This edition of the Installation and Configuration Guide applies to Version 3, Release 1, Modification 0 of IBM Tivoli System Automation for Multiplatforms, program number 5724-M00, and to all subsequent releases and modifications of this product until otherwise indicated in new editions. The End-to-End Automation Management Component is now a separate product entitled IBM Tivoli System Automation Application Manager (5724-S92).

This edition replaces SC33-8416-00.

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Title and order number of this book
Page number or topic related to your comment

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Contents

Figures ........................................ v i i
Tables ........................................... ix

About this guide ................................ xi
Who should read this guide ......................... xi
How to use this guide ................................ xi
Where to find more information .................... xi
Conventions used in this guide .................... x i
Typeface conventions ................................ x ii
Related information ................................ x ii

Summary of changes ................................ xv
What's new in release 3.1 ............................ xv

Part 1. Installation ................................. 1

Chapter 1. Installing System Automation for Multiplatforms on UNIX and Linux .................................. 3
Planning for the installation ........................ 3
Contents of the CD .................................. 3
Supported platforms ................................ 4
Preparing for installation ........................... 6
Prerequisites ....................................... 6
Initial configurations ................................ 7
Installing and upgrading System Automation for Multiplatforms ........................................ 9
Installing System Automation for Multiplatforms on UNIX and Linux .................................... 9
Installing the product license ....................... 12
Upgrading from a Try & Buy license to a full product license ............................................ 12
Languages and locales supported by System Automation for Multiplatforms ............................. 13
Migrating System Automation for Multiplatforms ................................................................. 14

Chapter 2. Installing System Automation for Multiplatforms on Windows .................................. 19
Planning for the installation ....................... 19
System Automation for Multiplatforms installation CD ....................................................... 19
System Automation for Multiplatforms installation archive .................................................. 19
Subsystem for Unix-based applications ........ 19
Supported languages and locales ................ 19
Preparing the system for the installation of System Automation for Multiplatforms on Windows .... 20
Installation prerequisites ........................... 20
Considerations regarding the load on nodes in Windows clusters ......................................... 21
Installing the Subsystem for UNIX-based Applications (required) ........................................... 21
Installing the Utilities and SDK Package (required) ............................................................... 21
Installing hotfixes ................................... 22
Updating the DNS or hosts file (required) ....... 22
Configuring the Subsystem for UNIX-based Applications ...................................................... 22
Setting up Windows user account access .......... 24
Installing or upgrading System Automation for Multiplatforms on Windows ......................... 26
Upgrading System Automation for Multiplatforms on Windows ........................................... 26
Installing System Automation for Multiplatforms on Windows Server x64 Edition .................... 26
Installing System Automation for Multiplatforms on Windows using the graphical installation program .......................................................... 27
Installing System Automation for Multiplatforms on Windows in silent mode ......................... 34
Verifying the installation ............................ 35
Changes made to your default profile ............ 35
Special considerations regarding Windows line endings ......................................................... 36

Chapter 3. Post-installation tasks for System Automation for Multiplatforms on Windows .................. 37
Manual license installation .......................... 37
Configuring a non-English environment for System Automation for Multiplatforms .................. 37
Configuring the IBM Tivoli System Automation Shell ......................................................... 38
Configuring a telnet session from a Windows command prompt ........................................... 38
Configuring a remote session using a terminal ................................................................. 38
Setting up the Windows firewall .................... 39
Windows Server 2003 .................................. 39
Windows Server 2008 ................................. 40

Chapter 4. Installing the System Automation for Multiplatforms operations console .................. 43
Planning for the installation ....................... 43
Packaging .......................................... 43
Product requirements ................................ 45
Preparing for the installation of System Automation for Multiplatforms operations console .... 47
Collecting the information you need to provide during installation ....................................... 47
Installation prerequisites ........................... 51
## Figures

1. Verifying the active and installed version numbers ........................................... 16
2. Log in panel of Integrated Solutions Console ......................................................... 61
3. Welcome panel of Integrated Solutions Console ...................................................... 62
4. Overview of the environment of the end-to-end automation adapter in UNIX and Linux clusters .................................................... 96
5. Overview of the environment of the end-to-end automation adapter in Windows clusters .......................................................... 97
6. Main panel of the end-to-end automation adapter configuration dialog .................. 99
7. System Automation for Multiplatforms end-to-end adapter configuration .................. 100
8. Host using adapter tab ......................................................................................... 102
9. Automating the adapter ....................................................................................... 103
10. Configuring data reporting ................................................................................ 106
11. Configuring the adapter security ........................................................................ 108
12. Adapter logging and trace information ................................................................ 109
13. Configuration update status panel ...................................................................... 111
14. System Automation for Multiplatforms replicate configuration files panel .............. 113
## Tables

1. Product CD versions ........................................... 3
2. Archives for Linux platforms .................................. 4
3. Archives for AIX platforms .................................... 4
4. Archives for Solaris platforms ................................ 4
5. Supported platforms for System Automation for Multiplatforms .... 5
6. Software packages available for installation, based on your operating system .. 6
7. Languages and locales supported by System Automation for Multiplatforms on Linux systems ...... 13
8. Languages and locales supported by System Automation for Multiplatforms on AIX systems .... 13
9. Languages and locales supported by System Automation for Multiplatforms on Solaris systems ... 14
10. Languages and locales supported by System Automation for Multiplatforms on Windows .......... 20
11. IBM Tivoli System Automation Shell properties .................. 38
12. Windows command prompt properties ........................... 38
13. Telnet session properties ...................................... 38
14. Session properties ............................................ 39
15. Session properties ............................................ 39
16. Windows firewall: Required port exceptions .................. 39
17. Firewall rules (Windows Server 2008) ........................... 41
18. Product CD versions ........................................... 43
19. Archives for Windows platforms ................................ 44
20. Archives for AIX platforms .................................... 44
21. Archives for Linux on System x ................................ 44
22. Archives for Linux on POWER .................................. 44
23. Archives for Linux on System z ................................ 45
24. Supported operating systems ................................... 45
25. Disk space requirements for the installation on Windows systems .................. 47
26. Disk space requirements on AIX and Linux systems .................. 47
27. Installation directory and Tivoli Common Directory ................. 48
28. Installation parameters for Integrated Solutions Console .................. 50
29. Port assignment for the embedded version of IBM WebSphere Application Server .......... 51
30. Ports for inbound TCP traffic (Windows Server 2008) .................. 60
31. Archive for Linux platforms .................................... 78
32. Archive for AIX platforms .................................... 78
33. Archive for Solaris platforms .................................. 78
34. Archive for Windows platforms ................................ 78
35. Windows platforms ............................................ 81
36. AIX platforms ................................................. 81
37. Linux on IBM System x ....................................... 81
38. Linux on POWER .............................................. 81
39. Linux on System z ............................................. 82
40. Context used to find a Tivoli Enterprise Portal workspace .................. 91
41. Resources in the end-to-end automation adapter policy .................. 114
42. End-to-end automation adapter command options .................. 115
43. Generated input properties files ................................ 119
About this guide

This guide provides information needed to plan, install, configure, and upgrade IBM Tivoli System Automation for Multiplatforms, hereafter also referred to simply as System Automation for Multiplatforms.

Who should read this guide

This guide is for planners, installers, and administrators who plan to install and configure System Automation for Multiplatforms.

How to use this guide

This guide is divided into the following parts:

- **Part 2, “Enabling launch-in-context support,” on page 85** describes how you install and configure the IBM TEC extension for System Automation for Multiplatforms, which enables users to navigate from an event displayed in the Event Console of Tivoli Enterprise Console to the corresponding resource or domain in the System Automation operations console, and describes how to set up launch-in-context support for Tivoli Enterprise Portal (TEP), which enables users to launch TEP workspaces from the System Automation operations console with a single mouse click.
- **Part 3, “Configuring the end-to-end automation adapter,” on page 93** explains how to set up the end-to-end automation adapter and define the related automation policy.
- The Appendixes provide troubleshooting procedures and reference information.

Where to find more information

In addition to this manual, the System Automation for Multiplatforms library contains the following books:

- **IBM Tivoli System Automation for Multiplatforms Administrator’s and User’s Guide**, SC33-8415
- **IBM Tivoli System Automation for Multiplatforms Reference**, SC33-8417


The System Automation for Multiplatforms home page contains useful up-to-date information, including support links and downloads for maintenance packages.


Conventions used in this guide

This guide uses several conventions for special terms and actions and operating system commands and paths.

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Typeface conventions

This guide uses the following conventions:

- Typically, file names, directories, and commands appear in a different font. For example:
  - File name: setup.bin
  - Directory: /etc
  - Command: startrpdomain cluster
- Variables are either italicized, enclosed in brackets, or both. For example:
  - http://<hostname.yourco.com>/index.html
- Frequently, variables are used to indicate a root installation directory:
  - Root installation directory of System Automation for Multiplatforms:
    <samp_root> or samp_root
- Directories are shown with forward slashes (/), unless operating-system specific information is provided. On Windows® systems, you should use backward slashes (\) when typing at a command line, unless otherwise noted.
- Operating-system specific information is provided. For example:
  - AIX, Solaris, Linux: /opt/IBM/tsamp/sam
  - Windows: C:\Program Files\IBM\SA for Multiplatforms

Related information

This topic provides information about publications and Web sites related to System Automation for Multiplatforms:

WebSphere Application Server publications:

The latest versions of all WebSphere Application Server publications can be found on the WebSphere Application Server library Web site at

[www.ibm.com/software/webservers/appserv/was/library/](http://www.ibm.com/software/webservers/appserv/was/library/)

IBM Reliable Scalable Cluster Technology (RSCT) documentation:

RSCT (Reliable Scalable Cluster Technology) is the infrastructure used by System Automation for Multiplatforms to provide clusters with improved system availability, scalability, and ease of use.

- The following RSCT publications are available on the System Automation for Multiplatforms CD:
  - RSCT Administration Guide, SA22-7889
  - RSCT for AIX 5L: Technical Reference, SA22-7890
  - RSCT for Multiplatforms: Technical Reference, SA22-7893
  - RSCT Messages, GA22-7891
  - RSCT Diagnosis Guide, SA23-2202
- RSCT publications can also be found at the following Web site:

IBM DB2 publications:

DB2 publications can be found on the IBM DB2 UDB Web site at


The link to the PDF manuals is available in the Other resources section on the Web page.
IBM Redbooks publications:
The following publication is available at:
www.redbooks.ibm.com/redbooks.nsf/
• Linux on IBM zSeries and S/390: High Availability for z/VM and Linux
Summary of changes

What's new in release 3.1

The following new features and enhancements are provided in Version 3 Release 1:

- System Automation for Multiplatforms can now be installed on:
  - AIX 5.3 and 6.1, including the RSCT prerequisite
  - Solaris 10 on SPARC
  - Windows Server 2008
- The minimum Red Hat Enterprise Linux version is now 4.6
- The configuration tool can now be used in silent mode without the need for a window environment (such as X-Window)
- System Automation for Multiplatforms on Windows can now be added to a System Automation Application Manager domain
- Graphical policy editor
- Running the product with the English language is now supported in Turkish locales
- You can now use the SA operations console to move resources from one node to another.
Part 1. Installation

<table>
<thead>
<tr>
<th>Chapter 1. Installing System Automation for Multiplatforms on UNIX and Linux</th>
<th>3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Planning for the installation</td>
<td>3</td>
</tr>
<tr>
<td>Contents of the CD</td>
<td>3</td>
</tr>
<tr>
<td>CDs / archives for System Automation for Multiplatforms</td>
<td>3</td>
</tr>
<tr>
<td>System Automation for Multiplatforms CD</td>
<td>3</td>
</tr>
<tr>
<td>Electronic distribution of System Automation for Multiplatforms</td>
<td>3</td>
</tr>
<tr>
<td>Supported platforms</td>
<td>4</td>
</tr>
<tr>
<td>Supported network interfaces</td>
<td>5</td>
</tr>
<tr>
<td>Preparing for installation</td>
<td>6</td>
</tr>
<tr>
<td>Prerequisites</td>
<td>6</td>
</tr>
<tr>
<td>Considerations regarding the load on nodes in UNIX and Linux clusters</td>
<td>7</td>
</tr>
<tr>
<td>Initial configurations</td>
<td>7</td>
</tr>
<tr>
<td>Installing and upgrading System Automation for Multiplatforms</td>
<td>9</td>
</tr>
<tr>
<td>Installing System Automation for Multiplatforms on UNIX and Linux</td>
<td>9</td>
</tr>
<tr>
<td>Performing the prerequisites check</td>
<td>9</td>
</tr>
<tr>
<td>Installing System Automation for Multiplatforms</td>
<td>10</td>
</tr>
<tr>
<td>Post-installation tasks</td>
<td>11</td>
</tr>
<tr>
<td>Installing the product license</td>
<td>12</td>
</tr>
<tr>
<td>Upgrading from a Try &amp; Buy license to a full product license</td>
<td>12</td>
</tr>
<tr>
<td>Languages and locales supported by System Automation for Multiplatforms</td>
<td>13</td>
</tr>
<tr>
<td>System Automation for Multiplatforms on Linux</td>
<td>13</td>
</tr>
<tr>
<td>System Automation for Multiplatforms on AIX</td>
<td>13</td>
</tr>
<tr>
<td>System Automation for Multiplatforms on Solaris</td>
<td>14</td>
</tr>
<tr>
<td>Migrating System Automation for Multiplatforms</td>
<td>14</td>
</tr>
<tr>
<td>Migrating an entire domain</td>
<td>15</td>
</tr>
<tr>
<td>Performing a node-by-node migration</td>
<td>15</td>
</tr>
<tr>
<td>Verifying the active and installed version number</td>
<td>16</td>
</tr>
<tr>
<td>Completing the migration</td>
<td>16</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Chapter 2. Installing System Automation for Multiplatforms on Windows</th>
<th>19</th>
</tr>
</thead>
<tbody>
<tr>
<td>Planning for the installation</td>
<td>19</td>
</tr>
<tr>
<td>System Automation for Multiplatforms installation CD</td>
<td>19</td>
</tr>
<tr>
<td>System Automation for Multiplatforms installation archive</td>
<td>19</td>
</tr>
<tr>
<td>Subsystem for Unix-based applications</td>
<td>19</td>
</tr>
<tr>
<td>Supported languages and locales</td>
<td>19</td>
</tr>
<tr>
<td>Preparing the system for the installation of System Automation for Multiplatforms on Windows</td>
<td>20</td>
</tr>
<tr>
<td>Installation prerequisites</td>
<td>20</td>
</tr>
<tr>
<td>Considerations regarding the load on nodes in Windows clusters</td>
<td>21</td>
</tr>
<tr>
<td>Installing the Subsystem for UNIX-based Applications (required)</td>
<td>21</td>
</tr>
<tr>
<td>Installing the Utilities and SDK Package (required)</td>
<td>21</td>
</tr>
<tr>
<td>Installing hotfixes</td>
<td>22</td>
</tr>
<tr>
<td>Updating the DNS or hosts file (required)</td>
<td>22</td>
</tr>
<tr>
<td>Configuring the Subsystem for UNIX-based Applications</td>
<td>22</td>
</tr>
<tr>
<td>Enabling the syslog daemon</td>
<td>23</td>
</tr>
<tr>
<td>Enabling telnet login to Subsystem for UNIX-based Applications (optional)</td>
<td>23</td>
</tr>
<tr>
<td>Setting up Windows user account access</td>
<td>24</td>
</tr>
<tr>
<td>Windows Server 2003</td>
<td>24</td>
</tr>
<tr>
<td>Windows Server 2008</td>
<td>25</td>
</tr>
<tr>
<td>Installing or upgrading System Automation for Multiplatforms on Windows</td>
<td>26</td>
</tr>
<tr>
<td>Upgrading System Automation for Multiplatforms on Windows</td>
<td>26</td>
</tr>
<tr>
<td>Installing System Automation for Multiplatforms on Windows Server x64 Edition</td>
<td>26</td>
</tr>
<tr>
<td>Installing System Automation for Multiplatforms on Windows using the graphical installation program</td>
<td>27</td>
</tr>
<tr>
<td>Installing System Automation for Multiplatforms on Windows in silent mode</td>
<td>34</td>
</tr>
<tr>
<td>Response file generation</td>
<td>34</td>
</tr>
<tr>
<td>Using the response file to install silently</td>
<td>35</td>
</tr>
<tr>
<td>Verifying the installation</td>
<td>35</td>
</tr>
<tr>
<td>Changes made to your default profile</td>
<td>35</td>
</tr>
<tr>
<td>Special considerations regarding Windows line endings</td>
<td>36</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Chapter 3. Post-installation tasks for System Automation for Multiplatforms on Windows</th>
<th>37</th>
</tr>
</thead>
<tbody>
<tr>
<td>Manual license installation</td>
<td>37</td>
</tr>
<tr>
<td>Configuring a non-English environment for System Automation for Multiplatforms on Windows</td>
<td>37</td>
</tr>
<tr>
<td>Configuring the IBM Tivoli System Automation Shell</td>
<td>38</td>
</tr>
<tr>
<td>Configuring a telnet session from a Windows command prompt</td>
<td>38</td>
</tr>
<tr>
<td>Configuring a remote session using a terminal</td>
<td>38</td>
</tr>
<tr>
<td>Setting up the Windows firewall</td>
<td>39</td>
</tr>
<tr>
<td>Windows Server 2003</td>
<td>39</td>
</tr>
<tr>
<td>Windows Server 2008</td>
<td>40</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Chapter 4. Installing the System Automation for Multiplatforms operations console</th>
<th>43</th>
</tr>
</thead>
<tbody>
<tr>
<td>Planning for the installation</td>
<td>43</td>
</tr>
<tr>
<td>Packaging</td>
<td>43</td>
</tr>
<tr>
<td>Operations console CD</td>
<td>43</td>
</tr>
<tr>
<td>Electronic distribution</td>
<td>43</td>
</tr>
<tr>
<td>Product requirements</td>
<td>45</td>
</tr>
<tr>
<td>Supported platforms</td>
<td>45</td>
</tr>
<tr>
<td>Supported Web browsers</td>
<td>46</td>
</tr>
<tr>
<td>Hardware requirements</td>
<td>46</td>
</tr>
</tbody>
</table>
Chapter 1. Installing System Automation for Multiplatforms on UNIX and Linux

The following sections describe planning, preparation, and installation of System Automation for Multiplatforms on UNIX (AIX or Solaris) and Linux:

- "Planning for the installation.
- "Preparing for installation" on page 6
- "Installing and upgrading System Automation for Multiplatforms” on page 9.

Planning for the installation

Contents of the CD

Separate CDs labeled as follows contain scripts and software packages for each platform and the corresponding architecture:

- "IBM Tivoli System Automation for Multiplatforms 3.1.0 for Linux on System x, Linux on Power, and Linux on System z"
- "IBM Tivoli System Automation for Multiplatforms 3.1.0 for Linux on AIX"
- "IBM Tivoli System Automation for Multiplatforms 3.1.0 for Linux on Solaris"

CDs / archives for System Automation for Multiplatforms

The following sections explain where to find the System Automation for Multiplatforms installation files and scripts on the CDs and electronic distribution archives.

System Automation for Multiplatforms CD

To install System Automation for Multiplatforms, you use the installation script listed in the right column of the table below:

<table>
<thead>
<tr>
<th>Operating system</th>
<th>Product CD label</th>
<th>Installation script</th>
</tr>
</thead>
<tbody>
<tr>
<td>Linux</td>
<td>IBM Tivoli System Automation for Multiplatforms V3.1.0 for Linux on System x, Linux on Power, and Linux on System z</td>
<td>SAM3100MPLinux/installSAM</td>
</tr>
<tr>
<td>AIX</td>
<td>IBM Tivoli System Automation for Multiplatforms V3.1.0 for AIX</td>
<td>SAM3100MPAIX/installSAM</td>
</tr>
<tr>
<td>Solaris</td>
<td>IBM Tivoli System Automation for Multiplatforms V3.1.0 for Solaris</td>
<td>SAM3100MPSunOS/installSAM</td>
</tr>
</tbody>
</table>

Electronic distribution of System Automation for Multiplatforms

If you prefer electronic distribution to delivery on the CD, we offer you the possibility to download the product from the Web. After you have purchased System Automation for Multiplatforms you get a URL where you can download a tar or zip file.
Archives:

**Linux:**

*Table 2. Archives for Linux platforms*

<table>
<thead>
<tr>
<th>Archive name</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>C1A8IIML.tar</td>
<td>This is the archive you use to install the product.</td>
</tr>
<tr>
<td></td>
<td>For extracting the archive, GNU tar 1.13 or later is required.</td>
</tr>
<tr>
<td></td>
<td>Use the <code>tar xf</code> command to extract the archive. When you</td>
</tr>
<tr>
<td></td>
<td>have extracted the files, you will find the installation script</td>
</tr>
<tr>
<td></td>
<td><code>installSAM</code> in the following directory:</td>
</tr>
<tr>
<td></td>
<td>SAM3100MPLinux</td>
</tr>
</tbody>
</table>

**AIX:**

*Table 3. Archives for AIX platforms*

<table>
<thead>
<tr>
<th>Archive name</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>C1A8JML.tar</td>
<td>This is the archive you use to install the product.</td>
</tr>
<tr>
<td></td>
<td>Use the <code>tar xf</code> command to extract the archive. When you</td>
</tr>
<tr>
<td></td>
<td>have extracted the files, you will find the installation script</td>
</tr>
<tr>
<td></td>
<td><code>installSAM</code> in the following directory:</td>
</tr>
<tr>
<td></td>
<td>SAM3100MPAIX</td>
</tr>
</tbody>
</table>

**Solaris:**

*Table 4. Archives for Solaris platforms*

<table>
<thead>
<tr>
<th>Archive name</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>C1A8LML.zip</td>
<td>This is the archive you use to install the product.</td>
</tr>
<tr>
<td></td>
<td>Use the <code>unzip</code> command to extract the archive. When you</td>
</tr>
<tr>
<td></td>
<td>have extracted the files, you will find the installation script</td>
</tr>
<tr>
<td></td>
<td><code>installSAM</code> in the following directory:</td>
</tr>
<tr>
<td></td>
<td>SAM3100MPSunOS</td>
</tr>
</tbody>
</table>

**Supported platforms**

System Automation for Multiplatforms Version 3.1, supports the following UNIX and Linux environments: Linux on System z, Linux on System x, Linux on Power, AIX 5.3 and 6.1, and Solaris 10.

System Automation for Multiplatforms runs on all IBM Systems machines running Linux, on IBM System p machines running AIX, and on Sun SPARC or compatible systems running Solaris. Additionally, System Automation runs under VMWare on IBM System x (except Intel IA64 based servers) and any other 32-bit Intel based server, AMD Opteron based server (64-bit), or Intel EM64T based server (64 bit).

The following table lists the supported operating system versions. For the latest information, refer to the IBM Tivoli System Automation for Multiplatforms Release Notes on the System Automation for Multiplatforms home page:

The latest version of the release notes is available behind the Technical Documentation link.

