IBM

IBM Systems

IBM Director Upward Integration Modules Installation Guide

Version 5.10

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> **Note**
>
> Before using this information and the product it supports, read the information in Appendix C, "Notices."

Contents

Figures

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About this book

This book provides instructions for installing and integrating IBM® Director Upward Integration Modules (UIM) into the following software:

- IBM Tivoli® NetView®
- IBM Tivoli Management Environment®
- HP OpenView
- Microsoft® Operations Manager
- Microsoft System Management Server (SMS)

Upward integration modules (UIMs) enable third-party workgroup and enterprise systems-management products to interpret and display data that is provided by Level-1 and Level-2 managed systems. The UIMs provide enhancements to the systems-management products that you can use to start IBM Director Agent from within the systems-management platform, collect inventory data, view IBM Director event notifications, and for some UIMs, distribute IBM Director managed system software packages.

With the UIMs, you can use your systems-management software to manage systems installed with IBM Director Core Services or IBM Director Agent software. You can use IBM Director Agent software to:

- Gather detailed inventory information about your systems, including operating system, memory, network adapters, and hardware.
- Track your systems with features such as power management, event log, and system monitor capabilities.

IBM Director Agent uses some of the latest systems-management standards, including Common Information Model (CIM), Web-Based Enterprise Management (WEBM) and Extensible Markup Language (XML), to provide compatibility with your existing enterprise-management software.

IBM Director enables you to make the most of your existing enterprise management structure by upwardly integrating with Tivoli Management Framework, Tivoli NetView, HP OpenView, and Microsoft Systems Management Server (SMS), and Microsoft Operations Manager (MOM).

Note: The documentation for IBM Director Upward Integration Module for CA Unicenter is included with the CA Unicenter UIM.

Conventions and terminology

These notices are designed to highlight key information:

Note: These notices provide important tips, guidance, or advice.

Important: These notices provide information or advice that might help you avoid inconvenient or difficult situations.

Attention: These notices indicate possible damage to programs, devices, or data. An attention notice appears before the instruction or situation in which damage can occur.

Related information

This topic provides links to additional information related to IBM Director.

IBM Director resources on the World Wide Web

The following Web pages provide resources for understanding, using, and troubleshooting IBM Director and other systems-management tools.

IBM Director information center
> publib.boulder.ibm.com/infocenter/eserver/
> v1r2/topic/diricinfo/fqm0_main.html

> Updated periodically, the IBM Director information center contains the most up-to-date documentation available on a wide range of topics.

IBM Director Web site on ibm.com®
> www.ibm.com/servers/eserver/xseries/
> systems_management/ibm_director/

> The IBM Director Web site on ibm.com has links to downloads and documentation for all currently supported versions of IBM Director. Information on this site includes:
> * IBM Director 5.10 - downloads and documentation
> * IBM Director 4.22 - downloads and documentation
> * IBM Director 4.22 Upward Integration Modules (UIMs) - downloads and documentation
> * IBM Director 4.21 - downloads and documentation
> * IBM Director 4.20 - downloads and documentation
> * IBM Director Hardware and Software Compatibility document - lists supported @server and IBM xSeries® systems, as well as all supported operating systems. It is updated every 6 to 8 weeks.
> * Printable documentation for IBM Director - available in Portable Document Format (PDF) in several languages

IBM Systems Software information center
> www.ibm.com/servers/library/infocenter/

> This Web page provides information about IBM Virtualization Engine™, IBM Director, and other topics.

IBM ServerProven® page
> www.ibm.com/pc/us/compat/index.html

> This Web page provides information about IBM xSeries, BladeCenter®, and IntelliStation® hardware compatibility with IBM Director.

IBM Systems Management Software: Download/Electronic Support page
> www.ibm.com/servers/eserver/xseries/
> systems_management/ibm_director/

> Use this Web page to download IBM systems-management software, including IBM Director. Check this Web page regularly for new IBM Director releases and updates.

IBM Servers
> www.ibm.com/servers/

This Web page on ibm.com links to information, downloads, and IBM Director extensions such as Remote Deployment Manager, Capacity Manager, Systems Availability and Software Distribution (Premium Edition) for IBM servers:
- IBM BladeCenter
- IBM iSeries™
- IBM pSeries®
- IBM xSeries
- IBM zSeries®

IBM Redbooks™

www.ibm.com/redbooks/

You can download the following documents from the IBM Redbooks Web page. You also might want to search this Web page for documents that focus on specific IBM hardware; such documents often contain systems-management material.

Note: Be sure to note the date of publication and to determine the level of IBM Director software to which the Redbooks publication refers.

- *Creating a Report of the Tables in the IBM Director 4.1 Database* (TIPS0185)
- *IBM Director Security* (REDP-0417-00)
- *IBM eServer™ BladeCenter Systems Management with IBM Director V4.1 and Remote Deployment Manager V4.1* (REDP-3776-00)
- *Implementing Systems Management Solutions using IBM Director* (SG24-6188)
- *Integrating IBM Director with Enterprise Management Solutions* (SG24-5388)
- *Managing IBM TotalStorage® NAS with IBM Director* (SG24-6830)
- *Monitoring Redundant Uninterruptible Power Supplies Using IBM Director* (REDP-3827-00)

Remote Supervisor Adapter

Remote Supervisor Adapter overview
www.ibm.com/support/docview.wss?uid=psg1MIGR-4UKSML

This Web page includes links to the *Remote Supervisor Adapter User's Guide* and *Remote Supervisor Adapter Installation Guide*.

Remote Supervisor Adapter II overview
www.ibm.com/support/docview.wss?uid=psg1MIGR-50116

This Web page includes information about the Remote Supervisor Adapter II.

Other documents

For planning purposes, the following documents might be of interest:
- *Planning and installation guide - IBM eServer BladeCenter (Type 8677)*
- *IBM Management Processor Command-Line Utility User's Guide version 3.00*

How to send your comments

Your feedback is important in helping to provide the most accurate and highest quality information. If you have any comments about this book or any other IBM Director publication, use the form for reader's comments is provided at the back of this publication. If the form has been removed, you may address your comments to:

International Business Machines Corporation
Design & Information Development
Department CGFA
PO Box 12195
Research Triangle Park, NC 27709-9990
U.S.A.

What's new in release 5.10

This topic provides information about new features and enhancements in the IBM Director 5.10 upward integration modules.

Web-based (Information Center) product documentation

New in version 5.10, the IBM Director information center is a comprehensive, browser-based information system that provides easy access to the most up-to-date product information available. Updated periodically, the IBM Director information center contains:

- Assistance for the tasks that users must perform
- Conceptual information
- Reference for commands, extensions, icons, security, and many other topics
- Usage scenarios for IBM Director

To find information, users can search, browse the contents, follow links from one topic to related topics, and print the topics they want to read offline. The IBM Director information center is available at publib.boulder.ibm.com/infocenter/eserver/v1r2/topic/diricinfo/fqm0_main.html.

Upward integration enhancements

IBM Director 5.10 includes the following enhancements to the upward integration modules (UIM):

- Support for Microsoft Operations Manager (MOM)

Discontinued features

These upward integration module features have been discontinued:

- Microsoft Management Console (MMC)

Architectural support for more systems

IBM Director 5.10 contains a significant change in the product architecture. Upward integration modules (UIMs) now can manage two different types of managed systems: Level-1 and Level-2. *Level-1 managed systems* are systems that have Level 1: IBM Director Core Services installed. *Level-2 managed systems* are systems that have Level 2: IBM Director Agent installed. Depending on the UIM, the support that the UIM provides for both managed systems is the same.

Additional systems supported for IBM Director Agent installation

xSeries servers and Intel-compatible systems (32-bit operating systems)
- Novell NetWare, version 6.5
- VMware ESX Server, version 2.5, with the following guest operating systems:
  – Red Hat Enterprise Linux AS, ES, and WS, version 3.0 (Update 3 required)
  – SUSE LINUX Enterprise Server 8 for x86 (Service Pack 3 required)
  – SUSE LINUX Enterprise Server 9 for x86
  – Windows 2000, Advanced Server and Server Editions (Service Pack 3 or later required)

- – Windows Server 2003, Enterprise, Standard, and Web Editions (Service Pack 1 required)
- – Windows XP Professional Edition (Service Packs 1 and 2 required)
- VMware ESX Server, version 2.51, with the following guest operating systems:
  - – Red Hat Enterprise Linux AS, ES, and WS, version 3.0 (Update 4 required)
  - – SUSE LINUX Enterprise Server 8 for x86 (Service Pack 3 required)
  - – SUSE LINUX Enterprise Server 9 for x86 (Service Pack 1 required)
  - – Windows 2000, Advanced Server and Server Editions (Service Pack 3 or later required)
  - – Windows Server 2003, Enterprise, Standard, and Web Editions (Service Pack 1 required)
  - – Windows XP Professional Edition (Service Packs 1 and 2 required)
- Microsoft Virtual Server 2005 with the following guest operating systems:
  - – Windows 2000, Advanced Server and Server Editions (Service Pack 3 or 4 required)
  - – Windows Server 2003, Enterprise, Standard, and Web Editions
- Microsoft Virtual Server 2005 (Service Pack 1) with the following guest operating systems:
  - – Windows 2000, Advanced Server and Server Editions (Service Pack 3 or 4 required)
  - – Windows Server 2003, Enterprise, Standard, and Web Editions
  - – Windows Server 2003, Enterprise, Standard, and Web x64 Editions
  - – Windows XP Professional Edition (Service Pack 2 required)
  - – Windows XP Professional x64 Edition

xSeries servers and Intel-compatible systems (64-bit operating systems)
- Red Hat Enterprise Linux AS, version 4.0, for Intel Itanium
- Windows Server 2003, Datacenter, Enterprise, Standard, and Web x64 Editions
- Windows Server 2003, Datacenter and Enterprise 64-bit Itanium Editions

iSeries™ servers
- Red Hat Enterprise Linux AS, version 4.0, for IBM POWER

iSeries servers with xSeries options

iSeries server installations can use the following xSeries options:
- Integrated xSeries Server (ISX)
- xSeries servers that are attached to the iSeries servers via the Integrated xSeries Adapter (IXA)

Using these xSeries options, you can install IBM Director Agent and IBM Director Core Services on the following operating systems:
- Red Hat Enterprise Linux AS and ES, version 3.0, for Intel x86
- Red Hat Enterprise Linux AS and ES, version 4.0, for Intel x86
- SUSE LINUX Enterprise Server 8 for x86
- SUSE LINUX Enterprise Server 9 for x86
- Windows 2000, Advanced Server and Server Editions

- Windows Server 2003, Enterprise, Standard, and Web Editions

Note: Whether these operating systems are supported in your iSeries environment depends on the following criteria:
- The Integrated xSeries Server (ISX) installed in the iSeries server
- The xSeries server that is attached to the iSeries server via the Integrated xSeries Adapter (IXA)
- The release of i5/OS or OS/400 installed on the iSeries server

For more information, see *IBM Director Hardware and Software Compatibility*. You can download this document from www.ibm.com/servers/eserver/xseries/ systems_management/ibm_director/.

System p5 and pSeries servers
- Red Hat Enterprise Linux AS, version 3.3, for IBM POWER
- Red Hat Enterprise Linux AS, version 4.0, for IBM POWER

System z9 and zSeries servers
- Red Hat Enterprise Linux AS, version 4.0, for IBM System z9, zSeries and S/390
- SUSE LINUX Enterprise Server 9 for IBM System z9, zSeries and S/390

Part 1. IBM Director UIM for HP Openview

Chapter 1. IBM Director UIM for HP OpenView

With the IBM Director UIM for HP OpenView, you can use your systems-management software to manage systems installed with IBM Director Core Services or IBM Director Agent software.

When you install IBM Director UIM for HP OpenView, the following functions are added to the HP OpenView environment:

- **Event notification**: Provides notification of events that occur on managed systems on which IBM Director Agent is installed. These notifications are delivered using SNMP traps.
- **Inventory**: Scans inventory using an inventory plug-in that starts a Java™ application that collects the inventory from IBM Director Agent, including Asset ID™ data, BIOS details, and lease information.
- **Web browser launch**: Provides Web browser capability from within the HP OpenView environment so that you can display and manage real-time asset and health information about managed systems on which IBM Director Agent is installed.
- **Discovery**: Provides SNMP-based discovery of managed systems on which IBM Director Agent is installed.

   Note: You must configure the SNMP community name of the managed system.

Chapter 2. Integrating IBM Director UIM for HP OpenView

IBM Director provides an upward integration module that you integrate into HP OpenView.

HP OpenView installation requirements

Operating system and application requirements

IBM Director UIM for HP OpenView can be installed on systems running these operating systems and applications:

- HP OpenView Network Node Manager
  - Version 6.2 with patches NNM_00932 and NNM_00983 installed
  - Version 6.4 with patches NNM_00973 and NNM_00981 installed
- Microsoft Windows® 2000
- Red Hat Enterprise Linux® AS, version 2.1

IBM Director software prerequisites

IBM Director UIM for HP OpenView requires you to install either Level 1: IBM Director Core Services or Level 2: IBM Director Agent on the systems that you want to manage. For a list of supported operating systems, see Appendix A, "Operating systems supported by Level-2, Level-1, and Level-0 managed systems," on page 81

Note:

1. IBM Director UIM for HP OpenView does not support managed systems running 64-bit versions of IBM Director Agent.
2. IBM Director UIM for SMS also supports IBM Director Agent 4.10 and later. For a list of supported operating systems, refer to the *IBM Director 4.x Upward Integration Module Installation Guide*.

The following additional installation requirements must be met:

- If you want to install database support, you must have installed and configured Microsoft SQL Server 2000 before you install IBM Director UIM for HP OpenView. For more information, see "Configuring the database source" on page 12.

  Note: There is no database support for Linux.
- For Level 1: IBM Director Core Services and Level 2: IBM Director Agent discovery, you must have Windows SNMP support enabled on the system, and the SNMP option must be enabled before you install IBM Director Agent on the system.
- (Windows only) To access the Web browser function or to receive health alerts, you must enable these functions when you install Level 1: IBM Director Core Services and Level 2: IBM Director Agent on the system.

Limitations

When you install IBM Director UIM for HP OpenView, consider the following limitations:

- The IBM Director UIM for HP OpenView version 4.21 is required for support of Director Agent version 4.21 or later.
- After installation of IBM Director UIM for HP OpenView, HP OpenView might not display the interface of Director Agent nodes. Complete the following steps to add the interfaces to the Director Agent nodes:

  1. On the HP OpenView server, from a command prompt, type the following command and press **Enter**:

     ```
     ovstop netmon
     ```

  2. From a command prompt, type the following command and press **Enter**:

     ```
     ovtopofix -chn
     ```

  3. From a command prompt, type the following command and press **Enter**:

     ```
     ovtopofix -a
     ```

  4. From a command prompt, type the following command and press **Enter**:

     ```
     ovstart netmon
     ```

- Before you can save IBM Director inventory data to the SQL Server database that is used by OpenView, you must create a certificate. The UIM uses the certificate to authenticate communication. To create a certificate in OpenView, complete the following steps:

  1. From the OpenView menu bar, click **Tools > Director Agent > Create Certificate**. The Client Authentication window opens.
  2. In the **Username** field, type a valid user name.
  3. In the **Password** field, type the password.
  4. In the **Re-Type Password** field, type the password again.
  5. Click **OK**.

  After the certificate is created, you can save the IBM Director inventory to the database.

- If you compile the MIBs using the HP OpenView MIB compiler, you must use the MIBs that are provided in IBM Director 5.10.
- (Managed systems running Linux only) You must install and configure net-snmp5.2.1 for HP OpenView for discovery, inventory, and event notification of the managed system. For more information, see *IBM Director Installation and Configuration Guide*.
- Discovery, inventory, and event notification are supported on all client/server operating system combinations for HP OpenView, with one exception: an HP OpenView server that is installed on Windows NT® cannot collect inventory data from a system that uses Windows XP.
- When you display inventory data for multiple video adapters and the inventory data is not retrieved correctly, the problem is with CIM. If you try the wbemtest tool, you still do not retrieve the correct information for multiple video adapters.
- With SMBIOS 2.3.3:
  - PCI-X slots do not report the correct connector type. Retrieved inventory data displays the connector type as Unknown for all PCI-X slots.
  - Some multi-threaded processors might report processor details incorrectly. For these processors, the inventory function reports two processors, one with the correct information and the other with no information.

- With older versions of SMBIOS, ISA slots do not report current usage correctly. For these systems, current usage for ISA slots is reported as 7.
- Systems that are running Windows 2000 Professional Edition with S3 Trio 3D video adapters might not report the correct amount of adapter RAM. Adapter RAM is reported as 0.

