System x
IBM Hardware Management Pack for Microsoft
System Center Operations Manager 2007
Version 2.4
Installation and User's Guide

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Before using this information and the product it supports, read the information in "Notices."

Second Edition — November, 2010

This edition applies to version 2.4 of the IBM Hardware Management Pack for Microsoft System Center Operations Manager 2007 and to all subsequent releases and modifications until otherwise indicated in new editions.

Table of Contents

About this publication

This book provides instructions for installing IBM® Hardware Management Pack for Microsoft® System Center Operations Manager 2007, Version 2.4 into the Microsoft System Center Operations Manager 2007 and using the integrated features to manage systems in your environment.

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:
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- *IBM Hardware Management Pack for Microsoft System Center Operations Manager 2007, Version 2.4 Release Notes®*

- *IBM Hardware Management Pack for Microsoft System Center Operations Manager 2007, Version 2.4 Installation and User's Guide*

World Wide Web resources

The following Web pages provide resources for understanding, using, and troubleshooting IBM System x, BladeCenter blade servers, and systems-management tools.

IBM System x Integration Offerings for Microsoft System Management Solutions

IBM System x Integration Offerings for Microsoft System Management Solutions at http://www.ibm.com/systems/management/director/partners/microsoft/

Locate the latest downloads for IBM Hardware Management Pack for Microsoft System Center Operations Manager 2007, Version 2.4.

IBM Systems: Technical support site

IBM Systems: Technical support site at http://www-304.ibm.com/jct01004c/systems/support/

Locate support for IBM hardware and systems-management software.

IBM Systems Director: Download/Registration page

IBM Systems Management Software: Download/Registration page at http://www.ibm.com/systems/management/director/downloads.html

Download IBM systems-management software, including IBM Systems Director.

IBM Systems Management page

IBM Systems Management page at http://www.ibm.com/systems/management/

Obtain an overview of IBM systems management.

IBM ServerProven pages

System x ServerProven® pages at http://www-03.ibm.com/servers/eserver/serverproven/compat/us/indexsp.html

BladeCenter ServerProven pages at http://www-03.ibm.com/servers/eserver/serverproven/compat/us/eserver.html

Obtain information about hardware compatibility with IBM System x and xSeries servers and IBM BladeCenter.

Microsoft System Center Operations Manager 2007 page

Microsoft System Center Operations Manager at TechNet http://technet.microsoft.com/en-us/opsmgr/default.aspx

Obtain information about System Center Operations Manager that describes how to monitor your IBM systems across large organizations using IBM and Microsoft applications and operating system knowledge to resolve operational problems.

Overview

The Microsoft System Center Operations Manager allows you to monitor the health of a management target, to author management packs, and to perform administrative operations. A management target in Microsoft System Center Operations Manager can be a computer system, an operating system instance, an application, a network adapter, or a subcomponent inside of a management target. The scope of management classifies Microsoft System Center Operations Manager as a systems management software tool. The IBM Hardware Management Pack provides the management know-how of its IBM management targets.

Upon finding (discovering) a Windows® system, the Microsoft System Center Operations Manager management server pushes the Microsoft System Center Operations Manager agent onto the system, along with scripts inside the IBM Hardware Management Pack that provide policies for monitoring health and collecting events.

Microsoft System Center Operations Manager reports health characteristics of a management target in these categories:

- Availability
- Configuration
- Performance
- Security

For example, the Microsoft System Center Operations Manager reports cooling fan availability based on the fan presence sensor reading and fan performance by the fan tachometer reading.

The IBM Hardware Management Pack establishes relationships for hosting, aggregating, and establishing health dependency among IBM management targets. Microsoft System Center Operations Manager provides health roll-ups and drill-downs to give you a holistic view of objects, and to allow you to quickly identify any specific problem.

With the Microsoft System Center Operations Manager you can create custom groups of objects to manage a holistic health aggregation based on your business needs. You can define different monitoring or aggregation rules for different groups. For example, an application hosting provider might have a per-client holistic health view of all of the hardware, operating systems, applications, and other objects involved with the client. The hosting provider might also have a per-application view or have both views available at the same time.

Microsoft System Center Operations Manager maintains operations databases to track all events that are reported. Expert analysis of the operations databases can

show deep cause and effect relationships in the historical data that can reveal the root cause of a sophisticated problem.

Supported configurations

The following sections describe the supported configurations of the Hardware Management Pack of this release.

Supported systems

The following servers are supported by the Hardware Management Pack v2.4:

Server Product Name	Machine Type
IBM BladeCenter HS12	8014, 8028
IBM BladeCenter HS21	8853
IBM BladeCenter HS22	7870
IBM BladeCenter HS22V	7871
IBM BladeCenter HX5	7872
IBM BladeCenter LS21	7971
IBM BladeCenter LS22	7901
IBM BladeCenter LS41	7972
IBM BladeCenter LS42	7902
IBM System x3200 M2	4367, 4368
IBM System x3200 M3	7327, 7328
IBM System x3250 M2	4190, 4191, 4194
IBM System x3250 M3	4251, 4252, 4261
IBM System x3350	4192, 4193
IBM System x3400 M2	7836, 7837
IBM System x3400 M3	7378, 7379
IBM System x3450	7948, 7949, 4197
IBM System x3455	7940, 7941
IBM System x3500 M2	7839
IBM System x3500 M3	7380
IBM System x3550	7978
IBM System x3550 M2	7946
IBM System x3550 M3	4254, 7944
IBM System x3620 M3	7376
IBM System x3630 M3	7377
IBM System x3650	7979
IBM System x3650 M2	7947
IBM System x3650 M3	4255, 7945
IBM System x3650 T	7980, 8837
IBM System x3655	7985
IBM System x3690 X5	7148, 7149
IBM System x3755	7163, 8877
IBM System x3755 M3	7164
IBM System x3850 M2	7141, 7144, 7233, 7234
IBM System x3850 X5	7145, 7146
IBM System x3850 MAX5	7145, 7146
IBM System x3950 M2	7141, 7144, 7233, 7234

Server Product Name	Machine Type
IBM System x3950 X5	7145, 7146
IBM System x3950 MAX5	7145, 7146
IBM System x iDataPlex dx360 M2	6380, 7323, 7321
IBM System x iDataPlex dx360 M3	6391

For a description of the compatibility of a specific system with Windows and other hardware components, see the respective ServerProven page for that system. The ServerProven links are provided in the "IBM ServerProven pages" section of the "World Wide Web resources".

The following BladeCenter chassis are supported by the IBM Hardware Management Pack v2.4:

BladeCenter Chassis	Machine Type
BladeCenter	7967
BladeCenter E	8677
BladeCenter H	8852, 7989
BladeCenter S	8886, 7779
BladeCenter T	8720, 8730
BladeCenter HT	8740, 8750

For a description of the compatibility of a specific BladeCenter chassis with blade servers and other BladeCenter modules, see the respective ServerProven page for that chassis. The ServerProven links are provided in the "IBM ServerProven pages" section of the "World Wide Web resources".

Note that Advanced Management Module (AMM) of a BladeCenter is required for the Hardware Management Pack to discover and monitor the BladeCenter.

Supported configurations of management servers

Several factors determine if a system is supported by the Hardware Management Pack as a management server.

Management server requirements

A management server is supported if it meets the requirements of a management server of Operations Manager 2007 on a supported hardware configuration.

Supported versions of Operations Manager 2007 for management servers

A management server that is running Microsoft System Center Operations Manager 2007 SP1 or Operations Manager 2007 R2 is supported.

Supported operating systems for management servers

For Operations Manager 2007 R2, see the "Management server or root management server" row in the table of Operations Manager 2007 R2 Supported Configurations at http://technet.microsoft.com/en-us/library/bb309428.aspx for the supported operating systems.

For Operations Manager 2007 SP1, see the "Management server or root management server" row in the table of Operations Manager 2007 SP1 Supported Configurations at http://technet.microsoft.com/en-us/library/dd819933.aspx for the supported operating systems.

Note that Operations Manager 2007 SP1 is supported on Windows Server 2008 and Windows Server 2008 R2, but requires you to apply a set of hot fixes. See Support for running System Center Operations Manager 2007 Service Pack 1 and System Center Essentials 2007 Service Pack 1 on a Windows Server 2008-based computer at http://support.microsoft.com/kb/953141 or System Center Operations Manager 2007 SP1 Update Rollup at http://support.microsoft.com/kb/971541 for information about the required hot fixes.

Additional configuration requirements for management servers

All the management servers of the Operations Manager in the same management group must have the same version of the Hardware Management Pack installed.

The management servers that are managing BladeCenters must have the Hardware Management Pack package installed.

The three management packs of the Hardware Management Pack package must be imported to the Operations Manager. A mixed version of the management packs from a different version of the Hardware Management Pack is not supported.

Supported hardware configurations for management servers

See Supported systems and their respective ServeProven page for the compatibility with operating systems and add-on hardware.

Supported configurations of managed systems

A managed system is supported if the system is:

- Managed in an Operations Manager management group with a management server of a supported configuration
- On a system in the "Supported systems" list
- Running a supported version of a Windows operating system
- Running the software required for hardware management

Supported operating systems for managed systems

For managed systems with Operations Manager 2007 R2, see the "Agent" row in the table of Operations Manager 2007 R2 Supported Configurations at http://technet.microsoft.com/en-us/library/bb309428.aspx for the supported Windows operating systems.

For managed systems with Operations Manager 2007 SP1, see the "Agent" row in the table of Operations Manager 2007 SP1 Supported Configurations at http://technet.microsoft.com/en-us/library/dd819933.aspx for the supported Windows operating systems.

Hardware management software for managed systems

Supported versions of IBM Systems Director Agent

A managed Windows system must have a supported version of IBM Systems Director Agent installed and running, as shown in Table 1.

Table 1 Supported versions of IBM Director Agent

IBM Director Agent Version	Supported by IBM Hardware Management Pack v2.4	Notes
6.2.1	Supported	Director Platform Agent or Direct Common Agent
6.2.0	Supported	Director Platform Agent or Director Common Agent
6.1.2	Supported	Director Platform Agent or Director Common Agent
6.1.1	Not supported	Known compatibility issues
5.20.3x	Supported	Director Core Services (also called Level-1 Agent) or Level-2 Agent
5.20.2	Supported	Director Core Services (also called Level-1 Agent) or Level-2 Agent
5.20.1	Not supported	Known compatibility issues
5.20	Supported	Director Core Services (also called Level-1 Agent) or Level-2 Agent

Supported configurations by IBM Systems Director Agent

Table 2 describes compatibility with the respective version of the IBM Systems Director Agent.

Table 2 Supported configurations by IBM Systems Director Agent

IBM Director Agent version	Supported hardware and software
6.2.1	See Supported hardware at http://publib.boulder.ibm.com/infocenter/director/v6r2x/topic/com.ibm.director.plan.helps.doc/fqm0_r_hardware_compatibility.html for supported BladeCenter blade servers and System x servers. See Supported operating systems" at http://publib.boulder.ibm.com/infocenter/director/v6r2x/topic/com.ibm.director.plan.helps.doc/fqm0_r_supported_operating_systems.html for supported Windows versions.
6.2.0	See Supported hardware at http://publib.boulder.ibm.com/infocenter/director/v6r2x/topic/com.ibm.director.plan.helps.doc/fqm0_r_hardware_compatibility.html for supported BladeCenter blade servers and System x servers. See Supported operating systems" at http://publib.boulder.ibm.com/infocenter/director/v6r2x/topic/com.ibm.director.plan.helps.doc/fqm0_r_supported_operating_systems.html for supported Windows versions.
6.1.2	See Supported hardware at http://publib.boulder.ibm.com/infocenter/director/v6r1x/index.jsp?topic=/director.plan_6.1/fqm0_r_hardware_compatibility.html for supported BladeCenter blade servers, and System x servers. See Supported operating systems at http://publib.boulder.ibm.com/infocenter/director/v6r1x/index.jsp?topic=/director.plan_6.1/fqm0_r_os_supported_by_ibm_director_612.html for supported Windows versions.
5.20.x	See Supported hardware at http://publib.boulder.ibm.com/infocenter/eserver/v1r2/topic/diricinfo_5.20/fqm0_r_hardware_compatibility.html for supported BladeCenter blade servers, System x servers, xSeries servers, eServer servers, and NetFinity servers. See Supported operating systems at http://publib.boulder.ibm.com/infocenter/eserver/v1r2/index.jsp?topic=/diricinfo_5.20/fqm0_r_supported operating systems.html for supported Windows versions.

Supported configurations for managed systems with BMC or IMM

A managed Windows system with a Baseboard Management Controller (BMC) or an Integrated Management Module (IMM) must have a supported version of the IPMI driver stack installed and running.

For Windows Server 2000 or Windows Server 2003, both the OSA IPMI device driver and the IBM Mapping Layer for OSA IPMI driver are required. The OSA IPMI device driver for Windows is available at http://www.ibm.com/systems/support/supportsite.wss/docdisplay?brandind=5000000 8&Indocid=MIGR-5069608. The IBM Mapping Layer for OSA IPMI on Windows is available at http://www.ibm.com/systems/support/supportsite.wss/docdisplay?brandind=5000000 8&Indocid=MIGR-5069605 (for x86 version) and at http://www.ibm.com/systems/support/supportsite.wss/docdisplay?brandind=5000000 8&Indocid=MIGR-5069607 (for x64 version).

For Windows Server 2003 R2, the Microsoft IPMI driver should be installed and running. Note that the Microsoft IPMI driver is not installed by default.