**Table 5. Supported platforms for System Automation for Multiplatforms**

<table>
<thead>
<tr>
<th>Platform</th>
<th>IBM System x</th>
<th>IBM System z</th>
<th>IBM System p</th>
<th>IBM System i</th>
<th>Sun SPARC</th>
</tr>
</thead>
<tbody>
<tr>
<td>SUSE SLES 9 (32-bit)</td>
<td>x</td>
<td>x</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>SUSE SLES 9 (64-bit)</td>
<td>x</td>
<td>x</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>SUSE SLES 10 (32-bit)</td>
<td>x</td>
<td>x</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>SUSE SLES 10 (64-bit)</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td></td>
</tr>
<tr>
<td>Red Hat RHEL 4.6 (32-bit)</td>
<td>x</td>
<td></td>
<td>x</td>
<td>x</td>
<td></td>
</tr>
<tr>
<td>Red Hat RHEL 4.6 (64-bit)</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td></td>
</tr>
<tr>
<td>Red Hat RHEL 5.0 (32-bit)</td>
<td>x</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Red Hat RHEL 5.0 (64-bit)</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td></td>
</tr>
<tr>
<td>AIX 5.3</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>x</td>
</tr>
<tr>
<td>AIX 6.1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>x[^1]</td>
</tr>
<tr>
<td>Solaris 10 (64-bit)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>x[^2,8]</td>
</tr>
</tbody>
</table>

**Notes:**

1. System x (except Intel IA64 based servers) and any other 32-bit Intel based server, or AMD Opteron based server (64-bit), or Intel EM64T based server (64 bit).
   - All supported operating systems are also supported when running under VMWare.
2. Requires SUSE SLES9 SP1
3. Requires C++ Runtime Library for AIX, version 7.0.0.1, which is included in PTFs U800738 and U800739.
4. SP1 must be installed.
5. Solaris 10 on Sun SPARC 64-bit systems or fully compatible SPARC 64-bit clones. The System Automation for Multiplatforms operations console is not available within the Solaris environment, but an operations console on another platform can be associated with a Solaris-based cluster.
6. AIX 6.1 supports Workload Partition (WPAR) mobility or relocation. In the V3.1 release, System Automation for Multiplatforms and RSCT do not support domains with nodes that are System WPARs.
7. In the V3.1 release, System Automation for Multiplatforms and RSCT do not support domains with nodes that are Solaris zone containers.
8. Requires Solaris 10 update 1 (Update 01/06), or later.

**Supported network interfaces**

All platforms support 10 Megabit Ethernet, Fast Ethernet, and Gigabit Ethernet. In addition, the System z platform also supports Hipersockets, CTC, and VM Guest LAN.
Preparing for installation

System Automation for Multiplatforms is contained in several packages that must be installed on every cluster node that you want to automate. Package type and content depend on the operating system on which you are installing System Automation for Multiplatforms.

Notes:
1. The software packages must be available on the nodes on which you want to install System Automation for Multiplatforms. For example, you can mount the CD-ROM on a PC and use FTP to transfer the files to the node, or you can install the packages over a shared Network File System.
2. To be sure that the software packages are installed and uninstalled in the correct order, use the System Automation for Multiplatforms scripts installSAM and uninstallSAM.

Table 6. Software packages available for installation, based on your operating system

<table>
<thead>
<tr>
<th>Operating system</th>
<th>Type of package</th>
<th>Content</th>
</tr>
</thead>
<tbody>
<tr>
<td>Linux</td>
<td>RPM packages</td>
<td>System Automation for Multiplatforms RPMs and RSCT(^1) RPMs.</td>
</tr>
<tr>
<td>AIX</td>
<td>installp file sets</td>
<td>System Automation for Multiplatforms installp file sets and RSCT(^1) packages.</td>
</tr>
<tr>
<td>Solaris</td>
<td>Solaris packages</td>
<td>System Automation for Multiplatforms packages and RSCT(^1) packages.</td>
</tr>
</tbody>
</table>

Notes:
1. RSCT (Reliable Scalable Cluster Technology) is the infrastructure used by System Automation for Multiplatforms to provide clusters with improved system availability, scalability, and ease of use.

Prerequisites

Before starting the installation you must fulfill these requirements:

- You need to have root authority to install System Automation for Multiplatforms on the system.
- A Korn shell must be installed.
- Perl is required to use the command line interface of IBM Tivoli System Automation for Multiplatforms including native RSCT commands. It is, by default, installed on your Linux, AIX, or Solaris systems as part of the operating system, but if you are using System Automation for Multiplatforms in a language other than English, a special version of Perl may be required. Due to known problems with Perl 5.8.0 and how it handles UTF-8 encoded locales, some characters may not be properly displayed. This can occur on systems with Perl 5.8.0 installed, while using a UTF-8 encoded locale. When previous or subsequent versions of Perl are used, or non-UTF-8 encoded locales are used, this problem does not occur.

If you decide to upgrade your Perl 5.8.0 version on a Linux distribution, perform the following steps:
2. Unzip and tar -xvf on any directory.
3. Compile and install on the UTF-8 machine, referring to the instructions provided with the downloaded files.

4. Change the symbolic link pointing to the directory of the Perl version that is used by System Automation for Multiplatforms from: `/usr/sbin/rsct/perl5/bin/perl` to `/usr/bin/perl` to the directory where the new version of Perl is per default installed:
   `/usr/sbin/rsct/perl5/bin/perl` to `/usr/local/bin/perl`.
   - Also make sure that the directories `/usr/sbin` and `/opt` have at least 100 MB free space, and that the directory `/var` also provides at least 100 MB free space.
   - On any node where the end-to-end automation adapter is configured to run, at least 128 MB RAM must be available.
   - During installation of System Automation for Multiplatforms on AIX, the levels of RSCT packages required by System Automation for Multiplatforms are checked against the levels of RSCT packages already installed with the operating system, and missing packages or higher levels of RSCT packages are installed if required. Under certain circumstances, you may need to manually install higher levels of certain RSCT packages. For example, if the RSCT basic package is not installed, and the level of the installed RSCT core package is higher than the level of the RSCT packages supplied with System Automation for Multiplatforms, the installation of the RSCT basic package may fail due to RSCT prerequisites not being met. You need to download and install the appropriate RSCT filesets from the AIX service center to ensure that all RSCT packages installed are at the same level.
   - For other operating system-specific requirements, see the requirements Web page at http://www.ibm.com/software/tivoli/products/sys-auto-multi/requirements.html
   - For languages using the double-byte character set (DBCS), the Telnet dialog buffer must be sufficiently large to ensure that long messages are properly displayed. If this is not the case, enlarge the Telnet dialog buffer.
   - In the current Red Hat 5 distributions, the SElinux environment is switched on by default. It must be switched off for System Automation for Multiplatforms to work properly.

**Considerations regarding the load on nodes in UNIX and Linux clusters**

System Automation for Multiplatforms requires some of its subsystems to be processed constantly on the node to ensure that the cluster services are working properly (for example, heartbeat and communication between those subsystems). If this is not guaranteed, System Automation may trigger critical resource protection methods in case those subsystems cannot communicate in a given period of time. This leads eventually to a reboot of the node on which this issue occurs. To prevent this, it is recommended that the following prerequisites are satisfied:

- CPU load <= 100%
- Constant I/O and swap load < 10%


**Initial configurations**

You must perform these initial configurations:

- On all nodes, set the environment variable `CT_MANAGEMENT_SCOPE` to 2 (peer domain scope) for all users of System Automation for Multiplatforms:
**CT_MANAGEMENT_SCOPE=2**
To permanently set the variable, set it in the profile.

- Make sure that the environment variable LANG is set to one of the supported locales for the root user. To set the environment variable, use the command:
  ```
  export LANG=xx_XX
  ```

  where `xx_XX` where denotes one of the supported languages.
Installing and upgrading System Automation for Multiplatforms

This section covers the following topics:

- If you are performing an initial installation of System Automation for Multiplatforms, see the topic “Installing System Automation for Multiplatforms on UNIX and Linux” below.
- If a previous version of System Automation for Multiplatforms is already installed, you need to perform some steps before the new version of System Automation for Multiplatforms can be installed. To perform a migration to a new version of the product, see the topic “Migrating System Automation for Multiplatforms” on page 14.

Installing System Automation for Multiplatforms on UNIX and Linux

You use an installation script to install System Automation for Multiplatforms. The installation script performs the following actions:

- A complete prerequisites check to verify that all prerequisites are available and at the required level. If your system does not pass the check, the installation does not start, and you need to provide the missing prerequisites and restart the installation.
- Installs System Automation for Multiplatforms, including the end-to-end automation adapter.

To avoid having to restart the installation, you can invoke the prerequisites check separately, before starting the installation.

Performing the prerequisites check

Complete the following steps:

1. Get root authority.
2. If you downloaded the tar file from the Internet, extract the file, using the following command:

   `tar -xvf <tar file>`

   If you got the product on a CD, mount the CD and change to the directory where the CD is mounted.

3. Enter the following command:

   - Linux: `cd SAM3100MPLinux`
   - AIX: `cd SAM3100MPAIX`
   - Solaris: `cd SAM3100MPSunOS`

   For information about supported platforms, see "Supported platforms” on page 4.

4. To start the prerequisites check, issue the following command:

   `./prereqSAM`

   Typically, you do not need to specify any of the options that are available for the `prereqSAM` command. For a detailed description of the command, refer to `IBM Tivoli System Automation for Multiplatforms Reference`.

5. When the check is complete, check the following log file for information about missing prerequisites:

   `/tmp/prereqSAM.<#>.log`

   where `<#>` is a number; the highest number identifies the most recent log file.
6. If your system did not pass the prerequisites check, correct any problems before starting the installation.

**Installing System Automation for Multiplatforms**

**Before you begin:**

If an RSCT peer domain already exists, ensure that the node on which you are invoking the script is offline in the domain. Otherwise, the installation will be canceled.

To install the product, including the automation adapter, perform the following steps:

1. Get root authority.
2. If you downloaded the tar file from the Internet and have not yet extracted the file, extract it using the following command:
   
   ```
   tar -xvf <tar file>
   ```
   
   If you got the product on a CD, mount the CD and change to the directory where the CD is mounted.
3. Enter the following command:
   
   ```
   Linux: cd SAM3100MPLinux
   AIX: cd SAM3100MPAIX
   Solaris: cd SAM3100MPSunOS
   ```
4. Invoke the installation script:
   
   ```
   ./installSAM
   ```

   Typically, you do not need to specify any of the options that are available for the `installSAM` command. For a detailed description of the command, refer to [IBM Tivoli System Automation for Multiplatforms Reference](#).

5. Read the information in the License Agreement and the License Information that is displayed. You can scroll forward line by line using the “Enter” key, and page by page using the “spacebar”, which is basically the “more” functionality in UNIX. Once you have scrolled to the bottom of the License information file and you want to accept the terms of the license agreement, type ‘y’. Any other input will cancel the installation.

   The installation is also canceled when no license file is found.

6. After you accept the license agreement, the installation program performs a complete prerequisites check to verify that all prerequisites are available and at the required level.

   If your system does not pass the check, the installation does not start, and you need to provide the missing prerequisites and restart the installation.

   Information about the results of the prerequisites check is available in the log file `/tmp/installSAM.<#>.log` (for details, see step 7).

7. Check the following log file for information about the installation:
   
   ```
   /tmp/installSAM.<#>.log
   ```

   where `<#>` is a number; the highest number identifies the most recent log file.

   The entries in the log file have the following prefixes:

   **prereqSAM**

   Entries that were written during the prerequisites check.
installSAM

Entries that were written during the installation of the product.

8. To find out which packages were installed, inspect /tmp/installSAM.<#>.log, where <#> is the highest number in the list of logs you find.

Post-installation tasks

When you have installed System Automation for Multiplatforms on AIX, perform the following task:

Configure the system logger on AIX

The system logger is not configured by default. Messages are written to the error log.

To be able to obtain the debug data, it is recommended that you configure the system logger in the file /etc/syslog.conf. When you have made the necessary changes, you must recycle the syslogd using the command refresh –s syslogd. The location of the log file is defined in /etc/syslog.conf.

No further action is required in the case of Linux.

If you have installed System Automation for Multiplatforms on Solaris, perform the following task: The man pages are installed under the /usr/share/man directory. Ensure that the MANPATH environment variable is not defined or the path /usr/share/man is contained in the MANPATH environment variable.

Make shared volume groups enhanced concurrent capable on AIX: If your shared volume groups are not enhanced concurrent capable, when a node crashes the disks will be locked and the remote node will not be able to access the disk. To avoid this situation, you should make the shared volume group enhanced concurrent capable.

Before making the volume group enhanced concurrent capable, use the lsvg command to view information about the shared volume group:

```
# lsvg vgERSTZ0
VOLUME GROUP: vgERSTZ0
00c31bfe00004c0000000118c2f1ead2
VG STATE: active
PP SIZE: 4 megabyte(s)
TOTAL PPs: 255 (1020 megabytes)
FREE PPs: 14 (56 megabytes)
USED PPs: 241 (964 megabytes)
OPEN LVs: 2
TOTAL LVs: 256
QUORUM: 2 (Enabled)
MAX LVs: 256
MAX PPs per VG: 32512
MAX PPs per PV: 1016
LTG size (Dynamic): 256 kilobyte(s)
AUTO ON: no
AUTO SYNC: no
HOT SPARE: no
BB POLICY: relocatable
```
To make the volume group enhanced concurrent capable from the command line, enter the following command:

```
#/usr/sbin/chvg -a'n' -Q'y' '-C' <VOLUME_GROUP_NAME>
```

After making the volume group enhanced concurrent capable, the `lsvg` command returns information similar to the following:

```
# lsvg vgERSTZ0
VOLUME GROUP: vgERSTZ0 VG IDENTIFIER:
00c31bfe800004c00000018c2flead2
VG STATE: active PP SIZE: 4 megabyte(s)
VG PERMISSION: read/write TOTAL PPs: 255 (1020 megabytes)
MAX LVs: 256 FREE PPs: 14 (56 megabytes)
LVs: 2 USED PPs: 241 (964 megabytes)
OPEN LVs: 2 QUORUM: 2 (Enabled)
TOTAL PVs: 1 VG DESCRIPTORS: 2
STALE PVs: 0 STALE PPs: 0
ACTIVE PVs: 1 AUTO ON: no
Concurrent: Enhanced-Capable Auto-Concurrent: Disabled
VG Mode: Non-Concurrent
MAX PPs per VG: 32512
MAX PPs per PV: 1016 MAX PVs: 32
LTG size (Dynamic): 256 kilobyte(s) AUTO SYNC: no
HOT SPARE: no BB POLICY: relocatable
```

### Installing the product license

System Automation for Multiplatforms requires that a valid product license is installed on each system it is running on. The license is contained on the installation medium in the 'license' subdirectory. The installation of the license is usually performed during the product installation process. In case this did not succeed, issue the following command to install the license:

```
samlicm -i license_file
```

In order to display the license, issue:

```
samlicm -s
```

See [IBM Tivoli System Automation for Multiplatforms Reference](#) for a detailed description of the `samlicm` command.

### Upgrading from a Try & Buy license to a full product license

If you have installed the Try & Buy version of System Automation for Multiplatforms and then purchase the full product version, you will receive another copy of the installation media, which contains the license file for the full license.

The license file is located on the installation medium in the `license` subdirectory. It is recommended to perform the license upgrade by issuing the following command:

```
samlicm -i <license_file_name>
```
In order to display the license, issue:

```
samlicm -s
```

After upgrading the license, you should check if any updates for System Automation for Multiplatforms are already available and install the latest service level.

**Languages and locales supported by System Automation for Multiplatforms**

If you want to use System Automation for Multiplatforms in a language other than English, or if your default system locale is a non-English locale, use the following sections to find out which languages and locales are supported.

**System Automation for Multiplatforms on Linux**

Table 7 shows the combinations of languages and locales that are supported for System Automation for Multiplatforms on Linux systems to display translated messages. New versions of Linux operating systems may not support all of the listed encodings. UTF-8 encoding is always supported.

<table>
<thead>
<tr>
<th>Language</th>
<th>UTF-8</th>
<th>ISO-8859-1</th>
<th>EUC/GBK</th>
<th>Euro</th>
<th>GB18030/BIG5</th>
</tr>
</thead>
<tbody>
<tr>
<td>German</td>
<td>de_DE.UTF-8</td>
<td>de_DE, de_DE.ISO-8859-1</td>
<td></td>
<td>de_DE@euro</td>
<td></td>
</tr>
<tr>
<td>Spanish</td>
<td>es_ES.UTF-8</td>
<td>es_ES, es_ES.ISO-8859-1</td>
<td></td>
<td>es_ES@euro</td>
<td></td>
</tr>
<tr>
<td>French</td>
<td>fr_FR.UTF-8</td>
<td>fr_FR, fr_FR.ISO-8859-1</td>
<td></td>
<td>fr_FR@euro</td>
<td></td>
</tr>
<tr>
<td>Italian</td>
<td>it_IT.UTF-8</td>
<td>it_IT, it_IT.ISO-8859-1</td>
<td></td>
<td>it_IT@euro</td>
<td></td>
</tr>
<tr>
<td>Japanese</td>
<td>ja_JP.UTF-8</td>
<td>ja_JP, ja_JP.eucJP</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Korean</td>
<td>ko_KR.UTF-8</td>
<td>ko_KR.eucKR</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Brazilian Portuguese</td>
<td>pt_BR.UTF-8</td>
<td>pt_BR</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Simplified Chinese</td>
<td>zh_CN.UTF-8</td>
<td>zh_CN.GBK, zh_CN.GB2312</td>
<td>zh_CN.GB18030</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Traditional Chinese</td>
<td>zh_TW.UTF-8</td>
<td></td>
<td>zh_TW.Big5, zh_TW</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**System Automation for Multiplatforms on AIX**

The table below shows the combinations of languages and locales that are supported for System Automation for Multiplatforms on AIX to display translated messages.

<table>
<thead>
<tr>
<th>Language</th>
<th>UTF-8</th>
<th>ISO-8859-1</th>
<th>EUC/GBK</th>
<th>SJIS/GB18030/BIG5</th>
</tr>
</thead>
<tbody>
<tr>
<td>German</td>
<td>DE_DE</td>
<td>de_DE</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Spanish</td>
<td>ES_ES</td>
<td>es_ES</td>
<td></td>
<td></td>
</tr>
<tr>
<td>French</td>
<td>FR_FR</td>
<td>fr_FR</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Italian</td>
<td>IT_IT</td>
<td>it_IT</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Table 8. Languages and locales supported by System Automation for Multiplatforms on AIX systems (continued)

<table>
<thead>
<tr>
<th>Language</th>
<th>UTF-8</th>
<th>ISO-8859-1</th>
<th>EUC/GBK</th>
<th>SJIS/GB18030/BIG5</th>
</tr>
</thead>
<tbody>
<tr>
<td>Korean</td>
<td>KO_KR</td>
<td></td>
<td>ko_KR</td>
<td></td>
</tr>
<tr>
<td>Brazilian Portuguese</td>
<td>PT_BR</td>
<td>pt_BR</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Simplified Chinese</td>
<td>ZH_CN</td>
<td>zh_CN</td>
<td>zh_CN</td>
<td>Zh_CN</td>
</tr>
<tr>
<td>Traditional Chinese</td>
<td>ZH_TW</td>
<td>zh_TW</td>
<td>zh_TW</td>
<td>Zh_TW</td>
</tr>
</tbody>
</table>

**System Automation for Multiplatforms on Solaris**

The following table shows the combinations of languages and locales that are supported for System Automation for Multiplatforms on Solaris systems to display translated messages. New versions of the Solaris operating system may not support all of the listed encodings. UTF-8 encoding is always supported.

Table 9. Languages and locales supported by System Automation for Multiplatforms on Solaris systems

<table>
<thead>
<tr>
<th>Language</th>
<th>UTF-8</th>
<th>ISO-8859-1</th>
<th>EUC/GBK</th>
<th>Euro</th>
<th>GB18030/BIG5</th>
</tr>
</thead>
<tbody>
<tr>
<td>German</td>
<td>de_DE.UTF-8</td>
<td>de_DE.ISO-8859-1</td>
<td>de_DE.ISO-8859-15</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Italian</td>
<td>it_IT.UTF-8</td>
<td>it_IT.ISO-8859-1</td>
<td>it_IT.ISO-8859-15</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Japanese</td>
<td>ja_JP.UTF-8</td>
<td></td>
<td>ja_JP.eucJP</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Korean</td>
<td>ko_KR.UTF-8</td>
<td></td>
<td>ko_KR.EUC</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Brazilian Portuguese</td>
<td>pt_BR.UTF-8</td>
<td>pt_BR.ISO-8859-1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Simplified Chinese</td>
<td>zH_CN.UTF-8</td>
<td>zH_CN.GBK, zH_CN.EUC</td>
<td></td>
<td>zH_CN.GB18030</td>
<td></td>
</tr>
<tr>
<td>Traditional Chinese</td>
<td>zH_TW.UTF-8</td>
<td>zH_TW.EUC</td>
<td></td>
<td>zH_TW.BIG5</td>
<td></td>
</tr>
</tbody>
</table>

**Migrating System Automation for Multiplatforms**

You can migrate to System Automation for Multiplatforms V3.1 if an older version of System Automation for Multiplatforms is already installed.

Review the following considerations before migrating one or more nodes to a newer level:

- The migration process starts when any node within the active cluster is upgraded to the higher code level.
- You can always upgrade to a higher code level. Downward migration is not possible.
- The migration process is only complete when the active version number is equal to the highest installed code version number. Until then, different code levels can coexist. See "Verifying the active and installed version number" on page 16 and "Completing the migration" on page 16 how to complete the migration process.

You can use one of the following procedures to migrate System Automation for Multiplatforms to a higher level:

- It is recommended to use the procedure described in "Migrating an entire domain" on page 15.
Migrating an entire domain

During the migration, the domain will not be available. To minimize downtime, you can perform a prerequisites check before you start the actual migration (for more information, see "Performing the prerequisites check" on page 9).

To migrate an entire domain, perform these steps:

1. Make sure that all resources are offline:
   a. Check if the System Automation for Multiplatforms end-to-end automation adapter is running:
      ```
samadapter status
      
      If it is running, stop the automation adapter:
      ```
      ```
samadapter stop
      
      b. Stop all online resource groups by setting their NominalState to Offline:
      ```
      ```
      chrg -o Offline <resource-group-name>
      ```

2. If the domain is online, stop the domain:
   ```
   stoprpdomain <domain-name>
   ```

3. Run the ./installSAM script from the installation directory on all nodes. For more information on the installSAM script, see "Installing System Automation for Multiplatforms on UNIX and Linux" on page 9.

4. Start the domain:
   ```
   startrpdomain <domain-name>
   ```

5. Check the code levels with the lssrc -ls IBM.RecoveryRM command (see the sample in "Verifying the active and installed version number" on page 16). All nodes should have the newly installed code level, but the active code level should still be the previous one.

6. In order to activate the new version, continue with "Completing the migration" on page 16.

Performing a node-by-node migration

Node-by-node migration is only supported when migrating from System Automation for Multiplatforms V2.3. Migrating the nodes of a domain one by one has the advantage that System Automation for Multiplatforms remains available during the migration. To further minimize downtime, you can perform a prerequisites check before you start the actual migration (for more information, see "Performing the prerequisites check" on page 9).

To perform a node-by-node migration, do this:

1. Exclude the node from automation to ensure that resources that must be kept available are moved to another node in the peer domain:
   ```
   samctrl -u a <node>
   ```
   
   Note that the move operations may take a moment.

