IBM Tivoli Business Systems Manager

Getting Started

Version 2.11, with Fix Packs 1-10
IBM Tivoli Business Systems Manager

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Version 2.11, with Fix Packs 1-10
Before using this information and the product it supports, read the information in Appendix B, “Notices,” on page 43.
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Preface

This document provides an overview of IBM® Tivoli® Business Systems Manager.

Who Should Read This Document

This document is written for system programmers, network planners, operations managers, system designers, system administrators, network operators, and others who need an introduction to Tivoli Business Systems Manager.

What This Document Contains

IBM Tivoli Business Systems Manager: Getting Started contains the following sections:

- **Chapter 1, “Overview,” on page 1** provides an overview of the Tivoli Business Systems Manager product.
- **Chapter 2, “Tivoli Business Systems Manager Components,” on page 11** provides an overview of the components of the Tivoli Business Systems Manager product.
- **Chapter 3, “Data Sources,” on page 17** describes the various software products that integrate with the Tivoli Business Systems Manager product to monitor resources.
- **Chapter 4, “Discovery and Resource Monitoring,” on page 29** describes the discovery and resource monitoring functions by products.
- **Appendix A, “Accessibility,” on page 39** describes the features of the Tivoli Business Systems Manager product that are accessible to all users.

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.
- **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: 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
Chapter 1. Overview

This chapter provides an overview of Tivoli Business Systems Manager and includes:

- "Business Systems Management"
- "What Is Tivoli Business Systems Manager?" on page 2
- "Business Systems" on page 3
- "Resources" on page 3
- "Discovery Processing" on page 3
- "Event processing" on page 4
- "Views" on page 8
- "Reporting System" on page 9
- "Instrumentation" on page 10
- "Problem and Change Support" on page 10

Business Systems Management

Over the past 20 years there has been a dramatic increase in complexity in the variety of computer systems and software used to run a business. Gone are the days when a computer system was isolated and used for the single purpose of word processing or producing a spreadsheet. Now there are multiple systems, such as a cluster of database servers, providing a single service, or multiple services provided by a single machine such as a mainframe.

Most often, these computers are all networked to form a single, very complex enterprise. The IT departments that maintain these computers specialize in such infrastructures and have an extensive understanding of how these machines work and how to fix the technology when it breaks.

However, as the environment becomes more complex, business users also want to understand the health of the infrastructure and the IT environment for their particular functions. Each sector of the business might have its own opinion about which machines or resources are most important. All need to understand the state of their operation so they can proactively manage their resources.

The IT department might understand that all resources are important, but most likely would not know the overall impact of each of these resources in the business sense. When multiple resources fail at one time, they may need to prioritize repairs, which means understanding the impact of each single resource on the enterprise’s operations.

These requirements from both the business and the IT department can be addressed together: business users can see the resources that they are using and how they affect their function, and IT personnel can use a reversed model to see which function from the business user is affected by the resources.

To be able to perform this function, the system must:

- coordinate and collect the status of all IT resources from the different parts of the enterprise using various systems management tools
What Is Tivoli Business Systems Manager?

Tivoli Business Systems Manager is an enterprise management product that monitors the data processing resources which are critical to a business application. It enables end-to-end monitoring of systems, subsystems, applications, and other resources in your enterprise, from OS/390 and z/OS systems to distributed systems. Tivoli Business Systems Manager provides your operations with a view of the system components as they relate to your overall business. Use Tivoli Business Systems Manager to:

- Construct monitoring views that reflect the current applications and business systems within the enterprise which can contain a complex combination of system resources across the entire enterprise.
- Enable real-time monitoring.
- Support existing Tivoli Global Enterprise Manager instrumentation, Tivoli Distributed Monitoring, and IBM Tivoli Enterprise Console®.
- Provide an open architecture to enable third-party product integration.
- Manage business system components on a variety of platforms.
- Consolidate information scattered throughout the enterprise.
- Interact with customer applications, scheduling systems, and automation systems to provide a single view of the overall status and health of system resources.
- Provide trend-analysis data for Tivoli Enterprise™ Data Warehouse.
- Enable effective operation of your entire enterprise.

After resources are defined to or discovered by Tivoli Business Systems Manager, they are registered with Tivoli Business Systems Manager and the information is stored in an SQL database. You can access the database using a GUI-based console. Tivoli Business Systems Manager monitors for state changes that occur in the various resources within your enterprise. An event management facility helps you determine and troubleshoot system problems that can affect the availability of applications and systems. By applying rules to events and data collected from various sources, even when business systems span several platforms, Tivoli Business Systems Manager enables you to graphically monitor and control the interconnected business components and operating system resources.

The following concepts are pertinent to understanding the operation of Tivoli Business Systems Manager:

- “Business Systems” on page 3
- “Resources” on page 3
- “Discovery Processing” on page 3
- “Event processing” on page 4
- “Views” on page 8
Business Systems

A business system is a group of diverse but interdependent applications and other system resources that interact to accomplish specific business functions. A business system can contain applications or other resources that run on a variety of platforms, including host, distributed, and network environments. For example, a banking business system designed to support transactions over the Web typically includes a Web server running outside the company’s intranet and connected directly to the Internet and a Firewall that provides secure connectivity to a machine running a custom business component, such as loan processing. The loan processing business component usually runs on a distributed platform and connects to business components running on a host computer. The host handles all the bank transactions. This business system presents challenges to a system manager because it crosses the typically isolated environments of host and distributed systems.

Another example of a business system is an e-mail system. E-mail business systems include all the instances of e-mail business components that are being used in your network. You might have a mix of Lotus® Notes® servers and clients, POP mail or Microsoft Exchange servers and clients, and other e-mail business components. An e-mail business system includes definitions that tell whether each of its entities is a server, a client, or both. It also includes definitions of the monitors that collect status information for each business component in the business system, as well as definitions of the relationships between business components in the business system.

Tivoli Business Systems Manager allows you to use an automated approach for creating business systems. Using commands provided in Tivoli Business Systems Manager results in faster implementation and completeness of the business views. When the configuration is completed, the automatically-created business system view continues to monitor the system for the creation of new resources and automatically adds them to the view. Refer to IBM Tivoli Business Systems Manager: Administrator’s Guide for more information on automatically creating a business system.

Resources

Resources are the applications, subsystems, and technical devices (such as routers, server machines, and other physical devices) that the console monitors for availability. Resources are listed in the console database along with identifying information that includes the resource name and the resource type, as well as other information about the resource.

Resources are categorized by type. Examples of resource types are transaction, storage group, a particular type of port, a particular brand of performance monitor, a particular type of database, and an MVS job. For more detailed information on resources, see the online help.

Discovery Processing

Tivoli Business Systems Manager monitors resources for state changes and performance characteristics that indicate availability. However, before you can monitor resources in your enterprise, the resources must be discovered and registered in the Tivoli Business Systems Manager database. The resource discovery and registration process varies depending on the data source.
Discovering OS/390 and z/OS Resources

Resource discovery is a process that identifies resources. The process for resources monitored by OS/390 and z/OS involves running batch jobs that detect the configuration of your resources and update the database. Resources discovered through the Tivoli Enterprise Console require that the classes first be defined in the Tivoli Business Systems Manager database. The resources are then created dynamically as events and received from the Tivoli Enterprise Console. Resources discovered through the common listener interface are dynamically populated through bulk and delta discovery transactions.

Tivoli Business Systems Manager has three discovery processes for OS/390 and z/OS resources:

Initial discovery
- Batch jobs are run initially when, or before, Tivoli Business Systems Manager is installed and configured.

Rediscovery
- Batch jobs can be customized and run on a scheduled basis to gather updated information about resources in your enterprise.

Auto-discovery
- Programs automatically detect updates, resulting in updates to the database.

The discovery process uses various data sources to initially populate resources in the Tivoli Business Systems Manager database. The z/OS process involves a series of batch functions that create a sequential file, which is then forwarded to the Tivoli Business Systems Manager servers. The data is then processed and stored in the Tivoli Business Systems Manager database. The discovered resources are imported into Tivoli Business Systems Manager in a process called resource registration.

Discovering Distributed Resources

Tivoli Business Systems Manager has two methods for discovering distributed resources:

- Rules can be added to the Tivoli Enterprise Console to forward events to Tivoli Business Systems Manager database using the agent listener. The first event from a resource triggers the creation of the resource in the Tivoli Business Systems Manager database.

- The common listener provides bulk and delta transactions.Bulk transactions are a snapshot of the instrumented environment. Bulk transactions identify which resources exist, resources that have changed since the last bulk transaction, the associations between resources, and resources that no longer exist since the last bulk transaction. The Tivoli Business Systems Manager database is populated with the information in the bulk transaction. The delta transaction updates the Tivoli Business Systems Manager database as new resources are discovered.

Event processing

Tivoli Business Systems Manager consolidates events from a wide range of IBM and independent system vendor products. Event processing involves capturing specific events and routing them to the Tivoli Business Systems Manager server. The events result in updates to the Tivoli Business Systems Manager database, which are then displayed on the Tivoli Business Systems Manager console as alerts.
Events also can trigger the discovery of resources. Tivoli Business Systems Manager has two event types: messages and exceptions.

**Events (Messages and Exceptions)**

Events that occur on resources are called exceptions and messages. Exceptions usually indicate that a resource is experiencing duress, while messages reflect the state of the resource (active, inactive, or abended for example). Exceptions have an alert state and a priority. Alert states are red and yellow and priority states are critical, high, medium, low, or ignore. As events occur within the monitored environment, the console displays an alert icon next to the icon of the affected resource.