For Windows Server 2008 or Windows Server 2008 R2, the Microsoft IPMI driver is required. Note that the Microsoft IPMI driver is automatically installed on IBM servers that come with BMC or IMM, and there is no need to install the IBM Mapping Layer for OSA IPMI driver with the Microsoft IPMI driver stack.

Acquire and apply the latest firmware for the BMC or the IMM on the managed systems. See http://www.ibm.com/systems/support to locate the latest firmware for BMC or IMM.

Supported configurations for managed systems with RSA-II

A managed Windows system with a Remote Supervisor Adapter (RSA) II must have the RSA-II daemon installed and running. The RSA-II daemon for Windows is available at http://www.ibm.com/systems/support/supportsite.wss/docdisplay?brandind=5000000 8&Indocid=MIGR-5071025 (for x86 version), and at http://www.ibm.com/systems/support/supportsite.wss/docdisplay?brandind=5000000 8&Indocid=MIGR-5071027 (for x64 version).

For systems that come with a BMC and also have the RSA-II installed, the RSA-II daemon is optional if a supported IPMI driver stack is installed and running. However, the RSA-II daemon adds additional in-band system management functionality to is the functionality that is offered through the IPMI driver stack with BMC.

Director Agent 6.x does not support systems that do not have a BMC but have only the RSA-II. Use Director Agent 5.20.3x with the RSA-II daemon for these systems.

Acquire and apply the latest firmware for the RSA-II on the managed systems. See http://www.ibm.com/systems/support to locate the latest firmware for RSA-II.

Supported configurations for managed systems with ServeRAID-MR or MegaRAID

Table 3 lists the requirements for systems with ServeRAID-MR or MegaRAID. Acquire and apply the latest firmware and the device driver for the controller on the managed system. See http://www.ibm.com/systems/support to locate the latest firmware and the device driver for the ServeRAID-MR or MegaRAID controller.

Table 3 Requirements for ServeRAID-MR or MegaRAID

IBM Director Agent version	Additional software needed
6.2.1	No additional software is needed. The needed CIM provider is now part of the Director Platform Agent.
6.2.0	No additional software is needed. The needed CIM provider is now part of the Director Platform Agent.
6.1.2	No additional software is needed. The needed CIM provider is now part of the Director Platform Agent.
5.20.x	Download and install the LSI Mega RAID Provider for Windows from https://www.software.ibm.com/webapp/iwm/web/reg/download.do?source=dmp&S_PKG=director_x_ext&lang=en_US.

Supported configurations for managed systems with ServeRAID-BR/IR or Integrated RAID

Table 4 lists the requirements for systems with ServeRAID-BR/IR or Integrated RAID. Acquire and apply the latest firmware and the device driver for the controller on the managed system. See http://www.ibm.com/systems/support to locate the latest firmware and the device driver for the ServeRAID-BR/IR or Integrated controller.

Table 4 Requirements for ServeRAID-MR or MegaRAID

IBM Director Agent version	Additional software needed
6.2.1	No additional software is needed. The needed CIM provider is now part of the Director Platform Agent.
6.2.0	No additional software is needed. The needed CIM provider is now part of the Director Platform Agent.
6.1.2	No additional software is needed. The needed CIM provider is now part of the Director Platform Agent.
5.20.x	Download and install the LSI Mega RAID Provider for Windows from https://www.software.ibm.com/webapp/iwm/web/reg/do

IBM Director Agent version	Additional software needed
	wnload.do?source=dmp&S_PKG=director_x_ext&lang=en_US.

Supported configurations for managed systems with ServeRAID-8x/7x/6x

Table 5 lists the requirements for systems with ServeRAID-8x/7x/6x controller. Acquire and apply the latest firmware and the device driver for the controller on the managed system. See http://www.ibm.com/systems/support to locate the latest firmware and the device driver for the ServeRAID-8x/7x/6x controller.

Table 5 Requirements for ServeRAID-8x/7x/6x

IBM Director Agent version	Additional software needed
6.2.1	No additional software is needed. The needed CIM provider is now part of the Director Platform Agent.
6.2.0	No additional software is needed. The needed CIM provider is now part of the Director Platform Agent.
6.1.2	Not supported.
5.20.x	Download and install the ServeRAID Manager 9.0 – Windows L1 Agent or ServeRAID Manager 9.0 – Windows L2 Agent from https://www.software.ibm.com/webapp/iwm/web/reg/download.do?source=dmp&S_PKG=director_x_ext&lang=en_US.

IBM Hardware Management Pack for Microsoft System Center Operations Manager 2007, Version 2.4

With the IBM® Hardware Management Pack for Microsoft® System Center Operations Manager 2007, Version 2.4 you can use enhanced features of Microsoft System Center Operations Manager 2007 to communicate with BladeCenter management modules installed with IBM Director Core Services or IBM Platform Agent to discover and monitor the health of:

- IBM BladeCenter chassis and chassis components
- IBM System x systems and BladeCenter blade server systems

How IBM Hardware Management Pack, Version 2.4 supports IBM systems

Because the IBM Hardware Management Pack communicates with BladeCenter chassis and components, as well as with individual System x and BladeCenter x86/x64 blade servers, you can use Microsoft System Center Operations Manager to monitor all BladeCenter chassis and Windows-based IBM servers holistically.

The IBM Hardware Management Pack communicates with BladeCenter chassis and components through the management module using Simple Network Management Protocol (SNMP) over a LAN.

The IBM Hardware Management Pack communicates with individual servers, including BladeCenter blade servers, which are running a Windows operating system and that have a supported version of IBM Director Core Services or IBM Platform Agent installed.

Overview of the installation process

Install a supported version of the Microsoft System Center Operations Manager on the management server, then install IBM Hardware Management Pack on the management server. Use the Operations Manager Discovery Wizard to add Windows systems running on an IBM System x server or on a BladeCenter blade server that the Operations Manager is to manage. Follow similar steps to add a BladeCenter to be managed by the Operations Manager.

Note: See the Release Notes for the detailed supported configurations of this release.

When you install the IBM Hardware Management Pack, the following Microsoft System Center Operations Manager functions are enhanced for IBM System x and BladeCenter x86 systems:

- **Health explorer view**: Examines the health state of IBM BladeCenter chassis and components, and individual servers at a component level in a hierarchical view of availability, configuration, performance, and security.

- **Diagram view**: Shows inner organization views of IBM chassis and IBM System x and BladeCenter x86/x64 systems.

- **Events view**: Captures events that occur on specific or aggregate targets of IBM chassis and IBM System x and BladeCenter x86/x64 systems.

- **Active alerts view**: Lists all alert notifications for specific or aggregate targets of IBM chassis and IBM System x and BladeCenter x86/x64 systems.

Management concepts

To manage a BladeCenter with Operations Manager, enable the SNMP protocol on the BladeCenter so it can communicate with the Operations Manager management

server. When it is set up successfully, the management server can discover the chassis and communicate with the management module on the BladeCenter.

Individual Windows servers are handled differently. After it selects a server to manage, Microsoft System Center Operations Manager pushes its Microsoft System Center Operations Manager agent onto the managed system with the IBM Hardware Management Pack, if the target is an IBM System x or BladeCenter x86/x64 blade server. The Microsoft System Center Operations Manager agent and the IBM Hardware Management Pack communicate with the IBM Director Agent and other software for hardware management on the system and across the network to the Operations Manager Server.

Note: These management functions are supported on IBM BladeCenter chassis and on System x and x86/x64 blade servers running Windows. They are not supported on System i, System p, and System z systems.

Major features

Major features of IBM Hardware Management Pack are:

- Rich monitoring of the health of BladeCenter chassis and BladeCenter modules through one of the standards – Simple Network Management Protocol (SNMP) – defined by the Internet Engineering Task Force (IETF)

- Extensive monitoring of the health of hardware components of IBM System x servers and BladeCenter x86/x64 blade servers where Microsoft Windows is running, through Windows Management Instrumentation (WMI) with IBM Systems Director Agent, along with other necessary WMI providers and other necessary software stacks

- Comprehensive monitoring of the health of software stacks required on Windows for adequate health monitoring of hardware components of IBM System x servers and BladeCenter x86/x64 blade servers

- Easy determination of system health problems by aggregating monitors together for hardware component health together in the Operations Manager's Health Explorer

Installing

IBM provides the Hardware Management Pack for you to integrate into the Operations Manager to enhance the management of IBM systems. The Hardware Management Pack discovers and monitors the health of IBM BladeCenter chassis and chassis components, such as the management module and I/O modules, IBM System x systems, BladeCenter blade server systems, and system components.

Follow the instructions in the [Operations Manager 2007 Quick Start Guide](http://technet.microsoft.com/en-us/library/bb418758.aspx) at http://technet.microsoft.com/en-us/library/bb418758.aspx to install Microsoft System Center Operations Manager 2007.

See the Supported versions of Operations Manager 2007 for management servers for the hot fixes needed for Microsoft System Center Operations Manager 2007 SP1 to run successfully on Windows Server 2008.

Installation requirements for the IBM Hardware Management Pack

Install the IBM Hardware Management Pack on an IBM system that is running as a Microsoft System Center Operations Manager management server. The server can be the root management server (RMS) in the Operations Manager management group or a non-RMS server in the management group. See Supported configurations of management servers for detailed requirements.

You need administrative privilege to the system to which you are installing the Hardware Management Pack and also have administrative privilege to the Operations Manager's management group into which you import the management packs.

IBM Hardware Management Pack v2.4 depends on the management packs (MPs) or a later and compatible version of the respective management pack listed in Table 6.

Table 6 Hardware Management Pack dependencies

MP Name	MP ID	MP Version
Health Library	System.Health.Library	6.0.5000.0
System Library	System.Library	6.0.5000.0
Performance Library	System.Performance.Library	6.0.5000.0
SNMP Library	System.Snmp.Library	6.0.6278.0
Data Warehouse Library	Microsoft.SystemCenter.Datawarehouse.Library	6.0.6278.0
System Center Core Library	Microsoft.SystemCenter.Library	6.0.5000.0
Network Device Library	Microsoft.SystemCenter.NetworkDevice.Libary	6.0.6278.0
Windows Core Library	Microsoft.Windows.Library	6.0.5000.0

Installing the Hardware Management Pack

You can install the IBM Hardware Management Pack for Microsoft System Center Operations Manager 2007, Version 2.4, on a Root Management Server (RMS) or on a

non-RMS server. The RMS is the first management server on which you install the Operations Manager.

There is only one installation package of the Hardware Management Pack for 32-bit and 64-bit Windows. To start the installation, follow the instructions to locate and launch the correct installation package and then follow the instructions in the User's Guide to complete the installation process.

You need to have a sufficient level of privilege and information about the Root Management Server (RMS) of the management group before you start the installation process.

See Upgrading to the IBM Hardware Management Pack v2.4 if you already have an earlier version of the Hardware Management Pack installed on a management server or the management packs are already imported to the Operations Manager.

Steps for this task

To install the Hardware Management Pack, complete the following steps:

1. Go to IBM System x Integration Offerings for Microsoft Systems Management Solutions at http://www.ibm.com/systems/management/director/partners/microsoft/, navigate to "Microsoft System Center Operations Manager 2007" and locate the appropriate link in the "File Details" section to find the "IBM Systems Director - downloads" page for "IBM Director Upward Integration Modules". On the downloads page, locate "IBM Hardware Management Pack for Microsoft System Center Operations Manager 2007, Version 2.4" in the "IBM Director Upward Integration Modules for Microsoft" section and download the file named **IBM_HW_MP_V2.4.*XX*_setup.exe**, where *XX* is the build number of the release.

2. If not already installed, install Microsoft Operations Manager 2007 to establish a management server.

    Go to the Operations Manager 2007 Quick Start Guide Web site at http://technet.microsoft.com/en-us/library/bb418758.aspx to install Microsoft Operations Manager 2007.

3. If you are running Microsoft System Center Operations Manager 2007 Service Pack 1 (SP1) on a Windows Server 2008, install hot fixes on both Windows Server 2008 and Microsoft Operations Manager 2007 SP1.

    Go to the Support for running System Center Operations Manager 2007 Service Pack 1 and System Center Essentials 2007 Service Pack 1 on a

Windows Server 2008-based computer at
http://support.microsoft.com/kb/953141 to install the hot fixes.

3. Follow the instructions in the Release Notes to locate and download the **IBM Hardware Management Pack for Microsoft System Center Operations Manager 2007, Version 2.4**.

4. Double-click the downloaded installation executable file to start installing the IBM Hardware Management Pack.

   If the installer cannot find Microsoft Operations Manager on your system, the installation closes. Otherwise, after the preparation, the Welcome to the InstallShield Wizard for IBM Hardware Management Pack for Microsoft System Center Operations Manager 2007, Version 2.4 window is displayed.

5. Click **Next**.

   The License Agreement window is displayed.

6. Read the software license agreement. If you agree with the terms, select **I accept the terms in the license agreement**; then click **Next**.

   If the system already has Version 2.4 installed, you can select to repair or remove the IBM Hardware Management Pack, Version 2.4 code.

   The "Repair" function reinstalls the code and registry entries on the local server.

   The "Remove" function uninstalls the Hardware Management Pack package from the local system but does not delete the management packs from the Operations Manager. You must use the Operations Console to delete the management packs from the Operations Manager.

7. Verify the default target location. If necessary, select the target folder for the installation code and the knowledge articles that describe IBM systems and components.

8. Click **Next** to confirm the installation.

   If you are installing on a non-RMS server, you need manually configure the RMS name. Refer the "PostSetupCheckList.rtf" file after you finish the installation.

9. When the installation is completed, select **Read me** and click **Finish**.

   It is recommended that you read the PostSetupCheckList.rtf file and take the suggested actions.