2. Stop the node from another node in the domain, and verify that it is stopped:
   ```
   stoprpnode <node>; lsrpnode
   ```

3. To upgrade the node, run the script ./installSAM from the installation directory. For more information on the installSAM script, see "Installing System Automation for Multiplatforms on UNIX and Linux" on page 9.

4. Start the node:
   ```
   startrpnode <node>
   ```
5. Include the upgraded node in automation again:
   ```bash
   samctrl -u d <node>
   ```

6. The upgraded node can now join the existing domain. Use the `lssrc -Is IBM.RecoveryRM` command (see the sample in "Verifying the active and installed version number") to display the installed version and the active version of the product. The new code features will not be activated until the active System Automation for Multiplatforms version number is equal to the highest System Automation for Multiplatforms version number installed within the cluster, and you cannot fully utilize these new code features until all the nodes are upgraded.

7. Repeat the steps 1-6 for other nodes within the cluster.

8. In order to activate the new version continue with "Completing the migration."

### Verifying the active and installed version number

After the upgrade the new features of the new code are not yet activated. The previous and new code levels can coexist until the migration is complete. The `lssrc -Is IBM.RecoveryRM` command shows you the active version number AVN (2.3.0.0 in the sample below) and the installed version number IVN (3.1.0.0. in the sample below) of the product. When IVN and AVN are the same, migration is complete.

The output looks like:

```plaintext
Subsystem : IBM.RecoveryRM
PID : 27973
Cluster Name : ws
Node Number : 1
Daemon start time : Wed Nov 15 08:09:10 2006

Daemon State:
  My Node Name : lnxcm3x
  Master Node Name : lnxcm3x (node number = 1)
  Our IVN : 3.1.0.0
  Our AVN : 2.3.0.0
  Our CVN : 11082527751 {0x140861007}
  Total Node Count : 1
  Joined Member Count : 1
  Config Quorum Count : 1
  Startup Quorum Count : 1
  Operational Quorum State: HAS_QUORUM
  In Config Quorum : TRUE
  In Config State : TRUE
  Replace Config State : FALSE
```

Figure 1. Verifying the active and installed version numbers

In order to activate the new version, continue with "Completing the migration."

### Completing the migration

In order to check and complete the migration, perform the following steps:

1. Make sure that the domain is started and that all nodes in the domain are online.

2. Issue the `lsrpdomain` command to display the version of RSCT that is active in the peer domain, and the mixed version status:
   ```plaintext
   Name OpState RSCTActiveVersion MixedVersions TSPort GSPort
   SA_Domain Online 2.4.8.1 Yes 12347 12348
   ```

3. Issue the `lsrpnodel` command to display which version of RSCT that is installed on the nodes. Keep in mind that all nodes must be online:
4. If the RSCT peer domain is running in mixed version mode (MixedVersions = Yes) and all nodes have been upgraded to the new release of System Automation for Multiplatforms, you must update the active RSCT version by running the RSCT CompleteMigration action on one of the nodes. Before running the action, review the RSCT migration preparation procedures in IBM RSCT Administration Guide.

To update the RSCTActiveVersion, make sure that all nodes are online, and issue the following command on one of the nodes:

```
runact -c IBM.PeerDomain CompleteMigration Options=0
```

To verify that the active RSCT version has been updated, issue the `lsrpdomain` command again:

```
Name    OpState RSCTActiveVersion MixedVersions TSPort GSPort
SA_Domain Online 2.5.1.0 No 12347 12348
```

5. Run the `samctrl -m` command to activate the new features of the new code and to finish the migration. For more information about the command, refer to IBM Tivoli System Automation for Multiplatforms Reference.

The code version of the ActiveVersion and the InstalledVersion of System Automation for Multiplatforms should now be the same for all nodes. Until this is true, the new code features have not been activated and cannot be used.
Chapter 2. Installing System Automation for Multiplatforms on Windows

The following sections describe planning, preparation, and installation of System Automation for Multiplatforms on Windows:

- "Planning for the installation."
- "Preparing the system for the installation of System Automation for Multiplatforms on Windows" on page 20.
- "Installing or upgrading System Automation for Multiplatforms on Windows" on page 26.

Planning for the installation

You can install System Automation for Multiplatforms on Windows from CD or, if you prefer electronic delivery, download the product archive from the Web after you have purchased System Automation for Multiplatforms.

System Automation for Multiplatforms installation CD

The CD labeled “IBM Tivoli System Automation for Multiplatforms 3.1.0 for Windows” contains scripts and software packages for Windows.

To install System Automation for Multiplatforms on Windows, you use the installation program setup.exe which is located in the following directory:

SAM3100MP\Windows\Windows

System Automation for Multiplatforms installation archive

The name of the self-extracting archive is CIAKML.exe. After extraction, the installation program setup.exe is available in the following directory:

SAM3100MP\Windows\Windows

Subsystem for Unix-based applications

IBM Tivoli System Automation for Multiplatforms uses the Windows component “Subsystem for Unix-based Applications” (SUA). This component is shipped with Windows Server 2003 R2 and Windows Server 2008. It provides a POSIX-compatible subsystem on top of the Windows kernel and enables UNIX programs to be run on Windows. Several UNIX utilities are also available for SUA, including ksh, gcc, perl, and vi. To get these utilities, you have to download the "Utilities and SDK for UNIX-based Applications" update package from Microsoft. This update package is a requirement for System Automation for Multiplatforms as well.

Supported languages and locales

The table below shows the combinations of languages and locales that are supported for System Automation for Multiplatforms on Windows to display translated messages.
Table 10. Languages and locales supported by System Automation for Multiplatforms on Windows

<table>
<thead>
<tr>
<th>Language</th>
<th>ISO-8859-1</th>
<th>EUC/GBK</th>
<th>SJIS</th>
</tr>
</thead>
<tbody>
<tr>
<td>German</td>
<td>de_DE.ISO-8859-1</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>French</td>
<td>fr_FR.ISO-8859-1</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Japanese</td>
<td>ja_JP.EUC-JP</td>
<td>win-ja_windows-932</td>
<td></td>
</tr>
</tbody>
</table>

**Note:** Due to limitations in the system log daemon of the Subsystem for UNIX-based Applications (SUA) used by System Automation for Multiplatforms on Windows, messages to the system log are only available in English.

Preparing the system for the installation of System Automation for Multiplatforms on Windows

**Installation prerequisites**

The following prerequisites must be met:

- **Supported platforms:**
  - Windows Server 2003 R2 Standard Edition (32-bit) on System x
  - Windows Server 2003 R2 Enterprise Edition (32-bit) on System x
  - Windows Server 2003 R2 Standard x64 Edition (64-bit) on System x
  - Windows Server 2003 R2 Enterprise x64 Edition (64-bit) on System x
  - Windows Server 2008 Standard Edition (32-bit) on System x
  - Windows Server 2008 Enterprise Edition (32-bit) on System x

All of the above platforms are also supported when running under VMware.


Windows Server 2008 installed as Server Core or under Hyper-V is not supported.


- Subsystem for UNIX-based Applications (SUA) must be installed on the system.
- The following components of the Utilities and SKD for SUA must be installed:
  - Base Utilities
  - Base SDK
  - SVR-5 Utilities
  - GNU Utilities
  - GNU SDK
  - Perl

For the 32-bit (x86) Edition of Windows Server 2003 R2 and Server 2008, install the 32-bit (x86) version of “Utilities and SDK for UNIX-based Applications”.

For the 64-bit (x64) Edition of Windows Server 2003 R2 and Server 2008, install the 64-bit (x64) version of “Utilities and SDK for UNIX-based Applications”.

For more information, see "Installing the Subsystem for UNIX-based Applications (required)” on page 21.

- On Windows Server 2003 R2, hotfix 943832 must be installed:
For the 32-bit (x86) Edition of Windows Server 2003 R2 and Server 2008, install the 32-bit (x86) version of the hotfix.

For the 64-bit (x64) Edition of Windows Server 2003 R2 and Server 2008, install the 64-bit (x64) version of the hotfix.

- 430 MB of free disk space
- **Attention:** The original Subsystem for UNIX-based Applications directory structure must be retained! It is different from that of AIX, Linux, and Solaris. Do not create any additional directories to mimic the folder structure of other UNIX environments. Creating directories that are not present in SUA, for example, the directory `/lib` or `/usr/bin` may interfere with the normal operations of SUA or prevent the installation of System Automation for Multiplatforms, or both.

**Considerations regarding the load on nodes in Windows clusters**

System Automation for Multiplatforms requires some of its subsystems to be processed constantly on the node to ensure that the cluster services are working properly (for example, heartbeating and communication between those subsystems). If this is not guaranteed, System Automation may trigger critical resource protection methods in case those subsystems cannot communicate in a given period of time. This leads eventually to a reboot of the node on which this issue occurs. To prevent this, it is recommended that the following prerequisites are satisfied:

- CPU load < 80%
- Constant I/O and swap load < 3%


**Installing the Subsystem for UNIX-based Applications (required)**


**Installing the Utilities and SDK Package (required)**

You need to download the "Utilities and SDK for UNIX-based Applications" package from Microsoft. After having added the "Subsystem for UNIX-based Applications", a browser pointing to the correct Web site for your Windows operating system version can be opened under **Windows Start menu > All Programs > Subsystem for UNIX-based Applications > Download Utilities for Subsystem for UNIX-based Applications**.

For the 32-bit (x86) Edition of Windows Server 2003 R2 and Server 2008, download the 32 bit (x86) version of “Utilities and SDK for UNIX-based Applications”.

For the 64 bit (x64) Edition of Windows Server 2003 R2 and Server 2008, download the 64-bit (x64) version of “Utilities and SDK for UNIX-based Applications”.

To install the package, run the installation program for the package downloaded from Microsoft. During the installation, make the following selections:
On the Installation Options window of the Setup Wizard, select **Custom Installation**.

On the Selecting Component window, select:

- SVR-5 Utilities
- GNU Utilities
- GNU SDK
- Perl

Base Utilities and Base SDK are already selected by default and must not be de-selected. There is no need to install the “Visual Studio Debugger Add-in”.

On Windows Server 2008, enable the check box labeled “Enable SuToRoot behavior for SUA programs.” on the “Security Settings” wizard page.

**Note:** In order to allow the System Automation for Multiplatforms for Windows installer to recognize that all prerequisites are installed, a reboot of the system is required after the installation of the utilities and SDK for SUA.

### Installing hotfixes

On Windows Server 2003 R2, hotfix 943832, called “Subsystem for UNIX-based Applications (SUA) may return random strings and junk characters when SUA tries to obtain an ID on a Windows Server 2003 R2-based computer” must be installed. To obtain this hotfix from Microsoft, visit the following URL and search for 943832:

[http://support.microsoft.com/](http://support.microsoft.com/)

For the 32-bit (x86) Edition of Windows Server 2003 R2 and Server 2008, download the 32-bit (x86) version of the hotfix.

For the 64-bit (x64) Edition of Windows Server 2003 R2 and Server 2008, download the 64-bit (x64) version of the hotfix.

After having installed the hotfix, the system must be rebooted.

### Updating the DNS or hosts file (required)

The systems running System Automation for Multiplatforms on Windows should be included in DNS. If no DNS is available or inclusion in DNS is not desired, the Winsock hosts file on all systems must contain the host names and IP addresses of all remaining systems. Check the file `%SystemRoot%\system32\drivers\etc\hosts` on Windows Server 2003 or `%SystemRoot%\System32\drivers\etc\hosts` on Windows Server 2008 and add systems as necessary. When adding entries to the file, make sure that the file’s ownership and ACL are not changed.

### Configuring the Subsystem for UNIX-based Applications

You can perform the configuration before or after installing System Automation for Multiplatforms on Windows.

This section describes some optional but recommended configuration steps for the Subsystem for UNIX-based Applications. You can perform the configuration before or after installing System Automation for Multiplatforms on Windows.

In general, it is recommended that you use the following help systems to familiarize yourself with the Subsystem:
Enabling the syslog daemon

By default, the system logger daemon (syslogd) is not enabled in the Subsystem for UNIX-based Applications. However, most components installed by System Automation for Multiplatforms make extensive use of this component in order to log important information for the user.

To enable the system logger daemon, perform the following steps:
1. Open a Subsystem for UNIX-based Application shell, such as the Korn Shell.
2. Change the current working directory:
   ```bash
cd /etc/init.d
   ```
3. Open the file `syslog` for editing (for example, using the `vi` editor)
4. As described in that file, in the `start` section, uncomment the lines for starting the syslogd. The result must look like this:
   ```bash
   case $1 in
   start)
   ##
   ## syslogd daemon is disabled by default.
   ## If you want to run syslogd then you
   ## have to uncomment the next few lines.
   ##
   ${SYSLOGD}
   [ $? = 0 ] && echo "syslogd started"
   ;;
   stop)
   ;;
   ...  
   ```
5. Save the file.
6. Reboot the system.

After the system logger has been configured and started in this way you can find the logs and traces in the file `/var/adm/log/messages`. You can open this plain text file either by using the `vi` editor or the `less` viewer.

Enabling telnet login to Subsystem for UNIX-based Applications (optional)

After installing System Automation for Multiplatforms on Windows, an Administrator can use the component either by directly logging on to the Windows system or by opening a standard “Remote Desktop Connection” to open the remote Windows display on the system.

You can use telnet sessions for working with System Automation for Multiplatforms on Windows Server 2003. Telnet, remote Shell, or secure shell sessions for working with System Automation for Multiplatforms on Windows Server 2008 are not supported.

If you want to use telnet sessions for working with System Automation for Multiplatforms on Windows Server 2003, you must set up the telnet daemon on the Windows Server 2003 system in the same way as you would do on other UNIX systems.
When the Subsystem for UNIX-based Applications is installed, two different telnet daemons are supported by Windows:

- By default, a user connecting to the Windows server using telnet would open a session to the Win32 subsystem by running the `cmd.exe`. However, this command prompt cannot be used with System Automation for Multiplatforms on Windows.
- Which is why it is required to set up the telnet daemon of the Subsystem for UNIX-based Applications. To set up the telnet daemon, follow the instructions provided in the SUA documentation *Help for Subsystem for UNIX-based Applications*, in chapter “Starting the Subsystem for UNIX-based Applications telnetd and rshd daemons”.

### Setting up Windows user account access


**Windows Server 2003**

You can install, configure, run, and use System Automation for Multiplatforms on Windows Server 2003 systems with an arbitrary local user account if the system is non-Windows-domain-joined or with a Windows domain user account if the system is Windows-domain-joined. The user account is required to be a member of the built-in local Administrators group of the system.

**Windows systems that are non-Windows-domain-joined:**

1. Identify all the systems that you intend to add to the same System Automation for Multiplatforms domain. Ensure that none of these systems are currently members of a Windows domain.
2. On all the systems identified in step 1 establish a local user account that is to be used when installing, configuring, running, and interacting with System Automation for Multiplatforms.
   - The user account must have the same name on all systems
   - The user account must be a member of the local Administrators group on all systems
   - The user account does not need to, but is recommended to have the same password on all systems
   
   To establish this account, it is recommended that you create a new local user account specifically for use with System Automation for Multiplatforms on all the systems identified in step 1.
3. On each system identified in step 1 log into the system with the local user account established in step 2 and run the System Automation for Multiplatforms installer.
4. Whenever you run System Automation for Multiplatforms commands, you must be logged in with the local user account established in step 2.
5. Whenever you update or uninstall System Automation for Multiplatforms, you must be logged in with the local user account established in step 2.

**Windows systems that are Windows-domain-joined:**

1. Identify all systems that you intend to add to the same System Automation for Multiplatforms domain. Ensure that all of these systems are currently members of the same Windows domain.
2. On all the systems identified in step 1 on page 24, establish a domain user account that is to be used when installing, configuring, running, and interacting with System Automation for Multiplatforms. The account must be a member of the local Administrators group on all systems.

To establish this account, it is recommended to create a new domain user account specifically for use with System Automation for Multiplatforms on all systems. It is also recommended to create a special purpose domain group in which the special purpose domain user account is a member. If you create such a domain group, make sure that this group is the primary group of the special purpose domain user account.

3. On all systems identified in step 1 on page 24 log into the system with the domain user account established in step 2 and run the System Automation for Multiplatforms installer.

4. Whenever you run System Automation for Multiplatforms commands, you must be logged in with the domain user account established in step 2.

5. Whenever you update or uninstall System Automation for Multiplatforms, you must be logged in with the domain user account established in step 2.

**Windows Server 2008**

You must install, configure, run, and use System Automation for Multiplatforms on Windows Server 2008 systems with the built-in local Administrator user account of the system. If User Account Control (UAC) is active on the system (which is the default setting), you must keep the setting “User Account Control: Admin Approval Mode for the Built-in Administrator account” disabled (which is the default value) and the setting “User Account Control: Detect application installations and prompt for elevation” enabled (which is the default value).
Installing or upgrading System Automation for Multiplatforms on Windows

Upgrading System Automation for Multiplatforms on Windows
In order to upgrade System Automation for Multiplatforms on Windows from a version older than 3.1 to version 3.1, perform the following steps:
1. Uninstall the older version of System Automation for Multiplatforms on Windows from all systems.
2. Prepare all systems as required for the installation of System Automation for Multiplatforms 3.1 on Windows.
3. Install System Automation for Multiplatforms 3.1 on Windows on all systems.

Installing System Automation for Multiplatforms on Windows
Server x64 Edition


On these Windows Server Editions, System Automation for Multiplatforms is installed using the following approach:
1. Extract the self-extracting archive containing System Automation for Multiplatforms 3.1.0.4. The extraction process will create a directory named SAM3104MPWindows. See Chapter 10, "Installing and uninstalling service," on page 77 for more details about fix packs.

Note: Do not install the fix pack at this point. Complete the following steps.
2. Obtain the System Automation for Multiplatforms 3.1.0.0 as installation CD or installation archive. This version of System Automation for Multiplatforms contains a license key file that is required for enabling the product.
3. Locate the license key file in System Automation for Multiplatforms 3.1.0.0:
   • Installation CD: The installation CD contains a license key file, sam31.lic, in the directory SAM3100MPWindows\license.
   • Installation archive: Extract the self-extracting archive. The extraction process creates the directory SAM3100MPWindows. This directory contains the license key file sam31.lic in the subdirectory license.
4. Copy the license key file sam31.lic that you located in step 3 to the directory license in the directory SAM3104MPWindows that was created in step 1.
5. Launch the graphical or silent installation of System Automation for Multiplatforms 3.1.0.4 as described in "Installing System Automation for Multiplatforms on Windows using the graphical installation program" on page 27 and "Installing System Automation for Multiplatforms on Windows in silent mode" on page 34.

Note: When launched on Windows Server 2003 R2 Standard x64 Edition or Windows Server 2003 R2 Enterprise x64 Edition, the System Automation for Multiplatforms 3.1.0.4 graphical installer asks you for a license key file if it cannot be found in the directory SAM3104MPWindows\license.
Installing System Automation for Multiplatforms on Windows using the graphical installation program

Perform the following steps:

1. Log in on the Windows system with the appropriate account (see “Setting up Windows user account access” on page 24).

2. Launch the installation wizard (setup.exe) from the CD or from the extracted archive. Do not copy the installation wizard to another location to start it from there. When the installation wizard is ready, the initial wizard panel appears:

![Initial Wizard Panel]

3. Select the language for the installation dialogs, and click OK. The language in which System Automation for Multiplatforms is installed is derived from the system’s locale setting.

![Language Selection Panel]

4. Read the information on the Introduction panel and click Next.

5. Carefully read the terms of the license agreement. Make sure to also read the non-IBM terms by clicking Read non-IBM terms.
To accept the terms of the license agreement, select I accept both the IBM and the non-IBM terms and click Next.

When launched on Windows Server 2003 R2 Standard x64 Edition or Windows Server 2003 R2 Enterprise x64 Edition, the System Automation for Multiplatforms 3.1.0.4 graphical installer asks you for a license key file if it cannot be found in the directory SAM3104MPWindows\license.

6. Wait while the requirements check is being performed.

7. If the check was not successful, click Cancel to exit, correct the cause of the problem, and restart the installation. If the check was successful, click Next.

8. System Automation for Multiplatforms program files will be installed in the Windows SUA root directory, which is automatically discovered on the
system. On the Choose Install Folder panel, you can specify the directory where the product documentation is to be installed:

Specify a directory or accept the default and click Next.

9. On the Choose Shortcut Locations panel, make your selections and click Next.
10. Select additional features to be installed if needed. If you select a response file to be generated, it will be written to the installation directory. You can generate a response file if you intend to perform a silent installation on another system. (See “Installing System Automation for Multiplatforms on Windows in silent mode” on page 34.)

11. System Automation for Multiplatforms will be prepared for being run and used by the user account with which you are currently logged in on this system. In particular, the “System Resource Controller” Windows service will be registered with this user account. The current user account is detected by the installation wizard and displayed on the Password panel. Specify the password for this user account.
12. Review the information on the Pre-Installation Summary panel and click 
Install to start the installation.
A number of transient panels appear while System Automation for Multiplatforms is being installed.
To cancel the installation, click the **Cancel** button when available. Files installed so far are only cleaned up when you start a new installation. The two sub-steps "RSCT Merge Module" and "SAM Merge Module" are atomic: you cannot cancel the installation while these two modules are being installed.

13. On the Installation Complete panel, click **Done** to exit the installation wizard.

**Note:** After the installation of System Automation for Multiplatforms on Windows, you will find the following entries on the Add or Remove Programs panel in addition to the entry **SA for Multiplatforms**:

- RSCTMM
- RSCTNLV
These programs are part of System Automation for Multiplatforms on Windows. Be sure not to remove them separately. If you want to uninstall the program, use the entry SA for Multiplatforms.

Installing System Automation for Multiplatforms on Windows in silent mode

Response file generation

Silent installation is performed using a response file which you can generate during a wizard-driven installation by selecting the Response File check box in the Additional Features panel of the installer (see "Installing System Automation for Multiplatforms on Windows using the graphical installation program" on page 27). The response file is written to the installation directory (default: C:\Program Files\SA for Multiplatforms). Note that for security reasons, the password is not written to the file. You need to write the password to the file manually before you can actually use it.

The response file looks similar to this:

```
INSTALLED_PATH=C:\Program Files\IBM\SA for Multiplatforms
TSA_MENU_DIR=C:\Documents and Settings\All Users\Start Menu\Programs\SA for Multiplatforms
USER_INPUT_ADMIN_USERID=Administrator
USER_INPUT_ADMIN_PASSWORD=
INSTALL_DOCU=true
```

The file follows the KEY=VALUE format and can be edited with common text editors such as Notepad. Ensure that you save the file in ASCII text format. Add your password in plain text as the value to the USER_INPUT_ADMIN_PASSWORD key. Be careful not to leave the file on the system after using it to complete a silent installation because the installer will neither delete nor obscure the password contained in it.
Using the response file to install silently


To install silently, call the installer with the option `-f <responseFile>`, where `<responseFile>` is the path to the response file which is to be used for installation. For example, assuming the response file resides in `%USERPROFILE%`, the command would be:

```
setup.exe -f "%USERPROFILE%\responseFile.properties"
```

The silent installation runs in the background and writes a log file to `%APPDATA%\IBM\SA for Multiplatforms\InstallLog`. The name of the log file is "InstallLog_<date>_<time>.txt". Look for the entry "--- Installation finished ---" to verify that the installation was successful.