Installing IBM Director UIM for HP OpenView on Windows

This topic provides the steps for installing the HP OpenView UIM on a system running Windows.

After you install the UIM for HP OpenView, you must configure a database source if you want to collect inventory data. See "Configuring the database source" on page 12 for instructions.

Complete the following steps to install IBM Director UIM for HP OpenView:

1. Go to the IBM Director Support Web site at www.ibm.com/servers/eserver/xseries/ systems_management/ibm_director/ and download the IBM Director UIM for HP OpenView executable file, (dir5.10_uim_openview.exe) and the readme file (dir5.10_uim_openview.txt) to a temporary directory.
2. Stop Network Node Manager.
3. Double-click dir5.10_uim_openview.exe. The InstallShield Wizard starts, and the "Preparing to Install" window opens. When the Windows Installer is configured, the "Welcome to the InstallShield Wizard for IBM Director UIM for HP OpenView" window opens.
4. Click **Next**. The "License agreement" window opens.
5. Click **Yes**. The "IBM Director UIM for HP OpenView" window opens.
6. Read the information on the screen and click **Next**. The "User information" window opens. By default, the fields are already completed.
7. Complete the following steps to change the default information:
   a. In the **User Name** field, type the name of the OpenView administrator.
   b. In the **Company Name** field, type the name of your company.
   c. If you want to enable access only for the current operating-system account, click **Only for me (**_username_**)**, where _username_ is automatically substituted. Otherwise, click **Anyone who uses this computer (all users)**.
8. Click **Next**. The "Installation type" window opens.
9. Click the type of installation that you want.

   Typical
   > Installs IBM Director UIM for HP OpenView and the IBM Director UIM for HP OpenView help files.

   Compact
   > Installs IBM Director UIM for HP OpenView only.

   Custom
   > Installs IBM Director UIM for HP OpenView; and enables you to select whether to install the IBM Director UIM for HP OpenView help files and database support.

10. Click **Next**. If you specified a typical or compact installation, the "Setup summary" window opens; go to step 12 on page 8. If you specified a custom installation, the "Feature selection" window opens; go to step 11 on page 8.

11. Select the IBM Director features that you want to install and click **Next**. If you want to install database support, select the **Database support** check box.

   Note: To use this option, you already must have installed and configured Microsoft SQL Server 2000.

12. In the "Setup summary" window , review the setup summary. Click **Back** to make a change to the setup. Otherwise, click **Next**. The "Setup Status" window opens.

   When the installation is completed, the "Restart" window opens.

13. Click **Finish** to restart the system. The system restarts.

14. Start Network Node Manager. The Root window opens and the error log containing error messages about MIBs for IBM Director event alerts is displayed.

15. Click **Edit** → **Clear**; then, close the window.

16. Start Network Node Manager again. The problem is corrected, and the error log is not displayed.

Installing IBM Director UIM for HP OpenView on Linux

This section provides the instructions for the installation of IBM Director UIM for HP OpenView on a system running Linux.

Complete the following steps to install IBM Director UIM for HP OpenView:

1. Go to the IBM Director Support Web site at www.ibm.com/servers/eserver/xseries/ systems_management/ibm_director/ and download the IBM Director UIM for HP OpenView for Linux file (dir5.10_uim_openview_redhatlinux.tar.gz) and the readme file (dir5.10_uim_openview_linux.txt) to a temporary directory.

2. Extract the contents of dir5.10_uim_openview_redhatlinux.tar.gz.

3. Stop the HP OpenView server. From a command prompt, type the following command and press **Enter**:

   `/opt/OV/bin/ovstop`

4. To install IBM Director UIM for HP OpenView, type the following command and press **Enter**:

   `rpm -ivh ovuim-redhat-5.10-1.i386.rpm`

Uninstalling IBM Director UIM for HP OpenView on Linux

This section provides the steps for uninstalling the HP OpenView UIM on a system running Linux.

Complete the following steps to uninstall IBM Director UIM for HP OpenView on Linux:

From a command prompt, type the following command and press **Enter**:

`rpm -e ovuim-redhat-5.10-1.i386.rpm`

When you run this command, the IBM Director UIM for HP OpenView is unloaded and all related files are removed from the system.

Uninstalling IBM Director UIM for HP OpenView on Windows

This topic describes procedures for uninstalling IBM Director UIM for HP OpenView from a system running Windows.

Complete the following steps to uninstall IBM Director UIM for HP OpenView on Windows:

1. On the HP OpenView server open a command prompt; then, type the following command to run the delovums application:

   *d\installdirectory*delovums.exe

   where:
   - *d* is the drive letter of the hard disk drive.
   - *installdirectory* is the installation directory, typically Program Files\HP OpenView\NNM\bin\.

   The Director Agent map and Director Agent symbol are deleted from the submap of the Director Agent nodes.

2. Stop the HP OpenView server.
3. Click **Start** → **Settings** → **Control Panel**. The Control Panel window opens.
4. Double-click **Add/Remove Programs**. The Add/Remove Programs window opens.
5. From the Add/Remove list, select **IBM Director UIM for HP OpenView**; then, click **Remove**. The Confirm File Deletion window opens.
6. Click **OK**. The uninstallation program starts.
7. When the uninstallation is completed, click **OK**. Then, restart the system or refresh the Windows directory to remove the Director Agent folder icons from the **Start** menu.

Unloading the MIB files

You must unload the MIB files manually to complete the uninstallation. Complete the following steps to unload the MIB files:

1. Start the HP OpenView server.
2. In Network Node Manager, click **Options** → **Load/Unload MIBs:SNMP**.
3. Click the MIBs that you want to unload.
4. Click **Unload**.

Removing the database entry for IBM Director Agent

You must delete the database entry for IBM Director Agent to complete the uninstallation. Complete the following steps to remove the database entry for IBM Director Agent:

1. Start Microsoft SQL Server 2000 Enterprise Manager.
2. Expand the **Microsoft SQL Servers** tree.
3. Expand the **SQL Servers Group** tree.
4. Navigate to the IBM Director database.
5. Right-click the database and click **Delete**.

Chapter 3. Working with IBM Director UIM for HP OpenView

After you install IBM Director UIM for HP OpenView, you can access IBM Director functions from the Network Node Manager. In the Network Node Manager Root window, double-click the **DirectorAgent** icon to begin working with managed systems with IBM Director Agent installed. The Director Agent window opens.

Using discovery

To discover all systems with IBM Director Agent installed, in the Director Agent window, click **Tools** → **Director Agent** → **Director Agent Status**.

To remove any systems that have been removed by the Network Node Manager because of status polling, click **Tools** → **Director Agent** → **Remove Offline Nodes**.

Creating a certificate

HP OpenView uses a stored certificate to access inventory information for a managed system. Complete the following steps to create a certificate:

1. In the Director Agent window, click a managed system.
2. In the HP OpenView Root window, click **Tools** → **Director Agent** → **Create Certificate**.
3. In the Client Authentication window, type the user name and password in the applicable fields.
4. Click **OK**.

You can have only one certificate at a time. You cannot view inventory information for a managed system for which the certificate is not valid. To access inventory information for a managed system for which the certificate is not valid, click **Tools** → **Director Agent** → **Create Certificate** to type and save a new user name and password pair as the certificate.

Viewing inventory

Complete the following steps to view the inventory for a system:

1. In the Director Agent window, click the system.
2. Click **Tools** → **Director Agent** → **Director Agent Inventory** and click the inventory item that you want to view.

Notes:

1. For the inventory items that are collected by the inventory function of the IBM Director UIMs, see IBM Director UIM inventory collection.
2. The Director Agent Inventory task uses the stored certificate for authentication. If you have not created a certificate, the Client Authentication window opens when you click **Tools** → **Director Agent** → **Director Agent Inventory**. The Director Agent Inventory task will successfully collect and save inventory data only from the managed systems for which the certificate is valid.

Configuring the database source

If you specified a custom installation to include database support, you must configure the database source. Also, you must have installed and configured Microsoft SQL Server 2000 before you install IBM Director UIM for HP OpenView.

Note: On systems that are running Windows XP, you might also have to correct inventory collection.

Complete the following steps to configure a database source:
1. Start Network Node Manager.
2. Double-click the **Director Agent** icon.
3. Click **Tools** → **Director Agent** → **Configure ODBC DataSource**. The Configure DataSource for Database Access window opens.
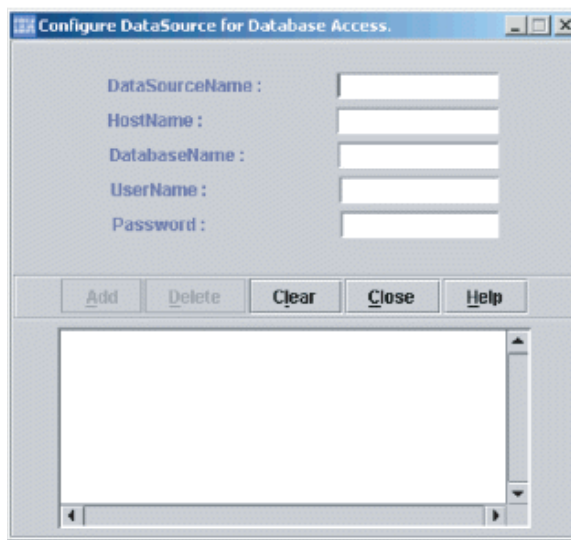
Figure 1. Configure DataSource for Database Access window

4. Complete the fields.
5. Click **Add**. A message is displayed in the bottom pane to indicate whether the database tables were created successfully.
6. Click **Close**.

Saving inventory data to the database

Complete the following steps to save the IBM Director Agent inventory data to the database:
1. Click **Tools** → **Director Agent** → **Get Director Agent Nodes**. A message is displayed stating that the IBM Director Agents are collected.
2. Click **OK**.
3. Click **Tools** → **Director Agent** → **Save Inventory to Database**. The Inventory Status window opens.

   Note: The Save Inventory to Database task uses the stored certificate for authentication. If you have not created a certificate, the Client Authentication window opens after you click **Tools** → **Director Agent** →

Save Inventory to Database. The Save Inventory to Database task will successfully collect and save inventory data only from the managed systems for which the certificate is valid.

In the bottom pane, a message is displayed when the inventory has been saved successfully.

4. Click **Close**.

Viewing event notifications

IBM Director UIM for HP OpenView adds IBM Director trap definitions to HP OpenView. To view the event notifications for a single system, in the Director Agent window, right-click the system and click **Alarms.** To view all event notifications, in the Alarm Categories window, click **Status Alarms**.

For a list of IBM Director Agent events, see Appendix B, "CIM indications in IBM Director," on page 85. For more information about how to customize events, see your HP OpenView documentation.

Accessing the Web browser

To access the Web browser, click **Tools** → **Director Agent** → **Director Agent Browser**. The Web browser window opens.

Chapter 4. Upward Integration Module troubleshooting

Use this section to troubleshoot and resolve problems with IBM Director Upward Integration Modules (UIMs).

Some upward integration module problems might be problems with IBM Director Agent. Review all troubleshooting topics for possible solutions. For additional troubleshooting information, see the *IBM Director Release Notes*.

The Mozilla browser does not respond

This problem affects the IBM Director UIM for HP OpenView on Linux only.

Problem

The Mozilla browser stops responding when you access the IBM Director help system.

Investigation

The Mozilla browser requires that the system run the Red Hat Linux Advanced Server, version 2.1 operating system with update 6 or later. You can download the latest Red Hat updates from www.redhat.com/security/updates/notes/

Part 2. IBM Director UIM for Microsoft Operations Manager

Chapter 5. IBM Director UIM for Microsoft Operations Manager

With the IBM Director UIM for Microsoft Operations Manager, you can use your systems-management software to manage systems installed with Level-1: IBM Director Core Services or Level-2: IBM Director Agent software.

When you install IBM Director UIM for Microsoft Operations Manager (MOM), the following functions are added to the Microsoft Operations Manager environment:

- **Discovery**: Provides discovery of Level-1 and Level-2 managed systems.
- **Events**: Captures events that occur on Level-1 and Level-2 managed systems.
- **Alerts**: Sends a notification when certain events occur on Level-1 and Level-2 managed systems.
- **State**: Changes the state of Level-1 and Level-2 managed systems based on event criteria.

Chapter 6. Integrating IBM Director UIM for Microsoft Operations Manager

IBM Director provides an upward integration module that you can integrate into Microsoft Operations Manager.

Microsoft Operations Manager installation requirements

Application requirements

IBM Director UIM for Microsoft Operations Manager can be installed on systems running this application:

- Microsoft Operations Manager 2005

IBM Director software prerequisites

IBM Director UIM for Microsoft Operations Manager requires you to install either Level 1: IBM Director Core Services or Level 2: IBM Director Agent on the systems that you want to manage. For a list of supported operating systems, see Appendix A, "Operating systems supported by Level-2, Level-1, and Level-0 managed systems," on page 81

Note: IBM Director UIM for Microsoft Operations Manager also supports IBM Director Agent 4.10 and later. For a list of supported operating systems, refer to the *IBM Director 4.x Upward Integration Module Installation Guide*.

Installing IBM Hardware Management Pack for Microsoft Operations Manager

This section provides the installation steps for importing the IBM Hardware Management Pack into Microsoft Operations Manager.

Complete the following steps to install IBM Director UIM for Microsoft Operations Manager:

1. Download the IBM Director UIM for Microsoft Operations Manager (IBM Hardware Management Pack) executable file, **dir5.10_uim_mom.exe**, and the readme file, dir5.10_uim_mom.txt, from www.ibm.com/servers/eserver/xseries/ systems_management/ibm_director/ to a temporary directory.
2. Double-click **dir5.10_uim_mom.exe** to extract the file to the MOM server.
3. Start the MOM Administrator Console.
4. Expand **Management Packs**.
5. Double-click **Import/Export Management Packs**.
6. Select IBMHardwareMP.akm in the **Please Select one or more Management Packs to import:** list.
7. Complete steps in Wizard to import the UIM.

Chapter 7. Working with IBM Director UIM for Microsoft Operations Manager

IBM Director UIM enhances the existing functionality of the MOM Administrator Console and MOM Operator Console.

MOM Administrator Console

IBM Director UIM added these items to the MOM Administrator Console:

Computer Attributes

> IBM Director Core Services – Detects when Level 1: IBM Director Core Services is installed on a system and collects the version number.

Rule Groups

> IBM Hardware ... IBM Director Core Services – Allows management and monitoring of Level-1 managed systems.

Notification Group

> IBM Director Operators – Notifies operators when alerts are generated on Level-1 managed systems.

Computer Group

> IBM Director Core Services – Contains the Level-1 managed systems.

Scripts

> IBM Director Core Services Indications – Processes all WMI indications sent by Level 1: IBM Director Core Services and generates MOM events.

> IBM Director Core Services Discovery – Discovers Level-1 managed systems and adds IBM Director Agent Role and components to those systems.

Providers

> IBM Director Core Services Events – Listens for WMI indications from Level 1: IBM Director Core Services.

> IBM Director-Schedule every 1 hours – Launches the IBM Director Core Services Discovery script every hour.

MOM Operator Console

IBM Director UIM added these items to the MOM Operator Console:

Alerts View

> IBM Hardware ... IBM Director ... Alerts – Displays unresolved alerts generated by Level 1: IBM Director Core Services.

Events View

> IBM Hardware ... IBM Director ... Events – Displays events generated by Level 1: IBM Director Core Services.

Computers and Groups

> IBM Hardware ... IBM Director ... Computers – Displays Level-1 managed systems.

IBM Hardware ... IBM Director ... Computer Groups – Displays IBM Director computer groups.

State View

IBM Hardware ... IBM Director ... State – Displays the State of the IBM Director Agent Role and components.

Chapter 8. Rule groups

Put your short description here; used for first paragraph and abstract.

The IBM Director Core Services rule group allows MOM to manage Level-1 and Level-2 managed systems. These rules are assigned to all systems found in the "IBM Director Core Services 5.1x" computer group. Systems are assigned to this computer group based on the Computer Attribute "IBM Director Core Services." Systems in this group are assigned the IBM Director Agent role by the discovery script.

The IBM Director Agent role contains the Environmental, Device, Communications, Security, and Other components.

These rules process events from Level 1: IBM Director Core Services and generate alerts when warranted. These rules also set the State of the IBM Director Agent Server Role components.

