Third Party System Management Integration Solution

Sun Servers Integration 2.3 for Microsoft System Center Operations Manager 2007

Supported servers:

- Sun Fire x64 Servers

- Sun Blade x64 Server Modules

A complete list of currently supported Sun servers, service processors, and service processor firmware is available at the following web site:

http://www.sun.com/system-management/tools.jsp

Please consult this web site before configuring the Sun Servers Integration 2.3 for Microsoft System Center Operations Manager 2007.

Sun Microsystems, Inc.

www.sun.com

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Contents

Preface

The Sun Servers Integration 2.3 for Microsoft System Center Operations Manager 2007 enables you to monitor and manage your Sun x64 servers. This document explains how to install the required software on your Sun x64 servers and Blade modules, how to install the Sun Servers Integration 2.3 and how to use the Sun-specific features in Microsoft System Center Operations Manager 2007 (hereafter Operations Manager).

How this Document is Organized

This document contains the following sections:

- **Introduction** provides an overview of how to install Sun Servers Integration 2.3

- **Configuring Monitored Nodes** explains how to install the drivers and tools necessary to enable you use Sun Servers Integration 2.3 to monitor your Sun x64 servers in Operations Manager

- **Deploying Sun Servers Integration 2.3** explains how to install the Sun Servers Integration 2.3 into Operations Manager

- **Monitoring Sun x64 servers in Operations Manager** explains how to use the Sun-specific tools provided by Sun Servers Integration 2.3

- **Troubleshooting** provides notes about how to resolve any problems you may have discovering Sun x64 servers as well as any release notes about Sun Servers Integration 2.3

This document is intended for experienced IT professionals, field sales representatives and support engineers.

Before You Read This Document

To fully understand the information provided in this document and perform the tasks discussed, you should use it in conjunction with the documentation and on-line help that is supplied with Operations Manager.

Typographic Conventions

The following typographic conventions are used in this document:

Typeface	Meaning	Examples
AaBbCc1234	Elements written as seen on screen.	Click the **File** menu. Select **Open -> New**.
AaBbCc1234	Code that you type.	cd ..
AaBbCc1234	Hyperlink to an external web site.	www.sun.com
AaBbCc1234	Cross reference within this document.	See Installing for more information.

Terms and Definitions

The following terms are used in this manual:

Term	Definition
IPMI	Intelligent Platform Management Interface
ILOM	Integrated Lights Out Manager
ipmievd Windows service	A service that listens for events from the BMC that are being sent to the SEL and writes them to the Windows Application log
SP	Service Processor
Sun x64 server	Any Sun x64 server or Blade module listed as supported on the following web page: http://www.sun.com/system-management/tools.jsp

Introduction

The Sun Servers Integration 2.3 extends the capabilities of Microsoft System Center Operations Manager 2007 by providing Sun-specific configuration information, product knowledge and tasks. Microsoft System Center Operations Manager 2007 (Operations Manager) is a tool designed to provide comprehensive system management capabilities in your data center.

Getting Started

The latest version of the Sun Servers Integration 2.3 can be downloaded from the following web page:

http://www.sun.com/system-management/tools.jsp

Once you have installed the Sun Servers Integration 2.3 to Operations Manager, you can take advantage of the following features in Operations Manager.

■ You can monitor your Sun x64 servers in Operations Manager, viewing alerts, events, the server's state and the state of any tasks.

Once you have discovered your Sun x64 servers, you can take advantage of the following Sun-specific features in Operations Manager.

■ You can use Sun-specific tasks, such as launching a remote desktop connection or opening the server's Microsoft Management Console.

Sun Server Tasks

- Go to Sun systems integrations website
- Launch connection to ILOM
- Launch remote desktop
- Management console
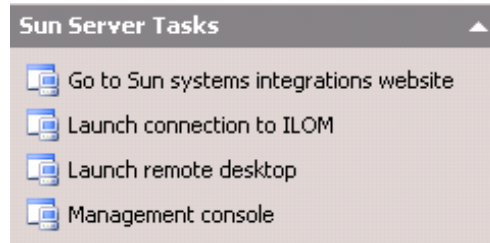
■ You can control a Sun x64 server's ILOM service processor.

- Sun servers task: Graceful server shutdown
- Sun servers task: SEL list
- Sun servers task: Server power cycle
- Sun servers task: Server power off
- Sun servers task: Server power on
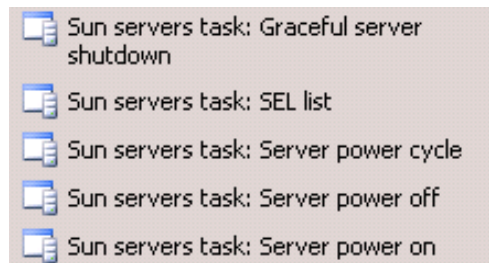
■ You can view detailed information about each event or alert received from supported and discovered Sun x64 servers.

Events (595)

Level	Date and Time	Source	Name	User	Event Number	Log Name	
⚠ Warning	9/9/2009 8:57:5...	Health Service S...	x4440-01.sg-pr...	N/A	999	Operations Man...	
✖ Error	9/9/2009 8:55:5...	Health Service S...	x4440-01.sg-pr...	N/A	999	Operations Man...	
ℹ Information	9/9/2009 8:54:0...	Health Service S...	x4440-01.sg-pr...	N/A	999	Operations Man...	
⚠ Warning	9/9/2009 8:52:0...	Health Service S...	x4440-01.sg-pr...	N/A	999	Operations Man...	
ℹ Success	9/9/2009 8:50:0...	Health Service S...	x4440-01.sg-pr...	N/A	999	Operations Man...	
ℹ Information	9/9/2009 8:48:1...	Health Service S...	x4440-01.sg-pr...	N/A	999	Operations Man...	
ℹ Success	9/9/2009 8:46:1...	Health Service S...	x4440-01.sg-pr...	N/A	999	Operations Man...	
⚠ Warning	9/9/2009 8:44:2...	Health Service S...	x4440-01.sg-pr...	N/A	999	Operations Man...	
ℹ Success	9/9/2009 8:42:2...	Health Service S...	x4440-01.sg-pr...	N/A	999	Operations Man...	
⚠ Warning	9/9/2009 8:40:2...	Health Service S...	x4440-01.sg-pr...	N/A	999	Operations Man...	
ℹ Success	9/9/2009 8:38:2...	Health Service S...	x4440-01.sg-pr...	N/A	999	Operations Man...	

Details

		Description:
Date and Time:	9/9/2009 8:57:58 PM	Sun.Servers.Monitoring.InBand.MicrosoftOperationsManager2007.Library.LogWriter.vbs : Voltage sensor CPU 0 VDD Voltage (ID: MB/P0/V_VDDCORE): sensor reading has returned above the lower non-recoverable threshold.
Log Name:	Operations Manager	
Source:	Health Service Script	
Generating Rule:	Read log to console	
Event Number:	999	
Level:	⚠ Warning	
Logging Computer:	X4440-01.sg-prague-ad.czech.sun.com	
User:	N/A	

Event Data: View Event Data

```
< DataItem type =" System.XmlData " time =" 2009-09-09T11:57:58.0002149-07:00 " sourceHealthServiceId =" 9AFB26AE-FC88-
    DF99-FE1D-5533C9E408BD " >
  < EventData >
    < Data > Sun.Servers.Monitoring.InBand.MicrosoftOperationsManager2007.Library.LogWriter.vbs </ Data >
    < Data > Voltage sensor CPU 0 VDD Voltage (ID: MB/P0/V_VDDCORE): sensor reading has returned above the lower
        non-recoverable threshold. </ Data >
  </ EventData >
</ DataItem >
```

Requirements

A complete list of the currently supported Sun servers, operating systems, service processors and service processor firmware is available at the following web site:

http://www.sun.com/systemmanagement/tools_supportmatrix.jsp?display=SCOM#SCOM

Please consult the list of supported servers at this website before installing Sun Servers Integration 2.3.

Each Sun x64 server you want to monitor in the Operations Manager must have an IPMI driver installed. For more information see Choosing a Configuration Procedure.

Choosing a Configuration Procedure

The exact configuration procedure that you should follow to enable a Sun x64 server to be monitored using the Sun Servers Integration 2.3 depends on the version of Windows Server that is installed on the server.

The following sections explain the different configuration procedures for Microsoft Windows Server 2003 SP1 or SP2, Windows Server 2003 R2 or Windows Server 2008.

Configuring Windows Server 2003 SP1 or SP2

This section describes how to configure Sun x64 servers running Windows Server 2003 SP1 or SP2 to enable Operations Manager to manage the hardware. Windows Server 2003 SP1 or SP2 use the Sun IPMI driver and the impievd Windows service.

To enable hardware monitoring of Microsoft Windows Server 2003 SP1 or SP2 follow these steps in the order they are shown:

- Install the Sun IPMI driver by following the procedure in Installing the Sun IPMI Driver

- Optionally verify the Sun IPMI driver is correctly installed by following the procedure in Verifying the Sun IPMI driver is Correctly Installed

- Install the ipmievd Windows service by following the procedure in Installing the ipmievd Windows Service

- Optionally verify the ipmievd Windows service is correctly installed by following the procedure in Verifying the ipmievd Service is Correctly Installed

Configuring Windows Server 2003 R2 or R2 SP2

This section describes how to configure Sun x64 servers running Windows Server 2003 R2 or Windows Server 2003 R2 SP2 to enable Operations Manager to manage the hardware. In these versions of Windows Server 2003 the Hardware Management Feature (including the Microsoft IPMI driver and provider) is provided by Microsoft. However, this feature is not installed by default and must be installed and enabled additionally.

To enable hardware monitoring of Microsoft Windows Server 2003 R2 or R2 SP2 follow these steps in the order they are shown:

- Install the Microsoft IPMI driver and provider by following the procedure in Installing the Microsoft IPMI Driver and Provider

- Optionally verify the Microsoft IPMI driver is correctly installed by following the procedure in Verifying the Microsoft IPMI Driver is Correctly Installed

- Install the ipmievd Windows service by following the procedure in Installing the ipmievd Windows Service

- Optionally verify the ipmievd Windows service is correctly installed by following the procedure in Verifying the ipmievd Service is Correctly Installed

Configuring Windows Server 2008

This section describes how to configure Sun x64 servers running Windows Server 2008 to enable Operations Manager to manage the hardware.

To enable hardware monitoring of Microsoft Windows Server 2008 follow this procedure:

- Install the ipmievd Windows service by following the procedure in Installing the ipmievd Windows Service

- Optionally verify the ipmievd Windows service is correctly installed by following the procedure in Verifying the ipmievd Service is Correctly Installed

Configuring Monitored Nodes

This section explains the how to install and configure the software necessary on your your Sun x64 servers, which you want to monitor as nodes in Operations Manager. The various versions of Windows Server require different procedures. For information on which procedure is appropriate for the version of Windows Server on your Sun x64 server, please see:

- Configuring Windows Server 2003 SP1 or SP2

- Configuring Windows Server 2003 R2 or R2 SP2

- Configuring Windows Server 2008

Installing the Sun IPMI Driver

This section describes how to install the Sun IPMI driver to enable hardware management of a Sun x64 server.

Ensure that you have one of the following Windows operating systems installed on your Sun x64 server.

- Microsoft Windows Server 2003 SP1

- Microsoft Windows Server 2003 SP2

Note - If Windows Server 2003 R2, Windows Server 2003 R2 SP2 or Windows Server 2008 is installed on the server, follow the steps described in either Configuring Windows Server 2003 R2 or R2 SP2 or Configuring Windows Server 2008.

Before you start, make sure you have downloaded the latest *Sun IPMI System Management Driver for Server 2003 prior to R2* package from:

http://www.sun.com/system-management/tools.jsp

Uncompress the *Sun IPMI System Management Driver for Server 2003 prior to R2* package locally on the server to be monitored.