---

Verifying the installation

To verify that the installation was successful, do the following:

1. Open the IBM Tivoli System Automation Shell (Start > All Programs > SA for Multiplatforms > IBM Tivoli System Automation Shell)
2. Check that the System Resource Controller (SRC) is running by checking the output of the command:
   ```
   ps -efi -Xunix | grep srcmstr
   ```
   If the SRC is not running, start it from the Windows Services Manager: Locate the entry System Resource Controller and start it again.
3. Check that the license file was correctly installed by checking the output and return value of the following command:
   ```
   samlicm -t
   ```
   If no text is displayed and the return code is 0, the license is correctly installed. (The return code can be obtained with command `echo $?`.) If the license was not correctly installed, refer to post-installation task "Manual license installation" on page 37.

---

Changes made to your default profile

During installation of System Automation for Multiplatforms on Windows some changes are made to the file `/etc/profile.lcl` in order to:

- Automatically set up the correct RSCT Management scope for the Administrator account when the IBM Tivoli System Automation Shell is being opened
- Use the correct code page when the system is set up to use the German or French locale.

This is an excerpt from the `/etc/profile.lcl` file after the installation of System Automation for Multiplatforms on Windows is complete:

```
# TSAWin
export CT_MANAGEMENT_SCOPE=2

# For supported Western European locales, set the appropriate codepage
if [ "$LANG" = "de_DE.ISO-8859-1" ]
then

```

---
Special considerations regarding Windows line endings

System Automation for Multiplatforms uses the Subsystem for UNIX-based Applications (SUA) to run as a UNIX program under Windows, and as such it uses the control character \n (that is, newline) to signify line endings. However, the Windows convention recognizes line endings with the control character sequence \r\n (that is, carriage return followed by newline). This convention is used, for example, when you use Windows text editors such as Notepad to create text files. Such files will not work unmodified with the System Automation for Multiplatforms command line interface. For example, the command `mkrsrc` will not accept definition files with Windows line endings. If you need to work with Windows files when using System Automation for Multiplatforms, you must first convert them to adopt the UNIX convention for line endings. You can use the command `flip` which comes with the "Utilities and SDK for UNIX-based Applications_X86" package for SUA to perform the conversion. This package is a requirement for System Automation for Multiplatforms, so you should have it already installed. Open a SUA Korn Shell and convert your text file from Windows to UNIX format with the following command:

```
flip -u <file>
```

SUA also provides UNIX editors such as vi. You do not need to convert line endings when using one of these editors because such files already conform to the UNIX format.
Chapter 3. Post-installation tasks for System Automation for Multiplatforms on Windows

Manual license installation

System Automation for Multiplatforms on Windows supports only one type of license. A Try&Buy license is not available.

The license key is part of the installation media and is automatically enabled during installation. If the license key was not available at installation time for some reason, it will not be possible to add a resource to a resource group, which means that it will not be possible to automate it.

You can use the `samlicm` command found in `/usr/sbin/rsct/bin` to install a valid license key at any time later:

1. Open an IBM Tivoli System Automation Shell.
2. Issue the command `samlicm -i <fully qualified file name of key file>`
3. Verify that the license installation was successful as described in "Verifying the installation" on page 35.

Configuring a non-English environment for System Automation for Multiplatforms on Windows

System Automation for Multiplatforms on Windows supports the following languages:

- English
- German
- French
- Japanese

Note: Due to limitations in the system log daemon of the Subsystem for UNIX-based Applications (SUA) used by System Automation for Multiplatforms on Windows, messages to the system log are only available in English.

If you are using System Automation for Multiplatforms on Windows in a non-English environment, either stop and restart the System Resource Controller (SRC) Windows service or reboot the system after the installation of System Automation for Multiplatforms on Windows is complete. This will pick up the changes described in "Changes made to your default profile" on page 35. To stop and restart the SRC Windows service, use the following commands:

1. Stop all subsystems under the control of System Resource Controller by issuing `stopsrc -a`
2. Stop and re-start the System Resource Controller Windows service
3. Restart the ctrmc subsystem by issuing `rmctrl -s`

To use a Japanese locale, the native Windows system where System Automation for Multiplatforms is installed must be a Japanese Windows system.
Configuring the IBM Tivoli System Automation Shell

If you log in at the Windows desktop directly or via a Windows Remote Desktop connection and open an IBM Tivoli System Automation Shell from the Windows desktop, do the following:

- To view the currently active locale, use the `locale` command.
- To set the locale, use the `export LANG=<locale>` command.
- To change the font, use the Properties menu item of the IBM Tivoli System Automation Shell window and switch to the Font tab.
- To view the active code page, use the `chcp` command.
- To change the active code page, use the `chcp <codepage_number>` command.

<table>
<thead>
<tr>
<th>IBM Tivoli System Automation Shell property</th>
<th>German</th>
<th>French</th>
<th>Japanese</th>
</tr>
</thead>
<tbody>
<tr>
<td>Locale</td>
<td>de_DE.ISO-8859-1</td>
<td>fr_FR.ISO-8859-1</td>
<td>win-ja_JP.windows-932</td>
</tr>
<tr>
<td>Font</td>
<td>Lucida Console</td>
<td>Lucida Console</td>
<td>default</td>
</tr>
<tr>
<td>Code page</td>
<td>28591</td>
<td>28591</td>
<td>932</td>
</tr>
</tbody>
</table>

Configuring a telnet session from a Windows command prompt

If you use the `telnet` command from a local Windows command prompt in order to log in to a Windows server where System Automation for Multiplatforms is installed, set up the properties as described in the following table:

<table>
<thead>
<tr>
<th>Windows command prompt property</th>
<th>German</th>
<th>French</th>
<th>Japanese</th>
</tr>
</thead>
<tbody>
<tr>
<td>Font</td>
<td>Lucida Console</td>
<td>Lucida Console</td>
<td>default</td>
</tr>
<tr>
<td>Code page</td>
<td>28591</td>
<td>28591</td>
<td>932</td>
</tr>
</tbody>
</table>

Then, open the telnet session from the command prompt and set up the properties as described in the following table:

<table>
<thead>
<tr>
<th>Telnet session property</th>
<th>German</th>
<th>French</th>
<th>Japanese</th>
</tr>
</thead>
<tbody>
<tr>
<td>Locale</td>
<td>de_DE.ISO-8859-1</td>
<td>fr_FR.ISO-8859-1</td>
<td>win-ja_JP.windows-932</td>
</tr>
</tbody>
</table>

Note: Using a telnet session for working with System Automation for Multiplatforms is only supported for systems with Windows Server 2003.

Configuring a remote session using a terminal

If you will be using a terminal to log in on a Windows server where System Automation for Multiplatforms is installed, set up the properties as described in the following table:
### Table 14. Session properties

<table>
<thead>
<tr>
<th>Session property</th>
<th>German</th>
<th>French</th>
<th>Japanese</th>
</tr>
</thead>
<tbody>
<tr>
<td>Character set</td>
<td>ISO-8859-1 (Latin-1, Western Europe)</td>
<td>ISO-8859-1 (Latin-1, Western Europe)</td>
<td>Shift_JIS</td>
</tr>
</tbody>
</table>

Once you have connected to the Windows SUA environment, set up the properties as described in the following table:

### Table 15. Session properties

<table>
<thead>
<tr>
<th>Shell property</th>
<th>German</th>
<th>French</th>
<th>Japanese</th>
</tr>
</thead>
<tbody>
<tr>
<td>Locale</td>
<td>de_DE.ISO-8859-1</td>
<td>fr_FR.ISO-8859-1</td>
<td>win-ja_JP.windows-932</td>
</tr>
</tbody>
</table>

**Note:** Using a remote session for working with System Automation for Multiplatforms is only supported for systems with Windows Server 2003.

### Setting up the Windows firewall

You must set up the Windows firewall if you want to protect the automation domain from being accessed by unauthorized users or programs connecting from systems which are not defined members of the domain.

#### Windows Server 2003

On Windows Server 2003, the Windows Firewall is disabled by default. You need to enable the Windows Firewall and define port exceptions in order to protect the System Automation for Multiplatforms automation domain. Enabling the Windows Firewall may affect other applications which rely on TCP or UDP network communication. You need to check whether additional Windows Firewall settings are needed to support other applications.

To set up the Windows firewall, perform these steps on each node of the System Automation for Multiplatforms automation domain:

1. Click **Start > Control Panel > Windows Firewall**.
2. Enable the firewall by selecting the radio button **On**. This protects this Windows system from all outside network traffic. This may affect other applications which rely on TCP or UDP network communication.
3. To make the Tivoli System Automation domain operational, you must add firewall exceptions for all trusted systems within the automation domain:  
   On the **Exception** tab, add the ports listed below. For each port that you add, click **Change scope** and add the IP addresses of all other nodes in the automation domain to the field **Custom list**.

The following ports must be opened in this way on all nodes of the automation domain. These are the default ports after installation. If you change any of the ports, you need to adapt the Windows Firewall settings.

### Table 16. Windows firewall: Required port exceptions

<table>
<thead>
<tr>
<th>Name</th>
<th>Port</th>
<th>Protocol</th>
</tr>
</thead>
<tbody>
<tr>
<td>IBM Tivoli SA MP RMC</td>
<td>657</td>
<td>TCP</td>
</tr>
<tr>
<td>Name</td>
<td>Port</td>
<td>Protocol</td>
</tr>
<tr>
<td>-----------------------</td>
<td>------</td>
<td>----------</td>
</tr>
<tr>
<td>IBM Tivoli SA MP RMC</td>
<td>657</td>
<td>UDP</td>
</tr>
<tr>
<td>IBM Tivoli SA MP HATS</td>
<td>12347</td>
<td>UDP</td>
</tr>
<tr>
<td>IBM Tivoli SA MP HAGS</td>
<td>12348</td>
<td>UDP</td>
</tr>
</tbody>
</table>

**Windows Server 2008**

On Windows Server 2008, the Windows Firewall with Advanced Security is enabled by default. By default, all incoming TCP or UDP network communication not explicitly allowed by rules is blocked. This default behavior is an inhibitor for creating and working with System Automation for Multiplatforms automation domains. Firewall rules need to be defined to allow for the TCP or UDP network communication required by System Automation for Multiplatforms. At the same time, the firewall rules protect the System Automation for Multiplatforms automation domain from being tampered with by systems that are not defined members of the automation domain. To set up the Windows Firewall with Advanced Security, perform these steps on each node of the System Automation for Multiplatforms automation domain:

1. Click **Start > Administrative Tools > Windows Firewall with Advanced Security**.
2. In the Windows Firewall with Advanced Security window, open item **Windows Firewall with Advanced Security on Local Computer** in the tree view.

To define an Inbound Rule in the Windows Firewall with Advanced Security, perform these steps:

1. From the **Actions** menu, click **New Rule**.
2. Select **Custom** for defining a custom rule, then click **Next**.
3. Select **All Programs**, then click **Next**.
4. Select the desired **Protocol type**.
5. For protocol types “TCP” and “UDP”, set **Local port** to **Specific Ports**, specify the desired local port, and keep the setting **All Ports** for **Remote port**. For protocol type “ICMPv4”, click **Customize**, specify the desired **ICMP Type** and **Code**, and close the **Customize ICMP Settings**. Click **Next**.
6. Select **These IP addresses** for **Which remote IP addresses does this rule match?**. Click **Add** to add all IP addresses of all other nodes in the automation domain. Click **Next**.
7. Select **Allow the connection**. Click **Next**.
8. Select all network locations, that is, “Domain”, ”Private”, and ”Public”. Click **Next**.
9. Specify a name and an appropriate description for the rule. Click **Finish**. By default, the new rule is automatically enabled.

To define an Outbound Rule in the Windows Firewall with Advanced Security, perform these steps:

1. From the **Actions** menu, click **New Rule**.
2. Select Custom for defining a custom rule, then click Next.
3. Select All Programs, then click Next.
4. Select the desired Protocol type.
5. For protocol types "TCP" and "UDP", set Remote port to Specific Ports, specify the desired remote port, and keep the setting All Ports for Local port. For protocol type "ICMPv4", click Customize, specify the desired ICMP Type and Code, and close the Customize ICMP Settings. Click Next.
6. Select These IP addresses for Which remote IP addresses does this rule match? Click Add to add all IP addresses of all other nodes in the automation domain. Click Next.
7. Select Allow the connection. Click Next.
8. Select all network locations, that is, "Domain", "Private", and "Public". Click Next.
9. Specify a name and an appropriate description for the rule. Click Finish. By default, the new rule is automatically enabled.

The following rules must be defined and enabled as described above on all nodes of the automation domain. The rules contain the default ports after installation. If you change any of the ports, you need to adapt the rules.

<table>
<thead>
<tr>
<th>Name</th>
<th>Direction</th>
<th>Default Port</th>
<th>Protocol</th>
</tr>
</thead>
<tbody>
<tr>
<td>IBM Tivoli SA MP RMC (TCP-In)</td>
<td>Inbound</td>
<td>657</td>
<td>TCP</td>
</tr>
<tr>
<td>IBM Tivoli SA MP RMC (UDP-In)</td>
<td>Inbound</td>
<td>657</td>
<td>UDP</td>
</tr>
<tr>
<td>IBM Tivoli SA MP Adapter (TCP-In)</td>
<td>Inbound</td>
<td>2001</td>
<td>TCP</td>
</tr>
<tr>
<td>IBM Tivoli SA MP HATS (UDP-In)</td>
<td>Inbound</td>
<td>12347</td>
<td>UDP</td>
</tr>
<tr>
<td>IBM Tivoli SA MP HAGS (UDP-In)</td>
<td>Inbound</td>
<td>12348</td>
<td>UDP</td>
</tr>
<tr>
<td>IBM Tivoli SA MP Ping (ICMPv4-In)</td>
<td>Inbound</td>
<td>Not applicable</td>
<td>ICMPv4 / Type 8 / Code any</td>
</tr>
<tr>
<td>IBM Tivoli SA MP RMC (TCP-Out)</td>
<td>Outbound</td>
<td>657</td>
<td>TCP</td>
</tr>
<tr>
<td>IBM Tivoli SA MP RMC (UDP-Out)</td>
<td>Outbound</td>
<td>657</td>
<td>UDP</td>
</tr>
<tr>
<td>IBM Tivoli SA MP Adapter (TCP-Out)</td>
<td>Outbound</td>
<td>2002</td>
<td>TCP</td>
</tr>
<tr>
<td>IBM Tivoli SA MP HATS (UDP-Out)</td>
<td>Outbound</td>
<td>12347</td>
<td>UDP</td>
</tr>
<tr>
<td>IBM Tivoli SA MP HAGS (UDP-Out)</td>
<td>Outbound</td>
<td>12348</td>
<td>UDP</td>
</tr>
<tr>
<td>IBM Tivoli SA MP Ping (ICMPv4-Out)</td>
<td>Outbound</td>
<td>Not applicable</td>
<td>ICMPv4 / Type 8 / Code any</td>
</tr>
</tbody>
</table>
Chapter 4. Installing the System Automation for Multiplatforms operations console

Note: The System Automation for Multiplatforms operations console cannot be installed in the Solaris environment. However, an operations console installed on another operating system platform can be used to manage Solaris domains.

Planning for the installation

Packaging

When you order the System Automation for Multiplatforms, you will find the operations console on the following CD and in the following archive, respectively:

Operations console CD

The following table lists the versions of the operations console CDs that are available for System Automation for Multiplatforms. To install the operations console, you use the installation wizard file listed in the right column of the table.

Table 18. Product CD versions

<table>
<thead>
<tr>
<th>Operating system</th>
<th>Product CD label</th>
<th>Installation wizard file</th>
</tr>
</thead>
<tbody>
<tr>
<td>Windows</td>
<td>IBM Tivoli System Automation for Multiplatforms V3.1.0 - Operations Console for Windows</td>
<td>SAM310000CWindows\Windows\setup.exe</td>
</tr>
<tr>
<td>AIX</td>
<td>IBM Tivoli System Automation for Multiplatforms V3.1.0 - Operations Console for AIX</td>
<td>SAM310000CAIX/AIX/setup.bin</td>
</tr>
<tr>
<td>Linux on System x</td>
<td>IBM Tivoli System Automation for Multiplatforms V3.1.0 - Operations Console for Linux on System x</td>
<td>SAM310000CI386/i386/setup.bin</td>
</tr>
<tr>
<td>Linux on POWER</td>
<td>IBM Tivoli System Automation for Multiplatforms V3.1.0 - Operations Console for Linux on POWER</td>
<td>SAM310000CPPC/ppc/setup.bin</td>
</tr>
<tr>
<td>Linux on System z</td>
<td>IBM Tivoli System Automation for Multiplatforms V3.1.0 - Operations Console for Linux on System z</td>
<td>SAM310000CS390/s390/setup.bin</td>
</tr>
</tbody>
</table>

Electronic distribution

You can also obtain System Automation for Multiplatforms through electronic distribution. In this case, you can download the deliverables from a URL you receive after purchasing the product.

For each platform, one archive is available for installing the operations console. The archives are listed in the following tables.
### Windows:

**Table 19. Archives for Windows platforms**

<table>
<thead>
<tr>
<th>Archive name</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>C1A8DML.exe</td>
<td>This is the archive you use to install the operations console. The archive is self-extracting. When you have extracted the files, you will find the installation wizard in the following directory: <code>&lt;drive&gt;:\SAM3100OC\Windows\Windows\setup.exe</code></td>
</tr>
<tr>
<td></td>
<td>For example: <code>C:\SAM3100OC\Windows\Windows\setup.exe</code></td>
</tr>
</tbody>
</table>

### AIX:

**Table 20. Archives for AIX platforms**

<table>
<thead>
<tr>
<th>Archive name</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>C1A8EML.bin</td>
<td>This is the archive you use to install the operations console. The archive is self-extracting. When you have extracted the files, you will find the installation wizard in the following directory: <code>SAM3100OCAIX/AIX/setup.bin</code></td>
</tr>
</tbody>
</table>

### Linux on System x:

**Table 21. Archives for Linux on System x**

<table>
<thead>
<tr>
<th>Archive name</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>C1A8FML.tar</td>
<td>This is the archive you use to install the product. Use the <code>tar -xf</code> command to extract the archive. When you have extracted the files, you will find the installation wizard in the following directory: <code>SAM3100OCI386/i386/setup.bin</code></td>
</tr>
</tbody>
</table>

### Linux on POWER:

**Table 22. Archives for Linux on POWER**

<table>
<thead>
<tr>
<th>Archive name</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>C1A8GML.tar</td>
<td>This is the archive you use to install the product. Use the <code>tar -xf</code> command to extract the archive. When you have extracted the files, you will find the installation wizard in the following directory: <code>SAM3100CPPC/ppc/setup.bin</code></td>
</tr>
</tbody>
</table>
Linux on System z:

Table 23. Archives for Linux on System z

<table>
<thead>
<tr>
<th>Archive name</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>C1A8HML.tar</td>
<td>This is the archive you use to install the product. Use the <code>tar -xf</code> command to extract the archive. When you have extracted the files, you will find the installation wizard in the following directory: <code>SAM31000CS390/s390/setup.bin</code></td>
</tr>
</tbody>
</table>

Product requirements

The following sections list the software and hardware requirements for the operations console. For the latest information, refer to the System Automation for Multiplatforms Release Notes. To obtain a copy of the release notes, go to the System Automation for Multiplatforms home page and click Technical Documentation.

You will find the System Automation for Multiplatforms home page at:


Supported platforms

The following table lists the platforms that are supported for the System Automation for Multiplatforms operations console:

Table 24. Supported operating systems

<table>
<thead>
<tr>
<th>Operating system</th>
<th>System x¹</th>
<th>System i</th>
<th>System p</th>
<th>System z</th>
</tr>
</thead>
<tbody>
<tr>
<td>AIX 5.3 (AIX 5L Version 5.3) ML 4⁴</td>
<td></td>
<td>X</td>
<td></td>
<td></td>
</tr>
<tr>
<td>AIX 6.1⁴</td>
<td></td>
<td>X</td>
<td></td>
<td></td>
</tr>
<tr>
<td>SUSE SLES 9 (32 bit³)</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>SUSE SLES 9 (64 bit³)</td>
<td></td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>SUSE SLES 10 (32 bit³)</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Table 24. Supported operating systems (continued)

<table>
<thead>
<tr>
<th>Operating system</th>
<th>System x</th>
<th>System i</th>
<th>System p</th>
<th>System z</th>
</tr>
</thead>
<tbody>
<tr>
<td>SUSE SLES 10 (64 bit)</td>
<td></td>
<td>X</td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>Red Hat RHEL 4.6 AS (32 bit)</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Red Hat RHEL 4.6 AS (64 bit)</td>
<td></td>
<td>X</td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>Red Hat RHEL 5.0 AS (32 bit)</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Red Hat RHEL 5.0 AS (64 bit)</td>
<td></td>
<td>X</td>
<td></td>
<td>X</td>
</tr>
</tbody>
</table>

Notes:
1. IBM System x systems with IA32, EM64T, or AMD64 architecture.
   Any other systems with IA32, EM64T, or AMD64 architecture are also supported.
   Systems with IA64 architecture are not supported.
2. The following Linux kernel architectures are supported for running with 32 bit:
   • x86 on IBM System x
3. The following Linux kernel architectures are supported for running with 64 bit:
   • ppc64 on IBM System i and IBM System p
   • s390x on IBM System z is supported for some distributions
4. AIX 6.1 supports Workload Partition (WPAR) mobility or relocation. In the V3.1 release, System Automation for Multiplatforms and RSCT do not support domains with nodes that are System WPARs.
5. Windows Server 2008 installed as Server Core or under Hyper-V is not supported.

Supported Web browsers

The operations console is displayed in a Web browser. The browser connects to the embedded version of IBM WebSphere Application Server in which the operations console is running. The Web browser may run on an arbitrary system.

The following minimum Web browsers are supported:
• Microsoft Internet Explorer V6.0 SP1
• Mozilla V1.7.8
• Firefox V1.5

For information on how the Web browser must be configured, refer to IBM Tivoli System Automation for Multiplatforms Administrator’s and User’s Guide section “Configuring your Web browser for Integrated Solutions Console”.

Hardware requirements

System Memory: 1.0 GB is required on the server on which the operations console is to be installed.