An example of an exception is unacceptable response time associated with a CICS transaction. An example of a message is the reception of a console message informing you that a batch job has terminated abnormally, causing a state change to occur, which results in an event.

**Event Viewer**

The Event Viewer displays events (exceptions and messages) that are associated with either a resource or all of the resources within a business system. Double-clicking an event opens a window that contains details for the event.

Because an event is associated with a resource and that resource may appear in multiple business systems, the Event Viewer filters out the duplicates and displays only unique events. However, the number of events for a resource (and descendants) is indicated in the status information at the bottom of the Event Viewer window.

When you drag a resource that has child events into a business system, be aware of the following:

- If the resource that was dragged into a business system has an alert status due exclusively to child events, the alert does not carry over with the resource. If the resource has messages or exceptions in addition to the child events, these may cause the alert state to carry over with the resource.
- When you run the Event Viewer from a business system, the Event Viewer finds all of the children in that business system that have no children. In other words, the Event Viewer finds the children of the leaf nodes. This means that if a business system has children in the physical view but not in the business system view, the Event Viewer shows events for the physical children.
- The Properties for the resource does not list any events for a child of the resource unless you drag the child into the business system.

**Notes:**

1. The Event Viewer displays only the last message for a resource. To see all of the messages for a resource:
   - a. Right-click the message row to open the context menu.
   - b. Click **Resource Properties**.
2. The last message is the only one that is relevant and the only one you can take action against.
3. When there are multiple exceptions, all are relevant.
Alerts

A variety of events or scenarios can affect availability and cause an alert on a resource. These events and scenarios include subsystem crashes, performance slowdowns, unscheduled downtime, and problems originating from a child or parent of a resource.

Determining the Cause of an Alert

When determining the cause of an alert, you must examine the properties page for a resource. To open the properties page of a resource:

1. Right-click a resource to open its context menu.
2. Click Properties.

Finding the Resource Type of the Currently Alarmed Resource: When examining the properties of the resource, you can eliminate many of the potential causes of an alert by knowing the possible causes of an alert for the current resource. For example, some resources do not receive events unless child resources have propagated them. If the current resource is one of these types, there is no reason to suspect the cause of an alert to be an exception. These resources can theoretically receive parent state change notification and the resource represents aggregates of other resources. For example, an enterprise is an aggregate of complexes, and a complex is an aggregate of machines.

Determining if it is a State Change: Observe the Current Events list on the General properties page and examine the message at the top of the list. Look to see if the message is either red or yellow and has a priority that is higher than Ignore. The date of the message can be a good way to determine if the message has just turned the resource red or yellow; however, the date will not indicate if the message is a factor in the alert state if the resource has been red or yellow for some time.

Determining if it is an Exception: Select the Exceptions page and observe if the resource contains exceptions. Then look at the threshold/count section. This will indicate which type of exception (alert state and priority) caused the threshold to be crossed. At this point, you should identify all exceptions of that type as there may be more than one exception that is responsible for the threshold being crossed.

Determining if it is an Exception or State Change from a Child Resource: If no recent exceptions appear and the threshold settings are not exceeded, the alert could have been propagated from the children of one or more of the current resources.

The first method to determine whether the availability of the child resource has been threatened is to open the view to the next level below the currently selected resource. If upon opening the view to the next level, you see resources containing alerts, it is likely that this is the cause of the alert you are investigating.

The second method, double-clicking a child event brings you to the next resource in the propagation chain. By selecting the Child Events page and then double clicking on an event you advance to the resource that forwarded the child event and the source of the problem is highlighted.

The Child Events page contains an aggregate exception table very similar to the one contained on the Exceptions page that counts only exceptions and state
changes from resources that are children of the current resource. From this table, you are able to discern if an alert has occurred because of an alert originating from one or more child resources.

Managing Alerts

A fundamental principle of an effective centralized command center is to make alerts meaningful. The lights that indicate problems of greater or lesser severity must reflect the context in which they appear. Tivoli Business Systems Manager introduces two concepts in managing this problem: correlated priorities and alert ownership.

Correlated priorities is a mechanism in selecting an object priority such that it will affect the alert status of a resource that is on a higher hierarchy. Taking ownership of an alert changes the tagged object icon from alert to Ownership status. Taking ownership also acts as a contract of problem acceptance. The user name is automatically recorded in a note, which allows narrative action information to be recorded, viewed, and played back for reviews. Because all clients are updated instantly when ownership is taken, other members of the command center team and department users with special business system views can see that someone is responding to an alert. Integration with the Tivoli Framework products enable the state changes in products such as TEC to reflect a coherent view of the enterprise.

Filtering is a powerful feature for building a business system view by providing ad-hoc selection criteria, such as object type, name, and alert state. This enables the command center staff to quickly create a custom view to closely monitor a collection of objects showing recent trouble conditions. Filtering also allows representations of the same object contained in different business system views to filter events differently, therefore allowing you to be notified only on events that pertain to you.

Tivoli Business Systems Manager monitors resources for state changes and the performance characteristics that reflect their availability. These resources are represented by Tivoli Business Systems Manager objects in the database. Actions on an object, such as an alert notification and the propagation of that alert up and down a view, result from events. Events may be exceptions associated with an object or a state change of that object. Exceptions occur when the counters that measure performance thresholds are exceeded. An example of an exception could be unacceptable response time associated with a CICS transaction. Another example of an event could be the receipt of a console message that a batch job terminated abnormally. This would cause a state change to occur and would result in an event. As events occur within the monitored environment, they are collected and recorded by Tivoli Business Systems Manager, and are displayed by tagging an alert icon on the appropriate object’s icon.

Propagation leverages the object-orientated implementation inherent within the Tivoli Business Systems Manager environment and continuously disseminates events throughout the object hierarchy. Propagation escalates alerts up the hierarchy based on the severity of events and the volume and rate at which they occur. Exceptions, console messages, and other events are assigned priorities for each object. When an object receives an event, the event’s priority is examined and compared against tolerance rates set for that object. If a threshold is exceeded, an alert occurs on that object and sends an event to its parent object on the hierarchy. This, in turn, can cause another event to occur and another alert to be sent further
up the hierarchy. In addition to controls that adjust rates for incoming performance exceptions, each object on the hierarchy includes controls for events arriving from the child objects below it.

Propagation is the technical component that enables Tivoli Business Systems Manager to progress from a physical to a logical model. As events are propagated to the physical parents of an object, they also are propagated to all Business System Views containing those objects.

Views

Tivoli Business Systems Manager enables you to manage resources in a way that best reflects your current organization. Your Tivoli Business Systems Manager implementation can reflect a decentralized or a centralized control structure. The resources can either be defined to Tivoli Business Systems Manager or be discovered using various methods (for example, components, modules, programs) to detect the configuration of the resources. Once the resources are defined or discovered, they are registered in the Tivoli Business Systems Manager database; that is, information about the resources is stored in the database and is available for monitoring and viewing.

The Tivoli Business Systems Manager console and the Tivoli Business Systems Manager Web console display the resources in your enterprise in various views. When notifications that trigger alerts are received from the various collection agents within the enterprise, the alerts are displayed as graphic overlays on the resources, indicating the different status of your resources.

A resource view displays all the resources registered in the Tivoli Business Systems Manager database. Business system views can be created from the console or automatically from incoming discovery and event data. A business system view is a logical view that includes any subset of the registered resources that are of interest for monitoring. Each resource is represented as an icon within the view. You can create, save, and later access business system views. Opening several windows, each containing a different business system view, enables you to monitor different resources and their various relationships from a single workstation. Business system views can be based on an actual business system as well as on:

- An application or set of applications
- A department
- A vertical area of responsibility
- A geographical region

Examples of business system views are:
- Property & Casualty (business system)
- Health Claims, Policy Easy-Access, Order Entry, Help Desk (applications)
- Human Resources (department)
- DASD Management (vertical area of responsibility)
- Far East Operations (geographical region)

Business system views enable you to logically organize the resources that you want to monitor. For example, to monitor a company’s health claim processing system, you might construct a business system view as follows:

1. Identify the various applications, resources, and subsystems that make up the health claim processing system.
2. Verify that the items are registered resources within Tivoli Business Systems Manager.

3. Create a new business system view called “Health Claims”.

4. Populate the newly-created business system view with the identified resources.

The following views are available:

**Tree**  Displays resources in a tree format. (This is the default view.) For more information on the Tree view, see the online help.

**HyperView**  Displays resources in an elliptical view using the selected resource as the launch point. For more information on the HyperView view, refer to the online help.

**Table**  Displays resources in a table format that has sorting and filtering capabilities. For more information on the Table view, see the online help.

**Topology**  Topology views are representations of managed resources and business system resources. These views are graphical and include representations of relationships between resources, including, but not limited to, the hierarchical relationships in many of the other console views. For more information on the Topology view, see the online help.

**Note:** When you click the Tree ( ), HyperView ( ), and Table ( ) icons on the Toolbar, you are displaying in Tree view, HyperView, and Table view what is in the workspace view that has the focus. However when you use the context menu for a resource and click Open -> HyperView, the console retrieves information from the database and displays the descendents of the selected resource in HyperView.

Property sheets for each of the resources enable viewing and updating of:

- Attributes, such as the resource name and current status
- Alert information, such as currently posted events and notes
- Thresholds for propagation and filtering
- Scheduling information

The Web console enables quick access for checking critical resources and provides various ways for viewing resources and events.