The installation process does not import the IBM Hardware Management Pack into Operations Manager 2007.

10. Open the Operations Console of the Microsoft System Center Operations Manager, to import the management packs of the Hardware Management Pack to the Operations Manager.

11. Click the **Administration** button then right-click **Management Packs** and then click **Import Management Packs…** Follow the wizard to manually import the four management packs of the IBM Hardware Management Pack. By default, the management packs are installed in "%ProgramFiles%\IBM\IBM HW Mgmt Pack for OpsMgr 2007\Management Packs" They are:

  - IBM Hardware Management Pack - Common Library
    "IBM.HardwareMgmtPack.Common.mp"

  - IBM Hardware Management Pack for IBM System x and x86/x64 Blade Systems
    "IBM.HardwareMgmtPack.xSystems.mp"

  - IBM Hardware Management Pack for IBM BladeCenter Chassis and Modules
    "IBM.HardwareMgmtPack.BladeCenter.mp"

  - IBM Hardware Management Pack – Hardware IDs Library

    "IBM.HardwareMgmtPack.HardwareIDs.mp"

After they are successfully imported, the IBM Hardware Management Packs listed above should appear in the Administration pane of the Operations Manager console.

Note: Sometimes management pack entries might not display immediately after the installation. Refresh the window (F5) or wait a few minutes for the management pack entries to be displayed.

Installing on more than one management server

To install the Hardware Management Pack on more than one management server, install the Hardware Management Pack on all the management servers on which you plan to install the Hardware Management Pack first. Then, import the management packs of the Hardware Management Pack on one of the management servers to the Operations Manager. See the documentation of Operations Manager for information about importing management packs.

Note: To manage more than one BladeCenter in disjoint networks, install the Hardware Management Pack on more than one management servers that can communicate with their respective BladeCenters through SNMP.

Note: One management server can manage more than one BladeCenter Chassis as long as the management server can use SNMP to communicate with the target BladeCenters Chassis.

Upgrading to the IBM Hardware Management Pack v2.4

If you start the installation process and you already have an older version of the Hardware Management Pack installed, the installation performs an upgrade of the Hardware Management Pack. For detailed steps for an upgrade see the ″ Upgrading from version 2.3 or earlier″ section.

To upgrade, first place the management server on which you are installing the Hardware Management Pack in Operations Manager's maintenance mode and keep it in that mode until you complete importing the new management packs of the Hardware Management Pack to the Operations Manager.

Place the management server in the maintenance mode to eliminate errors caused by the stale definitions of old management packs that are cached locally by the Operations Manager.

Upgrading more than one management server

If you are installing the Hardware Management Pack on more than one management server, finish installing the Hardware Management Pack on all the management servers completely before proceeding to import the management packs of the Hardware Management Pack to the Operations Manager. Then take the management servers out of maintenance mode.

Upgrading from version 2.3 or earlier

If you are upgrading from a version 2.3 or earlier of the Hardware Management Pack, first delete any of the already-imported management packs from the Operations Manager.

Uninstalling IBM Hardware Management Pack, Version 2.4

To uninstall, set the server you are uninstalling into maintenance mode, remove the management pack entries from the Operations Console of the Microsoft System Center Operations Manager, and then uninstall the software package using the "Add or Remove Programs" function in the Windows Control Panel.

Removing the management packs from the Operations Console of the Microsoft System Center Operations Manager

Find the BladeCenter blade server or System x server that you are uninstalling in the Operations Manager console, right-click the server, and click **Maintenance Mode** -> **Start Maintenance Mode** from the context menu.

Use the console to manually remove the IBM Hardware Management Pack, Version 2.4 management packs from the console.

Deleting the IBM Hardware Management Packs from Operations Manager

Use the Administration pane in the Operations Manager console to select and delete the following management pack entries of the Hardware Management Pack from Operations Manager:

- IBM Hardware Management Pack - Common Library
- IBM Hardware Management Pack for IBM System x and x86/x64 Blade Systems
- IBM Hardware Management Pack for IBM BladeCenter Chassis and Modules
- IBM Hardware Management Pack – Hardware IDs Library

Delete the management packs from Operations Manager first to prevent errors caused by missing runtime support libraries caused by removing the package of the Hardware Management Pack too early. These errors also occur if you uninstall the Hardware Management Pack from more than one management servers.

If you plan to continue to use the Hardware Management Pack, but only need to move the responsibility of a management server to another server, make sure that a designated new management server has taken over the responsibility successfully before you remove the installed package of the Hardware Management Pack.

Use the Microsoft System Center Operations Manager console Administration panel to select and remove all four management packs included in the IBM Hardware Management Pack, Version 2.4:

- IBM Hardware Management Pack - Common Library
- IBM Hardware Management Pack for IBM System x and x86/x64 Blade Systems
- IBM Hardware Management Pack for IBM BladeCenter Chassis and Modules
- IBM Hardware Management Pack – Hardware IDs Library

Then remove the software package and files as described in Uninstalling the software package using the "Add or Remove Programs" function in the Windows Control Panel.

Uninstalling the software package using the "Add or Remove Programs" function in the Windows Control Panel

Steps for this task

1. Remove the management pack entries as described in Removing the management packs from the Operations Console of the Microsoft System Center Operations Manager.

   Note: See the Release Notes for the user privilege needed to use the Control Panel to manage the Hardware Management Pack package.

2. Uninstall the software package and the files entirely using the "Add or Remove Programs" function in the Windows Control Panel. Select **Remove** on the **IBM Hardware Management Pack v2.4 for Microsoft System Center Operations Manager 2007** entry.

Downgrading to a previous version

To downgrade the IBM Hardware Management Pack to a previous version, uninstall the current version and reinstall the earlier version.

Reinstalling IBM Hardware Management Pack, Version 2.4

If you recently removed management packs from the Microsoft System Center Operations Manager 2007 console, wait for the settings to be propagated to the Operations Manager database before you reinstall.

Important: If you do not wait for the removal of the management packs to register, reinstalling can result in managed clients that are not listed in the Operations Manager console.

See [Discovery information is missing after you delete and then reimport a management pack in Microsoft System Center Operations Manager 2007](http://support.microsoft.com/kb/943307) at http://support.microsoft.com/kb/943307 for information about this known limitation for Microsoft System Center Operations Manager 2007.

If you remove the management packs from the console, you detach the Hardware Management Pack from the Operations Manager server. You must then reinstall the Hardware Management Pack into Operations Manager 2007 to add the management packs back to the console view.

See [Installing the Hardware Management Pack on a root management server](#) for more information.

Configuring BladeCenter SNMP settings

IBM BladeCenter chassis that are correctly enabled for SNMP can be discovered automatically by Microsoft network device discovery. After installing the IBM Hardware Management Pack, you can verify that BladeCenter chassis are discoverable.

Steps for this task

To configure the IBM Hardware Management pack, do the following:

1. View Microsoft System Center Operations Manager consoles that are able to discover BladeCenter chassis by clicking **IBM Hardware** -> **IBM BladeCenters and Modules** -> **Windows Computers for managing IBM BladeCenters**.

   Use this view to identify the health of computers that have the IBM Hardware Management Pack installed and are able to discover and manage BladeCenter chassis and components.

2. Monitor IBM BladeCenters and modules by clicking **Monitoring** -> **IBM Hardware** -> **IBM BladeCenters and Modules**.

   Chassis units are displayed in the middle window followed by a view of their components that is organized in the same way that the management modules present components:

   - IBM BladeCenter Blades
   - IBM BladeCenter Chassis
   - IBM BladeCenter Cooling Modules
   - IBM BladeCenter I/O Modules
   - IBM BladeCenter Management Modules
   - IBM BladeCenter Media Modules
   - IBM BladeCenter Power Modules
   - IBM BladeCenter Storage Modules

   Each module type has a health state and the following properties:

   - Product name, and the logical name for blades
   - Physical location info

3. Logon to the IBM BladeCenter AMM web console. Set ports for SNMP communication for a BladeCenter chassis that has not been discovered automatically, by clicking **MM Control** -> **Port Assignment** on the management module Web console.

   Use the default SNMP ports of 161 for agent (queries/polling) and 162 for trapping. It is important that the SNMP port settings be consistent. Otherwise, the Operations Manager cannot discover the BladeCenter chassis.

4. Change the SNMP settings by clicking **MM Control** -> **Network Protocols -> Simple Network Management Protocol (SNMP**.

   a. Select **Enabled** for **SNMP Traps**, **SNMP v1 agent**.

   b. Fill in the **Community name** assigned to the BladeCenter through which SNMP will communicate and, the fully qualified host name or the IP

address, of every Microsoft System Center Operations Manager 2007 **Management Server** that will manage the BladeCenter.

Community name	Access type	Fully qualified host name or IP address
Public	**Set**	*yourOpsMgrServer.yoursite.yourcompany.com*

The "Set" access type is needed to enable management tasks such as remotely powering on or off a blade server through the Operations Manager console. If you do not intend to allow such tasks through the Operations Manager console, you can lower the access type to **Trap**. At minimum, the "Trap" access type must be set so that the Operations Manager server can perform SNMP queries and receive SNMP traps from the BladeCenter.

To receive events from management modules, a network connection must exist between the management module and Microsoft System Center Operations Manager. In addition, you must configure the management module to send events.

5. Although this step might vary slightly depending on the firmware level, enable alerting using SNMP. To enable alerting using SNMP over the LAN in firmware revision 46, click **MM Control** -> **Alerts**. In the right pane, under **Remote Alert Recipients**, click a **~not used~** link to configure the alert recipient as illustrated in the next figure.

Remote Alert Recipient 3 ⓘ

1. If you enable a SNMP over LAN recipient, you also need to complete the SNMP section on the Network Protocols page.
2. If you enable an E-mail over LAN recipient, you also need to complete the SMTP section on the Network Protocols page.

By entering an email or SNMP address not assigned to your company, you are consenting to share hardware serviceable events and data with the owner of that email or SNMP address not assigned to your company. In sharing this information, you warrant that you are in compliance with all import/export laws.

Status	Disabled ▾
Name	[ ]
Notification method	SNMP over LAN ▾
Receives critical alerts only	☐

Reset to Defaults   Cancel   Save

---

a. In the new Remote Alert Recipient window, change the status from **Disabled** to **Enabled**.

b. In the **Name** field, type a descriptive name for the **Management Server** of Microsoft System Center Operations Manager 2007 you will use to manage the BladeCenter. See Discovering BladeCenter in Operations Manager on page 23 for more about the Management Server setting.

c. Select **SNMP over LAN** for the **Notification method**.

d. Click **Save**.

The following figure shows a completed Remote Alert Recipient dialog.

Remote Alert Recipient 3 ❷

1. If you enable a SNMP over LAN recipient, you also need to complete the SNMP section on the <u>Network Protocols</u> page.
2. If you enable an E-mail over LAN recipient, you also need to complete the SMTP section on the <u>Network Protocols</u> page.

By entering an email or SNMP address not assigned to your company, you are consenting to share hardware serviceable events and data with the owner of that email or SNMP address not assigned to your company. In sharing this information, you warrant that you are in compliance with all import/export laws.

Status	Enabled ▾
Name	SCOM_RSM_01
Notification method	SNMP over LAN ▾
Receives critical alerts only	☐

Reset to Defaults   Cancel   Save

The following instructions are for firmware revision 46, but might change in succeeding firmware levels.

- In the left pane, under **MM Control**, click **Alerts**, scroll down to **Monitor Alert**, click which alerts to send, and click **Save**.

Monitored Alerts ❷

☑ Use enhanced alert categories

	☑ Critical Alerts	☑ Warning Alerts	☑ Informational Alerts
Chassis/System Management	☑	☑	☑
Cooling Devices	☑	☑	☑
Power Modules	☑	☑	☑
Blades	☑	☑	☑
I/O Modules	☑	☑	☑
Storage Modules	☑	☑	☑
Event Log		☑	☑
Power On/Off			☑
Inventory change			☑
Network change			☑
User activity			☑

Discovering BladeCenter in Operations Manager

To discover chassis and their components in Microsoft System Center Operations Manager, complete the following steps on a management server:

Steps for this task

1. Select **Discovery Wizard** to start the Discovery Wizard.
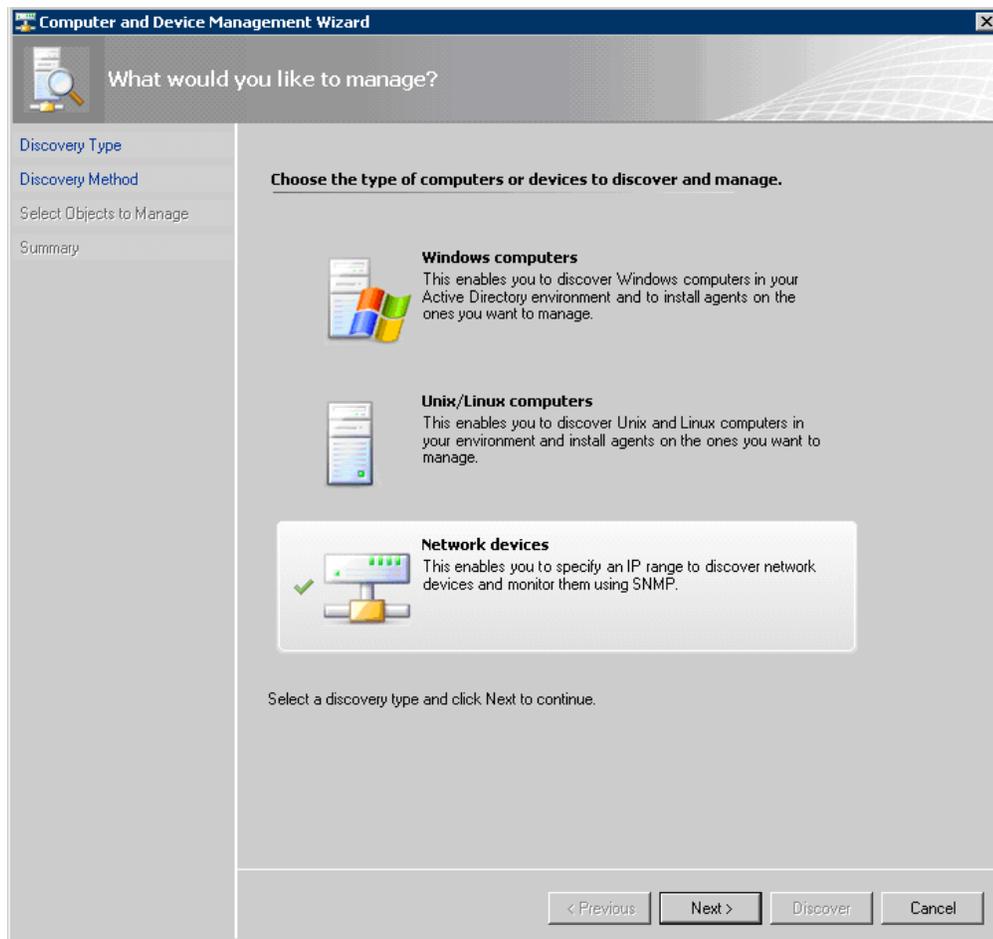
2. Select **Network devices** in SCOM 2007 R2. With SCOM 2007 SP1, select **Advanced discovery** for the **Auto or Advanced?** field**, Network Devices** for **Computer & Device Types** field, and then select the management server that is going to discover and manage the BladeCenter the **Management Server** field.

