gentrap_sample.sqi` file in the `<tivolimanager>\sql` directory.
Replace `<subsystem>` with the subsystem name from which ASG-Zeke runs and save the `<subsystem>.zeke_gentrap_sample.sqi` file.

Compile the `<subsystem name>zeke_gentrap_sample.sqi` file.

Sh cls q <sub-systemname> .zeke_gentrap_sample.sqi

Apply the `<subsystemname>.zeke_gentrap_sample.xml` file to IBMTivoli Business Systems Manager database.

The SQL file creates the traps for the specified subsystem. The following table lists the generic traps for ASG-Zeke messages.

<table>
<thead>
<tr>
<th>Generic Trap Msg ID</th>
<th>Category</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt;subsystem name&gt;203201</td>
<td>ASG-Zeke Messages</td>
<td>ASG-Zeke 203201 events</td>
</tr>
<tr>
<td>&lt;subsystem name&gt;203021</td>
<td>ASG-Zeke Messages</td>
<td>ASG-Zeke 203021 events</td>
</tr>
</tbody>
</table>

The ASG-Zeke data source issues message Z0302I for jobs that start late. The late message is issued one minute after the job is considered late. After the first late message is issued, late messages are issued every hour until the job is started.

Tivoli Business Systems Manager categorizes this event as an exception. You can adjust the threshold for this exception. See the *Tivoli Business Systems Manager: Administrator’s Guide* for details on setting thresholds for exceptions.

**Creating Schedule Sets:** You can create scheduled sets anywhere on the physical tree based on your business system environment. The schedule set names are the SYSTEM NAME in the ASG-Zeke data source. All monitored schedule sets, including EVENT_DISCOVER, need to be created from the console before you perform bulk discovery of ASG-Zeke resources. If any schedule set is not created, the SQL scheduled task, ZEKE Discovery Process, fails. The transaction is rolled back and all required schedule set names are listed in the SQL job history.

**Configuring ASG-Zeke Discovery Components:** The following sections describe the configuration of the Tivoli Business Systems Manager components for processing ASG-Zeke discovery.

**Automating ASG-Zeke Discovery:** The ASG-Zeke report listing files are sent to the Windows operating system by the ASIMVSIPLListenerSvc service and stored in the `<tivolimanager>\Data\Zeke` directory.

There are two scheduled tasks that perform ASG-Zeke bulk discovery.

- **ZEKE Discovery Load** — loads the data into the `pre_zeke_bcp` table in the Tivoli Business Systems Manager database.
- **ZEKE Discovery Process** — takes the data that has been manipulated by the load job and updates the resources within Tivoli Business Systems Manager.

Each of these polling jobs should run at a designated interval on the Tivoli Business Systems Manager database. If either job is started and there is no information in a state to be processed, then the job logs that it ran and then exits. If the job encounters an error, then an appropriate error is reported in the Job section of the SQL Server Enterprise Manager. If the job is successful in processing its data, then the information is enqueued for the next existing step in processing.
It is required that ZEKE Discovery Load runs first and is successful before starting
the ZEKE Discovery Process.

**Discovery and Event Tuning:** Use the following functions to tune ASG-Zeke
event processing and resource discovery on the Tivoli Business Systems Manager
database.

- the autodiscoveryflag variable
- Naming convention filters and key or non-key job specification

A system configuration variable autodiscoveryflag is defined for filtering
ASG-Zeke resources and events. When an event is sent for a resource that is
UNKNOWN, Tivoli Business Systems Manager checks the autodiscoveryflag
variable. The default setting, autodiscoveryflag=1 indicates that jobs are not
discovered during the bulk discovery process are discovered as key jobs and
placed into a schedule set name, EVENT_DISCOVER and schedule name,
UNKNOWN during event discovery. If you set the system configuration variable
to autodiscoveryflag=0 the resources are not created for events and the events are
sent to the Zeke_audit_events table.

The ASG-Zeke data source has the same filtering for naming conventions and key
job specification functions on the Windows operating system as CA-7 monitoring
uses. You can use the naming conventions of schedule set, schedules, and job name
to exclude resource creation during event and bulk discovery. It is also possible to
use the naming conventions of schedule set, schedules, and job name to specify
key jobs during event and bulk discovery.

**Note:** The batch schedule sets must be defined on the All Resources view at the
appropriate level prior to attempting bulk discovery.

**Configuring the autodiscoveryFlag:** To view system configuration variables for
the ASG-Zeke data source, run:

```plaintext
(GetSystemConfiguration @cid = 'ROOT',
@id = 0,
@groupname = 'ZEKE'
```

To update or insert the autodiscoveryFlag, run:

```plaintext
(SetSystemConfiguration @cid = 'ROOT',
@id = 0,
@groupname = 'ZEKE',
@propertyname = 'autoDiscoveryFlag',
@propertyvalue = 0,
@propertydatetype = 'INT'
```

**Configuring Naming Conventions Filters and Key/Non-Key Job Specifications**

**Using Report Files:** All report files generated from OS/390 are parsed using the
GTMZEEKED REXX program (TBSM.SGMEXED). This program uses up to three
parameters:

- Input data set name, INPUT (required)
- The KEY or EXCLUDE parameters (optional)

  The KEY parameter locates the key jobs from the input file. The EXCLUDE
  parameter indicates what jobs in the input file you want to leave out. If you do
  not supply the second parameter, all jobs in the input file are labeled non-key.

  The last parameter is used to prioritize the reports. This parameter can have a
  value of any whole number.
For example, TESTJOBA is in the report for all ZEKE, KEY and EXCLUDE jobs. If you gave a priority of 1 to the report containing all the ZEKE jobs, a priority of 2 to the KEY jobs and a priority of 3 to the report with EXCLUDE, TESTJOBA is excluded from being monitored because the EXCLUDE report has the highest priority.

For example, if you want Tivoli Business Systems Manager to monitor all ASG-Zeke jobs, run a Zeke Schedule of Events report: PREFIX.ZEKE.ZEKESSN.INPUT1.

If you want some jobs to be key, run the report: PREFIX.ZEKE.ZEKESSN.INPUT2.

To exclude ASG-Zeke jobs from being monitored, run the report: PREFIX.ZEKE.ZEKESSN.INPUT3.

The parse program (GTMZEKED) opens with the following parameters:
\%GTMZEKED PREFIX.ZEKE.ZEKESSN.INPUT1 1
\%GTMZEKED PREFIX.ZEKE.ZEKESSN.INPUT2 KEY 2
\%GTMZEKED PREFIX.ZEKE.ZEKESSN.INPUT3 EXCLUDE 3

When the ASG-Zeke discovery is completed, the jobs in the\%GTMZEKED PREFIX.ZEKE.ZEKESSN.INPUT2 data set are displayed as key jobs within the Batch Management Summary view. All others are considered non-key.

The jobs in the following data set are not displayed on the console:
\%GTMZEKED PREFIX.ZEKE.ZEKESSN.INPUT3

**Configuring Naming Convention Filters and Key/Non-Key Job Specifications from the Windows Operating System:** You can use the naming conventions for schedule set, schedules, and job name to filter out ASG-Zeke events and resources and to specify key or non-key jobs during bulk and event discovery.

All the naming conventions are applied to the bulk or event data exclusively by their priority. They can be set from high to low.

If you use the OS/390 and Windows operating system methods, the Windows settings overwrite the OS/390 report files on key or non-key specifications.

There is no naming convention default value used for the ASG-Zeke data source in the BJDiscoveryFilter method lookup table. You can view, add, delete, and modify the entries from a SQL query.

To view the list of naming conventions from the Windows operating system run:
EXEC _GetBJDiscoverFilters

To exclude all schedules and jobs under a schedule set Test run:
EXEC _SetBJDiscoverFilter @name_schedule_set = 'Test',
@data_source = 'ZEKE',
@add_entry = 1,
@excluded = 1,
@enabled = 1,
@priority = 1

To exclude all jobs under a specific schedule Test1 in the enterprise, run:
EXEC _SetBJDiscoverFilter @name_schedule = 'Test1',
    @data_source = 'ZEKE',
    @add_entry = 1,
    @excluded = 1,
    @priority = 1

To exclude all jobs with a specific name pattern in the enterprise, run:
EXEC _SetBJDiscoverFilter @name_job = '%Test%',
    @data_source = 'ZEKE',
    @add_entry = 1,
    @excluded = 1,
    @priority = 1

You can indicate jobs with a specific schedule set name, schedule name, or job
name pattern as a key job in your enterprise. To select all jobs with a specific
schedule key job name, for example, enter '%Test_key%' in your enterprise and run:
EXEC _SetBJDiscoverFilter @name_job = '%Test_key%',
    @data_source = 'ZEKE',
    @add_entry = 1,
    @key_flag = 1,
    @priority = 1

To remove a filter, run:
EXEC _SetBJDiscoverFilter @name_job = '%Test%',
    @data_source = 'ZEKE',
    @add_entry = 0

To disable a filter, run:
EXEC _SetBJDiscoverFilter @name_job = '%Test_key%',
    @data_source = 'ZEKE',
    @enabled = 0

Note: Use as few types of filters as possible. The more filter types you use, the
larger the performance impact.

Use the SetBJDiscoverFilter variable to add or remove an entry. The
columns that can be updated are enabled, priority, excluded and the key
flag.

All the entries in BJDiscoveryFilter_Lookup table for ASG-Zeke data source are used
in bulk discovery including the EXCLUDE flag and KEY flag. For event discovery,
only the EXCLUDE flag with a specific job name conversion is used because events
do not have any information about schedule set name and schedule names. For
example, if the BJDiscoveryFilter_Lookup table has the following entries, all entries
are used for bulk discovery and only the third row is used for event discovery.

Table 65. BJDiscoveryFilter_Lookup table

<table>
<thead>
<tr>
<th>name schedule set</th>
<th>name schedule</th>
<th>name job</th>
<th>data source</th>
<th>enabled</th>
<th>priority</th>
<th>excluded</th>
<th>key flag</th>
</tr>
</thead>
<tbody>
<tr>
<td>%test%</td>
<td>%test%</td>
<td>%test%</td>
<td>ASG-Zeke</td>
<td>1</td>
<td>2</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>%test%</td>
<td>%test%</td>
<td>%test%</td>
<td>ASG-Zeke</td>
<td>1</td>
<td>3</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>ALL</td>
<td>ALL</td>
<td>%TEST%</td>
<td>ASG-Zeke</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>0</td>
</tr>
</tbody>
</table>
Table 65. BJDiscoveryFilter_Lookup table (continued)

<table>
<thead>
<tr>
<th>name schedule set</th>
<th>name schedule</th>
<th>name job</th>
<th>data source</th>
<th>enabled</th>
<th>priority</th>
<th>excluded</th>
<th>key flag</th>
</tr>
</thead>
<tbody>
<tr>
<td>ALL</td>
<td>ALL</td>
<td>%TEST%</td>
<td>ASG-Zeke</td>
<td>1</td>
<td>2</td>
<td>0</td>
<td>1</td>
</tr>
</tbody>
</table>

Tracking Schedules: The SQL schedule task Must End Batch Operations issues a (LONG_DURATION) exception that uses a job start time from the job started event and the MUST_END in the report. Tivoli Business Systems Manager only generates a job, running too long events, for resources with MUST_END defined in the report files. The default setting indicates this scheduled task runs every 10 minutes and is disabled. Once it is enabled, if a job is running after a scheduled task, MUST_END, LONG_DURATION is issued, an exception is issued every 10 minutes until the job is stopped or restarted. If you do not want to generate a job, running too long events, for all jobs, use this scheduled task.

The SQL schedule task, Long Batch Operations issues a LONG_DURATION exception based on the settings in the BatchLongDuration table. All the batch jobs under CID and ID that are defined receive a LONG_DURATION exception if the jobs are running after start time + duration + MinuteLate. The default, setting is to issue this event every 10 minutes until the job is stopped.

Use the following methods to set and view the settings:

- To view all the entries, run:
  EXEC _GetLongOperationEXCPs
- To add an entry, run:
  EXEC _SetLongOperationEXCP @cid = 'ROOT',
  @id = 0,
  @evt_ALERTSTATE = 'Yellow',
  @evt_PRIORITY = 'Medium',
  @MINUTESLATE = 60,
  @ACTION = 'Add',
  @SCHEDPACK = 'ZEKE',
  @PRIORITY = 1

The @cid and @id parameters are the parent resource CID and ID. A LONG_DURATION exception is issued for all the batch jobs under this parent resource. You can set up different standards for the same data source with a different CID and ID.

For example, you can set up "production"(cid = 'BCYS', id = 1) schedule set for MinuttesLate = 30 and "test" (cid = 'BCYS', id = 2) schedule set for MinutesLate = 120.

The @Priority parameter is used for one rule (high priority) to overwrite the others (low priority). If the @cid = 'ROOT' parameter is used, this rule is applied to all batch jobs in the enterprise with this data source.

To update an individual entry, run:
EXEC _SetLongOperationEXCP @cid = 'ROOT',
@id = 0,
@evt_ALERTSTATE = 'Yellow',
@evt_PRIORITY = 'Medium',
@MINUTESLATE = 30,
@ACTION = 'Update',
@SCHEDPACK = 'ZEKE',
@PRIORITY = 2
To disable an individual entry, run:

```
EXEC _SetLongOperationEXCP @cid = 'ROOT',
    @id = 0,
    @SchedPack = 'ZEKE',
    @Enabled = 0,
    @Action = 'UPDATE'
```

To delete an entry, run:

```
EXEC _SetLongOperationEXCP @cid = 'ROOT',
    @id = 0,
    @Action = 'Delete',
    @SchedPack = 'ZEKE'
```

If more than one type of job scheduler is running in the enterprise, the @AlertState and @Priority parameters should be the same for all entries in BatchLongDuration table.

The columns cid, id, and SchedPack cannot be upgraded and are unique in the BatchLongDuration table.

**Event Clean Up:** The SQL scheduled task, Cleanup Batch Jobs runs daily and performs the cleanups based on the settings in the BatchCleanUp table. The table is empty by the initial default setting. Therefore, no cleanups are done until you configure the table.

The SQL scheduled task, Cleanup Batch Jobs, deletes batch job resources, which have no events for the `evt_days_to_keep` days parameter, under the cid and id columns that are defined for the specific batch scheduler. It also deletes events older than the `audit_days_to_keep` in audit_table parameter and events for deleted batch job resources.

To view clean up configuration, run the following command:

```
EXEC _GetBatchCleanUPs
```

To add an entry, run:

```
EXEC _SetBatchCleanUP @cid = 'ROOT',
    @id = 0,
    @data_source = 'ZEKE',
    @obj_days_to_keep = 30,
    @audit_table = 'zeke_audit_events',
    @audit_days_to_keep = 30,
    @enabled = 1,
    @priority = 1,
    @add_entry = 1
```

To update an entry, run:

```
EXEC _SetBatchCleanUP @cid = 'ROOT',
    @id = 0,
    @data_source = 'ZEKE',
    @obj_days_to_keep = 30,
    @audit_table = 'zeke_audit_events',
    @audit_days_to_keep = 60,
    @enabled = 1
```

To delete an entry, run:
EXEC _SetBatchCleanUp @cid = 'ROOT',
@id = 0,
@data_source = 'ZEKE',
@add_entry = 0

BMC CONTROL-M for OS/390

Installing BMC CONTROL-M for OS/390
Perform the following maintenance to install the BMC CONTROL-M for OS/390 data source:

1. Install the Tivoli Business Systems Manager CONTROL-M exits.
   Tivoli Business Systems Manager provides sample members, which are used to build CONTROL-M exits. The following table lists the sample members used with CONTROL-M exits.

   *Table 66. Sample members used with CONTROL-M exits*

<table>
<thead>
<tr>
<th>Member</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>IHSMKEY</td>
<td>Key Job Filter program</td>
</tr>
<tr>
<td>IHSMKEYJ</td>
<td>Assemble and link-edit Key Job Filter program</td>
</tr>
<tr>
<td>IHSMX01</td>
<td>Job Order exit</td>
</tr>
<tr>
<td>IHSMX01J</td>
<td>Assemble and link-edit Job Order exit</td>
</tr>
<tr>
<td>IHSMX02</td>
<td>Job Submission exit</td>
</tr>
<tr>
<td>IHSMX02J</td>
<td>Assemble and link-edit Job Submission exit</td>
</tr>
<tr>
<td>IHSMX11</td>
<td>Shout exit</td>
</tr>
<tr>
<td>IHSMX11J</td>
<td>Assemble and link-edit Shout exit</td>
</tr>
<tr>
<td>IHSMX15</td>
<td>Job Finish exit</td>
</tr>
<tr>
<td>IHSMX15J</td>
<td>Assemble and link-edit Job Finish exit</td>
</tr>
</tbody>
</table>

   Tivoli Business Systems Manager provides four CONTROL-M exits (IHSMX01, IHSMX02, IHSMX11, IHSMX15), which provide discovery and exception events to Tivoli Business Systems Manager from points within a jobs scheduling cycle. All four exits make use of a job filter program (IHSMKEY) to return the status of a job, either Key, Non-Key, or Ignore, which then determines how to process the job.

   **Note:** The DEBUG_FLAG can be set to ON or OFF to enable or disable the display of debugging data. Only enable debugging to provide information on the schedule records to IBM Customer Support for Tivoli products.

   JOB_STATUS_DEFAULT can be set to KEY, NKY or IGR. The default value is non-key.

2. The load modules that you generate are installed into a load library, which is accessible by all CONTROL-M address spaces and TSO users of CONTROL-M. The SGTMMODS load library must also be accessible by the same address spaces and users. If these load libraries are not able to be defined to the system linklist, then they must be added to a STEPLIB DD concatenation for each CONTROL-M address space, as well as the logon procedure for TSO users that are using CONTROL-M.
3. The sample JCL members, IHSMKEYJ, IHSMX01J, IHSMX02J, IHSMX11J, and IHSMX15J, are found in the SGTMSAMP data set. Modify each JCL member, as described in the comments within the JCL member, and submit the jobs. The expected return code from each job is 0.

Configuring BMC CONTROL-M for OS/390
This section provides information on the configuration of the Tivoli Business Systems Manager integration with BMC CONTROL-M for OS/390, an automated production control and scheduling system that manages and automates the setup, scheduling, and running of jobs within an enterprise.

Configuring OS/390 Components: The Tivoli Business Systems Manager for CONTROL-M OS/390 exits send events to the source/390 object pump through the EDI interface. This EDI interface must be activated, and the EDI trap for CONTROL-M events must be defined before the source/390 object pump receives the events.

The started task GTMPUMP for the source/390 object pump contains an AOPYSIN DD card that allocates a parameter data set and member. To activate the EDI interface, this parameter member should contain the EDI=YES statement.

To configure the OS/390 components, perform the following steps:
1. Depending on the level of the source/390 object pump, the EDI trap for CONTROL-M events might or might not be defined. Browse the GTMPARMP member in the SGTMMODS data set and search for EDIMSG007=GTMCTM01. If this is present, then no further action is required. It is also possible that GTMCTM01 can be defined to a higher EDIMSG00x value. If so, no further action is required.
2. If there is no definition for GTMCTM01 present, then the following parameters must be added to the AOPYSIN parameter member:
   
   EDIMSG007=GTMCTM01
   GTMCTM01_JOBNAME=CONTROLM

   If the examination of GTMPARMP member showed that EDIMSG007 was already in use, then specify the first unused EDIMSG00x value.

Configuring Discovery Components: The following sections describe the configuration of the Tivoli Business Systems Manager components for processing BMC CONTROL-M discovery.

Discovery: Sample JCL member IHSMBCPJ runs REXX IHSMBCP and extracts information for a Control-M Active Jobs file, and creates a discovery file. The discovery file is downloaded (in binary format) to the Windows operating system, and loaded through a SQL stored procedure.

For example:

```
CALL m_LoadControlM 'c:\temp\mvs1ckp.bcp'
```

Rediscovery: Tivoli Business Systems Manager receives Job Schedule rediscovery data through the CONTROL-M Job Order exit IHSMX01 as job schedules are added to the Active Jobs file. All data from the exits are forwarded directly to the source/390 object pump using the AOPEDI interface.

The source/390 object pump then processes these records as it does any other data it encounters and places them into the data space. These records are retrieved by
the source/390 object server and sent to the server environment. Once on the server, pertinent data is extracted from the records, which enables the events to be processed and posted.

Adding a job schedule to the Active Jobs file indicates that the job should be run sometime during the next 24 hour period. While CONTROL-M New Day processing typically adds a majority of job schedules to the Active Jobs file, the situation exists where further job schedules can be added later. Using the Job Order exit enables the accurate capturing of these Job Schedule events for rediscovery.

**Event Processing:** Event/message data is provided by CONTROL-M exits. Tivoli Business Systems Manager receives Job Start events/messages through the Job Submission exit IHSMX02, and receives Job End events/messages through the Job Finish exit IHSMX15. The Shout exit, IHSMX11, is used to trap shout messages issued by the CONTROL-M Shout function.

**OMEGAMON II for MVS, CICS, DB2 and IMS**

Use the following sections to configure the Candle OMEGAMON II performance monitors for use with the Tivoli Business Systems Manager console.

**Defining Virtual 3270 Pool Terminals**

To connect to the OMEGAMON II program, you must define a pool of virtual 3270 terminals (VTAM APPL statements) that will be used by the object pump on each host operating system to establish 3270 sessions with each OMEGAMON II monitor. A 3270 session is required for each operating system or CICS, IMS or DB2 system that is monitored by OMEGAMON II. For example, if, on a single host operating system, you want to monitor three CICS regions, three DB2 subsystems, and the host operating system itself, then you would need a minimum of seven virtual terminals defined in the terminal pool. You might want to define additional virtual terminals to VTAM to allow for future expansion. This terminal pool is then defined to each object pump using the TERMINAL_PREFIX and NUMBER_OF_TERMINALS startup parameters.

If the number of terminals in the pool defined to the source/390 object pump is in the range 1 – 9, then each terminal name has the form *prefix n*. For example, if the prefix is XPAP51 and the number of terminals is four then you would need to define the following APPL statements to VTAM to define the terminal pool:

XPAP511
XPAP512
XPAP513
XPAP514

If the number of terminals in the pool is in the range 1 – 99, then every suffix is a two-digit number. The suffixes 1 – 9 are generated as 01 – 09. Thus if the prefix is XPAP51 and the number of terminals is 15 then you would need to define the following APPL statements to VTAM to define the terminal pool:

XPAP5101
XPAP5102
XPAP5103
XPAP5104
XPAP5105
XPAP5106
XPAP5107
XPAP5108
XPAP5109
The following example shows a sample VTAMLST definition defining a pool of five terminals:

```
AP51  VBUILD TYPE=APPL
XPAP5111 APPL
XPAP5112 APPL
XPAP5113 APPL
XPAP5114 APPL
XPAP5115 APPL
```

### Configuring LOGMODE Entries

The source/390 object pump requires a VTAM logmode name for each terminal model type that is supported (The source/390 object pump connects to a VTAM application as a model 2, 3, 4 or 5 terminal). Initially it uses the following logmode names that are defined in the default value ISTINCLM, of the VTAM **LOGMODE** table.

```
**********************************************************************
* 3274 MODEL 1A WITH MODEL 2 SCREEN (LOCAL SNA) *
* PRIMARY SCREEN 24 X 80 (1920) *
* NO ALTERNATE SCREEN DEFINED *
**********************************************************************

D4A32782 MODEENT LOGMODE=D4A32782,FMPROF=X'03',TSPROF=X'03',PRIPROT=X'B*1',SECPROT=X'90',COMPROT=X'3080',RUSIZES=X'87C7',PSERIC*
              =X'0200000000018500007E00',APPNCOS=#CONNECT

**********************************************************************
* 3274 MODEL 1A WITH MODEL 3 SCREEN (LOCAL SNA) *
* PRIMARY SCREEN 24 X 80 (1920) *
* ALTERNATE SCREEN 32 X 80 (2560) *
**********************************************************************

D4A32783 MODEENT LOGMODE=D4A32783,FMPROF=X'03',TSPROF=X'03',PRIPROT=X'B*1',SECPROT=X'90',COMPROT=X'3080',RUSIZES=X'87C7',PSERVIC*              =X'02000000000185020507F00',APPNCOS=#CONNECT

**********************************************************************
* 3274 MODEL 1A WITH MODEL 4 SCREEN (LOCAL SNA) *
* PRIMARY SCREEN 24 X 80 (1920) *
* ALTERNATE SCREEN 43 X 80 (3440) *
**********************************************************************

D4A32784 MODEENT LOGMODE=D4A32784,FMPROF=X'03',TSPROF=X'03',PRIPROT=X'B*1',SECPROT=X'90',COMPROT=X'3080',RUSIZES=X'87C7',PSERVIC*              =X'0200000000018502B507F00',APPNCOS=#CONNECT

**********************************************************************
* 3274 MODEL 1A WITH MODEL 5 SCREEN (LOCAL SNA) *
* PRIMARY SCREEN 24 X 80 (1920) *
* ALTERNATE SCREEN 27 X 132 (3564) *
**********************************************************************

D4A32785 MODEENT LOGMODE=D4A32785,FMPROF=X'03',TSPROF=X'03',PRIPROT=X'B*1',SECPROT=X'90',COMPROT=X'3080',RUSIZES=X'87C7',PSERVIC*              =X'0200000000018501B847F00',APPNCOS=#CONNECT
```
Configuring the Source/390 Object Pump for OMEGAMON II

Use this section to configure the source/390 object pump for use with OMEGAMON II.

1. Create the pool of VTAM terminal (APPL) definitions on the same OS/390 system on which the source/390 object pump runs, which connects to the OMEGAMONs, and activates the definitions to VTAM.

2. In the source/390 object pump TERMINAL_PREFIX startup parameter, specify the fixed prefix part of the pool terminal names used to log on to the OMEGAMONs.

3. In the source/390 object pump NUMBER_OF_TERMINALS startup parameter, specify the number of terminals in the 3270 terminal pool.

4. The source/390 object pump LOG SCREENS startup parameter controls whether logging of screen interactions for OMEGAMON sessions can be written to the AOPLOG DD.

The parameter values are:
- NO - No OMEGAMON screen logging occurs. This is the default setting.
- YES - OMEGAMON screen interactions are written to AOPLOG DD. Non-display fields are displayed filled with asterisks (*).
- ALL - OMEGAMON screen interactions are written to AOPLOG DD. Non-display fields (password fields) are displayed with data as entered.

5. Run the source/390 object pump LOGSCREENS modify command:

   Modify TBSM Source/390 Object Pump, LOGSCREENS NO | YES

   - This command turns screen logging on or off for the LOG SCREENS startup option or displays the current status of screen logging when no option is entered.
   - You cannot specify ALL on the LOGSCREENS command. See "Source/390 Commands" on page 89.

Configuring OMEGAMON II for MVS, CICS, DB2 and IMS

Use this section to configure the OMEGAMON II classic for MVS, CICS, DB2 and IMS integration for use with IBM Tivoli Business Systems Manager.

1. Create or modify the classic OMEGAMON exception settings for each data source and save them in a profile with the AS suffix. See "Setting Exceptions and Creating the OMEGAMON AS Profile" on page 150 for further details.

2. Ensure the initial OMEGAMON screen does not have any FGO or SGO commands on it. These OMEGAMON commands can affect OMEGAMON screen navigation by the source/390 object pump.

3. Review OMEGAMON II classic security to ensure that the user ID used to log on to the target OMEGAMON APPLID (set in the console) has access to the following OMEGAMON II classic exception collector commands:
   - EXSY for Omegamon CICS, MVS and DB2
   - XIMS for Omegamon IMS
   - The .PFK command sets the PF keys for Tivoli Business Systems Manager sessions.
   - The STOP command logs off the Tivoli Business Systems Manager OMEGAMON session.
   The CICS file collector process (OMEGAMON CICS sessions only) also uses the following commands:
   - The TABL command collects CICS table information.
• The FILE command collects CICS data set information.

4. Ensure that the mode tables, named in the source/390 object pump startup parameters, for the log on issued by the source/390 object pump to each OMEGAMON II classic log are defined to VTAM and are SNA log-modes.

5. Verify that the logon to the OMEGAMON VTAM APPLID takes the user directly to the initial OMEGAMON II classic screen.

6. Verify that there are enough terminals in the terminal pool for all the OMEGAMON sessions (one per session).

Setting Exceptions and Creating the OMEGAMON AS Profile

Use the following steps to set exception thresholds and save them within the OMEGAMON AS profile.

1. Log on to the classic OMEGAMON session with an existing or default profile. For example:

   LOGON APPLID(applid) DATA(USER=xx) (omit the DATA(USER=xx) part to use the default profile)

2. For each exception that you want to set, issue the XACB LIST=cccc command where cccc is the exception name you want to modify.

3. Change the exception settings as required.

4. When all the exceptions are set, issue the OMEGAMON command: PPRF SAVE AS.

   Reply Y to confirm Save. This saves the current exception settings in a profile with the AS suffix.

Resource Management Facility

Use the following sections to configure the IBM Resource Management Facility (RMF).

Configuring Resource Measurement Facility

To configure the integration with Resource Measurement Facility monitors, Tivoli Business Systems Manager uses the RMF Distributed Data Server (DDS). See the relevant RMF documentation regarding the configuration of the RMF and DDServers.

Source/390 Object Pump Startup Parameters

Use the following default values if no others are provided for RMF support within the source/390 object pump.

The RMF_SERVER_IP parameter supplies the IP address of the Distributed Data Server address space. This is the IP address of the system, on which the RMF Distributed Data server resides. If this is not provided, the default value of the local MVS systems IP address is used. This can be used when a single instance of RMF DDServer is collecting data for multiple systems within a sysplex.

If the DDServer is not in the same logical partition (LPAR) as the source/390 pump, set the startup parameter, RMF_SERVER_IP before the source/390 pump is started.

The port number RMF_SERVER_PORT=8802 on which RMF responds. This corresponds to the DM_PORT parameter in the GPMSRV00 member of the IEFPPARM library.
The RMF_SERVER_INTERVAL=100 value corresponds to the MINTIME option for RMF Monitor III.

The RMF_SERVER_TIMEOUT=5 value in seconds that the collector waits before assuming that the Distributed Data Server is unavailable. If a request times out, all future collections are not attempted until at least the time indicated by the server interval value has passed.

CICSPlex System Manager

Use the following sections to install and configure the CICSPlex System Manager (SM) data source integration with Tivoli Business Systems Manager.

Installing CICSPlex System Manager

You must install the CICSPlex SM CLISTS, samples, messages and JCL members that enable discovery, event, and command processing for CICSPlex SM. These data sets are installed through the System Modification Program Extended (SMP/E) tool.

Configuring CICSPlex System Manager

Use the following section to perform the configuration procedures required to integrate CICSPlex SM with Tivoli Business Systems Manager.

Tivoli Business Systems Manager uses the Real Time Analysis (RTA) feature of CICSPlex SM. This feature and other detailed descriptions of CICSPlex SM are described in the following CICSPlex SM publications:

- CICSPlex SM Concepts and Planning – Overview of functions
- CICSPlex SM Administration – Use of the CICSPlex SM screens
- CICSPlex SM Managing Resource Usage – Configuration information
- CICSPlex SM Web User Interface Guide – Information on the use of the Web User Interface

Configuring Tivoli NetView for OS/390 Components

Use this section to configure the Tivoli NetView for OS/390 components for the CICSPlex SM integration.

Before specifically configuring the Tivoli NetView for OS/390 components for the CICSPlex SM integration, refer to "Configuring Tivoli NetView for OS/390" on page 95 and perform the general configuration steps on your system.

Update the DSIPARM members.

Review the status of member IHSSMAT and ensure that the %INCLUDE statement for IHS$MAT1 exists and has not been commented out.

If you do not currently use a message automation table, refer to the IBM Tivoli NetView for OS/390 Automation Guide for information about installing message automation tables.

The Program to Program Interface (PPI) between Tivoli NetView for OS/390 and source/390 is used to transport the events to the Tivoli Business Systems Manager server. Ensure that Tivoli NetView for OS/390 has the PPI option enabled, and that upon starting the source/390 object pump, the PPI receiver is running.
Configuring CICSPlex System Manager Resources
Tivoli Business Systems Manager requires the following definitions of CICSPlex SM resources. For information, refer to the CICSPlex SM Concepts and Planning Guide.

CICSSYS

Defines the CICS system and associates it with a CICSPlex. The CICS regions must be connected to a CMAS.

The following definitions are required to monitor CICSPlex SM resources.

RTASPEC

Analysis specification that identifies the default control attributes that are used for system availability monitoring (SAM) and provides an anchor for all analysis definitions and status definitions associated with a CICS system. For Tivoli Business Systems Manager it is the anchor for the RTAGROUP specification that points to the RTADEF specifications that are used for MAS Resource Monitoring (MRM).

RTADEF

Analysis definition that defines the evaluations to be performed on a periodic basis and the actions to be taken should a notifiable condition occur. For Tivoli Business Systems Manager, this is used to define transaction and file status reporting. An RTADEF definition has a related EVALDEF definition that is used to define the evaluation and a related ACTNDEF definition to define the action.

EVALDEF

Evaluation definition that identifies the resources that are to be sampled and evaluated. When the result of the evaluation is true, the associated analysis definition (RTADEF) is used to determine if a notifiable condition has occurred.

ACTNDEF

Action definition that designates the type of external notification that occurs when the condition or conditions identified in the analysis definition are true.

EYUPARM

To enable additional information to be sent on the alerts to Tivoli NetView for OS/390 program, install PTF UQ64483 for CICS Transaction Server, Version 2.2 and PTF UQ64485 and UQ64486 for CICS Transaction Server, Version 1.3. In order to activate this function, the following EYUPARM (ALERTVER(1)) must be specified on the CMAS named in the ACTNDEF as sending generic alerts to Tivoli NetView for OS/390.

Defining System Availability Monitoring Alerts
The CICSPlex SM system availability monitoring (SAM) function monitors CICS systems during their planned hours of availability. If any of a set of predefined conditions occurs while a CICS system is being monitored, CICSPlex SM sends out an external notification. These conditions are:

SAMOPS
System Unavailable
SAMSO
Short on Storage

SAMSDM
System memory dump in progress

SAMTDM
Transaction memory dump in progress

SAMMAX
System at maximum number of tasks

SAMSTL
System in stall condition (deadlock)

To set up for SAM conditions:
1. Use the CICSPlex System Manager interactive panels and type RTASPEC. This provides a list of RTASPEC resources defined for your CICSPlex.
2. Find the RTASPEC resource corresponding to the MAS (CICS system) for which you are doing the setup. Type UPD as the action for this RTASPEC.
3. Determine which of the six conditions you want to generate alerts. For those conditions, specify an action definition (ACTNDEF) in the ACTION field. For CICSPlex SM purposes, the severity is not used. The ACTNDEF can be an existing definition; however, if it is used for other purposes, make sure that usage is compatible with usage for Tivoli Business Systems Manager.
4. For the preceding ACTNDEFs, ensure the following items are typed:
   - ALERT is set to YES
   - CMAS NAME is specified as the local CMAS; preferably, the CMAS that is sending alerts directly to Tivoli NetView for OS/390.
   - EYUPARM must be specified on the CMAS named in the ACTNDEF as sending generic alerts to Tivoli NetView for OS/390. The EYUPARM is ALERTVER(1).

This is done by specifying ACTNDEF on the CICSPlex SM interactive panels and then either DEF or UPD for each ACTNDEF; depending on whether you are defining new ones or modifying old ones.

Refer to the CICSPlex SM Managing Resource Usage Guide for more information on how to set up a SAM function.

Defining MAS Resource Monitoring Alerts
Use the CICSPlex SM MAS resource monitoring (MRM) function to monitor the status of any specific or generic CICS resource. Tivoli Business Systems Manager specifically monitors the following resources:

- Files
- Transactions
- CICS connections
- DB2 connections
- Corba resources
- Transient Data Queues
- Temporary Storage Queues
- DBCTL connections

Events generated by monitoring other resources are applied to the CICS region that owns them.
Sample Alert Definitions
Sample MRM definitions for the resources that are monitored by Tivoli Business Systems Manager are provided in the SGTSAMP library. You must install these definitions or a set that is functionally equivalent, to monitor the listed resources. The following table lists the sample alert MRM definitions.

Table 67. Sample Alert Definitions

<table>
<thead>
<tr>
<th>Sample Name</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>IHSCGRP</td>
<td>CICS groups</td>
</tr>
<tr>
<td>IHSCFILE</td>
<td>Files</td>
</tr>
<tr>
<td>IHSCTRAN</td>
<td>Transactions</td>
</tr>
<tr>
<td>IHSCMAS</td>
<td>CICS regions and connections</td>
</tr>
<tr>
<td>IHSCDB2C</td>
<td>DB2 connections</td>
</tr>
<tr>
<td>IHSCCORB</td>
<td>Corba servers and JAR files</td>
</tr>
<tr>
<td>IHSCMISC</td>
<td>Miscellaneous resources</td>
</tr>
</tbody>
</table>

Refer to the CICSPlex SM Managing Resource Usage for further details.

Configuring Windows Components for CICSPlex Discovery
Use the following section to install the Windows NT-based components for processing CICSPlex discovery.

Registry Modifications
The GTMAOPE0 utility and the ASIMVSIPListenerSvc service are used for bulk discovery of CICSPlex data sources.

Before you run the GTMAOPE0 utility, you must setup the ValidClient entries for the ASIMVSIPListenerSvc service on the database server and then restart the service.

For details on the configuration of the ASIMVSIPListenerSvc service, see “Configuring the ASIMVSIPListenerSvc Service” on page 92 and “Running the configurebulkdatautility.ksh Script” on page 92.

Configuring Scheduling Jobs
Use the following scheduling jobs to discover CICSPlex resources:

- CICS DiscoveryLoad
- CICS Discovery Process

For details on configuring these jobs, see “Configuring SQL Server Jobs” on page 93.

The CICS Discovery Process job performs the processing required on any CICS discovery batch job that is in the LOADED state. Like the CICS Discovery Load job, the administrator has to define a schedule for this job. To avoid placing a significant load on the database, schedule the discovery batch job for low-activity periods.

Note: To enable the CICS Discovery Load job to run before the discovery job, configure the schedules for these jobs.
CICSPlex System Manager for OS/390 Discovery Requests
The initial discovery of CICSPlex System Manager for OS/390 resources involves using the CICSPlex System Manager for OS/390 application program interface (API) to extract information from the CICSPlex System Manager for OS/390 data repository definition file. The module forwards the data to the Tivoli Business Systems Manager server, where it is processed and placed in the database.

Discovery jobs are initially run when Tivoli Business Systems Manager is installed and started. These jobs can be run later, either on a scheduled basis or manually by an operator, to capture updates to your configuration. For more information on discovery jobs, see the IBM Tivoli Business Systems Manager: Administrator’s Guide.

Within a CICSPlex, rediscovery occurs as a result of incoming event data that Tivoli Business Systems Manager is processing for availability. These events determine which CICSPlex a resource resides in, which operating system the resource is running on, and the status of the resource. If it is discovered that the resource has moved from one image to another, the database is modified to reflect the change.

For CICSPlex-managed resources to be discovered and monitored, a CICSPlex must be defined to Tivoli Business Systems Manager and inserted on the GUI, from one of the following resources:
- Enterprise
- Complex
- Machine
- LPAR
- Operating System

The definition of a CICSPlex includes several values that must be typed in the properties page:
- CICSPlex Maintenance point CMAS name
- Name of the discovery job (member name)
- OS ID of the system running maintenance point CMAS
- URL address for the CICSPlex SM Web User Interface (if this function is needed)
- User ID for the security exit (user ID for CICSPlex SM API if required)
- Sign on parameter for security text (password for CICSPlex SM API if required)

Once the CICSPlex is defined, the discovery data generated in the OS/390 environment is processed and placed in the Tivoli Business Systems Manager database. Resources such as CICS regions, CMASs, CORBA servers, Java resources, connections, files, and transactions are discovered. They are inserted in the database and you view them within the Resources view on the console.

Configuring the CICSPlex System Manager for OS/390 Discovery
IBM Tivoli Business Systems Manager discovery for CICSPlex System Manager is accomplished by running the sample IHSCCRUN from the SGTMSAMP library. This function is initiated from the console by right-clicking the CICSPlex icon, clicking your CICSPlex information, then clicking Discovery Request.

The discovery consists of the following steps:
1. Run IHSCPBCH, which extracts data about CICSPlex resources. It builds a sequential file with variable length records. Each record represents one discovered resource.
2. Run the GTMAOPE0 utility, which transmits the sequential file to the Windows operating system server that contains the Tivoli Business Systems Manager database. For further details, see “Configuring the GTMAOPE0 Utility” on page 90.

The configured job should be contained in a member of the library referred to by the GTMJCL DD card of the source/390 object pump.

The job statement should meet your corporate standards.

The following modifications should be made to the supplied sample:

- **STEPLIB DD Statement**
  At run time, CICSPlex SM must find the module EYU9AB00 in the STEPLIB, MVS linklist, or LPA library concatenation. This module is distributed in the CPSMnnn.SEYAUTH library where nnn is the version of CICPlex SM. The REXX alternate library should also be included in the STEPLIB concatenation.

```plaintext
//STEPLIB DD DISP=SHR,DSN=CPSMnnn.SEYAUTH
// DD DISP=SHR,DSN=hlq.SGTMMODS
// DD DISP=SHR,DSN=hlq.SEAGALT
```

- **SYSPRINT DD Statement**
  IHSCPBPCH produces messages on the SYSPRINT DD data set which is typically allocated to JES.

```plaintext
//SYSPRINT DD SYSOUT=* 
```

- **AOPDFILE DD Statement**
  IHSCPBPCH writes to a file with DDNAME AOPDFILE. It can create a new file or add to an existing file. IHSCPBPCH defines the following parameters for the file:
  - RECFM - VB
  - BLKSIZE - 4096
  - LRECL - 4092

  The following example creates a new file.

```plaintext
//AOPDFILE DD DISP=(NEW,CATLG),DSN=AOP.DISCOVRY,
// VOL=SER=USRVR0,SPACE=(TRK,(10,1)),UNIT=3390
```

  The following example adds to an existing file:

```plaintext
//AOPDFILE DD DISP=(MOD,KEEP),DSN=AOP.DISCOVRY
```

The majority of records written to the file are approximately 110 bytes in length. The maximum record length is approximately 130 bytes. The total number of records is the sum of the following:

- The number of CMAS regions in the CICSPlex
- The number of MAS regions in the CICSPlex
- The number of CICS system groups

  For each active MAS region:
  - The number of local transactions defined to the MAS
  - The number of remote transactions defined to the MAS
  - The number of local files defined to the MAS
  - The number of remote files defined to the MAS
  - The number of DB2 connections:
    - The number of DJARS
    - The number of CORBRA Servers

- **Transmit**
You must configure the GTMAOPE0 utility control statements as described in the section "Bulk Discovery" on page 90.

Using Subnames
Although multiple CICSplexes cannot have the same name in a CICSplex domain, multiple CICSplex domains are accepted within a single Tivoli Business Systems Manager environment. To accept multiple CICSplex domains, add a unique subname to each of the duplicate CICSplex names. The subname is displayed as an append to the CICSplex name, separated by a dot. The subname capability function is transparent to CICSplex System Manager for OS/390, which continues to use the original, duplicated CICSplex names.

To use subnames, the following restrictions apply:
- All ACTNDEFs for the CICSplex that has a subname, must be defined on a single CMAS, referred to as the reporting CMAS and usually the maintenance point CMAS.
- You must run the discovery job for a CICSplex on the MVS image that contains the reporting CMAS for that CICSplex. This MVS image must support a Tivoli NetView for OS/390 environment and a Tivoli Business Systems Manager source/390 environment.
- Installation functions pertaining to Tivoli NetView for OS/390 (such as the command list or automation table entry) must be installed before running the discovery job.
- The Tivoli NetView for OS/390 system should be running when you run the discovery job.

Define the CICSplex to Tivoli Business Systems Manager with a name of the form ccccccccc.sssssss where ccccccccc is the CICSplex name as defined to CICSplex System Manager for OS/390 and sssssss is the subname you are adding.

To define the subname:
- In the IHSCCPPD step of the discovery job, define the subname as a part of the CICSplex name in the form ccccccccc.sssssss where ccccccccc is the CICSplex name as defined to CICSplex System Manager for OS/390 and sssssss is the subname being added to it.
- Run the following Tivoli NetView for OS/390 command:
  
  IHSCGLBL CICSPlexName=cccccccc SubName=ssssssss
  
  Where ccccccccc is the CICSplex name as defined to CICSplex System Manager for OS/390 and sssssss is the subname being added to it.

If a subname is defined for a CICSplex, it is displayed for all representations of that CICSplex resources as well as all representations of any CICS resources that are associated with that CICSplex.

Additional Configuration for Data sets
The CPSM.SEYUAUTH data set for this version of CICSplex SM that is to be monitored must be included in the steplib concatenation for the source/390 object pump task. This enables the usage of the CICSplex SM APIs.

CICSplex SM Web User Interface
You can start in context the CICSplex SM Web User Interface to monitor resources. To enable this function the CICSplex SM Web User Interface server must be installed and configured. Refer to the CICS Web User Interface Guide for details. The
server location information is made known to Tivoli Business Systems Manager when the CICSPlex is defined to the system.

Additional functionality is provided using the CICS Performance Monitor, Version 1.1 program. This program provides a GUI front-end to define RTAs required for monitoring and is very similar to the functionality provided by the CICSPlex SM end-user interface which runs under the Interactive Software Productivity Facility (ISPF) program. For Tivoli Business Systems Manager to trap these newly defined alerts that have been created through the GUI, you must set the value for the ACTNDEF parameter to GENALERT(YES) using the ISPF interface. Refer to "Defining MAS Resource Monitoring Alerts" on page 153 for information about setting this parameter.

**Installing the CICS Transient Data Exit Program**

The CICS Transient Data Exit Program enables Tivoli Business Systems Manager to collect CICS TDQ messages. The External Data Interface within the source/390 object pump accepts message data from CICS using this exit.

To install the CICS Transient Data Exit program, perform the following steps:

1. Assemble and install the AOPCICSx program into CICS. The following sample jobs are found in the SGTMSAMP library:

   AOPCICS2 - CICS Version 2.1  
   AOPCICS3 - CICS Version 3.1 and later

2. The program must then be activated as an exit point within CICS. Add the program to the startup PLT AFTER the DFHDELIM entry. The Program List Table (PLT) is a list of programs that CICS runs during startup and shutdown. By placing the AOPCICS3 program into the startup PLT, CICS runs the program during startup, which activates the exit point in CICS, so that CICS Transient Data messages are captured. You can also define a transaction code for the program (any four character name can be used), log on to CICS, and use the transaction to start or stop the exit.

After the program is installed, CICS displays the following message at startup:

   A0P CICS DATA COLLECTION STARTED

3. Increase the EDI_BUFFER_SIZE parameter if you are losing data because of the number of CICS regions sending data to the source/390 object pump. Use the Source/390 object pump modify command EDI described in IBM Tivoli Business Systems Manager: Command Reference for more information. The CICS regions must be registered to the source/390 object pump.

4. If you are using the ACC1IDxx card as described in "Running Multiple Copies of Source/390 on a OS/390 Image" on page 72, code this in the CICS JCL members.

---

**Tivoli NetView for OS/390 RODM**

Use the following sections to configure the Tivoli NetView for OS/390 RODM integration with Tivoli Business Systems Manager.

**Configuring OS/390 Components**

Use the following steps to configure Tivoli Business Systems Manager OS/390 components:
1. Prepare the RODM unload and GTMAOPE0 JCL member. Refer to the GTMSAM16 sample in the SGTMsamp library. Run this job after all configuration is completed.

2. Add the following parameters to the source/390 object pump startup parameters to activate the RODM interface. For the entire contents of the startup parameters, see “Source/390 Object Pump Startup Parameters” on page 74.

The RODM_NAME=name parameter specifies the RODM name assigned to the RODM address space that the source/390 object pump is to connect to for network status information. If this parameter is omitted, then network status data is not collected.

The RODM_USERID=userid parameter specifies the user ID used to sign on to the RODM selected by the RODM_NAME parameter. If this parameter is omitted, then the source/390 object pump job name is used as the RODM user name. If a system authorization function (SAF) is providing security to RODM, then you code RODM_USERID= to force a blank user ID. The user ID that is used must have at least RODM level 5 security.

Note: Refer to the IBM Tivoli NetView for z/OS Administration Reference for further details.

The RODM_NOTIFY_METHOD=AOPNOTF | method name parameter specifies the name of the RODM method that is used to send status change data from RODM resources to the source/390 object pump. You can change this name if the default name conflicts with an existing RODM method in your installation. If so, you must re-link with the new name to the supplied RODM method in order to match the new name.

The RODM_NOTIFY_QNAME=AOPNOTFQ | notify queue name parameter specifies the name of the RODM notify queue that is used to transfer data from the RODM address space to the source/390 object pump. You can specify this parameter if the default name conflicts with a name you are using in your installation.

Note: In addition, the AOPNOTF RODM method needs to be made available to the RODM address space in the STEPLIB concatenation or LNKLIST definitions. AOPNOTF is available through a NetView PTF UW76034.

The RODM_QUERY_MODEL_TIME=180 | 30-9999 parameter specifies the amount of time that the RODM interface will wait after it receives acknowledgement that the SNA Topology Data Model was loaded before sending the RODMSTATUS UP message to Tivoli Business System Manager. The default value is 180 seconds. The minimum supported time is 30 seconds and the maximum time supported is 9999 seconds. The RODM_QUERY_MODEL_TIME can be tuned to provide an accurate estimate of wait time in seconds that should be specified by analyzing the following FLB–prefixed messages provided in NetView.

FLB402I SNA TOPOLOGY MANAGER HAS BEGUN WARM-START PROCESSING

The above message is issued after the SNA TOPOLOGY DATA MODEL is loaded. The Data Model Load program (RODM loader procedure) is EKGLOTLM.

FLB406J INITIAL TRANSFER OF SNA NETWORK TOPOLOGY FROM NODE netid.cpname IS COMPLETE

FLB423I INITIAL TRANSFER OF SNA LOCAL TOPOLOGY FROM NODE netid.cpname IS COMPLETE
If you take the time of the last message of the FLB406I and FLB423I messages set that was issued after a SNA TOPOLOGY DATA MODEL load and subtract that time from the FLB402I message, it gives you an idea of how long it takes SNA Topology Manager to create all of the network resources in RODM. Convert this time to seconds and round up to the nearest minute. Keep the time value in seconds for the RODM_QUERY_MODEL_TIME parameter specified in the Object Pump.

The RODMSTATUS UP message is the event message that is sent from the Object Pump to inform Tivoli Manager Business System that the RODM task has initialized and is ready to receive registration requests for the RODM resources. If the RODMSTATUS UP message is received and there had not been any prior RODM discovery resources populated in the Tivoli Business System Manager database, then there is no registration action taken.

### Configuring Windows Discovery Components

Use the following sections to configure the Windows discovery components.

Verify that the source\390 object pump is started before you run the sample job GTMSAM16 in the SGTMSAMP library to perform a discovery. After the source\390 components are started, the Tivoli Business Systems Manager MVSIPLS Listener service is automatically configured and can receive data from the GTMSAM16 job. You must configure the GTMSAM16 job before you submit it in your environment.

Configure the Tivoli Business Systems Manager MVSIPLS Listener service manually if you perform a RODM discovery prior to the source\390 components starting or if you discover RODM resources from a OS\390 host where the source\390 components were not running.

For details on the configuration of the ASIMVSISPLS Listener Svc service, see “Configuring the ASIMVSISPLS Listener Svc Service” on page 92 and “Running the configurebulkdatautility.ksh Script” on page 92.

### Configuring SQL Server Jobs

The following SQL server jobs are used for support and discovery of RODM resources:

- RODM Discovery Load
- RODM Discovery Process

For details on the configuration of these jobs, see “Configuring SQL Server Jobs” on page 93.

### Notes:

1. Automatic deletion of TEMP files is managed by registry setting. The setting ASIMVSISPLS Listener Svc/Settings Var "AutoDeleteTempFiles" should be set to 0 to retain the TEMP files; set to a 1 to enable AutoDelete.
2. Use the SQL Enterprise Manager to define a run schedule for each of the SQL server jobs. The schedule determines how often the job runs and in what time window.

Before you perform a RODM Discovery Load and RODM Discovery Process, you must insert the SNA\APPN or GMFHSAggregateFolder resource. You can insert both resources to discover them both during a single discovery process. See the
IBM Tivoli Business Systems Manager Administrator’s Guide for details on inserting SNA\APPN and GMFHSAggregateFolder resources.

When the RODM Discovery Process ends successfully, the state is set to COMPLETED.

You can view the State by running SQL procedure, Select batchid,pstat,ctime from DiscoveryBatch and observe the pstat.

The following table lists the definitions in the DiscoveryBatchPStatVal. SQL table.

<table>
<thead>
<tr>
<th>Pstat</th>
<th>Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>ENQUEUED</td>
</tr>
<tr>
<td>1</td>
<td>LOADED</td>
</tr>
<tr>
<td>2</td>
<td>INPROGRESS</td>
</tr>
<tr>
<td>3</td>
<td>COMPLETED</td>
</tr>
<tr>
<td>4</td>
<td>ALLOCATED</td>
</tr>
<tr>
<td>-1</td>
<td>LOAD_ERROR</td>
</tr>
<tr>
<td>-2</td>
<td>PROCESS_ERROR</td>
</tr>
<tr>
<td>-3</td>
<td>(Undefined)</td>
</tr>
<tr>
<td>-4</td>
<td>ALLOCATE_ERROR</td>
</tr>
</tbody>
</table>

Storage Management

Tivoli Business Systems Manager integrates with the following storage management products to monitor their exception sources. Tivoli Business Systems Manager reports storage exceptions based on a pre-defined workflow.

The storage management products that integrate with Tivoli Business Systems Manager are:
- System-Managed Storage (SMS)
- Data Facility Systems Managed Storage Hierarchical Storage Manager (DFSMShsm™)
- Extended Remote Copy (XRC)

Configuring System-Managed Storage

The following sections explain the necessary steps for enabling the discovery process and event flow of System-Managed Storage events on the OS/390 and Windows operating system components of Tivoli Business Systems Manager.

Configuring OS/390 Components

To configure Tivoli Business Systems Manager OS/390 components:
1. Install the appropriate SMP/E maintenance, which is located in your program directory.
2. Confirm that the following storage modules are in the Tivoli Business Systems Manager OS/390 SGTMSAMP library. The following table lists the storage modules in the SGTMSAMP library.
Table 69. Storage Modules in the SGTMSAMP library

<table>
<thead>
<tr>
<th>Member Name</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>GTMCATBD</td>
<td>Sample JCL member for Catalog scan discovery</td>
</tr>
<tr>
<td>GTMUCBBD</td>
<td>Sample JCL member for UCB scan discovery</td>
</tr>
<tr>
<td>GTMDCLBD</td>
<td>Sample JCL member for DCOLLECT scan discovery</td>
</tr>
<tr>
<td>GTMVTCBD</td>
<td>Sample JCL member for VTOC scan discovery</td>
</tr>
</tbody>
</table>

3. Prepare the Batch Discovery JCL by copying and modifying the sample JCL member. For instructions, refer to the Comments section in the sample JCL member.

4. The scheduling of the OS/390 collection jobs can begin in the following order and run on a daily basis using any OS/390 scheduling system. The following table lists the OS/390 collection jobs.