▶ To install the Sun IPMI driver:

1. On the server you want to monitor, click **Start -> Control Panel -> Add Hardware** to display the Add Hardware Wizard, then click **Next**.
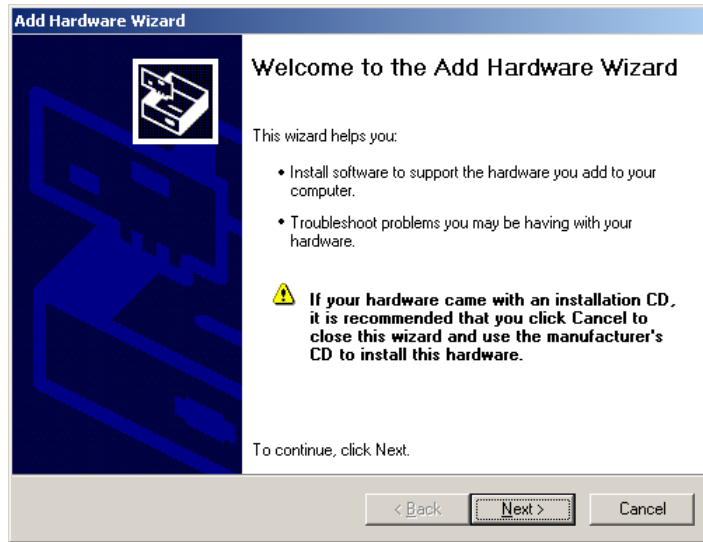
2. Select the **Yes, I have already connected the hardware** radio button, then click **Next.** The following dialog opens.
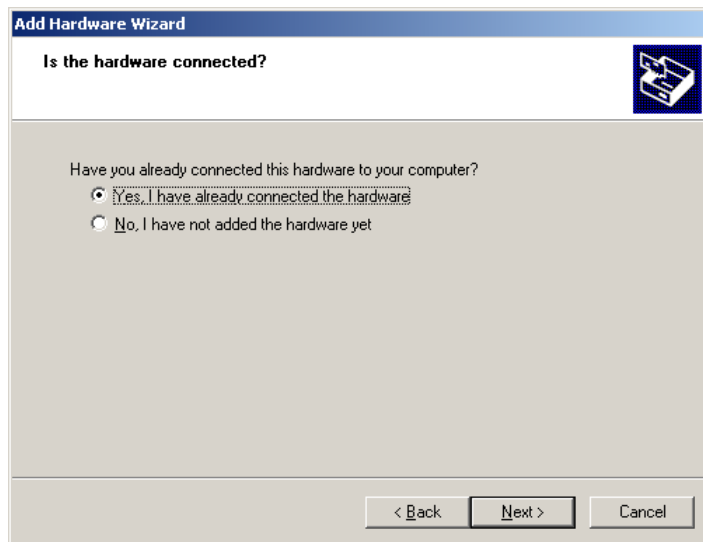
3. Select **Add a new hardware device**, then click **Next**.

4. Select the **Install the hardware that I manually select from a list (Advanced)** radio button, then click **Next**.

5. In the following dialog select the **System Devices** option from the list, then click **Next**.
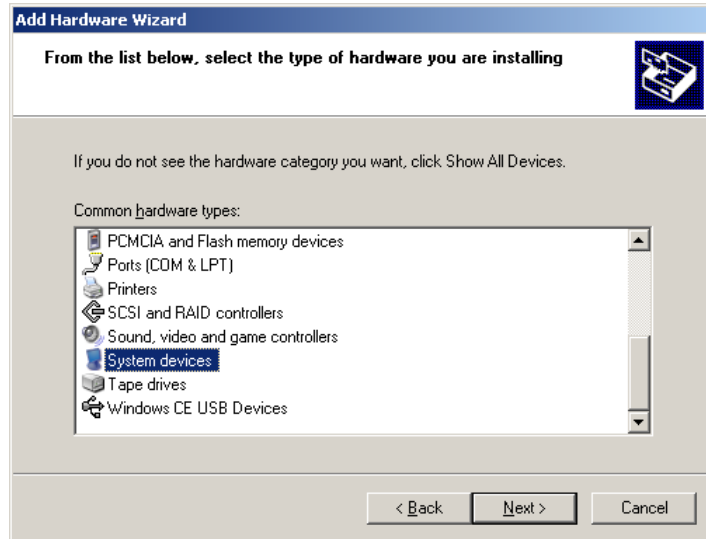
6. At the device driver selection click on **Have Disk**. Click **Browse** in the next dialog and navigate to the folder you uncompressed the *Sun IPMI System Management Driver for Server 2003 prior to R2* package to. Click the ISM.INF driver file, then click **OK** to proceed.

7. Choose **Next**, then click **Next** again to start the driver installation.

The Sun IPMI driver is now successfully installed.

Verifying the Sun IPMI driver is Correctly Installed

To verify that the Sun IPMI driver is installed, choose **Start -> Control Panel -> System -> Hardware** and open the Device Manager, as shown in the following image.
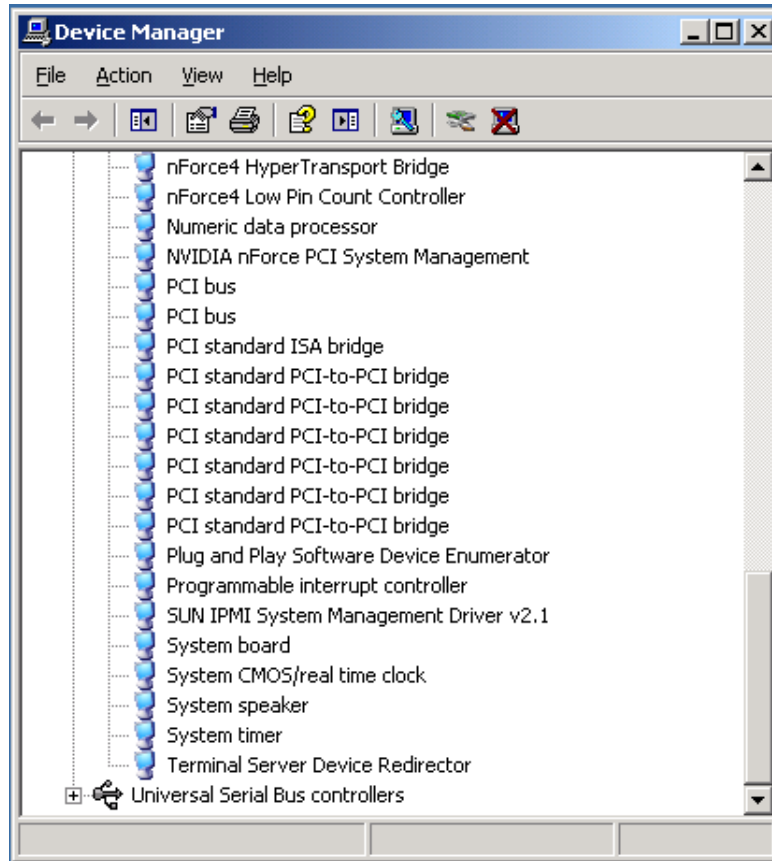
Verify that the **Sun IPMI System Management Driver v2.1** is included in the list of system devices and that no problems are indicated.

Installing the ipmievd Windows Service

This section describes how to install the ipmievd Windows service on a Sun x64 server.

The ipmievd Windows service is responsible for periodically polling the System Event Log, which is located on the service processor of the monitored server and updating the Windows Application Log with new hardware events.

Note - The ipmievd Windows service uses either the Sun IPMI driver or the Microsoft IPMI to communicate with the service processor. Before starting, please make sure that you have properly installed the appropriate IPMI driver for the operating system on your server, as described in Choosing a Configuration Procedure.

The ipmievd Windows service is a part of the *IPMItool for Microsoft Windows 2003*. Before you start, make sure you have downloaded the latest *IPMItool for Microsoft Windows 2003* package from:

http://www.sun.com/system-management/tools.jsp

Uncompress the *IPMItool for Microsoft Windows 2003* package locally on the server to be monitored.

▶ To install the ipmievd Windows service:

1. On the server that you want to monitor, open a command prompt window and change to the folder where you uncompressed the IPMI tool.

2. Depending on the installed operating system choose one of the following:

   ■ **On Windows Server 2003 SP1 or SP2** install the ipmievd Windows service by typing the following command:

   ```
   ipmievd.exe -i "-I ism sel"
   ```

   ■ **On Windows Server 2003 R2 or Windows Server 2008** install the ipmievd Windows service by typing the following command:

   ```
   ipmievd.exe -i "-I ms sel"
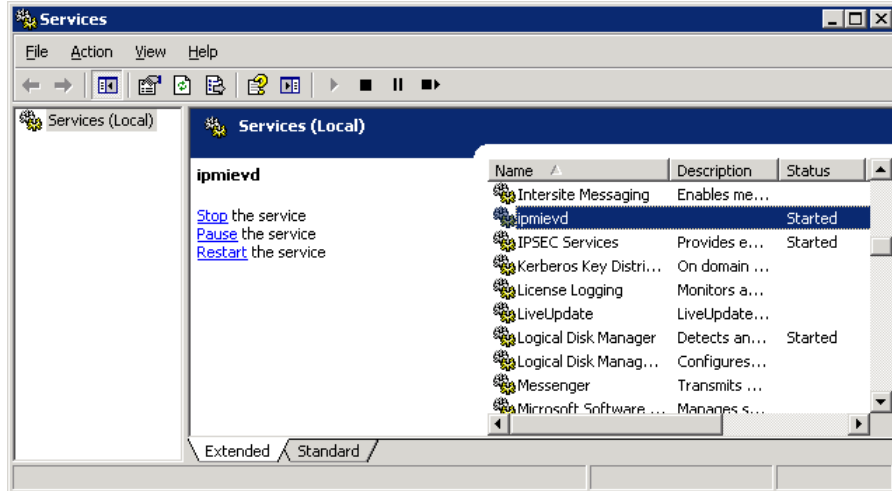   ```

   The ipmievd Windows service is installed on to the server.

3. To start the ipmievd Windows service, type the following command:

   ```
   net start ipmievd
   ```

   The ipmievd Windows service should report starting successfully.

4. The ipmievd Windows service is now successfully installed and running. You can verify this by clicking **Start -> Administrative Tools -> Services**.

Locate the ipmievd Windows service and verify that the service is started, as seen above.

Verifying the ipmievd Service is Correctly Installed

This section describes how to verify that the ipmievd Windows service has been correctly installed to enable hardware monitoring. This procedure is an optional task and is not a necessary part of the installation procedure.

Before you start, ensure that you have successfully followed all the steps in the section Installing the ipmievd Windows Service.

Verification consists of finding an appropriate hardware sensor and injecting a hardware event to that sensor using the ipmitool utility. The ipmitool utility is available in the *IPMItool for Microsoft Windows 2003* package downloaded in the previous section.

▶ To verify the ipmievd service is correctly installed:

1. Open a command prompt window (cmd.exe) and change (cd) to the folder where you uncompressed the IPMI tool.

2. Depending on the installed operating system choose one of the following:

   ■ **On Windows Server 2003 SP1 or SP2** obtain a list of hardware sensors and events from the service processor by typing the following command:

   ```
   ipmitool.exe -I ism -v sdr list
   ```

   ■ **On Windows Server 2003 R2 or Windows Server 2008** obtain a list of hardware sensors and events from the service processor by typing the following command:

   ```
   ipmitool.exe -I ms -v sdr list
   ```

3. Choose an appropriate sensor (Sensor ID) and hardware event that is Assertion Enabled and inject the hardware event. In this example, you inject the hardware event by typing:

```
ipmitool.exe -I ism event "ft1.fm2.prsnt" "Device
Absent" assert
```

4. To verify that the ipmievd service writes this event in the Windows Application Log, click **Start -> Administrative Tools -> Event Viewer** and select Application log.

5. Verify that a message with ipmievd source is located in the log.
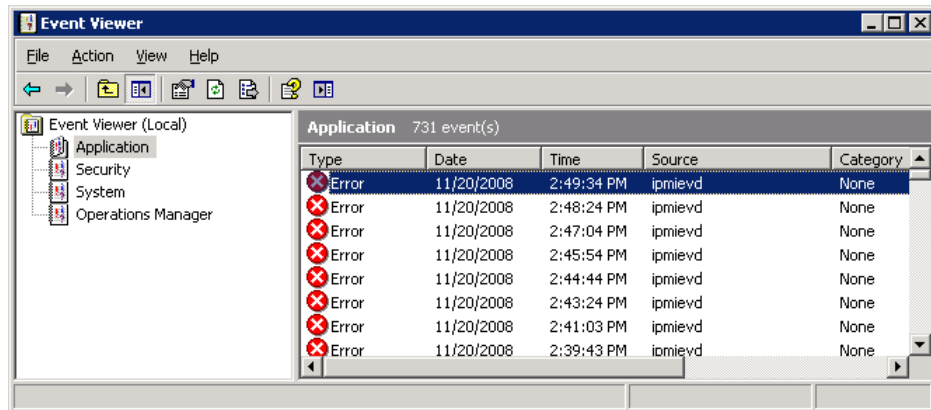
6. Double click on the selected event to view the details of the event.
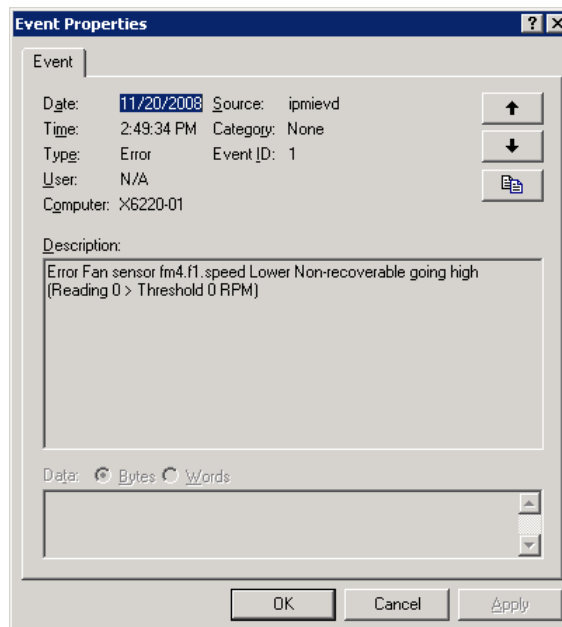
Once the events are being correctly written into the Windows Application Log, the server is properly configured and can be monitored using the Sun Servers Integration 2.3.

Installing the Microsoft IPMI Driver and Provider

This section describes how to install the Microsoft IPMI driver and provider to enable hardware management of a Sun x64 server running Windows Server 2003 R2.

Ensure that you have one of the following Windows operating systems installed on your Sun x64 server:

■ Microsoft Windows Server 2003 R2

■ Microsoft Windows Server 2003 R2 SP2

Note - if a non R2 version of Windows Server 2003 is installed on the server, follow the steps described in Configuring Windows Server 2003 SP1 or SP2. The Microsoft IPMI driver is installed by default on Windows Server 2008.

▶ To install the Microsoft IPMI driver and provider:

1. On the Sun x64 server running Windows 2003 R2 that you want to monitor, click **Start -> Control Panel -> Add or Remove Programs** and select **Add/Remove Windows Components**.

   The Windows Components Wizard opens, as seen below.
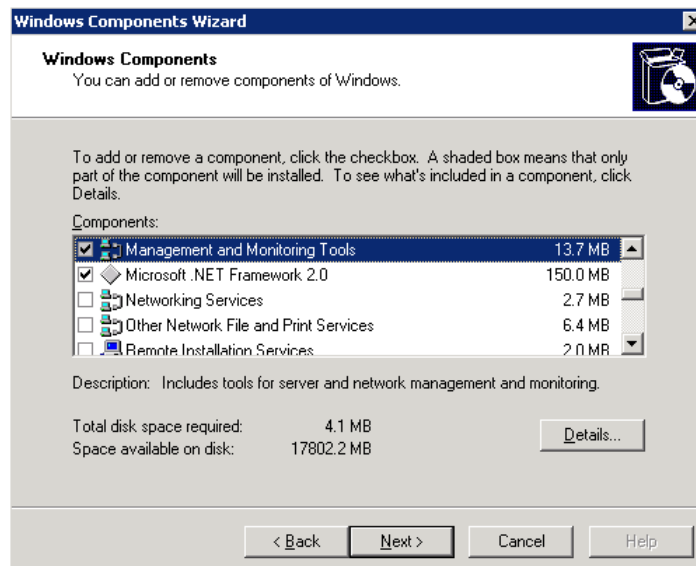
2. Select **Management and Monitoring Tools**, click **Details** and select the **Hardware Management** component.

3. Click **OK** and proceed with the following steps to install the hardware component.

4. Open the command prompt (cmd.exe) window and type the following command:

```
Rundll32 ipmisetp.dll, AddTheDevice
```

The Hardware Management component is now successfully installed.

To verify that the Hardware Management component has been installed, check the event viewer by clicking **Start -> Administrative Tools -> Event Viewer** and make sure the Hardware Events log is present.
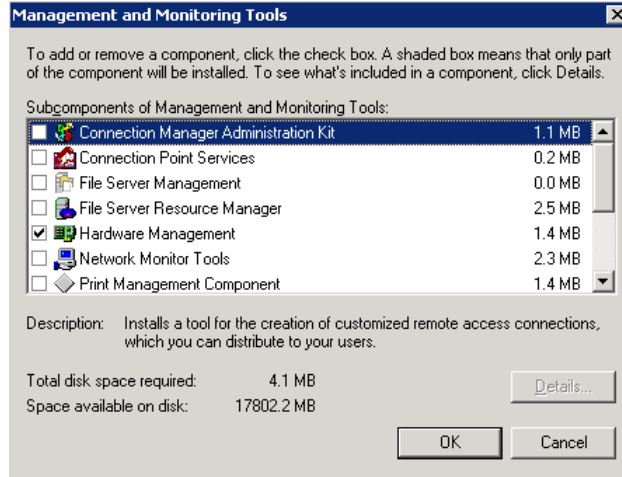
To verify that the IPMI driver has been properly installed and that the driver has correctly detected the service processor, click **Start -> Control Panel**. In the control panel, double-click **System**, then in the **Hardware** tab click **Device Manager**. As seen in the image below, under **System Devices** you should see the **Microsoft Generic IPMI Compliant Device**.
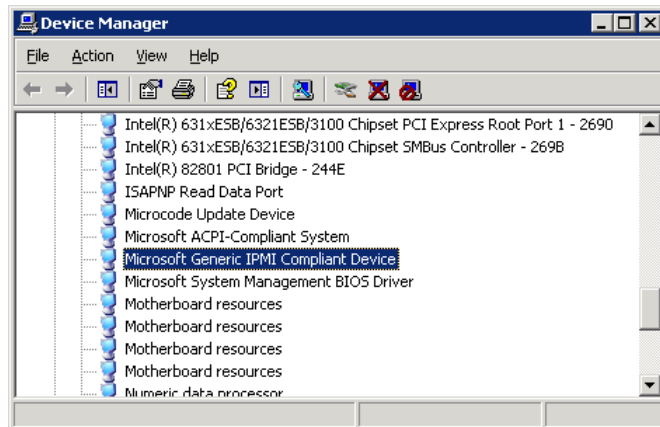
Verifying the Microsoft IPMI Driver is Correctly Installed

This section describes how to verify that a Sun x64 server has been correctly set up for hardware monitoring using the Microsoft IPMI driver. Verifying the correct installation of the driver is an optional part of the configuration procedure.

Verification consists of finding an appropriate hardware sensor and injecting a hardware event on that sensor. These hardware events are injected using the ipmitool utility. The ipmitool utility is available as part of the *IPMItool for Microsoft Windows 2003* package.

Before you start, make sure you have downloaded the latest *IPMItool for Microsoft Windows 2003* package from:

http://www.sun.com/system-management/tools.jsp
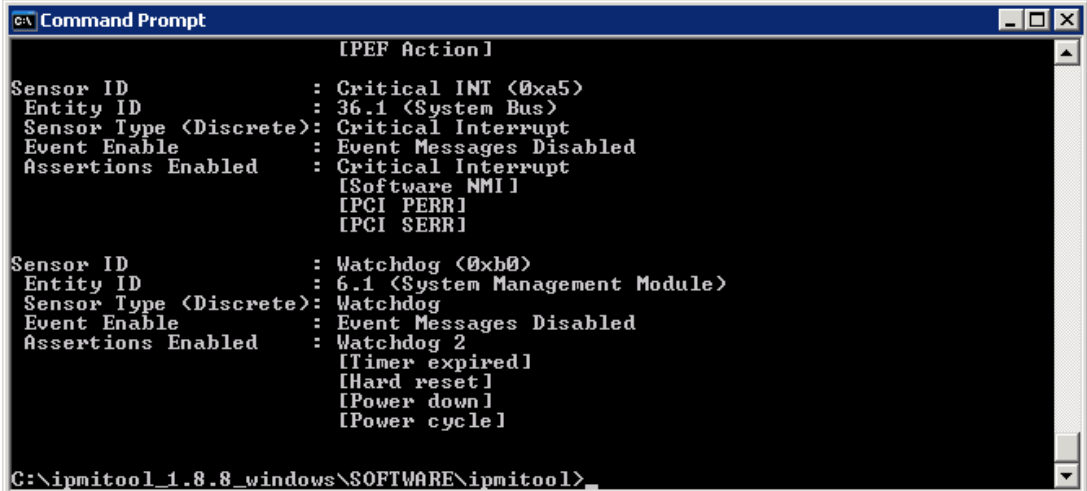
Uncompress the *IPMItool for Microsoft Windows 2003* package locally on the server to be monitored.

▶ To verify the IPMI driver is correctly installed:

1. Open a command prompt window (cmd.exe) and change (cd) to the folder where you uncompressed the *IPMItool for Microsoft Windows 2003*.

2. Obtain a list of hardware sensors and events from the service processor by typing the following command:

   ipmitool.exe -I ms -v sdr list

3. Choose an appropriate sensor and hardware event that is Assertion Enabled, note the Sensor ID. For example, in the example we will choose the second Sensor ID, called **Watchdog**.

4. To inject a hardware event, the following command is used:

```
ipmitool.exe -I ms event "Sensor ID" "Assertion"
assert
```

where *Sensor ID* is the ID of the sensor taken from the previous step and *Assertion* is the type of assertion to inject.

5. You can also verify that the hardware event is written into the Windows Hardware Events log. Choose **Start -> Administrative Tools -> Event Viewer** and select Hardware Events log. Verify that a message with **Microsoft-Windows-WSMAN-SEL_LogRecord** source is located in the log.
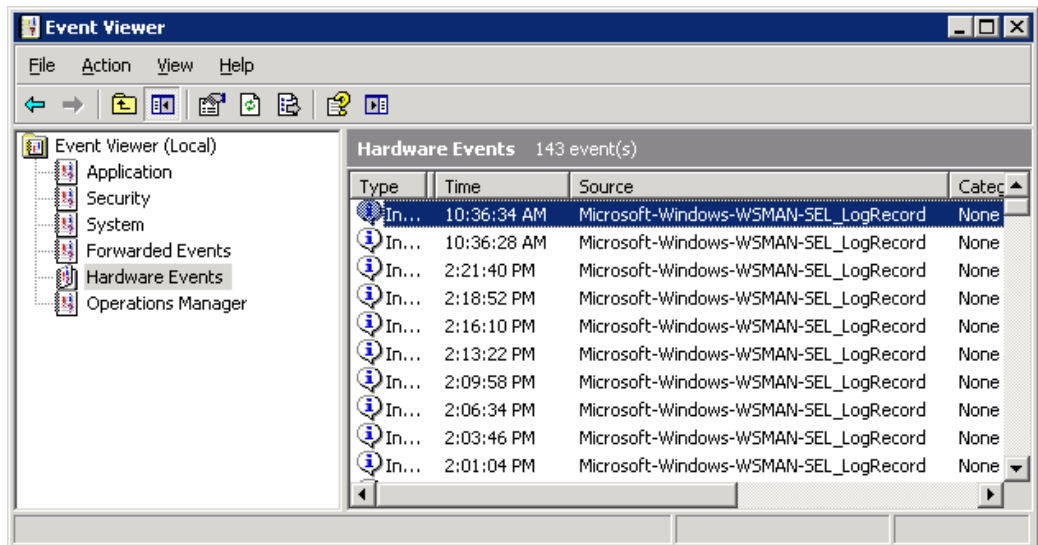
6. Double-click on the selected event to view the details of the event. The Events Properties dialog opens.
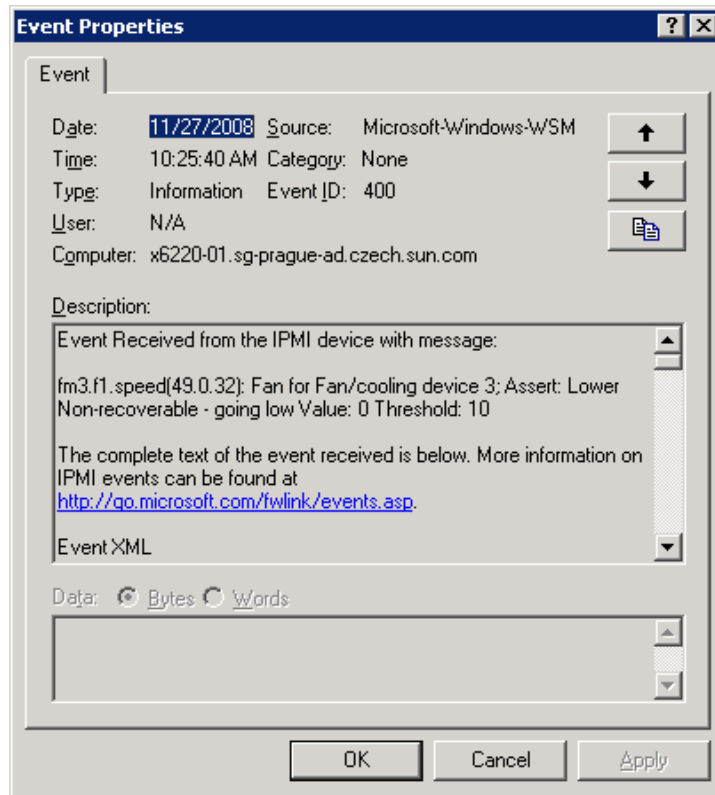
If step 5 completes successfully, the sever is properly installed and can be monitored by the Sun Servers Integration 2.3.

Deploying Sun Servers Integration 2.3

This section explains how to install Sun Servers Integration 2.3 as well as how to verify configuration.

Downloading the Sun Servers Integration 2.3

Before you start, make sure you have downloaded the latest Sun Servers Integration 2.3 from the following web site:

http://www.sun.com/system-management/tools.jsp

Save the Sun Servers Integration 2.3 to a working directory on the local system from which you plan to perform the installation and uncompress it.

Installing Sun Servers Integration 2.3

Sun Servers Integration 2.3 is supplied as a executable setup.exe file, which installs all of the tools, Management Packs and utilities needed to completely integrate Sun x64 servers into Operations Manager.

Note the Sun Servers Integration 2.3 installer is available for 32 bit and 64 bit architecture servers. Setup.exe is the 32 bit installer and setup_64.exe is the 64 bit installer.

▶ To install Sun Servers Integration 2.3:

1. Navigate to the folder you uncompressed Sun Servers Integration 2.3.

2. In the software folder run setup.exe or setup_64.exe depending on the server's processor architecture.

    The Sun Servers Integration 2.3 installer opens.
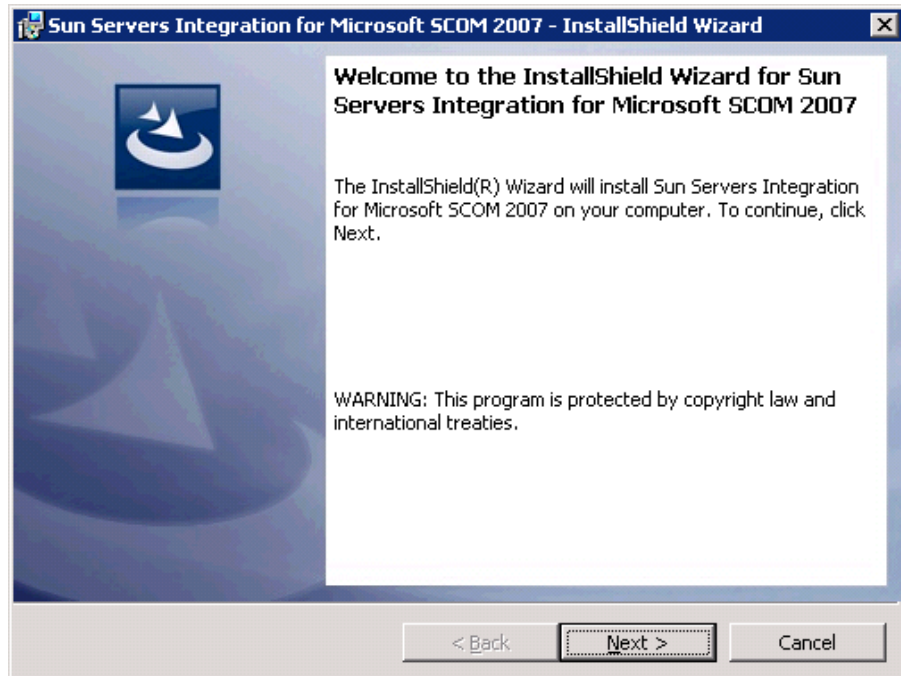
3. Click **Next.**

   The License agreement opens.
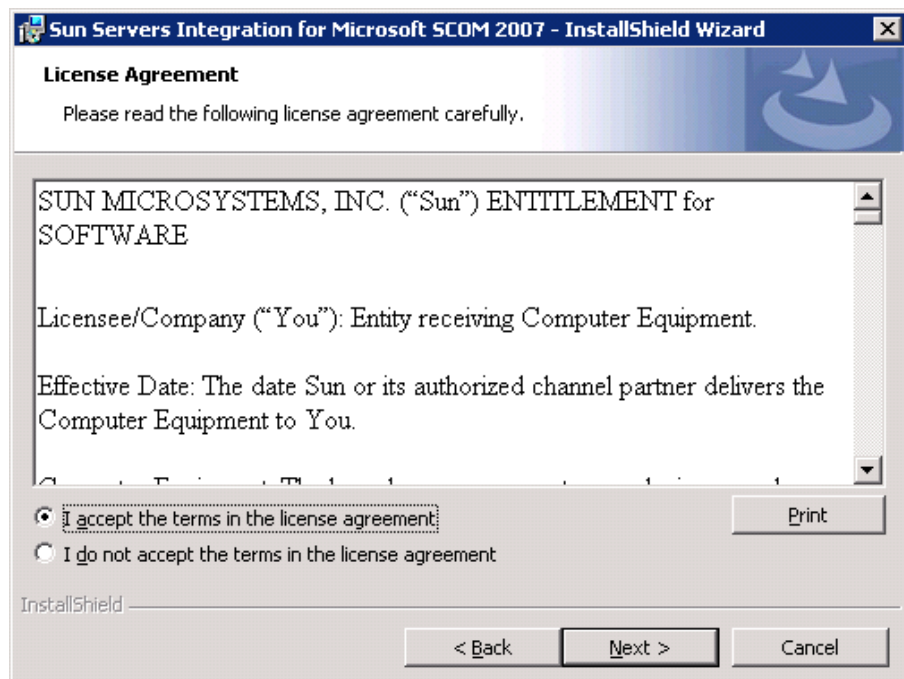
   Read the License agreement, click **I agree with the license agreement** and then click **Next**.
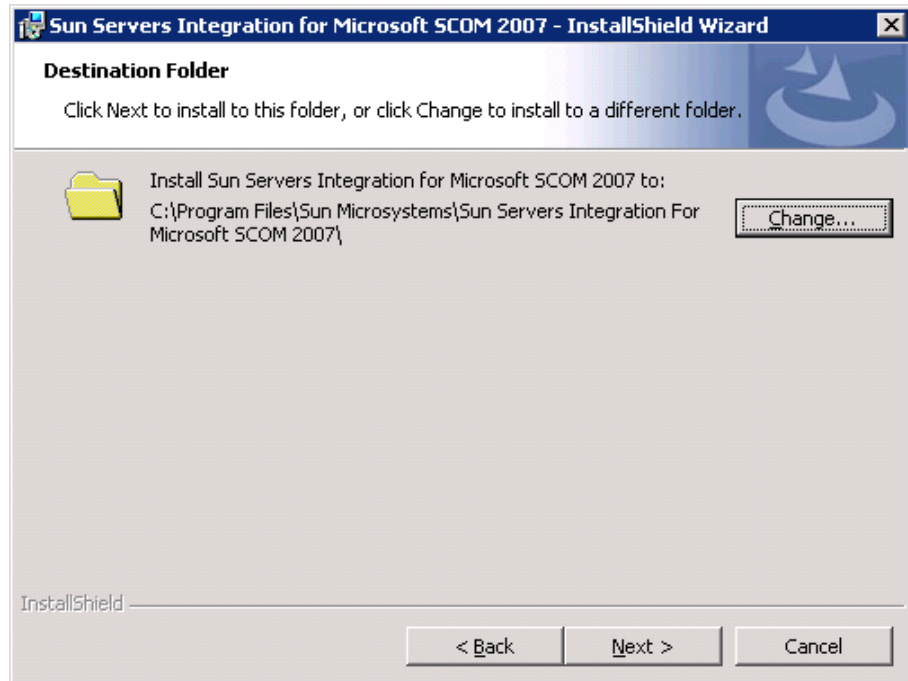
4. The destination folder page shows the default path which the Sun Servers Integration 2.3 will be installed to. Choose one of the following options:

If you want to install Sun Servers Integration 2.3 to the default path, click **Next**.

If you want to change the path which Sun Servers Integration 2.3 is installed to, click **Change**. A file browser opens and you can choose an alternative path, then click **OK** followed by **Next**.
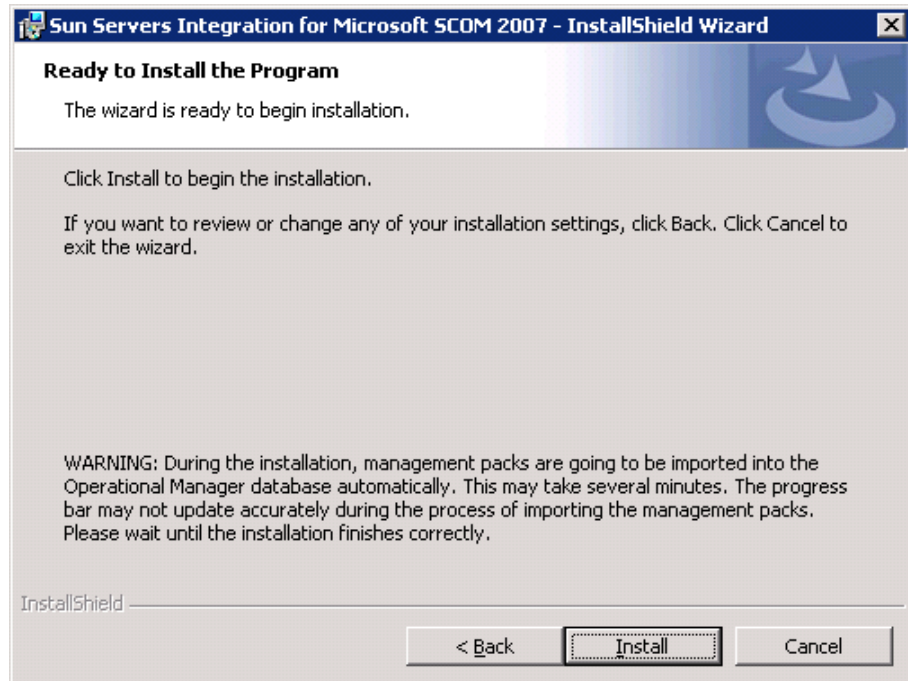
5. When you are sure you want to install Sun Servers Integration 2.3, click
   Install.

   The installer opens various command line windows. The progress bar
   may not update accurately during the process of importing the
   management packs.

6. When the Sun Servers Integration 2.3 has finished, click **Finish**.

7. To verify that the Sun Servers Integration 2.3 management packs have
   been imported successfully, open the Operations Console and click
   Administration. Click **Management Packs** and in the list of available
   management packs look for packs with Sun Servers Integration as part
   of their name.

Uninstalling Sun Servers Integration 2.3

Sun Servers Integration 2.3 can be uninstalled using standard Windows
administrative tools. The uninstaller removes all of the installed software
except the management packs. The management packs can be manually
uninstalled by deleting them from Operations Manager.

▶ To uninstall Sun Servers Integration 2.3:

1. In the Windows Control Panel, click **Add or Remove Programs**.

   The list of currently installed programs opens.

2. In the list of currently installed programs, find the entry for Sun Servers
   Integration for Microsoft SCOM 2007. Click **Change**.

The Sun Servers Integration 2.3 installer opens.
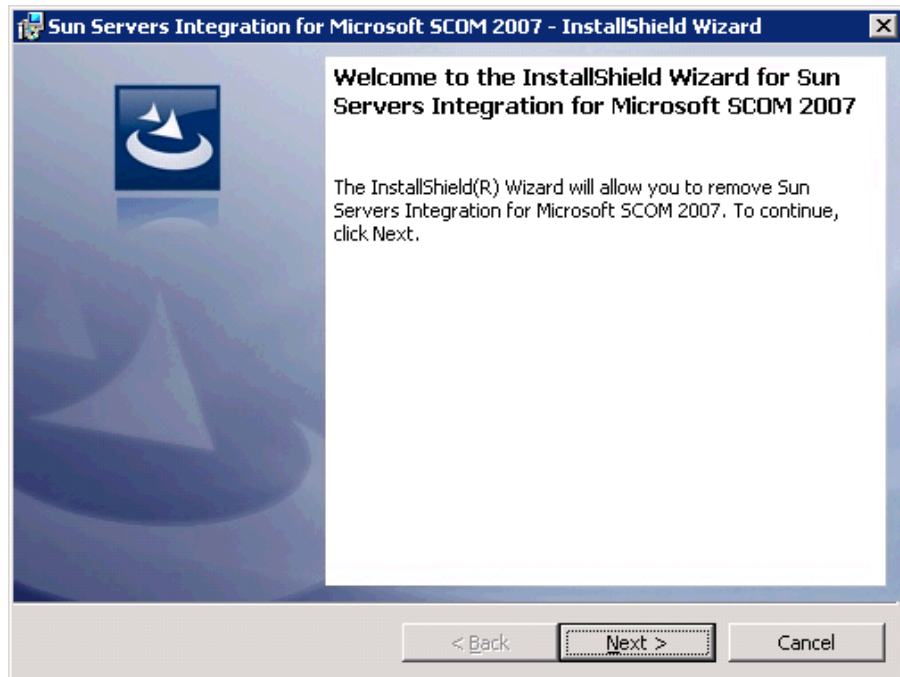
3. Click **Next**.

4. If you are sure you want to uninstall Sun Servers Integration 2.3, click **Remove**.

Sun Servers Integration 2.3 is uninstalled.

By default the Sun Servers Integration 2.3 management packs are not uninstalled automatically. You can optionally uninstall the Sun Servers Integration 2.3 management packs.

▶ To uninstall the Sun Servers Integration 2.3 management packs:

1. In the Operations Console, under **Administration** open the list of **Management Packs**.

2. Click any Sun Servers Integration management pack except the Sun Servers - Library and under **Actions** click **Delete**.

Note - all of the model specific management packs depend on the Sun Servers - Library pack. The Sun Servers - Library management pack must be deleted last.

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3. Repeat this process for each management pack starting with Sun Servers.

Verifying Configuration

Once you have added the Sun Servers Integration 2.3 to your Operations Manager configuration and one or more Sun x64 servers have been discovered, you can confirm that the entire configuration is working properly using one or both of the following procedures:

■ Manual verification: See Verifying Configuration Manually.

■ Remote verification: See Verifying Configuration Remotely Using IPMItool.

The following sections describe how to perform each of these procedures.

Verifying Configuration Manually

If you are located physically near one or more of your Sun x64 servers, you can verify configuration by generating a physical event. The most reliable way to accomplish this is to remove and re-insert a non-critical component.

Note - Before removing any component be certain that removal and re-insertion of this component will not affect the normal and routine operation of the server. Verify that the redundant component is not critical to the current state of the system.

▶ To test your configuration manually, do the following:

1. Locate the Sun x64 server in your data center.

2. Identify a component on that system that is non-critical and hot-pluggable (for example, a redundant power supply or fan tray).Remove the chosen non-critical component.

Note - Be certain to follow all required software and firmware procedures required for the safe removal of any hot-pluggable component. Consult the Sun manual or on-line information system that ships with your Sun x64 server for specific procedures related to removing the hot-pluggable component.

---

3. In the Operations Manager Event, Alert and Health Explorer views console, verify that removing the non-critical component has generated one or more hardware events.

4. Re-insert the non-critical component.

If you do not see the events in the Operations Manager Console, review this manual for required configuration steps or consult the Troubleshooting section.

Verifying Configuration Remotely Using IPMItool

Recent Sun x64 servers support an Integrated Lights Out Manager (ILOM) service processor. You can communicate with the ILOM service processors via their IPMI interfaces to have them generate non-critical, simulated events. If Operations Manager receives these non-critical, simulated events from ILOM, it is configured properly for actual events.

IPMItool is an open-source utility for managing and configuring devices that support the Intelligent Platform Management Interface (IPMI) version 1.5 and version 2.0 specifications. Versions of IPMItool are available for the Solaris, Linux, and Windows operating systems.

Operating System	IPMItool Distribution(s)
Solaris	• Web: http://ipmitool.sourceforge.net/ • Solaris 10 image: IPMItool is available at /usr/sfw/bin. • Software resource CDs: Often distributed with Sun x64 servers.
Linux	• Web: http://ipmitool.sourceforge.net/ • Software resource CDs: Often distributed with Sun x64 servers.
Windows	• Web: http://www.sun.com/system-management/tools.jsp • Software resource CDs: Often distributed with Sun x64 servers.

▶ To verify that Operations Manager is configured to receive hardware events from a server supporting an ILOM:

1. Collect the following information about the remote service processor that you want to test.

Field	Description
<SPname>	The name or IP address of the service processor Example: 192.168.1.1
<SPadminname>	The administrator login name for the service processor Example: root
<SPadminpassword>	The administrator password for the service processor Example: changeme

2. Enter the following IPMItool command to generate a list of all available sensors on the remote Sun x64 server:

```
# ipmitool -U <SPadminname> -P <SPadminpassword> \
-H <SPname> -v sdr list
```

For example, to get the list of available sensors on a Sun x64 server with a service processor at IP address 192.168.1.1, with a login of root and a password of changeme, type the following command:

```
# ipmitool -U root -P changeme -H 192.168.1.1 -v sdr
list
```

3. In the output from IPMItool, identify the Sensor ID name of a sensor that has at least one entry in the Assertions Enabled or Deassertions Enabled fields.

In the following example, IPMItool returns the following information about the sensor named mb.t_amb, which monitors the ambient temperature on the server's motherboard.

```
Sensor ID : mb.t_amb (0x9)

Entity ID : 7.0 (System Board)

Sensor Type (Analog) : Temperature

. . .

Upper critical : 55.000

. . .

Assertions Enabled : lnc- lcr- lnr- unc+ ucr+ unr+

Deassertions Enabled : lnc- lcr- lnr- unc+ ucr+ unr+
```

> **Note -** Exercise caution in choosing a sensor to use for a simulated event. Simulating unrecoverable high or low temperature for some sensors may cause the server to shut down.

4. Enter the following IPMI command to generate a simulated event.

   ```
   # ipmitool -U <SPadminname> -P <SPadminpassword> \
   -H <SPname> event <sensorname> <option>
   ```

   For example, to generate a simulated event for exceeding the upper critical (ucr) ambient temperature on a Sun x64 server with a service processor at IP address 192.168.1.1 and with an ILOM SP login of root and a password of changeme, type the following command:

   ```
   # ipmitool -U root -P changeme -H 192.168.1.1 \
   event mb.t_amb ucr assert
   ```

   IPMItool returns information similar to the following:

   ```
   Finding sensor mb.t_amb … ok