**Reporting System**

Tivoli Business Systems Manager provides a reporting system for generating reports from real time and historical availability data that Tivoli Business Systems Manager collects from the resources in your enterprise. The reporting system provides report forms for viewing the data you need to analyze problems and to anticipate and avoid future problems. You can also use the generated reports for trend analysis and capacity planning.
Instrumentation

Instrumentation provides information about specific applications, system software, or business components to Tivoli Business Systems Manager. You can add instrumentation to components of a business system or to standalone applications. Tivoli Business Systems Manager supports the following mechanisms for integrating third-party software:

- Tivoli Business Systems Manager Source/390 object pump
- Tivoli Business Systems Manager common listener architecture
- Tivoli Business Systems Manager Intelligent Monitoring infrastructure
- Tivoli Enterprise Console and the standard adapters that provided with Tivoli Enterprise Console
- Tivoli Ready and Tivoli Manager products
- Tivoli Application Management Specification

Problem and Change Support

Tivoli Business Systems Manager provides Problem Ticket, Change Request and Automatic Ticketing program user exits that can be used for integration to a customer’s Problem Management or Change Management product. Complete documentation, configuration and sample integrations can be found on the support Web site [http://www-1.ibm.com/support](http://www-1.ibm.com/support).

Note: If you are upgrading from Version 1.5, it is critical that you review the information on new features in the Program User Exits Guide and Code Samples documentation located on the Web site [http://www.ibm.com/software/sysmgmt/products/support/](http://www.ibm.com/software/sysmgmt/products/support/) Under Self Help select Solutions then select Program User Exits Guide and Code Samples. Some changes have been made that might require you to modify your request processor that is invoked from within Tivoli Business Systems Manager and integrated to your Problem or Change product.

IT departments commonly use a problem information system to document and track issues that pertain to the resources they manage. Typically the database record used to manage these issues is called a problem ticket. The standard workflow of a problem would be to create a problem ticket and assign it to a human resource for resolution. The ticket is closed when the problem is resolved. Tivoli Business Systems Manager now provides an automated process to create problem tickets when key events occur by defining event-filtering rules. For more information about the automated problem ticket process, refer to IBM Tivoli Business Systems Manager: Administrator’s Guide.
Chapter 2. Tivoli Business Systems Manager Components

This chapter describes the Tivoli Business Systems Manager components. It includes descriptions of:

- "Base Services and Components"
- “Components for Handling OS/390 and z/OS Data” on page 12
- “Components for Handling Distributed Data” on page 15

Base Services and Components

The Tivoli Business Systems Manager Windows-based components include:

- “Servers”
- “Consoles” on page 12
- “Health Monitor” on page 12

For information on hardware and software requirements for Tivoli Business Systems Manager, refer to IBM Tivoli Business Systems Manager: Installation and Configuration Guide.

Servers

The Tivoli Business Systems Manager servers process the availability data that is collected from various sources. Availability data is placed in the Tivoli Business Systems Manager database, where intelligent agents provide alerts on monitored resources and broadcast the alerts to the Tivoli Business Systems Manager console. The servers also handle user requests from the console.

Some of the services provided within the Tivoli Business Systems Manager management server are:

**Database server**

Provides for database for the Tivoli Business Systems Manager data and collects data from the Tivoli Enterprise Console event source in the distributed environment.

**History server**

Maintains a history of events collected by Tivoli Business Systems Manager and replicates the Tivoli Business Systems Manager database.

**Application server**

Handles requests for the console-based Tivoli Business Systems Manager clients.

**Propagation server**

Processes events and calculates propagation actions.

**Event handler server**

Receives data from and sends commands to OS/390 and z/OS.

**SNA server**

Enables Windows-based applications to communicate with OS/390 and z/OS-based applications.

**Web console application server**

Handles requests for the Web-based Tivoli Business Systems Manager
clients. This is a new server component for Tivoli Business Systems Manager 2.1 and is only required if you are using Web clients.

Consoles
The Tivoli Business Systems Manager console and the Tivoli Business Systems Manager Web console provide various views for monitoring the resources in your enterprise. For example, consoles are typically used for performing administrative and operator tasks. Web consoles are typically used for view sessions of resources. See the online help for more information.

Health Monitor
The Tivoli Business Systems Manager health monitor monitors the health and availability of Tivoli Business Systems Manager and the various servers on which the application is installed.

Components for Handling OS/390 and z/OS Data
The Tivoli Business Systems Manager Source/390 is a set of programs or components that enable monitoring and management of MVS, OS/390, and z/OS-based systems. Source/390 resides on the system and consists of the following:

- The Source/390 object pump, which collects data and traps events for monitored resources. It captures data from a variety of sources including the MVS system console, performance monitors, subsystems, CICS regions, and other applications and resources. Upon detecting an event, the Source/390 object pump formats a message according to a defined specification and forwards the formatted message to the Source/390 object server.
- The Source/390 object server, which manages the communication between the OS/390 and z/OS–based components and the Tivoli Business Systems Manager Windows-based servers. It passes the data gathered by the Source/390 object pump to the servers and logs any activity.
- The Source/390 dataspace, which facilitates communication between the Source/390 object pump and the Source/390 object server. It provides an intermediate queue area used for passing data between the Source/390 object pump and the Source/390 object server.
- Tivoli Business Systems Manager uses an External Data Interface (EDI) to integrate automation products (System Automation for OS/390, OPS/MVS, AF Operator, and Auto Operator). State changes, messages, and exceptions (for objects) that reside on the same MVS operating systems are passed through the EDI to Tivoli Business Systems Manager. (Note that Tivoli Business Systems Manager uses the Program to Program Interface (PPI) for System Automation for OS/390 V2.1 and V2.2.)

In addition to passing state changes, messages, and exceptions, EDI enables you to pass data from other supported data sources (for example, DB2®, CICSplex®, IMS™). You can also send automation starting and automation ending messages to indicate, respectively, automation is in progress and automation has completed for resources managed by Tivoli Business Systems Manager.

Refer to IBM Tivoli Business Systems Manager: Installation and Configuration Guide for additional information about using the EDI.

Event and performance data collected by the Source/390 object pump is placed in the Source/390 dataspace. The Source/390 object server then picks up the data and passes it to the Windows-based servers for subsequent processing and storing in
the Tivoli Business Systems Manager database. Figure 1 on page 14 shows how data is passed through the Source/390 components to the Windows-based servers and into the Tivoli Business Systems Manager database.

Note: In Figure 1 on page 14, DB2 indicates DB2 and DB2 Performance Monitor. MAINVIEW indicates MAINVIEW for CICS, DB2, IMS, and OS/390. TMON indicates ASG-TMON for CICS, DB2, and MVS.
Figure 1. The Source/390 program
Components for Handling Distributed Data

Distributed components, which are installed in a Tivoli management region, are shown in Figure 2.

Event enablement, which is installed on the Tivoli Enterprise Console event server, integrates with Tivoli Management Framework, Tivoli Enterprise Console, and Tivoli Distributed Monitoring to enable availability and performance management of distributed resources. Any resource whose status can be communicated using a Tivoli Enterprise Console event can be integrated with Tivoli Business Systems Manager. Event enablement also defines event classes and rules for handling events related to Tivoli Business Systems Manager.

Sources of data for distributed resources are:
• The Tivoli Distributed Monitoring event architecture
• Events created using the Tivoli Business Systems Manager Tivoli Enterprise Console rule engine program interface
• Applications instrumented using the common listener architecture
• The Application Policy Management (APM) event architecture, which is the event flow architecture of Tivoli Global Enterprise Manager and uses the Application Management Interface (AMI) instrumentation source from across the enterprise

The task server interacts with the Tivoli Management Framework and the Tivoli NetView for OS/390 and z/OS environments. Command requests from an operator are routed to the task server, which routes the requests to the appropriate environment. Responses are returned to the task server where they are correlated with the request and routed back to the requesting operator.
Chapter 3. Data Sources

Tivoli Business Systems Manager integrates with and collects data from numerous software products to provide monitoring of:

- “Distributed Resources”
- “MVS”
- “Storage Management Resources” on page 19
- “CICS Subsystems” on page 21
- “DB2 Subsystems” on page 22
- “IMS Subsystems” on page 23
- “Job Schedulers” on page 24
- “Automation Products” on page 26
- “IBM WebSphere Application Server for z/OS and OS/390” on page 27

Distributed Resources

Tivoli Business Systems Manager distributed components successfully integrate the management of distributed data sources into the business system and life cycle approach to availability management.

Tivoli Business Systems Manager integrates with the following distributed data source products:

- Intelligent Monitoring for BMC PATROL
- Intelligent Monitoring for NetIQ AppManager
- Intelligent Monitoring for Unicenter TNG
- IBM Tivoli Monitoring Classic and Advanced Editions
- 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®
- IBM Tivoli Manager products, for example MQSeries®

MVS

Monitoring of MVS is provided by collecting data from the MVS console (described in “MVS Console” on page 18) and from one or more of the following:

- “Resource Management Facility” on page 18
- “Tivoli NetView for OS/390 and z/OS” on page 18
MVS Console

Tivoli Business Systems Manager collects start, stop, or abend information from the MVS console for registered resources, which can be started tasks, batch jobs, CICS regions, DB2, and IMS.