3. Click **Next** to go to the **Discovery Method** page to enter more settings in the Discovery Wizard.

4. Enter an IP address range for discovery to examine. Enter the community name that you used on the BladeCenter chassis SNMP settings in the **Community string** field. Select SNMP v1 for **Version**, set the desired value for **Discovery Timeout**, and then select the management server of Microsoft System Center Operations Manager 2007 that is to be used to discover and manage the target BladeCenter for the **Management Server** field. This management server should have the IBM Hardware Management Pack installed and also needs to be correctly set up to discover and manage the target BladeCenter through its SNMP settings. See Configuring BladeCenter SNMP settings.

5. Click **Discovery** to go to the **Select Objects to Manage** page to select the IP address for the BladeCenter chassis to manage.
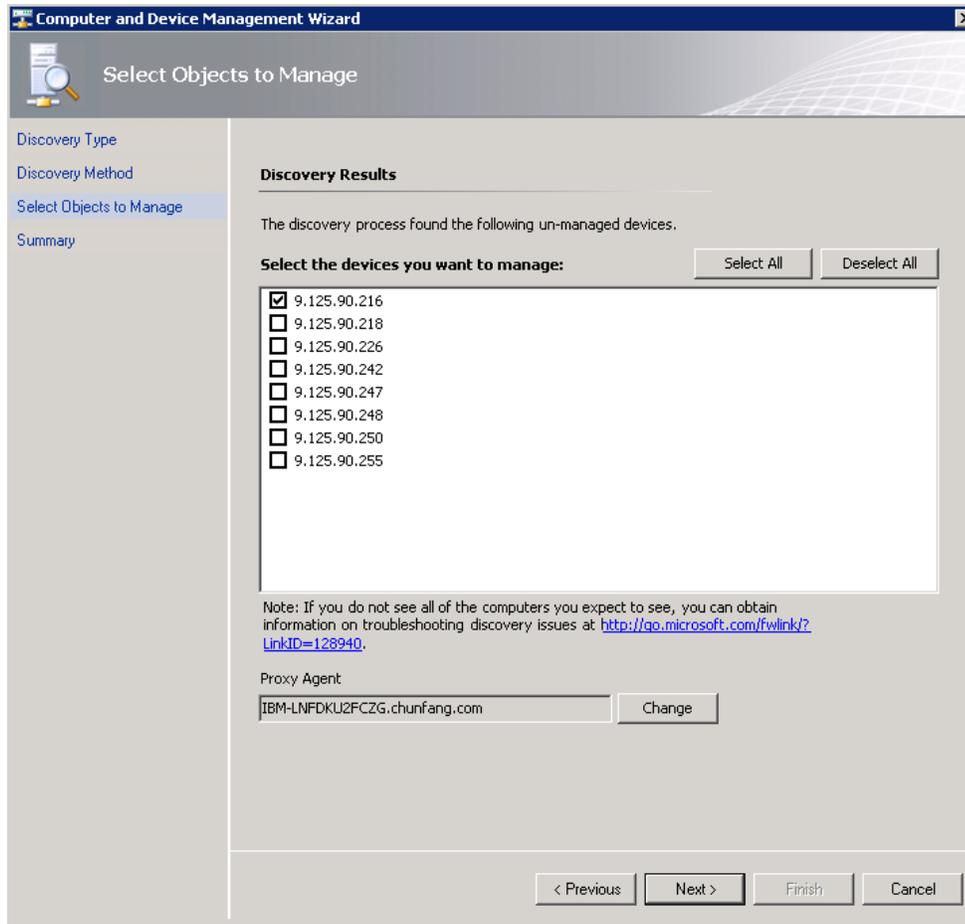
4. Select the IP address of the chassis unit to manage. Enter the name of the Microsoft System Center Operations Manager management server that you entered in the **Auto or Advanced** page in the **Proxy Agent** field.

    The Proxy Agent handles event alerts from the target BladeCenter. The server must be a Microsoft System Center Operations Manager management server that has the IBM Hardware Management Pack, Version 2.4 installed and that can communicate with the target BladeCenter chassis using SNMP. Making the proxy server the same as the management server selected for the discovery simplifies any troubleshooting.

Removing a discovered chassis

You can remove a discovered BladeCenter chassis from the group of discovered systems.

Steps for this task

To remove a discovered chassis:

1. Log on to the Microsoft Operations Manager 2007 operations console.

2. Select **Administration** -> **Network Devices**.

3. Select the BladeCenter Chassis you want to delete in the middle pane.

4. Right-click and select **Delete** to start the delete task.

   When the chassis and its discovered components are removed from the group, they are no longer displayed in the instances of:

   - IBM BladeCenter Blades
   - IBM BladeCenter Chassis
   - IBM BladeCenter Cooling Modules
   - IBM BladeCenter I/O Modules
   - IBM BladeCenter Management Modules
   - IBM BladeCenter Media Modules
   - IBM BladeCenter Power Modules
   - IBM BladeCenter Storage Modules

Working with the Hardware Management Pack

The Hardware Management Pack enhances the functionality of the Operations Manager to provide more detailed information about managed IBM systems.

Use the following tasks to learn more about using the Operations Manager when you have installed the Hardware Management Pack.

- Monitor the system using the Monitoring pane of the Operations Manager Console, as described in Using the Operations Manager Console with the Hardware Management Pack installed.

- Add an IBM system to the managed systems, as described in Adding an IBM system to be managed by the Operations Manager.

- Monitor the health of systems, components, and systems-management software, as described in Monitoring the health of systems, hardware components, and other targets.

- Identify and resolve errors, as described in Using Health Explorer to identify and resolve problems.

- Access IBM knowledge pages, as described in Using knowledge pages to resolve problems.

Using the Operations Manager Console with the Hardware Management Pack installed

After installing the IBM Hardware Management Pack, use the Monitoring pane of the Operations Manager Console to monitor the system. The IBM Hardware folders and views in the Monitoring pane provide a complete view of the health of your IBM BladeCenter chassis and chassis components and your System x and x86/x64 blade servers.

About this task

Perform the following procedure to become familiar with the Monitoring pane of the Operations Manager Console so that you can see what the Hardware Management Pack adds.

Steps for this task

1. Click the **Monitoring** tab in the left pane of the Operations Manager Console to show the systems and hardware components that you can monitor with the Hardware Management Pack.

   The following graphic shows part of the **Monitoring** pane of the Operations Manager Console after you install the Hardware Management Pack.

Monitoring

- IBM Hardware
  - Windows Computers on IBM System x or x86/x64 Blade Servers
  - IBM BladeCenter(s) and Modules
    - Active Alerts
    - IBM BladeCenter(s)
    - Task Status
    - Windows Computers for Managing IBM BladeCenter(s)
    - IBM BladeCenter Modules
  - IBM System x and x86/x64 Blade Servers
    - Active Alerts
    - Active Alerts for IBM Software for HW Mgmt
    - All IBM System x and x86/x64 Blade Servers
    - IBM System x Enterprise/Scalable Systems
    - IBM System x iDataPlex Systems
    - IBM System x Rack-mount Systems
    - IBM System x Tower Systems
    - IBM x86/x64 Blade Servers
    - Task Status
    - Unclassified IBM System x or x86/x64 Blade Servers
    - Hardware Components of IBM System x or x86/x64 Blade Servers
      - Active Alerts for IBM HW Components
      - IBM System Cooling Fans
      - IBM System Management Controllers
      - IBM System Network Adapters
      - IBM System Physical Memory
      - IBM System Physical Processors
      - IBM System Power Supplies
      - IBM System Storage (Non-Specific)
      - IBM System Storage (ServeRAID-8x/7x/6x)
      - IBM System Storage (ServeRAID-BR or Integrated RAID)

Under the IBM Hardware folder is one view that provides a global view: Windows Computers on IBM System x or x86/x64 Blade Servers view.

There are also two more folders of additional views of different types of monitoring data that is collected from IBM systems.

The IBM Hardware Management Pack adds the following folders and views:

IBM Hardware (folder)

The IBM Hardware folder includes active alerts, task status, and aggregate targets for all discovered IBM systems and hardware components. It also includes systems diagrams.

Windows Computers on IBM System x or x86/x64 Blade Servers (view)

Windows Computers on IBM Systems is a state view of IBM System x or x86/x64 Blade Servers. Use this view as you would use the **Monitoring** ->

Computers view. The difference is that this view contains computers that are either IBM System x or BladeCenter x86/x64 blade servers.

IBM BladeCenter(s) and Modules (folder)

This folder contains a summarized view of all BladeCenters and Modules and personalized summary views of specific Alerts, Task Status, IBM BladeCenters, and Windows Computers for Managing IBM BladeCenters.

IBM System x and x86/x64 Blade Servers (folder)

This folder contains a summarized view of all IBM systems in "All IBM System x and BladeCenter x86/x64 Blade Systems" and personalized summary views of specific types of IBM System x and BladeCenter x86/x64 Blade Servers that are grouped by the type of platform, such as Tower, rack, Blade, Enterprise server, and unclassified.

2. Click the **Windows Computer on IBM System x or x86/x64 Blade Servers** view.

   Only manageable hardware components are discovered and monitored, not all components. For example, a system with one or more non-manageable fans does not have all of its fans discovered or monitored. The pane labelled **Hardware Components of IBM System x or x86/x64 Blade Servers** shows various components.
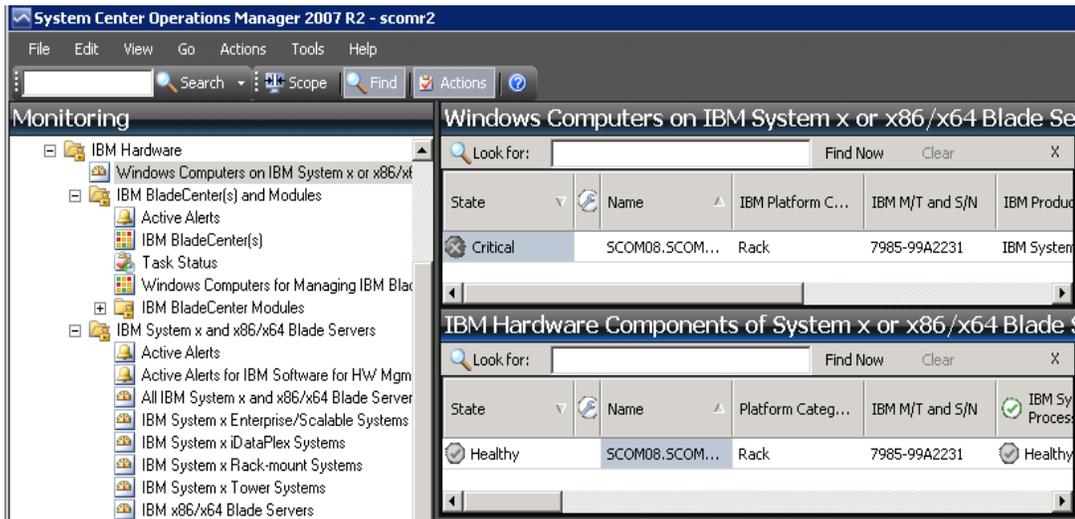
3. Click the **IBM BladeCenter(s) and Modules** folder to display detailed information.
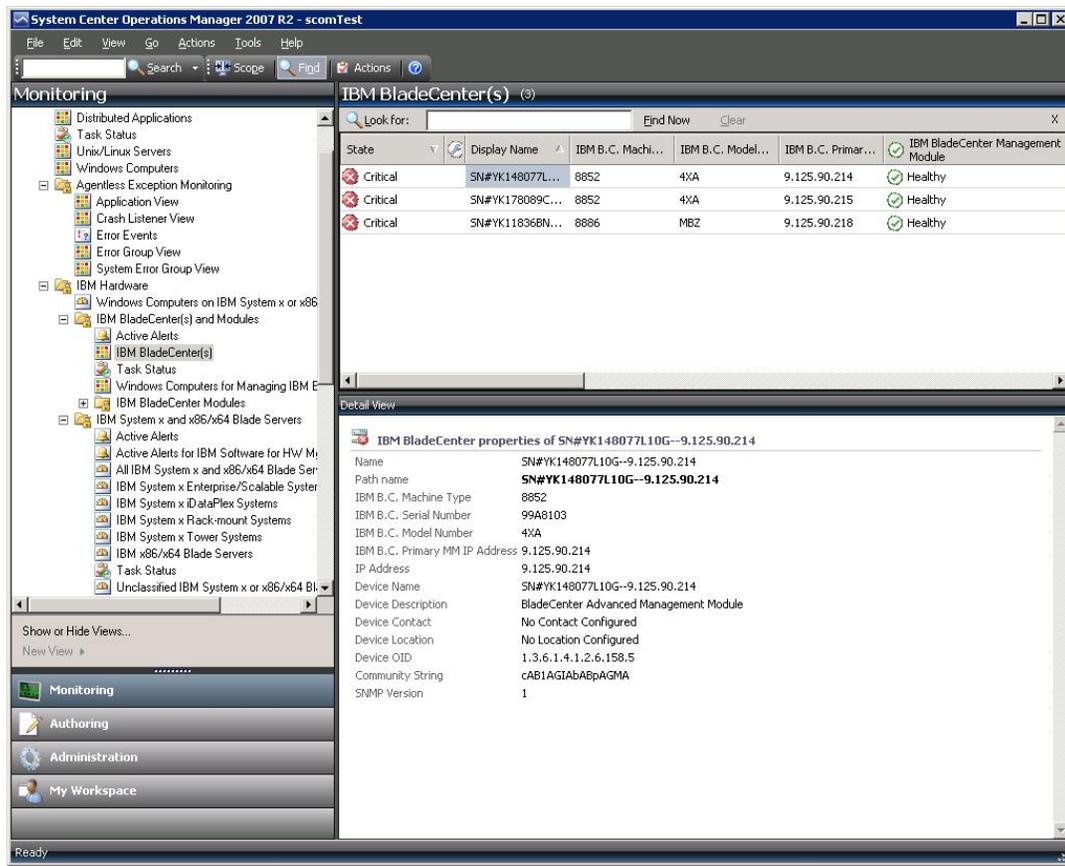
Under the IBM BladeCenter Modules folder are four views and one folder:

- **Active Alerts (view)**

  Active Alerts is a state view of IBM BladeCenter alerts.

- **IBM BladeCenter(s) (view)**

  IBM BladeCenters contains a summarized view of all IBM BladeCenter chassis and chassis components, such as Blades, Cooling, I/O, Storage, Power, Management Module, and other components.

- **Task Status (view)**

  Task Status is a state view of IBM BladeCenters and Modules.

- **Windows Computers for Managing IBM BladeCenter(s) (view)**

  This view shows management modules that can communicate with IBM BladeCenter chassis.

- **IBM BladeCenter Modules (folder)**

The IBM BladeCenter Modules folder contains all component information and status information for BladeCenter chassis, chassis components, and blade servers. Categories include Blades, Chassis, Cooling, I/O, Management Module, Media Modules, Power, and Storage.

4. Click the **IBM BladeCenter Modules** folder to display the views in the folder.

    After discovering an IBM BladeCenter chassis, the Hardware Management Pack classifies the system according to its system type, and adds the system to the view of all systems and to one of the other groups of system views:

    - IBM BladeCenter Blades
    - IBM BladeCenter Chassis
    - IBM BladeCenter Cooling Modules
    - IBM BladeCenter I/O Modules
    - IBM BladeCenter Management Modules
    - IBM BladeCenter Media Modules
    - IBM BladeCenter Power Modules
    - IBM BladeCenter Storage Modules

5. Click the **IBM BladeCenter(s) and Modules** -> **IBM BladeCenter Modules** -> **IBM BladeCenter Blades** to display detailed information about all BladeCenter blade servers.
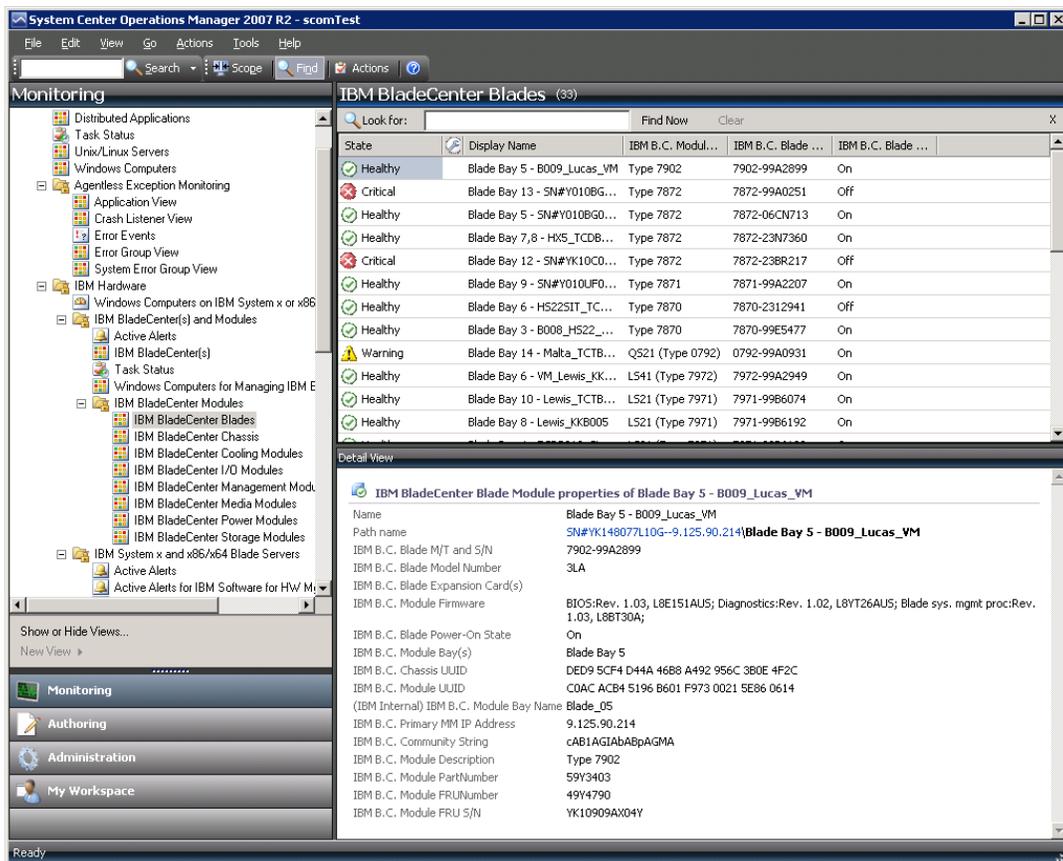
6. Click the **IBM System x and x86/x64 Blade Servers** view to display the views in the folder.

   After discovering an IBM system, the Hardware Management Pack classifies the system according to its system type, and adds the system to the view of all systems and to one of the other groups of system views:

   - **Active Alerts**

   - **Active Alerts for IBM Software for HW Mgmt**
   - **All IBM System x and x86/x64 Blade Servers** (all of the systems)
   - **IBM System x Enterprise/Scalable Systems**
   - **IBM System x iDataPlex Systems**
   - **IBM System x Rack-mount Systems**
   - **IBM System x Tower Systems**
   - **IBM x86/x64 Blade Systems**
   - **Task Status**
   - **Unclassified IBM System x and BladeCenter x86/x64 Blade Systems** (systems that are either too old or too new to be classified correctly)
   - **Hardware Components of IBM System x or x86/x64 Blade Servers** (folder)

7. Click the **All IBM System x and x86/x64 Blade Servers** view to show the dashboard views of its systems and hardware components.

   Each view of IBM systems provides a dashboard view of health states and a separate dashboard view of manageable hardware components in each system, as shown in the following figure.
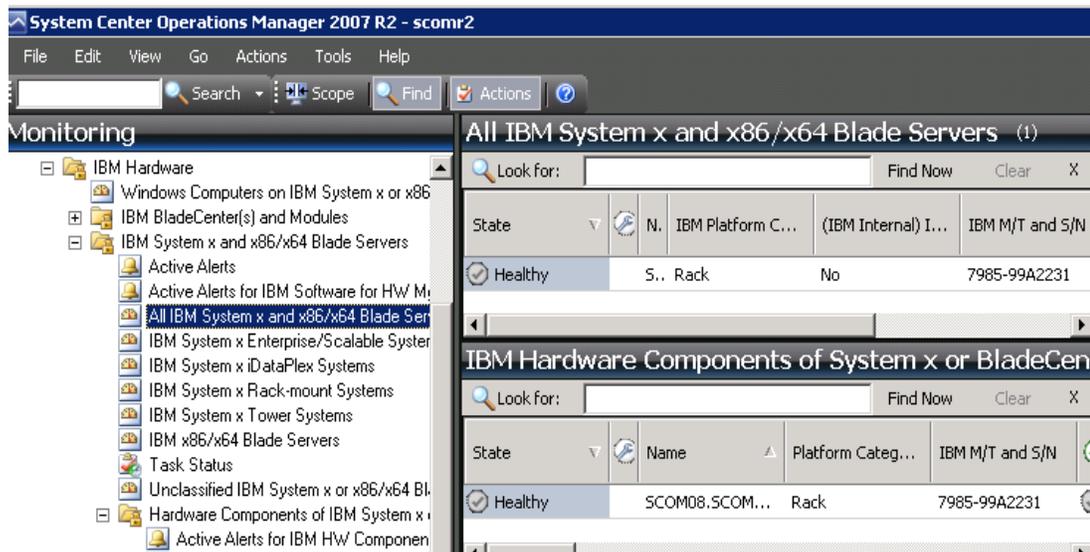
Adding an IBM system to be managed by the Operations Manager

Use the Microsoft Operations Manager 2007 Discovery Wizard to discover and add IBM systems to be managed. The Discovery Wizard deploys the Hardware Management Pack to the discovered system. The Discovery Wizard does not show systems that are already being monitored.

Steps for this task

1. Log on to the Operations Manager Server with an account with an Administrators role.

2. Click **Administration**.

3. Click **Discovery Wizard** at the bottom of the navigation pane or select **Configure computers and devices to manage** in the Actions menu.

   You can also right-click the Agent Managed view to select the Discovery Wizard from a context menu, as shown in Figure 1.
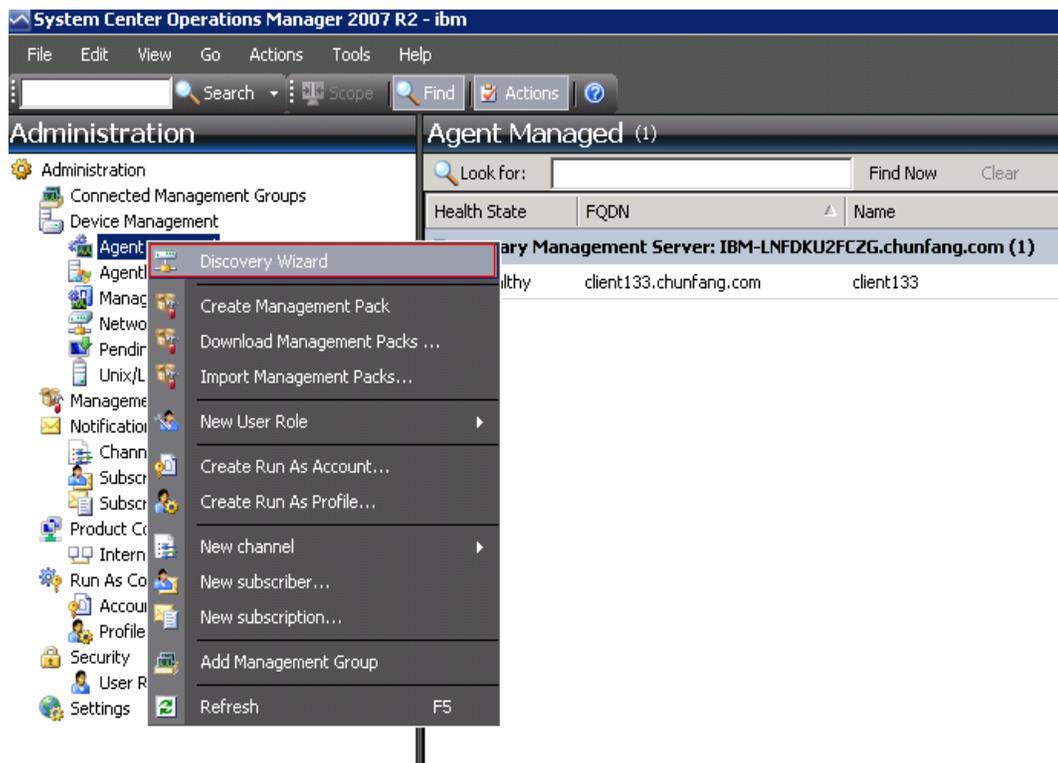
Figure 1 Using the context menu to select the Discovery Wizard

4. Click **Next** if the Introduction page is displayed. The page does not display if the Computer and Device Management Wizard has run before and you selected "Do not show this page again".