   0 | Pre-Init Time-stamp | Temperature mb.t_amb | \

   Upper Critical going high | Reading 56 > Threshold \

   55 degrees C
   ```

5. In the Operations Manager event console, verify that an event from ILOM relevant to the sensor that you specified in your IPMItool command has been received.

6. (Recommended) Clear the simulated event with the following syntax:

   ```
   # ipmitool -U <SPadminname> -P <SPadminpassword> \
   -H <SPname> event <sensorname> <option>
   ```

7. To clear (deassert) the simulated event in the previous example, enter the following command:

   ```
   # ipmitool -U root -P changeme -H 192.168.1.1 \
   event mb.t_amb ucr deassert
   ```

   If you do not see these messages in the console, review this manual for required configuration steps or see the Troubleshooting section.

Monitoring Sun x64 servers in Operations Manager

This section explains the Sun-specific features available in Operations Manager after installing Sun Servers Integration 2.3 and how to use them to monitor your Sun x64 servers. An overview of the various views and how they apply to Sun x64 servers is also provided.

Discovering Sun x64 Servers

Once you have installed Sun Servers Integration 2.3 you have to discover your Sun x64 servers, which have been configured as monitored nodes. Discovered Sun x64 servers are listed in the Operations Console Monitoring view under the Servers state, see Figure 1. For more information on discovering servers in Operations Manager, please see the Operations Manager documentation. You can optionally adjust how frequently Operations Manager discovers servers, please see Changing the Frequency of Server Discovery for more information.
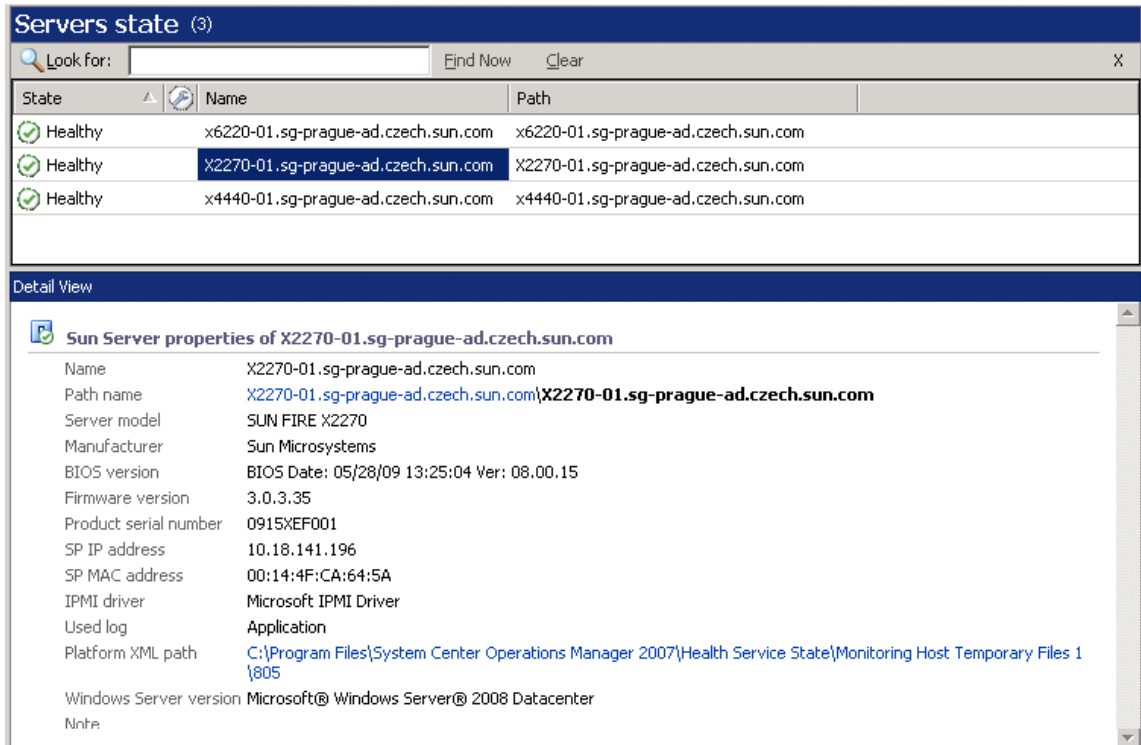
Figure 1: Monitored Servers State

If the Sun x64 server does not fulfill the requirements for being discovered, for example if an IPMI driver is not installed, it is displayed in the Operations Console Monitoring view under **Servers state (not discovered)**. The Servers state (not discovered) view may display a possible reason for the Sun x64 server not being discovered.
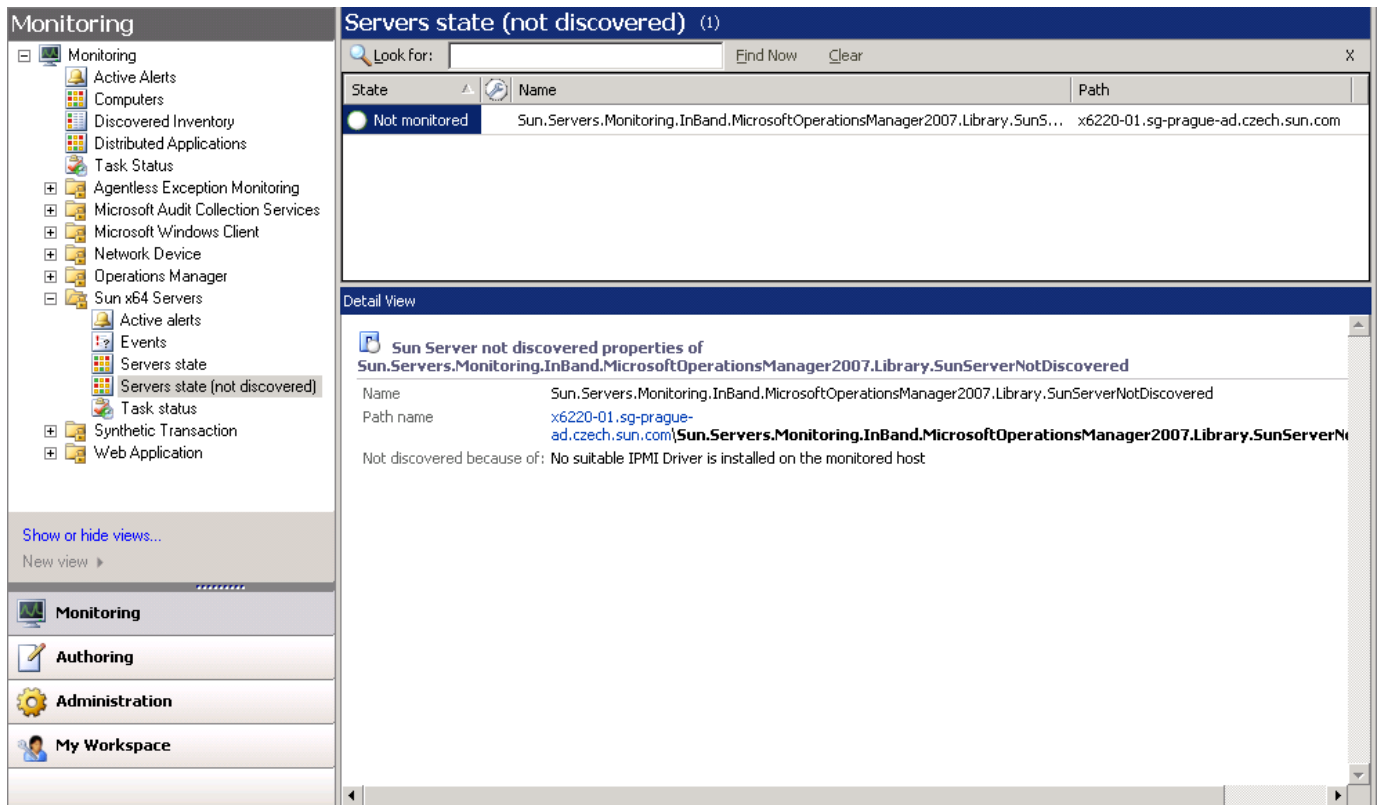
Figure 2: Server Not Discovered

Once a Sun x64 server is discovered you can see various properties and launch Sun-specific servers tasks, for more information see Sun-specific Tasks. The next step for the discovered Sun x64 server is to become monitored. Sun Servers Integration 2.3 provides monitors for every Sun x64 server sensor for supported platforms, including the knowledge base articles for sensors and events that indicate changes in the health state of the Sun x64 server.

It is always possible to monitor a supported machine regardless of the firmware version, however if it is not explicitly listed in the supported versions list, some events may not be displayed or translated and the discovered server will display a note in its properties. If the Sun x64 server is not supported, it will not be monitored at all. Sun x64 servers which fulfill the requirements , see Requirements for more information, are discovered and their static properties, such as SP IP address and so on are listed.

Changing the Frequency of Server Discovery

By default the Sun Server Discovery Rules run every 12 hours. You can modify how frequently the Sun Server Discovery Rules run for supported servers so that your Sun x64 servers can be discovered with less delay. There is one Sun Server Discovery Rule for each supported server.

Note - you should change the frequency of discovery when only necessary. Running discovery returns a large amount of data in a production environment with many monitored nodes.

▶ To change how frequently a Sun Server Discovery Rule runs:

1. In the Operations Console, click **Authoring**.

2. In the Authoring pane, under **Management Pack Objects** click **Object Discoveries**.

   The **Object Discoveries** list opens.
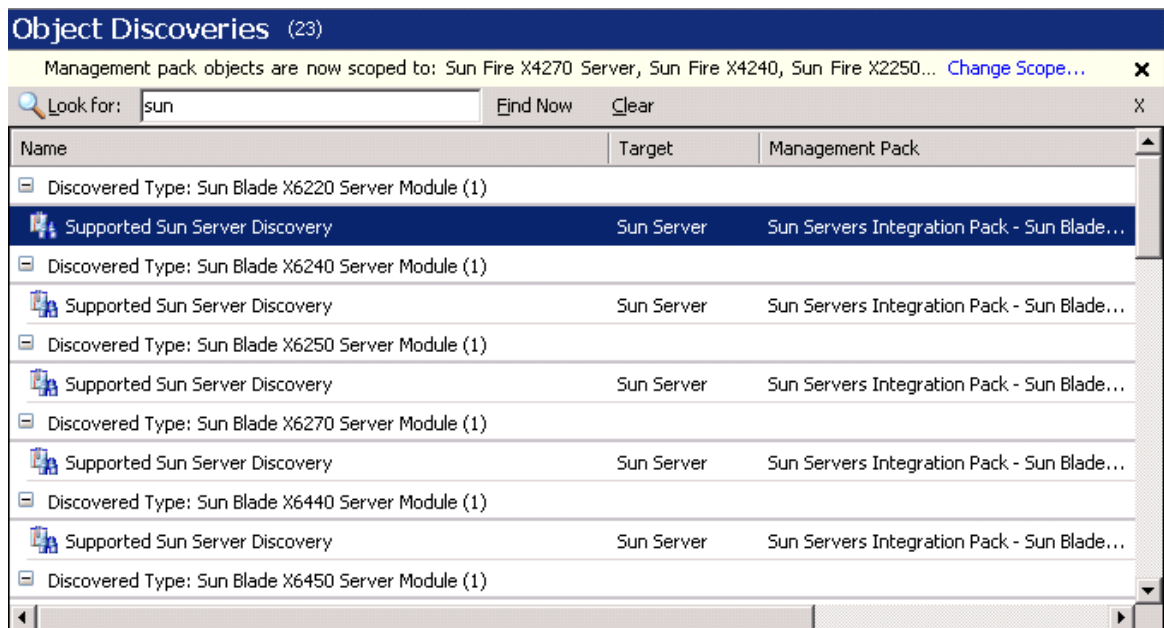
3. Optionally, type Sun into the **Look for** text box and click **Find Now**. This filters the Object Discoveries list to only show your Sun x64 servers.

4. For each row with **Discovered Type:** *Sun server model* in the Object Discoveries list, click the **Supported Sun Server Discovery** row.

5. In the Actions panel, select **Overrides** -> **Override the Object Discovery** -> **For all objects of type: Sun Server**.

6. The **Override Properties** window opens. The **Interval in seconds parameter** can be modified to adjust the discovery frequency, measured in seconds.

7. Repeat this procedure for each row with **Discovered Type:** *Sun server model* in the Object Discoveries list.

8. In the Object Discoveries list, find the row **Discovered Type: Sun Server** and click the **Sun Server Discovery** row.

9. In the Actions panel, select **Overrides** -> **Override the Object Discovery** -> **For all objects of type: Windows Server**.

Note - to disable discovery, the same steps can be taken. Instead of selecting Override the Object Discovery, select Disable Object Discovery.

Sun x64 Servers Specific Views

The various views available after installing the Sun Servers Integration 2.3 for Operations Manager provide the ability to monitor the health status of your Sun x64 servers.
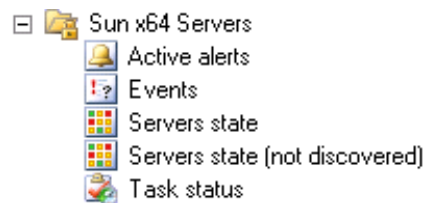
These views provide information about events that have happened, the task status, any state alerts, any Sun x64 servers that have not been discovered and the health of your Sun x64 servers.

Servers State View

The Servers state view provides an overall view of the status of a Sun x64 server, together with its specific properties. To use the Servers state view, open the **Monitoring** section in the Operations Console. Then open the Sun x64 servers folder and select **Servers state**.

This view provides a list of your Sun x64 servers. Clicking on a specific server shows information such as the name, model, BIOS version, SP details and so on. The Servers state view also enables you to access the Sun-specific tasks available for your Sun x64 servers as part of Sun Servers Integration 2.3.

Sun-specific Tasks

Within the Servers state view, the following tasks are available for all Sun x64 servers under the Sun servers tasks pane:

- **Go to Sun systems integrations website** - opens a web browser and navigates to the Integration with Third Party System Management ISV tools web page, where you can find the latest version of Sun Servers Integration 2.3.

- **Launch remote desktop** - launches a remote desktop connection to the server currently selected in the Servers state view.

- **Management console** - opens the Microsoft Management Console for the server currently selected in the Servers state view.

■ **Launch connection to ILOM** - opens a web browser and displays the web-based GUI main page of the ILOM SP.

Note - to use the Launch connection to ILOM task, the Sun x64 server's SP must be connected to the network and be accessible from the management server.

When using the Management Console task, the task may fail if the Sun x64 server and the management server are not in the same domain and there is no trust between them. The cause may be that additional log in credentials need to be provided. If you encounter this problem, run the `cmdkey` utility on the management server to assign login credentials for the Sun x64 server.

For example:

```
cmdkey /add:ServerName /user:ServerName\Administrator
/pass:password
```

assigns the login credentials *Administrator* and *password* for the server *ServerName*. More information on the `cmdkey` utility can be found at:

http://technet.microsoft.com/en-us/library/cc754243(WS.10).aspx

Assigning ILOM SP Log In Credentials

To be able to use the Sun server tasks you need to configure Operations Manager to store the log in details for the ILOM SP.

Using Run As Profile enables you to use log in credentials to access the Service Processor (SP) of a Sun x64 server. Several Sun server-specific tasks are associated with the specific Run As Profile called SunSpAccessAccount. You have the option of associating Run As Accounts for the mentioned Run As Profile on a target computer.

Using Run As Account allows you to specify the necessary privileges for use with those tasks targeted to specific computers on an as-needed basis. Data is encrypted between the root management server and the targeted computer when credentials are being transferred and the credentials are securely stored on the targeted computer.

▶ To assign login credentials for an ILOM SP:

1. Go to **Administration** and under **Security** click **Run As Accounts**.

2. Under **Actions** click **Create Run As Account...**.

3. Click **Next**.

4. Type a **Display name** and select Basic authentication as the **Run AsAccount** then click **Next**.

5. Provide the login and password of the ILOM SP you want to monitor as the **Account name** and **Password** then click **Create**.

6. Go to **Administration** and under **Security** click **Run As Profiles**.

7. In the **Run As Profiles** tab, click **Account for accessing the SP of Sun Server** and under **Actions** click **Properties**.

8. Select the tab **Run As Accounts** and then click **New...** to open the **Add Alternate Run As Account** dialog.

9. Under **Run As account**, select the previously created **Run As Account** created in step 5.

10.From the list of **Matching Computers**, select your management server.

11.Click **Ok** on both open dialogs to return to the Operations Console.

The log in details are now available in Operations Manager.

Management Server Tasks

Once you have the ILOM SP details available in Operations Manager you can use the management servers tasks to control your Sun x64 servers.

▶ To access the management server tasks specific for Sun x64 servers:

1. In the Operations Console, open **Monitoring** -> **Discovered Inventory**.

2. Right-click in the discovered inventory window and select **Change target type... -> Management server**.

3. In the list of target types, select the Management server where the Sun Servers Integration 2.3 has been installed.

   The list of Sun x64 server specific tasks is shown in the Actions pane under Health Service Tasks.


Note - to use the following tasks, the SP of the server being managed must be connected to the network and be accessible from the management server.

Sun servers task	Function
Graceful server shutdown	Shuts down the operating system gracefully prior to powering off the selected Sun server.
SEL list	Lists the contents of the System Event Log (SEL) of the selected Sun server.
Server power cycle	Immediately reboots the selected Sun x64 server.
Server power off	Forces a hard power off, only use when necessary.
Server power on	Immediately turns on the power for the selected Sun x64 server.

Table 1:

Running any of the Sun server tasks is similar. Before proceeding, you should ensure you have the SP's log in details available in Operations Manager, for more information see Assigning ILOM SP Log In Credentials.

▶ To run a Sun specific management server task:

1. In the Operations Console, open **Monitoring ->Discovered Inventory**. Under **Actions** is a group of tasks starting with **Sun servers task:**.

2. Click on the task name you want to use, the **Run Task** window opens.
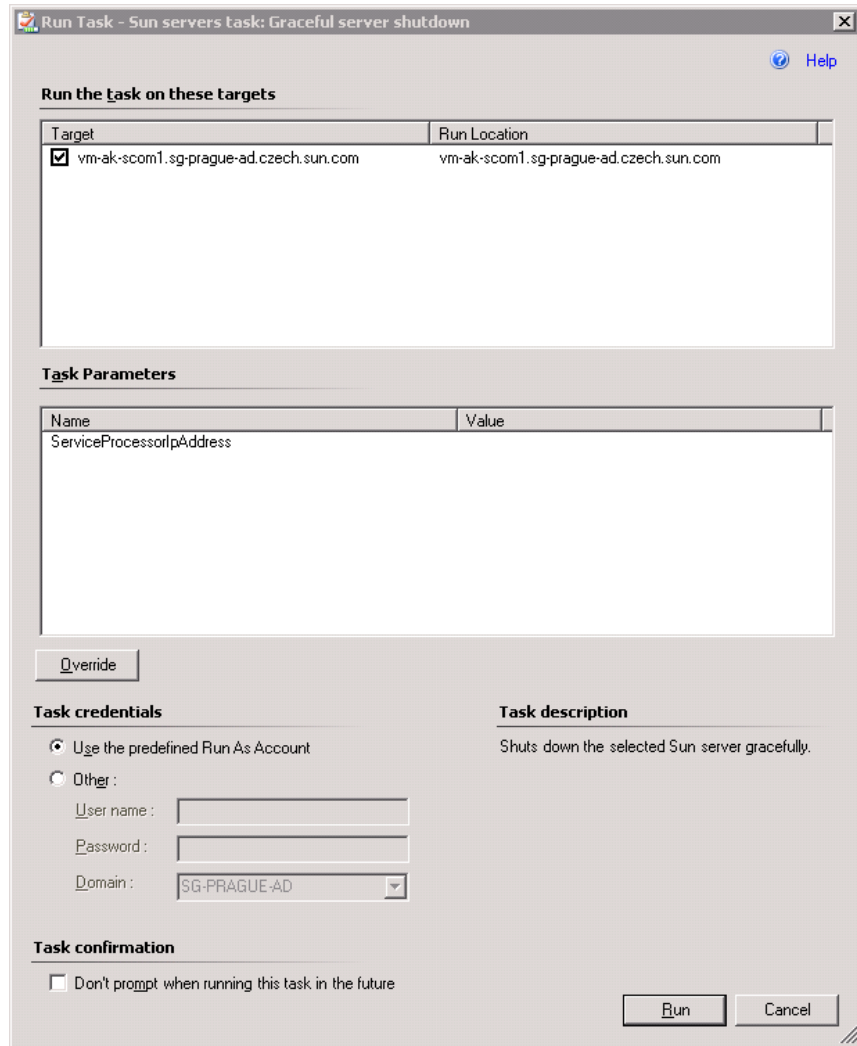
3. Under Task Parameters, select **ServiceProcessorIpAddress** and click **Override**.

4. In the **Override Task Parameters** dialog, in the **NewValue** field type the IP address of the ILOM SP of the Sun x64 server that you want to run the task on.

5. Click **Override**, the ILOM IP is displayed under **Value**.
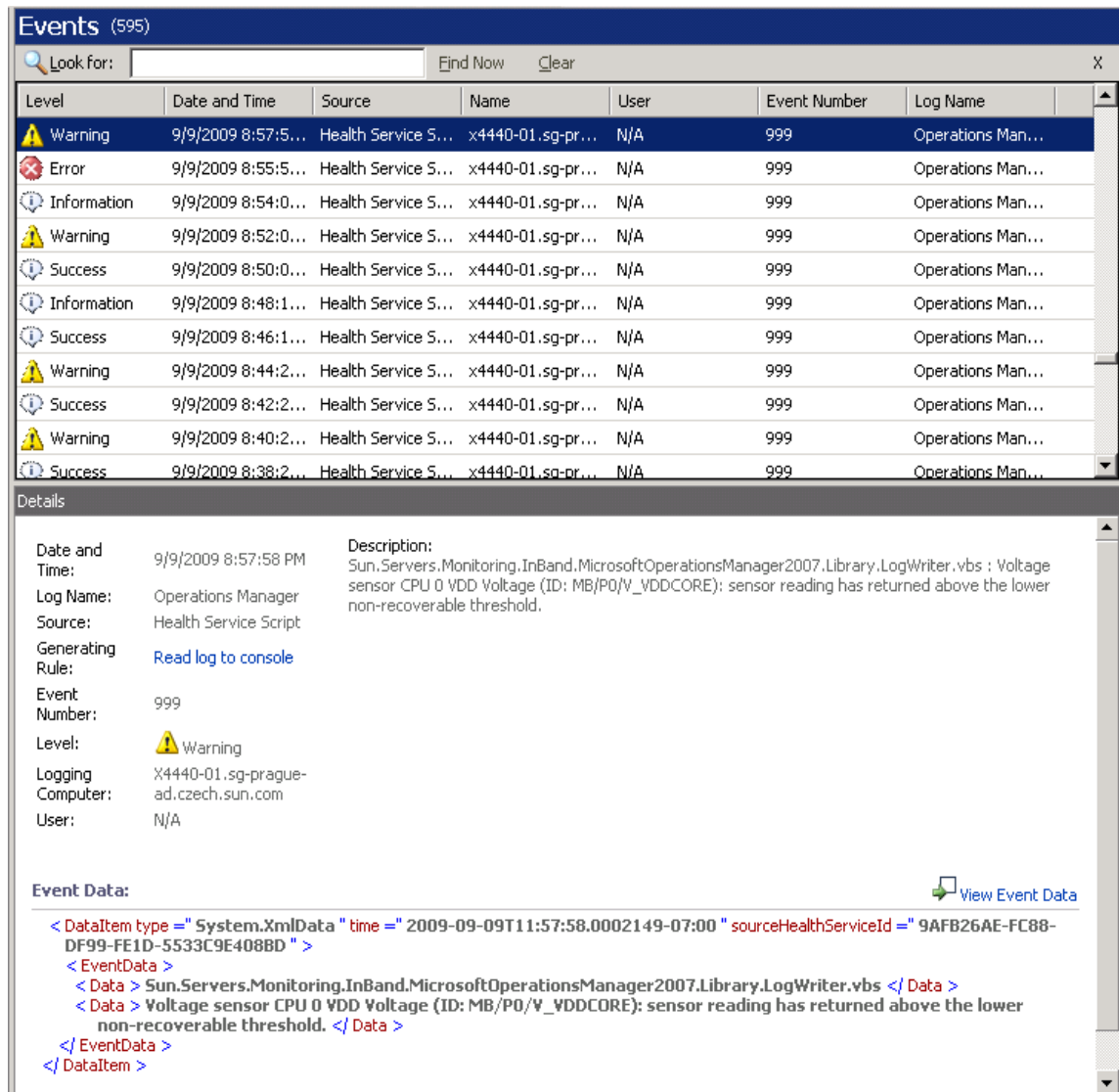
Note - the IP address of the ILOM SP can be obtained from the property SP IP of the discovered Sun x64 server. See Servers State View for more information.

6. Click **Run** and follow the information in the task output.

Events View

Sun Servers Integration 2.3 provides an Operations Manager Events view with the Sun-specific information related to Sun x64 servers.

To open the Sun x64 hardware Events view choose the **Monitoring** section in the Operations Console, open the Sun x64 servers folder and click **Events**.

Every event on Sun x64 servers produced by the ipmievd service that is captured by the Application log is processed by Sun Servers Integration 2.3 and shown in human-readable form in the **Events** list for the server.

Events with event number 999 indicate the Sun server component state by reporting the change of health for various server components.

Events with event number 888 indicate problems with particular server model discovery. Please see the corresponding event text for details about the error.

Events with event number 777 indicate problems with the server health state and failure of processing events. Please see the corresponding event text for details about the error.

Active Alerts View

Sun Servers Integration 2.3 provides an the Active alerts view with Sun-specific information related to the Sun x64 servers being monitored.

To open the Sun x64 hardware Alerts view, open the **Monitoring** section in the Operations Console. Then open the **Sun x64 servers** folder and select **Active alerts**.