Table 1. Rules

Rule	IBM Director Agent Server Role Component
Fan Event	Environmental
Memory Event	Device
Network Event	Communications
Other Event	Other
Power Supply Event	Device
Processor Event	Device
Security Event	Security
Storage Event	Device
Temperature Event	Environmental
Voltage Event	Environmental

The "Filter IBM Director Core Services WMI Events" rule processes all WMI indications produced by Level-1 and Level-2 managed systems. The rule must remain enabled in order for any of the other rules to function.

The "IBM Director Core Services Discovery" rule runs on all systems in the group. It adds the IBM Director Agent server role to each system and adds the various components of the IBM Director Agent role. It can also generate events to update or set the initial state of those components.

The "Notify IBM Director Operators on Alerts" rule runs on all alerts with a severity of Warning or higher. It sends a notification to Operators assigned to the IBM Director Operators notification group.

Part 3. IBM Director UIM for Microsoft Systems Management Server

Chapter 9. IBM Director UIM for Microsoft Systems Management Server

With the IBM Director UIM for Microsoft Systems Management Server (SMS), you can use your systems-management software to manage systems installed with IBM Director Core Services or IBM Director Agent software.

When you install IBM Director UIM for SMS, the following functions are added to the SMS environment:

- **Event notification**: Provides notification of events that occur on managed systems on which IBM Director Agent is installed. These notifications are translated into SMS status messages.
- **Collections**: Adds an SMS Collection to easily identify all managed systems on which IBM Director Agent is installed.
- **Inventory**: Scans inventory directly from IBM Director Agent, including Asset ID data, BIOS details, field-replaceable unit (FRU) numbers, lease information, and network details.

  Tip:
    – The inventory feature is compatible only with IBM Director Agent 4.20 or later.
- **Queries**: Adds an SMS Query to identify all managed systems on which IBM Director Agent is installed.
- **Software distribution**: Distributes an IBM Director Agent software package and performs an unattended installation on any system in the Microsoft SMS environment.
- **Wake on LAN**®: Remotely turns on managed systems on which IBM Director Agent is installed, and are Wake-on-LAN-capable.

Chapter 10. Integrating IBM Director UIM for Microsoft System Management Server

IBM Director provides an upward integration module that you integrate into Microsoft System Management.

Microsoft SMS installation requirements

Operating system and application requirements

IBM Director UIM for Microsoft SMS can be installed on systems running these operating systems and applications:

- Microsoft Systems Management Server 2.0, Service Pack 5.0
- Windows 2000, Service Pack 3 or later

IBM Director software prerequisites

IBM Director UIM for Microsoft SMS requires you to install either Level 1: IBM Director Core Services or Level 2: IBM Director Agent on the systems that you want to manage. For a list of supported operating systems, see Appendix A, "Operating systems supported by Level-2, Level-1, and Level-0 managed systems," on page 81

Note:

1. IBM Director UIM for SMS does not support managed systems running 64-bit versions of IBM Director Agent.
2. IBM Director UIM for SMS also supports IBM Director Agent 4.10 and later. For a list of supported operating systems, refer to the *IBM Director 4.x Upward Integration Module Installation Guide*.

SMS limitations

When you install IBM Director UIM for SMS, you must first uninstall any previous version that is installed.

Installing IBM Director UIM for Microsoft SMS

This topic describes procedures for installing IBM Director UIM for Microsoft SMS.

You must install IBM Director UIM for Microsoft SMS on all the servers that are in the SMS domain. During the installation, the SMS Administrator Console is configured with IBM Director Agent entries in the **Collections**, **Queries**, and **Tools** trees.

For you to install IBM Director UIM for Microsoft SMS, you must be logged on to Microsoft SMS with administrator privileges.

Complete the following steps to install IBM Director UIM for Microsoft SMS:

1. Download the IBM Director UIM for Microsoft SMS executable file, dir5.10_uim_sms.exe, and the readme file, dir5.10_uim_sms.txt,

fromwww.ibm.com/servers/eserver/xseries/
systems_management/ibm_director/ to a temporary directory.

2. Double-click **dir5.10_uim_sms.exe**. The InstallShield Wizard starts, and the "Preparing to Install" window opens.

3. Click **Next**. The "License agreement" window opens.

4. Click **Yes**. The "User information" window opens. By default, the fields are already completed.

5. Complete the following steps to change the default information:

   a. In the **User Name** field, type the name of the site server administrator.

   b. In the **Company Name** field, type the name of your company.

   c. Optional: If you want to enable access only for the current operating-system account, click **Only for me (*username*)**, where *username* is automatically substituted. Otherwise, click **Anyone who uses this computer (all users)**.

6. Click **Next**. The "Installation type" window opens.

7. Click the type of installation that you want.

   Typical
   > Installs IBM Director UIM for Microsoft SMS and the IBM Director UIM for Microsoft SMS help files.

   Compact
   > Installs IBM Director UIM for Microsoft SMS only.

   Custom
   > Installs IBM Director UIM for Microsoft SMS; and enables you to select whether to install the IBM Director UIM for Microsoft SMS help files and database support.

8. Click **Next**. If you specified a typical or compact installation, the Setup Type window opens; go to step 10. If you specified a custom installation, the "Feature selection" window opens; go to step 9.

9. Click **Next**. The "Setup Type" window opens.

10. If you are installing UIM on a site server, click **Server and Console**. Otherwise, click **Console Only**.

11. Click **Next**. The Choose Destination Location window opens.

12. **Optional:** Specify the installation location. By default, the UIM is installed in the following location:

    d:\Program Files\IBM\Director, where *d* is the drive letter of the hard disk drive.

    If you want to specify an alternative location, click **Browse**. The Choose Folder window opens. Select the directory to which you want to install the UIM and click **OK**.

13. Click **Next**. The Enter Text window opens.

14. In the entry field, type the SMS server name.

    Note: You must type a fully qualified domain name for the server.

15. Click **Next**.

16. In the "Setup summary" window, review the setup summary. Click **Back** to make a change to the setup. Otherwise, click **Next**. The Setup Status window opens. When the setup is completed, a command-prompt window opens, and the progress of the installation is displayed. When the installation is completed, the Restart window opens.

17. Click **Yes, I want to restart my computer now**, then click **Finish**. The site server restarts.

Uninstalling IBM Director UIM for SMS

This topic describes how to uninstall IBM Director UIM for SMS.

Complete the following steps to uninstall IBM Director UIM for SMS:
1. From the Windows desktop, click **Start** → **Settings** → **Control Panel**. The Control Panel window opens.
2. Double-click **Add/Remove Programs**. The Add/Remove Programs window opens.
3. From the list of programs, select **Director Agent Integration with SMS**; then, click **Remove**. The Confirm File Deletion window opens.
4. Click **OK**. The uninstallation program starts.
5. When the uninstallation is completed, click **OK**.
6. Restart the system.

Chapter 11. Working with IBM Director UIM for SMS

After you install the IBM Director UIM for Microsoft SMS, several IBM Director functions can be accessed from the SMS Administrator Console.

Note: IBM Director functions cannot be used on managed systems that do not have IBM Director Agent installed, although, their context menus display the **Director Agent Resources** option.

In the **Systems Management Server** tree, expand the **Collections** or **Queries** tree to display the **All Systems with Director Agent** node.

In the **Systems Management Server** tree, expand the **Tools** tree to display the **Director Agent Console** node.

Performing inventory collections on IBM Director Agents

Complete the following steps to perform inventory collections on a managed system:

1. In the **SMS Administrator Console** tree, expand **Collections**.
2. Click **All Systems with Director Agent**.
3. In the right pane, right-click a managed system; then, click **All Tasks** → **Start Resource Explorer**.
4. In the Resource Explorer window, expand the **Hardware** node of the tree in the left pane; then, click an IBM Director Agent service to connect to that service on the managed system.
5. View or edit the service settings as applicable.

Notes:

1. The IBM Director 5.10 UIM for SMS inventory feature is only compatible with IBM Director Agent version 5.10 or later. You must use IBM Director Agent 4.21 or later to access inventory information.

Issuing a Wake on LAN command

Complete the following steps to issue a Wake on LAN command to a managed system on which IBM Director Agent is installed:

1. From the **SMS Administrator Console**, right-click any managed system that has IBM Director Agent installed and then select **All Tasks** → **Wake on LAN**. A confirmation window opens.
2. Click **OK**. The system is turned on.

Distributing IBM Director Agent software

After you install IBM Director UIM for Microsoft SMS, you can use SMS software distribution to install IBM Director Agent on your managed systems. This section provides information about how to create, prepare, and distribute the IBM Director Agent software package.

Before you can distribute the IBM Director Agent software package to your SMS systems, you must download the IBM Director Agent installation file, dir5.10_agent_windows.zip, from the IBM Director Support Web site at www.ibm.com/servers/eserver/xseries/systems_management/ibm_director/.

Note: For additional information about IBM Director Agent features and installation requirements, see the *IBM Director Installation and Configuration Guide*.

Creating the IBM Director Agent software package

Complete the following steps to create the IBM Director Agent software package:

1. Create a temporary directory on the SMS server to which you want to extract the software package.
2. Extract the dir5.10_agent_windows.zip file to the temporary directory.
3. Using an ASCII text editor, complete the following steps:
   a. Open the diragent.rsp file (located in the temporary directory that you created) and verify the configuration options. This file follows the Windows INI file format and is fully commented.
   b. Modify the configuration options in the diragent.rsp file as applicable.
   c. Change the last line in the diragent.rsp file to

      RebootIfRequired = N

      Note: If you do not set this parameter to N, when you try to distribute the software package, the system restarts twice and the IBM Director Agent software is not installed properly.
   d. Save the diragent.rsp file to the temporary directory.
4. Open the SMS Administrator Console.
5. In the **SMS Administrator Console** tree, right-click **Packages**; then, click **New → Package from Definition**. The Create Package from Definition wizard starts, and the Welcome to the Create New Package from Definition Wizard window opens.
6. Click **Next**. The Package Definition window opens.
7. Click **Browse** and navigate to the IBM Director\bin subdirectory. If you installed the IBM Director UIM for SMS in the default location, the path is *d*:\Program Files\IBM\Director\bin, where *d* is the drive letter of the hard disk drive. Click **UMS.SMS**; then, click **Open**. The Package Definition window opens, and DirectorAgent is displayed in the **Package definition** field.
8. Click **Next**. The Source Files window opens.
9. Click **Always obtain files from a source directory** and click **Next**. The Source Directory window opens.
10. Complete the following steps to specify the location of the source files:
    a. In the **Source directory location** field, click **Local drive on site server** or **Network location**.
    b. In the **Source directory** field, type *d*:*TemporaryDirectory* where *d* is the drive letter of the hard disk drive and *TemporaryDirectory* is the directory to which you extracted the dir5.10_agent_windows.zip file.
11. Click **Next**. The Completing the Create Package from Definition Wizard window opens.

12. Review the package characteristics information and click **Finish**. The IBM Director Agent software package is displayed under **Packages** in the **SMS Administrator Console** tree.

Preparing the IBM Director Agent software package for distribution

Complete the following steps to prepare the IBM Director Agent software package for distribution:

1. Create a share distribution directory on your site server. This directory will be used as a temporary repository for the contents of the files extracted from the dir5.10_agent_windows.zip file.

2. Copy the contents of the temporary extraction directory (created in "Creating the IBM Director Agent software package" on page 36) to the share distribution directory.

   Note: The contents of the share distribution directory are automatically deleted after the software distribution is completed.

3. In the **SMS Administrator Console** tree, expand the **Packages** tree.

4. In the right pane, right-click **Director Agent** and click **Properties**. The IBM Corp. DirectorAgent English Package Properties window opens.

5. Click the **Data Access** tab. The Data Access page is displayed.

6. Click **Share distribution folder** and in the **Name** field, type the name of the temporary directory that you created in step 1.

7. Click **OK**.

8. In the **SMS Administrator Console** tree, click the **Programs** directory that is displayed under the **IBM Corp.DirectorAgent English Package**.

9. In the right pane, right-click **Director Agent** and click **Properties**. The DirectorAgent Program Properties window opens.

10. Change the contents of the **Command line** field to the following string:

    dir5.10_agent_windows.exe -s -a SILENT RSP=*server**share_name*\diragent.rsp

    where:
    - *server* is the SMS site server.
    - *share_name* is the name of the network share.

11. Click **OK**. The IBM Director Agent software package is ready for distribution.

Distributing the IBM Director Agent software package

Complete the following steps to distribute the IBM Director Agent software package:

1. In the SMS Administrator Console, right-click **Advertisements**; then, click **New → Advertisement**. The New Advertisement wizard opens.

2. On the General page, in the **Name** field, type a name for the package.

3. In the **Comment** field, type a comment, such as *IBM Director Agent software*.

4. In the **Package** list, click **Director Agent**.

5. In the **Program** list, click **Director Agent**.

6. In the **Collection** field, type the name of the collection to which you want to distribute the package, or click **Browse** to select a collection.

7. Click the **Schedule** tab. Specify a date and time to distribute the package.

8. Click **OK**. The software package is scheduled for distribution.

At the specified time and date, IBM Director Agent is installed on the selected systems.

Chapter 12. Microsoft SMS UIM inventory collection

This topic lists the inventory items that the UIM inventory function collects for the Microsoft SMS program.

- Asset ID
- BIOS details
- Cache
- CIM
- Firmware
- FRU service numbers
- IBM UM services
- IP network configuration
- IPX network configuration
- Lease information
- Memory details
- Network details
- Personalized data
- Processor details
- RAID controllers
- RAID disk drives
- RAID enclosures
- RAID logical drives
- Serial number information
- SNMP agent configuration
- System board configuration
- System enclosure
- System slots
- User details
- Video details
- Warranty information

Part 4. IBM Director UIM for Tivoli Management Framework

Chapter 13. IBM Director UIM for Tivoli Management Framework

With the IBM Director UIM for Tivoli Management Framework, you can use your systems-management software to manage systems installed with IBM Director Core Services or IBM Director Agent software.

When you install IBM Director UIM for Tivoli Management Framework , the following functions are added to the Tivoli Management Framework environment:

- **Event notification**: Provides notification of events (such as failing components) occurring on IBM Director Agent systems and IBM Management Processors, allowing IT personnel to take immediate corrective action. These notifications can be sent as native Tivoli Enterprise Console® events, SNMP traps, and Windows event log events.
- **Inventory**: Collects inventory data directly from IBM Director Agent is installed using custom MIF files, SQL scripts, and inventory queries.
- **Monitors**: Provides hardware status monitors for managed systems on which IBM Director Agent is installed. This feature enhances the Tivoli Console interface by providing a richer set of features and more comprehensive hardware monitoring capabilities. You can monitor hardware status and various thresholds.
- **Software distribution**: Enables you to build and distribute update packages for IBM Director Agent software and perform an unattended installation of these packages on any Tivoli endpoint running Microsoft Windows.
- **Tasks**: Allows you to view additional information and restart or shut down managed systems on which IBM Director Agent is installed remotely using Wake on LAN.

Chapter 14. Integrating IBM Director UIM for IBM Tivoli Management Framework

IBM Director provides an upward integration module that you integrate into IBM Tivoli Management Framework.

Tivoli Management Framework installation requirements

Application requirements

To use IBM Director UIM for Tivoli Management Framework, one of the following Tivoli Management Framework versions must be installed on the server:

- Tivoli Management Framework 3.7.1
- Tivoli Management Framework 4.1
- Tivoli Management Framework 4.1.1

In addition, the following table lists the Tivoli components that must be installed to enable the UIM functions.

Table 2. Tivoli components needed for Framework version

Function	Framework 3.7.1	Framework 4.1x
Events	TEC 3.8, 3.9	TEC 3.8, 3.9
Inventory	Inventory with 4.0 4.0-INV-FP05 and 4.0-INV-E-FIX 36	Configuration Manager 4.2.x
Monitoring	Tivoli Monitoring 5.1.1	Tivoli Monitoring 5.1.1
Software Distribution	Software Distribution 4.0	Configuration Manager 4.2.x

IBM Director software prerequisites

IBM Director UIM for Tivoli Management Framework requires you to install either Level 1: IBM Director Core Services or Level 2: IBM Director Agent on the systems that you want to manage. For a list of supported operating systems, see Appendix A, "Operating systems supported by Level-2, Level-1, and Level-0 managed systems," on page 81

Notes:

1. IBM Director UIM for Tivoli Management Framework also supports IBM Director Agent 4.10 and later. For a list of supported operating systems, refer to the *IBM Director 4.x Upward Integration Module Installation Guide*.

2. (Linux only) The following patches are recommended for use with Tivoli Management Framework 3.7.1 for Linux:
   - 3.6.1-TMF-034
   - 3.6.1-TMF-062
   - 3.7.1-CLL-002
   - 3.7.1-TMF-073
   - 3.7.1-TMF-090

3. (Linux and UNIX® only) Execute permissions might have to be set on all of the *.sh files used for installation.