Resource Management Facility

IBM Resource Management Facility (RMF™) provides a wide breadth of data about the status of almost any resource within the MVS environment. RMF issues system performance reports that you can use to:

- Determine if your system is running smoothly
- Detect system bottlenecks caused by contention for resources
- Evaluate the service your installation provides to different groups of users
- Identify workload delays and the reasons for the delays
- Monitor system failures, system stalls, and failures of selected applications

RMF monitors collected data about system workload and resource utilization. This data addresses all hardware and software components of your system, including processor, I/O device, and storage activities and utilization; resource usage; and activity and performance of groups of address spaces. Data is gathered for a specific cycle time, and consolidated data records are written at specified intervals.

RMF has three monitors. Monitor I provides long-term data collection for system workload and resource utilization. The Monitor I session is continuous, and measures various areas of system activity over a long period of time. Monitor II is an online snapshot session that generates a requested report from a single data sample. Monitor III provides short-term data collection and online reports for continuous monitoring of system workflow and delays.

Tivoli Business Systems Manager uses RMF data and automated thresholds to monitor OS/390 and z/OS resources and services. Through the Source/390 program, Tivoli Business Systems Manager integrates with RMF monitors to generate exceptions when RMF collects metrics that exceed customer-supplied thresholds. Source/390 processes a subset of the RMF Monitor III metrics such as activity, utilization, workflow, and delay counters. RMF exceptions are captured and posted to the Tivoli Business Systems Manager database and appear as alerts related to the operating system.

Tivoli NetView for OS/390 and z/OS

The Systems Network Architecture (SNA) provides a centralized network management system for subarea and Advanced Peer-to-Peer Networking® (APPN®) networks. The Tivoli NetView for OS/390 and z/OS SNA topology manager gathers subarea and APPN status and topology information and uses the Tivoli NetView for OS/390 and z/OS Resource Object Data Manager (RODM) as a data cache to locate and manage SNA topology data.

The integration of Tivoli Business Systems Manager with RODM involves capturing events and messages for the SNA/APPN resources and updating the Tivoli Business Systems Manager database with availability information.
MAINVIEW for OS/390

BMC Software MAINVIEW for OS/390 monitors the performance of OS/390. MAINVIEW for OS/390 provides samplers that monitor OS/390 performance indicators. Each sampler monitors a single indicator, such as the processor usage of a job. When you invoke a sampler, you can define a threshold value for its indicator. If the indicator exceeds the threshold value, then the sampler issues a warning message.

Integrating MAINVIEW for OS/390 with Tivoli Business Systems Manager involves capturing these sampler warning messages, translating the warning messages into events understood by Tivoli Business Systems Manager, and passing them to Tivoli Business Systems Manager.

OMEGAMON for MVS

Candle OMEGAMON for MVS is an MVS interactive performance monitoring system. Exception conditions are reported in Tivoli Business Systems Manager.

Integrating OMEGAMON for MVS involves Tivoli Business Systems Manager Source/390 collecting and monitoring exceptions, thresholds, tape waits, and other data available from OMEGAMON for MVS.

ASG-TMON for MVS

ASG-TMON for MVS monitors MVS performance in real time, provides access to historical data online for analysis, and offers facilities for summarizing and archiving MVS performance data for historical reporting. ASG-TMON for MVS also includes flexible exception processing and productivity-enhancing system and programmer utilities.

Integrating ASG-TMON for MVS with Tivoli Business Systems Manager involves capturing ASG-TMON for MVS exception messages, translating the exception messages into events understood by Tivoli Business Systems Manager, and passing the events to Tivoli Business Systems Manager.

Storage Management Resources

Monitoring of storage management resources is provided through integration with:

- “System-Managed Storage”
- “Data Facility Systems Managed Storage Hierarchical Storage Manager” on page 20
- “Extended Remote Copy” on page 20

System-Managed Storage

Storage environments have become increasingly complex as data centers have expanded to support numerous systems and platforms. Although storage management tasks vary with the platforms and storage system types supported, operating a storage system generally requires storage administrators to manage the following:

- Hardware components of various models and capabilities, which must match the requirements of the data transferred and stored
- Software utilities for moving, copying, retrieving, and archiving data
- Procedures for controlling the use of storage resources
Using a system-managed storage approach changes storage management from a manual process implemented by both end users and storage administrators to an automated process controlled by storage administrators. Although system-managed storage improves storage control and utilization and enables service level management, it does not provide the real-time data needed to effectively manage large and complex storage environments.

Tivoli Business Systems Manager integrates with DFSMS (Data Facility Systems Managed Storage) as an event source to discover and monitor storage group and volume events along with hardware storage subsystems and MVS device events. Tivoli Business Systems Manager reports system-managed storage exceptions that are based on a pre-defined workflow and provides real-time viewing of data set information that is contained in volume table of contents (VTOC) entries and catalogs. This integration provides an end-to-end view of how storage is affecting applications and other system components including the operating system, OLTP (on-line transaction processing), and batch processing.

**Data Facility Systems Managed Storage Hierarchical Storage Manager**

DFSMShsm™ (Data Facility Systems Managed Storage Hierarchical Storage Manager) is a storage management and productivity tool for managing low activity and inactive data. It improves DASD use by automatically managing both space and data availability in a storage hierarchy. DFSMShsm handles data set archiving, backup, and recovery, and manages available space on DASD volumes. Space management involves moving low-activity data sets from user-accessible volumes to DFSMShsm volumes and reducing the space occupied by data on both user-accessible and DFSMShsm volumes.

The integration of DFSMShsm with Tivoli Business Systems Manager involves reporting DFSMShsm exceptions that are based on a predefined workflow of messages that define DFSMShsm events. This integration provides an end-to-end view of how DFSMShsm processes affect applications and other system components, including the operating system, OLTP (on-line transaction processing), and batch processing.

**Extended Remote Copy**

Extended remote copy (XRC) is a storage-based disaster recovery and workload migration solution that can copy data in real time to a remote location. XRC is an extended function on all newer IBM storage controllers and operates in conjunction with appropriate levels of DFSMS/MVS®. It enables complete recovery of the data transactions that occurred between the most recent backup and the time when an application system failed.

Tivoli Business Systems Manager integrates with XRC as a source of events for monitoring and controlling XRC resources. Tivoli Business Systems Manager reports XRC events based on a predefined workflow of OS/390 and z/OS messages and queries the system data mover address space for information on established XRC session and volume pairs.
CICS Subsystems

Monitoring of CICS subsystems is provided through integration with:

- “CICSPlex System Manager for OS/390”
- “MAINVIEW for CICS”
- “OMEGAMON for CICS” on page 22
- “ASG-TMON for CICS” on page 22

CICSPlex System Manager for OS/390

A CICSPlex (a CICS complex) is an environment in which two or more CICS regions are linked through CICS intercommunication facilities.

IBM CICSPlex System Manager for OS/390 is a subsystem monitor that automates the operations of CICS systems. It reduces the complexity and simplifies the management of complex collections of CICS systems by presenting them as an integrated whole. It manages CICS systems under various operating systems and provides resource management, workload management, and resource monitoring. It enables you to manage by exception processing by automatically warning you of deviations from intended performance and workload management.

Tivoli Business Systems Manager supports CICSPlex System Manager for OS/390 by using it as a source for CICS monitoring and discovery. A CICSPlex system and its resources can be discovered from the Tivoli Business Systems Manager client console. Once the system has been discovered, it can be constantly monitored for changes in topology and for events. CICSPlex System Manager passes events to Tivoli Business Systems Manager through Tivoli NetView for OS/390. These events are captured and posted in the Tivoli Business Systems Manager database and appear as events related to specific resources on the Tivoli Business Systems Manager console.

The following list of resources are discovery and monitored by Tivoli Business Systems Manager:

- CICS regions
- CMAS regions
- Transactions
- Files
- CICS-CICS connections
- CICS system groups
- DB2 connections
- CORBA servers
- CICS-deployed jar files

In addition to the discovery and monitoring capability provided by Tivoli Business Systems Manager, a user may launch in context from any resource to the CICSPlex System Manager WUI (web user interface). This enables to the users access and control information from CICSPlex System Manager.

MAINVIEW for CICS

BMC Software MAINVIEW for CICS provides monitors that regularly collect data about conditions in a CICS region. Each monitor collects data for a different performance statistic, such as average response time. When you start a monitor, you can define a warning threshold value for the statistic. If the statistic exceeds the threshold, the monitor issues a warning message. Later, if the statistic drops below the threshold, the service issues a matching resolution message.
Integration with Tivoli Business Systems Manager involves capturing these
warning and resolution messages, translating them into events formatted for Tivoli
Business Systems Manager, and passing them to Tivoli Business Systems Manager.

Note: CICS regional discovery data is not provided by MAINVIEW for CICS.

OMEGAMON for CICS
Candle OMEGAMON for CICS is a CICS performance monitoring system. Tivoli
Business Systems Manager Source/390 collects data from OMEGAMON for CICS.
Exceptions are collected by Tivoli Business Systems Manager. In addition, data is
collected to provide CICS file availability for a registered CICS region.

Note: CICS regional discovery data is not provided by OMEGAMON for CICS.

ASG-TMON for CICS
ASG-TMON for CICS is a CICS performance monitoring system. Alert messages
issued by ASG-TMON for CICS are translated into exception events for the
relevant CICS resources in Tivoli Business Systems Manager.

Integrating ASG-TMON for CICS with Tivoli Business Systems Manager involves
capturing ASG-TMON for CICS SmartTarget alert messages, translating the alert
messages into events formatted for Tivoli Business Systems Manager, and passing
the events to Tivoli Business Systems Manager.

Note: CICS regional discovery data is not provided by ASG-TMON for CICS.