Disk space requirements: The following table lists the disk space requirements on Windows systems.
Table 25. Disk space requirements for the installation on Windows systems

<table>
<thead>
<tr>
<th>Description</th>
<th>Default directory</th>
<th>Disk space</th>
</tr>
</thead>
<tbody>
<tr>
<td>System Automation for Multiplatforms operations console installation directory (including the embedded version of WebSphere Application Server)</td>
<td>C:\Program Files\IBM\tsamp\eez</td>
<td>400 MB</td>
</tr>
<tr>
<td>Temporary disk space required for the installation and for installation log and response files</td>
<td>The value of the system variable %TEMP%. Typically this is: C:\Documents and Settings\Administrator\Local Settings\Temp</td>
<td>125 MB</td>
</tr>
<tr>
<td>Tivoli Common Directory</td>
<td>C:\Program Files\IBM\tivoli\common\eez</td>
<td>250 MB</td>
</tr>
<tr>
<td>Installer registry</td>
<td>The Zero G Registry resides in the hidden directory C:\Program Files\Zero G Registry.com.zerog.registry.xml</td>
<td>10 KB</td>
</tr>
</tbody>
</table>

The following table lists the disk space requirements on AIX and Linux systems:

Table 26. Disk space requirements on AIX and Linux systems

<table>
<thead>
<tr>
<th>Description</th>
<th>Default directory</th>
<th>Disk space</th>
</tr>
</thead>
<tbody>
<tr>
<td>System Automation for Multiplatforms operations console installation directory (including the embedded version of WebSphere Application Server)</td>
<td>/opt/IBM/tsamp/eez.</td>
<td>420 MB</td>
</tr>
<tr>
<td>Temporary disk space required for the installation</td>
<td>/tmp</td>
<td>300 MB</td>
</tr>
<tr>
<td>Tivoli Common Directory</td>
<td>/var/ibm/tivoli/common/eez</td>
<td>250 MB</td>
</tr>
<tr>
<td>Installer registry</td>
<td>/var/.com.zerog.registry.xml</td>
<td>10 KB</td>
</tr>
</tbody>
</table>

Preparing for the installation of the System Automation for Multiplatforms operations console

Collecting the information you need to provide during installation

The installation of the operations console is wizard-driven. The wizard guides you through the installation and prompts you for installation and configuration parameters. The following tables list the parameters you need to specify on the installation wizard panels in the order in which they must be specified. For information about installing in silent mode, see “Installing the System Automation for Multiplatforms operations console in silent mode” on page 59.

Make sure that you specify all required parameters on the installation wizard panels and that your entries are correct. The installation wizard does not verify that you entries are correct and complete during the installation.

Installation directory and Tivoli Common Directory
The parameters listed in the following table must always be specified.
<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Default</th>
</tr>
</thead>
<tbody>
<tr>
<td>Installation directory name</td>
<td>The directory to which the installable features are installed. In this guide, this directory is referred to as EEZ_INSTALL_ROOT. When specifying a directory other than the default, observe the following restrictions: <strong>Windows:</strong> &lt;ul&gt;&lt;li&gt;The directory name has to consist of the platform-specific path separator character and alphanumeric characters (A..Z, a..z, 0..9).&lt;/li&gt;&lt;li&gt;The colon character is allowed only once, immediately following the drive letter. For example, C:&lt;directory_name&gt; is allowed, but C:&lt;directory_name&gt;:&lt;directory_name&gt; is not allowed.&lt;/li&gt;&lt;li&gt;The space character and the underscore character (<em>) are allowed.&lt;/li&gt;&lt;/ul&gt; <strong>AIX, Linux:</strong> &lt;ul&gt;&lt;li&gt;The directory name has to consist of the platform-specific path separator character and alphanumeric characters (A..Z, a..z, 0..9).&lt;/li&gt;&lt;li&gt;The underscore character (</em>) is allowed. &lt;br&gt; The space and colon characters are not allowed.&lt;/li&gt;&lt;/ul&gt;</td>
<td>Windows: C:\Program Files\IBM\tsamp\eez &lt;br&gt;AIX, Linux: /opt/IBM/tsamp/eez</td>
</tr>
<tr>
<td>Parameter</td>
<td>Description</td>
<td>Default</td>
</tr>
<tr>
<td>-------------------------------</td>
<td>----------------------------------------------------------------------------------------------------------------------------------------------</td>
<td>------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Tivoli Common Directory</td>
<td>The Tivoli directory for storing serviceability information.</td>
<td>Windows:</td>
</tr>
<tr>
<td></td>
<td>During installation, you are only prompted for input when no Tivoli Common Directory is found on the system.</td>
<td>C:\Program Files\IBM\tivoli\common</td>
</tr>
<tr>
<td></td>
<td>In the Tivoli Common Directory, the subdirectory eez is created for storing product-specific data.</td>
<td>AIX, Linux:</td>
</tr>
<tr>
<td></td>
<td>When specifying a directory other than the default, observe the following restrictions:</td>
<td>/var.ibm/tivoli/common</td>
</tr>
<tr>
<td></td>
<td>Windows:</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• The directory name has to consist of the platform-specific path separator character and alphanumeric characters (A..Z, a..z, 0..9).</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• The colon character is allowed only once, immediately following the drive letter. For example, C:&lt;directory_name&gt; is allowed, but</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• The space character and the underscore character (_) are allowed.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>AIX, Linux:</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• The directory name has to consist of the platform-specific path separator character and alphanumeric characters (A..Z, a..z, 0..9).</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• The underscore character (_) is allowed.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• The space and colon characters are not allowed.</td>
<td></td>
</tr>
</tbody>
</table>

**Installation parameters for the System Automation for Multiplatforms operations console**

The parameters listed in the following table must always be specified.
### Table 28. Installation parameters for Integrated Solutions Console

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Default</th>
</tr>
</thead>
</table>
| WAS Admin User ID                       | The ID of the administrator user for the embedded version of WebSphere Application Server, which the System Automation for Multiplatforms operations console uses as a run-time environment. The user ID only has administrative privileges for the WebSphere Application Server but is not authorized to perform any Tivoli System Automation tasks. The user ID must comply with the following conditions:  
  • The user ID must be unique.  
  • The length is 3 to 60 characters.  
  • A valid user ID may contain only the characters a-z, A-Z, period (.), hyphen (-), underscore (_), and double-byte character set (DBCS) characters.  
  No other characters are permitted in this field. For example, diacritics, such as the umlaut, are not permitted. | No default value is provided |
| Password                                | The password for the WAS Admin User ID. The password must comply with the following conditions:  
  • The length is 5 to 60 characters.  
  • A valid password may contain only the characters a-z, A-Z, period (.), hyphen (-), and underscore (_).  
  No other characters are permitted in this field. For example, DBCS characters and diacritics, such as the umlaut, are not permitted. | No default value is provided |
| Tivoli System Automation Administration User ID | The user ID of the administrator user for Tivoli System Automation. The user is authorized to perform Tivoli System Automation tasks, but cannot perform WebSphere Application Server tasks. Notes:  
  1. The user can only be logged in from a single location (for example, a browser window).  
  2. If multiple users are to work with the operation console concurrently, personalized user IDs must be created and assigned to the predefined user groups. To create these user IDs, this Tivoli System Automation administrator user ID must be used. | eezadmin |

---

### Port assignment for the embedded version of IBM WebSphere Application Server

The following table lists the default ports for the embedded version of IBM WebSphere Application Server.

**Notes:**

1. If a WebSphere Application Server is already installed on the system or if a previous installation was not removed complete and cleanly, the ports are incremented by the installation program without notice.
2. You can check the ports of an embedded WebSphere Application Server installation in the following file:
   `<was_home>/profiles/<profileName>/properties/portdef.props`

   The default `<was_home>` directory is:
   On AIX systems:
   `/usr/IBM/WebSphere/AppServer`
   On Linux systems:
Installation prerequisites

The following prerequisites must be satisfied before you can start the installation wizard for the operations console:

- The user ID that is used to run the installation program must have administrator authority.
  
  On Linux and AIX, this user ID is typically "root".
- When installing the operations console to an AIX or Linux system, be sure that an X Window session is available for displaying the graphical installation program.
- In current Red Hat 5 distributions, the SEnix environment is switched on by default. It must be switched off for System Automation for Multiplatforms to work properly.
- On Windows Server 2008, you must install, configure, run, and use the operations console with the built-in local Administrator user account of the
system. If User Account Control (UAC) is active on the system (which is the 
default setting), you must keep the setting "User Account Control: Admin 
 Approval Mode for the Built-in Administrator account" disabled (which is the 
default value) and the setting "User Account Control: Detect application 
installations and prompt for elevation" enabled (which is the default value).

Installing the System Automation for Multiplatforms operations 
console using the graphical installation program

To install the System Automation for Multiplatforms operations console, you have 
two options:

- You can use a graphical installation program, the so-called installation wizard.
- You can install the operations console in silent mode, using a response file you 
generated in a previous wizard-driven installation.

This section describes how to install the System Automation for Multiplatforms 
operations console using the installation wizard. The required steps are described 
below.

Make sure that you specify all required parameters on the installation wizard 
panels and that your entries are correct. The installation wizard does not verify 
that your entries are correct and complete during the installation.

The screens in this section show a Linux installation. The screens that are 
displayed for other operating systems have a similar appearance. Make sure to 
conform to the conventions of your platform when specifying directory locations, 
files names, and so on.

To install the System Automation for Multiplatforms operations console, perform 
these steps:

1. Insert the following CD into the CD drive:
   IBM Tivoli System Automation for Multiplatforms V3.1.0, Operations Console for 
   <operating_system_name>
   There are multiple CDs. Be sure to use the one for your platform.
   Alternatively, for electronic delivery, unpack the file. See "Packaging" on page

2. Change to the directory that contains the installation program. For the location 
of the directory, refer to "Packaging" on page 43.

3. Launch the installation wizard by starting the following program from the 
current working directory:
   - Windows: setup.exe
     To generate a response file for use in a silent installation, use the following 
     command to launch the wizard:
     setup.exe -Dpreparesilient=true
   - AIX, Linux: setup.bin
     To generate a response file for use in a silent installation, use the following 
     command to launch the wizard:
     setup.bin -Dpreparesilient=true
When the installation wizard is ready, the initial wizard window appears:

4. Select the language in which the text on the installation wizard window is to appear and click OK. The language in which the System Automation for Multiplatforms is installed is derived from the system’s locale setting.

5. Read the information on the Introduction window and click Next.
6. Carefully read the terms of the license agreement. Make sure to also read the non-IBM terms by clicking Read non-IBM terms.

To accept the terms of the license agreement, select I accept both the IBM and the non-IBM terms and click Next.

7. Specify the installation directory or accept the default location.
   Click Next.
8. If the installation program detected a Tivoli Common Directory on your system, for example, because a Tivoli product is already installed, the directory must also be used for System Automation for Multiplatforms. In this case, the entry field that is displayed in this window is write-protected.

If the installation program did not detect a Tivoli Common Directory on your system, accept the default location or specify the directory to which the Tivoli log files are to be written.

Click Next.

_________________________________________________________________

9. Specify the user ID and password of the WebSphere administrator user. Click Next.

_________________________________________________________________
10. If no other WebSphere Application Server is installed on the system, accept the default ports for the embedded version of IBM WebSphere Application Server. To change any of the values, select Change default ports and make your changes.

**Note:** If you leave the values unchanged and another WebSphere Application Server is detected on the system, the ports will be changed without notice.

Click Next.

11. Specify the user ID, password, and the first and last name of the System Automation administrator. Do not use cut-and-paste to enter the password and the password confirmation, rather, directly type in the password and the password confirmation.

Click Next.
12. Review the information in the summary window and ensure that sufficient disk space is available.

Click **Install** to start the installation.

**Note:** To clean up the system from a partial installation, use the uninstallation program.

13. During the installation phase, information windows like the following inform you of the progress.
14. The following window is displayed during the configuration phase:

![Configuration Window](image)

**Note:** You may cancel the installation at any time. If you cancel during the configuration phase, the installer performs no cleanup. You can re-invoke the installation again later and configuration will resume at the point where it was canceled, or you can run the uninstallation program to clean up the system.

15. Review the information in the Installation Complete window. It informs you whether the installation completed successfully or whether errors occurred or the installation was canceled during the configuration process. Click **Done** to close the installation wizard.

![Installation Complete Window](image)
Installing the System Automation for Multiplatforms operations console in silent mode

You can install the System Automation for Multiplatforms operations console in silent mode using a response file you generated in a wizard-driven installation (see "Installing the System Automation for Multiplatforms operations console using the graphical installation program" on page 52).

After the wizard-driven installation is complete, you will find the response file install.properties in the following directory:

<EEZ_INSTALL_ROOT>/install

Note that this file is always generated even if you did not specify the option -Dpreparesilent=true when you invoked the installation wizard. However, install.properties files created without the -Dpreparesilent=true option cannot be used for silent installation.

To install the operations console in silent mode, perform these steps:

1. Insert the following CD into the CD drive:
   IBM Tivoli System Automation for Multiplatforms V3.1.0, Operations Console for <operating_system_name>
   There are multiple CDs. Be sure to use the one for your platform.
   Alternatively, for electronic delivery, unpack the file. See "Packaging" on page 43.

2. Change to the directory that contains the installation program. For the location of the directory, refer to "Packaging" on page 43.

3. Copy the response file install.properties to the system on which you want to perform the installation.

4. To start the installation, issue this command:
   AIX, Linux:
   setup.bin -i silent -f <fully_qualified_properties_file_name>
   Windows:
   setup.exe -i silent -f <fully_qualified_properties_file_name>

Post-installation tasks

Modify the Windows Firewall Security Rules

This task only applies if the operations console is installed on Windows Server 2008.

After the installation of the component operations console you have to ensure that inbound and outbound TCP traffic is allowed with other automation domains. Ports for communication with Integrated Solution Console as well as ports to receive status change events from other automation domains must be opened in the Windows Firewall with Advanced Security.

It is assumed that you do not block the outbound connections to the other automation domains.
The following ports have to be opened for inbound TCP traffic:

Table 30. Ports for inbound TCP traffic (Windows Server 2008)

<table>
<thead>
<tr>
<th>Name</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Event port number</td>
<td>2002</td>
<td>This is the port opened by the SA operations console in order to receive (EIF-) events from other automation domains. This port is configured by means of cfgdirect.</td>
</tr>
<tr>
<td>ISC Port</td>
<td>9060</td>
<td>This is the port you direct your web browser in order to open the SA operations console or the WebSphere Administrative console. This port can be configured in the file &lt;was_home&gt;/profiles/&lt;profileName&gt;/properties/portdef.props with the property named WC_adminhost.</td>
</tr>
<tr>
<td>Secure ISC Port</td>
<td>9043</td>
<td>This is the port that is used to open an HTTPS connection to the same Integrated Solution Console. This port can be configured in the file &lt;was_home&gt;/profiles/&lt;profileName&gt;/properties/portdef.props with the property named WC_adminhost_secure.</td>
</tr>
</tbody>
</table>

To correctly set up the firewall rules, do the following:

2. In the tree view of the dialog box that opens, select Windows Firewall with Advanced Security. Ensure that Outbound connections that do not match a rule are allowed is selected.
3. In the menu bar, click Action -> New Rule.
4. Select Custom and then click Next.
5. Select This program path and browse to the program java.exe of the WebSphere Application server profile you created for installation of SA Application Manager. For example: C:\Program Files\ibm\tsamp\eez\was\appserver\java\bin\java.exe.
6. Click the Customize button and ensure that the radio button Apply to all programs and services is selected. Click OK to close this dialog.
7. To continue with the wizard, click Next in the window where you specified the JVM.
8. Specify "TCP" as "Protocol Type" and "Specific Ports" as Local ports. In the entry field below, you have to specify the comma-separated list of ports that are listed in Table 30. For example, if you are using the defaults, you specify

60  System Automation for Multiplatforms: Installation and Configuration Guide
“2002, 9060, 9043”. For the “Remote Port” you select “All Ports” to ensure that outbound traffic is not blocked. Click Next.

9. Specify the **Any IP address** for both local and remote IP addresses. Click Next.

10. Ensure that **Allow the connection** is selected on this wizard panel. Click Next.

11. Apply this rule to all scopes “Domain”, “Private” and “Public”. Click Next.

12. In the name field, enter a name such as SA MP Direct Operations Console (TCP-In). You may also want to provide an optional description such as This allows the connection to the SA MP Direct Operations Console. It is required to use the ISC Web based consoles and allows receiving events from the other automation domains.

13. Click Finish.

### Verifying the installation

Perform the following steps to verify that the System Automation for Multiplatforms operations console was installed successfully:

1. In a Web browser window, specify the following address to display the Login panel of Integrated Solutions Console:

```
http://<your_host_name>:<your_isc_port>/ibm/console
```

The default port is 9060.

![Image of Integrated Solutions Console login panel](image.png)

---

Figure 2. Log in panel of Integrated Solutions Console
2. Enter the WebSphere administrator user ID and the corresponding password. If the Welcome page of Integrated Solutions Console is displayed, the embedded version of WebSphere Application Server was installed successfully. Log off.

![Integrated Solutions Console](image)

*Figure 3. Welcome panel of Integrated Solutions Console*

3. Repeat step 1. On the Log in panel of Integrated Solutions Console, enter the System Automation administrator user ID. The default user ID is `eezadmin`.

4. On the Welcome page of Integrated Solutions Console, click the entry for System Automation for Multiplatforms. If the Welcome page of System Automation for Multiplatforms is displayed, the System Automation for Multiplatforms operations console was installed successfully.
Chapter 5. Upgrading the operations console

The only upgrade path to Release 3.1 of the operations console is from Release 2.3.

Upgrading the operations console from Release 2.2

An upgrade from Release 2.2 to Release 3.1 is not possible. To obtain Release 3.1, first uninstall Release 2.2 and then install Release 3.1.

Upgrading the operations console from Release 2.3

To upgrade from release 2.3, do the following:

1. Insert the following CD into the CD drive:
   *IBM Tivoli System Automation for Multiplatforms V3.1.0, Operations Console for <operating_system_name>*
   There are multiple CDs. Be sure to use the one for your platform. Alternatively, for electronic delivery, unpack the file. See “Packaging” on page 43.

2. Change to the directory that contains the installation program. For the location of the directory, refer to “Packaging” on page 43.

3. Launch the installation wizard by starting the following program from the current working directory:
   *Windows*: setup.exe
   To generate a response file for use in a silent installation, use the following command to launch the wizard:
   `setup.exe -Dpreparesilent=true`
   *AIX, Linux*: setup.bin
   To generate a response file for use in a silent installation, use the following command to launch the wizard:
   `setup.bin -Dpreparesilent=true`

When the initial installation wizard window appears, follow the instructions provided to complete the upgrade.

It is not possible to upgrade an installation of System Automation for Multiplatforms Release 2.3 end to end with an operations console Release 3.1 installation.
Chapter 6. Configuring the operations console

This is necessary if your operations console cannot use port 2002 to receive events from adapters, or if you want to use the SSL (Secure Socket Layer) protocol for the transmission of requests from the operations console to the adapter.

Planning the configuration

The System Automation for Multiplatforms end-to-end automation adapter must be configured in order to be able to directly access the operations console. "Host using adapter tab" on page 102 describes how to do this.

See Chapter 14, “Configuring the end-to-end automation adapter of IBM Tivoli System Automation for Multiplatforms,” on page 95 to learn more about the System Automation for Multiplatforms end-to-end automation adapter.

You can also configure the end-to-end automation adapter in silent mode using an input properties file. See Chapter 15, “Silent configuration,” on page 117 for more details.

If you want to change the port number, obtain a valid port number from your network administrator. Note that all adapters that are connected to the operations console must send events to the same "Event port".

The operations console supports the Secure Socket Layer (SSL) protocol but it does not enforce it on adapters. Whether SSL is used for transport must be specified for the adapter on the Security tab of the adapter configuration dialog (see "Security tab” on page 108). All adapters that require SSL must have the same truststore file, keystore file, alias name and password for the keystore specified. The operations console uses the same information. Therefore, the truststore file and the keystore file must be placed on the host of the operations console.

If no truststore and keystore keys have been generated yet, you can execute ikeyman.bat to generate them. ikeyman.bat is available in the following directory:

AIX: /usr/IBM/WebSphere/AppServer/bin

Linux: /opt/IBM/WebSphere/AppServer/bin

Windows: C:\Program Files\IBM\WebSphere\AppServer\bin

The resulting information should be the location of truststore and keystore, and alias name and password to access the keystore. Note that actual keys would be obtained from a certification authority.

Using the configuration dialog

Perform the following steps to configure the operations console:

1. Invoke the configuration dialog:
   Windows: On Windows Server 2008, log on with the built-in local Administrator user account of the system. Change the directory to C:\Program Files\IBM\tsamp\eez\bin and type cfgdirect.bat.
AIX and Linux: Type `cfgdirect.sh`. The configuration dialog is displayed. The fields on the dialog tab show the current settings.

2. The event port number on the Server tab specifies the port on which the operations console listens for events from the adapter.

![Configuration Dialog](image)

3. In the fields on the Security tab you can specify the information required for using the SSL protocol (see “Planning the configuration” on page 65).

![Security Tab](image)

4. To save your changes, click **Save**.

5. Click **Done** to close the dialog.
Chapter 7. Uninstalling System Automation for Multiplatforms on UNIX and Linux

Before you begin

Consider the following points before you start the uninstallation procedure:

- Use the uninstallSAM script that is provided for your operating system to uninstall System Automation for Multiplatforms. For example, run ./uninstallSAM from the installation directory. This will ensure a proper deinstallation of the product.

- Before uninstalling you should save your configuration with the sampolicy -s command. For information on how to save a System Automation for Multiplatforms configuration, refer to the following documentation:
  - The description of the sampolicy command in IBM Tivoli System Automation for Multiplatforms Reference

- uninstallSAM will remove all configuration information that you defined for the domain. For this reason, you should never use uninstallSAM if you intend to upgrade to a new version.

Uninstallation procedure

To uninstall System Automation for Multiplatforms perform the following steps:

1. Ensure that the domain is offline:
   - Check if a domain is still online by entering the command:
     lsrpdomain
   - In order to stop a domain enter the command:
     stoprpdomain <domain>

2. Uninstall the product with the uninstallSAM script:
   ./uninstallSAM
   Typically, you do not need to specify any of the options that are available for the uninstallSAM command. For a detailed description of the command, refer to IBM Tivoli System Automation for Multiplatforms Reference

   If CSM or GPFS (which also use the RSCT and System Resource Controller (SRC) packages) is installed on a Linux system from which you want to uninstall System Automation for Multiplatforms, RPM will ensure that RSCT and SRC will not be uninstalled with System Automation for Multiplatforms. RPM messages will indicate this.

3. Check the following log file for information about the uninstallation:
   /tmp/uninstallSAM.<#>.log
   where <#> is a number; the highest number identifies the most recent log file.

4. To verify which packages were uninstalled, inspect /tmp/uninstallSAM.<#>.log, where <#> is the highest number of the log files you find.
Chapter 8. Uninstalling System Automation for Multiplatforms on Windows

Uninstallation procedure

Notes:
1. After a successful installation, background configuration processes continue to run for approximately 5 minutes. Allow this amount of time before performing an uninstallation.
2. When starting the uninstallation wizard, you need to be logged in with the same user account you used to install System Automation for Multiplatforms. The uninstallation will be incomplete or fail if the uninstallation wizard is run by a different user account.

To launch the uninstallation wizard, use one of the following approaches:
- From Windows Control Panel, do this:
  1. Open Add or Remove Programs in Control Panel.
  2. Click Change/Remove.
  3. Click SA for Multiplatforms.
  4. Click Remove.
- Click Start > All Programs > SA for Multiplatforms > Uninstall SA for Multiplatforms

The uninstallation wizard comprises these panels:
1. On the first panel, click Uninstall to start the uninstallation.
2. While the uninstallation is being performed, panels are shown that inform you of the progress:
3. When the uninstallation is complete, click **Done** to close the wizard.
Chapter 9. Uninstalling the System Automation for Multiplatforms operations console

This section describes how to uninstall the operations console. An uninstallation program is provided that removes the components that were installed by the installation wizard.