4. (Windows 2000, or Windows 2003 only) For Tivoli Management Framework 3.7.1 or 4.1, you must source your command environment for Tivoli Management Framework commands to work. To do this, type `c:\windows\system32\drivers\etc\Tivoli\setup_env.cmd` at a command prompt.

5. (Managed systems running Linux only) You must install and configure net-snmp for IBM Tivoli Management Framework to receive SNMP events from the managed system. For more information, see *IBM Director Installation and Configuration Guide*.

6. IBM Director UIM for Tivoli Management Framework does not support managed systems that are running 64-bit versions of IBM Director Agent 4.12 or later.

Tivoli Management Framework limitations

When you install IBM Director UIM for Tivoli Management Framework, consider the following limitations:

- On Linux and UNIX platforms, execute permissions might have to be set on all the *.sh files used for installation.
- (Managed systems running Windows XP) The Shutdown and Reboot task might fail on systems that are running IBM Director Agent if a user is not logged in on the system.
- Microsoft Windows 2000 servers that are running Terminal Services might be severely limited in functionality.

Installing IBM Director UIM for Tivoli Management Framework

IBM Director UIM for Tivoli Management Framework is a compressed file that contains the following components:

- Events
- Inventory
- Monitors
- Software distribution
- Tasks

Complete the following steps to download and expand the IBM Director UIM for Tivoli Management Framework:

1. Download IBM Director UIM for Tivoli Management Framework compressed file, dir5.10_uim_tme.tar, and the readme file, dir5.10_uim_tme.txt, from the Web site at www.ibm.com/servers/eserver/xseries/ systems_management/ibm_director/. Download these files into a temporary directory.

2. To expand the TAR file, from a command prompt navigate to the temporary directory, and then type the following command:
   ```
   tar -xvf dir5.10_uim_tme.tar
   ```

A new directory is created in the temporary directory with the following content.

Table 3. Directory structure of extracted IBM Director UIM for Tivoli Management Framework file

Directory name	Contents
..\datme	Component subdirectories
..\datme\readme.txt	Readme file
..\datme\DM	Monitoring component
..\datme\INV	Inventory component
..\datme\SD	Software distribution component
..\datme\Tasks	Tasks component
..\datme\TEC	Event component

Configuring IBM Director UIM for Tivoli Management Framework

You can configure one or more of the IBM Director UIM for Tivoli Management Framework components; however, you must configure each component individually. This section contains instructions for configuring the following components:

Configuring the events component

To receive native Tivoli Enterprise Console events from IBM Director Agent, you must install the Tivoli Enterprise Console Adapter Configuration Facility on all your endpoint gateways. Complete the following steps to configure the Tivoli Enterprise Console server for the events component:

1. To create a new rule base and an IBM Director Agent event source and to load the IBM Director Agent .baroc file, from a command prompt on your Tivoli Enterprise Console server, change to the ..\datme\TEC directory and type one of the following commands:

For a Windows Tivoli Management Framework	`bash datec.sh `*`NewRuleBase d:\NewDirectory SourceRulebase`*
For a UNIX Tivoli Management Framework	`./datec.sh `*`NewRuleBase d:/NewDirectory SourceRulebase`*

where:
- *NewRuleBase* is the name that you want to assign to the new rule base.
- *d:\NewDirectory* or *d:/NewDirectory* is the path name of the new directory that you want to create.
- *SourceRuleBase* is the name of the rule base that you want to use as a template for the new rule base. If you do not specify a source rule base, the Default rule base is used.

   Note: If you are using the IBM Director monitors component, you might want to use the same rule base as a template for the events rule base. In this case, for *SourceRuleBase*, specify the name of the rule base that you created for monitors.

The event server is restarted, and a message is displayed stating that the Tivoli Enterprise Console integration is complete.

2. **Optional:** To load the rule sets for IBM Director Agent events into a rule base, type one of the following commands:

For a Windows Tivoli Management Framework	`bash darules.sh RuleBase`
For a UNIX Tivoli Management Framework	`./darules.sh RuleBase`

   where:
   - *RuleBase* is the name of the rule base where the rule sets are imported.

      Note: You can load rule sets into a rule base one at a time. The rule sets are located in the ..\datme\TEC directory.
3. Start the Tivoli Enterprise Console.
4. Complete the following steps to create the IBM Director Agent event groups and console:
   a. Import the DirectorTEC file from the ..\datme\TEC directory using the Tivoli Enterprise Console Configuration window.
   b. From the Tivoli Enterprise Console, click **File** → **Import** → **Browse**.
   c. Navigate to the ..\datme\TEC directory and select **DirectorTEC**; then, click **OK**. The Import window opens.
   d. From the **Consoles** section, select **Director Agent**.
   e. From the **Event Groups** section, select the groups that you want to monitor.
   f. Click **OK**.
5. Shut down and restart the Tivoli Enterprise Console.
6. **Optional:** Complete the following steps if you want to receive IBM Director Agent, Fibre Channel switch SNMP, Director ServeRAID™ SNMP, or Director Server SNMP traps:

   Note: You must configure the Tivoli Enterprise Console SNMP Adapter to receive these traps.
   a. Append the contents of Director.cds, located in the ..\datme\TEC directory, to tecad_snmp.cds.
   b. Append the contents of Director.oid, located in the ..\datme\TEC directory, to tecad_snmp.oid.
7. **Optional:** (Windows only) Configure the Tivoli Enterprise Console NT Event Adapter on the managed system to receive Windows event log event traps. Append the contents of diragent_win.cds, which is in the ..\datme\TEC directory, to tecad_win.cds.

   Note: The diragent_win.cds contents must precede the generic NT Base Event class in the tecad_win.cds file.
8. **Optional:** Complete the following steps to configure the Tivoli Enterprise Console SNMP Adapter to receive Management Processor SNMP traps:
   a. Append the contents of ibmmp.cds, located in the ..\datme\TEC directory, to tecad_snmp.cds.
   b. Append the contents of ibmmp.oid, located in the ..\datme\TEC directory, to tecad_snmp.oid.
   c. Using the datme\TEC\datec.sh script, make sure the ibmmp.baroc file is included in the current rule base.

d. Assign the IBM MP SNMP event group to the applicable Tivoli Enterprise Console consoles.

In the Tivoli Enterprise Console Configuration window, the Director Agent console tree is displayed and contains the following event groups:

- **DA_DistMon** IBM Director Distributed Monitors events
- **Director Agent** Native IBM Director events
- **Director Agent SNMP** IBM Director SNMP traps
- **Director Agent ServeRAID SNMP** IBM ServeRAID SNMP traps
- **Director Agent NT Event Log** IBM Director Agent events in the Windows NT event log
- **Director Server SNMP** IBM Director Server SNMP traps
- **Fibre Channel SNMP** Fibre Channel SNMP traps
- **IBM MP SNMP** IBM Management Processor SNMP traps
- **Director Server** IBM Director Server events

Note: If you are using the IBM Director Agent monitors component also, assign the DA_Monitoring event group to the Director Agent console.

Configuring the inventory component

To scan and retrieve inventory information from IBM Director Agent systems, you must ensure that Tivoli Inventory Gateway is installed on any managed nodes that you want to use to distribute the Inventory profile as well. Complete the following steps to configure the inventory component:

1. Verify that you have administrator privileges and the necessary Tivoli Management Environment authorization for the Tivoli Management Region where you want to install the inventory library.
2. To create the IBM Director Agent inventory library and queries, from a command prompt change to the ..\datme\INV directory and type one of the following commands

For a Windows Tivoli Management Framework	`bash dainv_queries.sh RIMName PolicyRegion QueryLibrary`
For a UNIX Tivoli Management Framework	`./dainv_queries.sh RIMName PolicyRegion QueryLibrary`

where:

- *RIMName* is the name of the RIM host for your inventory query. Typically, the inventory inquiry is named inv_query.
- *PolicyRegion* is the name of your policy region.
- *QueryLibrary* is the name for your IBM Director Agent query library. If you do not specify a name, the default is DIRECTOR_AGENT_INV.

In your policy region, the IBM Director Agent query library is created and contains the IBM Director inventory queries. The number of queries may vary depending on the release you are installing..

3. From the policy region where you want to add the inventory profile, create a profile manager for IBM Director Agent, for example Director_Agent. Make sure that you select **Dataless Endpoint Mode**.

Note: You can use the same profile manager for the monitors and inventory components profiles.

4. Create an inventory profile, *DA_Inventory*, for the Director_Agent profile manager. Make sure that you select **InventoryConfig** as the profile type.
5. Make the following modifications to the properties for the **DA_Inventory** profile:
   a. In the Inventory Administration window, click the applicable **Scripts and MIF Files** node and type the applicable script in the **Enter a script to be run before the scan** field.

   > **Note:** Because of its length and to prevent errors, copy the PC script from the ..\datme\dir5.10_uim_tme.txt file and paste it into this field.

For PC endpoints	`tmeinv.bat`
For UNIX and Linux end points	```#! /bin/bash`  `if [-f "/etc/DirAgent/tmeinv.sh"]; then` ` . /etc/DirAgent/tmeinv.sh` `else` ` if [! -d "/etc/ibm/director/diragent/mifs/"]; then` ` mkdir /etc/ibm/director/diragent/mifs` ` fi` ` . /etc/ibm/director/diragent/diragent` ` cd ${DIRAGT_ROOTDIR}/cimom/bin` ` ${DIRAGT_ROOTDIR}/cimom/bin/cim2mif /TME` `fi```
For i5/OS endpoints	

   b. Type the applicable MIF text into the **Enter the path and name of custom MIF files to be read during installation** field:

For PC endpoints	For DB2®, type`c:\umsinvdb2.mif`
	For other databases, type `c:\umsinv.mif`
For UNIX and Linux endpoints	For DB2, type `/etc/ibm/director/diragent/mifs/umsinvdb2.mif`
	For other databases, type `/etc/ibm/director/diragent/mifs/umsinv.mif`
For i5/OS endpoints	For DB2, type
	For other databases, type

   > **Note:** The default path is c:\; however, this might change depending on the location you specify for the files.

   c. Click **Apply**.
6. Connect to your Tivoli inventory database and load the IBM Director inventory schemas. From the ..\datme\INV directory, load the applicable database schema file:

For IBM DB2	ums_db2_schema.sql
For Microsoft SQL	ums_ms_sql_schema.sql
For Oracle	ums_oracle_schema.sql

   Attention: Do not make any changes to the schema file.

The inventory component is now configured.

Configuring the monitors component

Complete the following steps to configure the monitors component for Tivoli Monitoring 5.1.1:

1. To add distributed monitoring resource models, from a command prompt on your IBM Tivoli Monitoring Server, change to the ..\datme\DM directory and type one of the following commands:

For a Windows Tivoli Management Framework	`bash damonitors.sh`
For a UNIX Tivoli Management Framework	`./damonitors.sh`

   A message is displayed stating that the installation is complete.

2. You must load the tmw2k.baroc file into the source rule base before you load the IBM Director.baroc file.

   If you have only the default rule base, you must create a new rule base and import the tmw2k.baroc into it. Then, run the shell script against this new rule base.To create a new rule base and classes, from a command prompt on your Tivoli Enterprise Console server, type one of the following commands:

For a Windows Tivoli Management Framework	`bash damonitorsTEC.sh `*`NewRuleBase d:\NewDirectory SourceRulebase`*
For a UNIX Tivoli Management Framework	`./damonitorsTEC.sh `*`NewRuleBase d:/NewDirectory SourceRulebase`*

   where:
   - *NewRuleBase* is the name that you want to assign to the new rule base.
   - *d:\NewDirectory* or *d:/NewDirectory* is the path name of the new directory you want to create.
   - *SourceRuleBase* is the name of the rule base that you want to use as a template for the new rule base. If you do not specify a source rule base, the Default rule base is used.

   Note: If you are using the IBM Director event component, you might want to use the same rule base. In this case, for *SourceRuleBase*, specify the name of the rule base that you created for events.

   The event server is restarted. A confirmation window opens.

3. **Optional:** To load the rule sets for IBM Director Agent monitors into a rule base, at a command prompt on your Tivoli Enterprise Console server, type one of the following commands:

For a Windows Tivoli Management Framework	`bash damonrules51.sh `*`RuleBase`*
For a UNIX Tivoli Management Framework	`./damonrules51.sh `*`RuleBase`*

   where *RuleBase* is the name of the rule base to which the rule sets are imported.

   Note: You can manually load rule sets into a rule base one at a time. The rule sets are located in the ..\datme\DM directory.

Complete the following steps to add the IBM Director Agent monitors:

1. From the policy region where you want to add the monitors, create a profile manager for IBM Director Agent, for example Director_Agent. Make sure that you select **Dataless Endpoint Mode**.

   Note: You can use the same profile manager for the monitors and inventory components profiles.

2. Create a monitors profile for the Director_Agent profile manager, for example DA_Monitors. Make sure that you select **Tmw2kProfile** as the profile type.

3. Add the IBM Director Agent monitors to **DA_Monitors**. Make sure that you select the **Wizard Generated Resource Models** category and add any of the following monitors as applicable:
   - HTTPCheck_sh
   - IBMPSG_PhysicalMemory Monitor
   - IBMPSG_PhysicalNetworkAdapter Monitor
   - IBMPSG_PowerSupply Monitor
   - IBMPSG_Processor Monitor
   - IBMPSG_ServeRAIDOverallStaus Monitor
   - IBMPSG_StorageFailurePredictionSettings Monitor
   - IBMPSG_PhysicalNetworkAdapter
   - IBMPSG_SystemEnclosure Monitor
   - IBMPSG_Tachometer
   - IBMPSG_TemperatureSensor
   - IBMPSG_VoltageSensor
   - SNMPCheck_sh

Configuring the tasks component

Complete the following steps to configure the tasks component to enable shutdown, restart, or view version information for the Tivoli Management Region (TMR) of managed systems with IBM Director Agent installed:

1. Verify that you have administrator privileges and the necessary Tivoli Management Environment authorization for the Tivoli Management Region where the tasks library must be located.

2. At a command prompt, navigate to the ..\datme\Tasks directory.

3. Type one of the following commands to create the tasks:

For a Windows Tivoli Management Framework	`bash datasks.sh` *HostName PolicyRegion* *TaskLibraryName*
For a UNIX Tivoli Management Framework	`./datasks.sh` *HostName PolicyRegion* *TaskLibraryName*

where:
- *HostName* is the name of the host system for your tasks.
- *PolicyRegion* is the name of your policy region.
- *TaskLibraryName* is the name of your IBM Director Agent task library. If you do not specify a name, the default is DIRECTOR_TASKS.

The DIRECTOR_TASKS library contains three tasks: About, Reboot, and Shutdown.

Upgrading or removing components

There is no upgrade path from the IBM Director 4.20 or earlier Upward Integration Module to the IBM Director UIM for Tivoli Management Framework. You must follow the uninstallation procedures in *IBM Director 4.20 UIM for Tivoli*. Then, you can configure one or more of the IBM Director UIM for Tivoli Management Framework components.

To remove any IBM Director UIM for Tivoli Management Framework components, you must undo the configuration changes you have made and remove any information from the database and event server.

Chapter 15. Working with IBM Director UIM for Tivoli Management Framework

After you configure the IBM Director UIM for Tivoli Management Framework components and install Level-1 IBM Director Core Services or Level-2 IBM Director Agent software on your endpoints, you can use the event notification, inventory collection, distributed monitoring, and tasks functions.

Using IBM Director events

The event server processes events that are sent to it by distributed monitors, native Tivoli Enterprise Console (TEC) events, and SNMP traps. The event server processes the events according to a rule base. Depending on the event and the rule used to handle it, the server can forward the event to a Tivoli Enterprise Console or respond to it. At least one event console must be installed before the event server can be set up.

You can view and manage the IBM Director events through the event console on the Tivoli desktop. You can also further customize IBM Director UIM for Tivoli Management Framework event component. For example, you can:
* Assign the event groups to other event consoles
* Trigger rules and actions by an event or a combination of events

For a list of IBM Director events, see Appendix B, "CIM indications in IBM Director," on page 85. For more information about how to customize events, see your IBM Tivoli documentation.

For detailed information about Windows event log events, SNMP traps, and native TEC events, see Appendix B, "CIM indications in IBM Director," on page 85

Using IBM Director inventory

Before you can collect any inventory, you must add the subscribers that are running Level 1: IBM Director Core Services or Level 2: IBM Director Agent. After you run an inventory scan, an entry is written to the inventory group reporting success or failure, and you can run any inventory query.