The hardware alerts view can be seen in the image below.
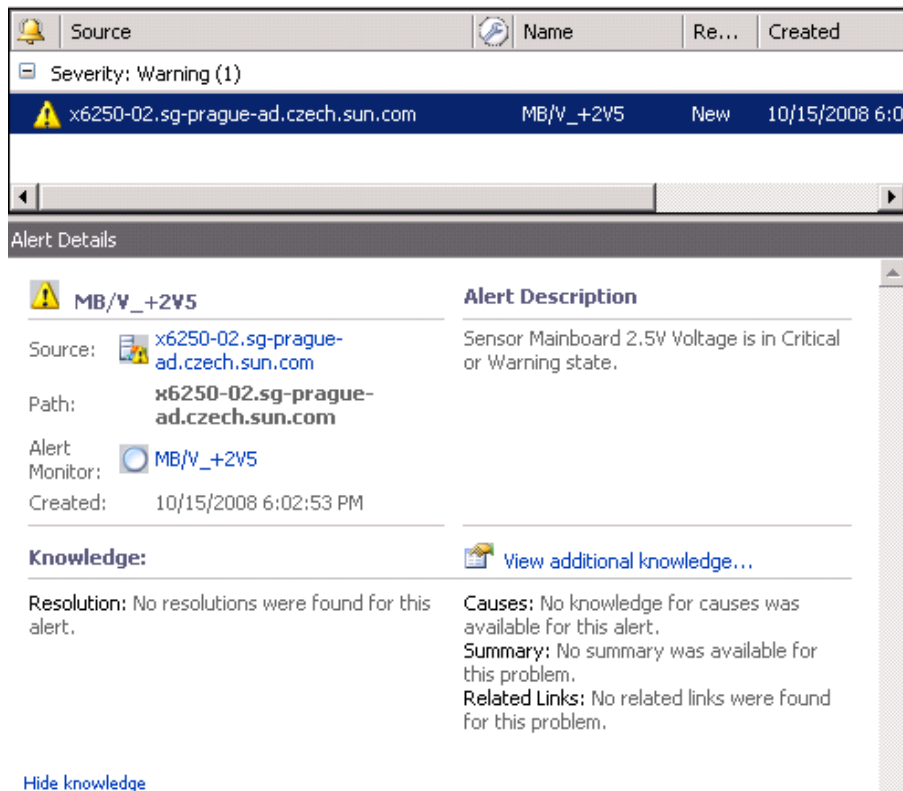
When the monitor for a particular sensor switches to warning or critical state, it generates an alert. The alert is cleared automatically when the state of the monitor has changed back to normal. For detailed information about the monitor state that caused the alert, consult the monitor knowledge base.

Health Explorer

To identify a component that is affected by raised hardware alerts, the Health Explorer view can be opened.

To open the Health Explorer for a particular server, open the **Monitoring** section of the Operations Console, select the desired server in any of the views and click **Health Explorer** in the right top actions panel.

The **Health Explorer** opens as shown in the image below.
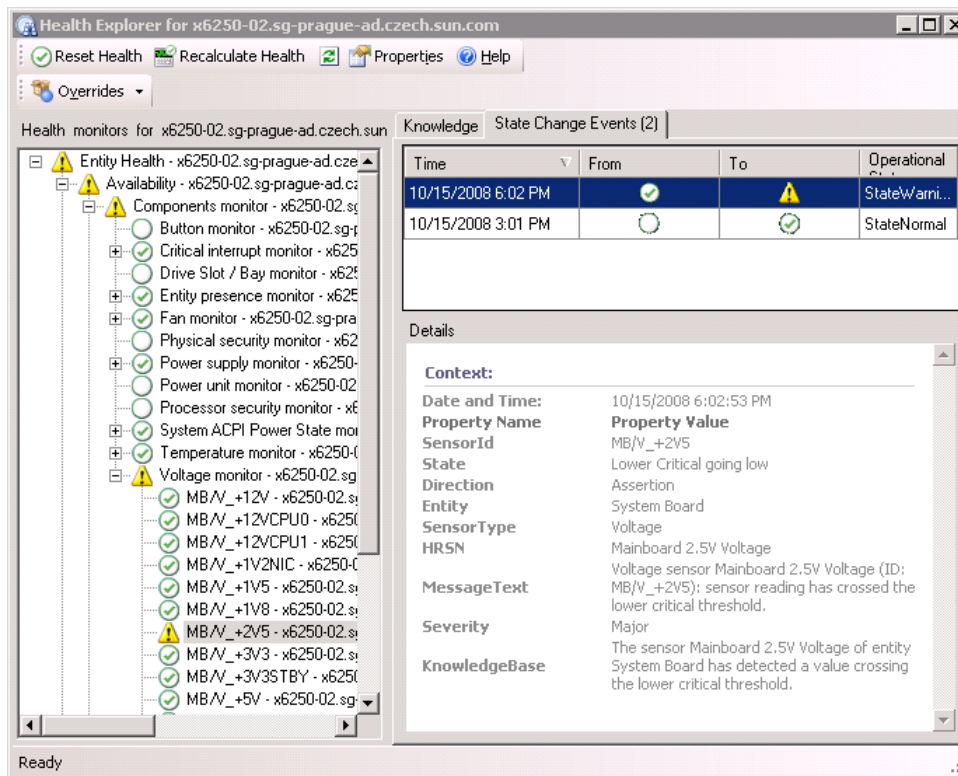
The Health Explorer displays information about the health of Sun x64 Server components and critical Windows services. Each sensor has a unique monitor. Sensors are grouped by sensor type under aggregate monitors, one per sensor type. Health status details can be expanded to show a particular sensor that is in warning or critical state.

To get detailed information about the sensor that is being monitored, see its knowledge base, which also contains the information about the available states for the monitored sensor together with their severities, as in the following example.
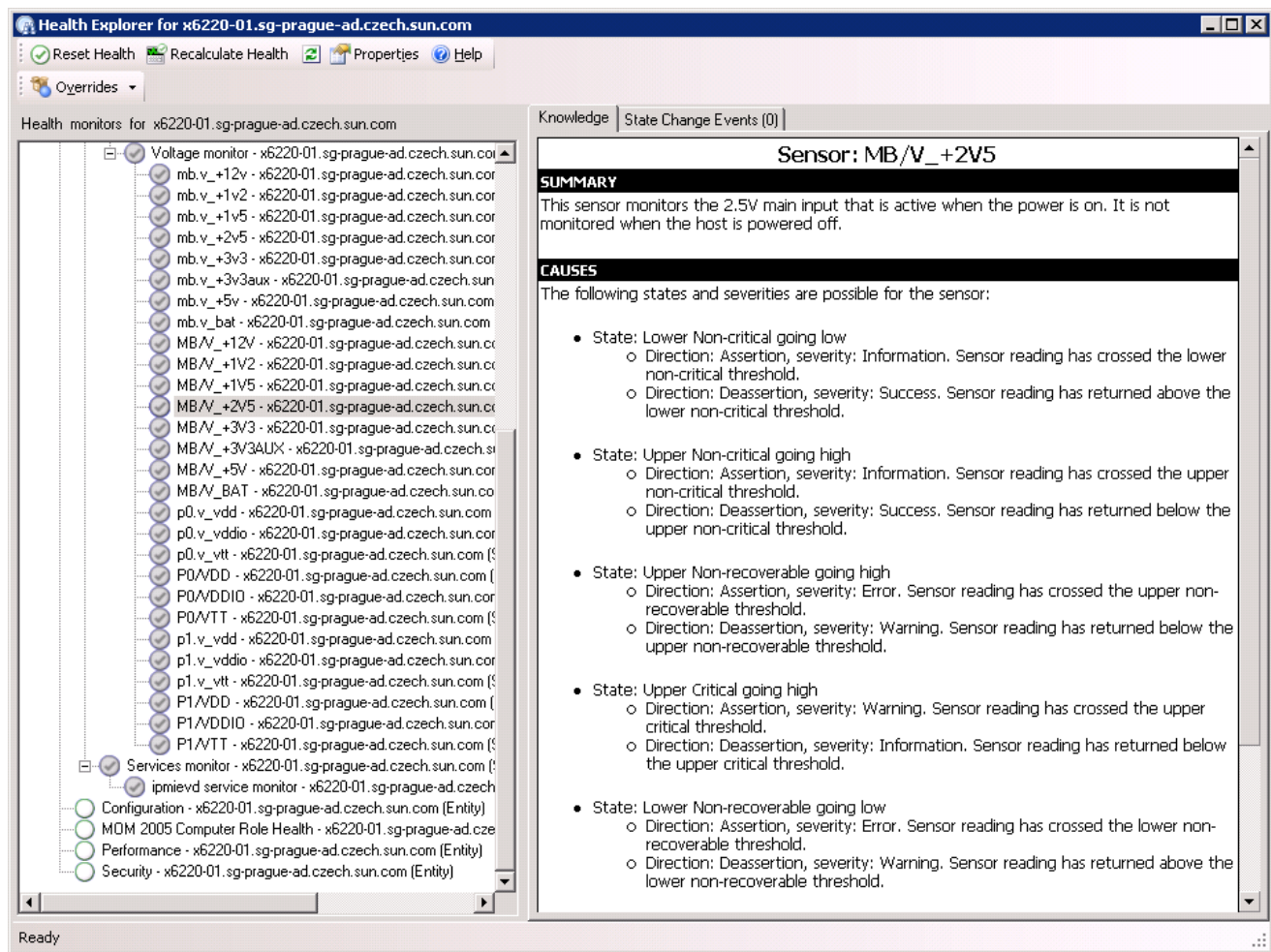
When a sensor has a critical state, an alert is generated with the corresponding severity.

Aside from hardware sensors, Windows services essential for monitoring of Sun x64 servers health are monitored. In this version of the integration, the ipmievd service is also monitored.

Task Status View

The Task Status view provides an overview of that tasks that have been run on the Sun x64 servers.

To open the Sun x64 servers Task Status view, open the **Monitoring** section in the Operations Console. Then open the **All Sun x64 servers folder** and select **Task Status View**.

Troubleshooting

This section provides tips and solutions for the most common problems you may encounter when installing and using Sun Servers Integration 2.3. In addition you can find the release notes for the current version.

Sun x64 Servers not Discovered

Check all of the necessary prerequisites mentioned in Requirements. Make sure you have followed the instructions appropriate to your server at Choosing a Configuration Procedure.

Possible reasons for your Sun x64 Server not being discovered by the integration pack are:

■ The server is an unsupported Sun x64 server model and/or is using an unsupported firmware version. To see details about the server model and firmware versions supported by a particular pack, check the list of supported servers and firmwares at:

http://www.sun.com/system-management/tools.jsp

■ The Sun IPMI driver, version 2.1 or higher is not installed on the Sun x64 server running Windows Server 2003 SP1 or SP2 that you want to monitor. For information on installing the Sun IPMI driver, see Installing the Sun IPMI Driver.

■ The Microsoft IPMI driver and provider is not installed on the the Sun x64 server running Windows Server 2003 R2 that you want to monitor. For information on installing the Microsoft IPMI driver and provider, see Installing the Microsoft IPMI Driver and Provider.

■ The ipmievd Windows service is not installed on the the Sun x64 server running either Windows Server 2003 SP1, SP2, Windows Server 2003 R2 or Windows Server 2008 that you want to monitor. For information on installing the ipmievd Windows service, see Installing the ipmievd Windows Service.

Release Notes

This section contains late breaking information relating to the Sun Servers Integration 2.3. Please also check the following web page for any updated information:

http://www.sun.com/system-management/tools.jsp

- If the service processor is restarted, all SEL messages are reread by Operations Manager. This can cause out of date messages, such as alerts and warnings, to reappear in Operations Manager. This can also cause the health of the server to be incorrectly reported.

- If the IPMI driver is not working on a Sun Fire X2250 Server make sure you have the latest BIOS installed. The ILOM firmware upgrade for Sun Fire X2250 Server does not automatically upgrade the BIOS. To solve this manually, upgrade the BIOS to at least version S86_3A16.

- With monitored nodes using ipmievd 1.8.10.2, if you encounter a problem with events appearing in the Event view, you can use the following command to check the SEL of the monitored node:

```
ipmitool -U <root> -P <changeme> - H <server> sel
info
```

where `<root>` is the user name, `<changeme>` is the password and `<server>` is the server. If the returned SEL Information reports Overflow:true, then use the following command to clear the SEL:

```
ipmitool -U root -P changeme - H <server> sel
clear
```

The Event view should start to display events correctly.

- When using a Sun X6450 server with ILOM version 2.0.3.10 build number 41273, Windows Server 2003 and the Sun IPMI driver version 2.1 you may encounter the following message:

```
This device is not working properly because
Windows cannot load the drivers required for this
device.
```

This is a known issue related to this specific combination of software and hardware and related to CR6899339. A work around for this issue is to upgrade the ILOM firmware to ILOM 3.

- When using a Sun Blade X6220 server module with ILOM version 2.0.3.10 build number 36968, Windows Server 2008 you may encounter issues with the Microsoft IPMI driver in device manager. A work around for this issue is to upgrade the ILOM firmware to ILOM 3.