Table 70. OS/390 collection jobs

<table>
<thead>
<tr>
<th>Job</th>
<th>Collection Routine</th>
<th>Related Resources</th>
<th>Duration</th>
<th>Startup Parameters</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Job 1</td>
<td>DcollectV</td>
<td>Storage Group, Disk Volume</td>
<td>Minutes</td>
<td>None</td>
<td>One system only</td>
</tr>
<tr>
<td>Job 2</td>
<td>UCB scan</td>
<td>Disk Device</td>
<td>Seconds</td>
<td>None</td>
<td>Every system follows Job 1</td>
</tr>
<tr>
<td>Job 3 ***</td>
<td>Catalog scan</td>
<td>Catalog entry</td>
<td>Seconds</td>
<td>Master</td>
<td>Every system Master Catalog</td>
</tr>
<tr>
<td>Job 4***</td>
<td>Catalog scan</td>
<td>Catalog entry</td>
<td>Minutes</td>
<td>all</td>
<td>One system only</td>
</tr>
<tr>
<td>Job 5**</td>
<td>VTOC scan</td>
<td>Data set</td>
<td>Hours</td>
<td>x-y range all</td>
<td>One system only</td>
</tr>
</tbody>
</table>

*** Indicates run only if Catalog viewing is enabled

** Indicates run only if Data set viewing is enabled.

Job 3 and 4 start the same program.

5. Authorize the source/390 object pump address space to use Sysplex Data Services. Use the following RACF commands:
   - To activate the resource class: SETROPTS CLASSACT(FACILITY) GENCMD(FACILITY)GENERIC (FACILITY)
   - To define the resource name: RDEFINE FACILITY resname UACC(NONE) where resname is the resource name. For example, ERBSDS.SMFDATA, or a generic resource name -ERBSDS.*.
   - To grant the user ID of the application program READ access: PERMIT resname CLASS(FACILITY)ID(userid)ACC(READ)
   - To activate changes: SETROPTS REFRESH RACLIST(FACILITY)

6. Make the SMF records available to Tivoli Business Systems Manager.

RMF must be active and have an SMF buffer available, which is collecting SMF type 74 records. The SMF buffer is controlled using the SMFBUF parameter when starting RMF. Refer to the OS/390 RMF User’s Guide for more information on the SMFBUF parameter.

A minimum value of SMFBUF(SPACE(8M),RECTYPE(74)) must be specified.
Configuring Windows Discovery Components

The GTMAOPE0 utility and the ASIMVSIPListenerSvc service are used for bulk discovery of SMS data sources.

Before you run the GTMAOPE0 utility, you must setup the ValidClient entries for the ASIMVSIPListenerSvc service on the database server and then restart the service.

For details on the configuration of the ASIMVSIPListenerSvc service, see "Configuring the ASIMVSIPListenerSvc Service" on page 92 and "Running the configurebulkdatautility.ksh Script" on page 92.

Configuring SQL Server Jobs: The following SQL server jobs are used for support and discovery of SMS resources:

- SMS Disk Device Discovery Load and Discovery Process
- SMS Disk Volume, Storage Group Discovery Load and Discovery Process
- SMS Data set Discovery Load and Discovery Process
- SMS Catalog Entry Discovery Load and Discovery Process

For details on the configuration of Discovery Load and Discovery Process jobs, see "Configuring SQL Server Jobs" on page 93.

Enabling Interval Monitoring

IBM Tivoli Business Systems Manager provides threshold profiles for space usage (DSE) exceptions, device performance exceptions (DPE), and cache performance exceptions (CPE). No storage resources are assigned threshold profiles. Resources must be registered (single or multiple resource registration) in order to receive interval exceptions. Use the following steps to customize threshold profiles before registration.

Use the default profiles provided in the SMSSampleIntervalProfiles.sqi file.

1. Copy the SMSSampleIntervalProfiles.sqi file to the SMSIntervalProfiles.sqi file in TivoliManager/sql directory.
2. Edit the SMSIntervalProfiles.sqi file and assign default DPE and CPE profiles to operating system resources as required.
3. Assign a default SPE profile to the storage complex resource.
4. Open a command prompt, change to the TivoliManager/sql directory and create the SMSIntervalProfiles.sqi file by running the command:
   ```sh```
   C:\TCL\SQL\SMSIntervalProfiles.sqi
   ```sh```
5. Start the Query Analyzer, load the SMSIntervalProfile.sqi file, and run the file.
6. Registration records are uploaded to the source/390 object pump during initialization.
7. You can register or unregister SMS resources for interval monitoring by right-clicking the resource from the console GUI and selecting Source/390 --> SMS--> register/unregister.

Note: Use the Class and Object IDs to identify resources while creating relationship statements. The Class and Object ID of a resource is displayed on the properties page of the resource when you hold down the Shift + Control keys and then press the F12 key. The ResourceDebugAttribute tab of the properties page contains attribute rows, cid (the objects Class ID) and id (the object Object ID).
You can perform further configuration to create additional profiles and resource assignments by modifying threshold values and adding relationship statements. Additional profiles can produce threshold management at the individual resource level. Use the same procedure previously mentioned.

To create special DPE and CPE exception profiles for database storage group volumes, perform the following steps:

1. Find the disk volume resources that comprise the database storage group and identify their partner disk device resources. Find Object IDs for all selected disk device resources.
2. Copy the SMSSampleIntervalProfiles.sqi file. Create the database profile for exceptions by copying default profiles and modifying the thresholds.
3. Assign the database profiles to all selected disk device resources by adding resource relation statements as follows:
   
   ```sql
   BEGIN_SMSINTERVAL_PROFILE(Database, DPE)
   SMSINTERVAL_OBJECT_RELATION (DKDV, ObjectId)
   SMSINTERVAL_OBJECT_RELATION (DKDV, ObjectId)
   SMSINTERVAL_OBJECT_RELATION (DKDV, ObjectId)
   END_SMSINTERVAL_PROFILE(Database, DPE)
   
   BEGIN_SMSINTERVAL_PROFILE (Database, CPE)
   SMSINTERVAL_OBJECT_RELATION (DKDV, ObjectId)
   SMSINTERVAL_OBJECT_RELATION (DKDV, ObjectId)
   SMSINTERVAL_OBJECT_RELATION (DKDV, ObjectId)
   END_SMSINTERVAL_PROFILE(Database, CPE)
   ```

4. Create the SMSIntervalProfile.sqi file and run the Query Analyzer as outlined in the preceding steps.

**Note:** SMS interval metrics are examined by OS/390 on scheduled intervals. The interval for a performance profile (DPE or CPE) is determined by the OS/390 host. The interval for a disk space exception profile (DSE) can be specified in the optional third and fourth parameters of the `BEGIN_SMSINTERVAL_PROFILE` macro.

The third parameter specifies the interval in minutes.

The fourth parameter specifies the number of minutes past the hour when the profile should be examined. For example, to examine a profile every hour on the half-hour, specify an interval of 60 minutes and an alignment of 30 minutes. If not specified, the interval is 30 minutes and the alignment is 0 minutes (every 30 minutes-on the hour and half-past each hour).

### Configuring Data Facility Systems Managed Storage Hierarchical Storage Manager

The following sections explain the necessary steps for configuring the Tivoli Business Systems Manager integration with Data Facility Systems Managed Storage Hierarchal Storage Manager (DFSMShsm) processes as an exception source to enable monitoring and control of DFSMShsm resources.

#### Enabling the HSM Monitor/Tuner Interface

In order to interface Tivoli Business Systems Manager with the DFSMShsm process, install the PTF UW80013 for HSM Monitor/Tuner prior to the following configuration:
• For Tivoli Business Systems Manager to receive alerts from HSM Monitor/Tuner, modifications must be made to the HSM Monitor/Tuner started task (GFTJHMT).
• Add the HILEV.SGTMMODS module library to the STEPLIB DD concatenation. Include either the REXX run time library or the REXX alternate library in the STEPLIB concatenation.
• Add the The HILEV.SGTMEXEC EXEC library to the SYSEXEC DD concatenation.
• If you are running multiple copies of the OS/390 components on a single image, code an ACC1IDxx DD DUMMY card, which corresponds to the preferred instance of Tivoli Business Systems Manager.

### Configuring HSM Monitor/Tuner Workstation

For installation of the HMT workstation, refer to *DFSMS Optimizer: The New HSM Monitor/Tuner*.

Tivoli Business Systems Manager launches the HMT workstation by running the runmontuner.bat file from the HMT installation directory.

The default installation directory for the HMT workstation component is the following:

```c:\Program Files\IBM\DFSMSOPT V1.2.0```

To run the HSM Monitor/Tuner workstation you *must* update your environment path variables by either editing the Autoexec.bat file or updating the PATH variable in your system's Control Panel.

The following example assumes you have used the default installation directory:

```PATH=C:\Program Files\IBM\DFSMSOPT V1.2.0;```

### Modifying an Existing MON9999 Routine

If there is an existing MON9999 automation routine used in the HSM Monitor/Tuner address space, it must be modified to run the console. The parameter passed to the MON9999 routine must be propagated to the console.

The following REXX code can be inserted into the MON9999 routine to run the console.

```ARG ARG1, ARG2, ARG3
RC = GTMHMTRX(ARG1, ARG2, ARG3)```

In this case, the HILEV.SGTMEXEC library should be in the SYSEXEC concatenation in the library containing the MON9999 routine.

### Configuring Extended Remote Copy Discovery

The following sections explain the necessary steps for using the discovery process and event flow for Extended Remote Copy storage events on OS/390 and Windows operating system components of Tivoli Business Systems Manager.

### Configuring OS/390 Components

To configure Tivoli Business Systems Manager OS/390 components:

1. Install the appropriate SMP/E maintenance, which is located in the program directory.
2. Confirm that the following storage modules are in the Tivoli Business Systems Manager OS/390 SGTMSAMP library. The following table lists the storage module used for configuring OS/390 components for XRC discovery.

Table 71. Storage Modules

<table>
<thead>
<tr>
<th>Member Name</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>GTMXRCSC</td>
<td>Sample JCL member for Batch Discovery</td>
</tr>
</tbody>
</table>

3. Prepare the Batch Discovery JCL member by copying and modifying the sample JCL programs. For instructions, refer to the Comments section in sample JCL program.

### Registry Modifications

The GTMAOPE0 utility and the ASIMVSIPListenerSvc service are used for bulk discovery of Extended Remote Copy (XRC) storage data sources.

Before you run the GTMAOPE0 utility, you must setup the ValidClient entries for the ASIMVSIPListenerSvc service on the database server and then restart the service.

For details on the configuration of the ASIMVSIPListenerSvc service, see

- “Configuring the ASIMVSIPListenerSvc Service” on page 92
- “Running the configurebulkdatautility.ksh Script” on page 92

### Configuring SQL Server Jobs

The following SQL Server jobs are used for support and discovery of Extended Remote Copy storage data resources:

- XRC Session Names Discovery Load
- XRC Session Names Discovery Process
- XRC Session Pairs Discovery Load
- XRC Session Pairs Discovery Process

For details on the configuration of these jobs, see “Configuring SQL Server Jobs” on page 93.

---

### ASG–TMON for CICS

Use the following sections to configure ASG–TMON for CICS for use with Tivoli Business Systems Manager.

Table 72. ASG–TMON for CICS Installation Overview

<table>
<thead>
<tr>
<th>Step Overview</th>
</tr>
</thead>
<tbody>
<tr>
<td>“1. Perform ASG–TMON Configuration”</td>
</tr>
<tr>
<td>“a. Configure ASG–TMON for CICS to Use z/OS Syslog” on page 167</td>
</tr>
<tr>
<td>“b. Determine ASG-TMON for CICS Messages to be Monitored” on page 167</td>
</tr>
<tr>
<td>“2. Configure NetView Components” on page 167</td>
</tr>
<tr>
<td>“a. Configure NetView for OS/390” on page 167</td>
</tr>
<tr>
<td>“3. Start NetView for OS/390” on page 167</td>
</tr>
</tbody>
</table>

### 1. Perform ASG–TMON Configuration

Use the following steps to configure ASG–TMON for CICS.

---

166 IBM Tivoli Business Systems Manager Installation and Configuration Guide
a. Configure ASG–TMON for CICS to Use z/OS Syslog

On the ASG-TMON for CICS Message Alerts screen (option 10.3.1), add the following message alert definition:

- MessageSev: TMON259* Z
- MessageSev: TMON26* Z

The message alert definition causes ASG-TMON for CICS to direct Smart Target alert messages to the z/OS system console.

Specifying a severity of Z causes ASG-TMON for CICS to send alert messages to the z/OS system console, keeping the default severity level supplied with ASG-TMON for CICS. To override the default severity level of particular alert messages, specify a severity of A, B, or C (this is equivalent to 1, 2, or 3, but with the messages being sent to the z/OS system console). For details on using the ASG-TMON for CICS Message Alerts screen, refer to the the ASG-TMON for CICS Reference Manual.

b. Determine ASG-TMON for CICS Messages to be Monitored

Individual ASG-TMON for CICS messages can be excluded from Tivoli Business Systems Manager monitoring. To achieve this, on the ASG-TMON for CICS Message Alerts screen (option 10.3.1), add extra message alert definitions for all message codes to be excluded. Assign these definitions a blank (or 1, 2, or 3) severity.

Note that these definitions are in addition to the TMON26* and TMON259* definitions defined in "a. Configure ASG–TMON for CICS to Use z/OS Syslog."

2. Configure NetView Components

Tivoli Business Systems Manager for ASG-TMON for CICS runs within a NetView for OS/390 started task. This section details the customization required for this started task.

a. Configure NetView for OS/390

Complete all steps in "Configuring Tivoli NetView for OS/390” on page 95.

3. Start NetView for OS/390

When all customization steps are complete, NetView for OS/390 must be restarted.

ASG–TMON for DB2

Use the following sections to configure ASG–TMON for DB2 for use with Tivoli Business Systems Manager.

Table 73. ASG–TMON for DB2 Installation Overview

<table>
<thead>
<tr>
<th>Step Overview</th>
</tr>
</thead>
<tbody>
<tr>
<td>“1. Configure Tivoli Business Systems Manager for DB2” on page 168</td>
</tr>
<tr>
<td>“2. Perform ASG–TMON Configuration” on page 168</td>
</tr>
<tr>
<td>&quot;a. Configure ASG–TMON for DB2 to Use z/OS Syslog” on page 168</td>
</tr>
<tr>
<td>“3. Configure NetView Components” on page 169</td>
</tr>
<tr>
<td>&quot;a. Configure NetView for OS/390” on page 169</td>
</tr>
<tr>
<td>“4. Start NetView for OS/390” on page 169</td>
</tr>
</tbody>
</table>

Chapter 9. Installing and Configuring Data Sources 167
1. **Configure Tivoli Business Systems Manager for DB2**
   
   As the Tivoli Business Systems Manager for ASG-TMON for DB2 data source requires the Tivoli Business Systems Manager for DB2 data source to be operational, it is necessary to perform all configuration steps for Tivoli Business Systems Manager for DB2. See “DB2 Universal Database for z/OS and OS/390 and DB2 Performance Monitor” on page 115.

2. **Perform ASG–TMON Configuration**
   
   The following section provides information about configuring ASG–TMON for DB2.

   a. **Configure ASG–TMON for DB2 to Use z/OS Syslog**
      
      For each of the ASG-TMON for DB2 default exceptions to be passed to Tivoli Business Systems Manager, do the following:
      
      1. Activate the relevant exception set. To achieve this, do the following:
         a. On the ASG-TMON for DB2 Exception Definitions window (option 3.1), select the exception record type, then select the particular exception set.
         b. Type act to activate the specific exception set.
      2. Insert the DB2 name as the first token in the exception message text. To achieve this, do the following:
         a. Type e to edit the exception set. The Exception Definition Detail window opens.
         b. Select the **EDIT EXCEPTION TEXT SUBSTITUTION FIELDS** command. The Exception Text Substitution Data window opens.
         c. Type **DB2 name** for a name in the first text substitution field.
         d. Press **F3** to return to the Exception Definition Detail window.
      3. Specify WTO (write to operator) as an action to be taken when the exception is detected. To achieve this, do the following:
         a. Select the **SPECIFY ACTIONS TAKEN WHEN EXCEPTION DETECTED** command. The Exception Action Definition window opens.
         b. Under **ACTIONS TAKEN WHEN EXCEPTION IS DETECTED**, specify:

            ```
            BEGIN AT STOP AFTER
            WTO EXCEPTION TEXT MESSAGE TO SYSTEM LOG : 01 99
            ```
         c. Press **F3** to return to the Exception Definitions window.
         d. In the **EXCEPTION TEXT** field, type `@@@` (a string of four at sign (@) characters), followed by a space, in front of the existing text. This causes ASG-TMON for DB2 to insert the DB2 subsystem name as the first token in the text of the WTO message, enabling Tivoli Business Systems Manager to route the event to the appropriate Tivoli Business Systems Manager DB2 resource.
      4. Autostart monitoring for the exception. To achieve this, type **Y** in the **AUTOSTART** field.

   **Note:** Do not change the value of the TEXT MESSAGE # field. The NetView automation table detects ASG-TMON for DB2 exceptions based on this TMDBnnnnnn value. If you change this value, then the exception is not passed to Tivoli Business Systems Manager, or is potentially interpreted as a different type of event.
3. Configure NetView Components

Tivoli Business Systems Manager for ASG-TMON for DB2 runs within a NetView for OS/390 started task. This section details the customization required for this started task.

a. Configure NetView for OS/390

Complete all steps in “Configuring Tivoli NetView for OS/390” on page 95.

4. Start NetView for OS/390

When all customization steps are complete, NetView for OS/390 must be restarted.

ASG-TMON for MVS

Use the following sections to configure ASG-TMON for MVS for use with Tivoli Business Systems Manager:

Table 74. ASG-TMON for MVS Installation Overview

<table>
<thead>
<tr>
<th>Step Overview</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>“1. Perform ASG-TMON for MVS Configuration”</td>
<td></td>
</tr>
<tr>
<td>“2. Perform Tivoli Business Systems Manager Configuration”</td>
<td></td>
</tr>
<tr>
<td>“a. Customize IHSZTMIN Parameter Member”</td>
<td></td>
</tr>
<tr>
<td>“3. Configure NetView Components” on page 172</td>
<td></td>
</tr>
<tr>
<td>“a. Configure NetView for OS/390” on page 172</td>
<td></td>
</tr>
<tr>
<td>“4. Start NetView for OS/390” on page 172</td>
<td></td>
</tr>
</tbody>
</table>

1. Perform ASG-TMON for MVS Configuration

a. Create a Userid for ASG-TMON for MVS

Create an ASG-TMON for MVS user ID that is dedicated to Tivoli Business Systems Manager for ASG-TMON for MVS. Create this user ID with limited (read-only) access. This user ID requires access only to the ASG-TMON for MVS Primary Menu and the Exception Activity Display window.

For details on creating an ASG-TMON for MVS user ID, refer to the ASG-TMON for MVS System Administrators Guide.

2. Perform Tivoli Business Systems Manager Configuration

a. Customize IHSZTMIN Parameter Member

Review the values of parameters in the SGTMASAMP member IHSZTMIN, and modify as required.

The following parameters do not have default values, and must be specified for Tivoli Business Systems Manager to successfully monitor ASG-TMON for MVS:

- IHSZTM.USERID
- IHSZTM.PASSWORD
The following table provides descriptions for all parameters:

Table 75.

<table>
<thead>
<tr>
<th>Parameter name</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>IHSZTM.APPLID</td>
<td>VTAM application ID of ASG-TMON for MVS. Default: TMONMVS</td>
</tr>
<tr>
<td>IHSZTM.AUTOTASK</td>
<td>The NetView autotask ID used by Tivoli Business Systems Manager to process ASG-TMON MVS events. Note: If you change this from the Tivoli-supplied default value, then you need to change the ID of the corresponding autotask definition in SGTMSAMP member IHSZTMOP. Default: IHSZTMA1</td>
</tr>
<tr>
<td>IHSZTM.DEBUG. IHSZTMIT</td>
<td>For diagnostic purposes. Must be ON or OFF. Change only under direction of Customer Support. Default: OFF</td>
</tr>
<tr>
<td>IHSZTM.DEBUG. IHSZTMON</td>
<td>For diagnostic purposes. Must be ON or OFF. Change only under direction of Customer Support. Default: OFF</td>
</tr>
<tr>
<td>IHSZTM.GROUPS</td>
<td>Value of the Active Groups field on the Exception Activity Display window. This field represents the active exception groups displayed on the window. You can use this parameter (and the LEVEL parameter) to limit which exception messages are passed as events to Tivoli Business Systems Manager. For details on the allowed values for this parameter, refer to the ASG-TMON for MVS Reference Manual. Default: SWIOAMU</td>
</tr>
<tr>
<td>IHSZTM.IHSMMSG.DD</td>
<td>Internal use only. Default: IHSOUT</td>
</tr>
<tr>
<td>IHSZTM.IHSMMSG.DISP</td>
<td>Internal use only. Default: IMMED</td>
</tr>
<tr>
<td>IHSZTM.INIT</td>
<td>Reset exception event flag. If set to YES, all past exception events are cleared on NetView for OS/390 startup, and new events will be sent to Tivoli Business Systems Manager console, even if sent before. If set to NO, past exception events are not cleared on NetView for OS/390 startup. If IHSZTM.SAVEC is set to OFF, IHSZTM.INIT will always be YES. Default: YES</td>
</tr>
<tr>
<td>Parameter name</td>
<td>Description</td>
</tr>
<tr>
<td>---------------------</td>
<td>-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>IHSZTM.LEVEL</td>
<td>Value of the Lowest Active Level field on the Exception Activity Display window. This field represents the severity level of the least severe exception message that can appear on the panel.</td>
</tr>
<tr>
<td></td>
<td>You can use this parameter (and the GROUPS parameter) to limit which exception messages are passed as events to Tivoli Business Systems Manager:</td>
</tr>
<tr>
<td></td>
<td><strong>INFO</strong> Exception messages of all severities are passed to Tivoli Business Systems Manager.</td>
</tr>
<tr>
<td></td>
<td><strong>WARNING</strong> Only warning and critical exception messages are passed to Tivoli Business Systems Manager.</td>
</tr>
<tr>
<td></td>
<td><strong>CRITICAL</strong> Only critical exception messages are passed to Tivoli Business Systems Manager.</td>
</tr>
<tr>
<td></td>
<td>Default: INFO</td>
</tr>
<tr>
<td>IHSZTM.LOGMODE</td>
<td>VTAM logmode used when Tivoli Business Systems Manager attempts to logon to ASG-TMON for MVS  [Default: D4A32782]</td>
</tr>
<tr>
<td>IHSZTM.PASSWORD</td>
<td>The password for the ASG-TMON for MVS user ID  [This is a potential security risk: The IHSZTMIN member contains the user ID and (unencrypted, plain text) password of an ASG-TMON for MVS user. To limit this security risk, you can: ]</td>
</tr>
<tr>
<td></td>
<td>• Review the access rights to the data set where you store this member.</td>
</tr>
<tr>
<td></td>
<td>• Limit the access rights of this ASG-TMON for MVS user ID.</td>
</tr>
<tr>
<td></td>
<td>Default: no default – must be specified by user.</td>
</tr>
<tr>
<td>IHSZTM.SAVEC</td>
<td>Save NetView global variables flag.</td>
</tr>
<tr>
<td></td>
<td>If set to ON, NetView for OS/390 global variables are saved to the NetView save/restore dataset, and hence will be available after NetView restart.</td>
</tr>
<tr>
<td></td>
<td>If set to OFF, NetView for OS/390 global variables are always cleared on every NetView for OS/390 restart.</td>
</tr>
<tr>
<td></td>
<td>See also the IHSZTM.INIT parameter.</td>
</tr>
<tr>
<td></td>
<td>Default: ON</td>
</tr>
</tbody>
</table>
Table 75. (continued)

<table>
<thead>
<tr>
<th>Parameter name</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>IHSZTM.TMON</td>
<td>Capture ASG-TMON for MVS exception messages flag. If set to YES, Tivoli Business Systems Manager will monitor exception messages from the ASG-TMON for MVS Exception Activity Display window. If set to NO, these exception messages will not be monitored. Default: YES</td>
</tr>
<tr>
<td>IHSZTM.USERID</td>
<td>The ASG-TMON for MVS user ID used by Tivoli Business Systems Manager to logon to ASG-TMON for MVS. Default: no default – must be specified by user.</td>
</tr>
<tr>
<td>IHSZTM.WAITTIME</td>
<td>Interval (in seconds) between Exception Activity Display window captures. Default: 60</td>
</tr>
</tbody>
</table>

3. Configure NetView Components

Tivoli Business Systems Manager for ASG-TMON for MVS runs within a NetView for OS/390 started task. This section details customization necessary for this started task.

a. Configure NetView for OS/390

Complete all steps in “Configuring Tivoli NetView for OS/390” on page 95.

4. Start NetView for OS/390

Once all customization steps are complete, NetView for OS/390 must be restarted.

MAINVIEW for CICS

Use the following sections to configure BMC MAINVIEW for CICS for use with Tivoli Business Systems Manager.

Table 76. MAINVIEW for CICS Installation Overview

<table>
<thead>
<tr>
<th>Step Overview</th>
</tr>
</thead>
<tbody>
<tr>
<td>“1. Perform BMC MAINVIEW Configuration”</td>
</tr>
<tr>
<td>“a. Configure BMC MAINVIEW for CICS to Use z/OS Syslog” on page 173</td>
</tr>
<tr>
<td>“b. Create a Journal Log User Exit Routine” on page 173</td>
</tr>
<tr>
<td>“c. Configure BMC MAINVIEW for CICS to Specify Correct Target” on page 173</td>
</tr>
<tr>
<td>“2. Configure NetView Components” on page 173</td>
</tr>
<tr>
<td>“a. Configure NetView for OS/390” on page 173</td>
</tr>
<tr>
<td>“3. Start NetView for OS/390” on page 173</td>
</tr>
</tbody>
</table>

1. Perform BMC MAINVIEW Configuration

Use the following steps to configure BMC MAINVIEW for CICS.
a. Configure BMC MAINVIEW for CICS to Use z/OS Syslog
Configure your BMC MAINVIEW for CICS services to direct their messages to the z/OS system console by specifying WMSG=WTO when you start the service. For details on specifying keywords when starting monitors, refer to the appropriate document in the BMC MAINVIEW for CICS library.

b. Create a Journal Log User Exit Routine
Even if WMSG=WTO is specified, not all messages issued by BMC MAINVIEW for CICS are sent to the z/OS system console. Therefore, it is necessary to create an SMLXIT journal log user exit routine. Follow the directions in the SGTMSAMP member IHSCMVX1.

c. Configure BMC MAINVIEW for CICS to Specify Correct Target
Tivoli Business Systems Manager requires that the CICS region relating to the BMC MAINVIEW message be in the MAINVIEW message text. To ensure this occurs, use the TARGET parameter in the BMC MAINVIEW BBIJNTxx and BBIIISPxx members and specify the CICS region job or started task name. For details on specifying the TARGET parameter, refer to the appropriate document in the BMC MAINVIEW for CICS library.

2. Configure NetView Components
Tivoli Business Systems Manager for MAINVIEW for CICS runs within a NetView for OS/390 started task. This section details the customization required for this started task.

a. Configure NetView for OS/390
Complete all steps in "Configuring Tivoli NetView for OS/390” on page 95.

3. Start NetView for OS/390
When all customization steps are complete, NetView for OS/390 must be restarted.

MAINVIEW for DB2
Use the following sections to configure BMC MAINVIEW for DB2 for use with Tivoli Business Systems Manager.

<table>
<thead>
<tr>
<th>Table 77. MAINVIEW for DB2 Installation Overview</th>
</tr>
</thead>
<tbody>
<tr>
<td>Step Overview</td>
</tr>
<tr>
<td>&quot;1. Configure Tivoli Business Systems Manager for DB2”</td>
</tr>
<tr>
<td>&quot;2. Perform BMC MAINVIEW Configuration” on page 174</td>
</tr>
<tr>
<td>&quot;a. Configure BMC MAINVIEW for DB2 to Use z/OS Syslog” on page 174</td>
</tr>
<tr>
<td>&quot;c. Configure BMC MAINVIEW for DB2 to Specify Correct Target” on page 174</td>
</tr>
<tr>
<td>&quot;3. Configure NetView Components” on page 174</td>
</tr>
<tr>
<td>&quot;a. Configure NetView for OS/390” on page 174</td>
</tr>
<tr>
<td>&quot;4. Start NetView for OS/390” on page 174</td>
</tr>
</tbody>
</table>

1. Configure Tivoli Business Systems Manager for DB2
As the Tivoli Business Systems Manager for BMC MAINVIEW for DB2 data source requires the Tivoli Business Systems Manager for DB2 data source to be operational, it is necessary to perform all configuration steps for Tivoli Business Systems Manager for DB2. See "DB2 Universal Database for z/OS and OS/390 and DB2 Performance Monitor” on page 115.
2. Perform BMC MAINVIEW Configuration

Use the following steps to configure BMC MAINVIEW for DB2.

a. Configure BMC MAINVIEW for DB2 to Use z/OS Syslog
Configure your BMC MAINVIEW for DB2 services to direct their messages to the z/OS system console by specifying WMSG=WTO when you start the service. For example, when starting the THDQD service, specify

REQ=THDQD WMSG=WTO

For details on specifying keywords when starting monitors, refer to the appropriate document in the BMC MAINVIEW for DB2 library.

b. Configure BMC MAINVIEW for DB2 Background Exception Sampler to use WTO
Configure your BMC MAINVIEW for DB2 Background Exception Sampler services to direct their messages to the z/OS system console. To do this, specify BMSGWTO=YES (to apply to all exception samplers) or WTO= YES (for individual exception samplers) in the BMC MAINVIEW for DB2 DMRBEXxx member. For more information, refer to the appropriate document in the BMC MAINVIEW for DB2 library.

c. Configure BMC MAINVIEW for DB2 to Specify Correct Target
Tivoli Business Systems Manager requires that the DB2 region relating to the BMC MAINVIEW message be in the MAINVIEW message text. To ensure this occurs, use the TARGET parameter in the BMC MAINVIEW BBIJNTxx and BBIISPxx members and specify the DB2 subsystem name. For more information, refer to the appropriate document in the BMC MAINVIEW for DB2 library.

3. Configure NetView Components

Tivoli Business Systems Manager for MAINVIEW for DB2 runs within a NetView for OS/390 started task. This section details the customization required for this started task.

a. Configure NetView for OS/390
Complete all steps in "Configuring Tivoli NetView for OS/390" on page 95.

4. Start NetView for OS/390

When all customization steps are complete, NetView for OS/390 must be restarted.

MAINVIEW for OS/390

Use the following sections to configure BMC MAINVIEW for OS/390 to use with Tivoli Business Systems Manager:

Table 78. MAINVIEW for OS/390 Installation Overview

<table>
<thead>
<tr>
<th>Step Overview</th>
</tr>
</thead>
<tbody>
<tr>
<td>&quot;1. Configure BMC MAINVIEW for OS/390 to use z/OS Syslog&quot; on page 175</td>
</tr>
<tr>
<td>&quot;2. Configure NetView Components” on page 175</td>
</tr>
<tr>
<td>&quot;a. Configure NetView for OS/390” on page 175</td>
</tr>
<tr>
<td>&quot;3. Start NetView for OS/390” on page 175</td>
</tr>
</tbody>
</table>
1. Configure BMC MAINVIEW for OS/390 to use z/OS Syslog

Configure BMC MAINVIEW to direct messages to the z/OS syslog by inserting the following control statement in the $INSYS0 member of the BBPARM data set:

LCLAEW=BOTH

For details, refer to the MainView SYSPROG Services User Guide and Reference.

2. Configure NetView Components

Tivoli Business Systems Manager for MAINVIEW for OS/390 runs within a NetView for OS/390 started task. This section details customization necessary for this started task.

a. Configure NetView for OS/390

Complete all steps in “Configuring Tivoli NetView for OS/390” on page 95.

3. Start NetView for OS/390

Once all customization steps are complete, NetView for OS/390 must be restarted.

MAINVIEW for IMS

Use the following sections to configure BMC MAINVIEW for IMS for use with Tivoli Business Systems Manager.

Table 79. MAINVIEW for IMS Installation Overview

<table>
<thead>
<tr>
<th>Step Overview</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>1. Configure Tivoli Business Systems Manager for IMS</strong></td>
</tr>
<tr>
<td><strong>2. Perform BMC MAINVIEW Configuration</strong></td>
</tr>
<tr>
<td><strong>a. Configure BMC MAINVIEW for IMS to Use z/OS Syslog</strong></td>
</tr>
<tr>
<td><strong>b. Configure BMC MAINVIEW for IMS to Specify Correct Target</strong> on page 176</td>
</tr>
<tr>
<td><strong>3. Configure NetView Components</strong> on page 176</td>
</tr>
<tr>
<td><strong>a. Configure NetView for OS/390</strong> on page 176</td>
</tr>
<tr>
<td><strong>4. Start NetView for OS/390</strong> on page 176</td>
</tr>
</tbody>
</table>

1. Configure Tivoli Business Systems Manager for IMS

As the Tivoli Business Systems Manager for BMC MAINVIEW for IMS data source requires the Tivoli Business Systems Manager for IMS data source to be operational, it is necessary to perform all configuration steps for Tivoli Business Systems Manager for IMS. See “IMS” on page 106.

2. Perform BMC MAINVIEW Configuration

Use the following steps to configure BMC MAINVIEW for IMS.

a. Configure BMC MAINVIEW for IMS to Use z/OS Syslog

Configure your BMC MAINVIEW for IMS Resource Monitor and Workload Monitor services to direct their messages to the z/OS system console by specifying WMSG=WTO when you start the service. For example, when starting the INQTR service, specify:

REQ=INQTR WMSG=WTO
For details on specifying keywords when starting monitors, refer to the appropriate document in the BMC MAINVIEW for IMS library.

b. Configure BMC MAINVIEW for IMS to Specify Correct Target
Tivoli Business Systems Manager requires that the IMS region relating to the BMC MAINVIEW message be in the MAINVIEW message text. To ensure this occurs, use the TARGET parameter in the BMC MAINVIEW BBIJNT:* and BBIISP:* members and specify the IMS control region job or started task name. For details on specifying the TARGET parameter, refer to the appropriate document in the BMC MAINVIEW for IMS library.

3. Configure NetView Components
Tivoli Business Systems Manager for MAINVIEW for IMS runs within a NetView for OS/390 started task. This section details the customization required for this started task.

a. Configure NetView for OS/390
Complete all steps in "Configuring Tivoli NetView for OS/390" on page 95.

4. Start NetView for OS/390
When all customization steps are complete, NetView for OS/390 must be restarted.

WebSphere for OS/390
Use the following sections to integrate WebSphere for OS/390 with Tivoli Business Systems Manager.

Configuring WebSphere for OS/390
Use the following sections to enable the event flow from WebSphere for OS/390 to Tivoli Business Systems Manager.

Configuring OS/390 Components
Prepare an input stream for each HTTP server configuration file located on the HFS (for example, /etc/http.conf file) to enable discovery of HTTP Server Templates. Refer to the GTMWSBD JCL sample in the SGTMMSAMP library.

Registry Modifications
Configure the appropriate entry in the Windows registry for processing to be completed on hosts running the ASIMVSIPListenerSvc service.

The GTMAOPE0 utility and the ASIMVSIPListenerSvc service are used for bulk discovery of WebSphere for OS/390 data sources.

Before you run the GTMAOPE0 utility, you must setup the ValidClient entries for the ASIMVSIPListenerSvc service on the database server and then restart the service.

For details on the configuration of the ASIMVSIPListenerSvc service, see "Configuring the ASIMVSIPListenerSvc Service" on page 92 and "Running the configurebulkdatautility.ksh Script" on page 92.

Distributed Data Sources
See "Distributed Data Sources" on page 276 for information on installing and configuring distributed data sources.
Associating TEC Events with Common Listener Resources

See “Associating Tivoli Enterprise Console Events with Common Listener Resources” on page 289 for information on associating TEC events with Common Listener resources.
Chapter 10. Optional Components

The following components are optional:

- “Automated Business System Views”
- “Problem Management and Automatic Ticketing and Change Management” on page 180
- “The Web Console Server” on page 181
- “The Health Monitor” on page 185
- “The Host Integration Server” on page 192
- “Installing and Configuring Components on Tivoli Enterprise Console” on page 198
- “Configuring OS/390 Task Authentication” on page 213
- “Optional Console Server Configuration” on page 215

Automated Business System Views

The automated business system feature automatically creates views by monitoring for resources that satisfy a stated criteria. The method of dragging and creating Business System views from a physical hierarchy is still supported, but the automated business systems engine allows faster implementation of business systems without use of the console. After configuring the automated business system engine, Tivoli Business Systems Manager continues to monitor for new resources that satisfy your stated criteria. These qualified new resources are automatically added to the view.

If you want to use this feature, you must configure the automated business system views by following the instructions in this section. Also, see the IBM Tivoli Business Systems Manager: Administrator’s Guide for more information about implementation and use of the automated business systems configuration.

Enabling Automated Business System

To enable the automated business system engine:

1. Set the enabled flag to yes for the following SQL jobs:
   - ABS Discovery Process
   - ABS Creation Process
   - ABS Table Purge

   Note: The flag for these jobs is initially set to No.

   The ABS Discovery Process and ABS Creation Process jobs are set to run every minute. The ABS Table Purge, a cleanup job, is scheduled to run every day at 4 a.m.

   The ABS Discovery Process job requires that the Update ObjPathCache job be enabled and running on a frequent schedule. The default schedule is: enabled and runs every 15 minutes. The job is limited to processing events that occur before the start of the last successful run of the Update ObjPathCache job.

2. From SQL Server Enterprise Manager, enable the automated business system jobs in the following hierarchy:
Defining Business Systems Views

You can define Business System views by creating or modifying the configuration file and loading it with the absConfig.ksh script. See the IBM Tivoli Business Systems Manager: Administrator’s Guide for further details.

Make sure that the ABS Creation Process and ABS Discovery Process jobs are not running and are disabled in your scheduler before loading the absConfig.ksh script with the -i parameter. Additionally, when using the absTest.ksh script with the -e parameter, verify that the ABS Creation Process job has completed before loading a new configuration.

Problem Management and Automatic Ticketing and Change Management

If you want Tivoli Business Systems Manager to interface with your Problem/Change Management application programs, you must configure the program user exits, using the instructions in this section, to develop your own customized program interface.

You can use your customized program user exits for the following features:

- Problem Management
- Change Management
- Automatic Ticketing for Problem Management

You must write the programs that are run by the Tivoli Business Systems Manager Program user exits. These programs process the data passed to them in the form of requests, then format the necessary calls to your business application programs to process the requests using whatever interface the business application program provides.

For example, most problem or change application programs provide some type of application programmed interface (API) that can be coded to process input data and issue API interfaces to the application program or application database. Once a Tivoli Business Systems Manager request has been processed, your written program needs to return control to the Tivoli Business Systems Manager exit point and provide notification of the results.

For configuration details, see the Program User Exits and Code Samples document, at the following web site:


From the Choose a Product drop-down list, select IBM Tivoli Business Systems Manager, then click Go. When the IBM Tivoli Business Systems Manager page displays, enter Program User Exits Guide and Code Samples in the Search support for IBM Tivoli Business Systems Manager text box. Check the Solve a problem check-box, then click Submit.

For Problem Management, Change Management, and Automatic Ticketing for Problem Management, refer to IBM Tivoli Business Systems Manager Program User Exits.
The Web Console Server

If you want to provide a Web interface to your Tivoli Business Systems Manager business systems views, you must install the Web console server. The primary objective of the Web console is to provide various Level 1 and Level 2 operator views to examine the status of resources and accomplish basic troubleshooting. Your usage pattern can typically be defined by short, sporadic sessions (for example, a traveling user checking the status of a critical system).

This chapter provides the installation instructions for the Web console server. It includes:

• "Important Notes"
• "Installing the Web Console Server"
• "Uninstalling the Web Console Server" on page 185

Important Notes

The following installation notes apply to the Web console server:

• If you configure SSL, online help will not work.
• Presentation Services (PS) installation creates the IBM console icon on the desktop. This icon is not supported by the IBM Tivoli Business Systems Manager Web console.
• Web console port numbers can be customized after installation by modifying the <install_dir>/ps\deploy.properties file. If you make modifications to this file, the Server for IBM Console and the Web Services for IBM Console must be restarted.
• If you encounter error message FWP2004E when you navigate to the IBM Tivoli Business Systems Manager Web console Web page, ensure that you can resolve (nslookup host name) the host name that you gave for the Web console server when you installed it. If you cannot resolve the host name, create an entry for the host name in the C:\WINNT\system32\drivers\etc\hosts file, and start the computer.

Installing the Web Console Server

The Web console server installation process uses the temp directory as a working directory. If there is not enough space in that directory, install the Web console server using the following command:

```
setup -is:tempdir <name of another directory>
```

Notes:

1. Before installing the Web console server onto a non-English machine, open a command prompt and enter:
   ```
   set JAVA2D_USEAWTFONTS=0
   ```
   Start the installation program, setup.exe, from the command prompt. Otherwise, some of the text on panels might become truncated. The InstallShield dialog might take a while to display.

To install the Web console server:

1. Run the Web console server Setup program located in the WebConsoleInstall directory on the Tivoli Business Systems Manager Base Services installation CD to access the Web console InstallShield program.
2. When the InstallShield program opens, a Welcome dialog is displayed. Click Next to continue or Cancel to exit the program.
3. The Software License Agreement dialog opens. From the Software License Agreement dialog, select I accept the terms in the license agreement. Click Next.

4. From the Directory Name text box, select the directory for your installation or click the Browse button to install in a different directory.
   The default installation directory is:
   C:\tbsm\WebC
   Click Next.

5. From the Server Name text box, type the fully qualified host name for the console server.
   If the console server is not listening on the default port, you must include the port number with the server name. For example, if the server name is wcserver.mycompany.com and is listening on port 5529 then specify wcserver.mycompany.com:5529 for the server name.
   From the Administrator Name text box, type your administrator’s name.
   From the Administrator Password text box, type your administrator’s password.
   The information supplied in the administrator name and password fields is used to monitor connectivity with the console server.

   Note: The Administrator name and password must be a member of the TBSM_Administrator group.

   From the Re-enter Password for verification text box, type your password again.
   Click Next.

6. The Presentation Services dialog opens. It lists all default values including port information. From the Would you like to use these default values? grouping, select the Yes, use the default values for installing Presentation Services button. Click Next.

7. During the installation of the Web console server, Presentation Services is also installed.

   Note: The web console server does not support an environment where Presentation Services is already installed as part of another application program installation.

   During the installation of Presentation Services, the following services are installed and automatically started:
   • Server for IBM Console
   • Web Services for IBM Console
   • Tivoli Presentation Services HTTP Server

   These services use a number of TCP/IP ports. If you need to add customized values or if any of the default ports are in use, the next two dialogs contain the following fields:

   Host Name
   The fully qualified host name of the computer where you are installing the web console server.

   HTTP Server Port
   The port number for the Presentation Services HTTP Server port. The default number is 80.
HTTP Interprocess Communication Port
The port number for communication between the Server for the IBM Console and other Presentation Services processes. The default number is 8010, but if 8010 is already in use, type an unused port number.

HTTP Administration Port
The port number for the Presentation Services HTTP Administration port. The default number is 8008, but if port 8008 is already in use, type an unused port number.

Web Services Port
The port number for communication between the Tivoli Presentation Services HTTP Server and Web Services for IBM Console. The default number is 8007, but if port 8007 is already in use, type an unused port number.

Web Services Interprocess Communication Port
The port number for communication between Web Services for the IBM Console and other Presentation Services processes. The default number is 8040, but if port 8040 is already in use, type an unused port number.

IBM Console Interprocess Communication Port
The port number for communication between the IBM Console and other Tivoli Presentation Services processes. The default number is 8030, but if port 8030 is already in use, type an unused port number.

The following table lists the default port numbers used by Presentation Services.

Table 80. Default Port Numbers Used by Presentation Services

<table>
<thead>
<tr>
<th>Default Port Numbers</th>
<th>Name of Port in the installation</th>
<th>Description</th>
<th>Can This Default Port Number be Changed?</th>
</tr>
</thead>
<tbody>
<tr>
<td>80</td>
<td>HTTP Server Port</td>
<td>Used by Presentation Services HTTP Server for HTTP communications</td>
<td>Yes, you can change it during installation.</td>
</tr>
<tr>
<td>8007</td>
<td>Web Services Port</td>
<td>Used by Web Services for IBM Console</td>
<td>Yes, you can change it during installation.</td>
</tr>
<tr>
<td>8008</td>
<td>HTTP Administration Port</td>
<td>Used by Presentation Services HTTP Administration</td>
<td>Yes, you can change it during installation.</td>
</tr>
<tr>
<td>8010</td>
<td>HTTP Interprocess Communication Port</td>
<td>Used by Server for IBM Console</td>
<td>Yes, you can change it during installation.</td>
</tr>
<tr>
<td>8030</td>
<td>Tivoli Console Interprocess Communication Port</td>
<td>Used by IBM Console</td>
<td>Yes, you can change it during installation.</td>
</tr>
<tr>
<td>8040</td>
<td>Web services Interprocess Communication Port</td>
<td>Used by Server for IBM Console</td>
<td>Yes, you can change it during installation.</td>
</tr>
</tbody>
</table>

8. The pre-installation summary panel opens and informs you of the total size of the installation and where it was installed. Click Next.

9. After the installation process completes, click Finish.
   When the install completes, the rebuilding and enabling of the online user assistance files occur. These files can take 10 - 30 minutes to build and become
enabled. You can use the system during this time, but it may be slower than usual while these files are being processed. The online user assistance may not be available until after this processing completes.

You can verify if the installation is complete by examining either of the following places:

- Look in the <INSTALL_DIR>\ps\log\fwp_mcr\stdout<n>.txt log file where <INSTALL_DIR> is the directory where the Web console server was installed. The <n> parameter is a number from 0 - 4 signifying one of several rolling log files.

  When the online user assistance build is complete, a message is displayed: 
  FWP1734I The utility that was started by the Management Component Repository to build the help set has completed successfully

- From the Windows Task Manager, wait for system usage to drop, which signifies that the processing of the user assistance files has completed.

Your temp directory contains the tbsm_wc_install.log file that you can use for troubleshooting.

10. To connect, use a web browser to specify:
    http://fully.qualified.host.name/IBMConsole
    The fully qualified host name is the host name of the machine where the Web console server is installed.

    Note: If the default port of 80 was not used as the HTTP port for the installation of Presentation Services, the connection needs the HTTP port within the URL:

    http://fully.qualified.host.name:HTTP_Port/IBMConsole

**Silent Installation**

The WebConsoleInstall directory contains a subdirectory called: Silent Install.

Within this directory is a sample script, which can be used for a silent installation.

The script is: TBSMWebConsoleInstall.scr

**Note:** During this installation a command window opens and displays messages. This window is closed when the installation is completed.

To perform the silent installation:

1. Copy the TBSMWebConsoleInstall.scr file, which is located in the WebConsoleInstall/silentInstall directory on the *Tivoli Business Systems Manager Base Services* installation CD to a directory on your machine. For example, c:\temp.

2. Follow the instructions in the file. Modify the TBSMWebConsoleInstall.scr file using any text editor by updating the values as appropriate.

3. Save the file when you complete all the modifications.

4. Start the installation using the updated file.
   From the command prompt, enter:
   setup -options c:\temp\TBSMWebConsoleInstall.scr
   The silent installation begins. During the installation, a command prompt opens with messages and closes when the installation is complete.

   You can verify if the installation is complete by examining either of the following places:
• Look in the <INSTALL_DIR>\ps\log\fwp_mcr\stdout<n>.txt log file where <INSTALL_DIR> is the directory where the Web console server was installed. The <n> parameter is a number from 0 – 4 signifying one of several rolling log files.

When the online user assistance build is complete, the following message is displayed:

FWP1734I The utility that was started by the Management Component Repository to build the help set has completed successfully

• From the Windows Task Manager, wait for processor usage to drop, which signifies the processing of the user assistance files has completed.

Your temp directory contains the tbsm_wc_install.log file that you can use for troubleshooting.

Note: If the system temp directory does not contain enough space, you can silently install the Web console server using the following command:

setup -is:tempdir <name of another directory> -options c:\temp\TBSMWebConsoleInstall.scr

Uninstalling the Web Console Server

To uninstall the Web console server:
1. From the Windows toolbar, click Start --> Control Panel -->Add/Remove Programs --> IBM Tivoli Business Systems Manager Web console server from Add/Remove Programs Properties dialog. Click the Add/Remove button. Follow the instructions from the dialogs for removing the software.
2. The Welcome dialog opens. Click Next.
3. The Destination Location dialog displays the location of the uninstallation. Click Next.
4. Uninstalling the program begins. When the uninstallation is complete a dialog is displayed that prompts you to start the uninstallation program for Presentation Services. Click Yes.
5. The Summary dialog opens, which lists any errors. Click Finish.
6. Follow the instructions from the uninstallation program for Presentation Services to remove it from your computer.

The Health Monitor

Note: For performance reasons, we recommend that the Health Monitor server be installed on its own machine.

Installing the Health Monitor Services

Install the following components from the Select Components dialog in addition to the other components you are installing:
• Health Monitor Server
• Health Monitor Client

Installing the Health Monitor Server

Use the the following steps to install the Health Monitor Server:
1. Insert the Tivoli Business Systems Manager Base Services CD into the Health Monitor Server computer. Double-click the BaseServices folder.
2. Double-click the Setup.exe icon.
3. From the Choose Setup Language dialog, confirm the language to use for your installation. Click OK.
4. When the System File Upgrade dialog opens, read the text and click Next.
5. From the Choose Destination Location dialog, place these files in a temporary directory. Click the Browse button to select a directory. After a preferred directory is selected or to use the default directory, click Next.
6. When the System File Upgrade is complete, click Finish. If you are prompted to restart the computer, do so now.
7. From the Choose Setup Language dialog, confirm the language to use for your installation. Click OK.
8. The Welcome to the Setup program dialog opens. The text in this dialog is basic information about the Setup program, including how to cancel the installation. Read the information and click Next.
9. The Software License Agreement dialog opens. Read the agreement. To accept the agreement and continue the installation process, click Yes.
10. When the Choose Destination Location dialog opens, select a directory to install Tivoli Business Systems Manager and click the Browse button. The Choose Folder dialog opens. Select your directory and click OK.
   The following message is displayed if the directory path you selected does not exist:
   The folder: <your destination path> does not exist. Do you want the folder to be created?
   Click Yes. The selected path is displayed in the Destination folder. When you select the preferred path or the default destination folder, click Next.

   Note: To avoid the possibility of the log and working files becoming full and stopping the Windows operating environment, install the application program on a drive other than the operating system default drive of C.
11. From the Setup Type dialog, select Custom and click Next.
12. From the Select Components dialog, select the Health Monitor Server. If you have previously installed components by selecting them from the Select Components dialog, do not clear them from the list. Click Next.
13. From the Enter Information dialog, type the host name of your local machine. Click Next.
14. From the Database Parameters dialog, type the server name, user name, and password for the database server. Click Next.
15. From the Health Monitor Server dialog, type the host name of the Console server, event handler (OS/390 services) and the propagation server. The health monitor does not monitor any component when you type unused as the host name. If you do not have a particular component installed on your system, use unused for the host name. For example, if you do not have OS/390 services on your system, type unused for the host name. Click Next.
16. From the Health Monitor Server dialog, type the database installation path (for example, <share>/msq17), the sender service server host name, and the health monitor client profile name. The client profile name should match the health monitor server name. Click Next.
17. From the Start Copying Files dialog, verify that your information is correct under the Current Settings grouping and click Next to begin copying the files.
18. From the Setup Complete dialog, when asked if you want to restart the computer, click Finish.
Configuring the Health Monitor Server

The following section applies to Health Monitor Service Host (no configuration is necessary for the client).

Configuring the Health Monitor Service: The Health Monitor Service must run with an account that has administrative privileges. The default setting runs with the local system account. You can change the account by viewing the properties of the Tivoli Business Systems Manager Health Monitor service.

From the Windows NT toolbar, click **Start --> Programs --> Administrative Tools --> Server Manager**. The Server Manager window opens. Select **Computer --> Services**. Double-click **Tivoli BSM Health Monitor Service**. Click the **This Account** button. Type in the name of the account that has administrative access for the Tivoli Business Systems Manager servers that you want to monitor. See your system administrator for the name of the account. Type the password for the account and confirm the password.

Add the `<Install Dir>\TivoliManager\Mgmt\HMS\ShellScripts` directory to your path. From the Windows NT toolbar, click **Start --> Settings --> Control Panel --> System**. Select the **Advanced** tab --> **Environment Variables**. From System variables, double-click **Path**. At the end of the line, add `<Install Dir>\TivoliManager\Mgmt\HMS\ShellScripts`, then click **OK**. Click **OK** to close the window.

From the Windows 2000 or Windows 2003 (using the Classic Start menu) toolbar, click **Start --> Programs --> Administrative Tools --> Services**. The Server Manager window opens. Select **Computer --> Services**. Double-click **Tivoli BSM Health Monitor Service**. Select **Log On Tab** and click the **This Account** button. Type in the name of the account that has administrative access for the Tivoli Business Systems Manager servers that you want to monitor. See your system administrator for the name of the account. Type the password for the account and confirm the password.

Add the `<Install Dir>\TivoliManager\Mgmt\HMS\ShellScripts` directory to your path. From the Windows 2000 or Windows 2003 (using the Classic Start menu) toolbar, click **Start --> Settings --> Control Panel --> System**. Select the **Environment** tab --> **Environment Variables**. From System variables, double-click **Path**. At the end of the line, add `<Install Dir>\TivoliManager\Mgmt\HMS\ShellScripts`, then click **OK**. Click **OK** to close the window.

**Required Services**: On the Health Monitor server, remove the unused entries from the registry and configure the other keys so that the health monitor correctly monitors the Tivoli Business Systems Manager services you actually have installed. This prevents the health monitor from displaying false red alerts.

Remove the following registry key to prevent the health monitor from monitoring the service.