Each query has its own set of information that is populated by default and can be modified. Some inventory items extend the Tivoli inventory, and some are additions to the Tivoli Management Framework. See Chapter 16, "Tivoli Management Framework UIM inventory collection," on page 59 for a list of the inventory queries that are created.

Using IBM Director monitors

You can configure the IBM Director monitors to suit your needs. All monitors are preconfigured to poll at 5-minute intervals; however, you can set applicable polling intervals for each monitor. You can also enable or disable a monitor.

You can check the status of monitors in Tivoli Management Framework in the following ways:

- Sending e-mails
- Sending Tivoli notices
- Sending Tivoli Enterprise Console events

See your IBM Tivoli documentation for more information about how to configure monitors.

Using IBM Director tasks

You can edit and run these tasks as you would any other Tivoli task. The About task returns information about the IBM Director UIM for Tivoli Management Framework that is installed. The Reboot task restarts subscribers on which IBM Director Agent is installed. The Shutdown task shuts down subscribers on which IBM Director Agent or IBM Director Core Services is installed.

Creating IBM Director software packages

To take advantage of IBM Director functions, you can package IBM Director software and then distribute it for installation. To distribute IBM Director software to an endpoint, you must first meet the following requirements:

- Tivoli Software Distribution Server is installed on the software distribution server.
- Tivoli Software Distribution Gateway is installed on all of the managed nodes that you plan to use as a software distribution gateway.
- A Tivoli endpoint is installed on each of the systems to which you want to distribute IBM Director software package.
- Windows is installed on the target system.

Complete the following steps to create an IBM Director software package to install on endpoints in your Tivoli Management Framework:

1. 1. Create a temporary directory on your Software Distribution Server to contain the IBM Director packages for distribution.
2. Download or otherwise obtain the software files that you want to distribute (for example, dir5.10_coreservices_windows.zip).
3. Extract the contents of the zip file into the temporary directory that was created for the package.
4. **Optional:** Edit installation directive in the response file. The response files found with IBM Director packages end with the file extension .rsp. The response file is fully commented may be edited using any text editor.
5. Create a new IBM Director package from the command prompt, by changing to the datme/SD directory, and entering one of the following commands.

   Note: All slashes used in the path parameters must be forward slashes(/) for both Windows and UNIX systems.

For a Windows server	`bash daswd.sh host_name policy_region source_path target_path xml_file SWD_version`
For a UNIX server	`./daswd.sh host_name policy_region source_path target_path xml_file SWD_version`

   where:
   - *hostName* is the name of the current host system for software distribution.

- *policy_region* is the name of your policy region.
- *source_path* is the fully-qualified path of the source of the files used to create the package, in the temporary directory.

    Note: If the temporary directory structure contains subdirectories, they must be separated with a forward slash (/) for a system that is running either Windows or UNIX.
- *target_path* is the fully-qualified path of the destination of the package on the endpoint.
- *xml_file* is the fully-qualified path and file name to be used to create the IBM Director software package. These are the supported packages and xml files:

Table 4.

Software package	XML file
Director Agent for Windows	dir5.10_agent_windows.xml
Director Core Services for Windows	dir5.10_coreservices_windows.xml
Director Web Based Access for Windows	dir5.10_wba_windows.xml
ServeRAID Manager Agent	raid_agent_windows.xml

- *SWD_version* is the version number (for example, 4.0) of the Tivoli Software Distribution that is installed. This is required only if you are using Tivoli Software Distribution 4.0.

For example, if you extracted the file dir5.10_coreservices_windows.zip to c:\temp, you would issue the following command on a Windows system:

```
bash daswd.sh triage triage-region c:/temp/FILES c:/stage
c:/temp/META-INF/dir5.10_coreservices_windows.xml
```

The DIRECTOR_SWD profile manager is created with an IBM Director software package.

After the IBM Director software package is created, see the *IBM Director Installation and Configuration Guide* for information about how to install and configure the IBM Director software. For more information about how to distribute the software package, refer your IBM Tivoli documentation.

Using IBM Director rule sets

This topic describes rule sets that you can use with Tivoli Management Enterprise.

Rule sets provide a mechanism that automatically handles events as they appear in the Tivoli Enterprise Console. These rules implement such tasks as dropping incoming events and canceling other events to reduce the number of insignificant or outdated events present in the Tivoli Enterprise Console. IBM Director UIM for Tivoli Management Enterprise provides a set of rules that can be used to automatically handle certain IBM Director-generated events.

All IBM Director rules function to either drop incoming events or cancel already-received events. When an incoming event is caught by a rule, the event server searches through all the events in the Tivoli Enterprise Console that occurred within the previous 24 hours and cancels any events that meet the criteria of that rule. In this way, old events are canceled and replaced by new events, and only the most recent event is present in the Tivoli Enterprise Console for any one sensor on a host.

For example, Fan Sensor 2 on host ABC has reached critical status. The Tivoli Enterprise Console receives an IBMPSG_FanEvent. Two hours later, the condition is corrected. Finally, the Tivoli Enterprise Console receives a harmless IBMPSG_FanEvent. If the IBM Director rule sets have been loaded, the harmless IBMPSG_FanEvent automatically closes the critical IBMPSG_FanEvent that was received.

IBM Director rule sets are in the ..\datme\DM directory for Distributed Monitoring and in the ..\datme\TEC directory for native Tivoli Enterprise Console and SNMP events. These rule sets can be imported one at a time into a rule base. Then, you recompile and reload the rule base and restart the event server. Or, you can automatically import all IBM Director rule sets.

Note: Neither method works if the rule base you are modifying is read-only. Also, the rule base cannot be compiled if the BAROC (Basic Recorder of Objects in C) files have not been imported.

Chapter 16. Tivoli Management Framework UIM inventory collection

This topic lists the inventory items that the UIM inventory function collects for the Tivoli Management Framework program.

- Alert on LAN™ settings
- Alert standard format settings
- Asset ID
- BIOS details
- Cache
- CIM
- Firmware
- FRU service numbers
- Geographic information
- IBM Director Agent
- IP network configuration
- IPX network configuration
- Lease information
- Memory details
- Network details
- Personalized data
- Port connectors
- Processor details
- RAID controllers
- RAID disk drives
- RAID enclosures
- RAID logical drives
- Serial number information
- ServeRAID controllers
- ServeRAID disk drives
- ServeRAID enclosures
- ServeRAID logical drives
- SNMP agent configuration
- System board configuration
- System enclosure
- System slots
- User details
- Video details
- Warranty information

Chapter 17. Rule sets

The topic provides information about rules sets.

Native Tivoli Enterprise Console rule set

This topic provides information about the rule set for native Tivoli Enterprise Console events.

File name	Rule action	Associated events
fan.rls	fan_cancel	IBMPSG_FanEvent
chassis.rls	chassis_cancel	IBMPSG_ChassisEvent
lease.rls	lease_cancel	IBMPSG_LeaseExpirationEvent
memory.rls	mem_cancel	IBMPSG_MemoryPFEvent
network.rls	net_cancel	IBMPSG_NetworkAdapterFailEvent IBMPSG_NetworkAdapterOnlineEvent IBMPSG_NetworkAdapterOfflineEvent
power.rls	pwr_cancel	IBMPSG_PowerSupplyEvent
processor.rls	proc_cancel	IBMPSG_ProcessorPFEvent
smart.rls	smart_cancel	IBMPSG_SMARTEvent
storage.rls	storage_cancel	IBMPSG_StorageEvent
temperature.rls	temperature_cancel	IBMPSG_TemperatureEvent
voltage.rls	voltage_cancel	IBMPSG_VoltageEvent
warranty.rls	warranty_cancel	IBMPSG_WarrantyExpirationEvent

SNMP event rule set

This topic provides information about the rule set for SNMP events.

File name	Rule action	Associated events
serveraid.rls	powersupply_ok_cancels_fail	ServeRAID_PowerSupplyOk cancels ServeRAID_PowerSupplyFail
serveraid.rls	powersupply_fail_cancels_ok	ServeRAID_PowerSupplyFail cancels ServeRAID_PowerSupplyOk
serveraid.rls	temp_ok_cancels_fail	ServeRAID_TempOk cancels ServeRAID_TempFail
serveraid.rls	temp_fail_cancels_ok	ServeRAID_TempFail cancels ServeRAID_TempOk
serveraid.rls	fan_ok_cancels_fail	ServeRAID_FanOk cancels ServeRAID_FanFail
serveraid.rls	fan_fail_cancels_ok	ServeRAID_FanFail cancels ServeRAID_FanOk
serveraid.rls	enclosure_ok_cancels_fail	ServeRAID_EnclosureOk cancels ServeRAID_EnclosureFail
serveraid.rls	enclosure_fail_cancels_ok	ServeRAID_EnclosureFail cancels ServeRAID_EnclosureOk

File name	Rule action	Associated events
ums.rls	networkadapter_offline_cancels_online	UMS_NetworkAdapterOfflineEvent UMS_NetworkAdapterOnlineEvent
ums.rls	storage_normal_cancels-low	UMS_StorageNormal UMS_StorageLow UMS_StorageVeryLow
ums.rls	fan_operational_cancels_outoforder	UMS_FanOperational UMS_FanOutOfOrder
ums.rls	warranty_cancels	UMS_WarrantyExpiredNormal UMS_WarrantyExpiredWarning UMS_WarrantyExpiredCritical
ums.rls	lease_cancels	UMS_LeaseExpiredNormal UMS_LeaseExpiredWarning UMS_LeaseExpiredCritical
ums.rls	chassis_inplace_cancels_intruded	UMS_ChassisInPlace UMS_ChassisIntruded
ums.rls	pwr_cancels	UMS_PowerSupplyNormal UMS_PowerSupplyWarning UMS_PowerSupplyCritical
ums.rls	mem_cancels	UMS_MemoryPFNormal UMS_MemoryPFWarning UMS_MemoryPFCritical
ums.rls	proc_cancels	UMS_ProcessorNormal UMS_ProcessorWarning UMS_ProcessorCritical
ums.rls	voltage_normal_cancels_outofrange	UMS_VoltageNormal UMS_VoltageOutOfRange UMS_VoltageCriticallyOutOfRange
ums.rls	temperature_normal_cancels_outofrange	UMS_TemperatureNormal UMS_TemperatureOutOfRange UMS_TemperatureCriticallyOutOfRange
ums.rls	smart_cancels	UMS_SMARTNormal UMS_SMARTWarning UMS_SMARTCritical

Tivoli Distributed Monitoring rule set

This topic provides information about the rule set for Tivoli Distributed Monitoring 5.1.1 events.

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File name	Rule action	Associated events
dm.rls	action_drop	TMW_ActionResult (HTTP and SNMP monitors only) **Note:** This event is dropped from the event server because it misinforms the user about the success of an IBM Director Agent HTTP or SNMP service restart.

File name	Rule action	Associated events
dm.rls	clearing_cancel	TMW_ClearingEvent clears Ev_HTTPCheck_sh_ScriptResult_matches Ev_SNMPCheck_sh_ScriptResult_matches IBMPSG_Chassis_SecurityBreach_is_Attempted IBMPSG_Chassis_SecurityBreach_is_Successful IBMPSG_Chassis_IsNotLocked
dm.rls	clearing_cancel2	Ev_HTTPCheck_sh_ScriptResult_matches Ev_SNMPCheck_sh_ScriptResult_matches IBMPSG_Chassis_SecurityBreach_is_Attempted IBMPSG_Chassis_SecurityBreach_is_Successful IBMPSG_Chassis_IsNotLocked clears TMW_ClearingEvent
dm.rls	clearing_cancel5	TMW_ClearingEvent clears IBMPSG_NetworkAdapter_Degraded IBMPSG_NetworkAdapter_Error IBMPSG_NetworkAdapter_PredFail
dm.rls	clearing_cancel6	IBMPSG_NetworkAdapter_Degraded IBMPSG_NetworkAdapter_Error IBMPSG_NetworkAdapter_PredFail clears TMW_ClearingEvent
dm.rls	clearing_cancel7	TMW_ClearingEvent clears IBMPSG_PortableBattery_BatteryStatus_is_ critical IBMPSG_PortableBattery_BatteryStatus_is_low IBMPSG_PortableBattery_CriticalLow IBMPSG_PortableBattery_FullChargeCapacity_ too_low
dm.rls	clearing_cancel8	IBMPSG_PortableBattery_BatteryStatus_is_ critical IBMPSG_PortableBattery_BatteryStatus_is_low IBMPSG_PortableBattery_CriticalLow IBMPSG_PortableBattery_FullChargeCapacity_ too_low clears TMW_ClearingEvent
dm.rls	clearing_cancel3	TMW_ClearingEvent clears IBMPSG_Tachometer_WarningHigh IBMPSG_Tachometer_CriticalHigh IBMPSG_Tachometer_CriticalLow IBMPSG_Tachometer_WarningLow
dm.rls	clearing_cancel4	IBMPSG_Tachometer_WarningHigh IBMPSG_Tachometer_CriticalHigh IBMPSG_Tachometer_CriticalLow IBMPSG_Tachometer_WarningLow clears TMW_ClearingEvent
dm.rls	clearing_cancel9	TMW_ClearingEvent clears IBMPSG_TemperatureSensor_CriticalHigh IBMPSG_TemperatureSensor_WarningHigh
dm.rls	clearing_cancel10	IBMPSG_TemperatureSensor_CriticalHigh IBMPSG_TemperatureSensor_WarningHigh clears TMW_ClearingEvent
dm.rls	clearing_cancel11	TMW_ClearingEvent clears IBMPSG_VoltageSensor_WarningHigh IBMPSG_VoltageSensor_CriticalHigh IBMPSG_VoltageSensor_CriticalLow IBMPSG_VoltageSensor_WarningLow

File name	Rule action	Associated events
dm.rls	clearing_cancel12	IBMPSG_VoltageSensor_WarningHigh IBMPSG_VoltageSensor_CriticalHigh IBMPSG_VoltageSensor_CriticalLow IBMPSG_VoltageSensor_WarningLow clears TMW_ClearingEvent

Part 5. IBM Director UIM for Tivoli Netview

Chapter 18. IBM Director UIM for Tivoli NetView

With the IBM Director UIM for Tivoli NetView, you can use your systems-management software to manage systems installed with IBM Director Core Services or IBM Director Agent software.

When you install IBM Director UIM for Tivoli NetView, the following functions are added to the Tivoli NetView environment:

- **Event notification**: Provides notification of events (such as failing components) occurring on IBM Director Agent systems and IBM Management Processors, allowing IT personnel to take immediate corrective action. Notifications are delivered through SNMP traps.
- **Inventory**: Collects the inventory data from IBM Director Agent, including Asset ID data, BIOS details, FRU service numbers, lease information, and network details.
- **Web browser launch**: Provides Web-browser capability from within the NetView environment that allows you to view and manage real-time asset and health information about managed systems on which IBM Director Agent is installed.
- **Discovery**: Automatically finds systems with the IBM Director agent installed, using SNMP. From NetView, you can identify Director agent systems at a glance.

  Note: You must configure the SNMP community name of the managed system.

Chapter 19. Integrating IBM Director UIM for IBM Tivoli NetView

IBM Director provides an upward integration module that you integrate into IBM Tivoli NetView.

Tivoli NetView installation requirements

Operating system and application requirements

IBM Director UIM for Tivoli NetView can be installed on systems running these operating systems and applications:

- IBM Tivoli NetView, versions 6.0.2 and 7.1
- Microsoft Windows 2000 and 2003
- Red Hat Linux version 7.2
- Red Hat Linux version 7.3
- SUSE LINUX version 7.2
- SUSE LINUX version 7.3
- SUSE LINUX version 8.0
- (Linux only) Red Hat Package Manager (RPM)

IBM Director software prerequisites

IBM Director UIM for Tivoli NetView requires you to install either Level 1: IBM Director Core Services or Level 2: IBM Director Agent on the systems that you want to manage. For a list of supported operating systems, see Appendix A, "Operating systems supported by Level-2, Level-1, and Level-0 managed systems," on page 81

Note:

1. IBM Director UIM for Tivoli NetView also supports IBM Director Agent 4.10 and later. For a list of supported operating systems, refer to the *IBM Director 4.x Upward Integration Module Installation Guide*.

The following additional installation requirements must be met:

- If you want to install database support, you must install and configure Microsoft SQL Server 2000 before you install IBM Director UIM for Tivoli NetView. For more information, see "Configuring the database source" on page 75.
- For IBM Director Agent discovery, SNMP support must be enabled on the system.
- To access the Web browser function or to receive health alerts, you must enable these functions when you install Level 1: IBM Director Core Services or Level 2: IBM Director Agent on the system.