Launching the graphical uninstallation program on Windows

To launch the uninstallation program on Windows, either issue the command <EEZ_INSTALL_ROOT>/uninstall/uninstall.exe at a command prompt or perform the following steps:
1. Open the Control Panel (Start > Control Panel).
2. On the Control Panel, open Add or Remove Programs.
3. On the Add or Remove Programs panel, select IBM Tivoli System Automation for Multiplatforms and click Change/Remove. This brings up the Welcome panel of the uninstallation program.

Launching the graphical uninstallation program on AIX and Linux

To launch the uninstallation program on AIX and Linux, enter the following command in a shell:
<EEZ_INSTALL_ROOT>/uninstall/uninstall

This brings up the Welcome panel of the uninstallation program.

Using the uninstallation program

Before you begin:

- Make backup copies of the following files in the directory <isc_home>/AppServer/profiles/Appsrv01/Tivoli/EEZ to prepare for reusing them after reinstalltion:
  - directui-joined-domains-xml
    Contains the domains that you saw most recently in the topology tree.
  - directui-prefs.xml
    Contains user preferences, such as hidden domains and resource filters.
  - directui.properties
    Contains the port on which the operations console listens for events from domains, and SSL information. If you never changed the port from the default and never specified SSL key information, you need not back up the file.
- Before starting the uninstallation of the operations console, make sure that the Integrated Solutions Console server is stopped.
During uninstallation, you may repeatedly be prompted to confirm that specific files are to be deleted. Make sure that the files should be deleted before confirming the deletion.

Perform the following steps to uninstall the operations console:
1. Launch the uninstallation program as described in the sections above.

2. In the Welcome window, click Next.

3. In the fields in the WebSphere Application Server window, type the user ID and password of the WebSphere administrator, and specify the name of the WebSphere Application Server and the WebSphere Application Server profile. Click Next.
4. The Start Deinstallation window informs you that the preparations for the uninstallation are complete. Click **Next**.

5. During the uninstallation, information windows like the following inform you of the progress.
6. When the uninstallation is complete, a summary window is displayed. To exit the installation program, click **Done**.
Chapter 10. Installing and uninstalling service

Installing service

Installing service means applying corrective service fix packs to release 3.1 of System Automation for Multiplatforms or upgrading the software release level from release 3.1. Such service fix packs are referred to as product fix packs in this guide. Product fix packs are available for System Automation for Multiplatforms including the operations console.

Product fix packs are delivered in the following formats:

- For Linux: Archives in TAR-format
- For AIX: Archives in TAR-format or self-extracting archives (operations console only)
- For Solaris: Archives in zip-format
- For Windows: Self-extracting archives

Where to obtain fix packs

Read the release notes to find out which fix packs are required for a release update. To obtain a copy of the release notes, go to the System Automation for Multiplatforms home page and click Technical Documentation.

You will find the System Automation for Multiplatforms home page at:


Archives for product fix packs can be downloaded from the System Automation for Multiplatforms support site at:


Download the archive to a temporary directory. Typically, one archive is available for each platform. For information about the naming conventions that apply to product fix pack archives, refer to Archive naming conventions.

Archive naming conventions

The archives for product fix packs for the System Automation for Multiplatforms and the operations console have the following syntax:

- 3.1.0-TIV-SAMP-<platform>-FP<fix_pack_number>.<archive_type> containing the service for System Automation for Multiplatforms, and
- 3.1.0-TIV-SAMPOC-<platform>-FP<fix_pack_number>.<archive_type> containing the service for the operations console.

where

- <platform> represents the platform on which System Automation for Multiplatforms is installed
- <fix_pack_number> represents the fix pack number
- <archive_type> is either tar, bin, or exe

Example:
This is the tar archive that is used to install fix pack 1 for System Automation for Multiplatforms 3.1 on AIX platforms:

3.1.0-TIV-SAMP-AIX-FP0001.tar

**Installing service for System Automation for Multiplatforms**

The tables below list the archive files you can download for applying service for the Linux, AIX, Solaris, and Windows operating systems:

**Usage instructions for the platform-specific archives**

**Linux:**

*Table 31. Archive for Linux platforms*

<table>
<thead>
<tr>
<th>Archive name</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>3.1.0-TIV-SAMP-LIN-FP&lt;fix_pack_number&gt;.tar</td>
<td>For extracting the archive, GNU tar 1.13 or later is required. Use the <code>tar -xf</code> command to extract the archive. This is where you will find the install script <code>installSAM</code> after extracting the archive: <code>SAM31&lt;maintenance_level&gt;MP/installSAM</code></td>
</tr>
</tbody>
</table>

**AIX:**

*Table 32. Archive for AIX platforms*

<table>
<thead>
<tr>
<th>Archive name</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>3.1.0-TIV-SAMP-AIX-FP&lt;fix_pack_number&gt;.tar</td>
<td>Use the <code>tar -xf</code> command to extract the archive. This is where you will find the install script <code>installSAM</code> after extracting the archive: <code>SAM31&lt;maintenance_level&gt;MP/installSAM</code></td>
</tr>
</tbody>
</table>

**Solaris:**

*Table 33. Archive for Solaris platforms*

<table>
<thead>
<tr>
<th>Archive name</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>3.1.0-TIV-SAMP-SOL-FP&lt;fix_pack_number&gt;.zip</td>
<td>Use the <code>unzip</code> command to extract the archive. This is where you will find the install script <code>installSAM</code> after extracting the archive: <code>SAM31&lt;maintenance_level&gt;MP/installSAM</code></td>
</tr>
</tbody>
</table>

**Windows:**

*Table 34. Archive for Windows platforms*

<table>
<thead>
<tr>
<th>Archive name</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>3.1.0-TIV-SAMP-WIN-FP&lt;fix_pack_number&gt;.exe</td>
<td>The archive is self-extracting. This is where you will find the update installation wizard after extracting the archive: <code>SAM31&lt;maintenance_level&gt;MP\Windows\setup.exe</code></td>
</tr>
</tbody>
</table>
Steps for installing service for System Automation for Multiplatforms

Before you begin:

• Installing service means upgrading System Automation for Multiplatforms from release 3.1. Therefore, release 3.1 must have been installed before any service can be applied.

  The only exception to this rule is the installation of System Automation for Multiplatforms 3.1.0.4 on Windows Server 2003 R2 Standard x64 Edition or Windows Server 2003 R2 Enterprise x64 Edition. See “Installing System Automation for Multiplatforms on Windows Server x64 Edition” on page 26.

• Product fix packs are always cumulative.

• For UNIX and Linux, you must have root authority to install a product fix pack. For Windows, administrator authority is required.

• When you have downloaded the archives from the IBM Tivoli System Automation for Multiplatforms support site (see “Where to obtain fix packs” on page 77), unpack the product fix pack archive to a temporary directory. For information about how to unpack the archive for your platform, refer to “Usage instructions for the platform-specific archives” on page 78.

• Before performing the steps below, check the release notes for additional or deviating installation instructions.

• For installing service on AIX, Linux, or Solaris platforms:
  - Back up your system configuration before installing service. For information on how to do this, refer to IBM Tivoli System Automation for Multiplatforms Administrator’s and User’s Guide section “Managing automation policies for System Automation for Multiplatforms domains”.
  - To minimize downtime, you can perform a prerequisites check before starting the installation (for more information, see “Performing the prerequisites check” on page 9).

Perform the following steps on each node in the peer domain:

1. Check if any resources are online on the node you want to service:
   • If resources are online and must be kept available, exclude the node from automation using the command
     `samctrl -u a <node>`

     System Automation for Multiplatforms stops the resources on the node and, if possible, restarts them on a different node in the peer domain.
   • If the resources need not be kept available during service, bring the resource groups offline.

2. Stop the node from another node in the domain, and verify that it is stopped:
   `storpnode <node>; lsrpnode`

3. After receiving the archives, extract them. They create a directory structure with root directory SAM31mf/MP, where mf stands for modification level and fix level.

4. Do this:

   **AIX, Linux, Solaris:**

   Install the service fix pack with the `installSAM` script. For detailed information about the script, refer to “Installing System Automation for Multiplatforms on UNIX and Linux” on page 9.

   **Windows:**
a. Change to the directory in which the update installation wizard is located. For information on where to find the update wizard, see Table 34 on page 78.

b. Launch the update installer. The update installer for fix packs is named setup.exe.

c. Follow the instructions on the wizard panels to install the product fix pack.

5. Start the node:
   startrpnode <node>

6. If you had excluded the node in step 2, include the node in automation again using the command
   samctrl -u d <node>

7. If you require the resource groups to be online, bring the resource groups online. Otherwise delay this step until after the last node in the peer domain has been serviced.

8. After all nodes have been serviced, perform the steps described in “Completing the migration” on page 16. This ensures that the changes become effective in the entire domain and the correct version is shown.
Installing service for the operations console

These are the archives for applying service for the operations console.

Usage instructions for the platform-specific archives

Windows:

Table 35. Windows platforms

<table>
<thead>
<tr>
<th>Archive name</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>3.1.0-TIV-SAMPOC-WIN-FP&lt;fix_pack_number&gt;.exe</td>
<td>The archive is self-extracting. This is where you will find the update installer program after unpacking the archive: SAM31&lt;maintenance_level&gt;OCWindows/Windows/setup.exe</td>
</tr>
</tbody>
</table>

AIX:

Table 36. AIX platforms

<table>
<thead>
<tr>
<th>Archive name</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>3.1.0-TIV-SAMPOC-AIX-FP&lt;fix_pack_number&gt;.bin</td>
<td>The archive is self-extracting. This is where you find the update installer program after unpacking the archive: SAM31&lt;maintenance_level&gt;0CAIX/AIX/setup.bin</td>
</tr>
</tbody>
</table>

Linux on IBM System x:

Table 37. Linux on IBM System x

<table>
<thead>
<tr>
<th>Archive name</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>3.1.0-TIV-SAMPOC-I386-FP&lt;fix_pack_number&gt;.tar</td>
<td>For extracting the archive, GNU tar 1.13 or later is required. Use the tar -xf command to extract the files to a temporary directory. This is where you find the update installer program after unpacking the archive: SAM31&lt;maintenance_level&gt;0CI386/i386/setup.bin</td>
</tr>
</tbody>
</table>

Linux on POWER:

Table 38. Linux on POWER

<table>
<thead>
<tr>
<th>Archive name</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>3.1.0-TIV-SAMPOC-PPC-FP&lt;fix_pack_number&gt;.tar</td>
<td>For extracting the archive, GNU tar 1.13 or later is required. Use the tar -xf command to extract the files to a temporary directory. This is where you find the update installer program after unpacking the archive: SAM31&lt;maintenance_level&gt;0CPPC/ppc/setup.bin</td>
</tr>
</tbody>
</table>
Linux on System z:

Table 39. Linux on System z

<table>
<thead>
<tr>
<th>Archive name</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>3.1.0-TIV-SAMPOC-S390-&lt;fix_pack_number&gt;.tar</td>
<td>For extracting the archive, GNU tar 1.13 or later is required. Use the <code>tar -xf</code> command to extract the files to a temporary directory. This is where you find the update installer program after unpacking the archive: <code>SAM31&lt;maintenance_level&gt;OCS390/s390/setup.bin</code></td>
</tr>
</tbody>
</table>

Installing product fix packs for the operations console

- When you have downloaded the archives from the System Automation for Multiplatforms support site (see “Where to obtain fix packs” on page 77), unpack the product fix pack archive to a temporary directory. For information about how to unpack the archive for your platform, refer to “Usage instructions for the platform-specific archives” on page 81.
- Before performing the subsequent steps, check the release notes for additional or deviating installation instructions.
- Change to the directory in which the update wizard program is located. For information on where to find the update wizard program, refer to “Usage instructions for the platform-specific archives” on page 81.
- Launch the update wizard. The update wizard for fix packs is named `update`.
- When the wizard is launched successfully, the Welcome panel appears.
- Follow the instructions on the wizard panels to install the product fix pack.

Uninstalling service

To uninstall a fix pack, you need to uninstall the complete product as described in the following sections:

- To uninstall System Automation for Multiplatforms on UNIX or Linux, follow the instructions in Chapter 7, “Uninstalling System Automation for Multiplatforms on UNIX and Linux,” on page 67.
- To uninstall System Automation for Multiplatforms on Windows, follow the instructions in Chapter 8, “Uninstalling System Automation for Multiplatforms on Windows,” on page 69.
- To uninstall the operations console, follow the instructions in Chapter 9, “Uninstalling the System Automation for Multiplatforms operations console,” on page 73.

After the uninstallation is complete, you can reinstall System Automation for Multiplatforms and the required service level (fix pack level).
Chapter 11. Installing the GDPS/PPRC Multiplatform Resiliency for System z feature

The following topics describe how to install and configure the GDPS/PPRC Multiplatform resiliency for System z (xDR) feature of System Automation for Multiplatforms.

Installing the xDR feature

Packaging

The code of the xDR feature is shipped as part of the System Automation for Multiplatforms product, but you cannot exploit the corresponding functionality unless you have installed a separate license to enable the code. You get the license when you order the xDR feature. The name of the license file is sam31_XDR.lic. This is where you find the license file:

- CD:
  You install the xDR feature from the CD "IBM Tivoli System Automation for Multiplatforms 3.1.0 – XDR for System z". The license file is available in directory SAM3100FeatXDR/license.
- If you obtain the xDR feature through electronic distribution, you find the license file in the electronic distribution file C1A8QML.txt. This file is identical to the license file itself. Rename or copy the electronic distribution file to sam31_XDR.lic.

Installation prerequisites

Before you can install the xDR feature license, you must install the System Automation for Multiplatforms base product. Note that the feature’s functionality is only supported on Linux on System z.

Installing the feature license

Use the `samlicm` command to install the license. The license file must be accessible from the system where System Automation for Multiplatforms is installed. Copy file sam31_XDR.lic to a location where it accessible when you invoke `samlicm`.

Execute the following command to install the license:

```
samlicm -i <license file location>/sam31_XDR.lic
```

To verify that the feature license has been successfully installed, issue the following command:

```
samlicm -s
```

The name of the xDR feature should appear as value of the "Product Annotation" field in the output of the command. For example:

```
...  
Product ID: 101  
Product Annotation: SA for MP xDR for Linux on System z  
...  
```

For more information on the `samlicm` command, refer to [IBM Tivoli System Automation for Multiplatforms Reference](#).
Activating the GDPS/PPRC Multiplatform Resiliency for System z feature

After you have completed the installation tasks described above, proceed as described in IBM Tivoli System Automation for Multiplatforms Administrator’s and User’s Guide, Chapter 10, section "Enabling GDPS/PPRC Multiplatform Resiliency for zSeries".

Uninstalling the GDPS/PPRC Multiplatform Resiliency for System z feature

There is no specific uninstallation of the xDR feature. It is uninstalled implicitly when System Automation for Multiplatforms is uninstalled.
Part 2. Enabling launch-in-context support

Chapter 12. Installing and configuring the IBM TEC extension for System Automation for Multiplatforms

Overview ........................................ 87
Prerequisites ...................................... 87
Installing the IBM TEC extension ........ 87
Configuring the TEC extension for System Automation for Multiplatforms .... 88
Adapting the configuration file to your environment ............................... 88
Defining a custom button for the Java version of the TEC Event Console (Java Swing Client) and the TEC event viewer embedded in TEP. .......................... 89
Defining a custom button for the Web version of the TEC Event Console .......................... 89

Chapter 13. Setting up Tivoli Enterprise Portal launch-in-context support ........ 91
Chapter 12. Installing and configuring the IBM TEC extension for System Automation for Multiplatforms

Overview

The IBM Tivoli Enterprise Console (TEC) extension for System Automation for Multiplatforms (IBM TEC Extension) allows navigating from a displayed event in the Event Console of Tivoli Enterprise Console (TEC Event Console) to the corresponding resource or domain in the System Automation operations console.

Example usage scenario:
1. An operator sees an event in the TEC Event Console that shows that a Tivoli System Automation resource failed.
2. The operator selects the event and starts the System Automation operations console for this event.
3. The System Automation operations console automatically navigates to the resource specified in the event.
4. The operator analyzes the error by checking, for example, the resource status and dependencies.

The IBM TEC Extension can be used for all TEC Event Console setups:
- Java version of the TEC Event Console
- TEC Web console
- TEC event viewer embedded in the Tivoli Event Portal (TEP)
  - running using the desktop client interface
  - running using the browser client interface

Prerequisites

To install and use the IBM TEC Extension for System Automation for Multiplatforms, the following prerequisites must be met:

**TEC version**
- TEC 3.8 or later

**TEC event forwarding**
To exploit launch-in-context support from the TEC to the System Automation operations console, Tivoli System Automation events must be sent to the TEC, which is why you must enable TEC event forwarding for System Automation for Multiplatforms in your environment:

- For a description on how to enable event forwarding, see the IBM Tivoli System Automation for Multiplatforms Administrator’s and User’s Guide, section “Using the IBM Tivoli System Automation TEC event interface with System Automation for Multiplatforms on AIX and Linux”

**Web browser is required for the Java version of the TEC Event Console**
If the Java version of the TEC Event Console is to be used to launch to the SA operations console, a Web browser (Mozilla, Firefox, or Internet Explorer) must be installed on the system where the event console runs.
Installing the IBM TEC extension

For the TEC Web console client, no installation steps are required. You can directly progress to the configuration steps described in “Configuring the TEC extension for System Automation for Multiplatforms.”

You only need to perform the installation steps described in this chapter if you are using the Java version of the TEC Event Console or the TEC event viewer embedded in TEP:

- When you are using the Java version of the TEC Event Console, the IBM TEC Extension for System Automation for Multiplatforms needs to be installed on the system where the TEC Event Console runs.
- When you are using the TEC event viewer embedded in the TEP and the TEP is started using the browser client interface, the IBM TEC Extension for System Automation for Multiplatforms needs to be installed on the system where the browser runs.

To install the IBM TEC Extension on AIX, Linux or Windows perform these steps:
1. Insert the System Automation for Multiplatforms product CD into the CD drive of the system where the TEC server is running.
2. Open a command prompt (Windows) or a command shell (Linux, AIX).
3. Change to the directory ecext on the product CD or in the electronic distribution directory structure.
4. Start the installation program, using this command:
   ```
   java -jar setup.jar
   ```
5. Follow the installation instructions.

To install the IBM TEC Extension on z/OS perform these steps:
1. Find the installer in $MPE_INSTALL_ROOT/install/tec_ext_installer.
2. FTP the installer in binary mode to the location where it will be installed.
3. Open a command prompt.
4. Change to the directory at the chosen location.
5. Start the installation program, using this command:
   ```
   java -jar setup.jar
   ```
6. Follow the installation instructions.

Configuring the TEC extension for System Automation for Multiplatforms

To enable the launch-in-context feature, complete the following steps:
1. Optional: Adapt the configuration file isc.properties to your environment
2. Define a custom button for the TEC Event Console

See the following sections for a more detailed description of these steps.

Adapting the configuration file to your environment

This is an optional configuration step.

You can use the configuration file isc.properties to configure the host name and port of Integrated Solutions Console. The file is generated by the installer. If you
want to change the values specified at the installation, you can change the content of the configuration file. Depending on the TEC Event Console setup, this file is located in the following directory:

**TEC Event Console is installed as a Java Swing client or TEC event viewer embedded in TEP**

- The file resides in the same directory where the IBM TEC Extension for System Automation for Multiplatforms is installed.

**TEC Web console client**

- The file can be found in the directory `<was_root>/profiles/<server_name>/Tivoli/EEZ`

Example of a configuration file:

```plaintext
isc.server = e2eserver1
isc.port = 9060
```

`isc.server` is the hostname where the ISC runs which hosts the Tivoli System Automation operations console. `isc.port` is the port that is used to access the ISC.

**Defining a custom button for the Java version of the TEC Event Console (Java Swing Client) and the TEC event viewer embedded in TEP**

Perform these steps:

1. Open the Java version of the TEC Event Console.
2. Select **Windows > Configuration**. Navigate to the console where you want to define the button. Right click **Properties**.
3. Select the **Custom Button** entry from the list on the left side of the panel.
4. Click **Create Button**.
5. Enter a label for the button, for example, “Launch SA Console”, and the location of `EEZLaunchSA`.