DB2 Subsystems
Monitoring of DB2 subsystems is provided through integration with:

- “Monitoring of Subsystems Running DB2 Universal Database”
- “MAINVIEW for DB2” on page 23
- “OMEGAMON for DB2” on page 23
- “ASG-TMON for DB2” on page 23

Monitoring of Subsystems Running DB2 Universal Database
The DB2 Universal Database™ for z/OS and OS/390 provides comprehensive
database functionality including high performance, scalability, network and data
integration, reliability, and availability. The DB2 Performance Monitor (DB2 PM) is
a tool for analyzing and tuning the performance of DB2 subsystems and
DB2-based applications. DB2 PM can be used to determine overall performance of
a DB2 subsystem or to identify potential performance problems on an individual
thread basis.

Tivoli Business Systems Manager integrates with DB2 Universal Database for z/OS
and OS/390 and DB2 PM by capturing warning and resolution messages,
translating them into events formatted for Tivoli Business Systems Manager, and
passing them to Tivoli Business Systems Manager. Exceptions within DB2 PM can
be further managed by establishing threshold settings. This integration provides an
end-to-end view of how DB2 is affecting applications and other system
components.
MAINVIEW for DB2

BMC Software MAINVIEW for DB2 provides monitors that regularly collect data about DB2 for OS/390 performance indicators. Each monitor collects data for a single performance indicator, such as percentage of buffer pool usage. When you start a monitor, you can define a warning threshold value for the indicator. If the indicator exceeds the threshold, the monitor issues a warning message. Later, if the indicator drops below the threshold, the service issues a matching resolution message.

Integration with Tivoli Business Systems Manager involves capturing these warning and resolution messages, translating them into events formatted for Tivoli Business Systems Manager, and passing them to Tivoli Business Systems Manager.

OMEGAMON for DB2

Candle OMEGAMON for DB2 is a performance and availability monitor for monitoring the performance of DB2 Universal Database for z/OS and OS/390. OMEGAMON for DB2 provides an at-a-glance view of DB2 performance. The clear status orientation alerts you to potential problems immediately, so you can take action to protect DB2 system and application availability.

ASG-TMON for DB2

ASG-TMON for DB2 is a performance monitoring system for DB2 Universal Database for z/OS and OS/390. Integrating ASG-TMON for DB2 with Tivoli Business Systems Manager involves capturing ASG-TMON for DB2 default exceptions, translating these exceptions into events formatted for Tivoli Business Systems Manager, and passing the events to Tivoli Business Systems Manager.

Note: Only the default exceptions supplied with ASG-TMON for DB2 are captured; site-specific exceptions that you have defined are not captured.

IMS Subsystems

Monitoring of IMS subsystems is provided through either IMS monitoring supplied by Tivoli Business Systems Manager (see “IMS Monitoring”) or through integration with:

- “MAINVIEW for IMS” on page 24
- “OMEGAMON for IMS” on page 24

IMS Monitoring

IMS is a transactional and hierarchical database management system that provides high availability, performance, capacity, and integrity for critical on-line operational applications and data.

Tivoli Business Systems Manager IMS enables the enterprise to monitor IMS systems. The resources within IMS are discovered dynamically by Tivoli Business Systems Manager. IMS discovery requests can also be initiated for IMS subsystems from the Tivoli Business Systems Manager client console. Once an IMS system has been discovered, it is constantly monitored for changes in topology and for events.

The following list of resources are discovered and monitored by Tivoli Business Systems Manager:

- IMS Control Regions (DBCTL, DCCTL, and TM/DB)
- IMS Primary and Secondary MTO
• IMS Logs and WADS
• IMS Message Processing Regions
• IMS Fast Path Regions
• IMS Batch Message Processing Regions
• IMS Programs
• IMS Transactions
• IMS Databases, Fast Path DEDBs and AREAs, HALDB Partitions
• DB2 ESAF connections
• MQ ESAF connections
• IMS Connect Regions
• IMS Fast Database Recovery (FDBR) Regions
• Common Queue Server (CQS) Regions
• Internal Resource Lock Manager (IRLM) Regions

Integrating IMS with Tivoli Business Systems Manager involves using Tivoli NetView for OS/390 and z/OS to capture a set of IMS system console messages, IMS commands, and exceptions. These are translated into events understood by IBM Tivoli Business Systems and passed to Tivoli Business Systems Manager. These events are posted in the Tivoli Business Systems Manager database and appear as events related to specific resources on the Tivoli Business Systems Manager console. IMS exceptions are further managed by processes that run at predefined intervals to check the status of IMS resources. This integration provides an end-to-end view of how IMS is affecting applications and other system components.

MAINVIEW for IMS

BMC Software MAINVIEW for IMS provides monitors that regularly collect data about IMS performance indicators. Each monitor collects data for a single indicator, such as the length of the IMS transaction input queue. When you start a monitor, you can define a warning threshold value for the indicator. If the indicator exceeds the threshold, the monitor issues a warning message. Later, if the indicator drops below the threshold, the service issues a matching resolution message.

Integration with Tivoli Business Systems Manager involves capturing these warning and resolution messages, translating them into events formatted for Tivoli Business Systems Manager, and passing them to Tivoli Business Systems Manager.

Note: Tivoli Business Systems Manager for IMS is a prerequisite for this function.

OMEGAMON for IMS

Candle OMEGAMON for IMS is an interactive performance monitoring system. Exception conditions are reported in Tivoli Business Systems Manager.

Job Schedulers

Tivoli Business Systems Manager provides monitoring of job schedulers in the enterprise through integration with:

• “Tivoli Operation Planning and Control” on page 25
• “Tivoli Workload Scheduler” on page 25
• “CA-7” on page 25
• “CONTROL-M for OS/390” on page 25
• “ASG-Zeke” on page 26
Tivoli Operation Planning and Control

Tivoli Operations Planning and Control (Tivoli OPC) provides a comprehensive set of services for managing and automating the workload for the OS/390 and z/OS platforms from a single point of control. Through the creation of plans, applications, calendars, and special resources, production workloads can be scheduled to run automatically, taking into consideration dependencies, calendar issues such as weekends or holidays, and special processing requirements.

The integration of Tivoli OPC with Tivoli Business Systems Manager enables you to manage strategic applications from a business systems perspective. Tivoli Business Systems Manager receives events directly from Tivoli OPC regarding job status changes as well as alert conditions. Tivoli OPC also sends events that signal job additions.

Tivoli Workload Scheduler

Tivoli Workload Scheduler is a suite of programs that can:
- Help you plan and organize phases of workload production
- Manage the production environment and automate most operator activities
- Prepare jobs for execution, resolve interdependencies, and launch and track jobs
- Minimize idle time and improve throughput
- Help increase system control, ease of use, and production capacity
- Help reduce the need for workload management skills at remote locations
- Help with unattended operations

The integration of Tivoli Workload Scheduler with Tivoli Business Systems Manager enables the monitoring of key batch jobs, including start and stop time tracking, and deadline prediction.

CA-7

Computer Associates CA-7 is an OS/390-based scheduling and workload management system. Applications and jobs are defined, scheduled, and submitted by CA-7 and are tracked by SMF and JES exits and internal CA-7 code. Messages associated with the tracking that indicate milestones (start, stop, or normal completion) and problems (late start, excessive run time, or abnormal ends) are also written to a master station that is most commonly defined as a browse dataset.

The integration of CA-7 with Tivoli Business Systems Manager provides both discovery data and event data. Job discovery information is provided by a forecast report, generated at a client-defined interval, that is transported to Tivoli Business Systems Manager for processing. Event data is captured by the Tivoli Business Systems Manager external data interface using a CA-7 defined exit.

CONTROL-M for OS/390

BMC Software CONTROL-M for OS/390 is an automated production control and scheduling system. It manages and automates the setup, scheduling, and execution of jobs within an enterprise. It performs almost all of the job handling tasks of computer operators and provides continual data and status information about the jobs being processed. It also provides a user interface for controlling the production management process when necessary.
CONTROL-M will integrate with Tivoli Business Systems Manager by providing both discovery and event data. Discovery data and events are provided to the Source/390 object pump through CONTROL-M exits. Bulk discovery of Control-M objects is provided using a sample batch job.

**ASG-Zeke**

Allen Systems Group ASG-Zeke is an automated scheduling and dispatching system that monitors time and performs real-time scheduling for MVS systems. It automates the production control process by scheduling and dispatching events. Events are defined as a batch job, a message to the console, a system command, an ASG-Zeke command, a VM command, or a work center function.

The integration of Tivoli Business Systems Manager with ASG-Zeke involves both discovery and event data. Discovery data is provided through a customized plan listing report. Events and messages are provided to the Source/390 object pump by trapping ASG-Zeke messages.

### Automation Products

Tivoli Business Systems Manager currently integrates with the following automation products:

- “System Automation for OS/390”
- “CA-OPS/MVS”
- “AF/OPERATOR”
- “MAINVIEW AutoOPERATOR for OS/390” on page 27

### System Automation for OS/390

System Automation for OS/390, a Tivoli NetView for OS/390-based application, provides monitoring of all enterprise assets, as well as timely information about the operational status of those assets.

Tivoli Business Systems Manager integrates with System Automation for OS/390 to enable you to intercept the message and exception information generated by System Automation for OS/390.

### CA-OPS/MVS

Computer Associates CA-OPS/MVS is an automated systems operations product that facilitates monitoring of the enterprise and provides information about the status or condition of enterprise components. Tivoli Business Systems Manager exploits the use of messages and exceptions generated through CA-OPS/MVS, graphically representing their impact on the respective registered resource.