Limitations

When you install IBM Director UIM for Tivoli NetView, consider the following limitations:

- The IBM Director UIM for Tivoli NetView version 4.21 is required for support of IBM Director Agent version 4.21 or later.
- There is no database support for Linux.
- Discovery, inventory, and event notification are supported on all client/server operating-system combinations for Tivoli NetView, with two exceptions:
  - An IBM Tivoli NetView server that is running Linux can get inventory only from managed systems that are running IBM Director Agent 4.20.
  - An IBM Tivoli NetView server that is running Windows cannot get inventory from managed systems that are running IBM Director 4.1.
- Before you start IBM Director on Tivoli NetView, make sure that the Web browser on the NetView server is not set to use proxy accounts; otherwise, discovery fails.
- In Windows Internet Explorer 5.0, if you start the HTTP-based IBM Director Agent through Tivoli NetView, a proxy server authorization window opens even if the browser options are set to bypass a proxy server for local addresses. To correct this problem, you must upgrade to Internet Explorer 5.5.
- When you display inventory data for multiple video adapters and the inventory data is not retrieved correctly, the problem is with CIM. If you try the wbemtest tool, you still do not retrieve the correct information for multiple video adapters.
- With SMBIOS 2.3.3:
  - PCI-X slots do not report the correct connector type. Retrieved inventory data displays the connector type as Unknown for all PCI-X slots.
  - Some multi-threaded processors might report processor details incorrectly. For these processors, the inventory function reports two processors, one with the correct information and the other with no information.
- With older versions of SMBIOS, ISA slots do not report current usage correctly. For these systems, current usage for ISA slots is reported as 7.
- Systems that are running Windows 2000 Professional Edition with S3 Trio 3D video adapters might not report the correct amount of adapter RAM. Adapter RAM is reported as 0.
- All IBM Director Agent traps that are received are reported as Critical regardless of their severity. You can modify the severity by selecting **Options > Trap Settings** from the NetView server menu.
- If IBM Director UIM for Tivoli NetView is uninstalled and then reinstalled, you might receive the following error: `Browser service event ID: 8032`. Complete the following steps to correct this problem:
  1. Open Internet Explorer.
  2. Click **Tools > Internet Options**.
  3. Click **Delete Files**, and then click **OK**.
  4. Click **Clear History**, and then click **OK**.
- (Server running IBM NetView on Linux only) The following error message is displayed:

```
Error detected while loading MIB file: /usr/OV/ibm/mibs/ums.mib.
This MIB cannot be loaded until the following problem
is corrected: Line 44930: Error defining ASN.1 Type: duplicate
type with conflicting definition 'Boolean'.
```

  Complete the following steps to correct this problem:
  1. Open the ums.mib file in an ASCII text editor and locate the following section:

```
          Boolean ::= INTEGER (0..1)
```

   2. Add - - to the beginning of the line , so that the line reads as follows (all on
      one line):

```
      - - Boolean ::= INTEGER (0..1)
```

   3. Save the modified file.

- (Managed systems running Linux only) You must install and configure
  net-snmp5.2.1 for IBM Tivoli NetView for discovery, inventory, and event
  notification of the managed system. For more information, see *IBM Director
  Installation and Configuration Guide*.

- Before you can save NetView inventory data to the IBM Director database you
  must create a certificate. The UIM uses the certificate to authenticate
  communication. To create a certificate in NetView, complete the following steps:

   1. From the NetView menu bar, click **Tools > Director Agent > Create
      Certificate**. The Client Authentication window opens.

   2. In the **Username** field, type a valid user name.

   3. In the **Password** field, type the password.

   4. In the **Re-Type Password** field, type the password again.

   5. Click **OK**.

   After the certificate is created, you can save the inventory to the IBM Director
   database.

Installing IBM Director UIM for Tivoli NetView on Windows

This topic provides the installation instructions for the UIM.

After you install the UIM for Tivoli NetView, you must configure a database source
and create an IBM Director Agent SmartSet if you want to collect inventory data.
See "Configuring the database source" on page 75 and "Discovering IBM Director
Agents" on page 73 for instructions.

Complete the following steps to install IBM Director UIM for Tivoli NetView:

   1. Download the IBM Director UIM for Tivoli NetView executable file
      (dir5.10_uim_netview.exe) and the readme file (dir5.10_uim_netview.txt) from
      the IBM Director Support Web site at www.ibm.com/servers/eserver/xseries/
      systems_management/ibm_director/ and save them to a temporary directory.

   2. Stop Tivoli NetView Server.

   3. Double-click dir5.10_uim_netview.exe to start the InstallShield Wizard.

   4. Click **Next**.

   5. In the "License agreement" window, click **Yes**.

   6. Read the information in the window and click **Next**. The "User information"
      window opens. By default, the fields are already completed.

   7. Complete the following steps to change the default information:

      a. In the **User Name** field, type the name of the NetView administrator.

      b. In the **Company Name** field, type the name of your company.

      c. If you want to enable access only for the current operating-system account,
         click **Only for me (*username*)**, where *username* is automatically substituted.
         Otherwise, click **Anyone who uses this computer (all users)**.

   8. Click **Next**. The "Installation type" window opens.

   9. In the "Installation type" window, click the type of installation that you want:

Typical

Installs IBM Director UIM for Tivoli NetView and the IBM Director UIM for Tivoli NetView help files.

Compact

Installs IBM Director UIM for Tivoli NetView only.

Custom

Installs IBM Director UIM for Tivoli NetView; and enables you to select whether to install the IBM Director UIM for Tivoli NetView help files and database support.

10. Click **Next**. If you specified a typical or compact installation, the "Setup Type" window opens; go to step 12. If you specified a custom installation, the "Features selection" window opens; go to step 11.

11. Select the IBM Director features that you want to install and click **Next**. If you want to install database support, be sure to select the **Database support** check box.

> **Note:** For you to use this option, Microsoft SQL Server 2000 must already be installed and configured.

12. In the "Setup Type" window, if you are installing the UIM on a management system, click **NetView Server**. Otherwise, click **NetView Console**.

13. Click **Next**. The "Setup summary" window opens.

14. In the "Setup summary" window, review the setup summary. Click **Back** to make any changes. Otherwise, click **Next**. When the installation is completed, the "Restart" window opens.

15. Click **Yes, I want to restart my computer now**; then, click **Finish**. The system restarts.

Installing IBM Director UIM for Tivoli NetView on Linux

This section provides the instructions for the installation of IBM Director UIM for Tivoli NetView on a system running Linux.

Complete the following steps to install IBM Director UIM for Tivoli NetView:

1. Go to the IBM Director Support Web site at www.ibm.com/servers/eserver/xseries/ systems_management/ibm_director/ and download the IBM Director UIM for Tivoli NetView file, (dir5.10_uim_netview_redhatlinux.tar.gz or dir5.10_uim_netview_suselinux.tar.gz, depending on your Linux distribution) and the readme file (dir5.10_uim_netview_linux.txt) to a temporary directory.

2. Stop the Tivoli NetView Server. From a command prompt, type the following command and press **Enter**:

   `./usr/OV/bin/ovstop`

3. Decompress the contents of dir5.10_uim_netview_*distribution*.tar.gz, where *distribution* is either redhatlinux or suselinux.

4. From a command prompt, type the following command and press **Enter**:

   `rpm -ivh nvuim-distribution-5.10-1.1386.rpm`

   where *distribution* is either redhat for systems running Red Hat Linux or suse for systems running SUSE LINUX.

Post-installation tasks

After you install IBM Director UIM for Tivoli NetView, you might have to correct how icons are displayed.

Correcting how the icons for IP Internet and SmartSet are displayed

After you install the IBM Director UIM for Tivoli NetView, the icons for IP Internet and SmartSets might not be displayed correctly. Complete the following steps to correct the problem:

1. From the NetView Server, click **Options** → **Server Setup**. The Server Setup window opens.
2. Click the **Databases** tab. The Databases page is displayed.
3. In the top entry field, click **Clear Databases**. The text on the window is refreshed.
4. Click **Clear Bitmap Database**; then, click **OK**.
5. Close and reopen NetView Server. The icons for IP Internet and SmartSets are displayed correctly.

Discovering IBM Director Agents

To create an IBM Director Agent SmartSet to access IBM Director Agent inventory, run the nvsniffer.exe file. This file is in the *d*:\usr\ov\bin directory, where *d* is the drive letter of the hard disk drive. At a command prompt, navigate to the \usr\ov\bin directory; then, type `nvsniffer.exe`.

Uninstalling IBM Director UIM for Tivoli NetView on Linux

This section provides the steps for uninstalling the Tivoli NetView UIM on a system running Linux.

Complete the following steps to uninstall IBM Director UIM for Tivoli NetView on Linux:

From a command prompt, type the following command and press **Enter**:

```
rpm -e ovuim-distribution-5.10-1.i386.rpm
```

where *distribution* is redhat for systems running Red Hat Linux or suse for systems running SUSE LINUX.

When you run this command, the IBM Director UIM for Tivoli NetView is unloaded and all related files are removed from the system.

Uninstalling IBM Director UIM for Tivoli NetView on Windows

This topic describes how to uninstall IBM Director UIM for Tivoli NetView on Windows.

Complete the following steps to uninstall IBM Director UIM for Tivoli NetView on Windows:

1. Stop the Tivoli NetView server or servers.

2. From the Windows task bar, click **Start** → **Settings** → **Control Panel**. The Control Panel window opens.
3. Double-click **Add/Remove Programs**. The Add/Remove Programs window opens.
4. Scroll down to **IBM Director UIM for Tivoli NetView** and click **Remove**. The Confirm File Deletion window opens.
5. Click **OK**. The uninstallation program begins.
6. When the uninstallation is completed, click **OK**. Then, remove any objects that have been added to the Tivoli NetView environment, such as the IBM Director Agent SmartSet.

Enabling TEC Events

Level 1: Director Core Services and Level 2: IBM Director Agents send events automatically to TEC if the Tivoli endpoint is installed on the managed system. You can choose to have the Level 1: Director Core Services send events to TEC in a nonsecure method, without using the Tivoli endpoint.

Complete these steps to enable TEC events:
1. Edit the \Director\cimom\data\cimclient\TivoliConsumer.cfg file using any text editor.
2. Set the following values in the file:
      tecEventCommand=nonTME
      tecConfigFile=true
3. Save and close the file.
4. Edit the Director\cimom\data\cimclient\tecad_eif.conf file using any text editor.
5. Set the appropriate values for your environment.
6. Save and close the file.

Chapter 20. Working with IBM Director UIM for Tivoli NetView

After you install IBM Director UIM for Tivoli NetView, complete the following steps to access IBM Director functions from the Tivoli NetView Root window:

1. In the Tivoli NetView Root window, double-click the **SmartSets** icon.
2. Double-click the **DirectorAgent** icon to begin working with managed systems on which IBM Director Agent is installed. The Director Agent window opens.

Creating a certificate

IBM Tivoli NetView uses a stored certificate to access inventory information for a managed system. Complete the following steps to create a certificate:

1. In the Director Agent window, click a managed system.
2. In the Tivoli NetView Root window, click **Tools** → **Director Agent** → **Create Certificate**. The Client Authentication window opens.
3. Type the user name and password in the applicable fields.
4. Click **OK**.

You can have only one certificate at a time. You cannot view inventory information for a managed system for which the certificate is not valid. To access inventory information for a managed system for which the certificate is not valid, click **Tools** → **Director Agent** → **Create Certificate** to type and save a new user name and password pair as the certificate.

Viewing inventory

Complete the following steps to view the inventory for a managed system:

1. In the Director Agent window, click the system.
2. Click **Tools** → **Director Agent** → **Director Agent Inventory** and click the inventory item that you want to view.

Notes: The Director Agent Inventory task uses the stored certificate for authentication. If you have not created a certificate, the Client Authentication window opens when you click **Tools** → **Director Agent** → **Director Agent Inventory**. The Director Agent Inventory task will successfully collect and save inventory data only from the managed systems for which the certificate is valid.

Configuring the database source

If you specified a custom installation to include database support, you must configure the database source.

Note: Microsoft SQL Server 2000 must be installed and configured before you install IBM Director UIM for Tivoli NetView.

Complete the following steps to configure a database source:

1. Start Tivoli NetView.
2. Click **Tools** → **Director Agent** → **Configure ODBC DataSource**.

3. In the Configure Data Source for Database Access window, complete the fields.
4. Click **Add**. A message is displayed in the bottom pane indicating whether the database tables were created successfully.
5. Click **Close**.

Saving inventory data to the database

Complete the following steps to save the IBM Director Agent inventory data to the database:

1. Click **Tools** → **Director Agent** → **Get Director Agent Nodes**. A message is displayed stating that the IBM Director Agents are collected.
2. Click **OK**.
3. Click **Tools** → **Director Agent** → **Save Inventory to Database**. The Inventory Status window opens.

   Note: The Save Inventory to Database task uses the stored certificate for authentication. If you have not created a certificate, the Client Authentication window opens after you click **Tools** → **Director Agent** → **Save Inventory to Database**. The Director Agent Inventory task successfully collects and saves inventory data only from the managed systems for which the certificate is valid.

   In the bottom pane, a message is displayed when the inventory has been saved successfully.
4. Click **Close**.

Viewing event notifications

IBM Director UIM for IBM Tivoli NetView adds IBM Director trap definitions to IBM Tivoli NetView. To view the event notifications for a single system, in the Director Agent window, select the system and click the **Events** icon. The Event Browser window opens and displays all events for the system.

For a list of IBM Director Agent events, see Appendix B, "CIM indications in IBM Director," on page 85. For more information about how to customize events, see your Tivoli NetView documentation.

Accessing the Web browser (Windows only)

To access the Web browser, click **Tools** → **Director Agent** → **Director Agent Browser**. The Web browser window opens.

Chapter 21. HP OpenView and Tivoli NetView UIM inventory collection

This topic lists the inventory items that the UIM inventory function collects for the HP OpenView and Tivoli NetView programs.

- Asset ID
- BIOS details
- Cache
- CIMOM identification
- IBM Director Agent
- IBM Director Agent HTTP port
- Lease information
- Memory details
- Personalized data
- Port connectors
- Processor details
- Serial number information
- SNMP configuration
- System board configuration
- System enclosure
- System slots
- User details
- Video details

  Note: Because of a limitation with CIM, inventory for multiple video adapters is not collected correctly.
- Warranty information

Part 6. Appendixes

Appendix A. Operating systems supported by Level-2, Level-1, and Level-0 managed systems

This topic lists the operating systems on which you can install IBM Director Agent and IBM Director Core Services, as well as the operating systems for which IBM Director provides Level-0 system-management support.

Note: Unless stated otherwise, all of the listed operating systems are supported by IBM Director Agent, IBM Director Core Services, and Level-0 system management.

xSeries servers and Intel-compatible systems (32-bit operating systems)

- Novell NetWare, version 6.5

  Note: IBM Director does not provide Level-0 support for NetWare.

- Red Hat Enterprise Linux AS, ES, and WS, version 3.0

  Note: (Level-2 and Level-1 support only) For systems that contain an AMD Opteron or Athlon64 processor, Update 5 is required.