```
<table>
<thead>
<tr>
<th>Key</th>
</tr>
</thead>
<tbody>
<tr>
<td>HKLM\Software\Accessible Software, Inc.\Access1\1.0\Health Monitor\Profiles\Default Services&lt;Name of Service that should not be Monitored&gt;</td>
</tr>
</tbody>
</table>
```
The following setting defines the scheduled state of a service in the health monitor.

<table>
<thead>
<tr>
<th>Key</th>
<th>HKEY_LOCAL_MACHINE \ Software \ Accessible Software, Inc. \ Access1 \ 1.0 \ Health Monitor \ Profiles \ Default Services \ &lt;Service Name&gt;</th>
</tr>
</thead>
<tbody>
<tr>
<td>Name</td>
<td>DesiredState</td>
</tr>
<tr>
<td>Type</td>
<td>String</td>
</tr>
<tr>
<td>Value</td>
<td>&lt;RUNNING</td>
</tr>
</tbody>
</table>

The following list links the services to their respective components in Tivoli Business Systems Manager.

*Table 81. Linking services to respective components*

<table>
<thead>
<tr>
<th>Service name</th>
<th>Actual service</th>
<th>Component</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tivoli Business Systems Manager Agent Listener</td>
<td>ASIAgentListenerSvc</td>
<td>The Agent Listener service used to receive events from the Tivoli Enterprise Console.</td>
</tr>
<tr>
<td>Tivoli Business Systems Manager Console Server V2</td>
<td>ASIConsoleServerV2</td>
<td>The console and notification Server for the console.</td>
</tr>
<tr>
<td>Tivoli Business Systems Manager Database Validator</td>
<td>ASIDBValidator</td>
<td>The service that validates the database connection for Win hosts remote to the database host. There are multiple instances on different hosts.</td>
</tr>
<tr>
<td>Tivoli Business Systems Manager Enqueue Proxy Server</td>
<td>ASIEnqueueProxyServer</td>
<td>The component of propagation services and enqueues events to the Propagation Agent Queue.</td>
</tr>
<tr>
<td>Tivoli Business Systems Manager Event Enablement</td>
<td>ASIEventEnablement</td>
<td>This component is used in the distributed components with the Agent Listener service to handle Tivoli Enterprise Console events.</td>
</tr>
<tr>
<td>Tivoli Business Systems Manager MVSIPListener</td>
<td>ASIMVSIPListenerSvc</td>
<td>The IP-based Listener used for bulk file transfers from OS/390.</td>
</tr>
<tr>
<td>Tivoli Business Systems Manager MVSIPOSListener</td>
<td>ASIMVSIPOSListenerSvc</td>
<td>The IP based Listener used for event processing.</td>
</tr>
<tr>
<td>Tivoli Business Systems Manager MVSUpload Rule Server</td>
<td>ASIMVSVloadRuleSvc</td>
<td>The rule processor for evaluation of host messages for command interaction.</td>
</tr>
<tr>
<td>Tivoli Business Systems Manager Propagation Agent Dispatcher</td>
<td>ASIPADispatcher</td>
<td>This component is used to dispatch events to propagation agent.</td>
</tr>
<tr>
<td>Tivoli Business Systems Manager Remote Execution Server</td>
<td>ASIRemoteExecutionServer</td>
<td>This component is used to start and stop the Propagation server.</td>
</tr>
<tr>
<td>Tivoli Business Systems Manager Staged Event Loader</td>
<td>ASIStagedEventLoader</td>
<td>The Staged Event Loader services and Staging Tables that perform set based inserts into the database.</td>
</tr>
<tr>
<td>Service name</td>
<td>Actual service</td>
<td>Component</td>
</tr>
<tr>
<td>--------------------------------------------------</td>
<td>---------------------------------</td>
<td>---------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Tivoli Business Systems Manager Task Server</td>
<td>ASITaskServer</td>
<td>This component is used to issue commands on the monitored resources.</td>
</tr>
<tr>
<td>Tivoli Business Systems Manager TSD Event Handler</td>
<td>ASITSDEventHandlerSvc</td>
<td>This component is used for integration with the Tivoli Service Desk Problem Management product. Only used if the distributed version is being integrated. Not valid for Tivoli Service Desk for OS/390.</td>
</tr>
<tr>
<td>Tivoli Business Systems Manager Common Listener</td>
<td>ASICommonlistener</td>
<td>The Common Listener.</td>
</tr>
<tr>
<td>Tivoli Business Systems Manager TECListenerSvc</td>
<td>TECListenerSvc</td>
<td>OS/390 Tivoli Enterprise Console Listener.</td>
</tr>
</tbody>
</table>

**Using the SQL Server Enterprise Manager to Test Response Times:** On a computer with access to the database server, from the SQL Server Enterprise Manager, configure SQL Server to test response times, so that you can avoid empty windows in the health monitor.

1. From the SQL Enterprise Manager dialog, expand Jobs.
2. From Refresh SQL Response Time Tests, select Properties → General tab → Enabled. Click OK.

   If data is not displayed in the Health Monitor for the SQL response times, check the schedule or view the job history to verify this job has been run.

<table>
<thead>
<tr>
<th>Key</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Job Name</td>
<td>Refresh SQL Response Time Tests</td>
</tr>
<tr>
<td>Enables</td>
<td>Yes</td>
</tr>
</tbody>
</table>

**Using the SQL Query Analyzer to Configure Staged Event Status:** On a computer with access to the database server, you can configure the list of Staged Event Tables to contain only the tables for the components you want to monitor. This ensures that you avoid old data.

The following steps enable you to remove a table from the health monitor MonitoredStagingTable list.

1. From the Microsoft SQL Query Analyzer, run the following command to preload the MonitoredStagingTable with data:
   ```sql
   asisp_FillInMonitoredStagingTable
   ```
2. Run the following command to view the current list of Staged Event Tables that are monitored by health monitor:
   ```sql
   SELECT * FROM MonitoredStagingTable
   ```
   The first column displays the name of the Staging Table. Run the following command to remove a table:
   ```sql
   DELETE FROM MonitoredStagingTable WHERE name = '<StagingTableName>'
   ```

   The following table provides a list that links the Staged Event Tables to their respective components in Tivoli Business Systems Manager.
Table 82. Linking Staged Event Tables to respective components

<table>
<thead>
<tr>
<th>Staging Tables</th>
<th>Used for</th>
</tr>
</thead>
<tbody>
<tr>
<td>PendingSELHeartBeatEXCP</td>
<td>NT Agent and NT Agent Listener</td>
</tr>
<tr>
<td>PendingSELPerfMonEXCP</td>
<td>Used for backward compatibility</td>
</tr>
<tr>
<td>PendingSELScmMESG</td>
<td></td>
</tr>
<tr>
<td>StagedAutomationEvent</td>
<td></td>
</tr>
<tr>
<td>StagedCA7Event</td>
<td>Used for processing CA-7 events</td>
</tr>
<tr>
<td>StagedCPSM_DEL</td>
<td>CICSPlex SM Discovery and Monitoring</td>
</tr>
<tr>
<td>StagedCPSM_DISC</td>
<td></td>
</tr>
<tr>
<td>StagedDB2Event</td>
<td>DB2 Monitoring and Discovery</td>
</tr>
<tr>
<td>StagedEXCP</td>
<td>Exception Monitoring</td>
</tr>
<tr>
<td>StagedFILEMESG</td>
<td>CICS File Message Monitoring</td>
</tr>
<tr>
<td>StagedFMSG</td>
<td></td>
</tr>
<tr>
<td>StagedGenericTrap</td>
<td>Batch Processing (console messages); Generic</td>
</tr>
<tr>
<td>StagedIMSEvent</td>
<td>IMS Monitoring and Discovery</td>
</tr>
<tr>
<td>StagedMESG</td>
<td>Console Messages for all Job level resources</td>
</tr>
<tr>
<td>StagedOPCEvent</td>
<td>Tivoli Operations, Planning &amp; Control Event Monitoring</td>
</tr>
<tr>
<td>StagedRMF</td>
<td>OS/390 Monitoring from RMF</td>
</tr>
<tr>
<td>StagedRODMConnectionStatus</td>
<td>SNA Resource Monitoring through RODM</td>
</tr>
<tr>
<td>StagedRODMResponseMessage</td>
<td></td>
</tr>
<tr>
<td>StagedRODMStatesMessage</td>
<td></td>
</tr>
<tr>
<td>StagedSJM</td>
<td>Events for resources used by subsystems. For example, files, LUs, and transactions.</td>
</tr>
<tr>
<td>StagedTDQM</td>
<td>CICS Transient Data Queue Messages</td>
</tr>
<tr>
<td>StagedTRANDISC</td>
<td>CICS Transaction Discovery and Messages</td>
</tr>
<tr>
<td>StagedTRANMESG</td>
<td></td>
</tr>
<tr>
<td>StagedWTOR</td>
<td>Used when monitoring WTOR messages from OS/390</td>
</tr>
<tr>
<td>StagedZEKE_Events</td>
<td>Used for the processing of ASG-Zeke events</td>
</tr>
</tbody>
</table>

**Monitoring Database Queues:** On a computer with access to the database server, from the SQL Query Analyzer, configure the list of database queues to contain only the queues for the Tivoli Business Systems Manager components that you are using. This ensures that you avoid old data.

Use the following steps to enable you to remove a queue from the health monitor Monitored Database Queue List.

1. From the SQL Query Analyzer, use the following command to preload the MonitoredQueueTable with data:
   ```sql
   asisp_CreateQueueTable
   ```
2. Run the following command to view the current list of Database Queues that are monitored by health monitor:
The second column displays the name of the queue.

3. Run the following command to remove a queue:
   
   ```sql
   DELETE FROM MonitoredQueueTable WHERE queuename = '<Queue Name>'
   ```

The following table provides a list that links the database queues to their respective components in Tivoli Business Systems Manager.

**Table 83. Linking database queues to respective components**

<table>
<thead>
<tr>
<th>Database Queues</th>
<th>Used for</th>
</tr>
</thead>
<tbody>
<tr>
<td>PADispatcher</td>
<td>The Propagation Agent Dispatcher dequeues from this queue.</td>
</tr>
<tr>
<td>Notification</td>
<td>Notification queue used to contain pending notifications. Serviced by notification server.</td>
</tr>
<tr>
<td>BatchRule</td>
<td>Queue used by Batch Rule Service. Monitors all types of batch rule jobs.</td>
</tr>
<tr>
<td>DiscoveryBatch</td>
<td>Queue used for discovery batch.</td>
</tr>
<tr>
<td>HeartBeatMsg</td>
<td>Queue used for handling heartbeat messages from the Tivoli Business Systems Manager distributed components.</td>
</tr>
<tr>
<td>MVSUploadRule</td>
<td>Queue used by Upload Rule Service (Enterprise only).</td>
</tr>
<tr>
<td>PerfMonMsg</td>
<td>Queue used for handling Windows-based performance monitor messages.</td>
</tr>
<tr>
<td>RuleCommand</td>
<td>Queue used for handling many different batch process jobs.</td>
</tr>
<tr>
<td>ScmMsg</td>
<td>Queue used to process Service Control Messages.</td>
</tr>
<tr>
<td>AutoTicketEvent</td>
<td>Queue used for processing resource events for auto ticketing.</td>
</tr>
<tr>
<td>AutoTicketFilteredEvent</td>
<td>Queue used for processing resource events that match problem ticket creation rules for auto ticketing.</td>
</tr>
</tbody>
</table>

**Installing the Health Monitor Client**

Use the following steps to install the Health Monitor Client:

1. Insert the **Tivoli Business Systems Manager Base Services** CD into the computer. Double-click the **BaseServices** folder.
2. Double-click the **Setup.exe** icon.
3. From the Choose Setup Language dialog, confirm the language to use for your installation. Click **OK**.
4. When the System File Upgrade dialog opens, read the text and click **Next**.
5. From the Choose Destination Location dialog, place these files in a temporary directory. Click the **Browse** button to select a directory. After a preferred directory is selected or to use the default directory, click **Next**.
6. When the System File Upgrade is complete, click **Finish**. If you are prompted to restart the computer, do so now.
7. From the Choose Setup Language dialog, confirm the language to use for your installation. Click **OK**.
8. The Welcome to the Setup program dialog opens. The text in this dialog is basic information about the Setup program, including how to cancel the installation. Read the information and click **Next**.
9. The Software License Agreement dialog opens. Read the agreement. To accept the agreement and continue the installation process, click **Yes**.
10. When the Choose Destination Location dialog opens, select a directory to install Tivoli Business Systems Manager and click the Browse button. The Choose Folder dialog opens. Select your directory and click OK.

The following message is displayed if the directory path you selected does not exist:

The folder: <your destination path> does not exist. Do you want the folder to be created?

Click Yes. The selected path is displayed in the Destination Folder. When you select the preferred path or the default destination folder, click Next.

Note: To avoid the possibility of the log and working files becoming full and stopping the Windows operating environment, install the application program on a drive other than the operating system default drive of C.

11. From the Setup Type dialog, select Custom and click Next.

12. From the Select Components dialog, select the Health Monitor Client. If you have previously installed components by selecting them from the Select Components dialog, do not clear them from the list. Click Next.

13. From the Enter Information dialog, type the host name of your local machine. Click Next.

14. From the Health Monitor Client dialog, type in the name of the health monitor server. Click Next.

15. From the Select Program Folder, click Next to accept the default value (Tivoli Business Systems Manager) or select a folder name from the existing list to place your icons.

16. From the Start Copying Files dialog, verify that your information is correct under the Current Settings grouping and click Next to begin copying the files.

17. From the Setup Complete dialog, when asked if you want to restart the computer, click Finish.

Note: Users need at least read access to HKEY_LOCAL_MACHINE\Software\Accessible Software, Inc.\Access1\1.0 \ Health Monitor \ on the Health Monitor server for the client to function.

The Host Integration Server

The Microsoft Host Integration Server is required only if SNA connectivity is used for event flow from the mainframe. If TCP/IP event flow is used, this server is not required.

This chapter describes how to configure Host Integration Server enabling it to communicate with the source/390 object server. It includes:

- "Configuring Communication Services" on page 193
- "Validating LU6.2 Support“ on page 195
- "Installing Event Handler Server Using IP Communication Services” on page 196
- "Adding Additional Operating Systems” on page 196

Information on installing Host Integration Server is in Chapter 5, “Installing HIS,” on page 31.
Configuring Communication Services

The two configurations for the Tivoli Business Systems Manager communications services are:

- **Configuration 1**: All communications services are running on the SNA Client machine, known as the Event Handler. Generally, this configuration is used for installations with fewer than 35 operating systems.

- **Configuration 2**: The listener and event handler processes are running on the SNA Client machine, and the sender services are running on the SNA server machine. Generally, this configuration is used for installations with more than 35 operating systems.

Configuration 1 is considered the standard installation method. If your installation involves more than 35 operating systems, sender services should be created on the SNA server machine. If your installation involves more than 35 operating systems, follow instructions in the ["Installing Event Handler Server (Configuration 2)."](#)

**Notes:**

1. TPSTART is only required where the Listener process is installed. If you install multiple SNA clients pointing to the same server, or start TPSTART on the SNA server you can experience problems with the Listener processes that connect to OS/390.

2. Never install the Listener on more than one client pointing to the same Host Integration Server.

3. You must restart the event handler server the first time you run the `makemvscomponents` script and whenever you change the local LUNAME (-t parameter).

**Installing Event Handler Server (Configuration 1)**

On the event handler server, the `makemvscomponents` script is provided to do the following:

- Create the LU6.2 or IP Sender Service for each operating system
- Create the file receiver service for each operating system
- Create the event handler service for each operating system
- Update the IP Listener registry for each operating system (LU6.2 or IP).

Run the `makemvscomponents` script on the event handler server from the `TivoliManager\bin` directory. Run the `makemvscomponents` script for each OS/390 operating system in your environment. Before running this script, each OS/390 operating system must have been created within the database. You can obtain the syntax for the `makemvscomponents` script by issuing the `sh makemvscomponents -h` command from a command prompt on the event handler server.

For Configuration 1, use the default value for the component listing.

**Installing Event Handler Server (Configuration 2)**

The difference between configuration 1 and configuration 2 is that for configuration 2, the components are split between the SNA server and the event handler server. In configuration 2, when you set up the SNA server, you use the `-c` parameter in the `makemvscomponents` script to install the sender services on the SNA server and the remaining services on the event handler server. Refer to the following examples.
When you install with the IP communication services, the components can be split between the event handler server and a sixth server. The instructions for configuring this type of setup follows the SNA server configuration.

**Configuring the SNA Server for Configuration 2:** To configure the SNA server for configuration 2:

1. The Tivoli Business Systems Manager EnqueueProxyServer must be installed on the same server where the Tivoli Business Systems Manager MVS Sender services are running.

2. The Tivoli Business Systems Manager MVSUploadRule service must run on the event handler server. If the Tivoli Business Systems Manager MVSUploadRule service is installed on the SNA server machine, it must be disabled. There should only be one Tivoli Business Systems Manager MVSUploadRule service per Tivoli Business Systems Manager system.

3. When setting up your operating system instances on the event handler server and SNA server, use the makemvscomponents script to install the components. You must install the event handler server components first and then the SNA sender services on the SNA server machine.

Example 1 - Install components on the event handler server. Install only event handler and listener services for an operating system: M2CPUA on M2/LPARA/CPUA on the event handler server:

```
sh makemvscomponents -BM2CPUA -O'M2/LPARA/CPUA'-cEH,LS,FR -dUSAS101.NJ1TM390
```

Example 2 - Install only sender service for an operating system: M2CPUA on M2/LPARA/CPUA on the SNA server:

```
sh makemvscomponents -BM2CPUA -O'M2/LPARA/CPUA'-cSS -xNJ1TM390
```

4. After you run these scripts, start the new event handler services on the Event Handler server.

5. Start the SNA sender services on the SNA server machine. The sender service does not start successfully if the SNA server configuration for this operating system is not in place.

**Configuring IP Communication Services for Configuration 2:** To configure IP communication services for configuration 2:

1. The Tivoli Business Systems Manager EnqueueProxyServer must be installed on the same server where the Tivoli Business Systems Manager MVSIPSender services run.

2. The Tivoli Business Systems Manager MVSUploadRule service must run on the event handler server. If the Tivoli Business Systems Manager MVSUploadRule service is installed on the sixth server where you plan to install the Tivoli Business Systems Manager MVSIPSender services, it must be disabled. There should only be one Tivoli Business Systems Manager MVSUploadRule service per Tivoli Business Systems Manager system.

3. The Host Integration Server must be installed on both the event handler server and the sixth server machine. There is no Host Integration Server configuration required. This version of Tivoli Business Systems Manager uses National Language support code provided by the Host Integration Server.

4. When setting up your operating system instances on the event handler server and the sixth server machine, use the MakeMVSComponents.ksh script to install the components. You must install the event handler server components first and then the IP sender services on the sixth server machine. Do not use the -c parameter that is used by the MakeMVSComponents.ksh script when you split the service components for this configuration.
5. On the event handler server, start only the service named:
   - Tivoli Business Systems Manager MVSEventHandlerSvc - <instancename>
   service
   On the sixth server machine, where the IP sender services are intended to
   run, only start the service:
   - Tivoli Business Systems Manager MVSIPSenderSvc-
     <instancename>service

Example 1 - Install components on the event handler server. Install only event
handler and listener services for an operating system: M2CPUA on
M2/LPARA/CPUA on the event handler server:
   sh makemvscomponents -BM2CPUA -O'M2/LPARA/CPUA'-v1022 -whostname:1023
Example 2 - Install components on the sixth server machine. Install service
components for an operating system: M2CPUA on M2/LPARA/CPUA on the
SNA server:
   sh makemvscomponents -BM2CPUA -O'M2/LPARA/CPUA' -v1022 -whostname:1023

6. After you run these scripts, start the new event handler services on the event
handler machine.

7. Start the IP sender services on the sixth server machine.

Validating LU6.2 Support

Use the following steps to validate that a physical connection exists between
source/390 and the Host Integration Server.

1. Open the SNA Manager Application to view whether the connection is Active.
   If the connection is not active, start the connection. (Reference the Host
   Integration Server help facility).
   Once the physical connection is verified, the MVS listener processes are ready
to be used with Tivoli Business Systems Manager for Windows the operating
system environment.

2. Start Tivoli Business Systems Manager source/390 on an OS/390 system. The
   MVS Listener program on the Host Integration Server client workstation
   associated with that OS/390 system should start running automatically. (See the
   Source/390 Install and Configuration Guide.)

Use the following methods to determine if a connection exists between an SNA
server and an OS/390 system:
   • Use the APPC Viewer on the Host Integration Server Manager to view the
     sessions connected. Refer to Host Integration Server help facility for further
details.
   • Run
     D NET,10=\1\uname,E on the MVS console to view the sessions established from
     VTAM perspective.
   • Browse the Logs Folder within the Tivoli Business Systems ManagerWindows
     NT directory on the SNA Client workstation and search for files beginning with
     LS and MVSL_. If these files exist, then the SNA Server Manager starts the TP
     program (ACC1RCV) on the client machine. There is a log file generated for
each MVS Listener started by the SNA server. The status is indicated in a
message within the log file.
Installing Event Handler Server Using IP Communication Services

This section includes an example for installing Tivoli Business Systems Manager using IP communication services. The example installs Tivoli Business Systems Manager Windows operating system services for Operating System: CPUA under LPAR: LPARA. Use the -h parameter of the MakeMVSS Components.ksh script to obtain help information.

```
sh MakeMVSS Components.ksh -BM2CPUA -O'M2/LPARA/CPUA' -wIBM.MVS.HOSTA.COM:1023 -v1022
```

Where 1022 is the listening port number that the ASIMVSIPOSListenerSvc service uses for listening connections. This value must correspond with the value specified on the TCPIP_PORT card for all source/390 object servers that you want to use for connections.

**Notes:**

1. Before you run the MakeMVSS Components.ksh script to install the services to be used for an operating system, you must ensure that the operating system exists in the Tivoli Business System Manager database.
   
   For new operating system instances that communicate using IP, you must insert these resources into the physical view using the console GUI.

2. If you are migrating from LU6.2 to IP communication, run the MakeMVSS Components.ksh script with the -r parameter to remove all MVS instance service components prior to uninstalling Tivoli Business System Manager. Run the makenvs components.ksh script again to install the components using IP communication.

3. If you are connecting to more than one source/390 object server on the same operating system, then you must provide a unique port number for the -w parameter. Otherwise, the upload connection does not function correctly and registration to the source/390 object pump does not work.

4. You can run the GTMINFO program under TSO or ISPF to obtain the host IP address or host name that is required for the -w parameter when configuring the upload_ip_address. Use either the IP address or host name.

5. After you run the MakeMVSS Components.ksh script to install your MVS instances, you must start the event handler and IP sender services. The MakeMVSS Components.ksh script supports a -A parameter, which automatically starts the new services.

6. Refer to the documentation in the MakeMVSS Components.ksh script by using the -? parameter to display usage.

Adding Additional Operating Systems

If you install a new operating system into the environment after the Tivoli Business Systems Manager installation is complete, you must make the following changes and configurations to connect the new operating system to Tivoli Business Systems Manager.

1. Install the three started tasks (source/390 object pump, source/390 object server, and source/390 dataspace) on the new operating system. APF authorize the load library. Copy the startup parameters from an existing functional system. Ensure all MVS tuning requirements are met (non-swappable and appropriate dispatching priority).

2. Install and configure any necessary Tivoli Business Systems Manager interfaces to other OS/390 data sources, such as Tivoli Operations, Planning & Control, CA-7, System Automation for OS/390, CICS, and DB2.
3. **Make the following VTAM changes (see “Virtual Telecommunications Access Method Definitions” on page 71 for further information):**
   a. If you use SNA communications, define the source/390 object server APPLID to VTAM on the new system. Ensure that this APPLID has access to the SNA Server LU. For example, add any CDRSCs needed or update SME exit as required. The APPLID and the LU can initiate sessions with one another. Update the source/390 object server startup parameters to use this APPLID.
   b. Define OMEGAMON APPLIDS (Classic) if you use this performance monitor to capture data. Remember that you need one APPLID defined for every OMEGAMON FOR CICS, DB2, or MVSinstance that you log on. Update the source/390 object server startup parameters to reflect the APPLID definitions installed.
   c. If you use SNA communications, install the `logmode` table for Tivoli Business Systems Manager. Ensure that the logmode name used is indicated in the source/390 object server startup parameters, `MakeMVSComponents.ksh` script, and the APPLID definition.

4. If you use SNA communications, update Host Integration Server as follows:
   a. Insert a Remote APPC LU representing the new source/390 object server APPLID.
   b. If you are using a different logmode table than the other installed operating systems, insert that table name as an APPC mode and configure it to match the VTAM definitions.
   c. If you are using an existing logmode table, update the Partners tab to reflect the new relationship between local and remote LU.
      These changes require a restart of SNABASE on this machine and the event handler machine. Restart the SNA server machine and then restart the event handler machine at this time.

5. Update the database to include the new operating system. On the Source/390 tab, make sure Source/390 is enabled. You cannot proceed to Step 6 without adding the operating system to the database. Also, place the new operating system in the appropriate business system within the business system view: SYSPLEXES.

6. From the event handler computer, use the `MakeMVSComponents.ksh` script to create the necessary components for the new operating system. Once you have run these scripts, start the services that were created for the new operating system.

You are now ready to test connectivity to the new operating system. Refer to the section, **Validating LU6.2 Support** for procedures.

**IP Communication Support**
If you are configuring additional operating systems to use IP communication, the same procedure described in the preceding section applies except you do not use the SNA (VTAM) configuration.

**Uninstalling LU6.2 or IP Communication Services Support:** Use the `MakeMVSComponents.ksh` script with the `-r` parameter to remove all MVS instance service components before uninstalling Tivoli Business Systems Manager.
Installing and Configuring Components on Tivoli Enterprise Console

Information in this section describes how to install and configure components of Tivoli Business Systems Manager that run on the Tivoli Enterprise Console. It includes:

- “Existing Tivoli Global Enterprise Manager Users”
- “Installing Tivoli Business Systems Manager Event Enablement” on page 199
- “Configuring Event Enablement” on page 202
- “Tivoli Enterprise Console Status Integration” on page 209

Note: If you have multiple non-z/OS event feeds and you wish to provide correlation and automation, we recommend using the Tivoli Enterprise Console feed. If you have a single Common Listener-supported feed and automation and correlation are not required, then the Common Listener feed is appropriate.

Two services are installed on the Tivoli Enterprise Console server:

- Event enablement
- Task server

Event enablement handles the routing of Tivoli Enterprise Console events to the Tivoli Business Systems Manager servers through a connection to both the Tivoli Business Systems Manager Agent Listener and TECIPLListener services.

The task server handles the running of operator-initiated commands.

Existing Tivoli Global Enterprise Manager Users

If you are an existing Tivoli Global Enterprise Manager (GEM) console or GEM user, you should read and understand the material in this section because once installed, Tivoli Business Systems Manager replaces GEM.

To install Tivoli Business Systems Manager, the Tivoli Framework must be installed and running with a valid Tivoli Enterprise Console Server.

Install event enablement on each of the Tivoli Enterprise Console servers that you want to forward events to Tivoli Business Systems Manager and enable distributed monitoring.

Migrating from Tivoli Global Enterprise Manager

Tivoli Business Systems Manager supports the Application Policy Management architecture.

The following information eases the migration from Tivoli Global Enterprise Manager to Tivoli Business Systems Manager.

- All definition files that are currently loaded into Tivoli Global Enterprise Manager are in the Tivoli Global Enterprise Manager appdef directory. The parser.sh command was designed to process all definition files in a directory. Do not load unused Application Management Specifications definitions into Tivoli Business Systems Manager.

- Event enablement is a super set of the Tivoli Global Enterprise Manager, Version 2.3 event enablement component. It is capable of forwarding events simultaneously to Tivoli Global Enterprise Manager and Tivoli Business Systems Manager. Configure the Tivoli Global Enterprise Manager server to communicate
with the Tivoli Business Systems Manager event enablement component just as it would be configured for Tivoli Global Enterprise Manager event enablement.

- Tivoli Business Systems Manager does not support the Application Policy Management connection and aggregation features. For example, if a Tivoli Global Enterprise Manager connection was being used to show a relationship between two software component instances, with one being dependent on another, those instances could be added to a business system so that the status of the dependent component is affected by the other instance. See the IBM Tivoli Business Systems Manager: User’s Guide and IBM Tivoli Business Systems Manager: Administrator’s Guide for information about business system views.

- Although the Tivoli Global Enterprise Manager system layer events are not supported by Tivoli Business Systems Manager, mapping a Tivoli Distributed Monitoring profile to an Application Policy Management — defined software component, using the `gemdmmmap.sh` command, provides a similar function.

- If the Application Policy Management instrumentation supports connection and aggregation Application Policy Management flows, and Tivoli Global Enterprise Manager is no longer being used, disable the `APM_CI_CHANGE` (component information change) and `APM_CONNECTION_CHANGE` (connection change) monitors in the Tivoli Distributed Monitoring profile of the instrumentation for more efficient use with Tivoli Business Systems Manager.

**Installing Tivoli Business Systems Manager Event Enablement**

Install event enablement and the task server on each of the Tivoli Enterprise Console servers from which you want events to be forwarded to Tivoli Business Systems Manager.

If a previous version of event enablement is installed, uninstall it using the `remove` command before installing Tivoli Business Systems Manager event enablement.

To remove event enablement, run the following command:

```
For Windows: %BINDIR%\TDS\remove
```

```
For UNIX: $BINDIR/TDS/remove
```

See the IBM Tivoli Business Systems Manager: Administrator’s Guide for further details on the `remove` command.

Install event enablement using one of the following methods:

- From the standard Tivoli desktop:
  
  Follow the steps in Installing Components from the Tivoli Desktop. In Step 3, select the Tivoli Business Systems Manager Event Enablement component from the **Select Product to Install** list.

  In Step 4, because you are installing event enablement on the Tivoli Enterprise Console Event Server, its machine name should be the only one listed in the **Clients to Install On** list. Move the other machine names from that list to the **Available Clients** list.

- From the operating system command line:
  
  You can install Event Enablement from the command line using the `winstall` command as described in “Installing Distributed Components from the Command Line” on page 201 specifying `SERVER.IND` as the index file.

  The following example shows a command you can use to install event enablement.

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If you are using the Windows NT operating system, you must run the following command from the program shell:

winstall -c hostname:SPATH -i SERVER.IND

When the installation is complete, you see the files in the following directories:

- For Windows: $BINDIR\%TDS
- UNIX: $BINDIR/TDS

**Installing Distributed Components from the Tivoli Desktop**

Follow these steps to install distributed components for Tivoli Business Systems Manager from the Tivoli Desktop:

1. From the **Desktop** menu, select **Install--->Install Product** to display the Install Product dialog.

   If the path to the Tivoli Business Systems Manager Distributed CD-ROM image has already been set, you should see the various Tivoli Business Systems Manager distributed product components listed in the **Select Product to Install** list.

2. If the Tivoli Business Systems Manager distributed product components are not listed, click the **Select Media** button in the Install Product window to display the File Browser dialog.

   - Use the File Browser dialog to specify the path to the installation media.
   
     Follow these steps if you know the path to the CD-ROM image:
     
     a. Type the full path in the **Path Name** field.
     
     b. Click **Set Path** to change to the specified directory.
     
     c. Click **Set Media & Close** to save the new installation media path and return to the Install Product dialog. The Install Product dialog contains a list of Tivoli Business Systems Manager distributed product components that are available for installation.

   Follow these steps if you do not know the path to the CD-ROM image:

   a. From the **Hosts** list in the File Browser dialog, select the host that contains the installation media. When you select a host, the Directories list is updated to show the directories for the host you selected.

   b. Select the directory that contains the installation media from the **Directories** list. The machine on which you are mounted should be in the same Tivoli Management Region as the machine on which you are installing.

   c. Click **Set Media & Close** to save the new media path and return to the Install Product dialog. The dialog contains a list of Tivoli Business Systems Manager distributed components that are available for installation.

3. From the Install Product dialog, select the preferred product component from the **Select Product to Install** list.

4. All machines in the current Tivoli Management Region are listed in the Clients to Install On list in the Install Product dialog. This list should only contain machine names on which you want to install the preferred component. Move the other machine names from that list to the Available Clients list by selecting one or more clients from the Clients to Install On list and clicking the right-arrow button. The selected clients are moved from the Clients to Install On list to the Available Clients list.

5. Click **Install** to install the preferred component on the selected client machines.
6. The Product Install dialog opens. It lists the operations that take place while the software is being installed and alerts you of problems you might want to correct before installing the Tivoli Business Systems Manager distributed product component.

7. Click Continue Install to begin the installation process, or click Cancel to stop the installation process. When the installation completes, the Product Install dialog displays a completion message.

8. Read the log in the Product Install dialog to check for errors.

9. Click Close when the Product Install status dialog indicates that the installation is complete. Repeat the preceding steps to select other Tivoli Business Systems Manager distributed components to be installed on other sets of consoles as preferred.

Installing Distributed Components from the Command Line

Use the wininstall command to install Tivoli Business Systems Manager distributed components from the operating system command line.

**Note:** Before you run any command beginning with the letter w, you must set up the Tivoli Environment. A Tivoli Management Region server usually has the environment set, but on other managed nodes, use one of the following:

- For Windows:
  `setup_env.cmd`, located in the following subdirectory:
  `\WINNT\system32\drivers\etc\tivoli`

- UNIX:
  `setup_env.sh`, located in the subdirectory:
  `/etc/tivoli`

Following is the syntax for this command, followed by an explanation of its parameters:

```
winstall [-c cdrom_path] [-s tmr_server] [-i index_file] [-n] [-y]
[install-variable=value...] [managed node...]
```

The `-c cdrom_path` parameter specifies the path of the CD-ROM image.

The `-s tmr_server` parameter specifies the name of the Tivoli Management Region server.

The `-i index_file` parameter specifies the index file from which the Tivoli Business Systems Manager distributed component is to be installed. All index files have an extension of .IND.

The .IND files are:

- Tivoli Business Systems Manager Event Enablement, Version 2.1.1 (English):
  `SERVER.IND`

The `-n` parameter specifies that the product is to be installed on all managed nodes that do not currently have the product installed. This argument is ignored if managed-node is specified.

The `-y` parameter specifies that the installation should proceed without confirmation. This command identifies the actions that must be taken to perform
installation and requests confirmation before continuing. Using this argument, the 
\texttt{winstall} command identifies the action and installs the product without requesting
confirmation.

The \texttt{install-variable=value} parameter specifies the number of variables that control
the installation can be set on the command line. You can look in the installation
index file of the product for a definitive list of these variables. These variables
specify required information or override default information.

The \texttt{managed node} parameter specifies the managed node on which a Tivoli
Instrumentation Service is installed. Multiple managed nodes can be specified,
separated by a blank. It is important to specify the managed nodes because if
nothing is specified, the product is installed on all managed nodes in the Tivoli
Management Region.

Refer to the \texttt{winstall} command in the \textit{Tivoli Framework Reference Manual} for more
information.

\textbf{Additional Installation Options}

After installing the Tivoli Business Systems Manager event enablement, server, and
console, you can install additional Tivoli Business Systems Manager components
depending on your environment. See "Distributed Data Sources" on page 276
for more details.

\textbf{Configuring Event Enablement}

This section describes the required configuration tasks before using the event
enablement and task server processes.

\textbf{Configuring the Solaris /etc/system File}

If you are performing system operations in the Solaris operating system
environment, you must add the following lines to the \texttt{/etc/system} file:

\begin{verbatim}
set semsys:seminfo_semmap=90
set semsys:seminfo_semmni=90
set semsys:seminfo_semopm=90
set semsys:seminfo_semmns=900
set semsys:seminfo_semume=90
set semsys:seminfo_semnu=90
set semsys:seminfo_semni=90
set shmsys:shminfo_shmmax=68608000
\end{verbatim}

These values represent the number required for Tivoli Business Systems Manager
and the existing values must be increased to the number displayed. Once you have
added the lines to the file, restart your system.

\textbf{Tivoli Task Support}

The Tivoli Business Systems Manager distributed components provide the ability
to issue Tivoli tasks defined in a Tivoli task library from the Tivoli Business
Systems Manager console. The tasks are available to all operators that log on to
Tivoli Business Systems Manager with a user ID that belongs to the Tivoli Business
Systems Manager Administrators or TBSM_Administrators_Super Groups.

All Tivoli tasks are grouped under \textbf{Operational Tasks}. After you select a Tivoli
menu item, a Task dialog opens where you can collect the tasks argument values.
The task, and its arguments, are sent to the task server on the same system as the
Tivoli Enterprise Console that forwarded the instance events to Tivoli Business
Systems Manager. Using the user ID and password of the operator that issued the
command, the task server starts the Tivoli task through the Tivoli framework and returns the output to the Tivoli Business Systems Manager console.

Tivoli tasks are associated with Tivoli Business Systems Manager software component resources. The parser.sh command parses task definitions from the AMS CDF file and adds their definitions to the software components for the Tivoli Business Systems Manager definition. Because the CDF file does not fully describe the arguments of the task, the parser can be passed the name of the Tivoli task library definition file (TLL). From the TLL file, the parser extracts argument enumeration values. For example, with only the CDF file process, a task that has an argument named Startup Type would be displayed on the task dialog with a text input box. If a TLL file was provided to the parser, that same argument could be presented with a combo box input field with a drop-down list of valid choices for the Start Up Type argument.

Tivoli tasks can also be added to a defined Tivoli Business Systems Manager distributed resource by using the TLLParser.sh command. This command parses task definitions directly from the TLL file and adds them to the Operational Tasks cascading menu group. The TLLParser.sh command supports multiple task library definitions being added to the same software component definition. If the TLL file for an existing Tivoli Task library is not available, see the wtll Tivoli framework command to extract the TLL file from the installed task library.

Tivoli Business Systems Manager task support significantly enhances the ability of its operator to control the monitored resources. However, the following limitations apply:

- The AMS defined Set Threshold task is not supported by Tivoli Business Systems Manager. The parser.sh and TLLParser.sh commands ignore the definitions for that task.
- AMS Discover Connection tasks are not supported by the parsers.
- Tasks that drive a preprocessing script to collect argument information before presenting a task dialog to the user are defined but the preprocessor script is not used. The data provided by the preprocessing script is not available to the Tivoli Business Systems Manager task dialog.

Tivoli Business Systems Manager provides the delete_Menuitem.sh command to remove an unwanted task from a software component definition.

**Mapping Tivoli Enterprise Console Event Severity to Tivoli Business Systems Manager Alerts**

The state, or severity, of a Tivoli Enterprise Console event is contained in the severity event slot. The event sender forwarding events to Tivoli Enterprise Console must use a severity value that has been defined to the events in the Tivoli Enterprise Console event class definition (for example, the interapp.baroc file defines the APM_Heartbeat and APM_Threshold event classes). Tivoli Business Systems Manager maps the Tivoli Enterprise Console event severity slot values to a Tivoli Business Systems Manager alert state and priority. If the event contains a severity value that Tivoli Business Systems Manager does not recognize, the Tivoli Business Systems Manager exception results are the Alert State and Priority associated with the HARMLESS severity.

The mapping process is controlled by the GEMSeverities SQL table in the Object database. The default settings, and their descriptions, are shown in the following table. You can change the table by using the Microsoft SQL 7.0 Enterprise Manager or Microsoft SQL 2000 Enterprise Manager. Changes to the table take effect.
immediately.

Table 84. Default settings for GEMSeverities SQL table

<table>
<thead>
<tr>
<th>Severity</th>
<th>AlertState</th>
<th>Priority</th>
</tr>
</thead>
<tbody>
<tr>
<td>CRITICAL</td>
<td>3 (Critical, Red)</td>
<td>2 (High)</td>
</tr>
<tr>
<td>FATAL</td>
<td>3 (Critical, Red)</td>
<td>1 (Critical)</td>
</tr>
<tr>
<td>HARMLESS</td>
<td>1 (Normal, Green)</td>
<td>4 (Low)</td>
</tr>
<tr>
<td>INFORMATIONAL</td>
<td>1 (Normal, Green)</td>
<td>4 (Low)</td>
</tr>
<tr>
<td>MINOR</td>
<td>2 (Warning, Yellow)</td>
<td>4 (Low)</td>
</tr>
<tr>
<td>NORMAL</td>
<td>1 (Normal, Green)</td>
<td>5 (Ignore)</td>
</tr>
<tr>
<td>SEVERE</td>
<td>3 (Critical, Red)</td>
<td>3 (Medium)</td>
</tr>
<tr>
<td>UNKNOWN</td>
<td>2 (Warning, Yellow)</td>
<td>5 (Ignore)</td>
</tr>
<tr>
<td>WARNING</td>
<td>2 (Warning, Yellow)</td>
<td>3 (Medium)</td>
</tr>
</tbody>
</table>

Setting User Rights
This section describes settings and the user rights associated with the account that has the event enablement and task server services running under the Windows operating environment.

The user account for the event enablement and task server services must have the three following user rights:
- Act as part of the operating system
- Replace a process level token
- Log on as a service

To set user rights:

For Windows NT:
1. Click Start --> Programs --> Administrative Tool --> User Manager (for Domains).
2. Click Policies User Rights.
3. Click Show Advanced User Rights.
4. Scroll through the Right: list and select Act as part of the operating system.
5. The Grant To list displays the groups and users currently granted this right. If your target user ID is already listed, go to step 10; otherwise, continue with the next step.
6. Click Add and then click Show Users.
7. Select the target user ID (the one under which the server runs) and click Add, then click OK.
8. Repeat steps 5 through 9 for Replace a process level token.
9. Repeat steps 5 through 9 for Log on as a service.
10. Log off and log back on to the target ID for the user rights to take effect.

For Windows 2000 or Windows 2003 (using the Classic Start menu):
1. Click Start --> Programs --> Administrative Tools --> Local Security Policy.
2. On the tree view, expand and select Local Policies --> User Rights Assignment.
3. Right-click Act as part of the operating system and click Security.
4. If your target user ID is not listed, then click Add and add the user ID.
5. Repeat steps 3 and 4 for Replace a process level token.
6. Repeat steps 3 and 4 for Log on as a service.
7. Log off and log back on to the target ID for the user rights to take effect.

**Setting TZ Environment Variable on Windows**

If you use the Windows operating system and are receiving events with incorrect timestamps, first verify that the time zone and daylight savings settings are set correctly on the machine. This can be checked from the Date/Time icon in the control panel. If the time zone is correct, then verify that the TZ system environment variable is set. TZ is used to establish the local time zone and is used by various time functions to compute times relative to Coordinated Universal Time (UTC), formerly known as Greenwich Mean Time (GMT). An example of TZ is `TZ=EST8PDT`.

If TZ is not set, the event enablement process will attempt to set it based on information set in the system. We recommend that you set TZ manually if you are having trouble with incorrect timestamps on Windows.

Set TZ according to the specifications set out for TZ in the UNIX environment.

**Conﬁguring TCP/IP Port Numbers**

If you are using TCP/IP, the task server and event enablement default settings are for the following TCP/IP ports:

- Port 4020 for Tivoli NetView for OS/390 communications. This is optional if Tivoli NetView for OS/390 is part of the environment. Communication is between the task server and Tivoli NetView for OS/390.
- Port 4030 for Event Enablement, to Agent Listener and TECIPListener communications.
- Port 4042 for task server communications.

No action is required if these port numbers do not conflict with your current application program settings. However, if there is a conﬂict, change the port number or numbers using these instructions:

1. On the machine where the task server and event enablement are installed, open a command prompt.
2. Change to one of the following directories:
   - For Windows: 
     \%windir\%\system32\drivers\etc
   - For UNIX:
     /etc
3. Add the appropriate entry to the services file:
   ```
   tserver_tbsm 4020/tcp #server 390 port
tserver_ee 4030/tcp #event enablement port
tserver_ts 4042/tcp #task server port
   ```
   Substitute your port number for the default port number or numbers listed here.

**Notes:**

1. If you reassign the 390 port, you must also conﬁgure the Tivoli NetView for OS/390 Port keyword in the DUIPFMEM file. See the *Tivoli NetView for OS/390 Administration Reference Guide* for more information on the Port keyword.
2. If you reassign the event enablement port, then you must also run the `gemeeconfig` command on the agent listener machine.
3. If you reassign the task server port, then you must also run the `TGMTaskConfig` command on the database server machine.
4. For migration purposes, `tserver_390` continues to be recognized for the 390 port. However, if the NetView management console server is installed on the same machine as Tivoli Business Systems Manager event enablement, then the name used in the `etc/services` file for the 390 port should be changed to use `tserver_tbsm` rather than `tserver_390` or a port conflict occurs.

**Configuring for Network Address Translation**
If a firewall exists between the event enablement machine and either the OS/390 servers or the SQL server and Network Address Translation is being used, then the `config -f` command must be run to define the Network Address Translation address to the event enablement and task server processes. The address supplied to the `config -f` command is the address that the event enablement machine is known by, outside of the firewall.

After running the `config -f` command, both the event enablement process and the task server process must be stopped. Then restart both processes. Stopping one process and restarting it, then stopping and restarting the other process does not enable this change to take effect. Both processes must first be stopped and then restarted.

**Configuring Multiple Tivoli Object Servers**
The task server and event enablement scripts run the `setup_env` script to ensure that the environment is correctly set up before starting any processes. The `setup_env` script is typically located in the following directory:

- For Windows NT:
  ```
  %windir%\system32\drivers\etc\Tivoli
  ```
- For UNIX:
  ```
  /etc/Tivoli
  ```

If you have multiple Tivoli Object Servers (`oservs`) installed on your machine, the `setup_env` script might not be located in the standard location. If this is the case for your installation, set the `tserver_etc` environment variable to the directory that contains the appropriate `setup_env` file.

**Configuring the Task Server**
The following sections describe the steps necessary to configure the task server.

**Setting the User ID for Task Server Running Tivoli Management Environment Tasks:** Tivoli Business Systems Manager supports Tivoli Management Environment® (TME®) Tasks. To run these tasks, the user ID that the task server is running under must be associated with an administrator on the Tivoli Management Region server.

For Windows NT:
1. From the Windows taskbar, click the **Start** menu, click **Settings -->Control Panel -->Services --> Tivoli BSM Task Server** and then select the **Startup** button.
2. From the **Log On As** section, click **This Account** and select the user ID under which the task server should run. Type the password, and click **OK**.
3. Restart the task server to enable this change.
For Windows 2000 or Windows 2003 (using the Classic Start menu):
1. From the Start menu, select Settings --> Control Panel --> Administrative Tools --> Services --> Tivoli BSM Task Server.
2. Right-click Tivoli BSM Task Server, select properties -- >Log On tab.

On the UNIX operating environment, the task server runs as root.

To associate the user ID under which the task server is running with an administrator on the Tivoli Management Region server, follow these steps:
1. Determine the roles required to run all the tasks from the Tivoli desktop.
   a. Open the Tivoli desktop.
   d. Right-click each task icon. Select Edit task. Note the roles highlighted in the Roles Required to Execute Task. You need this information in subsequent steps. Right-click the selected administrator icon. Select Edit Logins.
   e. Type the login name you are using to run the GEM server.
   f. Click Change & Close.
2. Select an administrator on the Tivoli Management Region server to associate with the user IDs under which the task server is running.
3. Right-click each Task icon. Select Edit Properties from the pop up menu.
4. Set the following values in the Administrator Properties dialog:
   - User Login Name: $root_user
   - Group Name: $root_group
   - Click Change & Close.
5. Right-click the selected administrator icon again. Select Edit TMR Roles from the pop up menu.
6. Select the roles needed to run the task server tasks.
7. Click Change & Close.

**Setting the User ID for OS/390 Tasks**

Some products, such as MQ-Series, contain instrumentation that issues NetView commands through the task server. The task server must have one or more NetView operator IDs associated with it to enable these commands to run. You run the tserver hostcmdoper command to set one or more operator IDs and passwords. This command encrypts the operator ID and password and stores them to a disk. This does not apply to OS/390 tasks issued from the Tivoli Business Systems Manager console. Operator initiated tasks are run under the context of the operator that issues the task.

**Starting Task Server Manually or Automatically**

On Windows operating environments, the task server is automatically configured to start as a service when the system is restarted.

To modify the task server service:

From the task bar, click Start and select Settings -->Control Panel -->Services. The name of the service is Tivoli BSM Task Server.

In UNIX operating environments (AIX and Solaris operating system environments), the task server process is set up to run as the daemon ihscts. The installation
updates the appropriate system configuration files so that the process starts automatically when the machine is started. The affected configuration files differ across operating system environments:

- For Solaris operating system environment: /etc/rc3.d/S95tbsm and /etc/rc0.d/K05tbsm
- For AIX: /etc/rc.tbsm.

An entry has been added to inittab with the ID rctbsm.

**Configuring the Server. Properties File**

Use the server.properties file to configure certain attributes of the task server. Refer to the file itself for information on the various attributes. The server.properties file is located in the following directory:

$BINDIR/TDS/EventService/config

**Configuring Event Enablement**

After you install event enablement, you can configure the console environment for use with instrumented business components in the following areas:

- Updating the Tivoli Enterprise Console rules and event classes
- Setting the Tivoli Management Environment user ID
- Starting event enablement manually or automatically
- Setting the maximum default size of the event cache

**Updating Tivoli Enterprise Console Rules and Event Classes:** Update the Tivoli Enterprise Console rules and classes by running the ihsttec.sh script, which is on the Tivoli Enterprise Console server machine, in the following directory:

- For Windows: $BINDIR\%\TDS\EventService
- For UNIX: $BINDIR/TDS/EventService

The ihsttec.sh script sets up the profiles you use for monitoring your operating system, adds rules for the source/930 Tivoli Enterprise Console interface, and adds classes and rules for Tivoli Enterprise Console to Tivoli Business Systems Manager status maintenance.

**Setting the Tivoli Management Environment User ID:** The event enablement process must be capable of running Tivoli Management Environment (TME) commands, such as winterp and wep, therefore it must have sufficient authority within the Tivoli environment. To run these commands, the user ID that event enablement is running under must be associated with an administrator on the Tivoli Management Region server.

From a Windows NT, the user ID under which event enablement runs can be defined by the following:

1. From the Start menu, select Settings –> Control Panel –> Services –> Tivoli BSM Event Enablement. Click the Startup button. A Service dialog opens.
2. In the Log On As group, select the button next to This Account. Select the user ID that Event Enablement should run under, and type the password. Click OK.
3. Restart the Tivoli BSM Event Enablement service to enable this change.

On UNIX operating environments, event enablement runs as ROOT.

Confirm that the user ID under which event enablement runs maps to an administrator with sufficient authority to run the winterp and wep commands.
Starting Event Enablement Manually or Automatically: From Windows operating environments, event enablement is automatically configured to start as a service when the system is started.

From the Windows task bar, click the Start menu, select Settings -->Control Panel -->Services to modify the Event Enablement service. The name of the service is Tivoli BSM Event Enablement.

On UNIX operating environments (AIX, Solaris operating system environments), the event enablement process is set up to run as the ihstdmai daemon. The installation updates the appropriate system configuration files so that the process starts automatically when the machine is started.

The affected configuration files differ across operating environments:

- For Solaris operating system: /etc/rc3.d/S95ee_gem and /etc/rc0.d/K05ee_gem
- For AIX: /etc/rc.eegem
  An entry has been added to initab with the ID rceegem.
- For UNIX: /sbin/init.d/eegem and /etc/rc.config.d/eegem
  The /sbin/init.d/eegem file is linked to the following:
  - /sbin/rc0.d/K110eegem
  - /sbin/rc1.d/K110eegem
  - /sbin/rc2.d/K110eegem
  Modify the /etc/rc.config.d/eegem file to enable the daemon to begin at startup.

See the IBM Tivoli Business Systems Manager: Administrator’s Guide for details on using the ee_start and ee_stop commands to start and stop event enablement manually.

Setting the Maximum Default Event Cache Size: An event cache is used to hold the most recent events sent to event enablement. The maximum default size of the cache is 100 MB. You can specify the maximum amount of disk space that is used by the cache, and whether or not it is enabled, through the ee_config command, which is on the Tivoli Enterprise Console server machine, in the following directories:

- For Windows: %BINDIR%\TDS\EventService\bin\ee_config
- For UNIX: $BINDIR/TDS/EventService/bin/ee_config

See the IBM Tivoli Business Systems Manager: Administrator’s Guide or the commands online help for details on the event enablement’s ee_config command.

The location for the cache file is in the following subdirectory:

- For Windows: %BINDIR%\TDS\EventService\db
- For UNIX: $BINDIR/TDS/EventService/db

You must ensure that there is enough disk space available for the maximum cache size (100 MB).

Note: For these changes to take affect, restart event enablement.

Tivoli Enterprise Console Status Integration

This feature provides a consistent status between Tivoli Business Systems Manager and Tivoli Enterprise Console.
Tivoli Enterprise Console status can be:

- **ACK**
  - This indicates that an operator has acknowledged the event and assumed responsibility.

- **CLOSED**
  - This indicates that the event has been resolved.

- **Custom_status**
  - This indicates a site-specific status, the status has been added to the STATUS enumeration.

- **OPEN**
  - This indicates that no action has been taken on the event.

- **RESPONSE**
  - This indicates a rule has automatically responded to the event.

From the console, an operator can take ownership of an event. This is analogous to an ACK in Tivoli Enterprise Console.

Events acknowledged in Tivoli Enterprise Console result in a take-ownership icon appearing on the console as soon as the event arrives. When an event in Tivoli Enterprise Console is closed, then the severity of the corresponding event in Tivoli Business Systems Manager is set to HARMLESS to indicate that the event has been resolved. If the status of Tivoli Enterprise Console event is changed to RESPONSE, then the automation-icon in Tivoli Business Systems Manager can be set for the corresponding resource.

When a Tivoli Business Systems Manager operator takes ownership of an event, then the status of the event in Tivoli Enterprise Console is changed to ACK. And if the event is set to HARMLESS in Tivoli Business Systems Manager, then the status of the event in Tivoli Enterprise Console is changed to CLOSED.

**Status Integration Interfaces**

The following interfaces are added to the Tivoli Enterprise Console and Tivoli Business Systems Manager integration:

- **TEC Classes**
  - Two additional classes are added to Tivoli Enterprise Console. These classes are for events sent from Tivoli Business Systems Manager to Tivoli Enterprise Console to notify Tivoli Enterprise Console that the status of an event has changed.
  
  The two new classes are:
  - TBSM_setemsg_event
  - TBSM_setemsg_status_event

  The class definition can be found in the DS/EventService/config/tbsmstatus/tbsmstatus.baroc file that was added to the rule set when ihsttec.sh script was run.

- **TEC Rules**
  - An additional rule is added to Tivoli Enterprise Console to trap the events for the tbsm_setemsg_status_rule class. This rule drops the incoming change status event, updates the status and administrator fields for the original event, and commits the changes.
The rule definition can be found in the TDS/EventService/config/tbsmstatus/tbsmstatus.rls file, which adds entries when the \texttt{ihssttec.sh} script is run.

- **Tivoli Business Systems Manager System Configuration Table Additions**
  You can use the system configuration table to customize several properties of the Tivoli Enterprise Console status integration interface. These properties include:
  - Enable or disable the sending status notifications from Tivoli Business Systems Manager to Tivoli Enterprise Console.
  - The default Tivoli Enterprise Console operator ID, is used if a value is not supplied by Tivoli Enterprise Console.
  - Note subject for notes generated by Tivoli Enterprise Console ACK or CLOSE.
  - Note body for notes generated by Tivoli Enterprise Console.
  - Note resolution for notes closed by Tivoli Enterprise Console.
  - Directory used to hold postmsg adapter configuration file. An adapter configuration file exists for each Tivoli Enterprise Console sending events to the console.
  - The tecstatusconfig.ksh script displays and sets the preceding values. This script can be found in the \texttt{TivoliManager/bin} directory.

**Configuring the Status Integration**

The following components must be configured to enable the Tivoli Enterprise Console status integration:

- **Tivoli Enterprise Console Server**
  1. Run the \texttt{BINDIR/TDS/EventService/config/tbsmstatus/tbsmstatus.sh} script to add the additional Tivoli Enterprise Console classes and rules for the status notification events sent from the console to Tivoli Enterprise Console.

     If the \texttt{ihssttec.sh} script was run under "Updating Tivoli Enterprise Console Rules and Event Classes" on page 208, then the tbsmstatus.sh script does not need to be run; the \texttt{ihssttec.sh} script already added the required classes and rules.

  2. Add Tivoli Enterprise Console change rules for existing \texttt{ihsttec} calls.

- **SQL Server**
  1. Run the \texttt{tecstatusconfig.ksh -t tecServerHostName} command for each Tivoli Enterprise Console server that has event enablement sending events to Tivoli Business Systems Manager.

  2. Use the \texttt{tecstatusconfig.ksh} command to optionally configure the note subject, body, and resolution text used for notes created when a Tivoli Enterprise Console operator acknowledges an event.

Refer to the \textit{IBM Tivoli Business Systems Manager: Command Reference} for more information about the \texttt{tecstatusconfig.ksh} command.

**Tivoli Enterprise Console Change Rules:** The \texttt{ihsstec.sh} script described in "Updating Tivoli Enterprise Console Rules and Event Classes" on page 208 added change rules for APM threshold events, distributed monitoring profiles, and the source/390 interface, assuming each of these is used in your environment. The script did not update any rules that start the \texttt{ihssttec} exit. It also did not update any uses of the \texttt{ihssttec} exit not added to the rule base by the \texttt{ihsstec.sh} script. For \texttt{ihsstec} and \texttt{ihszttec}, change rules need to be added. If the rule base contains rules that call scripts, then the scripts need to be modified so that the \texttt{ihssttec} or \texttt{ihszttec} command includes the \texttt{-n} parameter when started for a status change.
Note: The -n parameter is an indicator that the ihstttec command is being driven from a change_rule rather than a rule. It tells the database that this is a status update to an existing exception rather than a new exception or message.

Sample change rules:

Given the existing generic event rule:

```bash
rule:
  ihstttec_SamplePM:
  {
    description: 'invoke ihstttec',
    event: event_of_class _class
    where [
      source: equals 'TMNT',
      hostname: _hostname,
      origin: _origin,
      modelname: _modelname,
      severity: _severity,
      msg: _msg
    ],
    reception_action:
    {
      exec_program(_event,
        '../../../TDS/EventService/ihstttec','-b "%s" -i "%s" -q "%s" -p "%s" -s "%s" -o "%s" -t "%s" -m "%s"',
        ['genericTest;1.0', _hostname, _origin, _modelname, _severity, '3', 'EXCEPTION', _msg],
        'YES')
    }.
  }
```

The corresponding change_rule would be (fields that are underlined indicate changes from the original rule):

```bash
change_rule:
  ihstttec_SamplePM_change:
  {
    description: 'invoke ihstttec',
    event: event_of_class _class
    where [
      source: equals 'TMNT',
      hostname: _hostname,
      origin: _origin,
      modelname: _modelname,
      severity: _severity,
      msg: _msg
    ],
    attribute: status set_to _newstatus within ['ACK', 'RESPONSE', 'CLOSED'],
    action:
    {
      exec_program(_event,
        '../../../TDS/EventService/ihstttec',
        '-n -b "%s" -i "%s" -o "%s" -q "%s" -p "%s" -s "%s" -t "%s" -m "%s"',
        ['genericTest;1.0', _hostname, _origin, _modelname, _severity, '3', 'EXCEPTION', _msg],
        'YES')
    }.
  }
```

Given the existing distributing monitoring event rule:

```bash
rule:
  ihstztec_SamplePM:
  {
```

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The corresponding change rule would be:

```
change_rule:
  Thstttec_SamplePM_Change:
  { 
  description: 'Catch change actions',
  event: _event of_class _class
  where [
  source: equals 'TMNT' ],
  attribute: status set_to _newstatus within ['ACK', 'RESPONSE', 'CLOSED'],
  action: 
  { 
  exec_program{_event, 
  './../TDS/EventService/ihstztec',
  'n', 
  [];
  'YES')
  }
  }
```

---

**Configuring OS/390 Task Authentication**

Each OS/390 operating system resource in Tivoli Business Systems Manager must be configured to enable tasks to be run for DB2, and IMS. This OS/390 task authentication configuration involves setting several operating system attributes.

Tivoli Business Systems Manager, Version 1.5 used a NetView operator ID that was defined in the OS_V table to run tasks. In Version 2.1 this changed and tasks are now run under the context of the operator that is using the task.

If you migrated from Version 1.5 or 2.1 and used the OS_V table, this table is enabled in Version 2.1.1. If you want to run tasks under the context of the operator that is using the task, run the osvnvusersettings.ksh -d script. This enables the latest task security and deletes existing NetView operator IDs from the OS_V table.

The tasks run within the context of the operator issuing the task. If the operator’s console logon user ID is not also a valid NetView operator ID, then the operator is prompted for a NetView operator ID and password the first time they issue an OS/390 task.

If the OS_V table is configured as described in the following paragraphs, then it takes precedence, and the NetView operator ID and password specified in the OS_V table is used rather than the operator’s own credentials.

The following attributes are displayed on the Configure TGMTTask Server Connection dialog:
TGMTaskServer

Specifies the name of the host running the Tivoli Business Systems
Manager Task Server used to communicate with Tivoli NetView for
OS/390.

If the host name is not specified and the field has a NULL value, the
database server name for the TGMTask Server is used at run time.

NetViewDomain

Specifies the name of the Tivoli NetView for OS/390 domain on which the
tasks for this operating system are run.

NetViewUser

Specifies the Tivoli NetView for OS/390 user ID used to run tasks. This is
visible only if the OS_V table is being used. If 2.1.1 security is used, then
the dialog only displays the TGMTaskServer and NetViewNetView fields.

NetViewPassword

Specifies the password for the specified NetView User. This is visible only
if the OS_V table is being used. If 2.1.1 security is used, then the dialog
only displays the TGMTaskServer and NetViewNetView fields.

To view or change the resources:

1. Select an operating system resource.
2. Right-click the resource and select Source/390 --> Configure TGM Task Server.
3. If none of the fields on the dialog are filled in, click Execute to view the current
   values.
4. If the TGMTaskServer field is filled in, but the other fields are blank, then the
   TGMTaskServer field is updated, and the other fields are set to NULL.
5. If the TGMTaskServer field is blank, but the other three fields are filled in,
   then the TGMTaskServer field is left unchanged, and the other three fields are
   updated.
6. If the OS_V table is being used and if one or more of the NetViewDomain,
   NetViewUser, and NetViewPassword fields are filled in (but not all of them),
   then:
   a. If the fields not entered on the dialog have current values in the database,
      then these values remain unchanged and the new values are updated.
   b. If the fields not entered on the dialog do not have current values in the
      database, then an error occurs and no fields are changed.

The Source/390 dialog updates the OS_V table. If the OS_V table is being used, the
NetView Domain, User, and Password fields in this table can also be updated
using the tserver hostcmdoper command.

The tasks issued are run under a NetView task, either an OST or autotask. If this
task is not active, then the defaults autologin=yes parameter must be specified on
the NetView task so that the user ID can be automatically logged on for the task to
run under it.

Defining the Logical Unit Name

The task server can communicate with Tivoli NetView for OS/390 using either
TCP/IP or Logical Unit (LU) 6.2. To communicate with the Tivoli NetView for
OS/390 environment using LU 6.2, you must define the LU name to be used for
the server. For Windows NT or AIX operating systems, to define the LU name of
the server, use the sample ts.acg configuration file in the following directory:

* For Windows: %BINDIR%\TDS\server\sample
• For UNIX: $BINDIR/TDS/server/sample

A sample ts.acg file is shipped with the Tivoli Business Systems Manager distributed components and represents a sample IBM communications server configuration file for task server LU 6.2 communications. This should only be used as a guide, as changes are most likely needed for your environment. Refer to the appropriate communications server documentation for more information on setting up LU 6.2 connections. The IBM communications server can be used on either the Windows NT or AIX operating system. Microsoft SNA server can also be used for LU 6.2 communications on the Windows NT operating system.

Enabling Task Server OS/390 Support
On the Tivoli NetView for OS/390 focal point, confirm you have the correct information for the following Tivoli NetView for OS/390 members on the OS/390 computer:
• DUIFPMEM
• DUIIGHB

In the DUIFPMEM member, the TCPNAME parameter must match the step name used by the TCPIP task:
• USETCPIP parameter must be YES.
• SOCKETS parameter should be 50.
• PORT parameter number must match what you have in the tserver_390 parameter on the task server console.

In the DUIIGHB member, the TCPNAME parameter must match the name used by the TCP/IP task.

To start the connection between Tivoli NetView for OS/390 and the task server, run the following command:

```
netconv action=start ip=DatabaseServerhostname
```

Where the task server is running.

An example of this command is:

```
netconv action=start ip=69.200.60.65
```

Optional Console Server Configuration

Configuring the Banner Area and Welcome Window within the Console
Using the following information, you can configure additional installation options, including the banner area and the Welcome window for the console.

Specifying the Location of the Banner Files
Within the Servers.properties file, there is a key-value field you can use to specify the location of the banner files to load remotely from the Console server. You can use this field to access the banner files for the console. It is not required that the banner files are installed on the same machine as the Console server. These files must be stored on a Web server. If you prefer to have the banner files installed on a computer other than the Console server, perform the following steps:
1. Add the following lines to the Servers.properties file:

```
# --------------------------------------------------------------
# The location of the banner files to load remotely from the Console Server.
# This value should point to the location of
# the banner files used by the console and does not need to
# be on the same machine as the Web server. The value should
# contain the format:
# http://hostMachine.domain/virtualDirectory/locationToBannerFiles
# com.tivoli.tbsm.ui.banner.UIBannerAreaManager.bannerAlias=
# --------------------------------------------------------------
```

2. Select the Web server machine to serve as a host for the banner files.
3. Create a directory to store the banner files on the host computer.
4. Assign the created directory an alias or virtual directory name.
5. Give the appropriate groups or users access to the alias or virtual directory such as administrators and operators, using the security protocols determined by the Web server software.

**Designating the Location of the Banner Files**

In the Servers.properties file, the field that indicates where to load the banner files for the Tivoli Business Systems Manager console is the following:

```
com.tivoli.tbsm.ui.banner.UIBannerAreaManager.bannerAlias=
<location of banner files>
```

The format of the value associated with this new field should contain the following format:

```
com.tivoli.tbsm.ui.banner.UIBannerAreaManager.bannerAlias=
http://hostMachine.domain/virtualDirectory
```

In most cases, the virtual directory simply points to the actual directory that contains the banner files.

**Example 1:**

Web Server Machine: *tbsm001.network.tivoli.com*

The directory that contains all HTML and other associated banner files:

```
C:\bannerFiles com.tivoli.tbsm.ui.banner.UIBannerAreaManager.bannerAlias=
http://tbsm001.network.tivoli.com/bannerFiles
```

**Example 2:**

Web Server Machine: *tbsm001.network.tivoli.com*

Highest level directory to contain banner files: *C:\tbsmWebFiles*

The directory that directly contains all HTML and other associated banner files:

```
C:\bannerFiles com.tivoli.tbsm.ui.banner.UIBannerAreaManager.bannerAlias=
http://tbsm001.network.tivoli.com/tbsmWebFiles/bannerFiles
```

**Note:** A forward slash (/) should not follow the final directory.

**No Designation for the Location of the Banner Files**

If a banner file location is not specified, the console places the banner files that are installed on the same computer as the Console server. In the Servers.properties file, the key-value field that indirectly determines the location for loading the banner files for the console from the Console server is:
The preceding value points to the location of the installed Console server, determined by an alias or virtual directory through the Web server software. A complete URL is formed, based on the host name of the Console server and the assigned alias or virtual directory. For example, /tbsm points to C:\ConsoleServer on a host machine named host. From the designated alias or virtual directory, the banner directory is then found and the appropriate banner files are loaded; in this case, the banner directory would be located at C:\ConsoleServer\banner. A complete URL is then formed to load the banner files; in this example, the complete URL would be:

http://host/tbsm/banner

**Note:** This key-value field eventually is deprecated and the banner Alias key is used to determine the location to load the appropriate banner files.

### Configuring the Banner Area

A banner is displayed at the top of the console viewing area. It identifies your role, and can be configured to display your company’s name.

Four default banner files are shipped with Tivoli Business Systems Manager. These files are located in the ConsoleServer\banner directory in the base TivoliManager directory:

- TBSMBannerOperator.html - This is displayed when an operator signs on.
- TBSMBannerRestrictedOperator.html - This is displayed when a restricted operator signs on.
- TBSMBannerAdministrator.html - This is displayed when an administrator signs on.
- TBSMBannerSuperAdministrator.html - This is displayed when a super administrator signs on.

To configure the console banner, edit the TBSMBannerAdministrator.html file. (Make a backup copy of the existing file before you begin.) The location for your configuration information is displayed with bold font in the following sample file. Replace that information with your configuration information.

```html
<html>
<head>
<title>Banner</title>
<meta http-equiv="Content-Type" content="text/html; charset=iso-8859-1">
<style type="text/css">
!--
.largeText
{font-family: Arial, sans-serif; font-size: 14pt; font-style: normal; font-weight: bold; color: #FFFFFF}
.smallText
{font-family: Arial, sans-serif; font-size: 10pt; font-style: normal; font-weight: bold; color: #FFFFFF}
-->
</style>
</head>
<body bgcolor="#9AAFC4" topmargin="0" leftmargin="0" marginwidth="0" marginheight="0">
<table width="100%" border="0" cellspacing="0" cellpadding="0">
<tr>
  <td width="360" background="bannerTile.gif"><img src="banner1.gif" width="360" height="55"></td>
  <td width="90%" background="bannerTile.gif" align="right">
    <!-- Change TBSM to Company Name, if desired -->
  </td>
</tr>
</table>
</body>
</html>
```
The TBSMBannerOperator.html file is identical except it includes SYSTEM OPERATOR instead of ADMINISTRATOR.

There are four other banner files that you can choose from and use as templates for your banner. They are in the ConsoleServer\banner directory in the base TivoliManager directory, <drive>:\TivoliManager\ConsoleServer\banner. File names are:

- banner1.html
- banner2.html
- banner3.html
- banner4.html

These files are identical to the preceding banner sample except they have different images on the left-hand side.

**Configuring the Welcome Window**

A Welcome window is displayed on your workspace when the console first opens. It goes away when you open a view.

The Welcome window identifies and describes Tivoli Business Systems Manager, but it can be configured to inform operators who to contact for problems or to provide other pertinent information.

Four default Welcome window files are shipped with Tivoli Business Systems Manager. These files are located in the ConsoleServer\banner directory in the base TivoliManager directory, <drive>:\TivoliManager\ConsoleServer\banner. The file names are:

- TBSMWelcomeOperator.html - This is displayed when an operator signs on.
- TBSMWelcomeRestrictedOperator.html - This is displayed when a restricted operator signs on.
- TBSMWelcomeAdministrator.html - This is displayed when an administrator signs on.
- TBSMWelcomeSuperAdministrator.html - This is displayed when a super administrator signs on.

To configure the Welcome window, edit the TBSMWelcomeOperator.html file. (Make a backup copy of the existing file and save it before you begin.) The location for your configuration information is displayed with bold font in the following sample file. Replace that information with your configuration information.

```html
<html>
<head>
<title>Welcome to the Tivoli Console</title>
</head>
<body>

...<body>
```
Manage your business systems with IBM Tivoli Business Systems Manager. Even when a business system spans multiple platforms, you can graphically monitor and control interconnected components and operating system resources. Using IBM Tivoli Business Systems Manager with other Tivoli components, you can manage dependencies between business components and their underlying infrastructure.

**The Tivoli Business Systems Manager for 390 events and Tivoli Enterprise Console Interface**

If you want to filter z/OS events that are sent to Tivoli Business Systems Manager, or if you want to send events to Tivoli Enterprise Console from the OS/390 host component, follow the instructions in this section.

The Host to Tivoli Enterprise Console Interface allows event messages collected by the OS/390 host component of Tivoli Business Systems Manager to be sent to Tivoli Enterprise Console where the messages can be correlated with other events and applied to Tivoli Enterprise Console. The Tivoli Enterprise Console component can then optionally return the event record, or a replacement event record to Tivoli Business Systems Manager for further processing.

Event messages of interest are intercepted within the source/390 object server as they are transmitted to the Windows operating environment and sent to the Tivoli Enterprise Console as a type of Tivoli Enterprise Console event, TEC_Generic, using the Tivoli Enterprise Console Event Integration Facility (EIF). Refer to the
IBM Tivoli Business Systems Manager: Administrator’s Guide for further details on architecture, data flow, and formatting of Tivoli Enterprise Console events within this interface.

**Message Selection and Filtering within the Source/390 Object Server**

Message selection and filtering is a table driven process. The table selects records based on format and action type and data within the fields. Each select table *rule* specifies if the record is sent to Tivoli Enterprise Console and Tivoli Business Systems Manager. The default setting sends all records to Tivoli Business Systems Manager as standard unless suppressed by the selection rules.

**SELECT Statement**

Each SELECT statement starts a new rule. A Tivoli Business Systems Manager event record matches the group if all field selection criteria for the SELECT statement are met by the data in the Tivoli Business Systems Manager event record. Once matched, the Tivoli Business Systems Manager and Tivoli Enterprise Console keywords, or current default settings (see the ONSSELECT keyword later) define whether the Tivoli Business Systems Manager event record is sent to Tivoli Business Systems Manager or Tivoli Enterprise Console or both. Once selected, the record is *not* matched against further SELECT groups.

The syntax of the records is the following:

```
SELECT
  FORMAT=nn | ALL
  ACTION=nn | ALL
  field#=mask [,mask,mask,...] [field#=...]
  [TBSM=YES | NO]
  [TEC=YES | NO]
  [CLASS=overriding class name | TEC_Generic]
  [slotname=data extract rule,data extract rule,...]
```

```
SELECT FORMAT=02 ACTION=01 03=MYJOB 02=BATC TBSM=YES TEC=YES
SELECT FORMAT=02 ACTION=01 03=JOB01 02=BATC TBSM=YES TEC=YES
```

The records with format 02, action 01, an 02 field containing BATC and an 03 field containing either MYJOB (1st select) or JOB01 (2nd select).

The previous pair of statements can also be coded like this:

```
SELECT FORMAT=02 ACTION=01 03=MYJOB,JOB01 02=BATC TBSM=YES TEC=YES
```

The job names are contained within a single 03 field separated by a comma. The data matches the field if it matches any of the masks for this field. This form is more efficient because it avoids the need to search the record for the field number each time.

Masks can contain the standard mask characters:

- An asterisk (*) matches any number of characters at this position
- A question mark and a colon (? :) matches any single characters at this position
- one or more spaces and a colon ( :) matches that number of spaces or more at this position

Masks containing special characters or spaces can be enclosed in single or double quotation marks. For example:

```
60='*VOL SER*','TAPE UNIT*
```
The field number 60 (OMEGAMON exception text) contains the text VOL SER or TAPE UNIT anywhere within the data for the field.

**Note:** If a SELECT group tests for a field that does not exist within a record then the SELECT group fails and that group does not select the record.

If the record matches none of the SELECT statements, then the default processing, unless overridden, sends the record to only Tivoli Business Systems Manager. This action maintains the mode of operation for all records that do not match SELECT statements, thus avoiding the need to code SELECT statements for every type of record.

### Setting Defaults

Instead of coding the Tivoli Business Systems Manager and Tivoli Enterprise Console keywords on every SELECT statement, you can use the ONSELECT commands to establish default settings that are to be used when a Tivoli Business Systems Manager event record matches a SELECT statement, and the DEFAULT statement to establish default settings that are to be used when the Tivoli Business Systems Manager event record does not match any SELECT statements.

**Setting the Default Action for Selected Records:** The ONSELECT keyword can be used to set the default actions if a SELECT group selects a record. These default actions apply unless overridden on an individual SELECT group by using the Tivoli Business Systems Manager or Tivoli Enterprise Console keywords. If no ONSELECT card is entered, the default action is to send the selected records to Tivoli Enterprise Console and not to Tivoli Business Systems Manager.

Multiple ONSELECT cards can be entered within the input stream to change the default action settings inherited by any following SELECT statements.

Using the ONSELECT card removes the need to code the required action (if different from the default of send to Tivoli Enterprise Console, not to Tivoli Business Systems Manager) for each SELECT group of cards.

**Syntax:**

```
ONSELECT TBSM=YES|NO TEC=YES|NO
```

There are no default values for the ONSELECT entry. Omitting a keyword is the same as coding NO, but at least one keyword is required.

**Example:**

**Coding:**

```
ONSELECT TBSM=YES TEC=YES
SELECT
FORMAT=02 ACTION=01 03=MYJOB 02=BATC
```

is the same as

```
SELECT
FORMAT=02 ACTION=01 03=MYJOB 02=BATC TBSM=YES TEC=YES
```

**Setting the Default Action for Unselected Records:** The standard default action for records not selected by any SELECT group is to send the record to Tivoli Business Systems Manager only. Entering the required send options on the
DEFAULT card can change this. Only one DEFAULT card should be entered, as
this is a global run time option, unlike the ONSELECT card that is used during the
SELECT table build.

Syntax:
DEFAULT TBSM=YES|NO TEC=YES|NO

There are no default values for the DEFAULT entry. Omitting a keyword is the
same as coding NO, but at least one keyword is required.

Example:
DEFAULT TBSM=NO TEC=NO
SELECT
FORMAT=02 ACTION=01 03=MYJOB 02=BATC TBSM=NO TEC=YES

This prevents any record that does not match the select entry from being sent to
either Tivoli Business Systems Manager or Tivoli Enterprise Console. Records that
match this SELECT entry are sent only to the Tivoli Enterprise Console.

Implementation and Configuration on the OS/390 Host
To configure the External Integration Facility (EIF) within the source/390 object
server you must do the following:
- Update the source/390 object server JCL
- Update the source/390 object server security profile
- Create the EIF configuration file
- Update the source/390 object server startup parameters.

Updating the Source/390 Object Server JCL
Add the following DD cards to each source/390 object server startup JCL member
that is to use the interface:
- //GTMEIFSL - Points to a data set that contains the SELECT statements used to
  select the records to send to Tivoli Enterprise Console.
- //GTMEIFSP - SYSOUT. Used to report any errors with the SELECT statements
- //SYSPRINT - SYSOUT. Messages from the EIF interface
- //SYSOUT - SYSOUT. Messages from the EIF interface

You might also need to include the SYS1.SCEERUN library to the STEPLIB DD if
this library is not available through your link list concatenation. In this case, the
library must be authorized program facility (APF) authorized, otherwise all
libraries in the STEPLIB concatenation will be unauthorized and the source/390
object server will not be able to initialize.

Updating the Source/390 Object Server Security Profile
Add an OMVS segment to the user ID that the source/390 object server runs under
because the configuration file used by the EIF interface itself must reside in the
hierarchical file system (HFS). See "Source/390 Security" on page 86 for further
details.

Creating an EIF Configuration File
Create an EIF configuration data set within the HFS of UNIX System Services. Use
the ISHELL command from TSO ISPF to create and edit the data set in an ISPF-like
environment.

The EIF configuration file should contain the following:
ConnectionMode=connection_less
EventMaxSize=4096
ServerLocation=ip address of TEC server events that are sent to
ServerPort=port number or 0 (zero) if using port mapper
BufferEvents=Yes | No
BufEvtPath=path | /etc/Tivoli/tec/cache
TestMode=No

Where:

BufferEvents=Yes | No

Indicates if events should be buffered locally if the interface is unable to send the events to Tivoli Enterprise Console. The interface attempts to send the cached events again the next time it is called. Once the cached events are sent to Tivoli Enterprise Console, they are deleted from the cache file.

BufEvtPath=path | /etc/Tivoli/tec/cache

Specifies the path and file name of the cache file in the HFS used to cache Tivoli Enterprise Console events if the interface is unable to send the event to Tivoli Enterprise Console. If not specified, the default is /etc/Tivoli/tec/cache. The Object server will need write access to the specified cache file within the HFS.

BufferFlushRate=nn | 0

Specifies the number of cached events per minute to send to Tivoli Enterprise Console. If this is omitted or a 0 (zero) is coded, then the events are sent in one burst.

Note: Be aware that if all the cached events are not sent, the EIF interface waits until the next minute before sending the next block of cached events. This behavior prevents the Object Server from sending events to Tivoli Business Systems Manager until the cache is cleared. Therefore it is recommended that you code 0 (zero) for this parameter to prevent the flushing of cached events from interfering with the transmission of events to Tivoli Business Systems Manager.

Updating the Source/390 Object Server Startup Parameters

Specify the EIF configuration file path and name to the Tivoli Business Systems Manager source/390 object server by adding the following statement to the startup parameters:

EIF_CONF=/path/filename

Specify the event logging option to the Tivoli Business Systems Manager object server by adding the following statement to the Object Server input parameters:

EIF_LOG=Y | N

This turns logging of Tivoli Business Systems Manager and Tivoli Enterprise Console events on or off. The EIF_LOG_LEVEL parameter controls the level of detail that is logged. Logged data is written to the AOPLOG DD file. If this is not specified, the default setting is EIF_LOG=N. Logging can also be controlled using the Object Server EIF LOG modify command.

EIF_LOG_LEVEL=TBSM | TEC | BOTH
This parameter can be used to control the level of detail logged to the AOPLOG DD file. If not specified, it defaults to BOTH. Valid options are:

- **TBSM** — The data in the Tivoli Business Systems Manager event record, along with the SELECT entry that matched it, or the default entry if no SELECT entries matched it is shown. Also logged are the Tivoli Business Systems Manager and Tivoli Enterprise Console options in effect as a result of the SELECT or default entry selection.
- **TEC** — The generated Tivoli Enterprise Console EIF event is logged, along with the return code from the call to the EIF interface.
- **BOTH** — Both of the above options are in effect.

### Object Server Operator Commands for the EIF Interface

The Object Server supports the following modify commands for the EIF interface:

- **EIF STOP** — Stops the sending of events to Tivoli Enterprise Console. Events are not cached or stored while the interface is stopped. Missed events are lost. All events are sent to Tivoli Business Systems Manager.
- **EIF START** — Restarts the EIF interface after a STOP. The Object Server sends selected records to Tivoli Enterprise Console.
- **EIF REFRESH** — Causes the Object Server to read the SELECT statement input data set allocated to the GTMEIFSL DD card and build a new SELECT table. This can be used to change the select table without having to recycle the Object Server.
- **EIF STATUS** — Displays information about the status of the EIF interface, the connection to the Tivoli Enterprise Console and statistics for the records sent to Tivoli Enterprise Console and Tivoli Business Systems Manager. Entering EIF with no option results in using the default STATUS command.
- **EIF LOG YES | NO | STATUS** — Turns logging of Tivoli Business Systems Manager and Tivoli Enterprise Console events to the AOPLOG file ON or OFF or displays the current setting for the EIF LOG option. If the option is omitted or entered incorrectly, it results in using the default STATUS.
- **EIF LOG LEVEL TBSM | TEC | BOTH** — Controls the level of logging of Tivoli Business Systems Manager and Tivoli Enterprise Console events passing through the interface. If the option is missing or invalid, it is ignored and the current log level is displayed.
Chapter 11. National Language Support

English is the default language for Tivoli Business Systems Manager. If you want Tivoli Business Systems Manager to display a language other than English, you need to follow the instructions in this section. In addition to English, the following languages are supported in this release of Tivoli Business Systems Manager:

- Spanish
- Brazilian Portuguese
- German
- French
- Italian
- Japanese
- Korean
- Simplified Chinese
- Traditional Chinese

The National Language Support resources for Tivoli Business Systems Manager are provided on a separate CD-ROM that is shipped with the Tivoli Business Systems Manager product. This CD-ROM contains separate installation programs for the following components and features:

- All core Tivoli Business Systems Manager server and console components
- Intelligent Monitor for Tivoli NetView
- Intelligent Monitoring for NetIQ AppManager
- Intelligent Monitoring for Patrol
- Intelligent Monitoring for TNG

Install the National Language Support resources after your corresponding Tivoli Business Systems Manager features have been installed and configured.

Installing National Language Support for Intelligent Monitoring for NetIQ AppManager, BMC PATROL and TNG Unicenter

Prerequisites

To run the National Language Support installation program for the Intelligent Monitoring for NetIQ, BMC PATROL and TNG Unicenter components, you must meet the following prerequisites:

- IBM Java Runtime Environment, Version 1.3 must be installed on your computer. The installation program searches for IBM Java Runtime Environment, Version 1.3.1 or 1.3. The installation program fails if it does not find this application.
- Before launching the National Language Support installation program for any of the Intelligent Monitoring components, the corresponding base component must already be installed.

Installing National Language Support for Intelligent Monitoring for NetIQ AppManager

To install National Language Support for Intelligent Monitoring for NetIQ AppManager:
1. Insert the National Language Support CD-ROM into the CD-ROM drive of your computer.
2. From a command prompt, change the location of the install image:
   D:\IntelligentMonitoring\Intelligent Monitoring for AppManager where D is the drive letter of your CD-ROM drive.
3. Run the installation program Setup.exe.
4. Follow all instructions on the dialogs to complete the installation.

### Installing National Language Support for Intelligent Monitoring for BMC PATROL

To install National Language Support for Intelligent Monitoring for BMC PATROL:

1. Insert the National Language Support CD-ROM into the CD-ROM drive of your computer.
2. From a command prompt, change the location of the install image:
   D:\IntelligentMonitoring\Intelligent Monitoring for Patrol where D is the drive letter of your CD-ROM drive.
3. Run the installation program Setup.exe.
4. Follow all instructions on the dialogs to complete the installation.

### Installing National Language Support for Intelligent Monitoring for TNG Unicenter

To install National Language Support for Intelligent Monitoring for TNG Unicenter:

1. Insert the National Language Support CD-ROM into the CD-ROM drive of your computer.
2. From a command prompt, change the location of the install image:
   D:\IntelligentMonitoring\Intelligent Monitoring for TNG where D is the drive letter of your CD-ROM drive.
3. Run the installation program Setup.exe.
4. Follow all instructions on the dialogs to complete the installation.

### Prerequisites

To run the National Language Support installation program for the Intelligent Monitor for NetView component, you must meet the following prerequisites:

- For Windows and AIX: IBM Java Runtime Environment, Version 1.3.1 (recommended) or Version 1.3 must be installed on your computer.
- For Solaris: Sun Java Runtime Environment, Version 1.3.1 (recommended) or Version 1.3 must be installed on your computer. The installation program searches for these versions of the Java Runtime Environment. The installation program fails if it does not find either of these applications.
- For all platforms: Tivoli Business Systems Manager Intelligent Monitor V2.1.1 for NetView must be installed on your computer.

**Notes:**

1. The version of Intelligent Monitor V2.1.1 for NetView provided on CD 2 of the Tivoli Business Systems Manager product package is not enabled for
National Language Support. A fix pack will be provided to those customers who wish to use Intelligent Monitor V2.1.1 for NetView with National Language Support. Please contact Customer Support for information on how to obtain this fix pack. The fix pack will have to be installed on top of Intelligent Monitor V2.1.1 for NetView prior to installing National Language Support for Intelligent Monitor V2.1.1 for NetView. The installation program for National Language Support will fail if it does not find the fix pack installed on your computer.

2. On UNIX, root privileges are required to execute the install and uninstall programs for National Language Support for Intelligent Monitor for Tivoli NetView.

Installing National Language Support for Intelligent Monitor for NetView

To install National Language Support for Intelligent Monitor for NetView:

For Windows:
1. Insert the National Language Support CD into your computer.
2. From a command prompt, change to the location of the install image:
   D:\IntelligentMonitoring\Intelligent_Monitoring_for_NetView where D is the drive letter of your CD-ROM drive.
3. Run the installation program Setup.exe.
4. Follow all instructions on the dialogs to complete the installation.

For AIX:
1. Insert the National Language Support CD into your computer.
2. From a command prompt, change to the location of the install image:
   <mountpoint>/IntelligentMonitoring/Intelligent_Monitoring_for_NetView where <mountpoint> is the mount point of the CD-ROM.
3. Run the installation program setup.aix.
4. Follow all instructions on the dialogs to complete the installation.

For Solaris:
1. Insert the National Language Support CD into your computer.
2. From a command prompt, change to the location of the install image:
   <mountpoint>/IntelligentMonitoring/Intelligent_Monitoring_for_NetView where <mountpoint> is the mount point of the CD-ROM.
3. Run the installation program setup.sol.
4. Follow all instructions on the dialogs to complete the installation.

If the installation program encounters problems finding a valid Java Runtime Environment on your computer, you may call the installation program using the following modified syntax:

On Windows:
Setup.exe -is:javahome <JRE_homedir>

On AIX:
setup.aix -is:javahome <JRE_homedir>

On Solaris:
setup.sol -is:javahome <JRE_homedir>
where <JRE_homedir> is the directory in which the Java Runtime Environment is installed.

**Uninstalling National Language Support for Intelligent Monitor for NetView**

To uninstall National Language Support for Intelligent Monitor for NetView:

**For Windows:**
1. From the Windows task bar, click **Start --> Settings --> Control Panel**.
2. Double-click **Add/Remove Programs**.
3. Click **Tivoli Business Systems Manager Intelligent Monitor V2.1.1 for NetView - Language Support**.
4. Click the appropriate button and follow the instructions on the remaining dialogs.

**For AIX:**
1. From a command prompt, change to the directory 
   `/usr/ibm/tivoli/GTM/IMforNetView.NLS`.
2. Execute the uninstallation program `uninstall/LPuninstaller.aix`.
3. Follow the instructions on the dialogs to complete the uninstallation.

**For Solaris:**
1. From a command prompt, change to the directory 
   `/opt/ibm/tivoli/GTM/IMforNetView.NLS`.
2. Execute the uninstallation program `uninstall/LPuninstaller.sol`.
3. Follow the instructions on the dialogs to complete the uninstallation.

**Installing National Language Support for Other Features and Components in a Non-Tivoli Management Environment**

For all other Tivoli Business Systems Manager features and components, a single installation program is used to install National Language Support resources in a non-Tivoli Management Environment (TME).

**Prerequisites**

To run the National Language Support installation program for all components you must meet the following prerequisites:

- In the Windows operating system environment, you must log on with a user ID that has administrator privileges.
- In UNIX operating system environment, you must log on as `ROOT`.

To install National Language Support resources in a non-TME environment:

1. Insert the Language Support CD-ROM into the CD-ROM drive of your computer.
   If your operating system does not automatically mount CD-ROMs, you need to mount the CD-ROM manually.
2. From a command prompt, change to the location of the install image:
   For the Microsoft Windows operating system environment:
   `D:\TBSM\ISMP` where `D` is the drive letter of your CD-ROM drive.
   For the UNIX operating system environment:
3. Run the installation program:
   For the Windows operating system environment:
   `LPinстал`
   For the UNIX operating system environment:
   `/LPinstall.sh`
4. Follow all instructions on the dialogs to complete the installation.

**Note:** During the installation of National Language Support resources, the InstallShield Multi-Platform (ISMP) installer performs various tasks needed to collect and process system information. These tasks could cause a few seconds to elapse between the time a navigation button is pressed and the time the expected result is displayed on the screen. However, ISMP sometimes fails to display an hourglass indicating that it is currently processing data.

If you encounter delays after pressing a navigation button without seeing any indication that data is being processed, do not click the navigation button again because the second click is applied to the next screen, effectively causing you to bypass that screen. This can result in incomplete data input during the installation process and unpredictable installation results.

---

**Available National Language Support Components**

**Windows Operating System Environment**

National Language Support resources are available for the following Tivoli Business Systems Manager components and features from the Windows operating system environment:

- **Console Resources** - Provides National Language Support resources for the console. You must install these resources in the same directory as the console client code.
- **Web Console Resources** - Provides National Language Support resources for the Web console.
- **Health Monitoring System Resources** - Provides National Language Support resources for the health monitor system.
- **Reporting System Resources** - Provides National Language Support resources for the reporting system.
- **Database Files** - Provides National Language Support resources for the databases. If these resources are not installed, the console and Web console user interfaces are only partially localized.

You need to load these resources into the Tivoli Business Systems Manager databases in a separate step once the installation program has run. See the "Additional Information for Populating the Tivoli Business Systems Manager Databases" on page 231.

- **TDS and TGM Resources** - Provides National Language Support resources for event enablement and TGM components.
- **Console Server Resources** - Provides National Language Support resources for the localized banner area files and Welcome pages of the console. You must install these resources into the directory which contains the English banner and
Welcome pages for the console. Depending on your implementation of Tivoli Business Systems Manager, this directory might be located on the same machine as the console server or on a different HTTP server.

**UNIX Operating System Environment**

National Language Support resources are available for the following Tivoli Business Systems Manager components and features from the UNIX operating system environment:

- Console Resources — Provides National Language Support resources for the console. Install these resources in the same directory as the console client code.
- Console Server Resources — Provides National Language Support resources for localized banner area files and Welcome pages of the console. Install these resources in the directory which contains the English banner and welcome pages for the console. Depending on your implementation of Tivoli Business Systems Manager, this directory might be located on the same machine as the console server or on a different HTTP server.

**Additional Installation Information**

Depending on the features you select during installation, you might be asked to confirm or enter the following information:

- An installation location for the installation program. This directory is needed to store uninstallation data.
  The default location is:
  In the Windows operating system environment:
  \C:\Program files\tbsmNLS
  In the UNIX operating system environment:
  /opt/tbsmNLS

- The installation location of the Tivoli Business Systems Manager base services.
  The installation program attempts to detect this installation location and presents the directory it found during installation.
  The default location of the base services is:
  C:\TivoliManager
  Tivoli Business Systems Manager base services are supported only in the Windows operating system environment.

- The installation location of the banner area files for the console server.
  The default location of the banner area files is:
  C:\TivoliManager\ConsoleServer\banner
  However, they can be installed on any HTTP server.

- The installation location of the console. The installation program attempts to detect this installation location and presents the directory it found during installation.
  The default location of the console is:
  In the Windows operating system environment:
  \C:\Program Files\tbsm
  In the UNIX operating system environment:
  /opt/tbsm

- The installation location of the server for Presentation Services. You need this directory to install National Language Service resources for the Web console.
Additional Information for Populating the Tivoli Business Systems Manager Databases

There are additional steps for populating the Tivoli Business Systems Manager databases with National Language Support resources.

**Note:** Back up your Tivoli Business Systems Manager databases before performing any of the steps described in this section. The following databases are affected:
- Master
- Meta
- Object
- WebServer

If you have decided to install database files for one or more languages, you need to load these files into the Tivoli Business Systems Manager databases after you complete the installation program. The `loadDB.sh` script installs your database files. It is in the following directory:

 `<TivoliManager>\sql\NLS`

Where `<TivoliManager>` is the installation location of the Tivoli Business Systems Manager base services.

**Prerequisites**

To run the additional steps for populating the Tivoli Business Systems Manager databases you must meet the following prerequisites:

- The MKS Toolkit for System Administrators (any version supported by Tivoli Business Systems Manager Version 2.1.1) must be installed on the machine on which the `loadDB.sh` script is run. It must be in the system path.
- The `osql.exe` utility that is provided with Microsoft SQL Server 7.0 Enterprise Edition and Microsoft SQL Server 2000 Enterprise Edition must be installed on the machine on which the `loadDB.sh` script runs. The MKS Toolkit executables must be in the system path.
- The installation of Microsoft SQL Server 7.0 Enterprise Edition or Microsoft SQL Server 2000 Enterprise Edition into which the National Language Support resources are loaded must be configured to allow modifications to be made directly to the system catalogs. See "Configuring Microsoft SQL Server for the `loadDB.sh` Script" in the following section.

**Note:** This setting is only required for as long as the `loadDB.sh` script runs. It can be returned to its original value after all National Language Support resources have been loaded into the Tivoli Business Systems Manager databases.

**Configuring Microsoft SQL Server for the `loadDB.sh` Script**

Configure your Microsoft SQL Server 7.0 Enterprise Edition or Microsoft SQL Server 2000 Enterprise Edition servers to allow updates directly to the system catalogs:

1. From the Windows task bar of the SQL Server machine, select `Start` --> `Programs` --> `Microsoft SQL Server` (for Microsoft SQL Server 2000 installations) or `Microsoft SQL Server 7.0` (for Microsoft SQL Server 7 installations) --> `Enterprise Manager`. 

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2. From the Enterprise Manager, expand Microsoft SQL Servers.
3. Expand the SQL Server group to which the Tivoli Business Systems Manager SQL server belongs. The default value is SQL Server Group.
4. Right-click the name of the SQL server that you want to work with and click Properties.
5. Click the Server Settings tab.
6. Make sure that the Allow modifications to be made directly to the system catalogs check box in the Server behavior group is selected.
7. Click OK to apply the setting.
8. Close the Enterprise Manager.

**Upgrading from a Tivoli Business Systems Manager Version 1.5 Database**

If you are upgrading from a Version 1.5 database and had any National Language Support resources installed in your Version 1.5 database, apply the following SQL script to your database:

```
<TivoliManager>\sql\NLS\sql\resetNLS.sql
```

Where `<TivoliManager>` is the installation location of the Tivoli Business Systems Manager base services.

You apply this script once. It must be applied prior to running the loadDB.sh script for the first time.

To apply this script:

1. From the Windows task bar of the SQL Server machine, select Start --> Programs --> Microsoft SQL Server (Microsoft SQL Server 2000 installations) or Microsoft SQL Server 7.0 (for Microsoft SQL Server 7 installations) --> Query Analyzer.
2. Click File --> Open
3. From the Open Query File dialog, browse to: `<TivoliManager>\sql\NLS\sql` directory.
4. Click resetNLS.sql
5. Click Open
6. Click Query --> Execute.
7. Close the SQL Server Query Analyzer.

**Running the loadDB.sh Script**

To run the loadDB.sh script:

1. From the Windows task bar, click Start --> Run.
2. Type cmd and click OK.
3. Change to the directory in which loadDB.sh is installed.
4. Run the script:
   ```
   sh loadDB.sh
   ```
5. Follow the instructions on the dialogs.
6. After the loadDB.sh script completes, you must stop and re-start the console server service Tivoli BSM Console Server V2, as well as all consoles, for the changes to take effect. Failure to stop and re-start the Tivoli BSM Console Server V2 service may result in mixed-language display in the Tivoli Business Systems Manager consoles.
The `loadDB.sh` script loads all resources that are required for one language into the Tivoli Business Systems Manager databases. To install support for more than one language, you need to run the `loadDB.sh` script multiple times.

All `loadDB.sh` script transactions are logged into the `<TivoliManager>\sql\NLS\out` directory.

All `loadDB.sh` script errors are logged into the `<TivoliManager>\sql\NLS\logs` directory. Error log files with a length of 0 bytes indicates that no errors were encountered for a specific portion of the `loadDB.sh` script process.

Language-specific transaction and error logs are identified by a three-letter language suffix in their file names. The suffixes used (in alphabetical order) are:

<table>
<thead>
<tr>
<th>Suffix</th>
<th>Language</th>
</tr>
</thead>
<tbody>
<tr>
<td>CHS</td>
<td>Simplified Chinese</td>
</tr>
<tr>
<td>CHT</td>
<td>Traditional Chinese</td>
</tr>
<tr>
<td>DEU</td>
<td>German</td>
</tr>
<tr>
<td>ESP</td>
<td>Spanish</td>
</tr>
<tr>
<td>FRA</td>
<td>French</td>
</tr>
<tr>
<td>ITA</td>
<td>Italian</td>
</tr>
<tr>
<td>JPN</td>
<td>Japanese</td>
</tr>
<tr>
<td>KOR</td>
<td>Korean</td>
</tr>
<tr>
<td>PTB</td>
<td>Brazilian Portuguese</td>
</tr>
</tbody>
</table>

After you have completed loading the National Language Support resources into the Tivoli Business Systems Manager databases, the files installed into the `<TivoliManager>\sql\NLS` are no longer needed. You can delete them using the uninstallation program which was created during the installation process. See “Uninstalling National Language Support” on page 234 for further details.

### Installing Language Support for Other Features and Components in a Tivoli Management Environment

To install the National Language Support resources for event enablement in the Tivoli Management Environment (TME):

1. Insert the Language Support CD-ROM into the CD-ROM drive of your computer.
   
   If your operating system does not automatically mount CD-ROMs, you need to mount the CD-ROM manually.

2. From the Tivoli task bar, click **Desktop -> Install -> Install Product**.

3. Click **Select Media**.

4. From the File Browser, select the location of the install image:
   
   For Windows operating system environment:
   
   D:\TBSM\TME

   Where D is the drive letter of your CD-ROM drive.

   For UNIX operating system environment:

   `/mnt/cdrom/TBSM/TME`

---

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Where /mnt/cdrom represents the mount point of the CD-ROM

5. Click Set Media, then Close.
6. From the Install Product dialog, select your language and client.
7. Click Install.

Uninstalling National Language Support

If you want to uninstall the National Language Support resources for any Tivoli Business Systems Manager features or components, uninstall the National Language Support resources before the features or components themselves are uninstalled.

Prerequisites

To run the National Language Support uninstallation program for all components, you must meet the following prerequisites:

- For the Windows operating system environment, you must log on with a user ID that has administrator privileges.
- For the UNIX operating system environment, you must log on as ROOT.

Uninstalling National Language Support

To uninstall National Language Support resources for other Tivoli Business Systems Manager features or components:

1. From Windows Explorer or a command prompt, change the location of the uninstallation data. The default locations are:
   - For Windows operating system environments: C:\Program Files\tbsmNLS
   - For UNIX operating system environments: /opt/tbsmNLS
2. Run the uninstallation script:
   - For Windows operating system environments: LPuninstall
   - For UNIX operating system environments: /LPuninstall.sh
3. Follow the instructions on the dialogs to complete the uninstallation.

Note: If you ran the installation program for National Language Support resources multiple times and used the same target directory for uninstallation data, multiple sets of uninstallation data subdirectories (_uninstlp, _uninstlp2) were created.

In order to uninstall all National Language Support resources, you have to run the scripts multiple times.

You need to modify the scripts before you run it:

a. Identify the uninstallation data subdirectory that you want to use (_uninstlp, _uninstlp2).
b. Open the uninstallation script file that you want to use in a text editor.
c. Locate the string:
   _uninstlp
d. Replace uninstlp with the name of the uninstallation data
   subdirectory you identified in Step 1.

e. Save the uninstallation script file.

Removing National Language Support Resources from the Databases

There is no supported mechanism for removing National Language Support
resources from the Tivoli Business Systems Manager databases.

Uninstalling Language Support from a TME Environment

There is no supported mechanism for uninstalling National Language Support
resources from the TME environment.

Uninstalling National Language Support for Intelligent Monitoring for NetIQ AppManager

To uninstall National Language Support for Intelligent Monitoring for NetIQ
AppManager:
1. From the Windows task bar, click Start --> Settings --> Control Panel.
2. Double-click Add/Remove Programs.
3. click TBSM 2.1 Intelligent Monitoring for AppManager - Language Support.
4. Click the button for your action and follow the instructions on the remaining
dialogs.

Uninstalling National Language Support for Intelligent Monitoring for BMC PATROL

To uninstall National Language Support for Intelligent Monitoring for BMC
PATROL:
1. From the Windows task bar, click Start --> Settings --> Control Panel.
2. Double-click Add/Remove Programs.
3. click TBSM 2.1 Intelligent Monitoring for Patrol - Language Support.
4. Click the button for your action and follow the instructions on the remaining
dialogs.

Uninstalling National Language Support for Intelligent Monitoring for TNG Unicenter

To uninstall National Language Support for Intelligent Monitoring for BMC
PATROL:
1. From the Windows task bar, click Start --> Settings --> Control Panel.
2. Double-click Add/Remove Programs.
3. click TBSM 2.1 Intelligent Monitoring for TNG - Language Support
4. Click the button for your action and follow the instructions on the remaining
dialogs.
Internationalization Issues

Internationalization issues for the console are described in the following sections:

- "Corruption Problems When Issuing Scripts"
- "Traditional Chinese Bold and Italic Font Display Problems"
- "Simplified Chinese Bold and Italic Font Display" on page 237
- "Japanese Bold and Italic Font Display Problems" on page 238
- "Accelerator Key Labels Shown in English" on page 238
- "IBM World Type Font“ on page 238

Corruption Problems When Issuing Scripts

When issuing shell scripts, you might received corrupted data. To correct this, define the TBSM_OEM_CP environment variable and set it to a value of 1. We recommend to defining this environment variable as a system variable so that all services have access to it.

Traditional Chinese Bold and Italic Font Display Problems

When using the console on Windows operating system environments in traditional Chinese, bold and italic characters can appear distorted. Both the user interface and the User Assistant are affected. The problem is caused by a font problem in the Java Runtime Environment on Windows systems.

Correct the problem as follows:

1. Contact IBM Customer Support for Tivoli products to obtain the font Times New Roman WT TC--Outline Data with Embedded Bitmaps, and install the font on the affected systems as follows:
   a. From the Windows task bar, click Start --> Settings -->Control Panel.
   b. From the Control Panel window, open the Fonts folder.
   c. From the File menu, click Install new font.

2. In the font properties file (_jvm/lib/font.properties.zh_TW):
   - Change these lines to appear as follows:
     serif.italic.1=Times New Roman WT TC,CHINESEBIG5_CHARSET
     serif.bold.1=Times New Roman WT TC,CHINESEBIG5_CHARSET
     sansserif.italic.1=Times New Roman WT TC,CHINESEBIG5_CHARSET
     sansserif.bold.1=Times New Roman WT TC,CHINESEBIG5_CHARSET
     monospaced.italic.1=Times New Roman WT TC,CHINESEBIG5_CHARSET
     monospaced.bold.1=Times New Roman WT TC,CHINESEBIG5_CHARSET
     dialog.italic.1=Times New Roman WT TC,CHINESEBIG5_CHARSET
     dialog.bold.1=Times New Roman WT TC,CHINESEBIG5_CHARSET
     dialoginput.italic.1=Times New Roman WT TC,CHINESEBIG5_CHARSET
     dialoginput.bold.1=Times New Roman WT TC,CHINESEBIG5_CHARSET
   - Add this line to the #font filename section:
     filename.Times_New_Roman_WT_TCS=tnrwt_t.ttf

Traditional Chinese Bold and Italic Font Display Problems when Installing Intelligent Monitoring

When installing Intelligent Monitoring on Windows operating system environments in traditional Chinese, bold and italic characters can appear distorted. The problem is caused by a font problem in the Java Runtime Environment on Windows systems. Correct the problem as follows:

1. Contact IBM Customer Support for Tivoli products to obtain the Monotype Sans WT TC font file (mtsans_t.ttf), and install the font on the affected systems as follows:
a. From the Windows task bar, click Start -> Settings -> Control Panel. The Control Panel dialog opens.

b. Double-click the Fonts icon. A list of font files is displayed.

c. From the File menu, click Install New Font.

d. Install the font. You must perform this operation for all your affected systems.

2. Locate the font properties file being used. For example, this might be: 
<JDK1.3 Install Directory>\lib \font.properties.zh_TW

3. Modify the following lines in the font properties file, as shown:

serif.1=Monotype Sans WT TC,CHINESEBIG5_CHARSET
serif.italic.1=Monotype Sans WT TC,CHINESEBIG5_CHARSET
serif.bold.1=Monotype Sans WT TC,CHINESEBIG5_CHARSET
sansserif.1=Monotype Sans WT TC,CHINESEBIG5_CHARSET
sansserif.italic.1=Monotype Sans WT TC,CHINESEBIG5_CHARSET
sansserif.bold.1=Monotype Sans WT TC,CHINESEBIG5_CHARSET
monospaced.1=Monotype Sans WT TC,CHINESEBIG5_CHARSET
monospaced.italic.1=Monotype Sans WT TC,CHINESEBIG5_CHARSET
monospaced.bold.1=Monotype Sans WT TC,CHINESEBIG5_CHARSET
dialog.1=Monotype Sans WT TC,CHINESEBIG5_CHARSET
dialog.italic.1=Monotype Sans WT TC,CHINESEBIG5_CHARSET
dialog.bold.1=Monotype Sans WT TC,CHINESEBIG5_CHARSET
dialoginput.1=Monotype Sans WT TC,CHINESEBIG5_CHARSET
dialoginput.italic.1=Monotype Sans WT TC,CHINESEBIG5_CHARSET
dialoginput.bold.1=Monotype Sans WT TC,CHINESEBIG5_CHARSET

4. Add the following line to the font properties file:

filename.Monotype_Sans_WT_TC=mtsans_t.ttf

**Simplified Chinese Bold and Italic Font Display**

When using the console on Windows operating system environments in simplified Chinese, bold and italic characters can appear distorted. Both the user interface and the User Assistant are affected. The problem is caused by a font problem in the Java Runtime Environment on Windows systems.

Correct the problem as follows:

1. Contact IBM Customer Support for Tivoli products to obtain the font Times New Roman WT SC--Outline Data with Embedded Bitmaps, and install the font on the affected systems as follows:

   a. From the Windows task bar, click Start --> Settings --> Control Panel.
   
   b. From the Control Panel window, open the Fonts folder.
   
   c. From the File menu, click Install new font.

2. In the font properties file (_jvm/lib/font.properties.zh):

   - Change these lines to appear as follows:

     serif.1=Times New Roman WT SC,GB2312_CHARSET
     serif.italic.1=Times New Roman WT SC,GB2312_CHARSET
     serif.bold.1=Times New Roman WT SC,GB2312_CHARSET
     serif.bolditalic.1=Times New Roman WT SC,GB2312_CHARSET
     sansserif.1=Times New Roman WT SC,GB2312_CHARSET
     sansserif.italic.1=Times New Roman WT SC,GB2312_CHARSET
     sansserif.bold.1=Times New Roman WT SC,GB2312_CHARSET
     sansserif.bolditalic.1=Times New Roman WT SC,GB2312_CHARSET
     dialog.1=Times New Roman WT SC,GB2312_CHARSET
     dialog.italic.1=Times New Roman WT SC,GB2312_CHARSET
     dialog.bold.1=Times New Roman WT SC,GB2312_CHARSET
     dialog.bolditalic.1=Times New Roman WT SC,GB2312_CHARSET
     dialoginput.1=Times New Roman WT SC,GB2312_CHARSET
Japanese Bold and Italic Font Display Problems

When using the console on Windows operating system environments in Japanese, bold and italic characters can appear distorted. Both the user interface and the User Assistant are affected. The problem is caused by a font problem in the Java Runtime Environment on Windows systems.

No work around is available at this time.

Accelerator Key Labels Shown in English

Accelerator key labels in the menus are displayed in English. These labels are controlled by the Java Runtime Environment and not by the Tivoli Business Systems Manager product itself, and the Java Runtime Environment shipped with Tivoli Business Systems Manager. IBM has limited support for localized accelerator key labels.

IBM World Type Font

The IBM World Type font must be installed on any console running the reporting system. Without this font, the browser might not correctly display the content of the reporting system pages.

<table>
<thead>
<tr>
<th>Language</th>
<th>Font File</th>
</tr>
</thead>
<tbody>
<tr>
<td>Japanese</td>
<td>tnrwt_j.ttf</td>
</tr>
<tr>
<td>Korean</td>
<td>tnrwt_k.ttf</td>
</tr>
<tr>
<td>Simplified Chinese</td>
<td>tnrwt_s.ttf</td>
</tr>
<tr>
<td>Traditional Chinese</td>
<td>tnrwt_t.ttf</td>
</tr>
<tr>
<td>Brazilian Portuguese, German, French, Italian and Spanish</td>
<td>tnrwt_j.ttf</td>
</tr>
</tbody>
</table>

You can install the font file by following the font installation instructions provided in the online help for your operating system.

If the reports from the reporting system do not display correctly with a localized version of the World Type font installed, install the tnrwt_j.ttf font and see if reports are displayed correctly.
Chapter 12. The Failover Process

The failover process provides a backup process for Microsoft Windows operating system servers and facilitates true 24x7 operations. The administrator uses this process to switch services from the primary set of Windows operating system servers to a secondary set of servers. This is especially useful in server hardware failure, database failure, or other operational reasons such as a scheduled outage on the primary server.

Prerequisites

You must meet the following prerequisites before you proceed with the failover process.

1. Install the Tivoli Business Systems Manager application program on a secondary site.
2. Connect the secondary site to the test data sources.
3. Verify all functionality of the installation on the secondary site.
4. Verify network connectivity between all 12 Tivoli Business Systems Manager servers (primary and secondary sites).
5. Verify full bidirectional trust between the Windows Domains (if applicable).
6. Create and verify a Windows operating system account for the database services in both Windows domains (for example: TBSMDomain1\TBSMSQL and TBSMDomain2\TBSMSQL).
7. Add both of the newly created accounts to the local Administrators group (for example: usrmgr.exe\hostname) on all 12 servers or add it to the Domain Administrators group for both domains.
8. Log on to all 12 servers with both Windows operating system accounts to create local profiles.
9. Set up the database services (MSSQLServer and SQLServerAgent) to log on with the accounts that you created in step 6.

Note: You must restart the services for the new permissions to take effect.

10. Synchronize the domains from the Primary Domain Controller in both domains using the Server Manager Applet.
11. Synchronize the time on all 12 Windows operating system servers. If no time server is available, use the net time /set \your_servername command.
12. Set the NT Application Event Log to Overwrite Events as Needed on all database servers (primary, secondary, primary history, and secondary history).
13. Verify that an LM Hosts file is present on all 12 servers. The LM Hosts file should contain entries for all 12 servers with the #PRE option. (LM Hosts location:
    C:\WINNT\system32\drivers\etc\lmhosts
14. Copy the extracted files to the installation directory on all four databases (primary, secondary, primary history, and secondary history).
Installing Failover on a Windows Operating Environment

Use the following steps to install failover on the Windows operating system environment:

1. Install the failover code on all four databases as follows:
   a. From a command prompt, change to the Tivoli Business Systems Manager SQL directory cd \TivoliManager\SQL.
   b. Run the following command:
      ```
      sh ApplyUpgrade -Usa -Ppassword -Sserver Failover.upg
      ```

2. Run steps 2, 3, and 4 only once and only on the primary site.
   Generate a failover configuration file template.
   a. From a command prompt, change to a temporary directory (for example: cd \TBSMTemp).
   b. Run the following command:
      ```
      sh fo_config –G ./configfile
      ```
      Where configfile is the name of the template file.

3. Edit the configuration file and replace the Hostname field with the name of the server that hosts each particular role. If a particular role is not installed or being used, make sure the Hostname field is blank.
   If multiple servers are performing the same role, enter all applicable host names separated by at least one space in the appropriate row of the configuration file.
   Save your file.

4. Load the configuration file as follows:
   a. From a command prompt, change to the temporary directory where the configuration file is located. (for example: cd \TBSMTemp p).
   b. Run the following command:
      ```
      sh fo_config –f ./configfile
      ```

5. Initialize Log Shipping.
   **Note:** This step can take several hours depending on the size of the databases and the available network bandwidth between the sites.
   a. From a command prompt, change to a temporary directory (for example: cd \TBSMTemp).
   b. Run the following command:
      ```
      sh fo_logship –T
      ```
      Where the –T parameter sets the Trace mode.
   c. Verify Log Shipping initialization by checking the hip.cmd.pid log in the TivoliManager\Logs directory where pid is a variable.

6. Check Log Shipping on all four database servers:
   a. Verify database jobs (all Log Shipping job names start with TBSM LogShipping).
   b. From the Query Analyzer on the secondary database servers, run the following command:
      ```
      msdb..log_ship_status
      ```
      Verify that the Log Shipping files are being copied and loaded without error.
**Note:** It is absolutely critical that any Query Analyzer window on the secondary or non-active site be pointed to either master or msdb database. They must not be connected to any of the databases.

c. Run the **TBSM Log Shipping Out of Synch Check** job to verify database synchronization. Please be aware that it takes time for the databases to get in synchronization after Log Shipping initialization. The delay depends on database size, Log Shipping file size and network bandwidth.

The failover process installation is complete.

---

**Installing Failover on OS/390**

**SNA-Based Connectivity**

Use the following steps to install the failover process on OS/390 for SNA-based connectivity:

1. Each of the two SNA servers must have a unique *Local APPC LU’s* defined in the Tivoli Business Systems Manager Parmlib, which is read during the source/390 object server initialization.

2. One member for the source/390 object server points to the address of the primary SNA server and the other points to the address of the failover SNA server.

3. In VTAM, configure the logical primary SNA server and the failover SNA server to have the same independent LU name. This requires the generation of unique PU Type 2 (Connection Names) definitions for each of the SNA servers. The *Local APPC LU’s* should be defined as the same name for each of the PU definitions.

**TCP/IP-Based Connectivity**

Use the following steps to install the failover process on OS/390 for TCP/IP-based connectivity:

1. From the optional TCPIP parameters field, for all instances of the source/390 object server, type the IP address of the secondary site event handler for the specific operating system (essential in the case of multiple event handlers in a site) in the **TCP/IP ADDRESS_BACKUP** parameter. See “Optional Parameters for TCP/IP Interface” on page 84.

2. In the TCPIP parameters field, for all instances of the source/390 object server, type the IP address of the secondary site Sender Services server for the specific operating system (essential in the case of multiple Sender Service servers in a site) in the **VALIDCLIENT** parameter. See “TCP/IP Interface” on page 83.

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**Setting Up a Server Failover Process**

The Failover process enables you to switch Tivoli Business Systems Manager services from a set of primary (source) servers to a set of secondary (target) servers. For non-emergency Failovers, such as for a scheduled maintenance outage, the switch should occur with minimal or no data loss. Other reasons that Failover could be needed are a hardware failure of a Tivoli Business Systems Manager Windows server, a database failure, a site catastrophe, or planned disaster recovery exercises.

The Failover process is accomplished by the following:
• Log Shipping, in which the transaction log is copied from the source servers to the target servers
• Server switching, in which processing is changed from the source servers to the target servers
• LU switching, in which the association of LUs is changed from the source servers to the target servers

Note: The files for this process must be installed and configured; for information, refer to the IBM Tivoli Business Systems Manager: Installation and Configuration Guide.

This section includes:
• “Failover Process Overview”
• “Overview of the Log Shipping Process” on page 247
• “Considerations for Failover” on page 249
• “Preparing for Failover” on page 252
• “Starting Log Shipping and Activating Databases on Secondary Servers” on page 254
• “Redirecting OS/390 Data Feeds” on page 255
• “Redirecting Distributed Data Feeds” on page 256
• “Redirecting Problem/Change Data Feeds” on page 257
• “Understanding WAN Bandwidth Implications for the Failover Process” on page 257

Failover Process Overview

The Failover process involves execution of three key scripts in sequence to move active processing of data from the source (primary) site to the target (secondary) site.

1. Failover must be configured using the fo_config.ksh script. This script creates a table with the Tivoli Business Systems Manager Windows Server names for both sites. This is run once when Failover is first installed. It only needs to be run again if the Tivoli Business Systems Manager configuration changes on either site.

2. Failover Log Shipping must be enabled. This is accomplished by running the fo_logship.ksh script. Log Shipping is the process that keeps the target (secondary) site Tivoli Business Systems Manager databases synchronized with the source (primary) site Tivoli Business Systems Manager databases. This script must be run at some point before Failover can be executed. Please note, this process is direction sensitive.

3. Failover to the secondary site is performed. This is accomplished by running the fo_failover.ksh script to generate the Failover command file. The command file is then executed with the fo_cmd_execute.ksh script. This process stops all services on the source (primary) site then activates the databases and starts the services on the target (secondary) site.

The Failover process can be reversed by executing the scripts in steps two and three with a -R parameter.

Failover Configuration Script – fo_config.ksh

Failover configuration is accomplished by running the fo_config.ksh script. This script generates a template configuration file with the command fo_config.ksh -G > ./configfile. The configuration file will list all the Tivoli Business Systems
Manager Server roles necessary for the Failover process. The Tivoli Business Systems Manager system administrator should modify the configuration file with a text editor, such as notepad.exe, to reflect the host names of their Tivoli Business Systems Manager environment. If multiple servers are performing the same role, be sure to enter all applicable host names separated by at least one space in the appropriate row of the configuration file. Any role that is not applicable to the customer’s environment should have a blank host name. The configuration file is then loaded with the fo_config.ksh -f ./configfile command. The load process creates and populates the tsbm_server_role table in the msdb database on the primary and secondary site SQL servers. Be aware that any role that has a blank host name in the configuration file will not have a row in the table.

**Failover Log Shipping Script – fo_logship.ksh**

Failover Log Shipping initialization is accomplished by running the fo_logship.ksh script. This script generates a command file for Log Shipping initialization that is immediately executed without pause using the fo_cmd_execute.ksh script. A brief, high-level, sequential outline of the command file generated by fo_logship.ksh is as follows:

1. Check network connectivity between primary and secondary site SQL servers.
2. Verify the Log Shipping direction by checking for active services on the target site.
3. Disable all Tivoli Business Systems Manager services on the target (secondary) site.
4. Stop all Tivoli Business Systems Manager services on the target (secondary) site.
5. Stop and Start SQL services on the target (secondary) site.
6. Create the Tivoli Business Systems Manager Log Shipping jobs on the source (primary) site.
7. Start Tivoli Business Systems Manager Log Shipping Transaction Log Backup on the source (primary) site and wait for up to 3600 seconds for it to complete successfully.
8. Backup all Tivoli Business Systems Manager databases on the source (primary) site.
9. Restore the backup from the source (primary) site on the target (secondary) site.
10. Create the Tivoli Business Systems Manager Log Shipping jobs on the target (secondary) site.
11. Output to a log file the result of a select * from sysprocesses query on the target database to record the active database processes at this point.
12. Start the Tivoli Business Systems Manager Log Shipping Copy and Load jobs and wait for up to 3600 seconds for them to complete successfully.
13. Delete the database backup files \logshipbackup\*.BAK.

The specific command file for each fo_logship attempt is created at runtime. It is named fo_logship.cmd.<pid> where pid is a numeric variable and can be found in the \TivoliManager\Logs directory (for example: fo_logship.cmd.392).

The command line switches for fo_logship.ksh are:

- **-K** Generate the fo_logship.cmd.<pid> command file but do not run it. Use this for debugging.
- **-R** Specifies this is the reverse Log Shipping.
-F     Force Log Shipping direction - do not check the Log Shipping direction.
-S<SQL|HIST
       Starts Log Shipping for the database server or history server only.
-T     Run this script in TRACE mode to generate more output.
-h or -?
       Displays help information.

Failover Script – fo_failover.ksh
Tivoli Business Systems Manager Failover is the process of switching active Tivoli Business Systems Manager processing from the primary (or source) site to the secondary (or target) site. Failover is accomplished by running the fo_failover.ksh script. This script generates a command file for Failover that can be reviewed or modified if necessary. The command file is then executed using the fo_cmd_execute.ksh script. A brief, high-level, sequential outline of the command file generated by fo_failover.ksh is as follows:
1. Check network connectivity to all primary and secondary site Tivoli Business Systems Manager servers.
2. If primary site Tivoli Business Systems Manager servers are not available, disable the Failover steps involving the unavailable servers.
3. Configure all Tivoli Business Systems Manager services to disabled on the target (secondary) site.
4. Disable SQL scheduled tasks (jobs) on the target (secondary) site.
5. Stop all Tivoli Business Systems Manager services on the target (secondary) site.
6. Delete all file queues on the source target (secondary) site.
7. Configure all Tivoli Business Systems Manager services to disabled on the source (primary) site.
8. Disable SQL scheduled tasks (jobs) on the source (primary) site.
9. Stop all Tivoli Business Systems Manager services on the source (primary) site.
10. Copy all non-empty file queues from the source (primary) site to the target (secondary) site.
11. Execute Tivoli Business Systems Manager SQL jobs on the source (primary) site.
   • Run Log Shipping Transaction Log Backup one last time.
12. Output to a log file the result of a select * from sysprocesses query on the target database to record the active database processes at this point.
13. Execute Tivoli Business Systems Manager SQL jobs on the target (secondary) site.
   • Run Log Shipping Copy Job one last time.
   • Run Log Shipping Load Job one last time.
   • Run stored procedure msdb..asisp_recover_databases.
   • Run stored procedure master..asisp_rename_sqlserver.
   • Update MVSSenderSvcMap.
   • Update the _TGMTaskServer column of OS_A.
14. Configure all Tivoli Business Systems Manager services to disabled on the target (secondary) site.
15. Start all Tivoli Business Systems Manager services on the target (secondary) site.
16. Enable key SQL scheduled tasks (jobs) on the target (secondary) site.
17. Register upload-enabled operating systems on the target (secondary) site.
18. Run check for TPStart.exe process on the target (secondary) site event handler.
19. Invoke the fo_commonlistener.ksh script to redirect the data feeds that use the
   Common Listener service. (The default script is blank. Any content must be
   created by the customer when the Failover process is installed.)

   The specific command file for each fo_failover.ksh attempt is created at runtime.
   It is named fo_failover.cmd.<pid>, where pid is a numeric variable and can be
   found in the \TivoliManager\Logs directory (for example: fo_failover.cmd.392).

   The command line switches for fo_failover.ksh are:
   -R  Specifies this is a reverse Failover.
   -F  Force the Failover direction. Do not check the Failover direction.
   -T  Run this script in TRACE mode to generate more output.
   -h or -? Displays help information.

**Enabling Failover**

Use the following steps to run the failover process on your system once the
installation is complete:

1. Generate the failover command file:
   a. From a command prompt, change to the Logs directory (cd
      \TivoliManager\Logs).
   b. Run the following command:
      sh fo_failover -T

      This generates a failover command file in the directory where this shell
      script runs. The naming convention for the generated file is
      fo_Failover.cmd.pid, where pid is the variable.

2. Verify the command file and make any custom changes you prefer.
   a. Open the fo_Failover.cmd.pid file in a text editor.
   b. Make any changes required and save the file.

3. Immediately before the Windows switch, deactivate the Primary SNA ServerPU
   on OS/390:
      (V NET,INACT,ID=puname,F)

   Another option:
   - Before failover is initiated on Windows, the source/390 object servers should
     be stopped in an orderly fashion on OS/390. The source/390 object pump
     STC continues to collect events and places them in the dataspace STC until
     communication to the Failover SNA server is reestablished.

4. Run failover
   a. Run sh fo_cmd_execute -T -f
      D:/TivoliManager/Logs/fo_failover.cmd.pid
   b. Monitor the process until it completes.

5. Delete the VTAM ALSLIST association to the Primary SNA Server. This action
   stops the flow of data from OS/390 to Windows and causes the Failover SNA
   server definition to be associated with the Local APPC LU. When the physical
   Failover SNA server is enabled, the event data from OS/390 begins to flow
   through the Failover SNA server:
The following is another option:

- Start the source/390 object server STC and point it to the member in Tivoli Business Systems Manager preamble that addresses the failover SNA server:

  $(GTMSRVR, MBR=altparm)$

6. Check the failover log for errors. The naming convention of the generated file is `fo_Failover.cmd.pid.log`, where `pid` is the variable.

7. You must configure the bulk discovery download (GTMAOPE0) to reflect the new IP address.

   Set up two batch jobs for each data source. Set up one job as the primary job using the production ASIMVSIPLSListerSvc service. Set up the other job as the secondary or backup job that uses the failover ASIMVSIPLSListerSvc service. The SYSIN DD Name card of the GTMAOPE0 bulk data utility references the member name of the appropriate control card deck.

8. Redirect the common listener-based data sources. If you have not created a `fo_commonlistener.ksh` script, you must manually configure your common listener-based data sources to point to the newly active Tivoli Business Systems Manager site. The common listener data sources are:

   - Distributed Monitoring, Version 4.0 and higher
   - NetView Distributed
   - Unicenter TNG
   - BMC PATROL
   - NetIQ AppManager
   - Tivoli Workload Scheduler for z/OS

The failover process is now complete.

**Enabling Reverse Failover**

Use the following steps to reverse failover:

1. Initialize Log Shipping in the reverse direction. You can delay this step for maintenance or testing on the inactive site, but make sure Log Shipping is always running.
   
   a. From a command prompt, change to a temporary directory (for example:
      
      ```
      cd \TBSM\Temp
      ```
   b. Run the following command:
      ```
      sh fo_logship -R -T
      ```

      Where the `-T` parameter sets the Trace mode and the `-R` parameter reverses the direction.

   c. Verify Log Shipping initialization by checking the `ship.cmd.pid.log` file in the `TivoliManager\Logs` directory where `pid` is a variable.

2. Check Log Shipping on all four database servers.
   
   a. Verify database jobs (all Log Shipping job names start with `TBSM Log Shipping`)
   b. From the Query Analyzer window, on the secondary database servers run the following command:
      ```
      msdb..log_ship_status
      ```
      Verify that the Log Shipping files are being copied and loaded without error.
   c. Run the `TBSM Log Shipping Out of Synch Check` job to verify database synchronization.
3. Generate the reverse failover command file.
   a. From a command prompt, change to the Logs directory. For example, cd \TivoliManager\Logs.
   b. Run the following command:
      
      ```
      sh fo_failover -R -T
      ```
      
      This generates a failover command file in the current directory. The naming convention for the generated command file is fo_Failover.cmd.pid where pid is a variable.
4. Verify the command file and make any custom changes that you prefer.
   a. Open the fo_Failover.cmd.pid command file in a text editor.
   b. Make your changes and save the file.
5. Immediately before the switch, deactivate the primary SNA Server PU on OS/390:
   
   ```
   (V NET,INACT,ID=puname,F)
   ```
   
   Another option is to stop the source/390 object servers on OS/390 before failover is initiated on the Windows operating system environment. The source/390 object pump STC continues to collect events and places them in the dataspace STC until communication to the failover SNA server is established again.
6. Run reverse failover.
   a. Run the following command:
      
      ```
      sh fo_cmd_execute -T -f D:\TivoliManager\Logs/fo_Failover.cmd.pid
      ```
      
      b. Monitor the process until it completes.
7. Delete the VTAM ALSLIST association to the primary SNA server. This action stops the flow of data from OS/390 to the Windows operating system environment and causes the failover SNA server definition to be associated with the Local APPC LU’s. When the physical failover SNA server is enabled, the event data from OS/390 begins to flow through the failover SNA server:
      
      ```
      (S GTMSRVR, MBR=altparm)
      ```
      
      Another option is to start the source/390 object server STC and point it to the member in Tivoli Business Systems Manager preamble that addresses the failover SNA server:
      
      ```
      (F vtamname,ALSLIST,ID=luname,OLDALS=puname,ACTION=DELETE
      ```
      
      8. Check the Failover log for errors. The naming convention of the generated file is fo_Failover.cmd.pid.log, where pid is a variable.
9. Configure the bulk discovery download (GTMAOPE0) again on all instances of the source/390 object server to reflect the new IP address.
10. Redirect the common listener-based data sources. If you have not created a fo_commonlistener.ksh script, you must manually configure your common listener-based data sources to point to the newly created active Tivoli Business Systems Manager site.

**Overview of the Log Shipping Process**

Tivoli Business Systems Manager Log Shipping is the process that keeps the Tivoli Business Systems Manager databases at the target (secondary) site synchronized with the Tivoli Business Systems Manager databases at the source (primary) site. Log Shipping is based on the Microsoft Log Shipping function of SQL Server. Log Shipping is an SQL resource kit utility for SQL Server 7.0 and a fully-integrated function with GUI support in SQL Server 2000 Enterprise Edition.
The Tivoli Business Systems Manager databases that are synchronized with Log Shipping are as follows:

- **Database server databases**
  - ASIRuleSvc
  - Meta
  - Object
  - ObjectEvents
  - ObjectQueues
  - OPCLoad
  - RODM
  - RODMLoad
  - WebServer

- **History server databases**
  - History
  - WebServer

The Log Shipping process works by creating transaction log backups of all Tivoli Business Systems Manager databases on the primary site, copying the backups over to the secondary site, and loading the backups every 5 minutes. Full backups of the primary databases are created as a snapshot or reference point to begin the process. The Log Shipping setup process creates the following SQL jobs:

- **Source (primary) site Tivoli Business Systems Manager database and history server jobs**
  - Log Shipping Backup/Restore History Purge
  - Log Shipping Transaction Log Backup
  - Log Shipping Synchronize TEC Server EventCache Time

- **Target (secondary) site Tivoli Business Systems Manager database and history server jobs**
  - Log Shipping Backup/Restore History Purge
  - Log Shipping Copy Job
  - Log Shipping History Purge
  - Log Shipping Load Job
  - Log Shipping Out of Synch Check

**Log Shipping Transaction Log Backup Job**
The Transaction Log Backup Job executes every 5 minutes by default configuration and backs up the transaction log of all of the relevant Tivoli Business Systems Manager databases on that server. The transaction log backups are created in the subdirectories of the `\logship\backup` directory on the server.

**Log Shipping Copy Job**
The Copy Job executes every 5 minutes by default and copies the transaction log backups from the `\logship\backup` subdirectories on the source (primary) site to the `\logship\backup` subdirectories on the target (secondary) site. This job only copies files that have not been previously copied.

**Log Shipping Load Job**
The Load Job executes every 5 minutes by default and loads the transaction log backups from the `\logship\backup` subdirectories on the target (secondary) site. This job only loads files that have not been previously loaded.

**Log Shipping Out of Synch Check Job**
The Out of Synch Check Job executes every 20 minutes and checks for a delta of 20 minutes or greater (the delta parameter is configurable). Because Transaction Log
Backup, Copy Job and Load Job are scheduled to execute every 5 minutes, this means that during normal workflow there can be up to a 15 minute delta (the databases are 15 minutes out of synchronization). If the databases are more than 20 minutes out-of-synch a message is posted to the screen of the secondary SQL (or History) server using a Net Send command. SQL can be configured to send this alert to the console of any Windows workstation that has appropriate network connectivity.

**Log Shipping Backup/Restore History Purge Job**
The Backup/Restore History Purge job deletes Transaction log backup files older than 48 hours (by default, it is configurable) from the \logshipbackups database subdirectories.

**Log Shipping History Purge Job**
The History Purge job purges rows from the table backup_movement_plan_history in the msdb database on target (secondary) servers. This table is populated by the Log Shipping copy and load jobs. This table will fill very rapidly on a central rollup server.

**Log Shipping Synchronize TEC Server EventCache Time Job**
The Synchronize TEC Server EventCache Time job stops the ASIAgentListener service once a day for 10 seconds and then copies the updated EventCache Time registry key(s) to the secondary site AgentListener registry. This prevents the secondary site from getting flooded with old TEC events in the case of an emergency Failover or a non-graceful shutdown of the ASIAgentListener service.

**Considerations for Failover**

**Limitations of Failover**
Failover has the following limitations:

- Tivoli Business Systems Manager Failover is a warm standby solution; it is not truly redundant. Data feeds and processing only occur on the active site.
- Failover does not address data feed (data source) redundancy.
- Failover is not intended as a tool to address the following issues:
  - Software bugs
  - Software distribution of fix packs/upgrades
  - Synchronization of files/binaries between the two sites
- All Tivoli Business Systems Manager fix packs, upgrades, and configurations changes must be applied to both sites.
- The Failover scripts do not automatically redirect the user consoles. The users must be notified by the Tivoli Business Systems Manager administrator to login to the newly activated site.
- Interfaces to problem/change systems using the Tivoli Business Systems Manager Problem/Change API must be designed to accommodate switching between the two Tivoli Business Systems Manager sites.
- Data feeds using the Common Listener service must have a custom script created to redirect the feeds back and forth between the two Tivoli Business Systems Manager sites. The content of the fo_commonlistener.ksh script must be created onsite at the time of Failover installation to account for customer-specific environments. If the customer does not choose to use this functionality, they are responsible for manually redirecting the data feeds in whatever manner they want at the time of Failover. The data feeds in Tivoli Business Systems Manager V2.1 that are affected are:
- Distributed Monitor 4.x and higher
- NetView Distributed
- TNG
- PATROL
- NetIQ
- TWS

- OS/390 Bulk Discovery Data Feeds (OPC, IMS, DB2, CPSM and RODM) must be manually reconfigured using the GTMAOPE0 utility to point to the newly activated site. We recommend that you include the reconfiguration steps in a JCL that can be run at the time of Failover. Refer to the IBM Tivoli Business Systems Manager: Installation and Configuration Guide for the necessary steps.

**Using Asymmetric Tivoli Business Systems Manager Primary and Secondary Sites**

The Tivoli Business Systems Manager secondary site may have a different number of servers than the primary site. For example, the primary site may have six servers while the secondary site has only four. Performance of Tivoli Business Systems Manager on the secondary site will probably be degraded if there are fewer servers to handle the Tivoli Business Systems Manager components. If the sites have a different number of servers, then the following guidelines must be followed:

- There must be the same number of database and history servers (running SQL Server) in the primary and secondary sites.
- All Tivoli Business Systems Manager components that are installed on the primary site must be installed on the secondary site. Only distribution of those components across the servers may vary.
- If TGMTaskServer services are used, then there must be the same number of instances of the service on the primary and secondary sites.

**Concerns for non-Tivoli Business Systems Manager Databases — Applying Maintenance**

The non-Tivoli Business Systems Manager databases (msdb, master, model, tempdb, etc.) databases cannot be synchronized with Log Shipping between the source and target sites because the databases must contain unique information relevant to each site. Because of this, all fix packs and upgrades that affect these databases must be applied to both Tivoli Business Systems Manager sites. This includes both the database server and the history server where applicable.

There are three options for keeping the Tivoli Business Systems Manager software synchronized when applying upgrades, fixpacks, and limited availability interim fixes on these servers, depending on the code change being made. Please note that these procedures apply only to Windows 2000 with SQL Server 2000, and it is expected that the Tivoli Business Systems Manager pre-requisite software (MKS toolkit, Windows SP, SQL Service Pack, etc.) are at the same level in both the primary and secondary environment.

In all cases, you should refer to the readme shipped with a upgrade, fix pack or limited availability interim fix for any specific instructions regarding Failover installation.

**Non-Tivoli Business Systems Manager databases:**

**master Database**

The master database contains all of the system-level information for an
SQL Server system. This system-level information is unique to that particular instance of SQL Server. Tivoli Business Systems Manager creates tables and stored procedures in this database.

**msdb Database**
The msdb database is the key database for Failover. It is used by SQL Server Agent for scheduling alerts and jobs, and recording operators. Tivoli Business Systems Manager creates tables, jobs, and stored procedures in this database. This database is also the location of all Failover tables, jobs, and stored procedures.

The majority of the jobs created by Tivoli Business Systems Manager are required for normal data processing. Because this database cannot be synchronized with Log Shipping, it is critical that any change to the tables, stored procedures, and especially the jobs be done on both sites.

**Option 1 - For limited availability interim fixes that only affect Tivoli Business Systems Manager databases (eg. NOT msdb, master, model, tempdb, and NO executable files):** The limited availability interim fix should be applied to the primary SQL server(s). In this case, nothing needs to be done on the secondary server(s) assuming Log Shipping is in place and the truncate log on checkpoint option is OFF (this option is set ON by attachdatabases but is turned off during secondary setup). Log Shipping will automatically move the Tivoli Business Systems Manager database changes to the secondary server.

**Option 2 - For limited availability interim fixes that affect executable files and may also include Tivoli Business Systems Manager database changes (for example, not msdb, master, model, tempdb):** The limited availability interim fix should be applied per the readme to all appropriate servers in BOTH environments except for the upg update. The snapshot/upg should be applied to the primary sql server. Logshipping will move the database changes to the secondary site assuming logshipping is in place, and the truncate log on checkpoint option is OFF (this option is set ON by attachdatabases but is turned off during secondary setup). You should verify that all services are still in the disabled state on the secondary servers immediately after applying any executable changes there, otherwise you may lose data.

**Option 3 - For all fix packs and any limited availability interim fix that impact non-Tivoli Business Systems Manager databases (such as msdb, master, model, tempdb):**

1. Stop SQLServerAgent on both primary and secondary servers, ensure that it is stopped (this stops Log Shipping)
2. Run procedure asisp_recover_databases from the Query Analyzer on the secondary msdb database in order to set Tivoli Business Systems Manager databases in a read/write state.
3. Apply the fix pack on all servers (primary and secondary) per the provided readme. Please note that Fix Packs usually prompt for a reboot. Please ensure that all Tivoli Business Systems Manager services on the secondary site are "Disabled" state prior to reboot, otherwise data may be lost.
4. Start SQLServerAgent on both primary and secondary servers, ensure it is started.
5. From a Command Prompt on the primary database server enter command to reinitialize Log Shipping in the proper direction:

   sh fo_logship.ksh
Minimizing Data Loss
Failover was designed to minimize potential data loss. Under normal operating conditions there is no data loss at all.

The Failover process addresses data loss issues by allowing the de-queueing mechanisms, such as Event Handlers, to finish in a timely manner whenever possible upon initiation of Failover. If the de-queueing mechanisms do not finish in the allowed time, the Failover script copies all file-based queues that contain unprocessed records to the target site. The queue checking and copying processes include the Event Handler, Agent Listener, Common Listener and Propagation Agent Queues. The Sender Service queues are not checked or copied. The database queues are not an issue because those queues are handled by the Log Shipping process.

The only significant potential for data loss occurs under emergency conditions, such as catastrophic primary server or site failure. The Failover script cannot copy queues from a server that is crashed or unavailable to the network. The script also cannot copy and load transaction log backup files from the primary site SQL server if it is unavailable, which means that the secondary site SQL server will only be as current as the most recent transaction log backup file that was loaded.

Ownership Notes Considerations
Depending on the configuration of the Tivoli Business Systems Manager domains and user accounts, it might be necessary to run the upd_note_userid.ksh script to update the _UserID value of all Ownership Notes in the Note_A table after a Failover.

You must update the Ownership Note if:

• The two Tivoli Business Systems Manager sites are in separate domains and separate Domain NT Accounts are used in the Tivoli Business Systems Manager Account Groups for Tivoli Business Systems Manager Console authentication on the console server.

• Local Windows NT accounts are used in the Tivoli Business Systems Manager Account Groups for Tivoli Business Systems Manager Console authentication on the two console servers.

You do not need to update the Ownership Note if:

• The two Tivoli Business Systems Manager sites are in the same domain and the same Domain NT Accounts are used in the Tivoli Business Systems Manager Account Groups for Tivoli Business Systems Manager Console authentication on all console servers.

• The two Tivoli Business Systems Manager sites are in separate domains, and only one set of Domain NT Accounts is used in the Tivoli Business Systems Manager Account Groups for Tivoli Business Systems Manager Console authentication on all console servers.

TGMTTaskServer Considerations
There must be the same number of instances of TGMTTaskServer on the secondary site as there are on the primary Site. Furthermore, all operating systems that are defined to use the same instance of TGMTTaskServer on the primary site must be defined to use the same instance of TGMTTaskServer on the secondary site.

Preparing for Failover
For Failover to complete successfully, the following criteria must be met:
• The secondary set of Tivoli Business Systems Manager servers must be installed and configured exactly the same as the primary set from a software point of view, including:
  – The same version and fix pack level of the Windows operating system.
  – The same version and fix pack level of Windows SQL Server.
  – The same version and fix pack level of the Tivoli Business Systems Manager prerequisites.
  – The same version, fix pack level, and components of Tivoli Business Systems Manager.

• The clock on all Tivoli Business Systems Manager servers should be synchronized periodically. Failover stored procedures can be configured to adjust for primary and secondary sites in different time zones.

**Note:** Do not synchronize the clocks while Log Shipping is active. If the clock is changed on the database or history server while Log Shipping is running, a fatal error will occur for the Log Shipping Load job. Log Shipping will then have to be reinitialized.

• All Tivoli Business Systems Manager functionality of the secondary site must be tested and verified prior to installation of the Failover process. This includes verifying connectivity to the data feed sources.

• There must be reliable network connectivity and host name resolution between all Tivoli Business Systems Manager servers in the primary and secondary sites.

• There must be sufficient available bandwidth between the two Tivoli Business Systems Manager sites. This is particularly important if there is a WAN connection between the two sites. See “Understanding WAN Bandwidth Implications for the Failover Process” on page 257 for more information.

• If the two Tivoli Business Systems Manager sites are in different Windows NT domains, there must be full bidirectional trusts between the two domains.

• The SQL Agent service on all Tivoli Business Systems Manager servers that are running SQL Server must be logged in with a Windows NT account that has administrative privileges to all database and history servers.

• The Tivoli Business Systems Manager administrator that is running the Failover scripts must be logged in with a Windows NT account that has administrative privileges to all Tivoli Business Systems Manager servers.

On the secondary (target) servers, ensure that all Tivoli Business Systems Manager services are stopped. It is recommended that you set service startup to Manual on these servers to ensure that services do not start if the server systems are restarted.

**Note:** Databases on the target servers will be overwritten during log switching.

Log Shipping requires connectivity between the source and target servers. The source server must have a shared drive or directory that can be read by the user ID under which the SQL server agent runs on the target server and written by the user ID under which the SQL server agent runs on the source server. The target server must have a shared drive or directory that can be read by the user ID under which the SQL server agent runs on the source server and written by the user ID under which the SQL server agent runs on the target server.

The location of these directories can be specified during Log Shipping; if they are not specified, the default location is \Logs\backup. If these directories do not exist, they are created during Log Shipping.
Starting Log Shipping and Activating Databases on Secondary Servers

Notes:

1. The primary (source) servers can be in use during this procedure, but all Tivoli Business Systems Manager services on the secondary (target) servers must be stopped.

2. For more information on the syntax and options for the SQL commands used in this procedure, refer to the IBM Tivoli Business Systems Manager: Command Reference.

The procedure to start Log Shipping and activate databases on to the secondary (target) servers is as follows:

1. On the source server, create the transaction backup job using this SQL command:
   
   ```sql
   exec asisp_create_logship_trans_backup
   ```

   This command creates the logshipbackup directory on the source server, if it does not exist, and starts backing up the logs. It also creates subdirectories that have the same names as the databases, for example, Object and Meta.

2. On the source server, create full database backups using this SQL command:
   
   ```sql
   exec asisp_create_logship_backups
   ```

   This command creates full backups of all Tivoli Business Systems Manager databases in the logshipbackup directory on the source server. Each backup file has a name that is the same as the database and an extension of .bak, for example, Object.bak and Meta.bak.

3. On the target server, restore full database backups using this SQL command on the target server:
   
   ```sql
   exec asisp_restore_logship_backups '\\source_server'
   ```

   This command restores all Tivoli Business Systems Manager databases on the target server in read-only mode.

4. On the target server, create and start Log Shipping jobs using this SQL command:
   
   ```sql
   exec asisp_create_copy_load_jobs 'source_server'
   ```

   This command copies the transaction log backup files to the target server and applies them to the read-only databases on the target server; as a result, Log Shipping should now be running.

5. On the target server, view Log Shipping activity using this SQL command:
   
   ```sql
   exec log_ship_entity_log
   ```

   This command shows the Log Shipping activity from the most recent to the oldest. Each log entry includes a success indicator (yes or no), the number of files, and the last file processed.

6. On the target server, activate the databases using this SQL command:
   
   ```sql
   exec asisp_recover_databases
   ```

   This command places the Tivoli Business Systems Manager databases on the target server in a usable state and ensures that the Log Shipping Copy, Load,
Out of Sync Check, and History Purge jobs are disabled. It also enables the truncate-log-on-checkpoint option for all databases to prevent the transaction logs from growing too large.

Redirecting OS/390 Data Feeds

Redirecting Object Server via SNA
There are two methods for switching the host connection (Object Server STC) from the primary (source) SNA server to the secondary (target) SNA server:

- You have configured two SNA servers with different independent LU names and provided two Tivoli Business Systems Manager Parm members for the Tivoli Business Systems Manager source/390 object server.
- You have configured two SNA servers with the same independent LU name. This is the preferred method.

Redirecting Data When Servers Have Different Independent LU Names: The process when you have two SNA servers with different independent LU names is:
1. Define a unique Local APPC LU for each of the SNA Servers in Tivoli Business Systems Manager’s Parmlib which will be read during Object Server initialization.
2. One member for the Object Server will point to the address of the Primary SNA Server, and the other member will point to the address of the Failover SNA Server.
3. Before Failover is initiated on Windows NT, the Object Server(s) should be stopped in an orderly fashion on the mainframe. The Object Pump STC will continue to collect events and will place them in the Data Space STC until communication to the Failover SNA Server is re-established.
4. Perform failover for the Windows NT components.
5. Start the Object Server STC and point it to the member in Tivoli Business Systems Manager’s Parmlib that addresses the Failover SNA Server: $GTM$SRVR, MBR=altparm.

Redirecting Data When Servers Have the Same Independent LU Name: For two SNA servers with the same independent LU name, which is the recommended approach:
1. In VTAM, configure the logical Primary SNA Server and the Failover SNA Server to have the same independent LU name. This will require the generation of unique PU Type 2 (Connection Names) definitions for each of the SNA Servers. The Local APPC LUs should be defined as the same name for each of the PU definitions.
2. Immediately before the Windows NT switch, deactivate the Primary SNA Server’s PU on the mainframe, using V NET,INACT,ID=puname,F.
3. Perform failover for the Windows NT components.
4. Delete the VTAM ALSLIST association to the Primary SNA Server, using

\[ F\ vtam\_name,ALSLIST,ID=LU\_name,OLDALS=PU\_name,ACTION=DELETE \]

This action will stop the flow of data from the mainframe to Windows NT and will cause the Failover SNA Server definition to be associated with the Local APPC LUs. When the physical Failover SNA Server is enabled, the event data from the mainframe will begin to flow through the Failover SNA Server.
Redirecting Object Server via TCP/IP
The redirection of the TCP/IP connectivity between the Object Server-started task on OS/390 and the Tivoli Business Systems Manager Windows servers is automatic if the following configuration steps have been done:

1. In the optional TCPIP parameters of all instances of the Tivoli Business Systems Manager Object Server on OS/390, enter the IP address of the secondary site Event Handler for that specific OS in the TCPIP_ADDRESS_BACKUP parameter. This is important in the case of multiple Event Handlers in a site. Refer to the IBM Tivoli Business Systems Manager: Installation and Configuration Guide for more information.

2. In the TCPIP parameters of all instances of the Tivoli Business Systems Manager Object Server on OS/390, enter the IP address(es) of the secondary site Sender Services Server for that specific OS in the VALIDCLIENT parameter. This is important in the case of multiple Sender Service Servers in a site. Refer to the IBM Tivoli Business Systems Manager: Installation and Configuration Guide for more information.

When the Object server loses the connection to the primary site for more than 30 seconds, it automatically attempts to connect to the secondary IP address. If the secondary address does not work after 30 seconds, then the Object Server retries the primary IP address. The Object Server will continue to cycle between attempts to connect to each address until a connection is finally made.

Redirecting Bulk Discoveries
OS/390 Bulk Discovery Data Feeds (OPC, IMS, DB2, CPSM & RODM) must be manually reconfigured using the GTMAOPE0 utility to point to the newly activated site. It is recommended that you include the reconfiguration steps in a JCL that can be run at the time of Failover. Refer to the IBM Tivoli Business Systems Manager: Installation and Configuration Guide for the necessary steps.

Redirecting Distributed Data Feeds

Redirecting Feeds Using the Agent Listener
The Agent Listener does not require any specific redirection if the service on the secondary site was configured to point to the same TEC servers as the primary site.

The Tivoli Business Systems Manager Log Shipping Synchronize TEC Server EventCache Time Job keeps the EventCacheTime registry keys current to within 24 hours by default. The job can be run more frequently, if desired.

Redirecting Feeds Using the Common Listener Service
Currently there is no method to automatically redirect data feeds that use the Common Listener service.

A custom script must be created to redirect data feeds between two Tivoli Business Systems Manager sites using the Common Listener service. The fo_commonlistener.ksh script must be created onsite at the time of Failover installation to account for customer-specific environments. If the customer does not choose to use this functionality, they are responsible for manually redirecting the data feeds in whatever manner they want at the time of Failover. The data feeds in Tivoli Business Systems Manager that are affected are:

- Distributed Monitor 4.x and higher
- NetView Distributed
- TNG

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• PATROL
• NetIQ
• TWS

Redirecting Problem/Change Data Feeds

Redirecting Tivoli Service Desk for OS/390 Data Feeds
The only step required for redirecting the Tivoli Service Desk for OS/390 data feed is to activate the NETCONV session(s) to the new Source Tivoli Business Systems Manager site after Failover.

Redirecting Legacy Tivoli Service Desk Distributed Edition Data Feeds
The Tivoli Business Systems Manager adapter running on the Tivoli Service Desk Distributed Edition server must be stopped, reconfigured to point to the new Tivoli Business Systems Manager Source site and then restarted. If appropriate permissions are granted on the TSD server, a shell script can be created to perform this task from the Tivoli Business Systems Manager site. This script could then be manually added to the Failover command file to run upon execution of Failover.

Redirecting Data Feeds Using the Problem/Change API
When creating a custom Problem/Change request processor, the interface should be designed to allow connectivity to the Problem/Change application from a secondary site.

Understanding WAN Bandwidth Implications for the Failover Process
The performance of the wide area network (WAN) link between the Tivoli Business Systems Manager primary and secondary sites has a significant impact on the performance of the Tivoli Business Systems Manager Failover process. Specifically, it has a significant impact on transaction log forwarding. When the WAN bandwidth available (throughput) to Tivoli Business Systems Manager Failover and transaction log forwarding is small in relation to the size of the Tivoli Business Systems Manager databases and the volume of the transaction log forwarding files, the target delta of less than 20 minutes between the primary and secondary SQL servers might not be achieved. Low throughput also leads to long initialization for transaction log forwarding.

WAN Throughput Effect on Initialization of Transaction Log Forwarding
A small WAN throughput can greatly increase the duration of initialization for transaction log forwarding. The primary effect of long initialization for transaction log forwarding is that the elapsed time until Failover can be performed is lengthened because database synchronization is a requirement for Failover. The following example illustrates the problem.

Assume an installation has the following environment:
• Large Tivoli Business Systems Manager databases (approximately 6GB total).
• Moderate data flow that generates approximately 50MB of transaction log forwarding files every 5 minutes with occasional bursts of high activity generating a 250MB (or more) set of transaction log forwarding files. They are moving approximately 15GB of transaction log forwarding files across the WAN link every day.
• WAN link to their secondary site with a Committed Information Rate (CIR) of 4 Megabits that is also shared with at least one other application.

When the installation starts transaction log forwarding, the database backup generates approximately 5.8GB of backup files in 30 minutes. Transaction log forwarding then restores those databases through the WAN to the secondary site in approximately 6.5 hours. While this restore is occurring, transaction log forwarding backup files accumulate on the primary site. When the restore is complete, the transaction log forwarding copy job starts. While transaction log forwarding copies the 6.5 hours of accumulated files that total approximately 3.1GB, it must also transaction log forwarding keep up with current files. The net effect is that the database does not get synchronized until 13 hours after transaction log forwarding was started. The problem can be compounded if the other application is using the WAN link.

**WAN Throughput Effect on Database Synchronization**

A small WAN throughput can increase the duration of file copying for transaction log forwarding. This can cause the database synchronization delta to be greater than the target time of 20 minutes. The following example illustrates this problem.

Assume an installation has the following environment:
• Large Tivoli Business Systems Manager databases (approximately 6GB total).
• Moderate data flow that generates approximately 50MB of transaction log forwarding files every 5 minutes.
• WAN link to their secondary site that is shared with at least one other application and has a CIR of 4 Megabits.

**Scenario 1:** A large burst of database activity occurs that creates very large transaction log forwarding files of 300MB or more (for example, a large DB2 discovery is performed). Due to the large file size and the restricted throughput, it might take 30 minutes to copy the transaction log forwarding file to the secondary site. The normal transportation time is 5 minutes or less. Because transaction log forwarding files accumulate while the copy job works on the one large file, the database delta will be greater than 20 minutes. The net result is that the databases can be unsynchronized for an hour or two.

**Scenario 2:** Decreased throughput on the WAN link causes slow file copying for transaction log forwarding. The decreased throughput is due to the second application using the WAN link extensively. The decreased throughput slows down the copying, which causes the databases to get out of synchronization. This pattern continues until the second application reduces its utilization. If Tivoli Business Systems Manager has a large burst of activity at the same time, the databases can be unsynchronized for many hours.

**Transaction Log Forwarding Considerations**

The two major factors that impact Failover WAN utilization are:
• Available bandwidth
• Failover file transfer volumes

Available bandwidth is affected by the following:
• WAN CIR to the secondary site
• Average portion of the CIR that is used by other applications
• Peak portion of the CIR that is used by other applications
Network traffic on the LAN between the Tivoli Business Systems Manager servers and the WAN

Failover file transfer volumes are affected by the following:

- Size of the Tivoli Business Systems Manager database backups – Considerations include the number and type of objects being monitored.
- Size of the transaction log forwarding files, which depends on the amount of database activity.
  - Considerations with the primary database include the number and type of events (messages, exceptions, discoveries) being processed, and Tivoli Business Systems Manager database maintenance.
  - Considerations with the history database include the number of events being processed, Tivoli Business Systems Manager database maintenance, and large reports that create numerous transactions.

Using Script-based Utilities

**fo_chk_connectivity.ksh**
This script performs a network and command test to all of the Tivoli Business Systems Manager servers specified in the Failover msdb..bsm_server_role table. The following commands are executed for each server:

- Ping <hostname>
- Sclist \<hostname>
- SC \<hostname> query NetLogon
- ls \<hostname>\d$
- rkill /view \<hostname>

The command line switches for fo_chk_connectivity.ksh are:

- `-T` Run this script in TRACE mode and generate more output.
- `-h` or `-?` Displays help information.

**fo_resynch_histserver.ksh**
This script synchronizes the BCP History process on the newly active site. If this script is not run after a successful Failover, reporting system usage could result in unusually high overhead on the SQL Server until the regularly scheduled Object, Meta, and RODM synchronization time.

This script does the following:

- Executes BackupAllDatabases.cmd on the database server and waits for it to finish.
- Starts the Copy Backups from Live DB Server SQL job on the history server and waits for it to finish.
- Starts the Restore Databases for Reporting System SQL job on the history server and waits for it to finish.

The command line switches for fo_resynch_histserver.ksh are:

- `-T` Run this script in TRACE mode and generate more output.
- `-h` or `-?` Displays help information.
**upd_note_userid.ksh**

This script can display or modify the domain information of the user accounts for Ownership Notes.

Output is always sent to standard out. Domain or hostname should be a valid name. If either the -O or -N option is specified, the other one must also be specified. If neither the -O nor the -N option is specified, then all domain information in _UserID in the Note_A table will be displayed.

The command line switches for *upd_note_userid.ksh* are:

- **-S <db_server>**
  - Specifies server name where database resides.

- **-U <db_user>**
  - Specifies database user name.

- **-P <db_password>**
  - Specifies password for database user.

- **-E**
  - Use trusted database connection.

- **-O**
  - Specifies the old domain or hostname

- **-N**
  - Specifies the new domain or hostname.

- **-T**
  - Run this script in TRACE mode and generate more output.

- **-h or -?**
  - Displays help information.
Part 4. Installing Tivoli Business Systems Manager — Distributed Edition

This part explains how to install and configure Tivoli Business Systems Manager — Distributed edition. This includes deployments that do not contain the Tivoli Business Systems Manager 390 source components.

Tivoli Business Systems Manager — Distributed consists of two required servers, a database server and a console/propagation server. Reporting can be configured on the database server or on an optional, separate third server — a history server. Microsoft SQL Server is installed on the database server, and on the optional history server. The reporting system should be configured on the same machine as your history server.

**Note:** Installation of Tivoli Business Systems Manager — Distributed edition onto a single machine is not recommended for a production environment. It can be useful for a testing/demonstration environment if multiple test servers are not available.

Sections include:

- Chapter 13, “Installing and Configuring Base Services,” on page 263
- Chapter 14, “Optional Components,” on page 275

**Note:** If you want to monitor any OS/390 data sources, do not follow these installation directions; follow the instructions in Part 3, “Installing Tivoli Business Systems Manager — Enterprise Edition,” on page 41. If you are upgrading from a previous version of Tivoli Business Systems Manager, follow the instructions in Part 5, “Upgrading Tivoli Business Systems Manager,” on page 291.
Chapter 13. Installing and Configuring Base Services

This chapter describes the installation and configuration tasks for Tivoli Business Systems Manager — Distributed base services. Base services are the services and components that are used for Tivoli Business Systems Manager.

Sections include:

- “Important Notes and Considerations”
- “Prerequisites” on page 264
- “The Database Server” on page 264
- “The Console Server” on page 268
- “Installing and Configuring Components on Tivoli Enterprise Console” on page 273

The most common Tivoli Business Systems Manager — Distributed configuration consists of two or three servers. While Tivoli Business Systems Manager — Distributed works well on two servers, using three servers can improve performance, depending on your event throughput. The directions in this guide assume you will be using the 2 server setup. If you are using a different setup, contact IBM Support. The 2 servers are the following:

- Database server (sometimes referred to as primary database server)
- Console server

Important Notes and Considerations

- Exit all Microsoft Windows programs before beginning the Setup program.
- Double-click the Setup.exe icon from the BaseServices folder. The Tivoli Business Systems Manager InstallShield guides you through the installation process.

Note: When prompted for an installation drive, select the largest data drive on the machine. Tivoli Business Systems Manager stops processing if it fails to find space for logs or data queues. Microsoft Structured Query Language (SQL) Server 7.0 Enterprise Edition and SQL Server 2000 Enterprise Edition jobs can be used to maintain the Tivoli Business Systems Manager logs.

- If you are installing with InstallShield, when you select the server components to install, InstallShield might return the wrong value for the available space on the machine.

If you are installing on a Windows machine, use Microsoft utilities to determine the available space on the machine. To determine the available space:

1. Double-click My Computer.
2. Right-click the icon for the drive on which you are installing the product.
3. Click Properties.

- To exit the Setup program at any time before installation is complete, click Cancel. To continue with each step of the installation, click Next.
- All Tivoli Business Systems Manager servers should be located in the same Windows domain to ensure proper communication between the servers.
- Tivoli Business Systems Manager communicates to the console using the IP address or Domain Name Server (DNS) name of the console as provided when the console starts the session. The host file for the Windows operating system in C:\winnt\system32\drivers\etc\hosts can also be used for name resolution. Tivoli Business Systems Manager does not resolve host names using Windows Internet Name Services (WINS). Appropriate measures should be taken to ensure that the Tivoli Business Systems Manager servers can communicate to the consoles using the customer selected network methodology.
- To enable communication between Tivoli Business Systems Manager servers and the console environment through a Firewall or router, see Appendix A, “Configuring Network Communications Using Firewalls,” on page 337.
- If you decide to change the logon for Tivoli Business Systems Manager services from the default value of LocalSystem to a user ID, then that user ID must have administrative rights for the Windows operating system environment.

Prerequisites

See Part 1, “Specifications and Requirements,” on page 1 and confirm that all prerequisites have been installed on all servers.

The Database Server

The steps that pertain to upgrading must be adhered to in order for successful upgrades of your existing databases.

Installation

Install the Tivoli Business Systems Manager distributed components on the Database server machine:

1. Insert the TBSM Base services CD in the database server computer.
   Double-click the BaseServices folder.
2. Double-click the Setup.exe icon.
3. From the Choose Setup Language dialog, confirm the language to use for your installation. Click OK.
4. When the System File Upgrade dialog opens, click Next.
5. From the Choose Destination Location dialog, place these files in a temporary directory. Click the Browse button to select a directory. After a preferred directory is selected or to use the default directory, click Next.
6. When the System File Upgrade is complete, click Finish. If you are prompted to restart the computer, do so now.
7. From the Choose Setup Language dialog, confirm the language to use for your installation. Click OK.
8. The Welcome to the Tivoli Business Systems Manager Setup program dialog opens. The text in this dialog is basic information about the Setup program, including how to discontinue the install. Read the information and click Next.
9. The Software License Agreement dialog opens. Read the agreement. To accept the agreement and continue the installation process, click Yes.
10. When the Choose Destination Location dialog opens, select a directory to install Tivoli Business Systems Manager and click the Browse button. The Choose Folder dialog opens. Select your directory and click OK.
    The following message is displayed if the directory path you selected does not exist:
The folder: your_destination_path does not exist. Do you want the folder to be created?

Click Yes. The selected path is displayed in the Destination Folder. When you select the preferred path or the default destination folder, click Next.

Note: To avoid the possibility of the log and working files becoming full and stopping the Windows operating environment, install the application program on a drive other than the operating system default drive of C.

11. From the Setup Type dialog, select Custom and click Next.

12. When the Select Components dialog opens, select the following components:
   - Database server
   - Distributed TEC Listener
   - NetView for OS/390 Command Processor (This is selected automatically when you select the Database server component.)

   Optionally, you can select:
   - The History server

Note: If you had previously installed components by selecting them from the Select Components dialog, do not clear them from the list.

13. Click Next.

14. The host name of the local server machine should be in the host name field. If not, type the host name and click Next.

15. Type the host name of the SQL Server machine, the SQL Administrator Username, and SQL Administrator Password. Click Next.

16. If you are migrating from Version 1.5 or 2.1 to Version 2.1.1 and want to upgrade your existing databases, select Upgrade existing databases from the Database upgrade dialog. If you are installing Tivoli Business Systems Manager for the first time or you do not want to keep your databases, select Do not upgrade databases from the Database upgrade dialog. The upgrade process can vary from four to 12 hours or more depending on the size of your database. Upgrading is the only way to keep the data in your existing databases.

   If you decide to upgrade your databases, the setup program performs a brief check of your databases to ensure it has the service from Tivoli Business Systems Manager Version 1.5, fix pack 40 or later. If the check fails, the setup program alerts you. Exit the setup program and check that you have Tivoli Business Systems Manager Version 1.5, fix pack 40 or later installed. Contact IBM Customer Support for Tivoli products if you need assistance. Do not proceed with the upgrade until you have discussed the problem with Customer Support.

17. If you selected the History Server component, the Select Program Folder dialog opens. Select Program Folder to host all application programs. (The default setting is IBM Tivoli Business Systems Manager.) Click Next.

18. From the Start Copying Files dialog, verify that your information is correct under the Current Settings grouping and click Next to begin copying the files.

Note: The setup program runs for a few minutes. If you do not have Microsoft Host Integration Server Client or Microsoft SNA Client, Version 4.0 Service Pack 2 installed, a message is displayed while the setup program is running:
Error: SNA Client is not installed. Some services might not be configured correctly

Ignore this error message for this distributed component installation. Click OK to close the window and continue the installation.

19. When the Setup Complete dialog opens, if you are prompted to restart, select No. Click Finish.
   If the Setup Complete dialog does not prompt you to restart, click Finish.

   Note: If you accidentally restart your computer, you must stop any Tivoli Business Systems Manager services that are running.

**Verification**

After installing the database server, the following services should be on your computer:

- Tivoli BSM Agent Listener
- Tivoli BSM Database Validator
- Tivoli BSM Event Enablement
- Tivoli BSM Propagation Agent Dispatcher
- Tivoli BSM Staged Event Loader
- Tivoli BSM Task Server
- Tivoli BSM TSD Event Handler

Verify that these services are on your computer.

Windows NT: From the Start menu, click Settings --> Control Panel --> Services.


**Configuration**

1. The following comments have been added to the Detachdatabases.sql script for URL host names that have been customized and set to host names other than the websvr_host name that is specified in Attachdatabases.sql script.

   Note: If you did not customize the URL host names in the MenuItem table, do not follow this step.

   If you have customized URL host names, modify the following lines to map the customized host name to an internal host name.

   - Update the USER_DEFINED_HOSTNAMEX to the customized host name that are used in the control_id parameter of the Object Menu Item table. Leave the second column INTERNAL_NAME unchanged
   - There is no need to map the websvr_host name that is specified in the Attachdatabases.sql script.
   - The URL host name is updated from the USER_DEFINED_HOSTNAMEEs to INTERNAL_NAMEEs when the database is detached.
   - The URL host name is updated from INTERNAL_NAMEEs to USER_DEFINED_HOSTNAMEes when the database is attached.

   INSERT INTO #mappingURLHost (definedHost, pseudoHost VALUES
   ('USER_DEFINED_HOSTNAME1', 'INTERNAL_NAME1')
   INSERT INTO #mappingURLHost (definedHost, pseudoHost VALUES
Save the `DetachDatabases.sql` script, but do not run it at this time.

2. Edit the `AttachDatabases.sql` script in the `install_directory\sql\` directory and make the following changes as necessary.

- **SQL Server 7.0 users:** If you used `D:\MSSQL7\` as your installation directory for Microsoft SQL Server 7.0 Enterprise Edition (see step 8 on page 339), no changes are necessary. If you did not use `D:\MSSQL7\`, you must modify the script to point to the appropriate drive where the database server is installed.

- **SQL Server 2000 users:** If you used `D:\MSSQL\` as your installation directory for Microsoft SQL Server 7.0 Enterprise Edition (See step 10 on page 345), no changes are necessary. If you did not use `D:\MSSQL\`, you must modify the script to point to the appropriate drive where the database server is installed.

- Enter the host name of the database machine (Replace `XXXX` in the SQL code).

  **Note:** There are three instances of `XXXX`. Only replace the first instance of `XXXX`. Do not change the others.

- Enter the host name of the propagation machine (Replace `YYYY` in the SQL code. `YYYY` only occurs once in the script).

- Enter the host name of the Web server machine (Replace `ZZZZ` in the SQL code. `ZZZZ` only occurs once in the script).

Save the `AttachDatabases.sql` script.

3. If you upgraded your existing databases, you are finished with this installation and do not perform the remaining steps. Restart your computer.

4. Launch SQL Server Service Manager and stop the SQL Server Agent and the MSDTC Server service (Microsoft SQL Server 7.0 Enterprise Edition).

5. Ensure that the MSSQL7 or MSSQL2000 server service is started.

6. Use the Microsoft SQL Server 7.0 or Microsoft SQL Server 2000 Query Analyzer and apply the `DetachDatabases.sql` script in the `install_directory\sql\` directory to your database server.

  **Note:** If the `DetachDatabases.sql` script encounters an error, stop and restart the MSSQL7 or MSSQL2000 server service and run the `DetachDatabases.sql` script again.

7. Expand the database devices from the TBSM Base Services CD (DBDevices\DBDevices_V2.1.1.exe) to the `D:\MSSQL\Data\` or `D:\MSSQL\Data\subdirectory`. (These are database devices, not backup devices and they can be attached to the server without having to create database devices, create databases, and perform database restores.)

You can extract the files by changing to the target directory and running the following executable files:

- **Microsoft SQL Server 7.0 Enterprise Edition:**
  
  Extract files from:
  
  `CD-ROM_PATH:\DBDevices\DBDevices_V2.1.1.exe` to `D:\MSSQL\DATA\`

- **Microsoft SQL Server 2000 Enterprise Edition:**
  
  Extract files from:
  
  `CD-ROM_PATH:\DBDevices\DBDevices_V2.1.1.exe` to `D:\MSSQL\DATA\`

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8. Use the Query Analyzer and apply
   \textit{install\_directory}\sql\AttachDatabases.sql script to the database server.
9. Restart the computer.

\textbf{Configuring the Reporting System}

To install the history and reporting system for your distributed installation, you
must configure it to point to the appropriate database servers. Refer to section
“The History Server” on page 49 and the accompanying sections for details.

\section*{The Console Server}

\textbf{Installation}

To install the console server:
1. Insert the \textit{TBSM Base Services CD} in the console server computer. Double-click
   the \textit{BaseServices} folder.
2. Double-click the \textit{Setup.exe} icon.
3. From the \textit{Choose Setup Language} dialog, confirm the language to use for your
   installation. Click \textbf{OK}.
4. When the System File Upgrade dialog opens, read the text and click \textbf{Next}.
5. From the Choose Destination Location dialog, place these files in a temporary
directory. Click the \textit{Browse} button to select a directory. After a preferred
directory is selected or to use the default directory, click \textbf{Next}.
6. When the System File Upgrade is complete, click \textbf{Finish}. If you are prompted
to restart the computer, do so now.
7. From the Choose Setup Language dialog, confirm the language to use for your
   installation. Click \textbf{OK}.
8. The Welcome to the Tivoli Business Systems Manager Setup program dialog
   opens. The text in this dialog is basic information about the Setup program,
   including how to discontinue the installation. Read the information and click
   \textbf{Next}.
9. The Software License Agreement dialog opens. Read the agreement. To accept
   the agreement and continue the installation process, click \textbf{Yes}.
10. When the Choose Destination Location dialog opens, select a directory to
    install Tivoli Business Systems Manager and click the \textit{Browse} button. The
    Choose Folder dialog opens. Select your directory and click \textbf{OK}.
    The following message is displayed if the directory path you selected does not
    exist:
    \texttt{The folder: your\_destination\_path does not exist. Do you want the}
    \texttt{folder to be created?}
    Click \textbf{Yes}. The selected path is displayed in the \textit{Destination Folder}. When you
    select the preferred path or the default destination folder, click \textbf{Next}.

\textbf{Note}: To avoid the possibility of the log and working files becoming full and
stopping the Windows operating environment, install the application
program on a drive other than the operating system default drive of C.
11. From the Setup Type dialog, select \textbf{Custom} and click \textbf{Next}.
12. From the Select Components dialog, select the following components:
    \begin{itemize}
    \item Console Server
    \item Propagation Server
    \item Common Listener Server (only if needed)
    \end{itemize}
Note: If you have previously installed components by selecting them from the Select Components dialog, do not clear them from the list.

13. Click Next.

14. The host name should be in the Hostname field. If not, type the host name of the local server and click Next.

15. Type the host name of the SQL Server machine, the SQL Administrator sa Username, and SQL Administrator sa Password. Click Next.

Note: This information is stored in the Servers.properties file on the console server machine, so that it can access the databases. You should ensure this file is a protected file using Windows operating system file file security, if necessary.

16. From the Choose JDBC Driver dialog, select the driver you want to use to connect the console server and common listener to the SQL database. The selection, Microsoft SQL Server 2000 Driver for JDBC, can only be used if you are using Microsoft SQL Server 2000 Enterprise Edition. Click Next.

17. Confirm the Web alias that is used by the console server. You can use TBSM. Click Next.

18. From the Create local groups? dialog, choose whether or not the setup program creates local Windows user groups for use by the Console server. If you have the setup program create local groups and you already have local groups, your existing local groups are not changed. If you do not have the setup program create local groups, you must either create the local groups yourself or you must create global groups on your domain controller. See the section on security in the IBM Tivoli Business Systems Manager: Administrator’s Guide for more information.

Make your decision and click Next.

19. If you instructed the setup program to create local groups, bypass this step and proceed to the following step. If you instructed the setup program to not create local groups, the Delete local groups? dialog is displayed and you can choose whether or not the setup program deletes local Windows user groups for use by the console server. If you are using global groups, have the setup program delete local groups. Make your decision and click Next.

20. From the Start Copying Files dialog, verify that your information is correct under the Current Settings grouping and click Next to begin copying the files.

21. From the Setup Complete dialog, when asked if you want to restart the computer, select No and click Finish.

If the Setup Complete dialog does not prompt you to restart, click Finish.

22. Review the installation_directory\ConsoleServer\Servers.properties file for any additional required changes.

Review the installation_directory\CommonListener\ASI CommonListener.Properties file for any additional required changes.

If you installed the JDBC driver in a directory other than the default location, you must do the following: a.

Update the classpath property in the installation_directory\ConsoleServer\Servers.properties file. For example, if you installed Microsoft SQL Server 2000 Driver for JDBC on your 0 drive, your classpath should change from:

com.tivoli.tbsm.server.DMManager.Driver.classpath=c:\\Program Files\\Microsoft SQL Server 2000 Driver for JDBC\\lib\\msbase.jar; c:\\Program
Files\Microsoft SQL Server 2000 Driver for JDBC\lib\msutil.jar;
c:\\Program
Files\Microsoft SQL Server 2000 Driver for JDBC\lib\mssqlserver.jar;

to:

com.tivoli.tbsm.server.DBManager.Driver.classpath=d:\\Program
Files\Microsoft SQL Server 2000 Driver for JDBC\lib \msbase.jar;
d:\\Program
Files \Microsoft SQL Server 2000 Driver for JDBC\lib \msutil.jar;
d:\\Program
Files \Microsoft SQL Server 2000 Driver for JDBC\lib \mssqlserver.jar;

b. Update the classpath property in installation_directory\CommonListener\ASI CommonListener\Properties file. For example, if you installed Microsoft SQL Server 2000 Driver for JDBC on your D drive, your classpath should change from:

com.tivoli.tbsm.commonlistener.DBManager.Driver.classpath=c:\\Program
Files\Microsoft SQL Server 2000 Driver for JDBC\lib\msbase.jar;
c:\\Program
Files\Microsoft SQL Server 2000 Driver for JDBC\lib\msutil.jar;
c:\\Program
Files\Microsoft SQL Server 2000 Driver for JDBC\lib\mssqlserver.jar;

to:

com.tivoli.tbsm.commonlistener.DBManager.Driver.classpath=d:\\Program
Files\Microsoft SQL Server 2000 Driver for JDBC\lib\msbase.jar;
d:\\Program
Files\Microsoft SQL Server 2000 Driver for JDBC\lib\msutil.jar;
d:\\Program
Files\Microsoft SQL Server 2000 Driver for JDBC\lib\mssqlserver.jar;

Validation

After installing the console server, the following services should be on your computer.

- Tivoli BSM Console Server V2
- Tivoli BSM Database Validator
- Tivoli BSM Enqueue Proxy Server
- Tivoli BSM Common Listener (only if installed)
- Tivoli BSM Remote Execution Server

Verify if the following services are on your computer.

Windows NT: From the Start menu, click Settings --> Control Panel --> Services.


Restart the database server. After the database server is up and running, restart the remaining servers in any order.

Configuring the Console Server

For configuration details, see “Configuration” on page 59 of the OS/390 components section in addition to the following information.

Configuring the Common Listener Service

The Common Listener service provides a scalable infrastructure for the integration of product instrumentation into Tivoli Business Systems Manager. The Common Listener service is used by the Intelligent Monitoring products, Tivoli NetView, and
Tivoli Monitoring to send resource discovery and event information to Tivoli Business Systems Manager. Configuration of the Common Listener service is controlled by the TivoliManager/Commonlistener/ASICommonlistener.properties file. The InstallShield process will fill in the required values during installation.

Notes:
1. The InstallShield process prompts you for the required settings and automatically fills in the ASICommonListener:properties file with the proper data. If you have Version 1.5 installed and you changed any of the ASICommonListener properties other than the required ones, then your configuration is lost when you install Version 2.1.1.
2. If you migrated from the Version 1.5 system, the current ASICommonlistener.properties file is not modified. Some settings have been added to this file for Version 2.1. Review the Version 2.1 of this file and copy the new properties. The Version 2.1 ASICommonlistener:properties file is located in the installation_directory\Commonlistener\installed directory. The new properties are flagged with the symbol, V210.
3. The InstallShield process will fill in the default location of the JDBC drivers. This value should be reviewed and changed for your installation. The property com.tivoli.tbsm.commonlistener.DBManager.Driver.classpath specifies the location of the JDBC libraries.

CommonListenerProperties Files:

commonlistener.trace.level
Controls the level of trace records written to the common listener log. The value of low should be specified for normal use. At this level, only errors and warnings are written to the log. A value of medium will write copies of all records received by the common listener to the log. A value of high, in addition to what is written by medium, will also write entry and exit trace records.

commonlistener.trace.max.file.dim
Controls the size of the common listener log.

commonlistener.trace.max.files.number
Controls the number of files by the common listener log. If the size is specified as 1Mb and the number is specified as two, then each file will be 500Kb in size.

transport.local.ip.address
The host name or address of the server. The InstallShield process will fill this in. Ensure that it is fully qualified. If there are problems with connections, try using the TCP/IP address. This must match the server host name specified in the configuration files of the adapter, which is the IM, Tivoli NetView, or Tivoli Monitoring configuration.

transport.request.port
The port number used to receive connections. The default value is 8082. This must match the server port specified in the configuration files of the adapter, which is the IM, Tivoli NetView, or Tivoli Monitoring configuration.

transport.response.port
Port number used to send responses. The default value is 8082. This must match the server port specified in the configuration files of the adapter, which is the IM, Tivoli NetView, or Tivoli Monitoring configuration.
**transport.mqe.local.queue.store**
Controls how MQe stores incoming data. File specifies that the data is written to disk until received by the common listener. This ensures that data will not be lost, but incurs additional I/O overhead. Memory specifies that the data is kept in memory. This is quicker because there is less I/O, but if the process were to end abruptly, the data would be lost. Reduced is a middle ground, some data is kept in memory, but above a certain level the data is written to disk.

**com.tivoli.tbsm.commonlistener.CL.transactionTimeOut**
Specifies the number of seconds that a transaction will remain active with receiving records. Some Common Listener flows consist of multiple MQe messages. If a transaction is started and then records stop coming in for that transaction, this value specifies the number of seconds that will pass without receiving any records for that transaction before the Common Listener will declare the transaction dead and cancel the transaction. The data for that transaction is discarded. The default value is 240 seconds.

**com.tivoli.tbsm.commonlistener.CL.sqlserverWait**
If the Common Listener is started before the SQL Server has started, this property specifies the number of minutes that the Common Listener will wait for the SQL Server. If this time limit expires, then the Common Listener process will shut down. The default value is 60 minutes.

**com.tivoli.tbsm.commonlistener.CL.batchWait**
As records are received and processed, they are batched together and written to the database. This property controls how long records are batched before they are written to the database. The default value is 1 500 milliseconds.

**com.tivoli.tbsm.commonlistener.CL.maxTransactionThreads**
Specifies the number of threads that are simultaneously receiving data from MQe and writing it to the database. The default value is 5 threads. A very large number of threads can result in a decrease in performance. The optimal number will vary depending on the system, but you should not increase this number to a large value.

**com.tivoli.tbsm.commonlistener.CL.stage.trid**
Records received from MQe are identified by a transaction identifier. Identifiers are retrieved from a pool of identifiers, rather than retrieving the identifiers from the database one at a time. The less it has to go to the database, the better the performance. The default pool size is 200 identifiers.

**com.tivoli.tbsm.commonlistener.CL.maxEventNumber**
The Common Listener puts data into a group of staging tables, the data is taken from the staging tables by a stored procedure which creates the required resources in the database. By default, this stored procedure will process everything available in the staging tables. For efficiency we want the stored procedure to process as large a batch as possible, but at times processing everything can be too large of a batch. This property restricts the size of the batch. The default size is 2 000.

**com.tivoli.tbsm.commonlistener.CL.sleepBetweenProcessNextTrans**
Specifies how often the stored procedures remove data from the staging table. The default value is every five seconds.

**com.tivoli.tbsm.commonlistener.CL.alwaysRunCLProccessNextTransactionJob**
Alternately, events from the Tivoli Enterprise Console program can be put
into the Common Listener staging tables. If this alternate path is being used, then this property should be set to true. The default value is false.

**com.tivoli.tbsm.commonlistener.CL.sql.server.bcp.file**

Bulk discovery flows can be very large, hundreds of thousands, if not millions of records. Processing these records one at a time can be very slow. This property enables using BCP (bulk copy) to process bulk discovery flows. This should always be configured, unless your network contains only a small number of resources. BCP uses a file, this property provides the directory into which to write this file. This is a directory on the SQL server.

**com.tivoli.tbsm.commonlistener.CL.bcp.file**

If the Common Listener is running on a server other than the SQL Server, then the directory or logical drive may be different than on the SQL Server. If they are the same, then this property is not needed, if they are different then this property needs to be defined.

The Common Listener log file is written in the TivoliManager/logs directory. It is named CLyyyyymmddhhmm.num.log, where yyyy is the year, mm is the month, dd is the day, hh is the hour, and mm is the minute or minutes that the Common Listener service was started. The num is a number that varies, depending on the commonlistener.trace.max.files.number property.

### Installing and Configuring Components on Tivoli Enterprise Console

See “Installing and Configuring Components on Tivoli Enterprise Console” on page 198 for information on how to install and configure Tivoli Enterprise Console components.
Chapter 14. Optional Components

Automated Business System Views

The automated business system function automatically creates views by monitoring for resources that satisfy a stated criteria. The method of dragging and creating Business System views from a physical hierarchy is still supported, but the automated business systems engine allows faster implementation of business systems without use of the console. After configuring the automated business system engine, Tivoli Business Systems Manager continues to monitor for new resources that satisfy your stated criteria. These qualified new resources are automatically added to the view.

If you want to use this function, you must configure the automated business system views by following the instructions in "Automated Business System Views" on page 179. Also, refer to the IBM Tivoli Business Systems Manager: Administrator's Guide for more information about implementation and use of the automated business systems configuration.

Problem Management/Automatic Ticketing and Change Management

If you want Tivoli Business Systems Manager to interface with your Problem/Change Management application programs, you must configure the program user exits, using the instructions in this section, to develop your own customized program interface.

You can use your customized program user exits for the following functions:

- Problem Management
- Change Management
- Automatic Ticketing for Problem Management

See "Problem Management and Automatic Ticketing and Change Management" on page 180 for instructions on how to configure the program user exits.

The Web Console Server

If you want to provide a Web interface to your Tivoli Business Systems Manager business views, you must install the Web console server. See "The Web Console Server" on page 181 for instructions.

The Health Monitor

If you would like to use the Tivoli Business Systems Manager Health Monitor to monitor the state of the application, see "The Health Monitor" on page 185 for instructions.

National Language Support

English is the default language for Tivoli Business Systems Manager. If you want Tivoli Business Systems Manager to display a language other than English, you need to follow the instructions in Chapter 11, "National Language Support,” on page 225.
Failover

The failover process provides a backup process for Windows operating system servers and facilitates true 24x7 operations. The administrator uses this process to switch services from the primary set of Windows operating system servers to a secondary set of servers. This is especially useful in server hardware failure, database failure, or other operational reasons such as a scheduled outage on the primary server.

If you plan to use Failover, see Chapter 12, “The Failover Process,” on page 239.

Tivoli Enterprise Console

Tivoli Enterprise Console is required if you are managing non z/OS resources through the Tivoli Enterprise Console. See “Installing and Configuring Components on Tivoli Enterprise Console” on page 198 for information on how to install and configure Tivoli Enterprise Console components.

Distributed Data Sources

Tivoli Business Systems Manager integrates with the following distributed data source products:

- Tivoli Distributed Monitoring (Classic) and IBM Tivoli Monitoring
- Tivoli Manager For products
- IBM Tivoli Monitoring For Applications - mySAP.com
- IBM Tivoli Monitoring For Applications - Siebel
- IBM Tivoli Monitoring For Business Integration - WebSphere MQ
- IBM Tivoli Monitoring For Business Integration - WebSphere MQI
- IBM Tivoli Monitoring For Databases - Oracle
- IBM Tivoli Monitoring For Databases - DB2
- IBM Tivoli Monitoring For Databases - Informix
- IBM Tivoli Monitoring For Infrastructure - Apache
- IBM Tivoli Monitoring For Infrastructure - WebSphere Application Server
- IBM Tivoli Monitoring For Infrastructure - iPlanet
- IBM Tivoli Monitoring For Infrastructure - IIS
- IBM Tivoli Monitoring For Messaging and Collaboration - Domino
- Intelligent Monitor for Tivoli NetView
- Intelligent Monitoring for Unicenter TNG
- Intelligent Monitoring for NetIQ AppManager
- Intelligent Monitoring for BMC PATROL

Any products that do not have planning, installing or configuring instructions in the following sections, refer to the relevant documentation shipped with the specific module that you want to integrate.

Planning for Your Installation of Tivoli Distributed Monitoring (Classic Edition) and IBM Tivoli Monitoring

Use this section to plan for your installation of Tivoli Distributed Monitoring (Classic Edition) and IBM Tivoli Monitoring.
This data source and other detailed descriptions of Tivoli Distributed Monitoring (Classic Edition) and IBM Tivoli Monitoring are described in the following Tivoli Monitoring publications:


**Configuring Distributed Monitoring (Classic Edition)**

Run the `ihsttec.sh` script to receive events from Tivoli Distributed Monitoring (Classic Edition) into Tivoli Business Systems Manager. See “Updating Tivoli Enterprise Console Rules and Event Classes” on page 208. The `ihsttec.sh` script prompts you for the Tivoli Distributed Monitoring profiles to enable events associated with these profiles to be sent to Tivoli Business Systems Manager.

The Tivoli Enterprise Console rules that are generated by the `ihsttec.sh` script start the `ihstztec` command. The `ihstztec` command recognizes the slots architected by Tivoli Distributed Monitoring (Classic Edition) and routes the data to Tivoli Business Systems Manager.

**Note:** In order to implement IBM Tivoli For products, follow the above instructions.

**Configuring IBM Tivoli Monitoring**

There are two methods to receive events from IBM Tivoli Monitoring into IBM Tivoli Business Systems Manager. They are:

- Tivoli Enterprise Console
- Common Listener

If you want to send IBM Tivoli Monitoring events to Tivoli Enterprise Console and then have them routed to Tivoli Business Systems Manager, refer to the *IBM Tivoli Business Systems Manager: User’s Guide*, which provides the configuration steps necessary to route IBM Tivoli Monitoring events to Tivoli Enterprise Console. To get the Tivoli Monitoring events from Tivoli Enterprise Console to Tivoli Business Systems Manager requires you to write Tivoli Enterprise Console rules that use either the generic API, `ihstttec` or the DM API, `ihstztec`. Refer to the *IBM Tivoli Business Systems Manager: Command Reference* for more details about the `ihstttec` command.

Events that are generated by IBM Tivoli Monitoring are architected differently than events for Tivoli Distributed Monitoring (Classic Edition). The IBM Tivoli Monitoring events can be mapped to Tivoli Distributed Monitoring (Classic Edition) architecture and processed by the `ihstztec` command.

Further updates on this method can be found in the *IBM Tivoli Business Systems Manager: Administrator’s Guide*.

### Table 87. Slot mapping for Distributed Monitoring (Classic Edition) and IBM Tivoli Monitoring

<table>
<thead>
<tr>
<th>Slot</th>
<th>DM (Classic Edition)</th>
<th>IBM Tivoli Monitoring</th>
</tr>
</thead>
<tbody>
<tr>
<td>Source</td>
<td>SENTRY</td>
<td>TMNT</td>
</tr>
<tr>
<td>sub_source</td>
<td>&lt;Profile Name&gt;</td>
<td>Ihstztec copies Profilename to sub_source and strips off the trailing “#region_name”</td>
</tr>
</tbody>
</table>
Table 87. Slot mapping for Distributed Monitoring (Classic Edition) and IBM Tivoli Monitoring (continued)

<table>
<thead>
<tr>
<th>Slot</th>
<th>DM (Classic Edition)</th>
<th>IBM Tivoli Monitoring</th>
</tr>
</thead>
<tbody>
<tr>
<td>Profilename</td>
<td>this slot does not exist in Classic Edition</td>
<td>&lt;Profile Name Plus TMR&gt; Contains the IBM Tivoli Monitoring profile name, then a number sign (#), and then the region name.</td>
</tr>
<tr>
<td>Origin</td>
<td>&lt;ip_address&gt;</td>
<td>&lt;ip_address&gt;</td>
</tr>
<tr>
<td>sub_origin</td>
<td>&lt;hostname&gt;</td>
<td>Ihstztec sets this to the Hostname slot to be more consistent with DM Classic events.</td>
</tr>
<tr>
<td>Msg</td>
<td>&lt;message&gt;</td>
<td>&lt;message&gt;</td>
</tr>
<tr>
<td>Hostname</td>
<td>&lt;hostname&gt;</td>
<td>&lt;hostname&gt;</td>
</tr>
<tr>
<td>adapter_host</td>
<td>&lt;hostname of adapter&gt;</td>
<td>&lt;hostname of adapter&gt;</td>
</tr>
<tr>
<td>Modulename</td>
<td>this slot does not exist in Classic Edition</td>
<td>&lt;resource model name&gt;</td>
</tr>
<tr>
<td>Severity</td>
<td>&lt;severity&gt;</td>
<td>&lt;severity&gt;</td>
</tr>
<tr>
<td>Probe</td>
<td>&lt;short monitored source name&gt;</td>
<td>this slot does not exist in IBM Tivoli Monitoring</td>
</tr>
<tr>
<td>probe_arg</td>
<td>&lt;arg list for monitored source&gt;</td>
<td>uses the event_key slot</td>
</tr>
<tr>
<td>event_key</td>
<td>this slot does not exist in Classic Edition</td>
<td>&lt;list of key information&gt;</td>
</tr>
<tr>
<td>Monitor</td>
<td>&lt;monitored source name&gt;</td>
<td>Ihstztec concatenates the TEC event class with @ and the IBM Tivoli Monitoring resource model name</td>
</tr>
<tr>
<td>Value</td>
<td>&lt;raw value returned by monitored source&gt;</td>
<td>IBM Tivoli Monitoring events do not have the equivalent of a Value slot, but do have a shorter $msg slot that contains what was in the Value slot of a DM classic event. The ihstztec command copies the $msg slot to the Value slot unless there is a Messages slot. Also, attributes that are unique to an object are appended to the Value slot.</td>
</tr>
</tbody>
</table>

Although the Common Listener does not require any specific configuration steps for IBM Tivoli Monitoring on IBM Tivoli Business Systems Manager, you must configure and run the Common Listener service, itself. See the TivoliManager\Commonlistener\ASICOMmonlistener.properties file for configuration options. Configure the Common Listener during the installation of the base product. For IBM Tivoli Monitoring integration, refer to the IBM Tivoli Business Systems Manager: User’s Guide, which provides the installation and configuration instructions for the Common Listener adapter on the Tivoli Distributed Monitoring gateway. The IBM Tivoli Monitoring PACS do not support the Common Listener method.

IBM Monitoring For Products

The IBM Monitoring For products provide an interface to Tivoli Business Systems Manager through generic objects. See the appropriate IBM Tivoli Monitoring For documentation for more information.
Intelligent Monitor for Tivoli NetView

The Intelligent Monitor for Tivoli NetView integration with Tivoli Business Systems Manager provides the capability of the following:

- Populating the Tivoli Business Systems Manager database with IP topology data and maintaining it dynamically. This component consists of the Tivoli Business Systems Manager Intelligent Monitor for Tivoli NetView and is an add-on for IBM Tivoli NetView Version 7.1.
- Launching Tivoli NetView functionality from the Tivoli Business Systems Manager Console in context. This component enables the Tivoli Business Systems Manager Console to launch the Tivoli NetView Web console in context with the node selected.

Prerequisites

The following are required:

- The Tivoli Business Systems Manager Version 1.5 Fix Pack 40 or higher or Tivoli Business Systems Manager Version 2.1. Please check with customer support for the latest version.
- Tivoli NetView Version 7.1 or above for Windows NT, Windows 2000, AIX, or Solaris.

Intelligent Monitor Installation

The following installation instructions are for the AIX, Solaris, and Windows platforms.

Tivoli NetView for AIX and Solaris:

1. The following installation kits are available:
   - IMfNetView-aix4-r1.tar for AIX
   - IMfNetView-solaris2.tar for Solaris
2. These installation kits consist of the following files:
   - IMfNetView.tar
   - Install.ksh
3. Stop the Tivoli NetView program and all daemons.
4. Install the Intelligent Monitor for Tivoli NetView by entering the following from a command prompt:
   ```
   ./Install.ksh
   ```
   In the case of an upgrade installation, any configuration files that have been modified will be preserved with a suffix of _old attached to the filename. Original files can also be found in the /usr/OV/newconfig/tbsm directory. Compare the old and new files before using your new version.

Tivoli NetView for Windows:

1. The installation kit consists of the following file:
   ```
   IMfNetView-win.zip
   ```
   Unzip this file in a temporary directory.
2. Stop the Tivoli NetView program and all daemons.
3. Run Setup.exe from the temporary directory.
Adapter Configuration

This section applies to all platforms:

   a. Replace the term localhost in the following lines with the local IP host name:

   ```
   transport.local.ip.address = localhost
   transport.request.address = localhost.BASETTEST.QM+BASETTEST.Q
   transport.response.address = localhost.BASETTEST.QM+BASETTEST.Q
   ```

   For example, for an IP host name of myhost.com, modify the lines as follows:

   ```
   transport.local.ip.address = myhost.com
   transport.request.address = myhost.com.BASETTEST.QM+BASETTEST.Q
   transport.response.address = myhost.com.BASETTEST.QM+BASETTEST.Q
   ```

   b. Replace the term localhost in the following line with the IP host name of the Tivoli Business Systems Manager machine with the Common Listener installed:

   ```
   transport.server.ip.address = localhost
   ```

2. Edit the /usr/OV/conf/nvid.conf file.

   This file contains information about the Tivoli NetView site. This information will enable multiple Tivoli NetView sites to contribute data to a central Tivoli Business Systems Manager database.

   **NVID**
   
   This site identifier is reserved for future use by the Tivoli NetView program. It can be used as a label for the network management site. This identifier is limited to 15 characters and cannot contain spaces.

   **NetworkID**
   
   This site identifier is appended to all instIDs of the Tivoli Business Systems Manager objects to uniquely identify objects from each site. Typically it is shorter than NVID and is intended to be used by cooperating applications communicating with Tivoli Business Systems Manager. This identifier is limited to the alphanumeric characters A - Z, a - z, and 0 - 9 and cannot contain spaces.

   **PrimaryURL**
   
   This is the IP host name and port for the Web server on this node, for example, myhost.com:8080. This is used when launching the Tivoli NetView Web console from the Tivoli Business Systems Manager console.

   **SecondaryURL**
   
   This is an optional backup NetView machine that shares the same nvid.conf file.

   The nvid.conf file should be identical on both the primary and secondary Tivoli NetView server machines if you have both.

3. Edit the /usr/OV/conf/topxbsmagent.properties file to affect the behavior of the bsmadapter. The property `listenerlog=true` will cause an Extensible Markup Language (XML) dump into the `/usr/OV/log/BaseClientLogging.log` file, instead of passing it to the remote Tivoli Business Systems Manager machine. The most common operation is `false`, which will cause data to pass to the Common Listener.
4. Edit the /usr/OV/conf/topxtrapgate.conf file. Comment out any events you do not want the adapter to send to Tivoli Business Systems Manager.

**Note:** It is not possible to add new events; you can only remove existing events.

**Console Launch Configuration**

**Installation on Tivoli Business Systems Manager:**
1. On the Tivoli Business Systems Manager database server on NT, locate the following files in the tivolimanager subdirectory. This will place the following files under that directory:
   - bin\nvlaunchconfig.sh
   - sql\netviewlaun upg
   - sql\LookupNetviewURLs.sql
   - sql\_LookupNetviewURLs.sql
2. Edit the file nvlaunchconfig.sh and replace the XXXXXs with the Tivoli Business Systems Manager database server name and SQL Server user name and password.
3. Locate the stored procedure and menu items and install them by running the ApplyUpgrade script:
   - cd \tivolimanager\sql
   - sh /ApplyUpgrade netviewlaunch.upg

**Installation of the Tivoli NetView Web Console:** Install the Tivoli NetView Web console according to the Tivoli NetView installation instructions.

Special instructions for the AIX platform are as follows:
1. Use the nvwc_aix_jre_1.3.tar file to install the Tivoli NetView Web console. This includes the Java Runtime Environment (JRE). This file is found on the Tivoli NetView server in the /usr/0/V/www/wwwroot/download/nvwc_aix_jre_1.3.tar directory.
2. Create the environment variable **NVWC_HOME** to define the directory in which you installed the Tivoli NetView Web console. Under this directory will be the bin and lib directories.
3. Ensure the **NVWC_HOME** environment variable is always defined by placing it in the .profile file or other such file.
4. Edit the file $NVWC_HOME/bin/nvlaunch.sh to set the path for the Java 1.3 runtime file. Locate the line NVWC=$(dirname $0)/... and add the following line below it:
   ```
   export PATH=$NVWC/jre/bin:$PATH
   ```

**Launch Fix Pack for Version 7.1:** This is a mandatory fix pack for the NetView Web console running with the Tivoli Business Systems Manager console. It consists of the file launch.jar which can be used on both AIX and Windows platforms. It should be placed in the following:

For the Windows platform:
```
%NVWC_HOME%\lib\launch.jar
```

For the AIX platform:
```
$NVWC_HOME/lib/launch.jar
```
**Post-Installation Checklist:** Check that these components are running:

- The tbsmadapter daemon
- The netviewd daemon, or the GUI on the Tivoli NetView server, and the network has been discovered
- The tbsmtopo and tbsmtrap processes on the Tivoli NetView server (started automatically with the GUI or the netviewd daemon)
- The Common Listener service on the Tivoli Business Systems Manager server

Perform a bulk upload as described in the *IBM Tivoli Business Systems Manager: User’s Guide*. Then check the following:

1. The Tivoli NetView IP data has been uploaded to Tivoli Business Systems Manager:
   a. Ensure the Tivoli Business Systems Manager server, including the Tivoli Business Systems Manager Common Listener service, is running.
   b. Ensure the Tivoli NetView program is running and the network is discovered.
   c. Ensure the Tivoli Business Systems Manager Intelligent Monitor for Tivoli NetView is installed and running on the Tivoli NetView server.
   d. Run the Upload function.

2. The Tivoli Business Systems Manager console can view the IP data:
   a. Ensure that the Tivoli Business Systems Manager console is running and can view the IP data.
   b. Start the Tivoli Business Systems Manager console again after you finish setting up the launch menu items below.

3. The Tivoli NetView Web console:
   a. Ensure the Web console accounts have been configured on the Tivoli NetView server with users, roles and passwords.
   b. Ensure the Tivoli NetView Web console can connect to the Tivoli NetView server using one of these accounts.

**Starting the Intelligent Monitor for Tivoli NetView**

Follow these below steps to start the adapter:

1. Start the Tivoli NetView GUI. The adapter consists of the following programs:
   - The tbsmadapter daemon, which is one of the daemons started with the `ovstart` command.
   - The `ovw` registered application `tbsmtopo`.
   - The `ovw` registered application `tbsmtrap`.

2. Start an upload of all the Tivoli NetView resources to Tivoli Business Systems Manager.
   a. From the Tivoli NetView menu, click **Tools**
   b. Click **TBSM Adapter Manager: Bulk Upload**

Events generated by Tivoli NetView that are configured in the `topxtrapgate.conf` file will automatically be sent to Tivoli Business Systems Manager through the common listener service.

**Note:** You can filter out specific trap identifiers in this file, but you cannot add new trap identifiers.
Planning for your Installation of Intelligent Monitoring for NetIQ AppManager, Unicenter TNG, and BMC PATROL

The setting of the system environment variable PATH is related to the Java Runtime Environment (JRE). When you install JRE, the \jre\bin path is set, but if it was copied to your computer, the path was not set. Set the path manually with \jre\bin and also \jre\bin\classic, because those are necessary for the running of the Intelligent Monitoring process.

You need to install Microsoft VCRedist.exe on every machine to use Intelligent Monitoring for NetIQ AppManager, Unicenter TNG, and BMC PATROL. See http://support.microsoft.com/default.aspx?scid=KB;EN-US;Q259403 for more information.

When installing Intelligent Monitoring on Windows operating system environments in Traditional Chinese, some characters can be displayed as damaged. See “Traditional Chinese Bold and Italic Font Display Problems when Installing Intelligent Monitoring” on page 236.

NetIQ AppManager

Installing Intelligent Monitoring for NetIQ AppManager: Use this section to install Intelligent Monitoring for NetIQ AppManager on your system.

Install Intelligent Monitoring on each console that you want to monitor and that runs NetIQ AppManager.

Before you install Intelligent Monitoring, ensure that you have satisfied the software and hardware requirements.

To install Intelligent Monitoring for NetIQ AppManager:

1. Insert the Tivoli Business Systems Manager Distributed CD and double-click the Intelligent Monitoring directory.
2. Double-click Intelligent_Monitoring_for_AppManager.
3. Double-click win32.
4. Double click the setup.exe icon.
5. From the Select language for Install Procedure dialog, select a language for use with the installation. Click OK.
6. The Welcome dialog opens. Read the information and click Next.
7. From the Choose Destination Location dialog, click the Browse button to select a directory (or use the default directory). After you have selected a directory click Next.
8. The Communications Settings dialog opens.

Enter the following information:

Local Port The workstation port number used by Intelligent Monitoring to communicate with the Common Listener.

Server Address The IP address of the server where the Common Listener is installed.

Server Port A port of the server where the Common Listener is installed.
This must be the same port that the Common Listener uses to receive data from Intelligent Monitoring.

Click Next.

9. The Installation Summary dialog opens. Your selected installation path is displayed. If this location is correct, click Next.
11. You must restart your computer if required.

Uninstalling Intelligent Monitoring for NetIQ AppManager: To uninstall Intelligent Monitoring for NetIQ AppManager:
2. Click Add/Remove Programs. The Add/Remove Programs window opens.
3. From the Currently Installed Programs, select TBSM 2.1 Intelligent Monitoring for AppManager. Click the Change/Remove button.
4. From the Select language for Install Procedure dialog, select a language. The Uninstalling Welcome dialog opens. Click OK.
5. The Uninstalling Summary dialog opens. Click Next.
6. The Uninstalling Finish dialog opens. Click Finish to exit the procedure.
7. You must restart your computer if required.

Configuring Event Discovery: After completing your installation for Intelligent Monitoring for NetIQ AppManager, but before initially starting event discovery, you must configure the event component.

To configure the event component, specify the subnet mask of the network the host belongs to. Start the setup command:

```
wimasetup -subnetmask subnetmask
```

Starting the Event Discovery Service: To start the event discovery service for NetIQ AppManager:
3. Double-click the Services icon. The Services dialog opens.
4. From the Service list, double-click Tivoli BSM AppManager Event Discovery The properties dialog opens.

Note: Event discovery must always be active when NetIQ AppManager is operating. The service does not keep track of the changes that take place when the event discovery is not active. For example, if some events occur when event discovery service is not running, you do not see those events on the console when you start the service again.

Unicenter TNG

Installing Intelligent Monitoring for Unicenter TNG: Use this section to install Intelligent Monitoring for Unicenter TNG on your system.

Before you install Intelligent Monitoring, ensure that you have satisfied the software and hardware requirements.
Intelligent Monitoring consists of two components, which can be installed separately or together:

- Object discovery, which you install on Unicenter TNG CORE
- Event discovery, which you install on Unicenter TNG Event Managers

To install Intelligent Monitoring for Unicenter TNG:

1. Insert the Tivoli Business Systems Manager Distributed CD and double-click the Intelligent Monitoring directory.
2. Double-click Intelligent_Monitoring_for_TNG.
3. Double-click win32.
4. Double click the setup.exe icon.
5. From the Select language for Install Procedure dialog, select a language for use with the installation. Click Next.
6. The Welcome dialog opens. Read the information and click Next.
7. From the Choose Destination Location dialog, click the Browse button to select a directory (or use the default directory). Once you have selected the directory, click Next.
8. Intelligent Monitoring consists of two components, Unicenter TNG_Event Discovery and Unicenter TNG_Object Discovery, which can be installed separately or together. From the Select Feature dialog, make your selection and click Next.

Note: You must install the Event Discovery component on each Event Manager from which you want to collect TNG events for transmission to Tivoli Business Systems Manager.

9. The Communications Settings dialog opens.
   Type the following information for each feature you selected:

**Local Port** The workstation port number used by Intelligent Monitoring to communicate with the Common Listener.

**Server Address** The IP address of the server where the Common Listener is installed.

**Server Port** A port of the server where the Common Listener is installed. This must be the same port that the Common Listener uses to receive data from Intelligent Monitoring. Click Next.

10. Your selected installation path and feature is displayed in the Destination Location dialog. If this location is correct, click Next.
12. You must restart your computer if required.

**Uninstalling Intelligent Monitoring for Unicenter TNG:** To uninstall Intelligent Monitoring for Unicenter TNG:

2. Click Add/Remove Programs. The Add/Remove Programs window opens.
3. From the Currently Installed Programs, select TBSM 2.1 Intelligent Monitoring for TNG. Click the Change/Remove button.
4. From the Select language for Install Procedure dialog, select a language. The Uninstalling Welcome dialog opens. Click OK.
5. The Uninstalling Summary dialog opens. Click Next.
6. The Uninstalling Finish dialog opens. Click **Finish** to exit the procedure.
7. You must restart your computer when the procedure is completed.

**Configuring Event Discovery:** After completing your installation for Intelligent Monitoring for Unicenter TNG, but before initially starting event discovery, you must configure the event component.

To configure the event component, specify the subnet mask of the network the host belongs to. Start the setup command:

```bash
wimtsetup -e -subnetmask subnetmask
```

**Configuring Delta Discovery in Intelligent Monitoring for Unicenter TNG:** After installing Intelligent Monitoring for Unicenter TNG, but before starting the delta resource discovery for the first time, you have to perform the following procedure:

1. From the Windows tool bar, select **Start --> Settings --> Control Panel.**
2. Double-click the **Administrative Tools** icon. The Administrative Tools dialog opens.
3. Double-click the **Services** icon. The Services dialog opens.
4. From the **Service** list, double-click **Tivoli BSM TNG Object Discovery.** The properties dialog opens. The Service dialog opens.
5. In the **Startup Type** group, leave the default value selected.
6. In the **Log On As** group, select **This Account.**
7. In the **Password** text box, type the account name of a system administrator.
8. Click **Finish** to save the settings and close the dialog.

**Starting the Delta Discovery Service:** To start the delta discovery service, perform the following procedure:

1. From Windows tool bar, select **Start --> Settings --> Control Panel.** The Control Panel window opens.
2. Double-click the **Administrative Tools** icon. The Administrative Tools dialog opens.
3. Double-click the **Services** icon. The Services dialog opens.
4. From the **Service** list, double-click **Tivoli BSM TNG Object Discovery.** The properties dialog opens.
5. Click **Start.**

**Note:** Delta discovery must always be active when Unicenter TNG is operating. The service does not keep track of resource changes that take place when the delta discovery is not active. For example, if some resources are added when the delta discovery service is not running, you do not see those resources on the console when you start the service again.

**Starting the Event Discovery Service in Intelligent Monitoring for Unicenter TNG:** To start the event discovery service, perform the following procedure:

1. From Windows tool bar, select **Start --> Settings --> Control Panel.** The Control Panel window opens.
2. Double-click the **Administrative Tools** icon. The Administrative Tools dialog opens.

3. Double-click the **Services** icon. The Services dialog opens.

4. From the **Service** list, double-click **Tivoli BSM TNG Event Discovery**. The properties dialog opens.

5. Click **Start**.

   **Note:** Event discovery must always be active when Unicenter TNG is operating. The service does not keep track of resource changes that take place when the delta discovery is not active. For example, if some resources are added when the event discovery service is not running, you do not see those events on the console when you start the service again.

**BMC PATROL**

**Installing Intelligent Monitoring for BMC PATROL:** Use this section to install Intelligent Monitoring on your system.

Install Intelligent Monitoring on each console that you want to monitor through Tivoli Business Systems Manager and that runs BMC PATROL.

Before you install Intelligent Monitoring, ensure that you have satisfied the software and hardware requirements.

To install Intelligent Monitoring for BMC PATROL:

1. Insert the Tivoli Business Systems Manager Distributed CD and double-click the **Intelligent Monitoring** directory.

2. Double-click **Intelligent_Monitoring_for_Patrol**.

3. Double-click **win32**.

4. Double click the **setup.exe** icon.

5. From the Select language for Install Procedure dialog, select a language for use with the installation. Click **Next**.

6. The Welcome dialog opens. Read the information and click **Next**.

7. From the Choose Destination Location dialog, click the **Browse** button to select a directory (or use the default directory). After you have selected the directory, click **Next**.

8. The Communications Settings dialog opens.

   Enter the following information:

   **Local Port** The console port number used by Intelligent Monitoring to communicate with the Common Listener.

   **Server Address** The IP address of the server where the Common Listener is installed.

   **Server Port** A port of the server where the Common Listener is installed. This must be the same port that the Common Listener uses to receive data from Intelligent Monitoring. Click **Next**.

9. Your selected installation path is displayed in the Destination Location dialog. If this location is correct, click **Next**.

10. The Setup Complete dialog opens. Click **Finish**.

11. You must restart your computer if required.
After you have installed Intelligent Monitoring for BMC PATROL, you must perform the following steps:

1. Create the host configuration file (HOSTS.CFG) using the `wimpgethosts` command.

2. Set the subnetmask, for each network that contains BMC PATROL managed hosts, that you want to monitor through Tivoli Business System Manager. Whenever a new host is discovered, those subnetmasks are later used by the product for instantiating the correct network resource view. Refer to the `wimpsetup` command in the IBM Tivoli Business Systems Manager: Command Reference for more information.

3. Instrumentation only maps a subset of PATROL application classes in Tivoli Business Systems Manager. However no class is mapped. To enable mapping of a supported application class, you must manually edit the Prtl.scl file, located in the directory where Intelligent Monitoring for PATROL has been installed, and remove the comment symbols from the clauses that express mapping of each application class. For example, to enable mapping of NT_CPU objects, you must remove the forward slash and asterisk (/\*) and asterisk and forward slash (\*) from the following mapping clause:

```c
/* NT_CPU_REMAPPED_AS Component WITH { Type =Processor; }; */
```

The mapping clause then becomes:

```c
NT_CPU_REMAPPED_AS Component WITH { Type =Processor; };
```

This is considered by instrumentation.

**Note:** To avoid instrumentation not working, consult IBM Customer Support about the manual edit procedure.

**Uninstalling Intelligent Monitoring for BMC PATROL:** To uninstall Intelligent Monitoring for BMC PATROL:

1. From Windows tool bar, select **Start --> Settings --> Control Panel.** The Control Panel window opens.
2. Click **Add/Remove Programs.** The Add/Remove Programs window opens.
3. From the **Currently Installed Programs,** select **TBSM 2.1 Intelligent Monitoring for Patrol.** Click the **Change/Remove** button.
4. From the Select language for Uninstall Procedure dialog, select a language. The Uninstalling Welcome dialog opens. Click **OK.**
5. The Uninstalling Summary dialog opens. Click **Next.**
6. The Uninstalling Finish dialog opens. Click **Finish** to exit the procedure.
7. You must restart your computer when the procedure is completed.

**Configuring Event Discovery:** After completing your installation for Intelligent Monitoring for BMC PATROL, but before initially starting event discovery, you must configure the event component.

To configure the event component, specify the subnet mask of the network the host belongs to. Start the setup command:

`wimpsetup -subnetmask subnetmask`

**Configuring the Listening Service in Intelligent Monitoring for BMC PATROL:** When you install Intelligent Monitoring for BMC PATROL on your system, the Tivoli BSM Patrol Discovery service is added to the **Services** list.

This listening service checks the HOSTS.CFG file at regular time intervals, to get changes in the file. Whenever a new host is added, the service collects the
application instances relating to that host. Then, it maps them to Tivoli Business Systems Manager. If a host is deleted from the host configuration file, the service deletes that host from the database.

On the console, each event is associated with the resource representing the PATROL instance that has generated it, if it is mapped. If not mapped, the event is associated with the computer representing the machine where the event originated.

**Starting the Listening Discovery Service:** To start the listening service discovery:
1. From the Windows tool bar, select **Start —> Settings —> Control Panel.** The Control Panel window opens.
2. Double-click the **Administrative Tools** icon. The Administrative Tools dialog opens.
3. Double-click the **Services** icon. The Services dialog opens.
4. From the **Service** list, double-click **Tivoli BSM Patrol Discovery.** The properties dialog opens.

   **Note:** Tivoli BSM Patrol Discovery must be always active when PATROL is operating. The service does not get events that are generated when the listening service is not active. To put the service in automatic startup, click **Startup.**
5. Click **Start.**

---

**Associating Tivoli Enterprise Console Events with Common Listener Resources**

If you are using Tivoli Enterprise Console as your event console, you might want to discover objects through the Common Listener service, but then post exceptions and messages against these objects by way of Tivoli Enterprise Console events.

An example of this would be the Tivoli NetView program. The Tivoli NetView program can send a bulk discover for its topology to Tivoli Business Systems Manager using the Common Listener transport, and then maintain this topology using Common Listener delta flows. But many customers like to use Tivoli Enterprise Console as their focal point for event processing, so they send NetView SNMP traps to Tivoli Enterprise Console rather than sending events to Tivoli Business Systems Manager using the Common Listener. Using the Tivoli Business Systems Manager generic Tivoli Enterprise Console API (ihssttec), the customer can write a Tivoli Enterprise Console rule that takes the Tivoli NetView events and forwards these to Tivoli Business Systems Manager, having them posted against the NetView objects discovered by way of the Common Listener service.

To do this, the **ihssttec** command options `-b` and `-i` must be equal to the values that Tivoli NetView used during the discovery. The `-b` option specifies either the class ID or class name for the object. As an example, either ROUT or NetworkRouter could be used for a router. If the class cannot be determined, then a percent sign (%) can be specified on the `-b` flag. The percent sign (%) acts as a wildcard. The `-i` option must specify the instance identifier that was used on the Common Listener discovery flow.

As an example, Tivoli NetView uses the `ObjectName:netViewID (1.127.0.0:NV01)`. In addition to creating a rule in Tivoli Enterprise Console, you must also configure the Tivoli Business Systems Manager Common Listener service to periodically process its staging tables even though the service has not received data over its
MQe transport. Set the property
com.tivoli.tbsm.commonlistener.CL.alwaysRunCLProcessnextTransactionJob to true in the properties TivoliManager/CommonListener/ASICommonlistener.properties file.
Part 5. Upgrading Tivoli Business Systems Manager

Chapter 15. Upgrading Tivoli Business Systems Manager to Version 2.1.1

This chapter describes how to upgrade to Tivoli Business Systems Manager, Version 2.1.1. It includes:

- “Upgrading Tivoli Business Systems Manager” on page 294
- “Upgrading Tivoli Business Systems Manager to use SQL Server 2000” on page 298
- “Upgrading the Console Server from Version 1.5 to 2.1.1” on page 302
- “Upgrading Distributed Line of Business Rules to the Automated Business System Engine” on page 305
- “Upgrading Data Sources” on page 309

Tivoli Business Systems Manager supports the following operating system and database server upgrade configurations:

Table 88. Supported Upgrade Configurations

<table>
<thead>
<tr>
<th>Version 1.5 Operating System and Database Server Configuration</th>
<th>Version 2.1 or 2.1.1 Operating System and Database Server Configuration</th>
</tr>
</thead>
<tbody>
<tr>
<td>Microsoft Windows NT 4.0 Server Service Pack 6a and Microsoft SQL Server 7.0 Windows Service Pack 3</td>
<td>Windows NT 4.0 Server Service Pack 6a and Microsoft SQL Server 7.0 Windows Service Pack 4</td>
</tr>
</tbody>
</table>

Notes:

2. After upgrading, you must validate your system with extensive testing.
3. Before you upgrade to 2.1.1, you must have Tivoli Business Systems Manager, Version 2.1 or Version 1.5 (Fix Pack 1.5-BSM-0040) installed.
4. If you have installed Tivoli Business Systems Manager fix packs shipped after the availability of Tivoli Business Systems Manager 2.1, or if you have not met the required pre-requisites, the installation program will notify you with the message

   Your database is not at the prerequisite level to install Tivoli Business Systems Manager 2.1.1.

This means fix packs have been applied that may not be compatible with the database migration process. We recommend that you do not select database
migration as an installation option and that you contact Tivoli Customer Support to determine the best option for migrating your database. Before calling support, run the query

\[
\text{SELECT *} \text{ FROM imSnapshotHistory}
\]

to get a list of the fix packs applied to your database.

---

**Upgrading Tivoli Business Systems Manager**

**Note:** If you are upgrading to Tivoli Business Systems Manager Version 2.1.1 but continuing to use the same version of Microsoft SQL Server (either SQL Server 7.0 or SQL Server 2000) follow the upgrading steps in this section. If you are upgrading your SQL Server from 7.0 to 2000, follow the instructions in "Upgrading Tivoli Business Systems Manager to use SQL Server 2000" on page 298.

Following are the steps to upgrade Tivoli Business Systems Manager to Version 2.1.1. This is the only supported migration path. Event Enablement and the OS/390 code must be updated at the same time or after the Tivoli Business Systems Manager server code:

1. Verify that you have all the required prerequisites installed and they are at the supported release level.
2. Upgrade the Tivoli Business Systems Manager database server.
3. Upgrade the rest of your Tivoli Business Systems Manager servers.
4. Upgrade the OS/390 code (if applicable).
5. Upgrade your Event Enablement feeds (if applicable).
6. Verify everything is working.

**Note:** The upgrade process can vary from four to 12 hours or more depending on the size of your database. Upgrading is the only way to keep the data that is in your existing databases.

<table>
<thead>
<tr>
<th>Step</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Upgrade the database server</td>
<td></td>
</tr>
</tbody>
</table>

---

Table 89. Upgrading to Version 2.1.1
Table 89. Upgrading to Version 2.1.1 (continued)

<table>
<thead>
<tr>
<th>Step</th>
<th>Notes</th>
</tr>
</thead>
</table>
| a) Backing up the databases and registry | Back up the databases of your current system and the entire registry.  
- **Database server**  
  From a command prompt, enter:  
  `BackupAllDatabases`  
- **History server**  
  From the Enterprise Manager, back up the History database.  
- **Backing up the entire registry:**  
  From a command prompt, enter:  
  `regback <target directory>`  
  This backs up your registry files to the target directory. Entering `regback` displays online help information.  
- **SQL Scripts:** (Informational)  
  Tivoli Business Systems Manager, Version 2.1 contains new versions of the `AttachDatabases.sql` and `DetachDatabases.sql` scripts. They are installed under the SQL server subdirectory in your installation directory.  
  Your old versions are automatically copied to the following directory:  
  `<installation directory>\SQL\migrate`  
- **SQL Server Client Network Utility**  
  Confirm that the default SQL server connection is TCP/IP or Multiprotocol.  
  From the Windows taskbar, select **Start -> Programs -> Microsoft SQL Server 7.0 -> Client Network Utility -> General tab**. Set the default network library value to: TCP/IP or Multiprotocol. Provide the default library value with a server alias of:  
  `<host name>,1433` |
| b) Save your changes to these SQL jobs that will be replaced in the database. | You need to do this step only if you are upgrading from Version 1.5. If you are upgrading from 2.1, ignore this step. The following SQL jobs are replaced during the upgrade:  
- CL_ProcessRuleJob  
- CLCleanUpJob  
- CLScheduled_SPCallsJob  
- Cleanup Old Log Files  
- Installation Management Snapshot |
| c) Upgrading files and databases | 1. Stop all Tivoli Business Systems Manager services on all Tivoli Business Systems Manager servers. Please ensure that all events have been processed before stopping the system. Otherwise, events may be lost, or not fully processed. Health Monitor should be used to ensure the staged event loader tables, database queues, and propagation queues are empty before shutting down.  
2. Follow the instructions in **"The Database Server"** on page 44 and **"Configuring the Database Server"** on page 48.  
See the IBM Tivoli Business Systems Manager: Administrator’s Guide for details on stopping and starting services. |
<p>| d) Configuring the TGMTask server | Follow the instructions in <strong>&quot;Configuring OS/390 Task Authentication&quot;</strong> on page 213 to complete this task. |</p>
<table>
<thead>
<tr>
<th>Step</th>
<th>Notes</th>
</tr>
</thead>
</table>
| 2. Upgrade the history server | a) Backing up the databases and registry  
    • Backing up databases:  
      From a command prompt, enter:  
      `BackupAllDatabases`  
    • Backing up the entire registry:  
      From a command prompt, enter:  
      `regback <target directory>`  
      This backs up your registry files to the target directory. Entering `regback` displays online help information  
    b) Upgrading the history server  
    c) Configuring the history server  
    d) Configuring the reporting system  
    e) Adding additional reporting system configurations  
    Follow the instructions in “The History Server” on page 49 and the accompanying sections to complete these tasks. After completing step 296, restore the backed up history database. |
| 3. Upgrade the console server | a) Backing up the registry  
    • Backing up the entire registry:  
      From a command prompt, enter:  
      `regback <target directory>`  
      This backs up your registry files to the target directory. Entering `regback` displays help text.  
    b) Upgrading the console server  
    c) Validating  
    d) Additional installation options  
    If you are upgrading from Version 1.5, follow the instructions in “The Console Server” on page 56 and “Upgrading the Console Server from Version 1.5 to 2.1.1” on page 302 to complete these tasks.  
    If you are upgrading from Version 2.1, follow the instructions in “The Console Server” on page 56 to complete these tasks. |
| 4. Upgrade the propagation server | a) Backing up the registry  
    • Backing up the entire registry:  
      From a command prompt, enter:  
      `regback <target directory>`  
      This backs up your registry files to the target directory. Entering `regback` displays help text.  
    b) Upgrading the propagation server  
    c) Validating  
    Follow the instructions in “The Propagation Server” on page 61 to complete these tasks. |
## Table 89. Upgrading to Version 2.1.1 (continued)

<table>
<thead>
<tr>
<th>Step</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>5. Upgrade the event handler server</strong></td>
<td></td>
</tr>
<tr>
<td>a) Backing up the registry</td>
<td>See step 3a.</td>
</tr>
<tr>
<td>b) Upgrading the event handler server</td>
<td>Follow the instructions in “The Event Handler Server” on page 63 and the accompanying sections to complete these tasks.</td>
</tr>
<tr>
<td>c) Validating</td>
<td></td>
</tr>
<tr>
<td>d) Configuring</td>
<td></td>
</tr>
<tr>
<td><strong>6. Upgrade the console</strong></td>
<td></td>
</tr>
<tr>
<td>a) Upgrade the console to Version 2.1.1</td>
<td>Follow the instructions in “Upgrading the Console” on page 304 to complete this task.</td>
</tr>
<tr>
<td><strong>7. Upgrade the health monitor</strong> (If you have already installed the health monitor and configured the health monitor host, you do not have to configure it again. Upgrading consists of installing the executable file.)</td>
<td></td>
</tr>
<tr>
<td>a) Upgrade the health monitor server</td>
<td>Follow the instructions in “Installing the Health Monitor Server” on page 185 to complete this task.</td>
</tr>
<tr>
<td>b) Upgrade the health monitor client</td>
<td>Follow the instructions in “Installing the Health Monitor Client” on page 191 to complete this task.</td>
</tr>
<tr>
<td>c) Configure the health monitor service host</td>
<td>Follow the instructions in “Configuring the Health Monitor Server” on page 187 to complete this task.</td>
</tr>
<tr>
<td><strong>8. Upgrade the web console server (if applicable)</strong></td>
<td></td>
</tr>
<tr>
<td>If you are upgrading from version 1.5, follow the instructions in “The Web Console Server” on page 181 to install the web console server.</td>
<td></td>
</tr>
<tr>
<td>If you are upgrading from version 2.1, you do not need to upgrade the web console server.</td>
<td></td>
</tr>
<tr>
<td><strong>9. Upgrade Event Enablement from Version 1.5 Fix Pack 40 or 2.1 to 2.1.1 (if applicable)</strong></td>
<td></td>
</tr>
<tr>
<td>a) Upgrade Event Enablement</td>
<td>1. Run $BINDIR/TDS/remove (%BINDIR%/TDS/remove on Windows) and install Event Enablement 2.1.1. 2. Then rerun $BINDIR/TDS/EventService/ihsttec.sh (%BINDIR%/TDS/EventService/ihsttec.sh on Windows).</td>
</tr>
<tr>
<td>b) Run gemeeconfig</td>
<td>Run gemeeconfig to verify the list of configured Event Enablers. The distributed definitions should be migrated as part of the database migration.</td>
</tr>
<tr>
<td>c) Run \TivoliManager\bin\tecestatusconfig.sh to take advantage of the TEC &lt;-&gt; Tivoli Business Systems Manager console integration.</td>
<td></td>
</tr>
<tr>
<td><strong>10. Upgrade OS/390 code (if applicable)</strong></td>
<td></td>
</tr>
<tr>
<td>a) Install the programs, samples, messages, and JCL members</td>
<td>Install the programs, samples, messages, and JCL members that enable discovery, event processing, and command processing for the source/390 components by following the instructions found in the Program Directory.</td>
</tr>
</tbody>
</table>
Table 89. Upgrading to Version 2.1.1 (continued)

<table>
<thead>
<tr>
<th>Step</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>b)</td>
<td>Replace the TBSM Source/390 libraries (SGTMMODS, SGTMEXEC, SGTMSAMP) in any product JCL procedures where they have been previously inserted. (Examples are Netview, OPC, SA/390, etc.)</td>
</tr>
</tbody>
</table>

**Upgrading Tivoli Business Systems Manager to use SQL Server 2000**

If you currently run Tivoli Business Systems Manager Version 1.5 or 2.1 with Microsoft Windows 2000 and Microsoft SQL Server 7.0 and you want to upgrade to Microsoft SQL Server 2000, follow the upgrade steps outlined in this section. If you will continue to use the same version of Microsoft SQL Server (either SQL Server 7.0 or SQL Server 2000) follow the steps in "Upgrading Tivoli Business Systems Manager” on page 294.

**Note:** The upgrade process can vary from four to 12 hours or more depending on the size of your database. Upgrading is the only way to keep the data that is in your existing databases.

Table 90. Upgrading to Version 2.1.1 if you are changing to Microsoft SQL Server 2000

<table>
<thead>
<tr>
<th>Step</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Back up the databases and registry</td>
<td>a) Back up the databases of your current system and the entire registry.</td>
</tr>
<tr>
<td></td>
<td>• <strong>Backing up databases:</strong> From a command prompt, enter: <code>BackupAllDatabases</code></td>
</tr>
<tr>
<td></td>
<td>• <strong>Backing up the entire registry:</strong> From a command prompt, enter: <code>regback &lt;target directory&gt;</code> This backs up your registry files to the target directory. Entering <code>regback</code> displays help text.</td>
</tr>
<tr>
<td></td>
<td>• <strong>SQL Scripts:</strong> (Informational) IBM Business Systems Manager contains new versions of the AttachDatabases.sql and DetachDatabases.sql scripts. They are installed under the SQL subdirectory in your installation directory. Your old versions are automatically copied to: <code>&lt;installation directory&gt;\SQL\migrate</code></td>
</tr>
<tr>
<td></td>
<td>• <strong>SQL Server Client Network Utility</strong> Confirm that the SQL server connection default is TCP/IP or Multiprotocol. Select Start -&gt; Programs -&gt; Microsoft SQL Server -&gt; Client Network Utility -&gt; General tab. Set the default network library value to: TCP/IP or Multiprotocol. Provide the default library value with a server alias of: <code>&lt;host name&gt;,1433</code></td>
</tr>
</tbody>
</table>
Table 90. Upgrading to Version 2.1.1 if you are changing to Microsoft SQL Server 2000 (continued)

<table>
<thead>
<tr>
<th>Step</th>
<th>Notes</th>
</tr>
</thead>
</table>
| b) Save your changes to these SQL jobs that will be replaced in the database. | You need to do this only if you are upgrading from Version 1.5. If you are upgrading from 2.1, ignore this step. The following SQL jobs are replaced during the upgrade:  
  • CL_PROCESSRULEJOB  
  • CLCLEANUPJOB  
  • CLSCHEDULED_SPCALLSJOB  
  • Cleanup Old Log Files  
  • Installation Management Snapshot |
| 2. Upgrade files and databases | 1. Stop all Tivoli Business Systems Manager services on all Tivoli Business Systems Manager servers. See the IBM Tivoli Business Systems Manager: Administrator’s Guide for details on stopping and starting services.  
| 3. Configuring the TGMTask server | Follow the instructions in “Configuring OS/390 Task Authentication” on page 213 to complete this task. |
| 4. Backing up the databases and registry | |
Table 90. Upgrading to Version 2.1.1 if you are changing to Microsoft SQL Server 2000 (continued)

<table>
<thead>
<tr>
<th>Step</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>a) Back up the databases of your current system and the entire registry.</td>
<td><strong>Backing up databases:</strong>&lt;br&gt;From a command prompt, enter: <code>BackupAllDatabases</code>&lt;br&gt;<strong>Saving database backups:</strong>&lt;br&gt;The database backup files must be copied to a directory that is not under <code>D:\MSSQL7</code> because that tree view will be removed. For example:&lt;br&gt;<code>mkdir d:\backup\</code>&lt;br&gt;<code>xcopy d:\mssql7\backup\*.bak d:\backup</code>&lt;br&gt;<strong>Detaching the database files:</strong>&lt;br&gt;In preparation for copying the database files to a save location, you must detach them from SQL so that they are not in use. From the SQL Query Analyzer, run:&lt;br&gt;<code>&lt;installdir&gt;\sql\detachdatabases.sql</code>&lt;br&gt;You might need to stop and start SQL Server again in order to run this script without any errors. The <code>detachdatabases.sql</code> script needs to run until all databases are detached. Do not continue until the script runs clean.&lt;br&gt;<strong>Saving the database files:</strong>&lt;br&gt;The following <code>*.mdf</code> database files must be copied and saved before removing Microsoft SQL Server 7.0 to a directory that is not under <code>D:\MSSQL7</code> because that tree view will be removed. For example:&lt;br&gt;<code>copy d:\mssql7\data\ASIRuleSvc_Data.mdf d:\backup</code>&lt;br&gt;<code>copy d:\mssql7\data\EventHistory.mdf d:\backup</code>&lt;br&gt;<code>copy d:\mssql7\data\Meta_Data.mdf d:\backup</code>&lt;br&gt;<code>copy d:\mssql7\data\ObjectEvents_Data.mdf d:\backup</code>&lt;br&gt;<code>copy d:\mssql7\data\ObjectQueues_Data.mdf d:\backup</code>&lt;br&gt;<code>copy d:\mssql7\data\Object_Data.mdf d:\backup</code>&lt;br&gt;<code>copy d:\mssql7\data\OPCLoad.mdf d:\backup</code>&lt;br&gt;<code>copy d:\mssql7\data\ROD.mdf d:\backup</code>&lt;br&gt;<code>copy d:\mssql7\data\RODLoad.mdf d:\backup</code>&lt;br&gt;<code>copy d:\mssql7\data\WebServer_Data.mdf d:\backup</code>&lt;br&gt;<strong>Backing up the entire registry:</strong>&lt;br&gt;From a command prompt, enter:&lt;br&gt;<code>regback &lt;target directory&gt;</code>&lt;br&gt;This backs up your registry files to the target directory. Entering <code>regback</code> displays online help information.</td>
</tr>
</tbody>
</table>
Table 90. Upgrading to Version 2.1.1 if you are changing to Microsoft SQL Server 2000 (continued)

<table>
<thead>
<tr>
<th>Step</th>
<th>Notes</th>
</tr>
</thead>
</table>
| 5. Uninstall Microsoft SQL Server 7.0 | a) From the Windows taskbar, select Start --&gt; Settings --&gt; Control Panel --&gt; Add/Remove Programs. Click Microsoft SQL Server 7.0 and click Add/Remove.  
  b) Restart the database server host.  
  c) Remove the remaining registry keys for SQL Server 7.0:  
    - Start RegEdit &gt; HKEY_LOCAL_MACHINES &gt; SOFTWARE &gt; Microsoft&gt; MSSQLServer &gt; delete the entire tree view.  
    - Start RegEdit &gt; HKEY_CURRENT_USER &gt; SOFTWARE &gt; Microsoft &gt; MSSQLServer &gt; delete the entire tree view.  
  d) Remove the directory structure for Microsoft SQL Server 7.0 by right-clicking the MSSQL7 directory on your installation drive and clicking Delete.  
  e) Restart the database server host. |
| 9. Apply changes to standard Microsoft SQL databases | From a command prompt, enter:  
  cd <installdir>  
  sh ./applyupgrade.ksh systemdb.upg |
| 10. Copy and attach the databases | 1. Detach the database files from SQL. Using the SQL Query Analyzer, run <installdir>/sql/detachdatabases.sql  
  2. Copy the database files which you saved earlier. From a command prompt, enter:  
  xcopy d:|backup|*.mdf d:|mssql|data  
  3. Attach the database files to SQL. From the SQL Query Analyzer, run <installdir>/sql/attachdatabases.sql  
  The script typically runs longer the first time you attach the database because Microsoft SQL Server 2000 Enterprise Edition must convert from the Microsoft SQL Server 7.0 format. |
| 11. Upgrade the history server | Follow step 2 on page 296 |
| 12. Upgrade the console server | Follow step 3 on page 296 |
| 13. Upgrade the propagation server | Follow step 4 on page 296 |
| 14. Upgrade the event handler server | Follow step 5 on page 297 |
Table 90. Upgrading to Version 2.1.1 if you are changing to Microsoft SQL Server 2000 (continued)

<table>
<thead>
<tr>
<th>Step</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>15. Upgrade the console</td>
<td>Follow step 6 on page 297</td>
</tr>
<tr>
<td>16. Upgrade the health monitor</td>
<td>Follow step 6 on page 297</td>
</tr>
<tr>
<td>17. Upgrade the web console server (if applicable)</td>
<td>If you are upgrading from version 1.5, follow the instructions in &quot;The Web Console Server&quot; on page 181 to install the web console server. If you are upgrading from version 2.1, you do not need to upgrade the web console server.</td>
</tr>
</tbody>
</table>

Upgrading the Console Server from Version 1.5 to 2.1.1

This section describes how to upgrade your existing Tivoli Business Systems Manager, Version 1.5 installation to Tivoli Business Systems Manager, Version 2.1.1. It includes:

- Preparing your console and console server
- Supporting both versions of the console
- Removing the Tivoli Business Systems Manager Version 1.5 console services after you complete the upgrade

**Note:** For best system performance, upgrade your consoles promptly and disable the Version 1.5 support on the console server after your upgrades are complete.

The 1.5 console server (at Fix Pack 1.5-BSM-0040) is compatible with the 2.1.1 databases, however you cannot access new functions of Version 2.1.1.

**Preparation**

Before you install Tivoli Business Systems Manager Version 2.1.1, upgrade your DataDirect Connect or Microsoft SQL Server 2000 Driver for JDBC to meet the current system requirements. Ensure that Version 1.5 is functioning properly with the upgraded JDBC driver.

**Installing the Version 2.1.1 Console Server**

You can install the Version 2.1.1 console server on the same machine as your Version 1.5 console server or on a separate machine. If you install the console server on the same machine, use the same base directory (for example, D:\TivoliManager). The installation program copies the console server configuration file, workspaces, and saved preferences to the Version 2.1.1 installation directory.

If you install the console server on a separate machine or in a different directory, you can copy these files manually before starting the console server service or create new files for Version 2.1.1.

**Configuring the Console Server:** To configure the console server for upgrading, see sections "The Console Server" on page 56 and "Configuration" on page 59 for information on the console server configuration file, Servers.properties file.
Settings have been added to this file for Version 2.1.1. Refer to the documentation and the <install_dir>\ConsoleServer\Servers.properties.sample file even if the installation program copied the Version 1.5 Servers.properties file.

You can use the same banner area and Welcome window files for Version 2.1.1 and Version 1.5. Configure the Web server alias to point to the Version 2.1.1 banner area files. Configure your Version 1.5 console to use the same Web server alias that uses Version 2.1.1. You can later remove the Version 1.5 installation without disruption to your Version 2.1.1 service.

**Administrator Preferences:** Administrator Preferences were introduced in Tivoli Business Systems Manager Version 2.1. If you are upgrading from Version 1.5, the Administrator Preferences will be reset to their default values. Review each preference in the Administrator Preferences notebook (available from the console by selecting the Console menu, and then clicking Administrator Preferences) and ensure they are set to your desired values. For information on the Administrator Preferences, see "Setting Administrator Preferences" in Chapter 5 of the *IBM Tivoli Business Systems Manager: Administrator's Guide* and the Online Help.

**Saving User Preferences:** The console server saves user preferences in files with the .prefs suffix. During the 2.1.1 console server upgrade, these files are copied from the 1.5 JavaAppServer directory to the 2.1.1 ConsoleServer directory.

The Version 2.1.1 console server initially reads the files and updates the files to the Version 2.1.1 format. Do not copy the files back to the Version 1.5 directory. The Version 1.5 console does not support reading the Version 2.1.1 format.

**Saving Workspaces:** During the 2.1.1 console server upgrade, your workspace files are copied, however, table settings such as sorts, will revert to their default settings. If you have customized your table settings and want to keep these changes, you must use the Workspace Migration Utility. In addition, the Workspace Migration Utility preserves similar information about tables which are stored in user preferences. The Workspace Migration Utility is provided on CD2 in the folder 15WS_migrationtool. The readme is in the 15WS_migrationtools\Docs directory.

**Note:** The Version 2.1.1 console server initially reads and updates the files to the Version 2.1.1 format. Do not copy the files back to the Version 1.5 directory. The Version 1.5 console does not support reading the Version 2.1.1 format.

**Security:** Tivoli Business Systems Manager added two security groups to determine console user rights in this version. They are:
- TBSM_Administrators_Super
- TBSM_Operators_Restricted

The Version 1.5 console ignores these groups during the upgrade. See the security section of *IBM Tivoli Business Systems Manager: Administrator's Guide* for details on security configuration.

### Supporting Both Versions of the Console and Console Server

After you install Tivoli Business Systems Manager Version 2.1.1, you can run a combination of Version 1.5 and 2.1.1 consoles that connect to the same Version 2.1.1 database:

1. You must have a console server service running for each version of the console.
   - The services required are:
• Version 1.5 consoles - Tivoli BSM Console Server (JCServerSvc.exe)
• Version 2.1.1 consoles - Tivoli BSM Console ServerV2 (JCServerSvcV2.exe)

2. Use the operating system service management function (Control Panel->Services for Windows NT, and Computer Management->Services and Applications->Services for Windows 2000) to verify (and change if necessary) the state of these services. If you installed both services on the same computer, the Version 1.5 service becomes dependent on the Version 2.1.1 service. The Version 2.1.1 service starts automatically when the Version 1.5 service is started.

Removing Tivoli Business Systems Manager Version 1.5 Services

After you upgrade all consoles to Tivoli Business Systems Manager, Version 2.1.1, the Version 1.5 console server service does not have to run. Remove the Tivoli BSM Console Server service. Use the operating system service management function (Control Panel->Services ->Add/Remove for Windows NT, and Computer Management->Services and Applications->Services ->Add/Remove for Windows 2000)

To recover the disk space used by the Version 1.5 console server, remove the files manually.
1. From a command prompt, make the current directory:
   D:\TivoliManager\JavaAppServer
2. Enter the command:
   JCServerSvc.exe -r This command removes the service from the operating system list of services.
3. Exit the command prompt.
4. Remove the D:\TivoliManager\JavaAppServer directory and all its subdirectories.

Upgrading the Console

To upgrade the console to Version 2.1.1, go to the command prompt, run the setup program located in the ConsoleInstalls\platform directory on the Tivoli Business Systems Manager Base Services installation CD.

Note: Exit the console before beginning the upgrade.

The directories are:
• ConsoleInstalls/aix_power
• ConsoleInstalls/linux
• ConsoleInstalls/sol_sparc
• ConsoleInstalls/sol_x86
• ConsoleInstalls\win32

Note: To upgrade the console from 2.1 to 2.1.1 on AIX and Solaris, run _itbsmUninst/uninstall to remove the 2.1 code before installing the 2.1.1 version. The _itbsmUninst directory is located under /opt/tbsm (or the previous installation directory).
1. When the Welcome System Upgrade dialog opens, read the text and click Next.
2. The Software License Agreement dialog opens. From the Software License Agreement dialog, click **I accept the terms in the license agreement**. Click **Next**.

3. If you are upgrading from 1.5 to 2.1.1, the installation location dialog opens with the directory that contains the 1.5 code. If you prefer to have both versions available, change the directory to a different location. If you want to remove the 1.5 code and install the 2.1.1 code, leave the directory as displayed. Click **Next**. (If the installation location for the 2.1.1 code is the same as the 1.5 code, a warning page opens to remind you that the 1.5 code is uninstalled prior to the installation of the 2.1.1 code. Click **Next**.)

**Note:** If you are upgrading from 2.1 to 2.1.1, this installation dialog does not display. Tivoli Business Systems Manager will automatically use the values that were used for the 2.1 installation.

4. From the **Server host name** text box, type the name of the console server host name. Click **Next**.

**Note:** If you are upgrading from 2.1 to 2.1.1, this installation dialog does not display. Tivoli Business Systems Manager will automatically use the values that were used for the 2.1 installation.

5. The installation summary panel opens and informs you of the total size of the installation and where it was installed. Click **Next**.

6. After the installation process completes, you have the option to automatically start the console. Check the **Start console** check box. (The default setting starts the console.) Click **Next**.

**Note:** If you are upgrading from 2.1 to 2.1.1, this installation dialog will not display. Tivoli Business Systems Manager will automatically use the values that were used for the 2.1 installation.

7. The Installation Summary dialog opens, which lists any errors. Click **Finish**. For UNIX operating environments, click **Next**.

**Note:** On UNIX operating environments, you must log out and then log on before the environment variable takes effect. Before the installation program closes, a dialog reminding you to log out is displayed. Click **Finish**.

---

**Upgrading Distributed Line of Business Rules to the Automated Business System Engine**

This section describes how you can upgrade your existing distributed line of business rules to the automated business system engine. This is only needed if you are upgrading from 1.5 to 2.1.1. If you are upgrading from 2.1 to 2.1.1, you do not have to upgrade your rules.

The distributed rules are enabled to keep the functionality of your existing rules. You have the option to use these rules, upgrade to the automated business system, or use a combination of both. When deciding whether or not you want to upgrade to the automated business system engine, evaluate the performance of the existing distributed rules, the upgrade time, and the performance of the automated business system engine.
Overview

In addition to the console drag and drop approach to create lines of business or business systems, the Tivoli Business Systems Manager distributed components include the addLOB.sh, addpvToLOB.sh, and addpvToLOBInst.sh commands for automating the line of business creation. These commands were available in Tivoli Business Systems Manager, Version 1.5 and are supported in Version 2.1.1 for backward compatibility. These commands add rules into your database according to which business system view is automatically populated with distributed resources. You can also add these during the translation of AMS definition files (xdf files) to Tivoli Business Systems Manager definitions. See the IBM Tivoli Business Systems Manager: Administrator's Guide on the parser.sh command for further details.

Upgrading

The upgrade process involves extracting your existing distributed rules from the database into an automated business system compatible format, loading them into the automated business system engine, and disabling the processing of the distributed rules.

The upgrade process consists of the following steps:

1. Run the migrateToAbs.ksh script to convert your existing definitions to the automated business system format and output them to a file.

   The migrateToAbs.ksh script examines all the distributed rules in the GEM_InstFiltering table and their corresponding lines of business in the GEM_LOBLookUp table of the object database. It outputs these definitions in the automated business system compatible format. This script does not upgrade all the rules and has some exceptions.

   The syntax is:
   
migrateToAbs -S <sql_server> -U <sql_userid> -P <sql_password> -o <output_file> -p <start_pattern_id> -c <start_criteria_id>
   
   The -S <sql_server> parameter specifies the host name of the SQL server. The -U <sql_userid> parameter specifies the user ID to connect to the SQL server.
   
   The -P <sql_password> parameter specifies the password to connect to the SQL server.
   
   The -o <output_file> parameter specifies the file where the generated output is directed. The default value is migrateToAbs_out.
   
   The -p<start_pattern_id> parameter specifies the pattern ID that you start from. The default value is 1.
   
   The -c<start_criteria_id> parameter specifies the criteria ID that you start from. The default value is 1.

   Use the start_pattern_id and start_criteria_id parameters if the automated business system engine already has criteria defined. The number should be one greater than the maximum pattern or criteria ID of existing definitions in your automated business system engine. For example, if there are 10 patterns and 4 criteria, then these are numbered 11 and 5 respectively.

   The migrateToAbs.ksh script calls the gemsp_migrateToAlob SQL stored procedure on the database. The gemsp_migrateToAlob SQL stored procedure converts the distributed rules to the automated business system format and stores this data in the GEM_Pattern, GEM_CriteriaToPattern, GEM_Path, GEM_CriteriaToPath tables of the object database. The migrateToAbs.ksh script
exports the data from these tables into the output file using the bcp command. The patterns that cannot be translated are output to a log file for reference.

Some rules cannot be upgraded by the migrateToAbs.ksh script. The rules in GEM_InstFiltering table cannot be translated to the automated business system format because there is no one-to-one mapping between the two functions. You must manually add these rules to the automated business system engine. See “Adding Rules that Cannot be Upgraded” on page 308 in this section and the IBM Tivoli Business Systems Manager: Diagnosis Guide for details.

The following rules cannot be upgraded in the GEM_InstFiltering table:

- When memTest=0
- When REG_EXPR is used in memOptions.
- When more than one symbolic is used in memExpr.
- When Global Enterprise Manager symbolics HB_PRIMARY or HB_SECONDARY are used.
- When enabled, the exclusive and priority columns have significance. Otherwise they are ignored.
- When rules are added using the addpvToLOBInst.sh script.

2. Merge the migrateToAbs.ksh script generated automated business systems configuration file with the existing automated business systems configuration file and load the consolidated configuration into the database.

If the automated business system engine has not been configured before this step, then you do not have to merge the configuration files. Instead of creating a consolidated configuration file, load the output file from step 1 into the database by running the absConfig.ksh script with the –i parameter. For example:

```
absConfig.ksh -S tbsmdb -U sa -P sa_tbsmdb -i migrateToAbs_output_file
```

- tbsmdb = name of the database server
- sa = the user id
- sa_tbsmdb = the password to connect to the database

If the automated business systems feature has been configured before this step, then the existing configuration should be extracted from the database, combined with the output file from step 1, and then loaded into the database. Run the absConfig.ksh script with the –o parameter to extract the existing configuration. See the IBM Tivoli Business Systems Manager: Command Reference for more details on the absConfig.ksh script. Combine the configuration files. Cut and paste the data rows from the output file in step 1 into the same sections of the output file created by the absConfig.ksh script. To avoid duplicate value errors, verify that the rows you added do not reuse the existing values for the ListName, Pattern, Criteria, and Path fields. Run the absConfig.ksh script with the –i parameter to load the consolidated configuration.

The automated business systems engine monitors the database and creates new business systems when you create or modify resources that satisfy a stated criteria.

The result of this step is the configuration of the automated business systems engine. However, the default setting does not enable it to run. To enable the automated business systems engine, see “Automated Business System Views” on page 179.
3. Disable the distributed rules. The switch to disable the distributed rules is in GEM_Options table (object database). Set the `enable_gem_auto_lob` parameter to no to turn it off. This switch disables all the distributed rules defined in the database.

   The SQL statement for this update is:

   ```sql
   UPDATE GEM_Options SET _Value='no'
   Where _Option='enable_gem_auto_lob'
   ```

   To turn it on set the parameter to yes. The values (yes or no) are case sensitive.

**Adding Rules that Cannot be Upgraded**

This process consists of examining the distributed rules that could not be upgraded and adding them manually into the automated business system engine.

**Example.**

Rule: when memTest=0:

You add this type of rule when 0 is specified to the `–t` parameter in the `addpvToLOB.sh` script:

```
addpvToLOB.sh -S tbsmdb -U sa -P sa_tbsmdb -p NetworkRouter -l notInRaleigh -o SQL_LIKE -n "raleigh" -e "%_TCPHost%" -t 0
```

This rule creates an entry in the GEM_InstFiltering table. The value 0 for parameter `–t` indicates that the specified condition is evaluated true when the pattern matching fails. That is, the resources of the network router class are added to the business system, `notInRaleigh` if their TCP host name does not have the string `raleigh` in it. The following table lists the entries in the GEM_InstFiltering table for this rule.

**Table 91. GEM.InstFiltering table**

<table>
<thead>
<tr>
<th>Column_name</th>
<th>Column_value</th>
</tr>
</thead>
<tbody>
<tr>
<td>cid</td>
<td>ROUT</td>
</tr>
<tr>
<td>LOBKey</td>
<td>NotInRaleighLOBC</td>
</tr>
<tr>
<td>memOptions</td>
<td>SQL_LIKE</td>
</tr>
<tr>
<td>memPattern</td>
<td>raleigh</td>
</tr>
<tr>
<td>memExpr</td>
<td>%Address%</td>
</tr>
<tr>
<td>memTest</td>
<td>0</td>
</tr>
<tr>
<td>enabled</td>
<td>1</td>
</tr>
<tr>
<td>exclusive</td>
<td>0</td>
</tr>
<tr>
<td>priority</td>
<td>0</td>
</tr>
</tbody>
</table>

The `memTest=0` rule cannot be upgraded because it has to be negated (that is, change the rule, so that the action is taken when the pattern matches, not when it fails.) before adding it to the automated business system engine.

The rule for this example is negated using `NOT LIKE` SQL operator.

The definitions that you need to add are in the following tables:
The following table lists the PatternList definition:

<table>
<thead>
<tr>
<th>ListName</th>
<th>Operand</th>
</tr>
</thead>
</table>

The following table lists the Pattern definition:

<table>
<thead>
<tr>
<th>Pattern</th>
<th>Class</th>
<th>Attribute</th>
<th>When</th>
<th>Operator</th>
<th>Operand1</th>
<th>Operand2</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>ROUT</td>
<td>Address</td>
<td>Current</td>
<td>NOT LIKE</td>
<td>%raleigh%</td>
<td>%</td>
</tr>
</tbody>
</table>

The following table lists the CriteriaToPattern definition:

<table>
<thead>
<tr>
<th>Criteria</th>
<th>Pattern</th>
<th>PatternRelated</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
</tbody>
</table>

The following table lists the Path definition:

<table>
<thead>
<tr>
<th>Path</th>
<th>Level</th>
<th>Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>notInRaleighLOBC</td>
<td>1</td>
<td>NotInRaleigh</td>
</tr>
<tr>
<td>notInRaleighLOBC</td>
<td>2</td>
<td></td>
</tr>
</tbody>
</table>

The following table lists the CriteriaToPath definition:

<table>
<thead>
<tr>
<th>Criteria</th>
<th>Path</th>
<th>Level</th>
<th>Pattern</th>
<th>Variable</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>notInRaleighLOBC</td>
<td>2</td>
<td>1</td>
<td>name</td>
<td>&lt;1:name&gt;</td>
</tr>
</tbody>
</table>

For more information about the implementation and use of the automated business systems configuration file and the syntax and implementation of the *absConfig.ksh* script, refer to the *IBM Tivoli Business Systems Manager: Command Reference*.

---

**Upgrading Data Sources**

This section describes the upgrade of data sources to Tivoli Business Systems Manager, Version 2.1.1.

**Note:** All data source sections should be used in conjunction with Chapter 9, “Installing and Configuring Data Sources,” on page 95.

---

**Upgrading Tivoli NetView for OS/390**

**Upgrading from Version 2.1 to 2.1.1**

You can upgrade to Tivoli Business Systems Manager Version 2.1.1 from Version 2.1 by following the steps described in the following table:
### Table 97. Upgrading from Version 2.1 to 2.1.1

<table>
<thead>
<tr>
<th>Step</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Install Tivoli Business Systems Manager components. For detailed instructions, see <a href="#">Install Tivoli Business Systems Manager Components</a> on page 96.</td>
</tr>
</tbody>
</table>
| 2.   | Customize every Tivoli NetView for OS/390 Started Task Procedure. For detailed instructions, see [Customize every NetView for OS/390 Started Task](#) on page 97.  
   a. Update NetView for OS/390 Started Task JCL. Update the NetView for OS/390 Started Task JCL with the new Tivoli Business Systems Manager libraries. See [Update NetView for OS/390 Started Task JCL](#) on page 97.  
   b. Configure NetView Parameter Members — Review the NetView DSIPARM parameter members, and modify if required. See [Configure NetView Parameter Members](#) on page 97. |
| 3.   | Perform Data Source-specific Migration steps. See the relevant Data Source chapters in this manual and [Perform Data Source-specific Customization](#) on page 102. |

### Upgrading from Version 1.5 to 2.1.1

You can upgrade to Tivoli Business Systems Manager Version 2.1.1 from Version 1.5 by following the steps described in the following table:

### Table 98. Upgrading from Version 1.5 to 2.1.1

<table>
<thead>
<tr>
<th>Step</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>2.</td>
<td>Install Tivoli Business Systems Manager components. For detailed instructions, see <a href="#">Install Tivoli Business Systems Manager Components</a> on page 96.</td>
</tr>
</tbody>
</table>
| 3.   | Customize every Tivoli NetView for OS/390 Started Task Procedure. For detailed instructions, see [Customize every NetView for OS/390 Started Task](#) on page 97.  
   a. Update NetView for OS/390 Started Task JCL. Update the NetView for OS/390 Started Task JCL with the new Tivoli Business Systems Manager libraries. See [Update NetView for OS/390 Started Task JCL](#) on page 97.  
   b. Include IHS$MAT in Message Automation Table (MAT). IHS$MAT was introduced in Tivoli Business Systems Manager, Version 1.5 through a PTF. Make sure it is included in the NetView MAT. See [Configure NetView Parameter Members](#) on page 97 for more information on IHS$MAT.  
   c. Review IHS$EXCL SGTMSAMP Member. The Exclude member IHS$EXCL was introduced by PTF in Tivoli Business Systems Manager, Version 1.5 for the IMS and DB2 Data Sources. The operation has changed and users of IMS or DB2 should review all installation steps for exclude processing. Refer to the IBM Tivoli Business Systems Manager: Administrator's Guide for more information about exclude processing.  
   d. Configure Other NetView Parameter Members. Most other NetView DSIPARM parameters have changed from Version 1.5 to Version 2.1.1. These are described in [Configure NetView Parameter Members](#) on page 97.  
   e. Remove Delta Processing PDSE from NetView JCL (if used). Delta processing (IHS$DLTA) was introduced by PTF in Tivoli Business Systems Manager, Version 1.5. If implemented, a PDSE was inserted in the NetView startup JCL in the DD TBSMDDISC. This is no longer required and can be removed. |
| 4.   | Perform Data Source-specific Migration steps. See the relevant Data Source chapters in this manual and [Performance](#) on page 102. |
Note: Most Tivoli Business Systems Manager Version 2.1.1 data sources using NetView for OS/390 will not work with the Tivoli Business Systems Manager Version 1.5 (and earlier) Microsoft Windows and Source/390 components. These must be upgraded first.

Upgrading IMS

Upgrading from Version 2.1 to 2.1.1

You can upgrade to Tivoli Business Systems Manager Version 2.1.1 from Version 2.1 by following the steps described in the following table:

Table 99. Upgrading from Version 2.1 to 2.1.1

| Step | 1. Install Tivoli Business Systems Manager components. For detailed instructions, see "1. Install Tivoli Business Systems Manager for IMS Components" on page 107.  
| 2. Perform NetView for OS/390 Migration Steps. See "Upgrading Tivoli NetView for OS/390" on page 309. Note that two new IHS$PARM values are introduced in Tivoli Business System Manager Version 2.1.1 for IMS: IHSI.$CORRWAIT and IHSILOTMA.TIMEOUT.  

Notes:

1. No changes are required to the following:
   • Tivoli Business Systems Manager for IMS AO exits
   • IMS OTMA setup
   • Security

2. When upgrading, it is not required to run initial discovery again.

Upgrading from Version 1.5 to 2.1.1

You can upgrade to Tivoli Business Systems Manager Version 2.1.1 from Version 1.5 by following the steps described in the following table:

Table 100. Upgrading from Version 1.5 to 2.1.1

| Step | 1. Install Tivoli Business Systems Manager components. For detailed instructions, see "1. Install Tivoli Business Systems Manager for IMS Components" on page 107.  
| 2. Install the IMS AO Exit. The Tivoli Business Systems Manager Version 2.1.1 IMS AO exit incorporates all Tivoli Business Systems Manager Version 1.5 PTFs for IMS AO exits up to OW56490. If these PTFs are already installed in your Version 1.5 IMS AO exit or you do not require these fixes, then the IMS AO exit does not need to be upgraded. Otherwise, reinstall the IMS AO exit in all IMS regions as described in "a. Install IMS AO Exit" on page 107.  
| Note: The Version 2.1.1 IMS AO Exit coexists completed with Tivoli Business Systems Manager Version 1.5.  
| 3. Install IHS$MPF z/OS exit, if required. Tivoli Business Systems Manager Version 2.1.1 includes a new exit for IMS DBCTL users named IHS$MPF. If required, install this exit. See "a. Install IHS$MPF exit" on page 113 for more information.  
| 4. Ensure all NetView for OS/390 Migration steps have been completed. See "Upgrading Tivoli NetView for OS/390" on page 309. |
Table 100. Upgrading from Version 1.5 to 2.1.1 (continued)

<table>
<thead>
<tr>
<th>Step</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>5.</td>
<td>Remove IHSIMAT from user MAT. IHSIMAT is now included in the IHS$MAT member. Remove the %INCLUDE IHSIMAT statement from the NetView for OS/390 MAT member for your site.</td>
</tr>
<tr>
<td>6.</td>
<td>Modify IMS OTMA Customization. The IMS OTMA setup for Tivoli Business Systems Manager for IMS has changed in Version 2.1.1. Revisit and complete all installation steps as described in “i. Enable OTMA” on page 110.</td>
</tr>
<tr>
<td>7.</td>
<td>Modify IMS Security Customization. The IMS security requirements have been modified in Tivoli Business Systems Manager for IMS Version 2.1.1. Review and complete all steps as described in “ii. Configure IMS Security Parameters” on page 110.</td>
</tr>
</tbody>
</table>

Notes:

1. Tivoli Business Systems Manager for IMS Version 2.1.1 will not work with the Tivoli Business Systems Manager Version 1.5 (and earlier) Microsoft Windows and Source/390 components. These must be upgraded first.

2. When upgrading, it is not required to run initial discovery again. Initial discovery is now optional in Tivoli Business Systems Manager Version 2.1.1. The IHSILCFG command and the IHSIDCFG DSIPARM member used with Tivoli Business Systems Manager Version 1.5 are not available.

3. Tivoli Business Systems Manager Version 2.1.1 supports IMS releases 6, 7, and 8 only. All other releases are ignored and are not displayed on the Tivoli Business Systems Manager console (IMS regions with an unsupported IMS release are removed from the Tivoli Business Systems Manager console the first time NetView for OS/390 is started).

Upgrading DB2 Universal Database for z/OS and OS/390

Use the following DB2 Universal Database for z/OS and OS/390 upgrade table to upgrade to Tivoli Business Systems Manager, Version 2.1.1. More detail on each step is available in "DB2 Universal Database for z/OS and OS/390 and DB2 Performance Monitor” on page 115.

Table 101. Upgrading DB2 Universal Database for z/OS and OS/390

<table>
<thead>
<tr>
<th>Step</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>2.</td>
<td>Install Tivoli Business Systems Manager for DB2 components. See “1. Install Tivoli Business Systems Manager for DB2 components” on page 115 for details.</td>
</tr>
<tr>
<td>3.</td>
<td>Perform DB2 subsystem configuration for every DB2 to be monitored. See “3. Perform DB2 configuration for each DB2 subsystem or data sharing group” on page 116 for details.</td>
</tr>
<tr>
<td></td>
<td>a. Run the IHSBTBND job from SGTMSAMP — This job must be executed for every standalone DB2 subsystem or a member of a Data Sharing Group.</td>
</tr>
<tr>
<td>5.</td>
<td>Start the NetView program.</td>
</tr>
</tbody>
</table>
Table 101. Upgrading DB2 Universal Database for z/OS and OS/390 (continued)

<table>
<thead>
<tr>
<th>Step</th>
</tr>
</thead>
<tbody>
<tr>
<td>6. Verify installation.</td>
</tr>
<tr>
<td>a. Verify DB2 Rediscovery.</td>
</tr>
<tr>
<td>b. Verify DB2 Event Processing.</td>
</tr>
<tr>
<td>c. Verify Poll Monitors.</td>
</tr>
<tr>
<td>d. Verify Console Commands.</td>
</tr>
</tbody>
</table>

**Note:** The Tivoli Business Systems Manager for DB2, Version 2.1.1 integration does not work with earlier versions of the Tivoli Business Systems Manager base product or Windows operating system environment software. You must upgrade first.

**System Automation for OS/390**

Use the following System Automation for OS/390 upgrade table to upgrade to Tivoli Business Systems Manager, Version 2.1.1:

**System Automation for OS/390, Version 1.3**

Table 102. Upgrading System Automation for OS/390, Version 1.3

<table>
<thead>
<tr>
<th>Step</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Upgrade the Windows operating system and the source/390 object pump to Tivoli Business Systems Manager, Version 2.1.1.</td>
</tr>
<tr>
<td>a. Modify the source/390 object pump parameters.</td>
</tr>
<tr>
<td>Ensure the source/390 object pump parameters contain the following variables:</td>
</tr>
<tr>
<td>SA390_JOBNAME=stcname</td>
</tr>
<tr>
<td>Where stcname is the started task name for the System Automation for OS/390 NetView agent.</td>
</tr>
<tr>
<td>A size value of 5000 for the following System Automation for OS/390 interface implementation is required:</td>
</tr>
<tr>
<td>EDI_BUFFER_SIZE=2048</td>
</tr>
<tr>
<td>2. Configure the System Automation for OS/390 NetView agents.</td>
</tr>
<tr>
<td>The following DD statements are affected:</td>
</tr>
<tr>
<td>– DSICLD</td>
</tr>
<tr>
<td>– DSIPARM</td>
</tr>
<tr>
<td>– DSIMSG</td>
</tr>
<tr>
<td>– STEPLIB</td>
</tr>
</tbody>
</table>
System Automation for OS/390, Version 2.1 and 2.2

Table 103. System Automation for OS/390, Version 2.1 and 2.2

<table>
<thead>
<tr>
<th>Step</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>a. Modify the source/390 object pump parameters:</td>
<td></td>
</tr>
<tr>
<td>– PPI=YES</td>
<td></td>
</tr>
<tr>
<td>– SA390_JOBNAME=stcname</td>
<td></td>
</tr>
<tr>
<td>– EDI_BUFFER_SIZE=2048</td>
<td>size</td>
</tr>
<tr>
<td>If you have not defined any External Data Interface (EDI) message automation table (MAT) traps, you do not need to modify the SA390_JOBNAME and EDI_BUFFER_SIZE parameters.</td>
<td></td>
</tr>
<tr>
<td>2. Configure the System Automation for OS/390 NetView agents.</td>
<td></td>
</tr>
<tr>
<td>The following DD statements are affected:</td>
<td></td>
</tr>
<tr>
<td>– DSICLD</td>
<td></td>
</tr>
<tr>
<td>– DSIPARM</td>
<td></td>
</tr>
<tr>
<td>– DSIMSG</td>
<td></td>
</tr>
<tr>
<td>– STEPLIB</td>
<td></td>
</tr>
<tr>
<td>3. Configure NetView components.</td>
<td></td>
</tr>
<tr>
<td>a. Ensure DSIPARM includes IHS$OPF in DSIOPFU:</td>
<td></td>
</tr>
<tr>
<td>%INCLUDE IHS$OPF</td>
<td></td>
</tr>
<tr>
<td>b. Ensure the current Message Automation Table contains IHS$MAT. To find the current MAT, issue &lt;AUTOTBL STATUS&gt; from the NetView command line facility.</td>
<td></td>
</tr>
<tr>
<td>c. Check hlq.SGTMSAMP(IHS$PARM).</td>
<td></td>
</tr>
<tr>
<td>Check the value of the IHSS.STATUS_LVL parameter in IHS$PARM and modify if necessary.</td>
<td></td>
</tr>
<tr>
<td>d. Remove the INGEXSTA exit from the DSICLD concatenation.</td>
<td></td>
</tr>
<tr>
<td>This is required when migrating from System Automation for OS/390, Version 1.3 to Version 2.1 or 2.2.</td>
<td></td>
</tr>
<tr>
<td>a. Define IHSSAUT1 and IHSSAUT2 to System Automation for OS/390 through the TSO dialogs.</td>
<td></td>
</tr>
<tr>
<td>IHSSAUT1 and IHSSAUT2 must be defined as auto operators to System Automation for OS/390 through the TSO dialogs. Following the ACF build process; an INGAMS refresh command must be issued on the System Automation for OS/390 NetView.</td>
<td></td>
</tr>
<tr>
<td>5. Start the NetView program.</td>
<td></td>
</tr>
<tr>
<td>The first time the NetView program is started, it automatically performs a full rediscovery for that system.</td>
<td></td>
</tr>
</tbody>
</table>

Tivoli Operations, Planning & Control

You can upgrade to Tivoli Business Systems Manager, Version 2.1.1, Tivoli Operations, Planning & Control and Tivoli Workload Scheduler for z/OS for OS/390 using the following upgrade table:
Table 104. Upgrading Tivoli Operation Planning and Control and Tivoli Workload Scheduler for z/OS

<table>
<thead>
<tr>
<th>Step</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Upgrade the Windows NT operating system and the source/390 object pump to Tivoli Business Systems Manager, Version 2.1.1.</td>
</tr>
</tbody>
</table>
| 2. | Configure Tivoli Workload Scheduler for z/OS.  
   a. Update Tivoli Operations, Planning & Control (Tivoli Workload Scheduler for z/OS where applicable) parameters.  
   Remove the WTO alerts from the ALERTS initialization Tivoli Operations, Planning & Control statement. If you used Tivoli Operations, Planning & Control, Version 2.2 or Version 2.3 to integrate with Tivoli Business Systems Manager, you were required to include WTO alerts as follows:  
   `ALERTS WTO(DURATION ERROROPE LATEOPER RESCONT OPCODE R QLIMEXCEED)`  
   You must remove the preceding WTO alerts (unless the WTO alerts are being used for purposes other then Tivoli Business Systems Manager), for Tivoli Workload Scheduler for z/OS to successfully integrate with Tivoli Business Systems Manager. |
| 3. | Configure Tivoli Operations, Planning & Control.  
   a. Remove the Tivoli Business Systems Manager version of exit EQQUX007 from the STEPLIB DD concatenation of the Tivoli Workload Scheduler for z/OS started task procedure.  
   If you were using Tivoli Operations, Planning & Control feature of System Automation for OS/390 and are using the System Automation for OS/390 Tivoli Operations, Planning & Control feature supplied version of Exit 7. That includes the exit driver module, EQQUX007, and two other modules UX007001 and UX007002. As shipped, the System Automation for OS/390 version of EQQUX007 calls up to 10 programs at that exit point, as if Tivoli Operations, Planning & Control called them directly. Refer to the AOC/MVS V1R4 OPC Automation Programmer’s Reference for more information on Exit 7 integration.  
   - Locate module UX00700n (n = number suffix of module name) that was originally added to allow the integration to Tivoli Business Systems Manager (this module was originally shipped as EQQUX007 on the Tivoli Business Systems SGTMMODS data set, before it was renamed to UX00700n).  
   Please note that the module in the LNKLST has to have a higher module number than 2 as the UX007001 and UX007002 are existing modules (as shipped by System Automation for OS/390).  
   - Remove or rename the module UX00700n (that corresponds to the Tivoli Business Systems Manager module you previously installed) from the LNKLST to prevent it from being called, as it is no longer needed with this installation option.  
   If you were using Tivoli Operations, Planning & Control, Version 2.2 or Version 2.3 integration with Tivoli Business Systems Manager, you copied the EQQUX007 program from the SGTMMODS data set into an APF authorized library in the LNKLST concatenation as defined by the STEPLIB DD statement in the Tivoli Workload Scheduler for z/OS JCL procedure. To successfully integrate with Tivoli Business Systems Manager, remove the EQQUX007 program from this library. The LLA UPDATE command is required if you remove the program from LNKLST. See the OS/390 MVS commands documentation for more details about the LLA UPDATE command. Update the Tivoli Operations, Planning & Control EXITS init statement to:EXITS CALL07(N0)  
   b. Set EXTMON to Y.  
   You must specify the EXTMON (YES) parameter on the OPCOPTS initialization statement. This statement defines the runtime options to Tivoli Workload Scheduler for z/OS and the tracker, controller or standby controller that uses this statement. Refer to the IBM Tivoli Workload Scheduler for z/OS Customization and Tuning Manual, for OPCOPTS statement information. |
Table 104. Upgrading Tivoli Operation Planning and Control and Tivoli Workload Scheduler for z/OS (continued)

<table>
<thead>
<tr>
<th>Step</th>
</tr>
</thead>
<tbody>
<tr>
<td>c. Set up the Tivoli Operations, Planning &amp; Control jobs to be monitored by Tivoli Business Systems Manager.</td>
</tr>
<tr>
<td>In order to monitor jobs using Tivoli Business Systems Manager, the External Monitor job option of an operation must be set to the <strong>YES (Y)</strong> parameter. This option is changed in the application program description database and in the current plan. You can use the ISPF panels, the Tivoli Workload Scheduler for z/OS programming interface, or the Job Scheduling console to set the option or browse. Tivoli Business Systems Manager does not monitor jobs by a default action.</td>
</tr>
<tr>
<td>d. Disable the Write To Operator (WTO) Traps and duplicate events.</td>
</tr>
<tr>
<td>When Tivoli Workload Scheduler for z/OS is installed on an OS/390 system, message descriptions for Tivoli Operations, Planning &amp; Control started task resources must be disabled so that WTO messages are no longer trapped. If you do not disable the started task resources, events are delivered in the old and new methods and duplicate messages or exceptions are created.</td>
</tr>
<tr>
<td>Tivoli Business Systems Manager accepts events in both methods, but this is primarily so you can install or test Tivoli Workload Scheduler for z/OS on some host systems while still receiving WTO traps from other hosts. A specific batch resource can only receive Tivoli Workload Scheduler for z/OS or WTO events.</td>
</tr>
<tr>
<td>You can disable WTO traps in one of the following ways:</td>
</tr>
<tr>
<td>- Delete the Tivoli Operations, Planning &amp; Control started task resource. This is the simplest method but you will not be able to monitor Tivoli Operations, Planning &amp; Control as a started task in Tivoli Business Systems Manager unless you add the objects back into Tivoli Business Systems Manager.</td>
</tr>
<tr>
<td>You are not able to monitor Tivoli Operations, Planning &amp; Control as a started task in Tivoli Business Systems Manager.</td>
</tr>
<tr>
<td>- Delete the message descriptions</td>
</tr>
<tr>
<td>This retains the Tivoli Operations, Planning &amp; Control started task resource, but you cannot select the resource from the Tivoli Business Systems Manager console and you must run a stored procedure from the SQL Server Query Analyzer.</td>
</tr>
<tr>
<td>To delete the message descriptions:</td>
</tr>
<tr>
<td>1. To select the started task, run the following command from the Query Analyzer:</td>
</tr>
<tr>
<td>USE Object EXEC asisp_tws_disable_wto_traps</td>
</tr>
<tr>
<td>2. From the STC id column of the output from the previous command, select the object id of the started task you want to disable in the WTO traps.</td>
</tr>
<tr>
<td>Run the following command substituting the object id for STC id:</td>
</tr>
<tr>
<td>USE Object EXEC asisp_tws_disable_wto_traps STCid</td>
</tr>
<tr>
<td>If the started task is not listed by the first command and there are no message descriptions defined for it, then Tivoli Business Systems Manager does not trap for the Tivoli Operations, Planning &amp; Control WTOs.</td>
</tr>
</tbody>
</table>

Tivoli Business Systems Manager Version 2.1.1 for Tivoli Workload Scheduler for z/OS does not work with earlier versions of the Tivoli Business Systems Manager base software or Windows NT software. You must upgrade all your system components before you upgrade this data source.

**CICSPlex System Manager for OS/390**

Use the following CICSPlex System Manager (SM) upgrade table to upgrade to Tivoli Business Systems Manager, Version 2.1.1:
Table 105. CICSPlex System Manager for OS/390

<table>
<thead>
<tr>
<th>Step</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Upgrade the Windows operating system and source/390 object pump OS/390 to Tivoli Business Systems Manager, Version 2.1.1.</td>
</tr>
</tbody>
</table>
| 2. | Configure CICSPlex SM discovery jobs.  
a. Modify the CICSPlex SM discovery job.  
The member IHS$CRUN in the SGTM$AMP library contains a sample CICS discovery job. Modify this job to ensure that job name standards are followed and that the TRANSMIT step directs the data to the server running the ASIMV$SIPListenerSvc service. |
| 3. | Configure the source/390 object pump JCL.  
a. Add the CICSPlex System Manager library to the STEPLIB concatenation.  
The CICSPlex System Manager SEYUAUTH library should be added to the STEPLIB concatenation for the source/390 object pump. The version of the SEYUAUTH library should correspond to the version of the maintenance point CMAS for the CICSPlexes that you want to monitor using the source/390 object pump.  
b. Verify GTMJCL DD card.  
The source/390 pump JCL should contain a GTMJCL DD card. This points to a library where Tivoli Business Systems Manager submits batch jobs. |
| 4. | Configure NetView components.  
a. Include IHS$MAT in the Message Automation Table (MAT).  
The IHS$MAT include was introduced in a previous version of Tivoli Business Systems Manager by a PTF. Check that this member is included in the NetView MAT.  
b. Remove IHS$CMAT from MAT.  
Previous versions might have included IHS$CMAT in the MAT (even though the use of IHS$MAT was introduced by PTF in a previous version of Tivoli Business Systems Manager. This is no longer required, as it is included in IHS$MAT.  
c. Review IHS$MAT, IHS$CMD, IHS$OPF, IHS$MPF, and IHS$DISC.  
You must review all members. Most are new or changed in Tivoli Business Systems Manager, Version 2.1.1.  
d. Remove CICSPlex REXX function package.  
Previous versions of Tivoli Business Systems Manager required that the CICSPlex API REXX function package be installed in the NetView program. This is no longer required. You can remove the function package from the NetView program when using Tivoli Business Systems Manager, Version 2.1.1. |

Note: The Tivoli Business Systems Manager for CICSPlex System Manager Version 2.1.1 integration does not work with older versions of the Tivoli Business Systems Manager base software or Windows software. These must be upgraded first.

**Tivoli NetView for OS/390 RODM**

Use the following Tivoli NetView for OS/390 RODM upgrade table to upgrade to Tivoli Business Systems Manager, Version 2.1.1:
Table 106. Upgrading RDOM, Version 1.3

<table>
<thead>
<tr>
<th>Step</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Upgrade Windows operating system and OS/390 components to Tivoli Business Systems Manager, Version 2.1.1.</td>
<td></td>
</tr>
</tbody>
</table>
| a. Verify the source/390 object pump parameters. | Ensure the source/390 object pump parameters contain the same RDOM keyword cards that are already used in your current Tivoli Business Systems Manager, Version 2.1.1.  
 b. Verify that the RDOM started task is running on OS/390 or z/OS. |  |
| a. Perform RDOM discovery. | Perform a RDOM discovery process or manually register the resources by using the console.  
 Update your existing RDOM Discovery Job to use the Version 2.1.1 SGTMMODS load library for the GTMAOE0 utility. Run the RDOM discovery job.  
 Run the RDOM Discovery Load job.  
 Run the RDOM Discovery Process job. |  
 See “Configuring SQL Server Jobs” on page 93 for details.  
 b. Perform a RDOM manual registration (optional).  
 If no SNA\APPN resources are registered from the discovery process, then there are no new resources discovered.  
 Manually register the SNA\APPN network resources. Refer to the IBM Tivoli Business Systems Manager: Administrator’s Guide for more information. |  |

Upgrading National Language Support

To upgrade National Language Support, perform the following steps:

For Intelligent Monitoring components:
- Upgrading from 1.5 to 2.1.1 — No upgrade from 1.5 (no NLS support in that release)
- Upgrading from 2.1 to 2.1.1 — Uninstall the old NLS support, then install the new NLS support. Follow the instructions in Chapter 11, “National Language Support,” on page 225.

For all other components in a non-TME environment:
- Uninstall the old NLS support, then install the new NLS support. Follow the instructions in Chapter 11, “National Language Support,” on page 225.

For NLS resources stored in the Tivoli Business Systems Manager databases:
- After installing the new NLS support using the ISMP installer, run the loadDB.sh script as described in the section “Additional Information for Populating the Tivoli Business Systems Manager Databases” on page 231. You do not need to delete NLS resources from the database before loading new NLS resources. The loadDB.sh script (together with the stored procedures it calls) provides a built-in update function. However, an update of the NLS resources in the Tivoli Business Systems Manager databases will take significantly longer (several hours per language) than an original installation.

For components in a TME environment:
- Install the new NLS resources. You do not need to perform any uninstallation beforehand.
Note: Any *uninstallation* steps for NLS resources in the migration process should be performed *prior* to base code migration. Any *installation* steps for NLS resources in the migration process should be performed *after* base code migration.
Chapter 16. Upgrading Failover to Version 2.1.1

This chapter describes how to upgrade failover to Tivoli Business Systems Manager, Version 2.1.1 if your environment already has failover implemented. If your site does not already have failover implemented, perform the Tivoli Business Systems Manager 2.1.1 upgrade, and then follow the directions in Chapter 12, “The Failover Process,” on page 239.

The failover methodology assumes the following:
• System administrators are familiar with the failover process.
• Extensive acceptance testing of the upgrade process has already been performed with a copy of your database on the Tivoli Business Systems Manager Quality Assurance set of servers.
• Failover has already been implemented in your Tivoli Business Systems Manager production environment.
• The primary site is the set of Tivoli Business Systems Manager servers that are typically processing events.
• The secondary site is the set of Tivoli Business Systems Manager servers that are inactive or used for disaster recovery.

Overview

The high-level steps to upgrade Tivoli Business Systems Manager when failover is already implemented are:
• Perform a failover to the secondary site.
  – Do not initialize Tivoli Business Systems Manager log shipping again (the failover database synchronization process) once failover is complete.
• Take the primary site Tivoli Business Systems Manager databases out of failover mode.
• Upgrade the primary site.
• Test the primary site.
• Upgrade the secondary site. For this, there are two options.
  – Option One (minimal operator down time). Move the operators and the production data sources to the upgraded (Version 2.1.1) primary site and then upgrade the secondary site.
    This involves approximately 30 minutes or less of operator down time while the data sources at the upgraded primary site are reactivated for production. This option does involve the loss of all event data that had been received by Tivoli Business Systems Manager since the Tivoli Business Systems Manager log shipping was disabled.
  – Option Two (no event data loss). Suspend active use and processing of Tivoli Business Systems Manager while the primary site is upgraded.
    This involves approximately four to 24 hours of operator down time while the primary site is upgraded. The duration of this option depends on several factors, including database size, server hardware resources, and how much upgrade testing is performed before the operators are back on the system. This option involves no loss of event data. All event data accumulates in queues while the upgrade is occurring. In this option, the upgrade of the primary site also serves as a final test before the production upgrade.
• Initialize Tivoli Business Systems Manager log shipping again.

Upgrading the Primary Site

1. Verify that all Tivoli Business Systems Manager Services on this site are disabled.
2. Verify that all Tivoli Business Systems Manager services on this site are stopped.
3. Take the databases out of failover mode.
   a. On the Tivoli Business Systems Manager SQL Server:
      1) Stop the SQLServerAgent service.
      2) Stop the MSSQLServer service.
      3) Start the MSSQLServer service.
      4) Open a Query Analyzer session and point to the Tivoli Business Systems Manager SQL Server.
      5) Run the query:
         EXEC xp_rule_stoppulsing
      6) Run the stored procedure:
         EXEC msdb..asicsp_recover_databases
      7) Start the SQLServerAgent service.
      8) Enable all SQL jobs that are required for typical Tivoli Business Systems Manager processing (use the secondary SQL server as a reference if necessary).
   b. On the Tivoli Business Systems Manager history server:
      1) Stop the SQLServerAgent service.
      2) Stop the MSSQLServer service.
      3) Start the MSSQLServer service.
      4) Open a Query Analyzer session and point to the Tivoli Business Systems Manager SQL Server.
      5) Run the stored procedure:
         EXEC msdb..asicsp_recover_databases @histserver=1
      6) Start the SQLServerAgent service.
      7) Enable all SQL jobs that are required for typical Tivoli Business Systems Manager history processing (use the secondary Tivoli Business Systems Manager history server as a reference if necessary).
4. Run the standard upgrade process as defined.
5. Test the upgraded Tivoli Business Systems Manager environment.
   a. Enable all Tivoli Business Systems Manager services on this site except for the event handlers and sender services.
   b. Set up the data source connectivity for testing purposes.
      1) Only enable event handlers and sender services for the OS/390 instances that are going to be used to test the system.
      2) For TCP/IP OS/390 data sources:
         a) Enable the Tivoli BSM MVSIPListener service if using TCP/IP connectivity to the OS/390 instances that are going to be used to test the system.
         b) Temporarily remove the production OS/390 TCP/IP component definitions for the duration of the testing cycle:
Note: If the Tivoli BSM MVSIPListener service is running without removing the production definitions, and a production instance of the source/390 object server is restarted, it might connect to the upgraded primary site instead of the Version 1.5 production (secondary) site. If that occurs, you can force the connection to the other site using the source/390 object server SWITCH command. See IBM Tivoli Business Systems Manager: Command Reference for more information.

3) SNA or Host Integration Server OS/390 data sources.
   a) Save the current SNA or Host Integration Server configuration.
   b) Temporarily remove the production OS/390 LU definitions for the duration of the testing cycle.
   c) Enable the snasrvr service.

4) For TCP/IP distributed data sources, configure the data source to point to a test system.

   c. Restart all Tivoli Business Systems Manager servers.
   d. Run all appropriate verification tests.

6. Reconfigure the upgraded primary site for production data when all verification tests are complete:
   a. Stop all Tivoli Business Systems Manager services on the upgraded primary site.
   b. Reconfigure all data sources on the upgraded site.
      1) Recreate all necessary production OS/390 TCP/IP component definitions.
      2) Reconfigure distributed data sources.
   c. Verify that all necessary Tivoli Business Systems Manager services are enabled, including all appropriate event handlers and sender services.
   d. OPTIONAL: Reset all resources to the green (active) state using the EXEC Object..asip_resetdb @resetmessages=1 stored procedure because the production state might not match the state in the database.
      1) Stop the SQLServerAgent service.
      2) Open a Query Analyzer session and point to the Tivoli Business Systems Manager SQL Server.
      3) Run the stored procedure:
         
         ```
         EXEC Object..asip_resetdb @resetmessages=1
         ```
         
         This stored procedure deletes all current event data but not historical event data if the history server has been properly set up and configured.
         At this point in the upgrade process, the primary site has been upgraded to Version 2.1.1 and tested. The active processing of the events are still occurring on the secondary site by Version 1.5.

---

**Upgrading the Secondary Site**

From this point, there are two options:

- Option One: Minimal Operator Down Time
- Option Two: No Event Data Loss
Option One: Minimal Operator Down Time

Activate the upgraded primary site as the production site and perform the following steps:

1. Have all Tivoli Business Systems Manager operators log off.
2. Stop all Tivoli Business Systems Manager services on the non-upgraded site.
3. Stop the snasrvr service on the SNA server on the non-upgraded secondary site.
4. Restore the production SNA server configuration on the upgraded primary site.
5. Restart all Tivoli Business Systems Manager servers in the upgraded primary site.
6. Have all Tivoli Business Systems Manager operators log on to the upgraded primary site.
7. Go to "Upgrading the Secondary Site - Option One."

Option Two: No Event Data Loss

1. Have all Tivoli Business Systems Manager users log off.
2. Stop all Tivoli Business Systems Manager services on the non-upgraded secondary site.
3. Stop the snasrvr service on the SNA or Host Integration Server on the non-upgraded secondary site.
4. Go to "Upgrading the Secondary Site - Option Two" on page 326.

Upgrading the Secondary Site - Option One

1. Make sure that all Tivoli Business Systems Manager services are disabled (including SNA or Host Integration Server).
2. Make sure that all Tivoli Business Systems Manager services are stopped.
3. Take the databases out of failover mode.
   a. On the Tivoli Business Systems Manager SQL Server:
      1) Stop the SQLServerAgent service.
      2) Stop the MSSQLServer service.
      3) Start the MSSQLServer service.
      4) Open a Query Analyzer session and point to the Tivoli Business Systems Manager SQL Server.
         a) Run the query:
            EXEC xp_rule_stoppulsing
         b) Run the stored procedure:
            EXEC msdb..asisp_recover_databases
      5) Start the SQLServerAgent service.
      6) Enable all SQL jobs that are required for typical Tivoli Business Systems Manager processing (use the current ACTIVE Tivoli Business Systems Manager SQL server as a reference if necessary).
   b. On the Tivoli Business Systems Manager history server:
      1) Stop the SQLServerAgent service.
      2) Stop the MSSQLServer service.
      3) Start the MSSQLServer service.
      4) Open a Query Analyzer session and point to the Tivoli Business Systems Manager SQL Server.
5) Run the stored procedure:

```
EXEC msdb..asisp_recover_databases @histserver=1
```

6) Start the SQLServerAgent service.

7) Enable all SQL jobs that are required for typical Tivoli Business Systems Manager history processing (use the current ACTIVE Tivoli Business Systems Manager history server as a reference if necessary).

4. Run the standard upgrade process.

5. Test the upgraded Tivoli Business Systems Manager environment.

   a. Enable all Tivoli Business Systems Manager services on this site except for the event handlers and sender services that handle the OS/390 data.
   b. For data source connectivity for testing purposes:
      1) Only enable event handlers and sender services for the OS/390 instances that are going to be used to test the system.
      2) For TCP/IP OS/390 data sources:
         a) Enable the Tivoli BSM MVSIPListener service only if you are using TCP/IP connectivity to the OS/390 instances that are going to be used to test the system.
         b) Temporarily remove the production OS/390 TCP/IP component definitions for the duration of the testing cycle:
            `makeMVSComponents -r -0<OSname>`

         **Note:** If the Tivoli BSM MVSIPListener service is running and a production instance of the source/390 object server is restarted, it can connect to this site (the non-upgraded site) instead of the production (upgraded) site. If this occurs, you can force the connection to the other site using the source/390 object server **SWITCH** command. See *IBM Tivoli Business Systems Manager: Command Reference* for more information.

   3) SNA OS/390 data sources:
      a) Save the current SNA configuration.
      b) Temporarily remove the production OS/390 LU definitions for the duration of the testing cycle.
      c) Enable the snasrvr service.

   4) For TCP/IP distributed data sources, configure the data source to point to a test system.

   c. Restart all Tivoli Business Systems Manager servers.
   d. Run all appropriate verification tests.

6. Prepare the site to re-establish failover after you complete all verification tests.

   a. Disable all Tivoli Business Systems Manager services.
   b. Stop all Tivoli Business Systems Manager services on the upgraded site.
   c. Reconfigure all data sources on the upgraded site.
      1) Recreate all necessary production OS/390 TCP/IP component definitions.
      2) Restore the production SNA server configuration.
      3) Reconfigure the distributed data sources.

7. Initialize Tivoli Business Systems Manager log shipping again, in the appropriate direction.
Upgrading the Secondary Site - Option Two

1. Make sure that all Tivoli Business Systems Manager services are disabled (including SNA or Host Integration Server).
2. Make sure that all Tivoli Business Systems Manager services are stopped. See the services section in the IBM Tivoli Business Systems Manager: Administrator’s Guide for further details.
3. Take the databases out of failover mode.
   a. On the Tivoli Business Systems Manager SQL Server:
      1) Stop the SQLServerAgent service.
      2) Stop the MSSQLServer service.
      3) Start the MSSQLServer service.
      4) Open a Query Analyzer session and point to the Tivoli Business Systems Manager database server.
         a) Run the query:
            EXEC xp_rule_stoppulsing
         b) Run the stored procedure:
            EXEC msdb..asisp_recover_databases
      5) Start the SQLServerAgent service.
   b. On the Tivoli Business Systems Manager history server:
      1) Stop the SQLServerAgent service.
      2) Stop the MSSQLServer service.
      3) Start the MSSQLServer service.
      4) Open a Query Analyzer session and point to the Tivoli Business Systems Manager SQL Server.
      5) Run the stored procedure:
         EXEC msdb..asisp_recover_databases @histserver=1
      6) Start the SQLServerAgent service.
      7) Enable all SQL jobs (see the IBM Tivoli Business Systems Manager Administrator’s Guide for a list of SQL jobs) that are required for typical Tivoli Business Systems Manager processing (use the current ACTIVE Tivoli Business Systems Manager SQL server as a reference if necessary).
4. Run the standard upgrade process.
5. Test the upgraded Tivoli Business Systems Manager environment.
   a. Enable all Tivoli Business Systems Manager services on this site except for the event handlers and sender services that handle the OS/390 data.
   b. For data source connectivity for testing purposes:
      1) Only enable event handlers and sender services for the OS/390 instances that you are going to use in testing the system.
      2) For TCP/IP OS/390 data sources:
         a) Enable the Tivoli BSM MVSIPListener service only if you are using TCP/IP connectivity to the OS/390 instances for testing the system.
         b) Temporarily remove the production OS/390 TCP/IP component definitions for the duration of the testing cycle:
            makeMVSComponents -r -O<OSname>
Note: If the Tivoli BSM MVSIPListener service is running and a production instance of the source/390 object server is restarted, it might connect to this site (the non-upgraded site) instead of the production (upgraded) site. If this happens, you can force the connection to the other site using the source/390 object server SWITCH command. See IBM Tivoli Business Systems Manager: Command Reference for more information.

3) For SNA OS/390 data sources:
   a) Save the current SNA configuration.
   b) Temporarily remove the production OS/390 LU definitions for the duration of the testing cycle.
   c) Enable the snasrvr service.

4) For TCP/IP distributed data sources, configure the data source to point to a test system.
   c. Restart all Tivoli Business Systems Manager servers.
   d. Run all appropriate verification tests.

6. Prepare the site for re-establishing failover when all verification tests are complete.
   a. Enable all Tivoli Business Systems Manager services.
   b. Reconfigure all data sources on the upgraded site:
      1) Recreate all necessary production OS/390 TCP/IP component definitions.
      2) Restore the production SNA server configuration.
      3) Reconfigure the distributed data sources.

7. Restart all Tivoli Business Systems Manager servers.

8. Have all Tivoli Business Systems Manager operators log on to the upgraded site.

9. Initialize Tivoli Business Systems Manager log shipping again, in the appropriate direction.
Chapter 17. Converting from a Two-Server Linked History to a Two-Server BCP Approach Setup

Tivoli Business Systems Manager 2.1.1 no longer supports the linked server approach for history server setup. Please follow the instructions in this chapter to convert your setup to a BCP approach.

Determining Your Type of History Setup

The best way to determine what type of history server setup you have is based upon the state of the history database, the eventhistory database, and the event table/view in the object database:

- If the database on your history server is named History, then you already have the BCP approach and you do not need to follow these conversion instructions.
- If the database on your history server is named EventHistory, and the event table in the object database on the database server is a view instead of a table, then you have a two-server linked-server approach installed. The event view looks like the following:

```
CREATE VIEW event AS
SELECT *
FROM
<HistoryServerName>.EventHistory.dbo.event_table
```

- If the history server is installed on the same machine as the database server, and the event table in the object database on the database server is a view instead of a table, then you have a one-server linked-server approach installed. The event view looks like the following:

```
CREATE VIEW event AS
SELECT *
FROM EventHistory.event_table
```

- If none of these scenarios is present, then you have no history server. Without a history server, reports from the reporting system can only report on data from your live production database.

Prerequisites

- A linked server for history approach has been installed.
- The existing historical events residing on the history server will be retained.
- The Object, Meta, and RODM databases on the Tivoli Business System Manager database server are being backed up periodically, and that there are successful backup files of the Object, Meta, RODM databases present.

Defined Variables

The following variables are defined:

- `<HistoryServer>` — The host name of the server that contains the history database.
- `<HistsaUID>` — The sa User ID for the history database.
- `<HistsaPWD>` — The sa (system administrator) password for the history database.
  - The history server refers to the secondary server that contains the history database, to which events from the database server are forwarded. The events contained on the history database are used to run historical reporting.
The primary server refers to the database server, which has events forwarded to a variety of data sources. These events are used for real-time monitoring of critical resources for your enterprise.

Conversion Instructions

To convert from a two-server linked history approach to a two-server BCP approach, perform the following steps:

1. Export the existing historical events.
   
   The events residing on the history server are exported by running the following BCP command:
   
   ```
   bcp "EventHistory..event_table" out <drive>:\dbEventHistory.txt
   -w -q -S<HistoryServer> -U<HistsaUID> -P<HistsaPWD>
   -e<drive>:\dbEventHistoryERR.txt
   ```
   
   Use the appropriate values for <HistsaUID>, <HistsaPWD>, and <HistoryServer> on the history server database. Replace <drive> with the hard drive letter that has sufficient space to contain the BCP export file.

2. Uninstall the linked server.
   
   Run the following command on the database server:
   
   ```
   sh HistoryServerUninstall.ksh -N <HistoryServer> -R <HistsaUID> -W <HistsaPWD>
   ```

3. Install the history server using the BCP approach. Follow the instructions in the preceding section, "Installation" on page 50.

4. Import the historical events. The saved events from step 1 are imported into the new history server setup by running the following BCP command:
   
   ```
   bcp "History..eventhist" in <drive>:\dbEventHistory.txt -w -b10000 -q
   -S<HistoryServer> -U<Hist_saUID> -P<Hist_saPWD>
   -e<drive>:\dbEventHistoryERR.txt
   ```
   
   Use the appropriate values for <Hist_saUID>, <Hist_saPWD>, and <HistoryServer> on the history server database. Replace <drive> with the hard drive letter from which the BCP export file was created. See step 1.

5. Configure the reporting system. Follow the instructions in "Installation" on page 50.
Chapter 18. Image Management Changes

Tivoli Business Systems Manager Versions 2.1 and 2.1.1 requires all images displayed within the console to be non-animated, GIF images with transparent backgrounds. Although the console and console server do not specifically determine if a GIF image supports a transparent background, if you are upgrading from Version 1.5, you are strongly urged to convert your own GIF images to have transparent backgrounds to avoid any overlapping of images.

Existing images from Tivoli Business Systems Manager version 1.5, such as bitmap images, will continued to be stored in the BLOB table. However, these images will not be supported or used in Tivoli Business Systems Manager 2.1.1. If you wish to convert your bitmap images to GIFs, you are encouraged to do so, provided you use the correct image sizes for resource type images. All resource images will support 4 sizes: tiny (16x16 pixels), small (24x24 pixels), medium (32x32 pixels), and large (45x45 pixels). If you wish to create or modify resource images, you must follow these size requirements.

You can view, change, or remove images from the console using the Image Manager. You can also replace an image for an object class with a new one, or use one of the ones already in existence in the database. Original images that are changed (such as the images that are shipped with Tivoli Business Systems Manager 2.1) to a different image are backed-up in the database so you do not lose the original images.

In addition to resource images, Tivoli Business Systems Manager 2.1 and 2.1.1 also support background images that can be displayed behind various views within the console, such as Topology or HyperView. You can use the Image Manager to import new background images into the database.

Importing Distributed Images

In Tivoli Business Systems Manager versions 2.1 and later, the gemimageimport.sh script is no longer used and supported. In place of gemimageimport.sh script, you should use the loadgemicons.sh script to load distributed icons into the database. This script creates entries in the BLOB table of the Tivoli Business Systems Manager database for the specified icons and is specific to the distributed classes users add to create their site specific distributed monitoring environment.

Another script, loadclassgifs.sh, can be used for backgrounds and non-distributed classes (for example, classes that already exist in Tivoli Business Systems Manager). With both loadclassgifs.sh and loadgemicons.sh, customers can perform mass-loading of images into the database without the use of a GUI. You must restart the console server in order to see any changes to your images.

See documentation of both scripts below:

LoadGEMIcons.sh

Syntax

sh LoadGEMIcons -S <DB Server> -U <DB User> -P <DB Password> -p <Product> -v <version> -f <Icon File Name>
Parameters
- **S** *<DB Server>*
  Database parameter that is the name of the server where the database resides.
- **U** *<DB User>*
  Database parameter that is the user name to access the database.
- **P** *<DB Password>*
  Database parameter that is the password to access the database.
- **p** *<Product>*
  Name of the GEM product.
- **v** *<Version>*
  Version of the product.
- **f** *<Icon File Name>*
  Full path name of the image.

Image Naming Conventions
*<base name>*_*<type>*.gif
*<base name>*
  This prefix can be any valid file name character
*<type>*
  The type or size of image. Valid values are 45 (large), 32 (medium), 24 (small), 16 (tiny)

Example
sh LoadGEMIcons -Sdbserver -Usa -Psa_dbserver -pDB2Database -v1.1
    -fc:/tivolimanager/images/

Loadclassgifs.sh

Syntax
sh LoadClassGIFs -S <DB Server> -U <DB User> -P <DB Password> -f <Icon Path> -C <Class ID> -t <Image Type>

Parameters
- **S** *<DB Server>*
  Database parameter that is the name of the server where the database resides.
- **U** *<DB User>*
  Database parameter that is the user name to access the database.
- **P** *<DB Password>*
  Database parameter that is the password to access the database.
- **f** *<Icon Path>*
  Location of the icons. The default is a forward slash (/).
- **C** *<Class ID>*
  CID of the classes to load. The default is an asterisk (*).
- **t** *<Image Type>*
  Type of image to load. The default is ResourceImage.
MiscResourceImage
Resource images from other products that do not correspond to a CID in the Tivoli Business Systems Manager database.

BackgroundImage
Background images.

Image Naming Conventions

Resource Images (ResourceImage):
cid_<cid>_<type>.gif
<cid> the cid of the resource type
?type> type or size of image. Valid values are 45 (large), 32 (medium), 24 (small), 16 (tiny)

Miscellaneous Resource Images (MiscResourceImage):
cid_<resourcetype>_<type>.gif
<resourcetype> type of resource with which this image is associated. Does not have to be a cid.
?type> type or size of image. Valid values are 45 (large), 32 (medium), 24 (small), 16 (tiny)

Background Images (BackgroundImage):
bg_<name>.gif
<name> name of the image

Example
sh LoadClassGIFs -Sdbserver -Usa -Psa_dbserver -fD:/temp/icons/gifs/

Extracting Previously loaded (version 1.5) BMP Images from the BLOB table

BMP images (bitmaps) are no longer supported in Tivoli Business Systems Manager version 2.1 and 2.1.1. Therefore, any customized icons that are BMPs must be manually converted to the GIF format. There is no automatic procedure for this. During the upgrade process, however, bitmaps are not deleted; they are stored in the BLOB_C table. The BMP images have a Category (a new column in Tivoli Business Systems Manager 2.1 and 2.1.1 in the BLOB_C table) value of 0; the Type field should be BMP. The existing BMP images will need to be exported from the BLOB table, converted to GIF images, and then imported again into the BLOB table using the loadgemicons or LoadClassGIFs script.

To extract images from the BLOB_C table, use the following command:
textcopy -S<DB server> -U<DB user> -P <DB password> -DObject -TBLOB_C -C_Data
-W"WHERE id = <id>" -F<file name> -o

For example:
textcopy -SMYDBServer -UAdministrator -PTBSM -DObject -TBLOB_C -C_Data
-W"WHERE id = 5" -Fimage1.gif -o
The id must be known and can be found in the BLOB_C table. The filename refers to the filename of the image to put into the BLOB table.

Once the BMP images have been extracted, an imaging tool will be needed to save these images as transparent GIF images. There are several available image tools available on the Internet, such as "Advanced Batch Converter" (ABC) at http://www.batchconverter.com/ which can be used for this purpose.

**Reporting System Images**

Images used in the Reporting System are not obtained from the BLOB table. Instead, GIF files located in the `<TivoliManager>\ASIReports\ASIWeb\Menu\Images` directory are used.

The image files used by the Reporting System correspond to the ResourceImage and MiscResourceImage resource types described for the -t parameter of the "Loadclassgifs.sh" on page 332, and are of the small type. The only difference between the small image types inserted into the BLOB table by the `loadclassgifs` script and the image files used by the Reporting System is the file name.

The file names added to the BLOB table by the `loadclassgifs` script of the type which would be used by the Reporting System are of the form:

```
cid_<cid>_24.gif
```

- `<cid>` The cid of the resource type.

The corresponding file names used by the Reporting System are of the form:

```
<cíd>.gif
```

- `<cid>` The cid of the resource type.

Therefore, in order to make new images which have been added to Tivoli Business Systems Manager available to the reporting system; simply copy the new file to the `<TivoliManager>\ASIReports\ASIWeb\Menu\Images` directory, and rename it.

**Example**

You created a new 24x24 GIF image for cid=XYZ3, and named it `cid_XYZ3_24.gif`. You added it to Tivoli Business Systems Manager using the following script:

```
sh LoadClassGIFs -Sdbserver -Usa -Psa_dbserver -fD:/temp/icons/gifs/
```

Use `xcopy` to add it to the Reporting System:

```
xcopy D:\temp\icons\gifs\cid_XYZ3_24.gif D:\TivoliManager\ASIReports\ASIWeb\Menu\Images\XYZ3.gif
```
Part 6. Appendixes
Appendix A. Configuring Network Communications Using Firewalls

To enable communication between Tivoli Business Systems Manager servers and the client environment through a firewall or router, you must define the ports that are used for communication between the components. Activate the indicated protocols for each port. Depending on the firewall or router configuration, it may be necessary to define ports 135, 136, 137, and 138 for TCP and UDP protocols.

**Note:** If the Failover servers and the primary servers are on different machines, you need SQL (port 1433) and RPC between the server sets.

<table>
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<tr>
<td>Telnet</td>
<td>TCP, UDP 23</td>
<td>Bi-directional</td>
<td>General connectivity</td>
</tr>
<tr>
<td>Domain / Domain Name Server</td>
<td>TCP, UDP 53</td>
<td>Bi-directional</td>
<td>General connectivity</td>
</tr>
<tr>
<td>WWW / World Wide Web HTTP</td>
<td>TCP, UDP 80</td>
<td>Bi-directional</td>
<td>General connectivity</td>
</tr>
<tr>
<td>Microsoft SNA Base</td>
<td>TCP, UDP 1478</td>
<td>Bi-directional</td>
<td>MVS data feeds</td>
</tr>
<tr>
<td>Domain Controller</td>
<td>TCP 137</td>
<td>Bi-directional</td>
<td>MVS data sources</td>
</tr>
<tr>
<td>netbios-ns / NetBIOS Name Service</td>
<td>TCP 138</td>
<td>Bi-directional</td>
<td>MVS data sources</td>
</tr>
<tr>
<td>netbios-dgm / NetBIOS Datagram Service</td>
<td>TCP 139</td>
<td>Bi-directional</td>
<td>MVS data sources</td>
</tr>
<tr>
<td>netbios-ssn / NetBIOS Session Service</td>
<td>TCP, UDP 1433</td>
<td>Bi-directional</td>
<td>MVS data feeds</td>
</tr>
<tr>
<td>Service</td>
<td>Port</td>
<td>Direction</td>
<td>Notes</td>
</tr>
<tr>
<td>-------------------------</td>
<td>----------</td>
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<td>---------------------------------------------------------</td>
</tr>
<tr>
<td>TCP 9403</td>
<td>Bi-directional</td>
<td>MVS data sources</td>
<td></td>
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<tr>
<td>TCP 1039</td>
<td>Bi-directional</td>
<td>MVS data sources</td>
<td></td>
</tr>
<tr>
<td>Tcpmux / TCP Port Service Multiplexer</td>
<td>TCP, UDP 1</td>
<td>Bi-directional</td>
<td>Pinging from Host to specified server</td>
</tr>
<tr>
<td>Telnet</td>
<td>TCP, UDP 23</td>
<td>Bi-directional</td>
<td>General connectivity</td>
</tr>
<tr>
<td>Domain / Domain Name Server</td>
<td>TCP, UDP 53</td>
<td>Bi-directional</td>
<td>General connectivity</td>
</tr>
<tr>
<td>WWW / World Wide Web HTTP</td>
<td>TCP, UDP 80</td>
<td>Bi-directional</td>
<td>General connectivity</td>
</tr>
</tbody>
</table>

**Task Server and Event enablement** (See “Configuring TCP/IP Port Numbers” on page 205)

<table>
<thead>
<tr>
<th>Service</th>
<th>Port</th>
<th>Direction</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>TGMTask</td>
<td>TCP 4020</td>
<td>Bi-directional</td>
<td>Tivoli NetView for OS/390</td>
</tr>
<tr>
<td>Event enablement</td>
<td>TCP 4030</td>
<td>Server -&gt; Client</td>
<td>Agent Listener</td>
</tr>
<tr>
<td>Task server</td>
<td>TCP 4042</td>
<td>Server -&gt; Client</td>
<td>TGMTask</td>
</tr>
<tr>
<td>postmsg</td>
<td>TCP 5529 or port mapper</td>
<td>Server -&gt; Client</td>
<td>For TEC integration</td>
</tr>
</tbody>
</table>

**Common Listener** (See “Configuring the Common Listener Service” on page 270)

<table>
<thead>
<tr>
<th>Service</th>
<th>Port</th>
<th>Direction</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>CommonListener</td>
<td>TCP 8082</td>
<td>Server -&gt; Client</td>
<td>Default port</td>
</tr>
<tr>
<td>CommonListener</td>
<td>TCP 9898</td>
<td>Server -&gt; Client</td>
<td>Default port for Tivoli NetView</td>
</tr>
</tbody>
</table>

**Console Server and Console** (See “The Console Server” on page 56, “Installing the Console” on page 67)

<table>
<thead>
<tr>
<th>Service</th>
<th>Port</th>
<th>Direction</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>RMI Registry</td>
<td>1099</td>
<td>Client-&gt; Server</td>
<td>com.tivoli.tbsm.server.Servers.RMIRegistryPort</td>
</tr>
<tr>
<td>RMI Export</td>
<td>anonymous</td>
<td>Server -&gt; Client</td>
<td>com.tivoli.tbsm.server.Servers.RMIExportPort</td>
</tr>
<tr>
<td>HTTP</td>
<td>80</td>
<td>Client-&gt; Server</td>
<td>com.tivoli.tbsm.ui.banner.ULBannerAreaManager.bannerAlias</td>
</tr>
<tr>
<td>IPLListener service</td>
<td>1021</td>
<td>Server -&gt; Client</td>
<td>Used for the GTMAOE0 utility</td>
</tr>
<tr>
<td>IPOSListener service</td>
<td>1022</td>
<td>Server -&gt; Client</td>
<td>Used for a source/390 object server download</td>
</tr>
</tbody>
</table>
Appendix B. Installing Microsoft SQL Server 7.0 Enterprise Edition

Follow the SQL Server instructions carefully — ensuring the sort sequence is specified correctly — or Tivoli Business Systems Manager will not function correctly. Tivoli Business Systems Manager will also not function correctly if the post-installation steps (ANSI settings) are not followed.

If the Microsoft SQL Server 7.0 Enterprise Edition is already installed, uninstall it, and install it again using the following instructions to set the correct installation parameters for Tivoli Business Systems Manager.

To install the Microsoft SQL Server 7.0 Enterprise Edition, follow these steps:

1. Insert the Microsoft SQL Server 7.0 Enterprise Edition CD and select Setup.bat. The Microsoft SQL Server Version 7.0 Enterprise Edition setup dialog begins. The InstallShield guides you through the installation. Follow the instructions in the dialogs. Click Next.

2. From the Select Install Method dialog, click the method of installation and click Next.

3. From the Welcome dialog, read the information and click Next.

4. From the Software License Agreement dialog, read the license information. You must accept the license agreement to continue the installation. Click Yes.

5. From the User Information dialog, type your name and company. Click Next.

6. From the Setup dialog, type your CD key information and click OK.

7. Your product ID is displayed in the second Setup dialog. Follow the instructions and click OK to continue.

8. From the Setup Type dialog, click Custom and type your destination folders for the Program Files and Data Files. (Click the Browse button and use D:\MSSQL7 as the destination folder for both the Program Files and Data Files. If you use a directory other than D:\MSSQL7, change the SQL script (AttachDatabases.sql) used to attach the Tivoli Business Systems Manager databases to reflect the correct drive.

9. Click Next.

10. From the Select Components dialog, click Next to accept the default values (components with a check mark in the box).

11. From the Character Set/Sort Order/Unicode Collation dialog, type 1252/ISO for Character Set and select Binary Order as the Sort Order. Keep the remaining default values. Click Next.


13. From the Services Accounts dialog, keep the default value: Use the same account for each service. For Service Settings, click Use the Local System account. Click Next.

Notes:

a. If you plan on using the Automated Line of Business and/or the Problem Management /Automatic Ticketing and Change Management features, you will need to use the Local Administrator Account as the Log on as: account.
for the Microsoft SQL Server Service. This is due to a problem with Microsoft SQL Server 7.0 with the Microsoft SQL Server 7.0 Service Pack 4 applied.

b. A utility program supplied by Microsoft called dcomcnfg.exe can be used to adjust the security rights a login can have for DCOM launching and access. Below are the instructions from the Microsoft Knowledge Base article #323287 to set default permissions for all DCOM programs on a server:

1) Click Start, click Run, type dcomcnfg, and then click OK.
2) Click the Default Security tab.
3) Under Default Access Permissions, under Default Launch Permissions, and under Default Configuration Permissions, click Edit Default to set default permissions.
4) If appropriate, click Add to add other user accounts to the Name Box.
5) In the Name box, select the user or group whose default permissions you want to change.
6) In the Type of Access box, select an access type for the selected user or group.

14. When the Start Copying Files dialog opens, click Next to continue with the installation. If you want to change any parameters, click Back.

Note: When you click Back, selections reset back to their default values. If you click Back at any time during the installation, make sure you select the values you wanted again before clicking Next.

15. From the Choose Licensing Mode dialog, click Per Server. Click Add Licenses. Click Continue.

16. On the New Client Access License dialog, type 200 in the Quantity field and click OK.

17. From the Per Server Licensing dialog, read the text. If you agree to the conditions, click the I agree that: check box and click OK.

18. When the Choose Licensing Mode dialog reopens, click your licensing mode (Per Server) and click Continue to complete the installation.

19. Click Finish on the Setup Complete dialog.

Changing the SQL Server 7.0 Authentication Password

After you install Microsoft SQL Server 7.0 Enterprise Edition, you must change the SQL Server authentication password for the sa (system administrator) account. From the SQL Server Enterprise Manager select Start --> Programs --> Microsoft SQL Server 7.0 --> Enterprise Manager.

1. In the left-pane, expand Microsoft SQL Servers and then expand SQL Server Group list by clicking the plus (+) sign.
2. Select your SQL server (usually the only SQL server listed) and expand it by clicking the plus (+) sign. If a dialog comes up asking if you are sure you wish to connect, click Yes. If after doing this, there is still a red circle on the server icon (which means the SQL server is stopped), right-click your SQL server and click Start.
3. Expand the Security list by clicking the plus (+) sign.
4. From the list of security options, select Logins.
5. In the right pane of the window that opens, all available user accounts are listed. Right-click on the sa account and click Properties.
6. Type the new sa password and click Apply.
7. When prompted to confirm the new password, type the new sa password again and click OK. The dialog closes.

Note: The database userid which Tivoli Business Systems Manager utilizes, for example sa, should have the System Administrators server role and should also be the database owner (must have the role of db_owner) of ALL databases. Tivoli Business Systems Manager utilizes extended stored procedures to perform administrative functions (such as registry updates) and this requires system administrator access.

Installing SQL Server 7.0 Service Pack 4

The SQL Server 7.0 Enterprise Edition Service Pack 4 is available from the Microsoft Web site.

To install Microsoft SQL Server 7.0 Enterprise Edition Service Pack 4.0:
1. Run setup.bat. The Microsoft SQL Server Service Pack 4 setup dialog begins. The InstallShield guides you through the installation. Accept the default values throughout the installation.
2. When the Setup Complete dialog opens, select Yes, I want to restart my computer now. Click Finish.

Disabling Selected Client-Side Options in SQL Server 7.0

Certain SQL client-side options must be manually disabled in SQL Server 7.0 Enterprise Edition for Tivoli Business Systems Manager to function correctly.

Turn off the option Use ANSI NULLs, padding and warnings (in two places on the menus) in SQL Server 7.0 Query Analyzer Tool (ISQLW) by following the steps below:
1. Start the SQL Server 7.0 Query Analyzer. Select Tools --> SQL Server Query Analyzer.
2. When the Connect to SQL Server dialog opens, type in the name of the SQL server you just installed and enter the password.
3. From the Query analyzer window, click File --> Configure.
4. Click the New Connections tab.
5. Clear Use ANSI NULLs, padding and warnings and Use ANSI quoted identifiers.
6. Click OK to close the dialog.
7. Click Query --> Current Connection Options.
8. On the General tab, clear Use ANSI NULLs, padding and warnings and Use ANSI quoted identifiers.
9. Click OK to close the dialog.

Close Enterprise Manager and SQL Server Query Analyzer.

Configuring SQL Server

After installing the SQL Server, configure SQL Server by doing the following:
1. “Disabling the Lightweight Pooling Option” on page 342
2. “Adding the /3GB Switch to the boot.ini File” on page 342
Disabling the Lightweight Pooling Option

The Microsoft SQL Server lightweight pooling option, when enabled on a multiprocessor system, causes intermittent failures in Tivoli Business Systems Manager components. The lightweight pooling option should be disabled. (This is the default configuration.)

To set the SQL parameters and reduce memory problems, go to the Processor tab of the Enterprise Manager server properties and ensure that the following options are not checked:

- Boost SQL Server Priority on Windows NT
- Use Windows NT fibers

Adding the /3GB Switch to the boot.ini File

If the database server has the following configuration add the /3GB switch to the boot.ini file:

1. Windows 2000 Advanced Server or Windows NT 4.0 Enterprise Edition as the operating system
2. 4 GB of RAM
3. SQL Server 7.0 or SQL Server 2000

One of the lines in the file should look like this after the change:

```
multi(0)disk(0)rdisk(0)partition(2)\WINNT="Microsoft Windows 2000 Advanced Server"
```

Making this change ensures that the SQL server uses up to 3 GB of RAM on the system. This should be done after you configure SQL server. Once this is done, start the server for the change to take effect.

Using a SQL account other than "sa" for Tivoli Business Systems Manager

**Note:** You must create the preferred SQL account prior to installing Tivoli Business Systems Manager.

Create the preferred SQL account in the following manner:

1. Launch the SQL Server Enterprise Manager via Start -> Programs -> Microsoft SQL Server 7.0 -> Enterprise Manager.
3. In the right pane, right-click and select New Login.
4. Enter a name for the SQL account (for example: tbsmsa).
5. Select SQL Server Authentication and enter a password (for example: tbsm).
7. Click OK.
8. Confirm the password when prompted (for this example: tbsm).

From this point forward use the new SQL account for all installation purposes, including the following situations:

- Logging into Query Analyzer to run DetachDatabases.sql and AttachDatabases.sql.
- Anywhere Tivoli Business Systems Manager InstallShield asks for the database account and password.
Additional customization/requirements to be aware of during an installation that does not use the 'sa' user id:

- The alternate user ID must be configured to have the object database as the default database. Click Start --> Programs --> Microsoft SQL Server --> Enterprise Manager --> Logins --> General properties for the login, to change the default database.
- Check Health Monitor scripts for references to the specific user ID "sa."
- If the new SQL account is created after the install of Tivoli Business Systems Manager, several permissions in SQL and registry changes on the Tivoli Business Systems Manager servers need to be made. Please contact your Tivoli Business Systems Manager Support representative for assistance.
- The sa userid should remain on the Tivoli Business Systems Manager system.
Appendix C. Installing Microsoft SQL Server 2000 Enterprise Edition

Follow the SQL Server instructions carefully — ensuring the sort sequence is specified correctly — or Tivoli Business Systems Manager will not function correctly. Tivoli Business Systems Manager will also not function correctly if the post-installation steps (ANSI settings) are not followed.

If Microsoft SQL Server 2000 Enterprise Edition is already installed, uninstall it and install it again using these instructions to set the correct installation parameters for Tivoli Business Systems Manager.

To install the Microsoft SQL Server 2000 Enterprise Edition, follow these steps:
1. Insert the Microsoft SQL Server 2000 Enterprise Edition CD and select Setup.bat.
2. The Microsoft SQL Server 2000 Enterprise Edition setup dialog begins. The InstallShield guides you through the installation. Follow the instructions in the dialogs.
3. From the Welcome dialog, click Next.
4. From the Computer Name dialog, click Local Computer and click Next.
5. From the Installation Selection dialog, click Create a new instance of SQL Server, or install Client Tools. Click Next.
6. From the User Information dialog, type your information and click Next.
7. From the Software License Agreement dialog, read the agreement, and click Yes if you agree with the terms.
8. From the Installation Definition dialog, click Server and Client Tools. Click Next.
9. From the Instance Name dialog, leave Default checked and click Next.
10. From the Setup Type dialog, click Custom, click both Browse buttons and use D:\ as the Destination folder for the program files and data files. This will cause your SQL Server 2000 program files and data files to be placed in D:\MSSQL.

**Note:** If you use a drive other than D:\, you must change the SQL scripts (AttachDatabases.sql and attachhistorydatabases.sql) used to attach the Tivoli Business Systems Manager databases, to reflect the correct drive. The attachhistorydatabases.sql script is only modified on the history server. If you use the default path D:\Program Files\Microsoft SQL Server\MSSQL for Microsoft SQL Server 2000 Enterprise Edition, you will have to use the short path (for example, D:\PROGA~1\MICROS~1\MSSQL\).

11. Click Next.
12. From the Select Components dialog, accept all the default components and subcomponents. Click Next.
13. From the Services Accounts dialog, keep the default value: Use the same account for each service. Auto start SQL Server Service. For Service Settings, click Use the Local System account. Click Next.
Note: A utility program supplied by Microsoft called dcomcnfg.exe can be used to adjust the security rights a login can have for DCOM launching and access. Below are the instructions from the Microsoft Knowledge Base article #323287 to set default permissions for all DCOM programs on a server:

a. Click **Start**, click **Run**, type dcomcnfg, and then click **OK**.

b. Click the Default Security tab.

c. Under Default Access Permissions, under Default Launch Permissions, and under Default Configuration Permissions, click **Edit Default** to set default permissions.

d. If appropriate, click **Add** to add other user accounts to the Name Box.

e. In the Name box, select the user or group whose default permissions you want to change.

f. In the Type of Access box, select an access type for the selected user or group.

14. From the Authentication Mode dialog, click **Mixed Mode Windows Authentication and SQL Authentication** and type a SQL sa password.

15. From the Collation Settings dialog, click **Collation designator** and select Latin1_General. **Select Binary as the Sort Order**. Click **Next**.

16. From the Network Libraries dialog, accept the default values for Named Pipes and Named Pipe name and TCP/IP Sockets. Click **Multi-Protocol** and **Enable Multi-Protocol encryption**. Click **Next**.

17. When the Start Copying Files dialog opens, click **Next** to continue with the database server installation. If you want to change any parameters, click **Back**.

18. From the Choose Licensing Mode dialog, click **Processor License for**. Type the number of processors you need for your machine. Click **Continue**.

19. From the Setup Complete dialog, click **Finish**.

Note: The database user ID which Tivoli Business Systems Manager utilizes (for example, sa) should have the System Administrators server role and should also be the database owner (must have the role of db_owner) of ALL databases. Tivoli Business Systems Manager utilizes extended stored procedures to perform administrative functions (such as registry updates) and this requires system administrator access.

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**Installing SQL Server 2000 Service Pack 3**


To install Microsoft SQL Server 2000 Enterprise Edition Service Pack 3:

1. If you are installing an English version of Microsoft SQL Server 2000 Enterprise Edition, proceed to step 2. If you are installing a non-English version of Microsoft SQL Server 2000 Enterprise Edition, follow the directions in "For non-English versions of Microsoft SQL Server 2000 Enterprise Edition" on page 347.

2. Stop all SQL Server services.

3. Run the **setupsql.exe** file. The Microsoft SQL Server Service Pack 3 setup dialog begins. The InstallShield guides you through the installation.

4. Accept the default values throughout the installation.
5. From the SQL Server 2000 Service Pack 3 setup dialog, select Upgrade Microsoft Search and apply SQL Server 2000 SP3 (required). Click Continue.

6. From the Error Reporting dialog, click OK.

7. From the Start Copying Files dialog, click Next.

8. From the You should now backup your master and msdb databases since this installation has updated their content message, click OK.

9. When the Setup Complete dialog opens, click Yes, I want to restart my computer now. Click Finish to conclude the installation.

For non-English versions of Microsoft SQL Server 2000 Enterprise Edition

Note: This modification is for non-English versions of Microsoft SQL Server 2000 Enterprise Editions.

When you apply Microsoft SQL Server 2000 Enterprise Edition Service Pack 3, there might be a potential problem with the sp2_serv_uni.sql file. This file is used to create language specific rows in the sysmessages table of the master database. The file might be missing the N character before the description value of these messages. The N character is the national character, which is used to signal that the following value contains double-byte characters. If the N character is missing, then SQL Server 2000 Enterprise Edition treats the value as a single byte character, which results in distorted data within a column.

This modification needs to be made prior to installing SQL Server 2000 Enterprise Edition Service Pack 3.

The following example shows how the file needs to be modified:

Original insert statement before the change:
(21, 10, 0, 'xxxxxxxxxxxxxxx', 1041) ... xxx is a Japanese message.

Insert statement after the change:
(21, 10, 0, N'xxxxxxxxxxxxxxx', 1041)

You must make this modification for each insert statement within the sp2_serv_uni.sql file. Create a copy of the original file prior to making any changes. Use a text editor that supports double-byte characters to modify the file.

Disabling Selected SQL Server 2000 Client-Side Options

Certain SQL server client-side options must be manually disabled in Microsoft SQL Server 2000 Enterprise Edition for Tivoli Business Systems Manager to function correctly.

To disable these options, perform the following steps:

1. Reboot the computer.

2. Start the Microsoft SQL Server 2000 Query Analyzer. Click Start --> Programs --> Microsoft SQL Server --> Query Analyzer.

3. In the Connect to SQL Server dialog, enter the server name in the SQL Server field. Leave the Start SQL Server if it is stopped message box clear. Enter your password.

4. From the Query Analyzer window, click Tools --> Options.

5. From the Options dialog, click the Connection Properties tab.
6. Clear the Set ansi_defaults check box.
7. Click Apply, then click OK to close the dialog.

### Configuring SQL Server

After installing SQL Server, please configure SQL Server by doing the following:

#### Disabling the Lightweight Pooling Option

The Microsoft SQL Server lightweight pooling option, when enabled on a multiprocessor system, causes intermittent failures in Tivoli Business Systems Manager components. The lightweight pooling option should be disabled. (This is the default configuration.)

To set the SQL parameters and reduce memory problems do the following:

1. Launch SQL Server Enterprise Manager. Click Start --> Programs --> Microsoft SQL Server --> Enterprise Manager.
2. Right-click the server and select Properties.
3. Click the Processor tab.
4. Under the Processor control section, ensure that the following options are not checked:
   - Boost SQL Server Priority on Windows
   - Use Windows NT fibers
5. Under the Parallelism section, make sure Use all available processors is checked.

#### Adding the /3GB Switch to the boot.ini File

If the database server has the following configuration, please add the /3GB switch to the boot.ini file:

1. Windows 2000 Advanced Server or Windows NT 4.0 Enterprise Edition as the operating system
2. 4 GB of RAM
3. SQL Server 7.0 or SQL Server 2000

One of the lines in the file should be similar to the following after the change:

```
multi(0)disk(0)rdisk(0)partition(2)\WINNT="Microsoft Windows 2000 Advanced Server"
/fastdetect /3GB
```

Making this change ensures that SQL Server uses up to 3 GB of RAM on the system. This should be done after you configure SQL Server. Once this is done, restart the server for the change to take effect.

### Using a SQL Account Other Than sa for Tivoli Business Systems Manager

**Note:** You must create the preferred SQL account prior to installing Tivoli Business Systems Manager.

Use the following steps to create the SQL account:

1. Launch the SQL Server Enterprise Manager. Click Start --> Programs --> Microsoft SQL Server --> Enterprise Manager.
2. Expand SQL Server Group --> your_server --> Security --> Logins.
3. In the right pane, right-click and select New Login.
4. Enter a name for the SQL account (for example, tbsmsa).
5. Click SQL Server Authentication and enter a password.
6. Click the Server Roles tab and click System Administrators.
7. Click OK.
8. Confirm the password when prompted.

Use the new SQL account for all installation purposes, including the following situations:
- Logging into Query Analyzer to run the DetachDatabases.sql and AttachDatabases.sql scripts.
- When the Tivoli Business Systems Manager InstallShield process asks for the database account and password.

Consider the following customization and requirements during an installation that does not use the sa user ID:
- The alternate user ID must be configured to have the object database as the default database. Click Start --> Programs --> Microsoft SQL Server --> Enterprise Manager --> Logins --> General properties for the login, to change the default database.
- Check Health Monitor scripts for references to the specific user ID "sa."
- If the new SQL account is created after the installation of Tivoli Business Systems Manager, several permissions in SQL and registry changes on the servers must be made. Please contact Customer Service for assistance.
- The sa user ID should remain on the Tivoli Business Systems Manager system.
Appendix D. Installing SQL Server 7.0 Client

To install Microsoft SQL Server 7.0 Enterprise Edition client on the Event Handler:

1. Insert the Microsoft SQL Server 7.0 Enterprise Edition CD into the Event Handler server and run `Setup.bat`.
   
   The Microsoft SQL Server Version 7.0 Enterprise Edition setup dialog begins. The InstallShield guides you through the installation. Follow the instructions in the dialogs. Click **Next**.

2. From the Select Install Method dialog, click your method of installation and click **Next**.

3. A Setup dialog displays with the message *The Enterprise Edition server component cannot be installed on Windows NT Server using this CD. Only client components will be available for installation.* Click **OK**.

4. From the Welcome dialog, read the information and click **Next**.

5. From the Software License Agreement dialog, read the license information. You must accept the license agreement to continue the installation. Click **Yes**.

6. From the User Information dialog, type your name and company. Click **Next**.

7. From the Setup dialog, type your CD key information and click **OK**.

8. Your product ID is displayed in the second Setup dialog. Follow the instructions and click **OK** to continue.

9. From the Setup Type dialog, click **Next** to accept the default values.

10. From the Select Components dialog, click **Next** to accept the default values (components with a check mark in the box).

11. When the Start Copying Files dialog opens, click **Next** to continue with the installation. If you want to change any parameters, click **Back**.

   **Note:** When you click **Back**, selections reset back to their default values. If you click **Back** at any time during the installation, make sure you reselect the values you wanted before clicking **Next**.

12. Click **Finish** on the Setup Complete dialog.

Installing SQL Server 7.0 Service Pack 4

The SQL Server 7.0 Enterprise Edition Service Pack 4 is available from Microsoft Web site.

To install Microsoft SQL Server 7.0 Enterprise Edition Service Pack 4.0:

1. Run `Setup.bat`. The Microsoft SQL Server Service Pack 4 setup dialog begins. The InstallShield guides you through the installation. Accept the default values throughout the installation.

2. When the Setup Complete dialog opens, click **Finish**.

Disabling Selected SQL Server 7.0 Client-Side Options

Certain SQL client-side options must be manually turned off in SQL Server 7.0 Enterprise Edition for Tivoli Business Systems Manager to function correctly.
Disable the Use ANSI NULLs, padding and warnings and Use ANSI quoted identifiers options (located twice on the menus) in the SQL Server 7.0 Query Analyzer Tool (ISQLW) by following the steps below.

1.
   a. Start the SQL Server 7.0 Query Analyzer. Select Start --> Programs --> Microsoft SQL Server 7.0 --> Query Analyzer.
   b. When the Connect to SQL Server dialog opens, type the name of your database server and enter the password for the database server.
   c. From the Query analyzer window, select File --> Configure.
   d. Click the New Connections tab.
   e. Clear the Use ANSI NULLs, padding and warnings and Use ANSI quoted identifiers check boxes.
   f. Click OK to close the dialog.

2.
   a. Click Query --> Current Connection Options.
   b. On the General tab, clear the Use ANSI NULLs, padding and warnings and Use ANSI quoted identifiers check boxes.
   c. Click OK to close the dialog.

Close Enterprise Manager and SQL Server Query Analyzer.
Appendix E. Installing SQL Server 2000 Client

To install Microsoft SQL Server 2000 Enterprise Edition client on the Event Handler:

   The Microsoft SQL Server Version 2000 Enterprise Edition setup dialog begins. The InstallShield guides you through the installation. Follow the instructions in the dialogs. Click Next.

2. A Setup dialog displays with the message The Enterprise Edition server component cannot be installed on Windows NT Server using this CD. Only client components will be available for installation. Click OK.

3. From the Welcome dialog, read the information and click Next.

4. From the Software License Agreement dialog, read the license information. You must accept the license agreement to continue the installation. Click Yes.

5. From the User Information dialog, type your name and company. Click Next.

6. From the Setup dialog, type your CD key information and click OK.

7. Your product ID is displayed in the second Setup dialog. Follow the instructions and click OK to continue.

8. From the Setup Type dialog, click Next to accept the default values.

9. From the Select Components dialog, click Next to accept the default values (components with a check mark in the box).

10. When the Start Copying Files dialog opens, click Next to continue with the installation. If you want to change any parameters, click Back.

   Note: When you click Back, selections reset back to their default values. If you click Back at any time during the installation, make sure you reselect the values you wanted before clicking Next.

11. Click Finish on the Setup Complete dialog.

Installing SQL Server 2000 Service Pack 2

The SQL Server 2000 Enterprise Edition Service Pack 2 is available from Microsoft Web site. To install Microsoft SQL Server 2000 Enterprise Edition Service Pack 4.0:

1. Run Setup.bat. The Microsoft SQL Server Service Pack 2 setup dialog begins. The InstallShield guides you through the installation. Accept the default values throughout the installation.

2. When the Setup Complete dialog opens, click Finish.

Disabling Selected SQL Server 2000 Client-Side Options

Certain SQL client-side options must be manually disabled in SQL Server 2000 Enterprise Edition for Tivoli Business Systems Manager to function correctly. To disable these options, perform the following steps:

1. a. Start the SQL Server 2000 Query Analyzer. Select Start --> Programs --> Microsoft SQL Server --> Query Analyzer.
b. In the Connect to SQL Server dialog, enter the database server name in the SQL Server field. Leave the Start SQL Server if it is stopped message box clear.

c. From the Query analyzer window, select Query --> Current Connection Properties.

d. From the Current Connection Properties of server_name, clear the Set ansi_nulls, Set ansi_null_dflt_on, Set ansi_padding, Set ansi_warnings, Set quoted_identifier check boxes. The Set ansi_defaults check box should automatically be cleared after all other ANSI related check boxes are cleared.

e. Click Apply, then click OK to close the dialog.

2.

a. From the Query Analyzer window, click Tools --> Options.

b. From the Options dialog, click the Connection Properties tab.

c. Clear the Set ansi_nulls, Set ansi_null_dflt_on, Set ansi_padding, Set ansi_warnings, Set quoted_identifier check boxes. The Set ansi_defaults check box should automatically be cleared after all other ANSI related check boxes are cleared.

d. Click Apply, then click OK to close the dialog.

Close Enterprise Manager and SQL Server Query Analyzer.
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