### AF/OPERATOR

Candle AF/OPERATOR is an enterprise systems management product that provides current information as to the status of monitored components of the enterprise. The status and information, in the form of messages and exceptions, are processed by Tivoli Business Systems Manager and their impact is recorded on the component resource within the Tivoli Business Systems Manager representation of the enterprise.
MAINVIEW AutoOPERATOR for OS/390

BMC Software MAINVIEW AutoOPERATOR for OS/390 monitors status and conditions of enterprise components. Tivoli Business Systems Manager exploits the use of messages and exceptions generated by AutoOPERATOR, and graphically presents their impact on the enterprise.

IBM WebSphere Application Server for z/OS and OS/390

The WebSphere software is a suite of secure and reliable software products that enables you to bring your mission-critical applications directly to the Web.

The integration of IBM WebSphere Application Server for z/OS and OS/390 with Tivoli Business Systems Manager enables the discovery of WebSphere for OS/390 resources. Tivoli Business Systems Manager provides a resource view of IBM WebSphere Application Server for z/OS and OS/390 and covers resources that are represented as MVS address spaces.
Chapter 4. Discovery and Resource Monitoring

This section describes the Discovery and Resource Monitoring functions by products.

Discovery

Before Tivoli Business Systems Manager can monitor enterprise-wide resources, the resource discovery process must be run. This process can be a manual process of submitting discovery batch jobs from the mainframe or an automatic process directly from the graphical user interface (GUI).

Resources can also be discovered by:
- events (for example, exceptions, messages) issued by the products being monitored (for example, CICSplex, DB2, IMS, SMS)
- bulk discovery and delta discovery by products monitored through the common listener (Tivoli NetView, TNG, PATROL, Application Manager, TWS)

Bulk Discovery

This process consists of submitting discovery batch jobs on the OS/390 or z/OS mainframe. The discovery jobs run utilities to discover resources that are required to be monitored by Tivoli Business Systems Manager. The information required to discover these resources is sent to the Tivoli Business Systems Manager database. Here, Load/Discover scheduling jobs are run to discover or show resources in the Tivoli Business Systems Manager GUI.

Distributed resources instrumented through the common listener provide bulk discovery, which discovers all the resource instances related to the instrumented product. This information is sent to the database server where the resource database is updated. The IBM Tivoli Monitoring for products provide scripts that scan the environment that they are managing and generate events to create resources in the database.

Auto Discovery

When a user enables the Auto Discovery process, Tivoli Business Systems Manager resources are discovered automatically.

Distributed resources instrumented through the common listener provide delta discovery. Delta discovery sends changes to the resource instances related to the instrumented product to the database server. Changes can include resource attribute changes, resource deletion, and new resource creation. The IBM Tivoli Monitoring For products provide scripts that monitor the environment for new resources and generate events to reflect these changes.

Rediscovery

The rediscovery process is similar to running the bulk discovery process except that any changes to the resources are shown on the Tivoli Business Systems Manager GUI. For distributed data sources, auto discovery and rediscovery are essentially the same.
Discovery by Event

This process discovers resources based on events (states, messages, and exceptions) that are sent to Tivoli Business Systems Manager. If a resource is not discovered during bulk discovery and an event is trapped for this resource, the resource is discovered and the trapped event is posted to the discovered resource.

Discovery Filtering

This process filters (including or excluding) resources that should or should not be monitored by Tivoli Business Systems Manager.

Automatic Business System Support

This process creates automatic Business Systems for Tivoli Business Systems Manager resources.

Supported Discovery Functionality by Product

Table 1 shows the supported OS/390 monitors for the discovery process.

<table>
<thead>
<tr>
<th>IBM Tivoli Source/390 Object Pump Console</th>
<th>Candle OMEGAMON II for MVS</th>
<th>ASG-TMON for MVS</th>
<th>BMC MAINVIEW MVS</th>
<th>IBM Tivoli SMS</th>
<th>IBM Tivoli HSM</th>
<th>IBM Tivoli XRC</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bulk Discovery</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>Yes</td>
<td>No</td>
<td>Yes</td>
</tr>
<tr>
<td>Auto Discovery</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>Rediscovery</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>Yes</td>
<td>No</td>
<td>Yes</td>
</tr>
<tr>
<td>Discovery by Event</td>
<td>No</td>
<td>No</td>
<td>Yes</td>
<td>Yes</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>Discovery Filtering</td>
<td>No</td>
<td>No</td>
<td>Event</td>
<td>Event</td>
<td>No</td>
<td>No</td>
</tr>
</tbody>
</table>

Table 2 shows the supported Subsystem monitors for CICS for the discovery process.

<table>
<thead>
<tr>
<th>IBM Tivoli CICSPlex System Monitor</th>
<th>Candle OMEGAMON II for CICS</th>
<th>ASG-TMON for CICS</th>
<th>BMC MAINVIEW CICS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bulk Discovery</td>
<td>Yes</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>Auto Discovery Files</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Auto Discovery Transactions</td>
<td>Yes</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>Auto Discovery Other</td>
<td>Yes</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>Rediscovery</td>
<td>Yes</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>Discovery by Event</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Discovery Filtering</td>
<td>—</td>
<td>Event</td>
<td>Event</td>
</tr>
</tbody>
</table>

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Table 3 shows the supported Subsystem monitors for DB2 and IMS for the discovery process.

Table 3. Subsystem monitors (DB2 and IMS)

<table>
<thead>
<tr>
<th>A</th>
<th>IBM DB2 and DB2PM</th>
<th>Candle OMEGAMON II for DB2</th>
<th>ASG-TMON for DB2</th>
<th>BMC MAINVIEW DB2</th>
<th>IBM IMS</th>
<th>Candle OMEGAMON II for IMS</th>
<th>BMC MAINVIEW IMS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bulk Discovery</td>
<td>Yes</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>Yes</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>Auto Discovery</td>
<td>Yes</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>Yes</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>Rediscovery</td>
<td>Yes</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>Yes</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>Discovery by Event</td>
<td>Yes</td>
<td>No</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>No</td>
<td>Yes</td>
</tr>
<tr>
<td>Discovery Filtering</td>
<td>Event and Rediscovery</td>
<td>No</td>
<td>Event</td>
<td>Event</td>
<td>Event and Rediscovery</td>
<td>No</td>
<td>Event</td>
</tr>
</tbody>
</table>

Table 4 shows the supported Subsystem monitors for WebSphere for the discovery process.

Table 4. Subsystem Monitors (WebSphere)

<table>
<thead>
<tr>
<th>WebSphere OS/390</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bulk Discovery</td>
</tr>
<tr>
<td>Auto Discovery</td>
</tr>
<tr>
<td>Rediscovery</td>
</tr>
<tr>
<td>Discovery by Event</td>
</tr>
<tr>
<td>Discovery Filtering</td>
</tr>
<tr>
<td>Automatic Business System Support</td>
</tr>
</tbody>
</table>

Table 5 shows the supported Job Schedulers for the discovery process.

Table 5. Job Schedulers

<table>
<thead>
<tr>
<th>Computer Associates CA7</th>
<th>IBM OPC</th>
<th>IBM TWS 8.1</th>
<th>BMC Control-M</th>
<th>ASG-Zeke</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bulk Discovery</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Auto Discovery</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>Yes</td>
</tr>
<tr>
<td>Rediscovery</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Discovery by Event</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Discovery Filtering</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
</tbody>
</table>

Table 6 on page 32 shows the supported automation products for the discovery process.
Table 6. Automation Products

<table>
<thead>
<tr>
<th></th>
<th>IBM NetView OS/390 and z/OS w/RODM</th>
<th>IBM SA OS/390 Computer Associates OPS/MVS</th>
<th>Candle AF/Operator</th>
<th>BMC Auto Operator</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bulk Discovery</td>
<td>SNA/GMFHS</td>
<td>Yes</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>Auto Discovery</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>Rediscovery</td>
<td>SNA/GMFHS</td>
<td>SA V2.1</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>Discovery by Event</td>
<td>No</td>
<td>No</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Discovery Filtering</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>No</td>
</tr>
</tbody>
</table>

Table 7 shows the supported monitors for distributed sources for the discovery process.

Table 7. Distributed Sources Supported Monitors

<table>
<thead>
<tr>
<th></th>
<th>Tivoli Enterprise Console Resources</th>
<th>IBM Tivoli NetView</th>
<th>Computer Associates TNG</th>
<th>BMC PATROL</th>
<th>NetIQ AppManager</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bulk Discovery</td>
<td>No</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>Auto Discovery</td>
<td>Yes</td>
<td>No</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Rediscovery</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>Discovery by Event</td>
<td>Yes</td>
<td>No</td>
<td>Yes</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>Discovery Filtering</td>
<td>Yes</td>
<td>No</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Automatic Business System Support</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
</tbody>
</table>

Table 8 shows the supported monitors for Tivoli Monitoring for applications.