- Red Hat Enterprise Linux AS, ES, and WS, version 4.0
- SUSE LINUX Enterprise Server 8 for x86
- SUSE LINUX Enterprise Server 9 for x86
- VMware ESX Server, version 2.1, with the following guest operating systems:
  - Red Hat Enterprise Linux AS, ES, and WS, version 3.0
  - SUSE LINUX Enterprise Server 8 for x86 (Service Pack 3 required)
  - Windows 2000, Advanced Server and Server Editions (Service Pack 3 or later required)
  - Windows Server 2003, Enterprise, Standard, and Web Editions (Service Pack 1 required)
- VMware ESX Server, version 2.5, with the following guest operating systems:
  - Red Hat Enterprise Linux AS, ES, and WS, version 3.0 (Update 3 required)
  - SUSE LINUX Enterprise Server 8 for x86 (Service Pack 3 required)
  - SUSE LINUX Enterprise Server 9 for x86
  - Windows 2000, Advanced Server and Server Editions (Service Pack 3 or later required)
  - Windows Server 2003, Enterprise, Standard, and Web Editions (Service Pack 1 required)
  - Windows XP Professional Edition (Service Packs 1 and 2 required)
- VMware ESX Server, version 2.51, with the following guest operating systems:
  - Red Hat Enterprise Linux AS, ES, and WS, version 3.0 (Update 4 required)
  - SUSE LINUX Enterprise Server 8 for x86 (Service Pack 3 required)
  - SUSE LINUX Enterprise Server 9 for x86 (Service Pack 1 required)
  - Windows 2000, Advanced Server and Server Editions (Service Pack 3 or later required)
  - Windows Server 2003, Enterprise, Standard, and Web Editions (Service Pack 1 required)
  - Windows XP Professional Edition (Service Packs 1 and 2 required)

- VMware GSX Server, version 3.1, with the following support:

Guest operating systems	• Red Hat Enterprise Linux AS, ES, and WS, version 3.0 (Update 4 required) • SUSE LINUX Enterprise Server 8 for x86 (Service Pack 3 required) • Windows 2000, Advanced Server and Server Editions (Service Pack 3 or later required) • Windows Server 2003, Enterprise, Standard, and Web Editions (Service Pack 1 required)
Host operating systems supported on 32-bit systems	• Red Hat Enterprise Linux AS, ES, and WS, version 3.0 (Stock 2.4.21-4, Update 2.4.21-9, 2.4.21-9.0.1, 2.4.21-15, 2.4.21-27.EL kernels required) • SUSE LINUX Enterprise Server 8 for x86 (Stock 2.4.19, Update 2.4.21-138, 2.4.21-143, 2.4.21-215 and Patch 3 kernels required) • Windows 2000, Advanced Server and Server Editions (Service Packs 3 or later required) • Windows Server 2003, Enterprise, Standard, and Web Editions (Service Pack 1 required)
Host operating systems supported on 64-bit systems	Windows Server 2003, Enterprise, Standard, and Web x64 Editions (Service Pack 1 required)

- VMware GSX Server, version 3.2, with the following support:

Guest operating systems	• Red Hat Enterprise Linux AS, ES, and WS, version 3.0 (Update 3 required) • Red Hat Enterprise Linux AS, ES, and WS, version 4.0 (Updates 1 and 2 required) • SUSE LINUX Enterprise Server 8 for x86 (Service Pack 3 required) • SUSE LINUX Enterprise Server 9 for x86 (Service Pack 1 required) • Windows 2000, Advanced Server and Server Editions (Service Pack 3 or later required) • Windows Server 2003, Enterprise, Standard, and Web Editions (Service Pack 1 required) • Windows XP Professional Edition (Service Packs 1 and 2 required)
Host operating systems supported on 32-bit systems	• Red Hat Enterprise Linux AS, ES, and WS, version 3.0 (Stock 2.4.21-4, Update 2.4.21-9, 2.4.21-9.0.1, 2.4.21-15, 2.4.21-27.EL kernels required) • Red Hat Enterprise Linux AS, ES, and WS, version 4.0 (Stock 2.6.9-5.EL kernel required) • SUSE LINUX Enterprise Server 8 for x86 (Stock 2.4.19, Update 2.4.21-138, 2.4.21-143, 2.4.21-215 and Patch 3 kernels required) • SUSE LINUX Enterprise Server 9 for x86 (Stock 2.6.5-7.97 kernel, Service Pack 1 2.6.5-7.139 kernel required) • Windows 2000, Advanced Server and Server Editions (Service Packs 3 or later required) • Windows Server 2003, Enterprise, Standard, and Web Editions (Service Pack 1 required)
Host operating systems supported on 64-bit systems	Windows Server 2003, Enterprise, Standard, and Web x64 Editions (Service Pack 1 required)

- Microsoft Virtual Server 2005 with the following guest operating systems:
  - Windows 2000, Advanced Server and Server Editions (Service Pack 3 or 4 required)
  - Windows Server 2003, Enterprise, Standard, and Web Editions
- Microsoft Virtual Server 2005 (Service Pack 1) with the following guest operating systems:

- Windows 2000, Advanced Server and Server Editions (Service Pack 3 or 4 required)
- Windows Server 2003, Enterprise, Standard, and Web Editions
- Windows Server 2003, Enterprise, Standard, and Web x64 Editions
- Windows XP Professional Edition (Service Pack 2 required)
- Windows XP Professional x64 Edition
- Windows 2000, Advanced Server, Datacenter, Professional, and Server Editions
- Windows Server 2003, Datacenter, Enterprise, Standard, and Web Editions
- Windows XP Professional Edition

xSeries servers and Intel-compatible systems (64-bit operating systems)

- Red Hat Enterprise Linux AS, ES, and WS, version 3.0, for AMD64 and EM64T
- Red Hat Enterprise Linux AS, version 3.0, for Intel Itanium
- Red Hat Enterprise Linux AS, ES, and WS, version 4.0, for AMD64 and EM64T
- Red Hat Enterprise Linux AS, version 4.0, for Intel Itanium
- SUSE LINUX Enterprise Server 8 for AMD64
- SUSE LINUX Enterprise Server 8 for Itanium Processor Family
- SUSE LINUX Enterprise Server 9 for AMD64 and EM64T
- SUSE LINUX Enterprise Server 9 for Itanium Processor Family
- Windows Server 2003, Datacenter, Enterprise, Standard, and Web x64 Editions
- Windows Server 2003, Datacenter and Enterprise 64-bit Itanium Editions
- Windows XP Professional x64 Edition

iSeries servers

IBM Director provides Level-2 support for the following operating systems. Level-0 support includes Discovery, Remote Session and a limited subset of the Software Distribution task.
- AIX 5L, Version 5.2
- AIX 5L, Version 5.3
- i5/OS, Version 5 Release 3

IBM Director provides Level-2, Level-1, and Level-0 support for the following operating systems:
- Red Hat Enterprise Linux AS, version 3.0, for IBM POWER
- Red Hat Enterprise Linux AS, version 4.0, for IBM POWER
- SUSE LINUX Enterprise Server 8 for IBM POWER
- SUSE LINUX Enterprise Server 9 for IBM POWER

iSeries servers with xSeries options

iSeries server installations can use the following xSeries options:
- Integrated xSeries Server (ISX)
- xSeries servers that are attached to the iSeries servers via the Integrated xSeries Adapter (IXA)

Using these xSeries options, you can install IBM Director Agent and IBM Director Core Services on the following operating systems:
- Red Hat Enterprise Linux AS and ES, version 3.0, for Intel x86
- Red Hat Enterprise Linux AS and ES, version 4.0, for Intel x86
- SUSE LINUX Enterprise Server 8 for x86

- SUSE LINUX Enterprise Server 9 for x86
- Windows 2000, Advanced Server and Server Editions
- Windows Server 2003, Enterprise, Standard, and Web Editions

Note: Whether these operating systems are supported in your iSeries environment depends on the following criteria:
- The Integrated xSeries Server (ISX) installed in the iSeries server
- The xSeries server that is attached to the iSeries server via the Integrated xSeries Adapter (IXA)
- The release of i5/OS or OS/400 installed on the iSeries server

For more information, see *IBM Director Hardware and Software Compatibility*. You can download this document from www.ibm.com/servers/eserver/xseries/ systems_management/ibm_director/.

System p5 and pSeries servers

IBM Director provides Level-2 support for the following operating systems. Level-0 support is includes Discovery, Remote Session and limited subset of the Software Distribution task.
- AIX 5L, Version 5.2
- AIX 5L, Version 5.3
- i5/OS, Version 5 Release 3

IBM Director provides Level-2, Level-1, and Level-0 support for the following operating systems:
- Red Hat Enterprise Linux AS, version 3.3, for IBM POWER
- Red Hat Enterprise Linux AS, version 4.0, for IBM POWER
- SUSE LINUX Enterprise Server 8 for IBM POWER
- SUSE LINUX Enterprise Server 9 for IBM POWER

System z9 and zSeries servers

IBM Director provides Level-2, Level-1, and Level-0 support for the following operating systems:
- Red Hat Enterprise Linux AS, version 4.0, for IBM System z9, zSeries and S/390
- SUSE LINUX Enterprise Server 9 for IBM System z9, zSeries and S/390

Appendix B. CIM indications in IBM Director

IBM Director converts CIM indications for use by the following end consumers:

- IBM Director events
- IBM Director Console (Group Contents pane)
- Microsoft Operations Manager 2005 (alerts)
- Microsoft System Management Server (SMS) (native events)
- Microsoft Windows (event log event ID)
- SNMP
- Tivoli Enterprise Console (native events)
- Tivoli Enterprise Console (SNMP events)

Notes:

1. The HP OpenView and Tivoli NetView Upward Integration Modules (UIMs) use SNMP traps.

2. (Microsoft Operations Manager 2005) All ServeRAID CIM indications are converted to the same value. However, each ServeRAID CIM indication provides a distinct event description.

3. (Microsoft SMS) All ServeRAID CIM indications use the same message ID of 50210. However, each ServeRAID CIM indication provides a distinct event description.

4. (Microsoft Windows event log) All ServeRAID CIM indications are converted to the same event ID. However, each ServeRAID CIM indication provides a distinct Windows event log description.

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Abbreviations, Acronyms, and Glossary

Abbreviation and acronym list

This topic lists abbreviations and acronyms used in the IBM Director documentation.

Table 5. Abbreviations and acronyms used in IBM Director documentation

Abbreviation or acronym	Definition
AES	advanced encryption standard
APAR	authorized program analysis report
ASF	Alert Standard Format
ASM	Advanced System Management
ASM PCI Adapter	Advanced System Management PCI Adapter
BIOS	basic input/output system
CEC	Central Electronics Complex
CIM	Common Information Model
CIMOM	Common Information Model Object Manager
CP	control program
CRC	cyclic redundancy check
CSM	IBM Cluster Systems Management
CSV	comma-separated value
DASD	direct access storage device
DBCS	double-byte character set
DES	data encryption standard
DHCP	Dynamic Host Configuration Protocol
DIMM	dual inline memory module
DMI	Desktop Management Interface
DMTF	Distributed Management Task Force
DNS	Domain Name System
DSA	Digital Signature Algorithm
EEPROM	electrically erasable programmable read-only memory
FRU	field-replaceable unit

Table 5. Abbreviations and acronyms used in IBM Director documentation (continued)

Abbreviation or acronym	Definition
FTMI	fault tolerant management interface
FTP	file transfer protocol
GB	gigabyte
Gb	gigabit
GMT	Greenwich Mean Time
GUI	graphical user interface
GUID	globally unique identifier
HMC	Hardware Management Console
HTML	hypertext markup language
IIS	Microsoft Internet Information Server
I/O	input/output
IP	Internet protocol
IPC	interprocess communication
IPMI	Intelligent Platform Management Interface
IPX	internetwork packet exchange
ISDN	integrated services digital network
ISMP	integrated system management processor
JVM	Java Virtual Machine
JCE	Java Cryptography Extension
JDBC	Java Database Connectivity
JFC	Java Foundation Classes
JRE	Java Runtime Environment
KB	kilobyte
Kb	kilobit
kpbs	kilobits per second
KVM	keyboard/video/mouse
LAN	local area network
LED	light-emitting diode
LPAR	logical partition
MAC	media access control

Table 5. Abbreviations and acronyms used in IBM Director documentation (continued)

Abbreviation or acronym	Definition
MB	megabyte
Mb	megabit
Mbps	megabits per second
MD5	message digest 5
MDAC	Microsoft Data Access Control
MHz	megahertz
MIB	Management Information Base
MIF	Management Information Format
MMC	Microsoft Management Console
MPA	Management Processor Assistant
MPCLI	Management Processor Command-Line Interface
MSCS	Microsoft Cluster Server
MST	Microsoft software transformation
NIC	network interface card
NNTP	Network News Transfer Protocol
NTP	network time protocol
NVRAM	nonvolatile random access memory
ODBC	Open DataBase Connectivity
OID	object ID
PCI	peripheral component interconnect
OSA	Open Systems Adapter
PCI-X	peripheral component interconnect-extended
PDF	Portable Document Format
PFA	Predictive Failure Analysis®
POST	power-on self-test
PTF	program temporary fix
RAM	random access memory
RDM	Remote Deployment Manager
RPM	(1) Red Hat Package Manager (2) revolutions per minute
RSA	Rivest-Shamir-Adleman
RXE	Remote Expansion Enclosure

Table 5. Abbreviations and acronyms used in IBM Director documentation (continued)

Abbreviation or acronym	Definition
SAS	Serial Attached SCSI
SATA	Serial ATA
SCSI	Small Computer System Interface
SFS	shared file system
SHA	Secure Hash Algorithm
SI	Solution Install
SID	(1) security identifier (2) Oracle system identifier
SLP	service location protocol
SLPD	service location protocol daemon
SMBIOS	System Management BIOS
SMI	System Management Information
SMP	symmetric multiprocessor
SMS	Systems Management Server
SMTP	Simple Mail Transfer Protocol
SMART	Self-Monitoring, Analysis, and Reporting Technology
SMI-S	Storage Management Initiative Specification
SNMP	Simple Network Management Protocol
SPB	software package block
SQL	Structured Query Language
SSH	Secure Shell
SSL	Secure Sockets Layer
TAP	Telocator Alphanumeric Protocol
TCP/IP	Transmission Control Protocol/Internet Protocol
TTL	time to live
UDP	User Datagram Protocol
UID	unique ID
UIM	upward integration module
UNC	universal naming convention
USB	Universal Serial Bus
UUID	universal unique identifier
VPD	vital product data

Abbreviation or acronym	Definition
VMRM	Virtual Machine Resource Manager
VRM	voltage regulator module
WAN	wide area network
WfM	Wired for Management
WINS	Windows Internet Naming Service
WMI	Windows Management Instrumentation
WQL	Windows Management Instrumentation Query Language
XML	extensible markup language

Glossary

This glossary includes terms and definitions from:

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- The *Information Technology Vocabulary* developed by Subcommittee 1, Joint Technical Committee 1, of the International Organization for Standardization and the International Electrotechnical Committee (ISO/IEC JTC1/SC1). Definitions of published parts of this vocabulary are identified by the symbol (I) after the definition; definitions taken from draft international standards, committee drafts, and working papers being developed by ISO/IEC JTC1/SC1 are identified by the symbol (T) after the definition, indicating that final agreement has not yet been reached among the participating National Bodies of SC1.

- The *IBM Dictionary of Computing*, New York: McGraw-Hill, 1994.

- The *IBM Glossary of Computing Terms*, 1999.

To view other IBM glossary sources, see IBM Terminology at www.ibm.com/ibm/terminology.

A

Advanced Encryption Setting (AES)
A block cipher algorithm, also known as Rijndael, used to encrypt data transmitted between managed systems and the management server, which employs a key of 128, 192, or 256 bits. AES was developed as a replacement for DES.

Advanced System Management (ASM) interconnect
A feature of IBM service processors that enables users to connect up to 24 servers to one service processor, thus eliminating the need for multiple modems, telephones, and LAN ports. It provides such out-of-band management functions as system power control, service-processor event-log management, firmware updates, alert notification, and user profile configuration.

Advanced System Management (ASM) interconnect network
A network of IBM servers created by using the ASM interconnect feature. The servers are connected through RS-485 ports. When servers containing integrated system management processors (ISMPs) and ASM processors are connected to an ASM interconnect network, IBM Director can manage them out-of-band.

Advanced System Management (ASM) PCI adapter
An IBM service processor that is built into the Netfinity® 7000 M10 and 8500R servers. It also was available as an option that could be installed in a server that contained an ASM processor. When an ASM PCI adapter is used with an ASM processor, the ASM PCI adapter acts as an Ethernet gateway, while the ASM processor retains control of the server. When used as a gateway service processor, the ASM PCI adapter can communicate with other ASM PCI adapters and ASM processors only.

Advanced System Management (ASM) processor
A service processor built into the mid-range Netfinity and early xSeries servers. IBM Director can connect out-of-band to an ASM processor located on an ASM interconnect; an ASM PCI adapter, a Remote Supervisor Adapter, or

a Remote Supervisor II must serve as the gateway service processor.

alert A message or other indication that identifies a problem or an impending problem.

alert forwarding
Alert forwarding can ensure that alerts are sent, even if a managed system experiences a catastrophic failure, such as an operating-system failure.

alert-forwarding profile
A profile that specifies where remote alerts for the service processor should be sent.

alert standard format (ASF)
A specification created by the Distributed Management Task Force (DMTF) that defines remote-control and alerting interfaces that can best serve a client system in an environment that does not have an operating system.

anonymous command execution
Execution of commands on a target system as either *system account* (for managed systems running Windows) or *root* (for managed systems running Linux). To restrict anonymous command execution, disable this feature and always require a user ID and password.

ASF See *alert standard format*.

ASM interconnect gateway
See *gateway service processor*.

association
(1) A way of displaying the members of a group in a logical ordering. For example, the Object Type association displays the managed objects in a group in folders based on their type. (2) A way to display additional information about the members of the group. For example, the Event Action Plans association displays any event action plans applied to the managed objects in the group in an Event Action Plan folder.