5. Click **Advanced discovery** on the Auto or Advanced? page.

6. Click **Servers & Clients** in the Computer & Device Types list.

7. Select the Management Server to be used to discover the computers in the Management Server list.

8. Click the **Verify discovered computers can be contacted** check box.

9. Click **Next** to display the Discovery Method page.

10. Click **Browse for, or type-in computer names** to type in the names of IBM systems, or to click **Browse** to search the network for IBM systems.

11. Click **Next** to display the Administrator Account page.

12. Type the user name, password, and domain name of an account that is a member of the Administrators role.

    The account must have administrative privileges on the targeted computers to be managed. If **This is a local computer account, not a domain account** is selected, the Management Server Action Account is used to perform discovery. For more information about Operations Manager 2007 accounts, see [Security Considerations in Operations Manager 2007](http://technet.microsoft.com/en-us/library/bb309725.aspx) at http://technet.microsoft.com/en-us/library/bb309725.aspx.

    When you run the Operations Console on a computer that is not a Management Server, the Connect To Server dialog box is displayed. Type the name of the Management Server to connect to.

13. Click **Discover** to display the Discovery Progress page.

    Progress time depends on the number of computers in the network and other factors. The Discovery Wizard might return up to 4000 computers if you selected the **Verify discovered computers can be contacted** check box, or up to 10,000 computers if the check box is not selected.

14. Select the computers to manage on the Select Objects to Manage page.

15. Click **Agent** in the Management Mode list then click **Next**.

16. Click **Finish**.

17. Examine the Agent Management Task Status dialog box to verify that the status for the selected computers changes from Queued to Success.

18. Click **Close**.

What to do next

See the [Microsoft Operations Manager documentation](http://technet.microsoft.com/en-us/opsmgr/default.aspx) at http://technet.microsoft.com/en-us/opsmgr/default.aspx for more information about using the Discovery Wizard.

Viewing inventory

You can use Microsoft System Center Operations Manager to view inventory for appropriately configured management modules.

Steps for this task

To view the inventory for a system, complete the following steps:

1. On the Microsoft System Center Operations Manager operations console window, in the Computer and Groups pane, click **Computers and Groups View** -> **IBM Hardware** -> **IBM BladeCenters and Modules** to view IBM BladeCenters and their modules.

2. Click **Computers and Groups View** -> **IBM Hardware** -> **IBM System x and x86/x64 Blade Servers** to view IBM System x servers, BladeCenter blade servers, and other individual systems that have been discovered.

Monitoring the health of systems, hardware components, and other targets

The Hardware Management Pack discovers and monitors the health of hardware components: processors, memory, network adapters, storage, management controllers, power supplies, fans, temperature sensors, and voltage sensors. The Hardware Management Pack can also discover and monitor the health of system-management software, such as IBM Director Agent, IPMI driver, IBM IPMI Mapping Layer, and ServeRAID™ Manager Level 1 Agent.

About this task

Component discovery and health monitoring depends on firmware support, hardware compatibility, and management-software support. Because of the factors involved, not all components are discoverable. If a component is not discovered, it cannot be monitored or managed.

Steps for this task

1. Click the **Monitoring** button in the navigation pane.

2. Expand the **IBM Hardware** folder to display the folders and views that the Hardware Management Pack adds to the Operations Manager Console.

3. Expand either **IBM BladeCenter(s) and Modules** or **IBM System x and x86/x64 Blade Servers**.

4. Click **Active Alerts** to see if any Critical or Warning alerts are associated with your IBM Hardware.

   The following figure shows an example of how active alerts might be displayed:
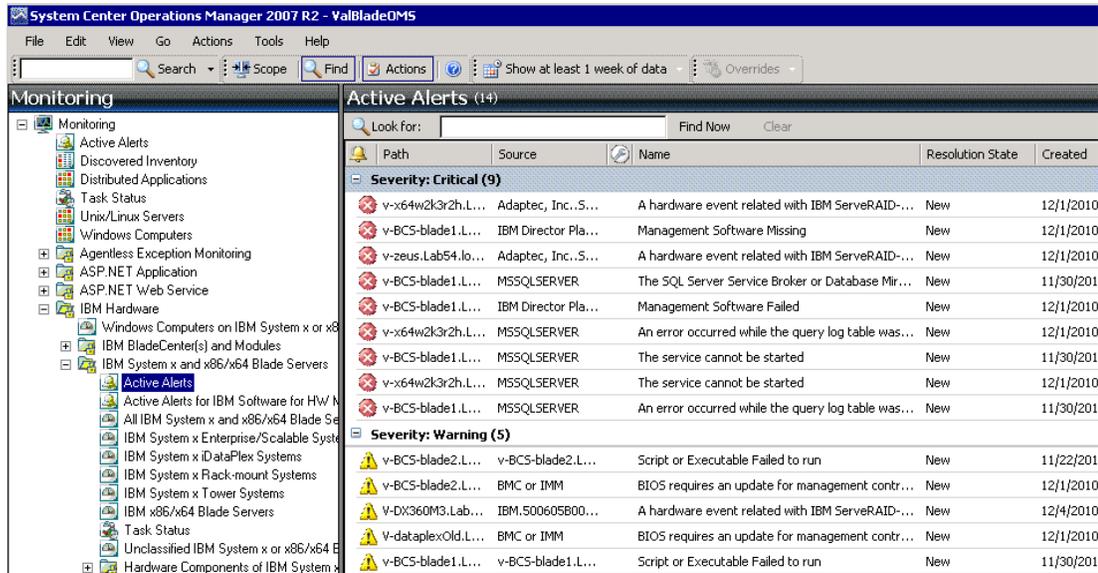
5. Check the health of your systems by using one or more of the following options.

   - Expand the **Windows Computer on IBM System x or x86/x64 Blade Servers** folder to check the status of the Windows platform on each system in the IBM Hardware.

   - Expand the **IBM BladeCenter(s) and Modules** folder to check the status of all IBM BladeCenter chassis. Then expand the **IBM BladeCenter Modules** view to see health information for all modules.

   - Expand the **IBM System x and x86/x64 Blade Servers** folder to check the hardware status on all IBM systems. Then click the **All IBM System x and x86/x64 Blade Servers** view to display the health indicators in the first column of the systems dashboard and in the first column of the hardware components dashboard. You can also expand any group view, such as **IBM System x Rack-mount Systems**, to check the hardware state for those systems.

What to do next

Go to [Using Health Explorer to identify and resolve problems](#) to learn how to use the Health Explorer to examine a critical problem.

Viewing alerts

You can use Microsoft System Center Operations Manager to view alerts that are sent from appropriately configured management modules and IBM System x systems and BladeCenter blade servers.

About this task

To view the active alerts for a system, complete the following steps.

1. To view BladeCenter chassis alerts, click **Monitoring** -> **IBM Hardware** -> **IBM BladeCenters and Modules->Active Alerts**.

   In **IBM BladeCenters and Modules**, you can see these components under each chassis.

   - IBM BladeCenter Blades
   - IBM BladeCenter Chassis
   - IBM BladeCenter Cooling Modules
   - IBM BladeCenter I/O Modules
   - IBM BladeCenter Management Modules
   - IBM BladeCenter Media Modules
   - IBM BladeCenter Power Modules
   - IBM BladeCenter Storage Modules

2. To view individual System x, xSeries, BladeCenter blade server, and other systems, click **Monitoring** -> **IBM Hardware** -> **IBM System x and x86/x64 Blade Servers-> Active Alerts**.

   The IBM Hardware Management Pack has limited support for tools like WinEvent.exe that generate IBM Director events and do not fully prescribe specific target instances.

   In some circumstances, the WinEvent.exe tool does not correctly support the event ID and the event description. This incorrect support makes the WinEvent.exe tool unreliable for displaying all events.

   > **Note:** All WinEvents are reported under one monitor.

   Successfully simulated events are displayed in the Operations Manager Console under the **Alerts** view and the **Events** view.

   Monitored systems that have IBM Director Agent 5.1.x installed and that use the WinEvent.exe tool can cause errors to reoccur even after you manually

clear the alerts from the Health Explorer view. To eliminate such event recurrence, delete the IBM\director\cimom\data\health.dat file and all IBM\director\cimom\data\health.dat*.evt files from the client system and restart the system.

3. Right-click a BladeCenter chassis, a System x server, a BladeCenter blade server, or any other system to open monitoring views. You can monitor using the Alert View, Diagram View, Event View, and State View.

Locating and finding Hardware errors

Navigate to "All IBM System x and x86/x64 Blade Servers" to view the hardware errors.

Using Health Explorer to identify and resolve problems

You can use the Health Explorer to identify and resolve error states that show up when monitoring IBM systems and hardware components. For a quick check up, look at Active Alerts, Windows Computer on IBM System x or x86/x64 Blade Servers, or All IBM System x and x86/x64 Blade Servers. These views show any existing Alerts on your IBM hardware.

About this task

Use the Health Explorer to view, learn, and take action on alerts, state changes, and other issues raised by a monitored object. The Health Explorer helps you troubleshoot your alerts.

For example, suppose that you see a critical error when you are monitoring your systems and hardware components, such as shown in Figure 2.
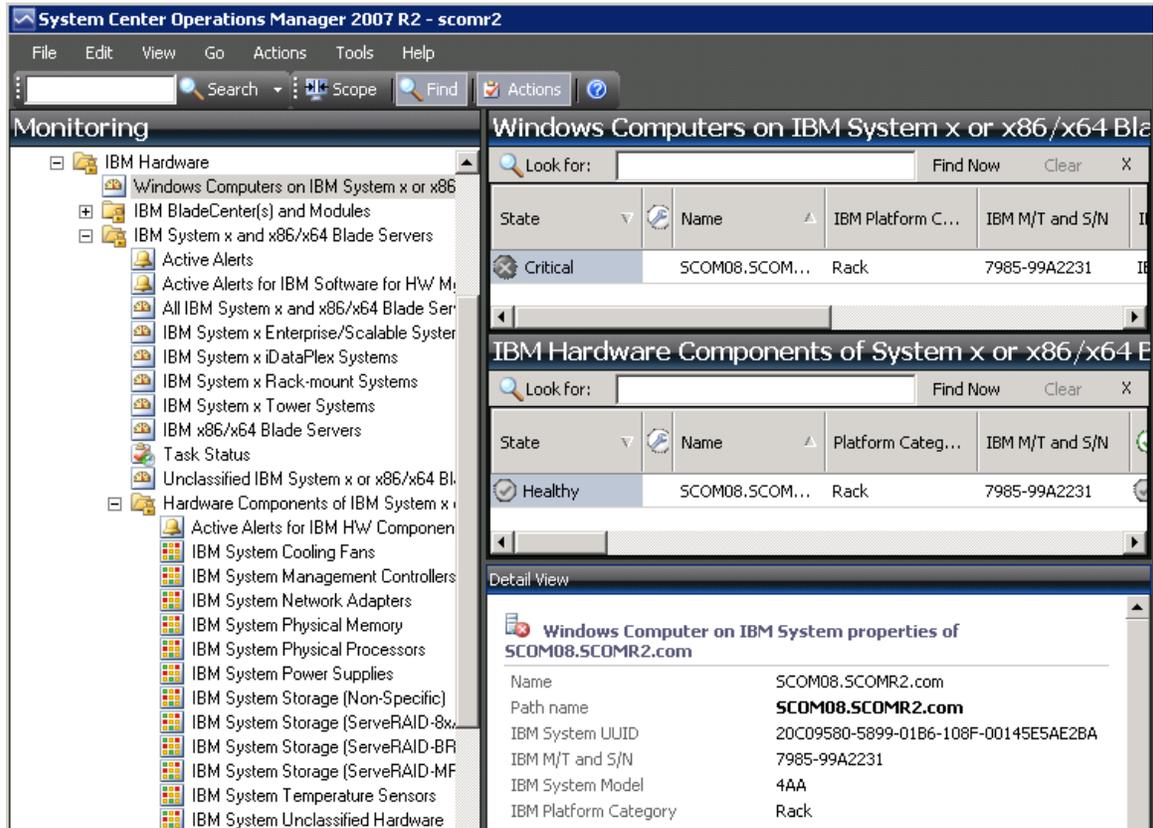
Figure 2 Example of a critical error showing up in a managed system

Use the following procedure to identify and resolve the error.

Steps for this task

1. Open the Health Explorer when there is a Warning or a Critical alert by clicking **All IBM System x and x86/x64 Blade Servers**; then double-click on the state. By default, the health Explorer opens with all failed monitors in expanded view.