   The syntax of the script is:

   For **Windows**:
   ```bash
   <path>EEZLaunchSA.bat [java home]
   ```

   Example:
   ```bash
   "C:\Program Files\IBM\TECExtension\EEZLaunchSA.bat" C:\IBM\tec_console\jre\bin\n   ```

   For **AIX and Linux**
   ```bash
   <path>EEZLaunchSA.sh [java home]
   ```

   where `<path>` is the directory in which the TEC Extension for System Automation was installed and the optional parameter `<java home>` is the Java home directory where the file `java.exe` can be found. This parameter must end with a `/` (slash) (Linux and AIX) or with `\` (backslash) (Windows).

   Java 1.3 or higher is required. If the path contains blanks it must be enclosed in quotes ("`).

6. Ensure that you have enabled “Event selection required for button action”.

**Defining a custom button for the Web version of the TEC Event Console**

For the definition of a Web custom button, the Java version of the TEC Event Console is required.
To define the button, do this:

1. Open the Java version of the TEC Event Console.
2. Select **Windows > Configuration**. Navigate to the console where you want to define the button. Right click **Properties**.
3. Select the **Web Custom Button** entry from the list on the left side of the panel.
4. Click **Create Button**.
5. Enter a label for the button, for example, “Launch SA Console”, and the URL of the Servlet:
   
   ```
   http://<isc_server>:<isc_port>/ibm/EEZUIWebClient/EEZIscUrlBuilderServlet
   ```

   where `<isc_server>` is the name of the host where the ISC runs which hosts the Tivoli System Automation operations console and `<isc_port>` is the port that is used to access the ISC.

   **Example:**

   ```
   http://e2etest:9060/ibm/EEZUIWebClient/EEZIscUrlBuilderServlet
   ```

6. Ensure that you have enabled “Event selection required for button action”.
Chapter 13. Setting up Tivoli Enterprise Portal launch-in-context support

If you are using both the System Automation operations console and Tivoli Enterprise Portal (TEP) for resource monitoring and management, you can set up launch-in-context support for Tivoli Enterprise Portal. Launch-in-context support enables users to launch Tivoli Enterprise Portal workspaces from the System Automation operations console with a single mouse click.

When Tivoli Enterprise Portal launch-in-context support is configured, a hyperlink becomes available on the General page for first-level automation domains and nodes on the System Automation operations console, allowing users to open the corresponding Tivoli Enterprise Portal workspaces with a single mouse click.

For launch-in-context support to work properly, a corresponding workspace must be available in Tivoli Enterprise Portal. This also means that the corresponding ITM agents for the objects that are displayed in the SA operations console must be installed, for example, the operating system agent for a displayed system, or the cluster agent for a MSCS cluster, or the corresponding agent for a z/OS sysplex.

The context that is used to find a Tivoli Enterprise Portal workspace is as follows:

<table>
<thead>
<tr>
<th>Selected object in the SA operations console</th>
<th>Context passed during launch</th>
<th>Object searched for to find TEP workspace</th>
</tr>
</thead>
<tbody>
<tr>
<td>z/OS domain</td>
<td>Sysplex name</td>
<td>managed_system_name=sysplex_name:*</td>
</tr>
<tr>
<td>non-z/OS first-level automation domain</td>
<td>Domain name</td>
<td>managed_system_name=domain_name:*</td>
</tr>
<tr>
<td>z/OS system</td>
<td>Node name</td>
<td>smfid=node_name</td>
</tr>
<tr>
<td>non-z/OS system</td>
<td>Node name</td>
<td>hostname=node_name</td>
</tr>
</tbody>
</table>

In particular, you have to ensure the following:

- For a non-z/OS domain, the first part of the managed system name as displayed in the TEP must match the domain name as configured for the automation adapter of this domain
- For a z/OS system, the system name must be identical to the SMFID
- For a non-z/OS system, the host name that is used in the TEP must match the node name as displayed in the SA operations console.

Here is a description how to change the host name that is used in the TEP:

1. Stop the OS Monitoring agent on the managed system.
2. When the corresponding entry in the TEP navigator goes offline, select the entry, right-click and select Clear offline entry from the context menu. The entry should disappear.
3. Open the configuration file for the monitoring agent, which is located in the following path:
   install_dir/config/env.config

   Add the following line:
   CTIRA_SYSTEM_NAME=<nodename>

   where <nodename> is the node name exactly as it is presented in the SA operations console.

   For Windows systems: Add the CTIRA_SYSTEM_NAME variable to the file KNTENV, which is located in install_dir/TMAITM6.

4. Restart the OS Monitoring agent on the managed system. The system should appear in the TEP navigator with the new name.

To set up launch-in-context support for Tivoli Enterprise Portal, complete the following steps in Integrated Solutions console (EEZAdministrator privileges are required):

1. Open Integrated Solution Console.

2. In the navigation tree, click System Automation for Multiplatforms > Settings > Tivoli Enterprise launch-in-context support.

3. In the fields on the page that appears, do this:
   Enable launch-in-context support for Tivoli Enterprise Portal
       Select to enable launch-in-context support.

   Server name
       Specify the name of the server on which Tivoli Enterprise Portal runs.

   Port number
       Specify the port number of the server on which Tivoli Enterprise Portal runs. The default port number is 1920.

4. Click OK to save the configuration.

Note: If the operations console is displayed while the TEP configuration is changed, select "Menu -> Refresh all" to pick up the changed settings in the current instance of the Operations Console.
Part 3. Configuring the end-to-end automation adapter

Chapter 14. Configuring the end-to-end automation adapter of IBM Tivoli System Automation for Multiplatforms ........................................ 95
Automating the end-to-end automation adapter ................................ 97
Invoking the end-to-end automation adapter configuration dialog .......... 98
Configuring the end-to-end automation adapter ................................. 99
   Adapter tab ........................................................................... 100
   Host using adapter tab ................................................................ 102
   Automation tab ......................................................................... 103
   Reporting tab .......................................................................... 106
   Security tab ............................................................................ 108
   Logger tab ............................................................................... 109
   Saving the configuration ............................................................ 111
Replicating the end-to-end automation adapter configuration files to other nodes in the domain .................. 113
Defining the end-to-end adapter automation policy ............................. 114
Removing the adapter automation policy ........................................... 115
Controlling the end-to-end automation adapter ................................. 115

Chapter 15. Silent configuration ..................................................... 117
Overview .................................................................................... 117
   Working in silent mode ............................................................. 117
   Tasks to be performed manually ................................................. 117
Invoking silent configuration .......................................................... 118
   Configuring MSCS on Windows Server 2008 ............................ 118
Silent mode input properties file ...................................................... 119
   Editing the input properties file ................................................. 119
Output in silent mode ................................................................... 120
Chapter 14. Configuring the end-to-end automation adapter of IBM Tivoli System Automation for Multiplatforms

The following sections describe how to configure the end-to-end automation adapter of System Automation for Multiplatforms.

You need to configure the end-to-end automation adapter when you use System Automation Application Manager or if you want to operate automated resources directly from an operations console. (For information about System Automation Application Manager, see IBM Tivoli System Automation Application Manager Administrator’s and User’s Guide.)

You can also configure the end-to-end automation adapter in silent mode using an input properties file. See Chapter 15, “Silent configuration,” on page 117 for more details.

Note: To use the System Automation for Multiplatforms operations console or end-to-end automation management, System Automation for Multiplatforms object names, for example, group names, resource names, and descriptions, must not contain the following characters: " (double quotation mark), ' (single quotation mark), ; (semicolon), $ (dollar sign), / (slash)

The online helps provided with the System Automation for Multiplatforms end-to-end automation adapter configuration dialog also provide useful information about using and configuring the end-to-end automation adapter.

Figure 4 on page 96 shows the environments in which the end-to-end automation adapter can operate and what needs to be configured for the end-to-end automation adapter in UNIX and Linux clusters:
Figure 4 shows that you have two adapter configuration alternatives, which are mutually exclusive:

- You can configure the adapter for the operations console of System Automation for Multiplatforms. In this case, the adapter is accessed directly by the operations console, without communicating via the IBM Tivoli System Automation Application Manager product. This operations console mode is referred to as *direct access mode*.

- If IBM Tivoli System Automation Application Manager is installed, you can configure the adapter for end-to-end automation management. This is required if you want to integrate a System Automation for Multiplatforms domain into the end-to-end framework of IBM Tivoli System Automation Application Manager. For more information on end-to-end automation management, refer to *IBM Tivoli System Automation Application Manager Administrator’s and User’s Guide*.

In Windows clusters, the same adapter configuration alternatives exist as for UNIX and Linux clusters. The adapter acts as the event publisher, as shown in Figure 5 on page 97.
Automating the end-to-end automation adapter

If the System Automation for Multiplatforms cluster consists of more than one node, the end-to-end automation adapter must be kept high-available. This will ensure that communication to end-to-end management or to the operations console stays alive during times of node outages or maintenance of nodes in the cluster.

High-availability does not need to be configured for the end-to-end automation adapter running on Windows. On the Windows platform, the adapter is implicitly high available after it has been started. This is due to the special implementation of the adapter as an event publisher (as illustrated in Figure 5).

On the Unix and Linux platforms, the end-to-end automation adapter must be automated as part of the automation policy of the System Automation for Multiplatforms cluster. In addition, the automation policy must also establish a unique alias IP address on the cluster node where the end-to-end adapter is currently running. This alias IP address is used by the event publishing function in System Automation for Multiplatforms to contact the adapter (as illustrated in Figure 4 on page 96). In case the adapter must be restarted on another cluster node, the automation policy must enforce the move of the alias IP address to the

Figure 5. Overview of the environment of the end-to-end automation adapter in Windows clusters
same node as well. The alias IP address must be requested from the system administrator and be implemented as an IBM.ServiceIP address. For more information on IBM.ServiceIP addresses, see *IBM Tivoli System Automation for Multiplatforms Administrator’s and User’s Guide*.

Care must be taken that the automation policy for the end-to-end automation adapter is part of each automation policy that will be active on the appropriate System Automation for Multiplatforms cluster running on Unix or Linux. Otherwise, communication to end-to-end management or to the operations console will be lost.

The automation policy for automating the end-to-end automation adapter can easily be defined by using the adapter configuration dialogs described in the following sections.

**Invoking the end-to-end automation adapter configuration dialog**

The end-to-end automation adapter can be configured with the `cfgsamadapter` utility.

**Notes:**

1. For UNIX and Linux, the `cfgsamadapter` utility is an X-Windows application and must be used from a workstation with X-Windows server capabilities. This could be one of your cluster nodes, if the X11 optional feature is installed on that node.

2. On AIX systems, the following requirement must be met for the end-to-end automation adapter installation: SSL/SSH packages must be installed and the sshd subsystem must be running to be able to complete the Replication task of the adapter configuration.

3. To use the System Automation for Multiplatforms adapter configuration dialog on UNIX and Linux, you must be logged on to the system with the user ID root or you must have write access to the directories `/etc/opt/IBM/tsamp/sam/cfg` and `/etc/Tivoli`.

   To use the adapter configuration dialog on Windows, log on with the same account used for installing System Automation for Multiplatforms (see "Setting up Windows user account access" on page 24).

4. On Windows, open a Korn Shell or an IBM Tivoli System Automation Shell (Start > All Programs > SA for Multiplatforms > IBM Tivoli System Automation Shell)
Issue the `cfgsamadapter` command to invoke the System Automation for Multiplatforms adapter configuration dialog. The main panel of the dialog is displayed:

![Tivoli System Automation for Multiplatforms Adapter Configuration Dialog](image)

Figure 6. Main panel of the end-to-end automation adapter configuration dialog.

**Note:** The Adapter high-availability panel does not apply to Windows because adapter high-availability does not need to be configured. Under Windows the adapter is implicitly highly available in the System Automation for Multiplatforms cluster.

This dialog lets you perform the following tasks:
1. Configure the end-to-end automation adapter (see page 99)
2. Replicate the end-to-end automation adapter configuration files to other nodes (see page 113)
3. (UNIX and Linux only.) Define the end-to-end automation adapter automation policy to create the resources required to automate the adapter (see page 114)
4. (UNIX and Linux only.) Remove the end-to-end automation adapter automation policy (see page 115)

**Configuring the end-to-end automation adapter**

On the main panel of the configuration dialog, click **Configure** to display the configuration tabs that are described in the following sections.

In the following description, the term **Host using the adapter** is used to refer to the system where either System Automation Application Manager or the System Automation for Multiplatforms operations console is installed.
Adapter tab

On the Adapter tab, you can configure the adapter host.

![Automation Adapter Configuration](image)

Figure 7. System Automation for Multiplatforms end-to-end adapter configuration.

Note: The Event port number field does not apply to Windows.

Fields and controls on the Adapter tab:

Host name or IP address

- Host name of the node where the adapter runs if the adapter is not automated.

  If you select to automate the adapter, the value is updated automatically with the value you specify in the field *Adapter IP address* on the Automation tab (see “Automation tab” on page 103). In this case, do not change the value in the field.

Request port number

- The port on which the adapter listens for requests from the host using the adapter. The default port is 2001.

Event port number

- The port on which the end-to-end automation adapter listens for events from the first level automation manager. The default port is 5539. The Event port number field does not apply to Windows.

Policy pool location

- The fully qualified name of the directory in which the XML policy files are stored. Any policy that you want to activate from the operations console must reside in this directory. On Windows, this must be entered as a Windows path, for example
Clicking **Advanced** lets you specify the adapter runtime behavior:

**Adapter stop delay**
The number of seconds by which the adapter stop is delayed to allow the adapter to properly deliver the domain leave event. The default value is 5. You may need to increase the value on slow systems. Valid values are 3 through 60.

**Remote contact activity interval**
The time period, in seconds, after which the adapter will stop if it was not contacted by the **host using the adapter**, which periodically contacts the adapter to check if it is still running. The default value is 360. If a value other than 0 is specified, the interval must be a multiple of the check interval.

When the value is set to 0, the adapter continuously runs and never stops. This is the recommended setting for adapters that are connected to a System Automation for Multiplatforms operations console, because otherwise the adapter will be stopped whenever the operations console is stopped.

**Initial contact retry interval**
The time period, in minutes, within which the adapter will attempt to contact the **host using the adapter** until it succeeds or the specified time has elapsed. The default value is 0, which means that the adapter will attempt to contact the **host using the adapter** indefinitely.

**EIF reconnect attempt interval**
The time period, in seconds, that the adapter will wait before it attempts to reestablish the connection to the **host using the adapter** after the connection was interrupted. The default value is 30.
Host using adapter tab

Use the Host using adapter tab to determine which host the adapter connects to and to specify the required information.

The end-to-end automation adapter can be configured to connect to one of these hosts:
- An end-to-end automation management host
- A System Automation for Multiplatforms operations console, which runs in direct-access mode

An adapter can only connect to a single host; the configurations are mutually exclusive.

Note: One of the following is required for the “Configure end-to-end management host” configuration alternative:
- System Automation Application Manager version 3.1 or higher.
- An end-to-end management host established by installing the end-to-end automation management component of System Automation for Multiplatforms version 2.3 or lower.

Fields and controls on the Host using adapter tab:

Configure end-to-end management host:

Host name or IP address
The name or IP address of the host on which System Automation Application Manager runs. The port number specified here must
match the port number specified as event port number when configuring the domain of System Automation Application Manager.

**Event port number**

The port on which System Automation Application Manager listens for events from the end-to-end automation adapter. The default port is 2002.

Configure direct access operations console:

**Host name or IP address**

The name or IP address of the host on which the operations console runs.

**Event port number**

The port on which the operations console listens for events from the end-to-end automation adapter. The default port is 2002.

**Automation tab**

**Note:** This tab does not apply to Windows because the adapter high-availability does not need to be configured. Under Windows the adapter is implicitly highly available in the System Automation for Multiplatforms cluster.

This tab lets you configure the adapter automation policy. This allows you to make the end-to-end automation adapter highly available, meaning that if the node on which the adapter runs breaks down, the adapter will be restarted on another node in the domain.

![Automation Adapter Configuration](image)

**Figure 9. Automating the adapter**
**Note:** All nodes where the adapter can run must be accessible using the same user ID and password.

Automate adapter in system automation domain
Select this check box if the end-to-end automation adapter is running in an RSCT peer domain with more than one node.

Query domain
Provided that the node on which the configuration dialog runs is in the RSCT peer domain, this queries the current automation policy. If the domain is online, all nodes that are online are shown in the **Defined nodes** table. This table provides the following information:

- **Defined node**
  If the RSCT peer domain is online, all nodes that are online are shown here
- **Automate on node**
  Indicates if the adapter is automated on this node.
- **Network interface**
  Name of the network interface used for requests from the host using the adapter.

The buttons at the bottom of the table let you perform the following:

- **Up**
  Moves the selected node one position up in the node sequence. The position determines the order in which automation selects the node on which the end-to-end automation adapter may run.
- **Down**
  Moves the selected node one position down in the node sequence. The position determines the order in which automation selects the node on which the end-to-end automation adapter may run.
- **Add**
  Displays the Add node for adapter automation panel which lets you define the name of the node to be added, determine if the node is to be added to automation of the adapter, and lets you enter the name of the network interface.
- **Remove**
  Removes the selected node from the list. This means that the end-to-end automation adapter must not be started on that node.
- **Change**
  Displays the Change node for adapter automation panel which lets you change the name of the node, add or remove the node from automation of the adapter, and lets you change the name of the network interface.

Automated resources prefix
This shows the prefix of the resource or resource groups names in the automation policy. The prefix can be changed.
It is restricted to ASCII characters; the following characters cannot be used:

- " (double quote), ' (single quote), ; (semicolon), $ (dollar), / (slash)

Note that if the end-to-end adapter policy has been defined using
the current prefix, you must remove this policy before changing the prefix.
For more information about defining the adapter automation policy, refer to “Defining the end-to-end adapter automation policy” on page 114.

**Adapter IP address**

Regardless on which node it runs, the end-to-end automation adapter uses this address to listen for requests and receive requests from the **host using the adapter**. It is an IP address which will be used as a ServiceIP resource to automate the adapter. You must obtain this IP address from your network administrator and it must neither be an actual host address nor localhost.

**Netmask**
The netmask that is used to define the ServiceIP resource in the adapter automation policy. Request a value from your network administrator.

**Note:** When you click **Save** after specifying an IP address in the field **Adapter IP address**, the following message may be displayed:

The message informs you that the IP addresses on the Adapter and Automation tabs differ and asks you to confirm that the IP address on the Adapter tab is to be updated with the value you specified on the Automation tab. Click **Yes** to confirm the change.
Reporting tab

Use the Reporting tab to configure the settings to collect reporting data in the System Automation Application Manager database.

After you configure the reporting database, you need to enable reporting with the command `samctrl -e JDBC`.

**Note:** The actual reporting functionality, like report generation, is provided as part of the System Automation Application Manager product. Therefore report data collection is generally only supported if you have configured the end-to-end automation management host of the System Automation Application Manager as the host using the adapter (see “Host using adapter tab” on page 102). If you have configured the host using the adapter for an operations console that directly accesses the adapter, all controls on this tab are disabled.

If you want to collect reporting data in the System Automation Application Manager’s DB2 database, select the Enable report data collection check box. Otherwise deselect the check box, which disables the entry fields on this tab.

**DB2 server name or IP address**

The host name or IP address of the DB2 server that hosts the reporting data database. Because the actual reporting functionality, like report generation, is provided as part of the System Automation Application Manager product, the DB2 server must be the same system where the System Automation Application Manager’s DB2 database is located.

If you omit this value, the value that you specify for the System Automation Application Manager host that is using the adapter in the Host using adapter tab is used as the default. If you are using a remote DB2 for
the System Automation Application Manager database, specify the host name or IP address of that remote DB2 system.

DB2 database name
The name of the System Automation Application Manager’s DB2 database where reporting data is stored.

DB2 schema name
The name of the schema used for the database tables where reporting data is stored. Change the value of this parameter only if the System Automation Application Manager’s DB2 database is located on a z/OS system where you might need to control the schema name to uniquely identify database tables in your DB2 installation.

DB2 port
The number of the port that is used to access the System Automation Application Manager’s DB2 database where reporting data is stored. The default port is 50001.

User ID
The user ID that is used to access the System Automation Application Manager’s DB2 database where reporting data is stored.

Password
The password that is used to access the System Automation Application Manager’s DB2 database where reporting data is stored.

Use the **Change** button to display a dialog that prompts you to specify and confirm the DB2 access password.

**Note:** Ensure that you update the password information whenever the DB2 database password is changed. If the password information does not match the DB2 database password, events will not be written to the database.
Security tab

This tab lets you configure the security for the interface between the end-to-end automation adapter and the end-to-end management host.

Select the Enable SSL check box if you want to use the Secure Socket layer (SSL) protocol. If checked, the following entry fields must be completed.

**Truststore**
Name of the truststore file used for SSL. The file name may contain multiple period characters. Click **Browse** to select a file.

**Keystore**
Name of the keystore file used for SSL. The file name may contain multiple period characters. Click **Browse** to select a file.

**Keystore password**
Password of the keystore file. The password is required if a keystore file was specified. Click **Change** to change the password.

**Note:** If the truststore is in a different file than keystore, the passwords for the files must be identical.

**Keystore alias**
Alias name of the certificate to be used by the server. If not specified, the keystore file must contain only one entry which is the one to be used.

Also select the **Enforce user authentication** check box to enable the authentication of the user with Pluggable Access Module (PAM).

**PAM Service**
(UNIX and Linux only.) The name of a file in the directory `/etc/pam` (SUSE), or an entry in file `/etc/pam.d` (Red Hat), or an
entry in file /etc/pam.conf (AIX and Solaris) that determines which checks are made to authenticate a user.

**Note:** If you are configuring the automation adapter for the Windows Subsystem for UNIX-based Applications (SUA) environment, authentication of users is not performed with the Pluggable Access Module. In this case the end-to-end automation manager or the operations console requests operations from the automation adapter on behalf of a configurable user ID. Check the check box to enable the authentication of this user ID by the operating system on which the automation adapter is running. If not checked, user authentication is bypassed.

**Logger tab**

Use the Logger tab to specify the settings for logging, tracing, and First Failure Data Capture. You can change the settings permanently or temporarily.

Note that the Logger tab always displays the values that are currently set in the configuration file.

![Logger tab](image)

*Figure 12. Adapter logging and trace information*

On the Logger tab, you can perform the following tasks:

**Change the settings permanently**

Perform these steps:

1. Make the required changes on the tab.
2. Click **Save**.

**Results:**

The settings in the configuration file are updated. You must restart the adapter for the changes to take effect.
Change the settings temporarily
Perform these steps after ensuring that the adapter is running:
1. Make the required changes on the tab.
2. Click Apply.

Results:
The new settings take effect immediately. They are not stored in the configuration file. If the adapter is not running, you receive an error message.

Revert to the permanent settings
If you changed the settings temporarily, perform the following steps to revert to the permanent settings defined in the configuration file, or when you are unsure which settings are currently active for the adapter:
1. Invoke the configuration dialog and open the Logger tab. The Logger tab displays the values that are currently set in the configuration file.
2. Click Apply to activate the settings.

Results:
The settings take effect immediately. If the adapter is not running, you receive an error message.

Controls and fields on the Logger tab:
Maximum log/trace file size
The file size in kilobytes.

Message logging level:
Error Logs messages on the error level.
Warning Logs messages on the error and warning levels.
Information Logs messages on the error, warning and informational levels.

Trace logging level:
Off Collects no trace information.
Minimum Collects trace information on the error level.
Medium Collects trace information on the error and warning levels.
Maximum Provides the message and trace logs and collects additional information on the error, warning, and informational level.

First failure data capture (FFDC) settings:
• Recording level:
  Off Collects no FFDC information.
  Minimum Provides the message and trace logs and collects additional information on the error level.
  Medium Provides the message and trace logs and collects additional information on the error and warning level.
  Maximum Provides the message and trace logs and collects additional information on the error, warning, and informational level.
• Disk space:
Maximum disk space
Specifies the maximum disk space in bytes used by FFDC traces which are written into the FFDC trace directory. The default space is 10485760 byte (10MB).

Space exceeded policy
Select what to do if the maximum disk space is exceeded.

- Message IDs:
  Filter mode Initiates the tracing of FFDC data depending on the message IDs listed in Message ID list.
  
  Message ID list:
  Specifies the message IDs which cause the tracing of the FFDC data. Wildcards like *E, meaning all error messages, are allowed.

**Saving the configuration**
Click **Save** on the configuration dialog to save your changes to the adapter configuration files. Upon completion, the configuration update status panel appears, showing the list of configuration files that were updated. This is depicted in Figure 13.

**Notes:**
1. When you changed the Adapter IP address on the Automation tab, the message described in the note on page 105 may be displayed. Click **Yes** to confirm the change and to save the new configuration to the configuration files.
2. When entries are missing or a value you have entered is out of range (for example, a port number), an error message is displayed.
3. If you made changes on the Automation tab, a message appears reminding you to launch the Define automation policy task.
4. If not noted otherwise, you must restart the adapter for the changes to become effective.

![Configuration Update Status](image)

*Figure 13. Configuration update status panel*
Replicating the end-to-end automation adapter configuration files to other nodes in the domain

Click **Replicate** on the main panel of the configuration dialog (see Figure 6 on page 99). The following panel is displayed:

![Replicate Configuration Files](image)

*Figure 14. System Automation for Multiplatforms replicate configuration files panel*

Use this window to distribute (replicate) the end-to-end automation adapter configuration itself or configuration updates to the remaining nodes in the RSCT peer domain:

1. Select the configuration files you want to replicate or click **Select all** to select all configuration files in the list.
2. Click **Select all** below the list of replication target nodes. This ensures that the adapter configuration is identical on all nodes.
3. Enter the user ID and password for the target nodes you want to replicate the files to.
4. Start the replication by clicking **Replicate**.

Replication may take a while. While the files are being replicated, the **Replicate** button is indented and grayed-out. When the replication is complete, the replication status of each configuration file is displayed.
Defining the end-to-end adapter automation policy

Note: The automation policy for the end-to-end adapter does not apply to Windows.

Clicking Define on the main panel of the configuration dialog (see Figure 6 on page 99) will create the resources with the resource name (Resource-/group prefix) as described on page 104. Note that if automated resources with the same name existed, they will be removed before creation of the new ones.

If you specified, for example, the resource-/group prefix name samadapter, the resource group samadapter-rg, and the resources and relationships shown in the following table will be created.

Table 41. Resources in the end-to-end automation adapter policy

<table>
<thead>
<tr>
<th>Resource name</th>
<th>Resource class</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>samadapter-rg</td>
<td>IBM.ResourceGroup</td>
<td>The resource group that comprises all automated resources.</td>
</tr>
<tr>
<td>samadapter</td>
<td>IBM.Application</td>
<td>The samadapter application itself.</td>
</tr>
<tr>
<td>samadapter-ip</td>
<td>IBM.ServiceIP</td>
<td>The virtual IP address on which the adapter can be accessed from the host using the adapter and the EIF event publisher.</td>
</tr>
<tr>
<td>samadapter-nieq</td>
<td>IBM.Equivalency</td>
<td>The available network interfaces on each node.</td>
</tr>
<tr>
<td>samadapter-on-ip</td>
<td>IBM.ManagedRelationship</td>
<td>The dependency of samadapter on the IP address.</td>
</tr>
<tr>
<td>samadapter-ip-on-nieq</td>
<td>IBM.ManagedRelationship</td>
<td>The dependency of the IP address on the network interface.</td>
</tr>
</tbody>
</table>

When you click Define, the button may stay indented for a while until the resources have been removed, the cluster is synchronized, the new resources are created, and the cluster is synchronized again. The dialog will not repaint after it has been covered and uncovered. Eventually, the results of the commands are displayed in a pop-up window.

Note: Activating a complete (not incremental) policy, or deactivating a policy for System Automation for Multiplatforms using the sampolicy command may remove existing definitions for the end-to-end adapter automation policy, or definitions that are referenced by an end-to-end automation policy. For example, the definition of a resource that is referenced in an end-to-end automation policy may be removed when a new policy for System Automation for Multiplatforms is activated.

Therefore, it is recommended that before you activate a modified policy file, you first save the currently active policy using the sampolicy -s command, edit the XML output file, and finally use the command sampolicy -u to update the active policy with the changed XML output file. When editing
the policy, you must make sure that all definitions for end-to-end adapter automation are preserved and that none of your changes has an undesired effect on the currently active end-to-end automation policy.

For detailed information, see the description of the **sampolicy** command in IBM Tivoli System Automation for Multiplatforms Reference.

---

**Removing the adapter automation policy**

**Note:** The automation policy for the end-to-end adapter does not apply to Windows.

You typically use the Remove function **before** you change the name prefix of the automated resources (see page 104). When the adapter is automated and you deselect the check box **Automate adapter in system automation domain** on the Automation tab, you receive a message reminding you to remove the automated resources for the adapter.

Clicking **Remove** on the main panel of the configuration dialog will remove the resources shown in Table 41 on page 114. If the end-to-end automation adapter is still running, it is stopped before the automated resources are removed.

When you click **Remove**, the button may stay indented for a while until resources have been removed and the cluster has been synchronized. Eventually, the results of the commands are displayed in a pop-up window.

---

**Controlling the end-to-end automation adapter**

You use the **samadapter** command to start, stop, and monitor the adapter.

**Table 42. End-to-end automation adapter command options**

<table>
<thead>
<tr>
<th>Command</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>samadapter status</td>
<td>Checks if the adapter is running and returns the RSCT return code for the operational state (OpState):</td>
</tr>
<tr>
<td></td>
<td>0 Unknown. The adapter status cannot be determined.</td>
</tr>
<tr>
<td></td>
<td>1 Online. The adapter is running.</td>
</tr>
<tr>
<td></td>
<td>2 Offline. The adapter is not running.</td>
</tr>
<tr>
<td>samadapter start</td>
<td>Starts the adapter if it is not running:</td>
</tr>
<tr>
<td></td>
<td>• If the adapter is automated, the command issues a request to start the adapter on the preferred node. The command returns when the request has been submitted.</td>
</tr>
<tr>
<td></td>
<td>• If the adapter is not automated, it is started on the node on which the command was issued.</td>
</tr>
<tr>
<td>samadapter stop</td>
<td>Stops the adapter if it is running:</td>
</tr>
<tr>
<td></td>
<td>• If the adapter is automated, the command issues a request to stop the adapter on the node where it is currently active. The command returns when the request has been submitted.</td>
</tr>
<tr>
<td></td>
<td>• If the adapter is not automated, it is stopped on the node on which the command is issued.</td>
</tr>
</tbody>
</table>
Chapter 15. Silent configuration

This chapter provides an overview of the silent mode of the end-to-end automation adapter configuration dialog and the tasks that you can perform in silent mode.

Overview

Using the configuration tool in silent mode allows you to configure the operations console running in direct access mode and the System Automation for Multiplatforms adapter without invoking the configuration dialog. This means that, for example, when configuring an AIX, Linux, or z/OS system, you do not need to have an X Window session available.

You can use the configuration tool in silent mode to configure the following components:

- The operations console
- The System Automation for Multiplatforms end-to-end automation adapter

You configure these components by editing configuration parameter values in an associated properties file. The parameter values in each properties file correspond directly to the values that you enter in the configuration dialog. See the following for more details about the configuration parameters:

- Chapter 6, “Configuring the operations console,” on page 65
- Chapter 14, “Configuring the end-to-end automation adapter of IBM Tivoli System Automation for Multiplatforms,” on page 95

You must first invoke the configuration tool to generate silent mode input properties files before you actually perform a configuration update.

Working in silent mode

To use the configuration tool in silent mode, you need to follow these steps for each component that you want to configure:

1. Generate or locate the silent mode input properties file, see “Silent mode input properties file” on page 119.
2. Edit the parameter values in the file, see “Editing the input properties file” on page 119.
3. Invoke the configuration tool in silent mode to update the target configuration files, see “Invoking silent configuration” on page 118.
4. If the configuration tool does not complete successfully, deal with any errors that are reported (see “Output in silent mode” on page 120) and re-invoke the configuration tool.

Tasks to be performed manually

After configuration has completed successfully, you might also need to manually perform some of the tasks that are invoked in dialog mode by clicking the corresponding push button in one of the launchpad windows.

If you have configured high availability for the end-to-end automation manager, you might also need to manually perform the following:

1. Replicate the configuration files.
You must replicate the configuration files to the other nodes in the System Automation for Multiplatforms domain whenever you have made changes to the configuration. To do this, you must run the configuration tool in silent mode with identical input properties files on each node in the domain.

2. Define the automation policy.
   Invoke the script `mksamadpter -p` to define the resources according to the values that you specified when configuring the adapter automation policy.

3. Remove the automation policy.
   Invoke the script `mksamadpter -r` to remove the resources that match the values that you specified when configuring the adapter automation policy.

### Invoking silent configuration

Because silent configuration is simply an alternative to the configuration dialog, silent mode is invoked using the same command. For each component you specify the option `-s` after the command to invoke the configuration tool.

You invoke silent configuration for each component as follows:

**The operations console running in direct access mode**

Perform the following step to invoke silent configuration:

- **Windows:** Change to the directory `C:\Program Files\IBM\tsamp\eez\bin` and enter the command: `cfgdirect -s`
- **AIX and Linux:** Enter the command: `cfgdirect -s`

**The System Automation for Multiplatforms end-to-end automation adapter**

To use the System Automation for Multiplatforms adapter configuration tool in silent mode, you must either be logged on to the system with the user ID `root` or you must have write access to the directories `/etc/opt/IBM/tsamp/sam/cfg` and `/etc/Tivoli`.

Enter the command `cfgsamadapter -s`

### Configuring MSCS on Windows Server 2008

All MSCS adapter configuration tasks must be performed with a domain user account satisfying these two requirements:

1. The domain user account must be member in the local Administrators group on all systems where the MSCS adapter service is planned to run.
2. The domain user account must be granted full control access over the Microsoft Server Cluster or Failover Cluster.

On Windows Server 2008, the silent configuration program must be started with Administrator privileges. Otherwise the configuration program is unable to write changed configuration files to the right location. Use the following procedure to obtain a command prompt with Administrator privileges which can be used to run the silent configuration program:

1. In the Windows Start menu, select "All Programs" -> "Accessories".
2. Right-click the entry named "Command Prompt".
3. In the context menu for "Command Prompt", select the entry "Run as administrator".
Silent mode input properties file

You generate silent mode input properties files from the values that are currently defined in the corresponding target configuration files. The advantages of this are:

- It allows you to generate properties files immediately after installation and before you perform any customization.
- If you customize with the configuration dialog and in silent mode, you can first generate an up-to-date input file before applying changes in silent mode.
- You can easily recover from the accidental deletion of the silent mode input properties file.

To generate a silent mode input properties file, use one of the following options when you invoke silent configuration:

- `g` Generate the input properties file only if it does not already exist.
- `gr` Generate the input properties file and replace it if it already exists.

Depending on the target configuration, Table 43 shows the silent input properties files that are generated if the `-g` or `-gr` option is specified.

<table>
<thead>
<tr>
<th>Component</th>
<th>Target configuration</th>
<th>Silent input properties file</th>
</tr>
</thead>
<tbody>
<tr>
<td>Operations console</td>
<td>cfgdirectui -s -g</td>
<td>&lt;config_dir&gt;/silent.directui.properties</td>
</tr>
<tr>
<td>System Automation for Multiplatforms adapter</td>
<td>cfgsamadapter -s -gr</td>
<td>&lt;config_dir&gt;/silent.samadapter.properties</td>
</tr>
</tbody>
</table>

Editing the input properties file

The input properties files that are generated for each of the components contain configuration parameter keyword-value pairs. To make it as easy as possible to switch between modes and to minimize errors when editing the properties file, the structure, terminology and wording that is used in the silent mode properties file is identical to the structure, terminology and wording of the configuration dialog.

The names of tabs (for example, Adapter) or buttons (for example, Advanced...) on the configuration dialog are used as identifiers in the properties file, for example:

```
# ==============================================================================
# ... Adapter...
# ==============================================================================
# ... Advanced
```

Each field name on the configuration dialog (for example, Request port number) is contained in the properties file, followed by a brief description and the keyword for that field, for example:

```
# ... Request port number
# Port of the automation adapter to receive requests from the host using
# the adapter
adapter-request-port=2001
```

To edit the properties file, simply locate the keywords whose values you want to change and overwrite the value.
If you set the value of a keyword to blank or comment out the keyword, the value that is currently defined in the target configuration file remains unchanged.

Notes:
1. If a keyword is specified several times, the value of the last occurrence in the file is used.
2. Each value must be specified on one single line.

Output in silent mode

Invoking the configuration tool in silent mode leads to output that closely matches the output that is displayed by the configuration dialog and consists of the following:

No update
This occurs if:
- All parameters in all target configuration files already match the specified silent input parameters

- No errors were detected when checking the silent input parameters
However, if additional information is available or any warning conditions were detected, the information and warnings are reported.
Successful completion
This indicates that:
• At least one of the target configuration files was updated (all configuration files and their update status are listed)

• No errors were detected when checking the silent input parameters

However, if additional information is available or any warning conditions were detected, the information and warnings are reported.

Unsuccessful completion
This indicates that:
• No target configuration file was updated
• Any errors that were detected when checking the silent input parameters are reported
Silent input properties file generation

This indicates that:

- No target configuration file was updated
- Target configuration values are used to generate the input file
Part 4. Appendixes
Appendix A. Troubleshooting the installation of the System Automation for Multiplatforms operations console

Use this section for troubleshooting problems you experience when installing or configuring the System Automation for Multiplatforms operations console.

Cleaning up from a failed installation

The installation can be canceled at any time. To recover from this situation, just run the installer again.

- Installation was canceled or failed before the installation was started: No cleanup is required.
- Installation was canceled or failed during the installation phase: Run the uninstaller to clean up files that were installed on disk.
- Installation was canceled during the configuration phase: Installation can be resumed.
- Installation failed during the configuration phase: Corrective actions may be needed before installation can be resumed.

If uninstall is desired rather than resume, no unconfiguration is necessary. Uninstall can be immediately called to remove all files from the disk. Uninstall can be run with the option -Dforce=true to be able to proceed even if errors are reported in the pre-uninstall phase.

Procedures for troubleshooting an installation

If the installation fails, the installation wizard displays an error message.

When an error occurs, immediately archive the installation log files (see “Using the log file collector utility” on page 126). This ensures that the original log files are retained, which is important should you need to contact IBM Support, and you can use the archive for your own troubleshooting activities.

An error occurred in the pre-installation phase

If an error occurs in the pre-installation phase, (that is, before the Install button was clicked), click the button Save installation log files on the error panel to collect all installation log files. The zip file will be created at the location specified.

An error occurred in the installation phase:

Typically, errors only occur in the installation phase if insufficient disk space is available.

An error occurred in the configuration phase:

Click Finish to finish the installation, then change to <EEZ_INSTALL_ROOT>/install and run the log file collector utility. The log zip will be created in the same directory. For details see “Using the log file collector utility” on page 126.
Known problems

**Attempt to connect to the System Automation for Multiplatforms operations console fails**

**Symptom:** The attempted connect to the System Automation for Multiplatforms operations console fails although it is installed correctly and the embedded version of WebSphere Application Server is running.

**Example:** When you try to open the administrative console by directing your browser to `http://<your_host_name>:<port>/admin` using the default port number 9060, you receive an error message indicating that the page cannot be opened.

**Explanation:** If any other installation of WebSphere Application Server (including installations of the embedded version) already exists on the system, the installation of the new embedded version automatically increments the port numbers it listens on.

**Solution:** Determine the ports on which the embedded version of WebSphere Application Server that was installed for System Automation for Multiplatforms operations console is listening. (For example, on Linux, after having started WebSphere Application Server, use the command `netstat -anp | grep java` to retrieve the list of ports that were opened by Java processes). Then direct the browser to the listening port of the administrative console.

**Using the log file collector utility**

When an error occurs, use the log file collector utility to collect the log files that were written during the installation. The utility generates an archive that you can use for your own troubleshooting activities and send to IBM Support if you cannot resolve the error.

Perform these steps to run the log file collector utility:

1. Change the directory to `<EEZ_INSTALL_ROOT>/install`. (See Table 27 on page 48 for an explanation of the variable `<EEZ_INSTALL_ROOT>`.)

2. Issue the following command:
   - **Windows**: `collectinstallerlogs.bat`
   - **AIX/Linux**: `collectinstallerlogs.sh`

   The command can be invoked with the option `-D` to only copy all logs (in case Java is not available); the directory tree created can then be packed manually.

   Name of the file that is created by the utility: `eezinstallerlogs_<timestamp>.zip`

   On AIX or Linux systems, you can invoke the command with the option `tar` to use `tar` rather than `jar` for packing.

   The resulting archive has the following directory structure:
   - `EEZ_logs`
   - `cfg`: configuration files (for the automation engine, etc.)
   - `logs`: `eezinstall.log`, etc.
   - `sh / bat` (Linux/AIX: `sh`; Windows: `bat`): scripts used by installer
   - `WAS_logs`
   - `logs`: general WAS server logs
   - `<server name>`: logs for the selected WebSphere Application Server
Gathering information for IBM Support

If you cannot resolve an installation problem, send the installation log file archive to IBM support (see “Using the log file collector utility” on page 126).
Appendix B. Troubleshooting the installation of System Automation for Multiplatforms on Windows

Installing without requirements check

If the requirements check in the installer fails but you are absolutely certain that you have met all requirements for the product, you can override this check. Call the installer with the option `-Dnoprereqcheck=true` (for example, `setup.exe` -Dnoprereqcheck=true). Note that this option only exists to overcome possible problems in the requirements checking procedure and is not recommended to be used for normal operation. The requirements check is there to prevent an installation on a wrongly configured system and to provide a hint as to which requirement was not met. If you switch it off, it can not be guaranteed that System Automation for Multiplatforms will work correctly on your system.

Where to find installation log files

The installation log files can be found in `%APPDATA%\IBM\SA for Multiplatforms\InstallLog`. Each installation log is named InstallLog_<date>_<time>.txt and corresponding data files are compressed in InstallLog_<date>_<time>.zip. If you have a problem with the installation of System Automation for Multiplatforms on Windows and you contact IBM Support for help, send these files along with your request.

Uninstalling without check

The System Automation for Multiplatforms uninstallation wizard checks whether the system is a member of a running automation domain. If yes, uninstalling System Automation for Multiplatforms will affect the automation domain and automated resource. For this reason, the uninstallation wizard will deny uninstallation.

The uninstallation wizard can be started on the command line with option -Dforce=true, to bypass all checking. This option should not be used for normal operation. The purpose of this option is to enable uninstallation in error situations where the check would otherwise prevent uninstallation. If you use this option, a running automation domain as well as automated resource running in this automation domain may fail.

Perform the following steps to start the uninstallation wizard with option -Dforce=true from the command line:

1. 1. Select Start > All Programs > Accessories > Command Prompt.
2. 2. Run the following command where `<PRODUCT_DIR>` is the fully qualified product directory you specified during installation:

   `<PRODUCT_DIR>\Base\Uninstaller\Uninstall SA for Multiplatforms.exe" -Dforce=true`

Uninstallation hang

When performing an uninstallation of System Automation for Multiplatforms on Windows, the uninstaller may be unable to stop and remove the System Resource Controller service from the system. If this happens, the product cannot be fully removed from the system. The System Resource Controller service remains in the
Stopping state but never stops. The uninstaller is not able to detect this problem and finishes without an error indication. A subsequent re-installation of System Automation for Multiplatforms on Windows will fail.

Perform the following steps to manually complete the uninstallation of System Automation for Multiplatforms on Windows:

1. Check that the System Resource Controller service remains in the Stopping state. If the System Resource Controller service is NOT in the Stopping state, this solution description does not apply.

2. Ensure that the SUA process named srcmstr is stopped. The following SUA Korn shell command can be used to determine whether the process is still running:
   ```
   ps -e -o pid,cmdnam -X unix | grep srcmstr
   ```
   The following SUA Korn shell command can be used to stop the process where <pid> is the process id of the srcmstr process:
   ```
   kill -KILL <pid>
   ```

3. Issue the following command in SUA Korn shell to stop the System Resource Controller service:
   ```
   service stop 'System Resource Controller'
   ```

4. Issue the following command in SUA Korn shell to remove the 'System Resource Controller service:
   ```
   service remove 'System Resource Controller'
   ```

5. Manually remove the following files using the 'rm' command in SUA Korn shell:
   - `rm /sbin/srcd /sbin/srcmstr /sbin/srcsemid /sbin/srcsetsm`
   - `rm -r /etc/usr/lib/libsrc/objrepos`
   - `rm /usr/lib/libplatform.so`
   - `rm /usr/lib/libsrc.so /usr/lib/libsrcdb.so`

6. Open the Windows Registry Editor by issuing command `regedt32.exe`. In the Registry Editor window, navigate to registry key `HKLM\SOFTWARE\IBM\TSA\Version`. Remove this registry key.
Appendix C. Using IBM Support Assistant

IBM Support Assistant is a free, stand-alone application that you can install on any workstation. IBM Support Assistant saves you time searching product, support, and educational resources and helps you gather support information when you need to open a problem management record (PMR) or Electronic Tracking Record (ETR), which you can then use to track the problem.

You can then enhance the application by installing product-specific plug-in modules for the IBM products you use. The product-specific plug-in for System Automation for Multiplatforms provides you with the following resources:

- Support links
- Education links
- Ability to submit problem management reports

Installing IBM Support Assistant and the System Automation for Multiplatforms plug-in

To install the IBM Support Assistant V3.0, complete these steps:

2. Download the installation package for your platform. Note that you will need to sign in with an IBM user ID and password (for example, a MySupport or developerWorks® user ID). If you do not already have an IBM user ID, you may complete the free registration process to obtain one.
3. Uncompress the installation package to a temporary directory.
4. Follow the instructions in the Installation and Troubleshooting Guide, included in the installation package, to install the IBM Support Assistant.

To install the plug-in for System Automation for Multiplatforms, complete these steps:

1. Start the IBM Support Assistant application. IBM Support Assistant is a Web application that is displayed in the default, system configured Web-browser.
2. Click the Updater tab within IBM Support Assistant.
3. Click the New Products and Tools tab. The plug-in modules are listed by product family.
5. Select the features you want to install and click Install. Be sure to read the license information and the usage instructions.
6. Restart IBM Support Assistant.
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Index

A
automation adapter 95

C
character sets
supported by System Automation for Multiplatforms 13
configuring non-English environment for System Automation for Multiplatforms on Windows 37

e2einstallerlogs
log file collector utility 126
end-to-end automation adapter 95
adapter tab 100
automating the adapter 103
automation policy
removing 115
configuration 99
configuration for the operations console 65
defining the policy 114
logger tab 109
replicating configuration files 113
reporting tab 106
security tab 108
silent configuration 117
UNIX and Linux clusters 96
Windows clusters 97
end-to-end automation manager silent configuration 118

E
e2einstallerlogs
log file collector utility 126
end-to-end automation adapter 95
adapter tab 100
automating the adapter 103
automation policy
removing 115
configuration 99
configuration for the operations console 65
defining the policy 114
logger tab 109
replicating configuration files 113
reporting tab 106
security tab 108
silent configuration 117
UNIX and Linux clusters 96
Windows clusters 97
end-to-end automation manager silent configuration 118

F
fix packs
installing 77

I
installation directory 47
installing
service fix packs 77
System Automation for Multiplatforms on UNIX or Linux 9
System Automation for Multiplatforms on Windows 19
System Automation for Multiplatforms on Windows in silent mode 34
System Automation for Multiplatforms on Windows Server x64 Edition 26
installing (continued)
System Automation for Multiplatforms on Windows with the graphical installation program 27
installing service
System Automation for Multiplatforms 77
System Automation for Multiplatforms operations console 77
installing System Automation for Multiplatforms 3
initial configurations 7
uninstalling service 82
license
installing 12
Try & Buy, upgrading 12
log file collector utility 126

M
migrating
System Automation for Multiplatforms 14
migrating System Automation for Multiplatforms
completing the migration 16
migrating a node step by step 15
migrating an entire domain 15

N
non-English environment, configuring System Automation for Multiplatforms on Windows 37

O
operations console
CDs and archives 3
configuration for direct access mode 65
configuration script 65
Configuring the end-to-end automation adapter 65
disk space requirements 46
installation parameters 49
installation steps 52
installing service 77
packaging
CDs and archives 43
planning the configuration 65
product prerequisites 45
troubleshooting 125

R
release notes 77
RSCTMM 33
RSCTNLV 33

S
SAMMM 33
SAMNLV 33
service
installing 77
silent configuration
end-to-end automation manager 118
supported platforms
UNIX and Linux 4
System Automation for Multiplatforms
installation prerequisites
Korn shell 6
installing 3
installing on UNIX or Linux 9
installing service 77
migrating 14
operations console
installing 52
supported platforms 45
uninstalling 73
preparing for installation 6
supported languages 13
supported UNIX and Linux platforms 4
uninstalling 67
upgrading on UNIX or Linux 9
System Automation for Multiplatforms on UNIX and Linux
planning for the installation 3
System Automation for Multiplatforms on Windows
planning for the installation 3
System Automation for Multiplatforms on Windows
configuring non-English environment 37
configuring the Subsystem for UNIX-based Applications 22
installation prerequisites 20
installation, changes to default profile 35
installation, line endings 36
installing 19
installing hotfixes 22
installing in silent mode 34
installing Server x64 Edition 26
installing the Subsystem for UNIX-based Applications 21
installing the Utilities and SDK package 21
installing with the graphical installation program 27
load on nodes in Windows clusters 21
manual license installation 37
planning for installation 19
post-installation tasks 37

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135
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