B

basic input/output system (BIOS)
The code that controls basic hardware operations, such as interactions with diskette drives, hard disk drives, and the keyboard.

BIOS See *Basic Input/Output System*.

blade server
An IBM @server BladeCenter server. A high-throughput, two-way, Intel® Xeon-based server on a card that supports symmetric multiprocessors {SMP}.

BladeCenter chassis
A BladeCenter unit that acts as an enclosure. This 7-U modular chassis can contain up to 14 blade servers. It enables the individual blade servers to share resources, such as the management, switch, power, and blower modules.

bottleneck
A place in the system where contention for a resource is affecting performance.

C

chassis
The metal frame in which various electronic components are mounted.

chassis detect-and-deploy profile
A profile that IBM Director automatically applies to all new BladeCenter chassis when they are discovered. The profile settings include management module name, network protocols, and static IP addresses. If Remote Deployment Manager (RDM) is installed on the management server, the chassis detect-and-deploy profile also can include deployment policies.

CIM See *Common Information Model*.

Common Information Model (CIM)
An implementation-neutral, object-oriented schema for describing network management information. The Distributed Management Task Force (DMTF) develops and maintains CIM specifications.

component association
In the IBM Director Rack Manager task, a function that can make a managed system or device rack-mountable when the inventory collection feature of IBM Director does not recognize the managed system or device. The function associates the system or device with a predefined component.

D

Data Encryption Standard (DES)
A cryptographic algorithm designed to encrypt and decrypt data using a private key.

database server
The server on which the database application and database used with IBM Director Server are installed.

deployment policy
A policy that associates a specific bay in a BladeCenter chassis with an RDM noninteractive task. When a blade server is added to or replaced in the bay, IBM Director automatically runs the RDM task.

DES   See *Data Encryption Standard*.

Desktop Management Interface (DMI)
A protocol-independent set of application programming interfaces (APIs) that were defined by the Distributed Management Task Force (DMTF). These interfaces give management application programs standardized access to information about hardware and software in a system.

Diffie-Hellman key exchange
A public, key-exchange algorithm that is used for securely establishing a shared secret over an insecure channel. During Phase II negotiations, the Diffie-Hellman group prevents someone who intercepts your key from deducing future keys that are based on the one they have.

digital signature algorithm (DSA)
A security protocol that uses a pair of keys (one public and one private) and a one-way encryption algorithm to provide a robust way of authenticating users and systems. If a public key can successfully decrypt a digital signature, a user can be sure that the signature was encrypted using the private key.

discovery
The process of finding resources within an enterprise, including finding the new location of monitored resources that were moved.

DMI   See *Desktop Management Interface*.

E

enclosure
A unit that houses the components of a

storage subsystem, such as a control unit, disk drives, and power source.

event   An occurrence of significance to a task or system, such as the completion or failure of an operation. There are two types of events: alert and resolution.

event action
The action that IBM Director takes in response to a specific event or events.

event-action plan
A user-defined plan that determines how IBM Director will manage certain events. An event action plan comprises one or more event filters and one or more customized event actions.

event-data substitution variable
A variable that can be used to customize event-specific text messages for certain event actions.

event filter
A filter that specifies the event criteria for an event action plan. Events must meet the criteria specified in the event filter in order to be processed by the event action plan to which the filter is assigned.

extension
See *IBM Director extension*.

F

field-replaceable unit (FRU)
An assembly that is replaced in its entirety when any one of its components fails. In some cases, a FRU may contain other FRUs.

file-distribution server
In the Software Distribution task, an intermediate server that is used to distribute a software package when the redirected-distribution method is used.

forecast
A function that can provide a prediction of future performance of a managed system using past data collected on that managed system.

FRU   See *field-replaceable unit*.

G

gateway service processor
A service processor that relays alerts from service processors on an Advanced

System Management (ASM) interconnect network to IBM Director Server.

group A logical set of managed objects. Groups can be dynamic, static, or task-based.

GUID See *Universal Unique Identifier*.

I

IBM Director Agent
A component of IBM Director software. When IBM Director Agent is installed on a system, the system can be managed by IBM Director. IBM Director Agent transfers data to the management server using several network protocols, including TCP/IP, NetBIOS, and IPX.

IBM Director Console
A component of IBM Director software. When installed on a system, it provides a graphical user interface (GUI) for accessing IBM Director Server. IBM Director Console transfers data to and from the management server using TCP/IP.

IBM Director database
The database that contains the data stored by IBM Director Server.

IBM Director environment
The complex, heterogeneous environment managed by IBM Director. It includes systems, BladeCenter chassis, software, SNMP devices.

IBM Director extension
A tool that extends the functionality of IBM Director. Some of the IBM Director extensions are Capacity Manager, ServeRAID Manager, Remote Deployment Manager, Software Distribution.

IBM Director Server
The main component of IBM Director software. When installed on the management server, it provides basic functions such as discovery of the managed systems, persistent storage of configuration and management data, an inventory database, event listening, security and authentication, management console support, and administrative tasks.

IBM Director Server service
A service that runs automatically on the management server, and provides the server engine and application logic for IBM Director.

IBM Director service account
The Windows operating-system account associated with the IBM Director Server service.

in-band communication
Communication that occurs through the same channels as data transmissions. An example of in-band communication is the interprocess communication that occurs between IBM Director Server, IBM Director Agent, and IBM Director Console.

integrated system management processor (ISMP)
A service processor built into the some xSeries servers. The successor to the Advanced System Management (ASM) processor, the ISMP does not support in-band communication in systems running NetWare. For IBM Director Server to connect out-of-band to an ISMP, the server containing the ISMP must be installed on an ASM interconnect network. A Remote Supervisor Adapter or a Remote Supervisor Adapter II must serve as the gateway service processor.

interprocess communication (IPC)
1) The process by which programs communicate data to each other and synchronize their activities. Semaphores, signals, and internal message queues are common methods of interprocess communication. 2) A mechanism of an operating system that allows processes to communicate with each other within the same computer or over a network. It also is called in-band communication

inventory-software dictionary
A file that tracks the software installed on managed systems in a network.

IPC See *interprocess communication*.

ISMP See *integrated system management processor*.

J

job A separately executable unit of work defined by a user, and run by a computer.

L

Level-0 managed system
An IBM or non-IBM server, desktop computer, workstation, or mobile computer, that can be managed by IBM Director but does not have any IBM Director software installed on it.

Level-1 managed system
An IBM or non-IBM server, desktop computer, workstation, and mobile computer that has IBM Director Core Services installed. IBM Director uses IBM Director Core Services to communicate with and administer the Level-2 managed system. IBM Director Core Services includes the SLP instrumentation, the IBM Director Agent SLP service type, and Common Information Model (CIM).

Level-2 managed system
An IBM or non-IBM server, desktop computer, workstation, or mobile computer that has IBM Director Agent installed. IBM Director Agent provides managed systems with the full complement of IBM Director Agent function that is used to communicate with and administer the Level-2 managed system. The function of a Level-2 managed system varies depending on the operating system and platform.

light path diagnostics
A technology that provides a lighted path to failed or failing components to expedite hardware repairs.

M

MAC address
See media access control (MAC) address.

managed group
A group of systems or objects managed by IBM Director.

managed object
An item managed by IBM Director. In IBM Director Console, a managed object is represented by an icon that shows its type (such as chassis, cluster, system, or scalable system, for example).

managed object ID
A unique identifier for each managed object. It is the key value used by IBM Director database tables.

managed system
A system that is being controlled by a given system management application, for example, a system managed by IBM Director.

management console
A system (server, desktop computer, workstation, or mobile computer) on which IBM Director Console is installed.

management module
The BladeCenter component that handles system-management functions. It configures the chassis and switch modules, communicates with the blade servers and all I/O modules, multiplexes the keyboard/video/mouse (KVM), and monitors critical information about the chassis and blade servers.

management server
The server on which IBM Director Server is installed.

media access control (MAC) address
In a local area network, the protocol that determines which device has access to the transmission medium at a given time.

N

nonvolatile random-access memory (NVRAM)
Random access memory (storage) that retains its contents after the electrical power to the machine is shut off.

notification
See *alert*.

NVRAM
See *nonvolatile random-access memory*.

O

out-of-band communication
Communication that occurs through a modem or other asynchronous connection, for example, service processor alerts sent through a modem or over a LAN. In an IBM Director environment, such communication is independent of the operating system and interprocess communication (IPC).

P

partition
See *scalable partition*.

PCI   See *Peripheral Component Interconnect*.

PCI-X See *Peripheral Component Interconnect-X.*

Peripheral Component Interconnect (PCI)
A standard for connecting attached devices to a computer.

Peripheral Component Interconnect-X (PCI-X)
An enhancement to the Peripheral Component Interconnect (PCI) architecture. PCI-X enhances the Peripheral Component Interconnect (PCI) standard by doubling the throughput capability and providing additional adapter-performance options while maintaining backward compatibility with PCI adapters.

PFA See *Predictive Failure Analysis.*

physical platform
An IBM Director managed object that represents a single physical chassis or server that has been discovered through the use of the Service Location Protocol (SLP).

plug-in
A software module, often written by a third party, that adds function to an existing program or application such as a Web browser. See *IBM Director extension.*

POST See *power-on self-test.*

power-on self-test
A series of internal diagnostic tests activated each time the system power is turned on.

Predictive Failure Analysis (PFA)
A scheduled evaluation of system data that detects and signals parametric degradation that might lead to functional failures.

private key
1) In secure communication, an algorithmic pattern used to encrypt messages that only the corresponding public key can decrypt. The private key is also used to decrypt messages that were encrypted by the corresponding public key. The private key is kept on the user's system and is protected by a password. 2) The secret half of a cryptographic key pair that is used with a public key algorithm. Private keys are typically used to digitally sign data and to decrypt data that has been encrypted with the corresponding public key.

public key
1) In secure communication, an algorithmic pattern used to decrypt messages that were encrypted by the corresponding private key. A public key is also used to encrypt messages that can be decrypted only by the corresponding private key. Users broadcast their public keys to everyone with whom they must exchange encrypted messages. 2) The non-secret half of a cryptographic key pair that is used with a public key algorithm. Public keys are typically used to verify digital signatures or decrypt data that has been encrypted with the corresponding private key.

R

redirected distribution
A method of software distribution that uses a file-distribution server.

remote I/O enclosure
An IBM Director managed object that represents an expansion enclosure of Peripheral Component Interconnect-X (PCI-X) slots, for example, an RXE-100 Remote Expansion Enclosure. The enclosure consists of one or two expansion kits.

Remote Supervisor Adapter
An IBM service processor. It is built into some xSeries servers and available as an optional adapter for use with others. When used as a gateway service processor, the Remote Supervisor Adapter can communicate with all service processors on the Advanced System Management (ASM) interconnect.

resolution
The occurrence of a correction or solution to a problem.

resource-monitor threshold
The point at which a resource monitor generates an event.

RXE Expansion Port
The dedicated high-speed port used to connect a remote I/O expansion unit, such as the RXE-100 Remote Expansion Enclosure, to a server.

S

scalable node

A physical platform that has at least one SMP Expansion Module. Additional attributes are assigned to a physical platform when it is a scalable node. These additional attributes record the number of SMP Expansion Modules, SMP Expansion Ports, and RXE Expansion ports on the physical chassis.

scalable object

An IBM Director managed object that is used with Scalable Systems Manager. Scalable objects include scalable nodes, scalable systems, scalable partitions, and remote I/O enclosures that are attached to scalable nodes.

scalable partition

An IBM Director managed object that defines the scalable nodes that can run a single image of the operating system. A scalable partition has a single, continuous memory space and access to all associated adapters. A scalable partition is the logical equivalent of a physical platform. Scalable partitions are associated with scalable systems and comprise only the scalable nodes from their associated scalable systems.

scalable system

An IBM Director managed object that consists of scalable nodes and the scalable partitions that are composed of the scalable nodes in the scalable system. When a scalable system contains two or more scalable nodes, the servers that they represent must be interconnected through their SMP Expansion Modules to make a multinode configuration, for example, a 16-way xSeries 455 server made from four scalable nodes.

Secure Sockets Layer (SSL)

A security protocol that provides communication privacy. SSL enables client/server applications to communicate in a way that is designed to prevent eavesdropping, tampering, and message forgery.

Service Location Protocol (SLP)

In the Internet suite of protocols, a protocol that identifies and uses network hosts without having to designate a specific network host name.

service processor

A generic term for Remote Supervisor Adapters, Advanced System Management processors, Advanced System Management PCI adapters, and integrated system management processors (ISMPs). These hardware-based management processors used in IBM Netfinity and xSeries servers work with IBM Director to provide hardware status and alert notification.

SLP   See *Service Location Protocol*.

SMBIOS

See *systems management BIOS*.

SMP Expansion Module

An IBM xSeries hardware option. It is a single module that contains microprocessors, disk cache, random access memory, and three SMP Expansion Port connections. Two SMP Expansion Modules can fit in a chassis.

SNMP Access and Trap Forwarding

An IBM Director Agent feature that enables SNMP to access managed-system data. When installed on a managed system, this feature enables SNMP-based managers to poll the managed system and receive its alerts. If System Health Monitoring is installed on the managed system also, hardware alerts can be forwarded as SNMP traps.

SNMP device

A network device, printer, or computer that has an SNMP device installed or embedded.

SQL   See *Structured Query Language*

SSL   See *Secure Sockets Layer*.

static partition

A view-only scalable partition.

sticky key

An input method that enables the user to press and release a series of keys sequentially (for example, Ctrl+Alt+Del), yet have the keys behave as if they were pressed and released at the same time. This method can be used for those who require special-needs settings to make the keyboard easier to use.

Structured Query Language (SQL)
A standardized language for defining and manipulating data in a relational database.

switch module
The BladeCenter component that provides network connectivity for the BladeCenter chassis and blade servers. It also provides interconnectivity between the management module and blade servers.

system
The computer and its associated devices and programs.

System Health Monitoring
An IBM Director Agent feature that provides active monitoring of critical system functions, including system temperatures, voltages, and fan speeds. It also handles in-band alert notification for managed systems running Windows and some managed systems running Linux.

system variable
A user-defined keyword and value pair that can be used to test and track the status of network resources. System variables can be referred to wherever event-data substitution is allowed.

systems management BIOS (SMBIOS)
A key requirement of the Wired for Management (WfM) 2.0 specification. SMBIOS extends the system BIOS to support the retrieval of management data required by the WfM specification. To run IBM Director Agent, a system must support SMBIOS, version 2.2 or later.

T

target system
A managed system on which an IBM Director task is performed.

time to live (TTL)
A technique used by best-effort delivery protocols to inhibit endlessly looping packets. The packet is discarded if the TTL counter reaches 0.

triple data encryption standard (DES)
A block cipher algorithm that can be used to encrypt data transmitted between managed systems and the management server. Triple DES is a security enhancement of DES that employs three successive DES block operations.

TTL See *time to live*.

U

universal unique identifier (UUID)
A 128-bit character string guaranteed to be globally unique and used to identify components under management.

uptime
The time during which a system is working without failure.

upward integration
The methods, processes and procedures that enable lower-level systems-management software, such as IBM Director Agent, to work with higher-level systems-management software, such as Tivoli Enterprise™ or Microsoft SMS.

upward integration module
Software that enables higher-level systems-management software, such as Tivoli Enterprise or Microsoft Systems Manager Server (SMS), to interpret and display data provided by IBM Director Agent. This module also can provide enhancements that start IBM Director Agent from within the higher-level systems-management console, as well as collect IBM Director inventory data and view IBM Director alerts.

UUID See *universal unique identifier*.

V

vital product data (VPD)
Information that uniquely defines the system, hardware, software, and microcode elements of a processing system.

VPD See *vital product data*.

W

Wake on LAN
A technology that enables a user to remotely turn on systems for off-hours maintenance. A result of the Intel-IBM Advanced Manageability Alliance and part of the Wired for Management Baseline Specification, users of this technology can remotely turn on a server and control it across the network, thus

saving time on automated software installations, upgrades, disk backups, and virus scans.

walk An SNMP operation that is used to discover all object instances of management information implemented in the SNMP agent that can be accessed by the SNMP manager.

Windows Management Instrumentation (WMI)
An application programming interface (API) in the Windows operating system that enables devices and systems in a network to be configured and managed. WMI uses the Common Information Model (CIM) to enable network administrators to access and share management information.

WMI See *Windows Management Instrumentation*.

WMI Query Language (WQL)
A subset of the Structured Query Language with minor semantic changes to support Windows Management Instrumentation.

WQL See *WMI Query Language*.

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