   Figure 3 shows how such an error might be displayed in the Heath Explorer:
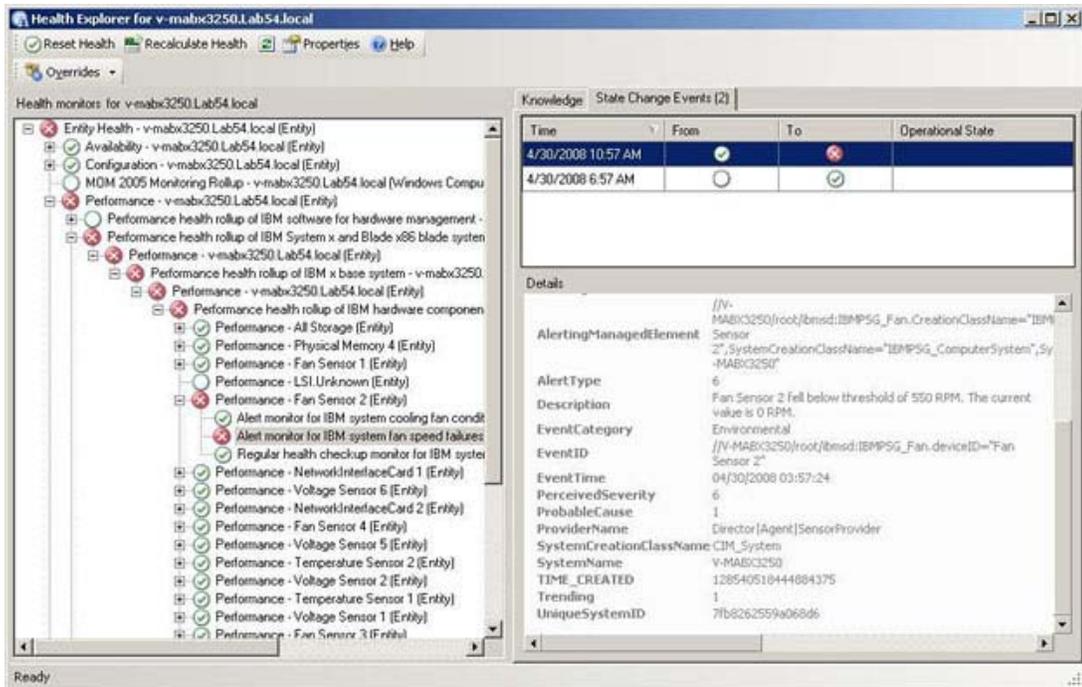
Figure 3 Example of hardware components causing a system to be in error

> If there is no warning or critical alert visible, highlight an IBM system in the "All IBM System x and x86/x64 Blade Servers" view and then right-click the system to show its context menu. Click **Open** and then click **Health Explorer for** *system_name*.

2. Use the Health Explorer to identify the basal level health monitor indicating an error. The indication should refer to a particular component instance.

   In this case, the cause of the error is a faulty fan.

3. Click **State Change Events** in the right-hand pane for details about the latest state change event.

   You can see the date and the time that the fan failed. You can also read details about the nature of the error.

What to do next

Go to Using knowledge pages to resolve problems to learn how to use the knowledge pages to get help to resolve an error state and to learn about hardware components.

Using knowledge pages to resolve problems

You can access knowledge pages about errors, events, and components to learn more about your systems and hardware components, and to learn how to resolve errors when they occur.

Before you begin

This topic builds on [Using Health Explorer to identify and resolve problems](#). Figure 4 shows how an error might be displayed in the Heath Explorer:
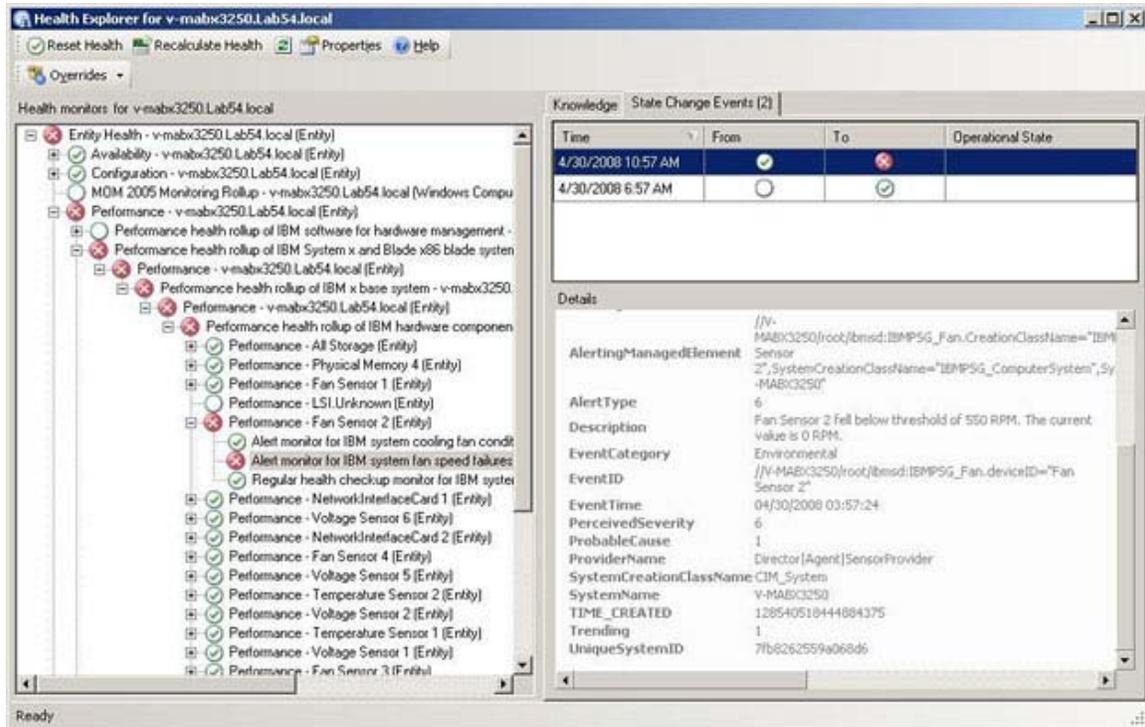
Figure 4 Example of hardware components causing a system to be in error

About this task

Knowledge pages written by IBM developers can help you understand more about IBM Systems x and x86/x64 Blade Servers events, alerts, components, and other information.

You can access the knowledge pages in these ways:

- Use the Health Explorer/Monitors View to access IBM Hardware Management Pack monitor knowledge.

- Use the Events view to access knowledge about the event.

- Use any links provided in the knowledge to access related hardware event knowledge.

Perform the following procedure to learn how to use knowledge pages.

Steps for this task

1. Click **Knowledge** in the right-hand pane of the Health Explorer to read about the error event, including explanations and necessary steps that might help you fix the problem.

   Read the "Knowledge" for the monitor in the right-hand pane to see if a manual "Reset Health" is needed, and for information about how to resolve the error if extra steps are needed. Figure 5 shows how such a page might be displayed:
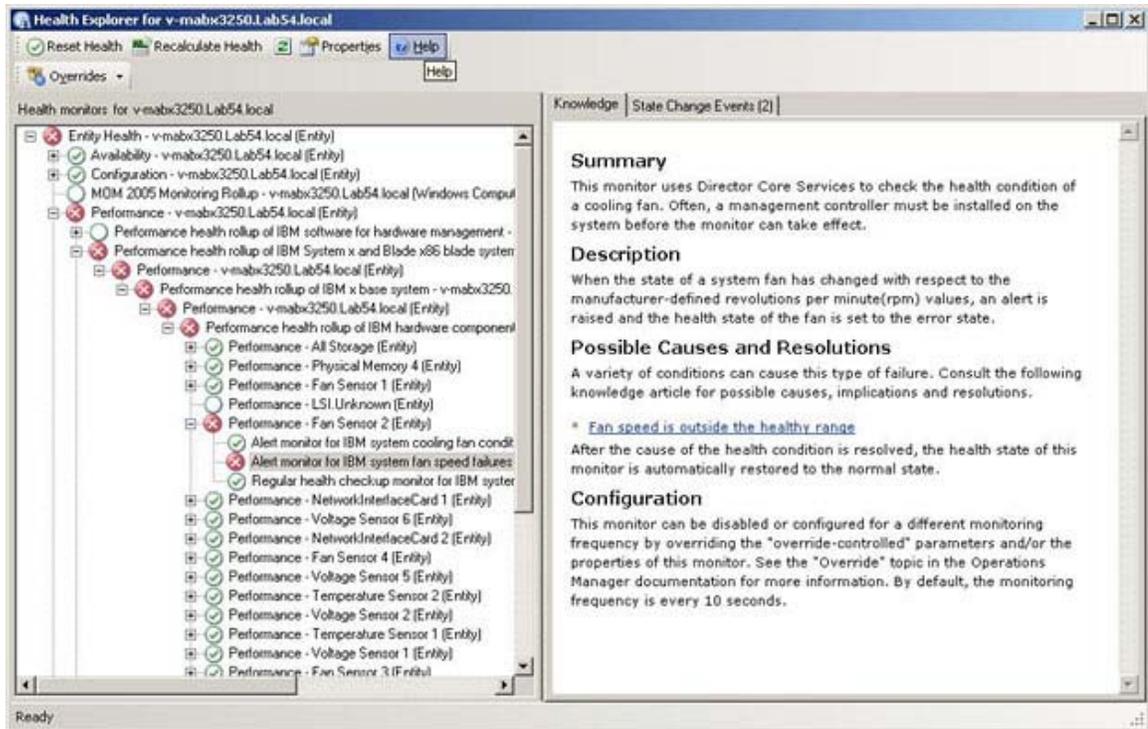
Figure 5 Example of a knowledge page that describes an error event

   Some knowledge pages have links to another knowledge page for possible causes and suggested actions. Such pages might describe specific errors and their remedies, or describe hardware components.

2. Click the **Fan speed is outside the healthy range** link.

   The link opens another knowledge page, as shown in Figure 6.
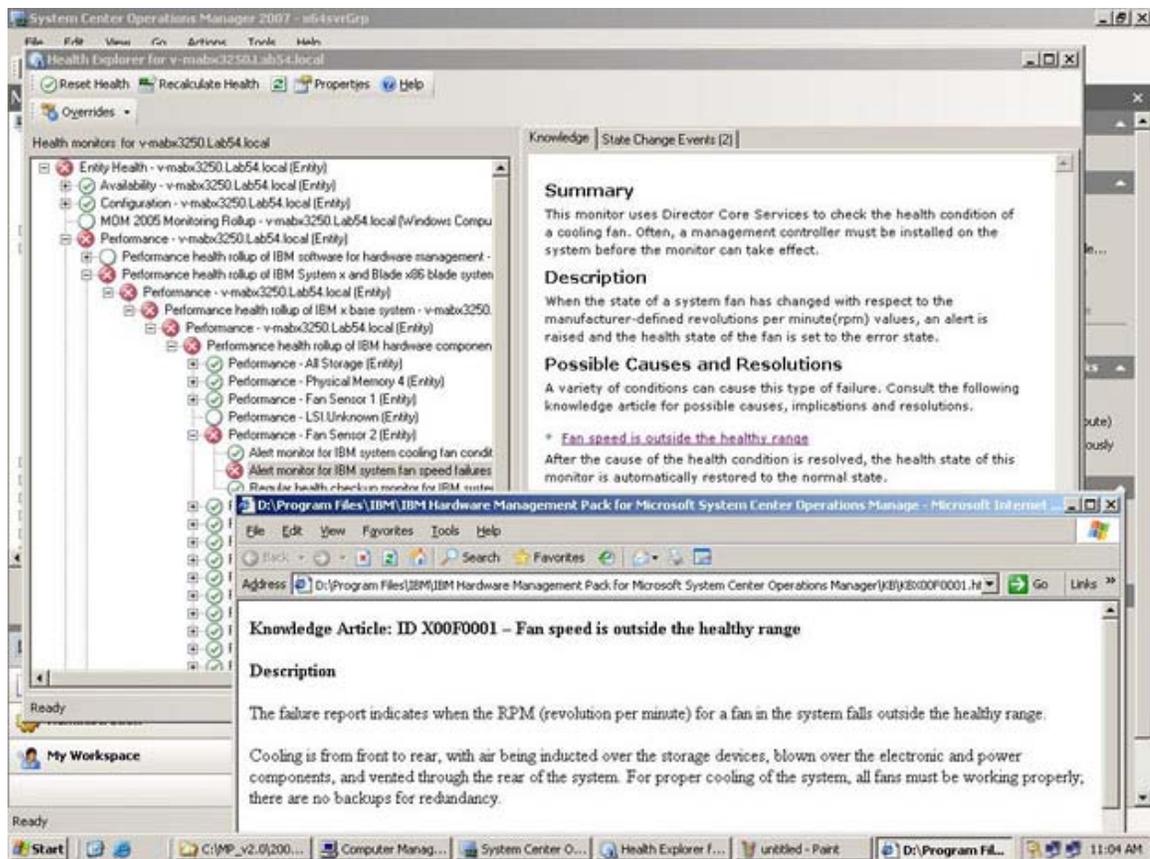
Figure 6 One knowledge page linking to another

3. Perform the procedures identified in the knowledge pages to resolve the error and reset the health sensor, if necessary.