Table 8. Tivoli Monitoring for Applications

<table>
<thead>
<tr>
<th></th>
<th>IBM Tivoli Monitoring for Applications - mySAP.com</th>
<th>IBM Tivoli Monitoring for Applications - Siebel</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bulk Discovery</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Rediscovery</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Discovery by Event</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Discovery Filtering</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>Automatic Business System Support</td>
<td>Yes</td>
<td>Yes</td>
</tr>
</tbody>
</table>

Table 9 on page 33 shows the supported monitors for Tivoli Monitoring for business integration.
### Table 9. Tivoli Monitoring for Business Integration

<table>
<thead>
<tr>
<th>Feature</th>
<th>IBM Tivoli Monitoring for Business Integration - WebSphere MQ</th>
<th>IBM Tivoli Monitoring for Business Integration - WebSphere MQI</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bulk Discovery</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Rediscovery</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Discovery by Event</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Discovery Filtering</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>Automatic Business System Support</td>
<td>Yes</td>
<td>Yes</td>
</tr>
</tbody>
</table>

### Table 10. Tivoli Monitoring for Databases

<table>
<thead>
<tr>
<th>Feature</th>
<th>IBM Tivoli Monitoring for Databases - Oracle</th>
<th>IBM Tivoli Monitoring for Databases - DB2</th>
<th>IBM Tivoli Monitoring for Databases - Informix</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bulk Discovery</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Rediscovery</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Discovery by Event</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Discovery Filtering</td>
<td>No</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>Automatic Business System Support</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
</tbody>
</table>

### Table 11. Tivoli Monitoring for Web Infrastructure

<table>
<thead>
<tr>
<th>Feature</th>
<th>IBM Tivoli Monitoring for Web Infrastructure - Apache</th>
<th>IBM Tivoli Monitoring for Web Infrastructure - WebSphere Application Server</th>
<th>IBM Tivoli Monitoring for Web Infrastructure - iPlanet</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bulk Discovery</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Rediscovery</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Discovery by Event</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Discovery Filtering</td>
<td>No</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>Automatic Business System Support</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
</tbody>
</table>

### Table 12. Tivoli Monitoring for Messaging and Collaboration

<table>
<thead>
<tr>
<th>Feature</th>
<th>IBM Tivoli Monitoring for Web Infrastructure - IIS</th>
<th>IBM Tivoli Monitoring for Messaging and Collaboration - Domino</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bulk Discovery</td>
<td>Yes</td>
<td>Yes</td>
</tr>
</tbody>
</table>

Table 10 shows the supported monitors for Tivoli Monitoring for databases.

Table 11 shows the supported monitors for Tivoli Monitoring for Web infrastructure.

Table 12 shows the supported monitors for Tivoli Monitoring for messaging and collaboration.
Table 12. Tivoli Monitoring for Messaging and Collaboration (continued)

<table>
<thead>
<tr>
<th></th>
<th>IBM Tivoli Monitoring for Web Infrastructure - IIS</th>
<th>IBM Tivoli Monitoring for Messaging and Collaboration - Domino</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rediscovery</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Discovery by Event</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Discovery Filtering</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>Automatic Business System Support</td>
<td>Yes</td>
<td>Yes</td>
</tr>
</tbody>
</table>

Resource Monitoring

This section describes the resources monitored by Tivoli Business Systems Manager integration.

Base Resources

Base resources include the monitoring of resources that are directly under Enterprise, Complex, Machine, LPAR, or OS. These may include CICSPlex, RODM, SMS, and other resources.

Low-level Resources

These are resources that are children of base resources. These may be DB2 buffer pools, CICS to CICS connection, CICS to DB2 connection, IMS databases or other resources.

Supported Resource Monitoring Functionality by Product

Table 13 shows the supported OS/390 monitors for the resource monitoring process.

Table 13. OS/390 Supported Monitors

<table>
<thead>
<tr>
<th></th>
<th>IBM Tivoli RMF</th>
<th>Candle OMEGAMON II for MVS</th>
<th>ASG-TMON for MVS</th>
<th>BMC MAINVIEW MVS</th>
<th>IBM Tivoli SMS</th>
<th>IBM Tivoli HSM</th>
<th>IBM Tivoli XRC</th>
</tr>
</thead>
<tbody>
<tr>
<td>Base Resources</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Low-level Resources</td>
<td>No</td>
<td>No</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
</tbody>
</table>

Table 14 shows the supported Subsystem monitors for CICS for the resource monitoring process.

Table 14. Subsystem Monitors (CICS)

<table>
<thead>
<tr>
<th></th>
<th>IBM Tivoli CICSplex System Monitor</th>
<th>Candle OMEGAMON II for CICS</th>
<th>ASG-TMON for CICS</th>
<th>BMC MAINVIEW CICS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Regions</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Transactions</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Files</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>LUs</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>No</td>
</tr>
</tbody>
</table>
Table 14. Subsystem Monitors (CICS) (continued)

<table>
<thead>
<tr>
<th></th>
<th>IBM Tivoli CICSPlex System Monitor</th>
<th>Candle OMEGAMON II for CICS</th>
<th>ASG-TMON for CICS</th>
<th>BMC MAINVIEW CICS</th>
</tr>
</thead>
<tbody>
<tr>
<td>CICS Connections</td>
<td>Yes</td>
<td>No</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>CICS-DB2 Connections</td>
<td>Yes</td>
<td>No</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>CICS Corba Servers</td>
<td>Yes</td>
<td>No</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>CICS DJARS</td>
<td>Yes</td>
<td>No</td>
<td>No</td>
<td>No</td>
</tr>
</tbody>
</table>

Resource Monitoring View

<table>
<thead>
<tr>
<th></th>
<th>Yes</th>
<th>No</th>
<th>No</th>
<th>No</th>
</tr>
</thead>
<tbody>
<tr>
<td>CICS Topology</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CICS Link Topology</td>
<td>Yes</td>
<td>No</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>Launch CICSPlex System Monitor Console</td>
<td>Yes, WUI</td>
<td>No</td>
<td>No</td>
<td>No</td>
</tr>
</tbody>
</table>

Table 15 shows the supported Subsystem monitors for DB2 and IMS for the resource monitoring process.

Table 15. Subsystem monitors (DB2 and IMS)

<table>
<thead>
<tr>
<th></th>
<th>IBM DB2 and DB2PM</th>
<th>Candle OMEGAMON II for DB2</th>
<th>ASG-TMON for DB2</th>
<th>BMC MAINVIEW DB2</th>
<th>IBM IMS</th>
<th>Candle OMEGAMON II for IMS</th>
<th>BMC MAINVIEW IMS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Base Resources</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Low-level Resources</td>
<td>Yes</td>
<td>No</td>
<td>No</td>
<td>Yes</td>
<td>No</td>
<td>Yes</td>
<td>Yes</td>
</tr>
</tbody>
</table>

Table 16 shows the supported Subsystem monitors for WebSphere for the resource monitoring process.

Table 16. Subsystem Monitors (WebSphere)

<table>
<thead>
<tr>
<th></th>
<th>WebSphere OS/390</th>
</tr>
</thead>
<tbody>
<tr>
<td>Base Resources</td>
<td>Yes</td>
</tr>
<tr>
<td>Low-level Resources</td>
<td>Yes</td>
</tr>
</tbody>
</table>

Table 17 shows the supported Job Schedulers for the resource monitoring process.

Table 17. Job Schedulers

<table>
<thead>
<tr>
<th></th>
<th>Computer Associates CA7</th>
<th>IBM OPC</th>
<th>IBM TWS 8.1</th>
<th>BMC Control-M</th>
<th>ASG-Zeke</th>
</tr>
</thead>
<tbody>
<tr>
<td>Base Resources</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Low-level Resources</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
</tbody>
</table>

Table 18 on page 36 shows the supported automation products for the resource monitoring process.
Table 18. Automation Products

<table>
<thead>
<tr>
<th></th>
<th>IBM NetView OS/390 and z/OS with RODM</th>
<th>IBM SA OS/390</th>
<th>Computer Associates OPS/MVS</th>
<th>Candle AF/Operator</th>
<th>BMC Auto Operator</th>
</tr>
</thead>
<tbody>
<tr>
<td>Base Resources</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Low-level</td>
<td>Yes (only SNA)</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
</tbody>
</table>

Table 19 shows the supported monitors for distributed sources for the resource monitoring process.

Table 19. Distributed Sources Supported Monitors

<table>
<thead>
<tr>
<th>Tivoli Enterprise Console Resources</th>
<th>IBM Tivoli NetView</th>
<th>Computer Associates TNG</th>
<th>BMC PATROL</th>
<th>NetIQ AppManager</th>
</tr>
</thead>
<tbody>
<tr>
<td>Base Resources</td>
<td>Yes*</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Low-level Resources</td>
<td>Yes*</td>
<td>Yes</td>
<td>Yes</td>
<td>No</td>
</tr>
</tbody>
</table>

* The types of resources generated by events from the Tivoli Enterprise Console is dependent on the type of events monitored and by the instrumentation generating the events.

Table 20 shows the supported monitors for Tivoli Monitoring for applications.

Table 20. Tivoli Monitoring for Applications

<table>
<thead>
<tr>
<th>IBM Tivoli Monitoring for Applications - mySAP.com</th>
<th>IBM Tivoli Monitoring for Applications - Siebel</th>
</tr>
</thead>
<tbody>
<tr>
<td>Base Resources</td>
<td>Yes</td>
</tr>
<tr>
<td>Low-level Resources</td>
<td>No</td>
</tr>
</tbody>
</table>

Table 21 shows the supported monitors for Tivoli Monitoring for business integration.

Table 21. Tivoli Monitoring for Business Integration

<table>
<thead>
<tr>
<th>IBM Tivoli Monitoring for Business Integration - WebSphere MQ</th>
<th>IBM Tivoli Monitoring for Business Integration - WebSphere MQI</th>
</tr>
</thead>
<tbody>
<tr>
<td>Base Resources</td>
<td>Yes</td>
</tr>
<tr>
<td>Low-level Resources</td>
<td>No</td>
</tr>
</tbody>
</table>

Table 22 shows the supported monitors for Tivoli Monitoring for databases.