What to do next

The knowledge page is also accessible through the Active Alerts view. Double click an Alert to show the Alert Properties. The Alert description is in the General tab. The second tab is Product Knowledge that includes the link to the knowledge page. Figure 7 shows the Alert Properties for an Alert:
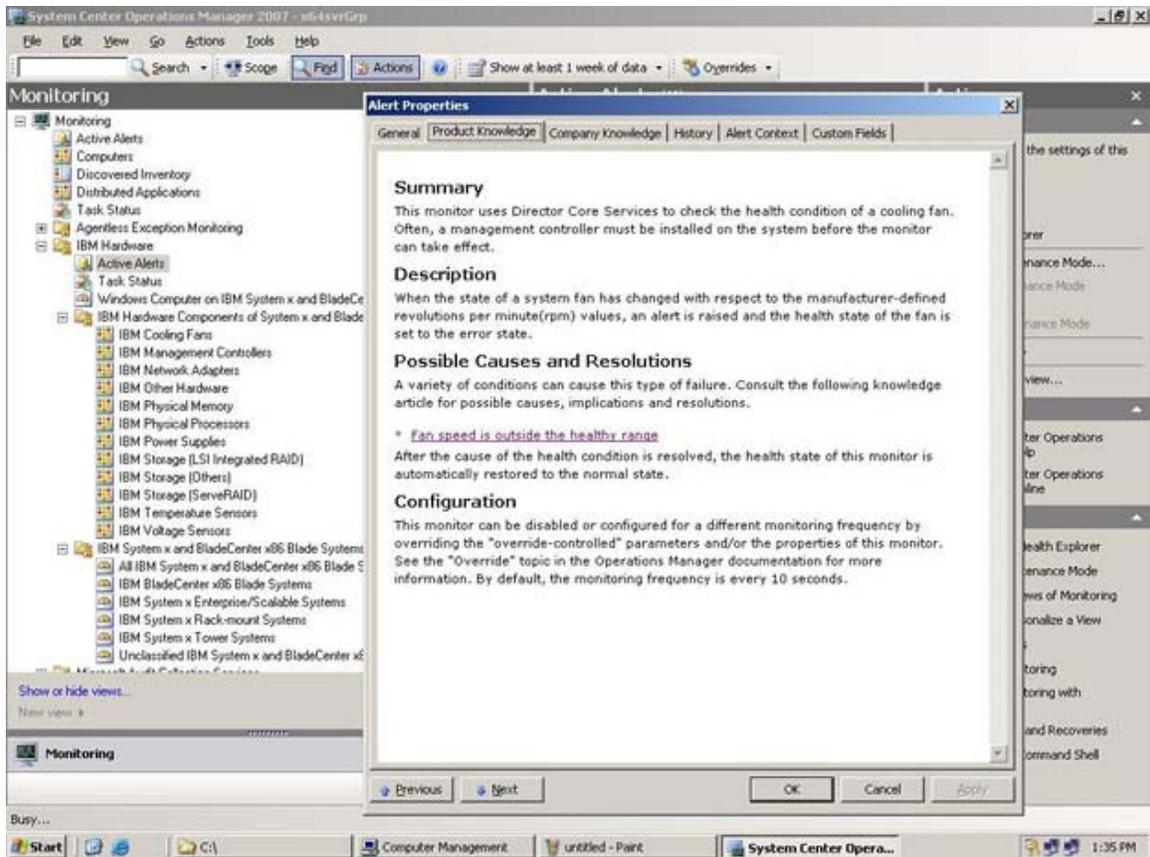
Figure 7 Example Alert Properties

Best practice: Determining the cause of an error

Use this recommended diagnostic procedure to help you look for and solve problems that might occur in the managed environment.

Steps for this task

1. Open the Operation Console and click **Monitoring** to open the Monitoring pane.

2. To quickly view the status of all of your managed IBM systems that have Windows operating systems, expand **IBM Hardware** and click **Windows Computers on IBM System x or x86/x64 Blade Servers**.

3. Check the health of the systems in the top middle pane.

   All newly discovered objects are in the healthy state by default. Health check monitoring updates the status of an object at regular intervals, according to the default interval setting. You can configure the monitoring frequency by overriding the "override-controlled" parameters. See the Microsoft Systems

Center Operations Manager documentation about "Override" for more information.

4. Select a system that shows a Critical or Warning state.
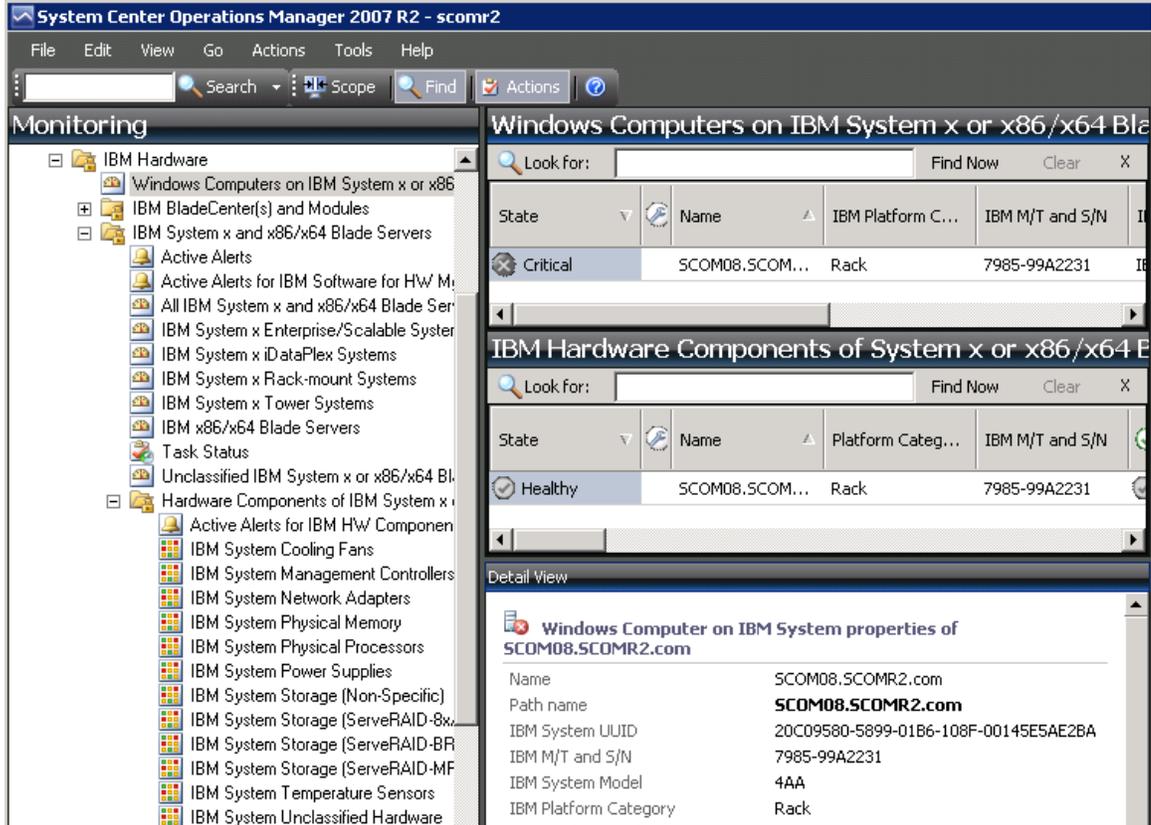
5. Determine if the error is related to hardware or software.

- **Hardware-related failures:** Look in the **Hardware Components of IBM System x or x86/x64 Blade Servers** pane to select the system. Scroll to the right to view all of the component status and data. You can personalize this view.

  This pane contains state views on a per-**hardware**-component-class basis. The purpose of this view is to provide access to detailed properties of each component instance. Look for additional system information in the **Detail View** pane.

- **Software-related failures:** Look in the **Windows Computer on IBM System x or x86/x64 Blade Servers** pane. This pane contains state views and information on a per-**software**-component-class basis. Select a system that has a Critical or Warning health state.

The purpose of these views is to provide access to detailed properties of each component instance. The **Detail View** pane displays all instances of the system software with a health state for each of the four health aspects.

6. To find more information and details about the failure, access the hardware information of the desired BladeCenter module or hardware system component by clicking **IBM BladeCenter Modules**.

   From a previous view, suppose that you already know that a power supply component failed. Select the related view, **IBM BladeCenter Power Modules**, to determine the problem with the power supply.

   Select the **Critical** power module to review its related data.

   Review the information and data presented in the **Detailed View** pane to see all instances of the module type and each of its four health aspects.
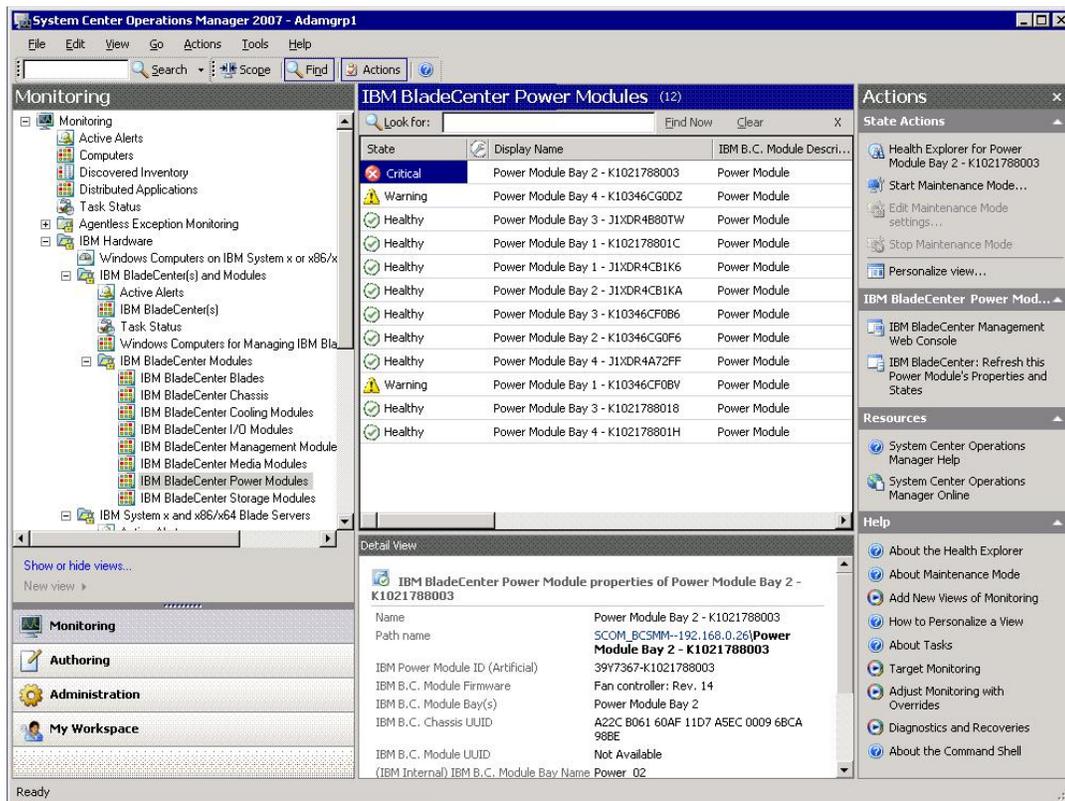
7. Right-click the selected module and select **open** -> **Health Explorer**.

8. Select the Alert and look at the information on the **State Change Events** page.

9. Depending on the alert you have, you can click **View Alert** for more information.

10. Click the **Knowledge** tab to read the Knowledge Page and the one or more Knowledge Articles that relate to your alert.

> **Important:** In addition to the health information available for each object, related information might be available from other objects that are health-related from different perspectives. For instance, a blade that is monitored in-band through its platform agent shows a health state, but the BladeCenter chassis management module also shows a health state for the blade.

Other BladeCenter chassis modules might affect the blade health, such as a power supply that supplies power to the blade server. Similarly, the health of a blade from the management module perspective might include the health and other information about the operating system running on the blade.

For instance, the following BladeCenter simple network management protocol (SNMP) alert has an event description field of **1.3.6.1.4.1.2.6.158.3.1.1.8** and an event ID of **1.3.6.1.4.1.2.6.158.3.1.1.14**. Convert the decimal event ID value to hexadecimal to look up the message in the Advanced Management Module *Message Guide*.

For a System x WMI event, the **Details** pane usually includes the description and the event ID.
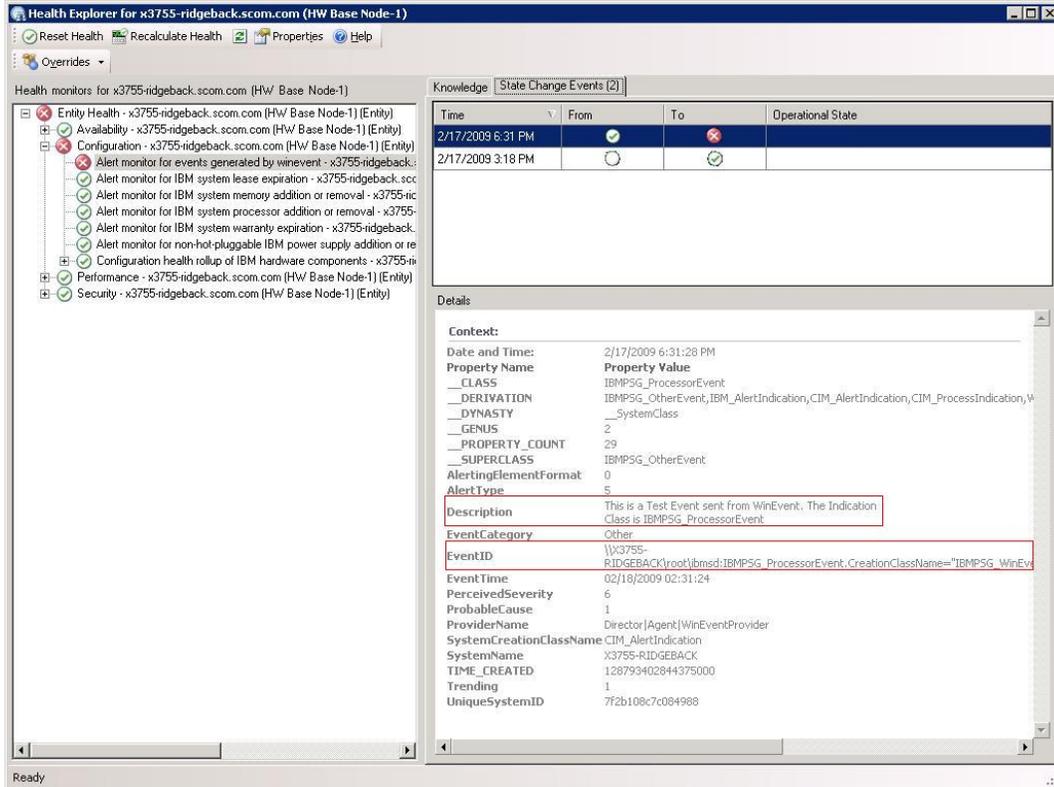
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