Table 22. Tivoli Monitoring for Databases

<table>
<thead>
<tr>
<th>IBM Tivoli Monitoring for Databases - Oracle</th>
<th>IBM Tivoli Monitoring for Databases - DB2</th>
<th>IBM Tivoli Monitoring for Databases - Informix</th>
</tr>
</thead>
<tbody>
<tr>
<td>Base Resources</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Low-level Resources</td>
<td>No</td>
<td>No</td>
</tr>
</tbody>
</table>

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Table 23 shows the supported monitors for Tivoli Monitoring for Web infrastructure.

Table 23. Tivoli Monitoring for Web Infrastructure

<table>
<thead>
<tr>
<th></th>
<th>IBM Tivoli Monitoring for Web Infrastructure - Apache</th>
<th>IBM Tivoli Monitoring for Web Infrastructure - WebSphere Application Server</th>
<th>IBM Tivoli Monitoring for Web Infrastructure - iPlanet</th>
</tr>
</thead>
<tbody>
<tr>
<td>Base Resources</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Low-level Resources</td>
<td>No</td>
<td>No</td>
<td>No</td>
</tr>
</tbody>
</table>

Table 24 shows the supported monitors for Tivoli Monitoring for messaging and collaboration.

Table 24. Tivoli Monitoring for Messaging and Collaboration

<table>
<thead>
<tr>
<th></th>
<th>IBM Tivoli Monitoring for Web Infrastructure - IIS</th>
<th>IBM Tivoli Monitoring for Messaging and Collaboration - Domino</th>
</tr>
</thead>
<tbody>
<tr>
<td>Base Resources</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Low-level Resources</td>
<td>No</td>
<td>No</td>
</tr>
</tbody>
</table>
Appendix A. Accessibility

This appendix provides information about how the IBM Tivoli Business Systems Manager console is accessible to all users.

General Shortcut Keys

Following are shortcut keys for the console:

<table>
<thead>
<tr>
<th>Task</th>
<th>Shortcut</th>
</tr>
</thead>
<tbody>
<tr>
<td>Open the Task Assistant</td>
<td>F1</td>
</tr>
<tr>
<td>View the primary topic on keyboard shortcuts in the Task Assistant.</td>
<td>F9</td>
</tr>
<tr>
<td>Close the window that has focus within the console</td>
<td>Ctrl + F4</td>
</tr>
<tr>
<td>Select or deselect the item in a Tree view</td>
<td>space bar</td>
</tr>
<tr>
<td>Refresh the view that has focus in the work area</td>
<td>F5</td>
</tr>
<tr>
<td>Move between Business Systems view, workspace, and Task assistant</td>
<td>F6</td>
</tr>
<tr>
<td>Move focus to the workspace and cycle through the views</td>
<td>Ctrl + F6</td>
</tr>
<tr>
<td>Activate the menu bar</td>
<td>F10</td>
</tr>
<tr>
<td>Open context menu for a resource</td>
<td>Shift + F10 (Does not work in HyperView or Topology view.)</td>
</tr>
<tr>
<td>Move focus to the splitter bar and toggle between splitter bars if more than one splitter bar is shown.</td>
<td>F8</td>
</tr>
<tr>
<td>Move a splitter bar to a new position when the splitter bar has focus</td>
<td>To move the bar, use the arrow keys or the <strong>Home</strong> and <strong>End</strong> keys. To set the new position, click <strong>Esc</strong> to deselect the splitter bar or move the focus to another area.</td>
</tr>
</tbody>
</table>

Shortcut keys for dialogs such as the Resource Properties dialog and the Take Ownership dialog:

<table>
<thead>
<tr>
<th>Task</th>
<th>Shortcut</th>
</tr>
</thead>
<tbody>
<tr>
<td>Move forward to the next item in the dialog</td>
<td>Tab</td>
</tr>
<tr>
<td>Move backward to the previous item in the dialog</td>
<td>Shift + Tab</td>
</tr>
<tr>
<td>Move out of a table or multi-line text area in a dialog and forward to the next item in the dialog</td>
<td>Ctrl + Tab</td>
</tr>
<tr>
<td>Move out of a table or multi-line text area in a dialog and backward to the previous item in the dialog</td>
<td>Ctrl + Shift + Tab</td>
</tr>
</tbody>
</table>

Shortcut keys for the Business Systems area:

<table>
<thead>
<tr>
<th>Task</th>
<th>Shortcut</th>
</tr>
</thead>
<tbody>
<tr>
<td>Move to the item below the current item</td>
<td>down arrow</td>
</tr>
</tbody>
</table>
Table 27. Shortcut keys for the Business Systems area: (continued)

<table>
<thead>
<tr>
<th>Action</th>
<th>Key Combination</th>
</tr>
</thead>
<tbody>
<tr>
<td>Move to the item above the current item</td>
<td>up arrow</td>
</tr>
<tr>
<td>Open a branch of the current item</td>
<td>right arrow</td>
</tr>
<tr>
<td>Close a branch of the current item</td>
<td>left arrow</td>
</tr>
<tr>
<td>Expand the current item</td>
<td>Shift + =</td>
</tr>
<tr>
<td>Collapse the current item</td>
<td>Shift + -</td>
</tr>
<tr>
<td>Scroll to the new page of the view that has focus</td>
<td>Page Down</td>
</tr>
<tr>
<td>Scroll to the previous page of the view that has focus</td>
<td>Page Up</td>
</tr>
<tr>
<td>Move to the first item in the view that has focus</td>
<td>Home</td>
</tr>
<tr>
<td>Move to the last item in the view that has focus</td>
<td>End</td>
</tr>
<tr>
<td>Open the selected item</td>
<td>Enter</td>
</tr>
</tbody>
</table>

Shortcut keys for sorting and filtering information in tables:

Table 28. Shortcut keys for sorting and filtering information in tables

<table>
<thead>
<tr>
<th>Action</th>
<th>Key Combination</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sort the current column in ascending order</td>
<td>Ctrl + S</td>
</tr>
<tr>
<td>Sort the current column in descending order</td>
<td>Ctrl + Shift + S</td>
</tr>
<tr>
<td>For a single column sort, clear the sort for the current column</td>
<td>Ctrl + Q</td>
</tr>
<tr>
<td>For a multi column sort, clear the sort for the current column</td>
<td>Ctrl + J</td>
</tr>
<tr>
<td>For a multi-column sort, clear all sorts</td>
<td>Ctrl + Q</td>
</tr>
<tr>
<td>For a multi-column sort, edit the sort</td>
<td>Ctrl + W</td>
</tr>
<tr>
<td>Show the filter row</td>
<td>Ctrl + R</td>
</tr>
<tr>
<td>Hide the filter row</td>
<td>Ctrl + Shift + R</td>
</tr>
<tr>
<td>Edit the filter for the current column</td>
<td>Ctrl + E</td>
</tr>
<tr>
<td>Apply the filter for the current column</td>
<td>Ctrl + Shift + U</td>
</tr>
<tr>
<td>Remove the apply filter for the current column</td>
<td>Ctrl + U</td>
</tr>
<tr>
<td>Clear all filters</td>
<td>Ctrl + K</td>
</tr>
<tr>
<td>Select all table rows that are displayed</td>
<td>Ctrl + A</td>
</tr>
<tr>
<td>Deselect all table rows that are displayed</td>
<td>Ctrl + Shift + A</td>
</tr>
</tbody>
</table>

Menu Shortcut Keys

This section describes shortcut keys for items on the menu bar as well as for menu choices.

Console Menu Bar

Console menu bar shortcut keys:
- Console Alt + C
- Edit Alt + E
- View Alt + V
- Search Alt + S
- Actions Alt + A
- Windows® Alt + W
- Help Alt + H
**Console Menu**
Console menu shortcut keys:
- New Business System Ctrl + N
- Task Monitor Ctrl + T
- Open Workspace Ctrl + W
- Open All Resources Ctrl + U
- Open Resource Types Ctrl + Y
- Save Workspace Ctrl + S
- Image Manager Ctrl + M
- Exit Alt F4

**Edit Menu**
Edit menu selections are available for Administrators and Super Administrators
- Copy Ctrl + C
- Paste Ctrl + V

**View Menu**
View menu shortcut keys:
- Refresh F5
- Cancel Query Shift + F5
- Events Ctrl + Shift + E
- Home Home
- Expand all Shift + =
- Collapse all Shift + -

**Search Menu**
Search menu shortcut keys:
- Search All Resources F3

**Actions Menu**
Actions menu shortcut keys:
- Business Impact Ctrl + B
- Properties Alt + Enter

**Help Menu**
Help menu shortcut keys:
- Open Task Assistant/Close Task Assistant F1
- Search Ctrl + Shift + F
- Keyboard Help F9

---

**Additional Menu Shortcut Keys for Topology Views**

This section describes shortcut keys for menu choices that are available while you are using Topology views.

**Edit Menu**
Edit menu shortcut keys:
- Find Ctrl + F (also for HyperViews)
**View Menu**

View menu shortcut keys:
- Zoom -> In Ctrl + Page Up
- Zoom -> Out Ctrl + Page Down
- Zoom -> Fit to Window Ctrl + Home
- Zoom Fit Visible to Window Ctrl + End
- Pan -> Up Up arrow key
- Pan -> Down Down arrow key
- Pan -> Left Left arrow key
- Pan -> Right Right arrow key
- Undo Detail Ctrl + F12

**Actions Menu**

Actions menu shortcut keys:
- Zoom Selected Ctrl + =
- Center Selected Alt + =
- More Detail Ctrl + F11
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