



Intel® Server Management Pack 3.0

User Guide

June 2008

Revision 3.0

Legal Statements

INFORMATION IN THIS DOCUMENT IS PROVIDED IN CONNECTION WITH INTEL® PRODUCTS FOR THE PURPOSE OF SUPPORTING INTEL DEVELOPED SERVER BOARDS AND SYSTEMS. NO LICENSE, EXPRESS OR IMPLIED, BY ESTOPPEL OR OTHERWISE, TO ANY INTELLECTUAL PROPERTY RIGHTS IS GRANTED BY THIS DOCUMENT. EXCEPT AS PROVIDED IN INTEL'S TERMS AND CONDITIONS OF SALE FOR SUCH PRODUCTS, INTEL ASSUMES NO LIABILITY WHATSOEVER, AND INTEL DISCLAIMS ANY EXPRESS OR IMPLIED WARRANTY, RELATING TO SALE AND/OR USE OF INTEL PRODUCTS INCLUDING LIABILITY OR WARRANTIES RELATING TO FITNESS FOR A PARTICULAR PURPOSE, MERCHANTABILITY, OR INFRINGEMENT OF ANY PATENT, COPYRIGHT OR OTHER INTELLECTUAL PROPERTY RIGHT.

UNLESS OTHERWISE AGREED IN WRITING BY INTEL, THE INTEL PRODUCTS ARE NOT DESIGNED NOR INTENDED FOR ANY APPLICATION IN WHICH THE FAILURE OF THE INTEL PRODUCT COULD CREATE A SITUATION WHERE PERSONAL INJURY OR DEATH MAY OCCUR.

Intel may make changes to specifications and product descriptions at any time, without notice. Designers must not rely on the absence or characteristics of any features or instructions marked "reserved" or "undefined." Intel reserves these for future definition and shall have no responsibility whatsoever for conflicts or incompatibilities arising from future changes to them. The information here is subject to change without notice. Do not finalize a design with this information.

The products described in this document may contain design defects or errors known as errata which may cause the product to deviate from published specifications. Current characterized errata are available on request.

Contact your local Intel sales office or your distributor to obtain the latest specifications and before placing your product order.

Intel is a trademark of Intel Corporation in the U.S. and other countries.

Microsoft, Windows, Windows Server, Active Directory, and Vista are trademarks, or registered trademarks of Microsoft® Corporation in the United States and/or other countries.

* Other names and brands may be claimed as the property of others.

Copyright © 2007–2008 Intel Corporation. All rights reserved.

Contents

1	Introduction	5
1.1	Document Scope	5
1.2	Overview	5
1.3	Features	6
1.4	System Requirements	7
1.4.1	Microsoft® System Center Essentials 2007* Server	7
1.4.2	Managed Intel® Server	7
1.4.3	Management Console	8
1.5	Intel® System Management Software Components	8
1.6	Related Information	9
1.7	Terminology	9
2	Getting Started	11
2.1	Pre-Installation	11
2.2	Installation	12
2.2.1	Installing Intel® Server Management Pack from Intel® System Management Software DVD	13
2.3	Post Installation	14
2.3.1	Intel® Agent Managed Servers	15
2.4	Configuring Intel® Agentless Servers	16
2.5	Monitoring Intel® Management Pack Operations	18
2.5.1	Monitoring Agent-Based Servers	18
2.5.2	Intel® Agentless Servers Actions	21
2.6	Uninstallation	22
3	Configuring Intel® Server Management Pack	23
3.1	Overview	23
3.2	Before You Configure Intel® Server Management Pack	23
3.3	Intel® Agent Managed Servers	24
3.3.1	Discovering Intel® Servers	24
3.3.2	Intel® Server Management Pack Added Views	31
3.3.3	Intel® Server Management Pack Added Tasks	38
3.3.4	Monitoring and Alerting	40
3.4	Health Explorer	44
3.5	Intel® Agentless Servers	45
3.5.1	Discovery of Servers	45
3.5.2	Initializing and Configuring Base-Board Controller for Out-Of-Band Management	45
3.5.3	Discovering New Managed Nodes under Intel® Agentless Servers	46
3.5.4	Intel® Agentless Servers Views	49
3.5.5	Intel® Agentless Server Management Pack Tasks	51

3.5.6	Intel® Agentless Server Monitors.....	52
3.6	Management Server Performance Tuning.....	57
3.6.1	Server State Polling Rule in Intel® Agentless Servers Management Pack	57
4	Intel® Server Management Pack Console/Intel® Active System Console.....	59
4.1	Navigating Intel® Server Management Pack/Intel® Active System Console.....	59
4.1.1	Hardware Information	59
4.1.2	BMC Configuration	60
4.1.3	Intel® Server Management Pack Console/ Intel® Active System Console Options	61
5	System Management Upgrade Scenarios.....	62
5.1	Scenario 1: SCE Server with Internet Connection	62
5.2	Scenario 2: Server without Internet Connection	62
5.3	Upgrading Intel® System Management Software from About System Management Software	63
5.4	Upgrading Intel® System Management Software when your server is not connected to the Internet.....	65
5.5	Upgrading the Management Packs from Microsoft® System Center Essentials 2007*	67

1 Introduction

The Intel® System Management Software version 3.0 is the next generation of the Intel Server Management product offerings providing remote monitoring, configuration, software distribution, updates, and trouble-shooting management features.

1.1 Document Scope

The purpose of this document is to help you install and use the Intel® System Management Software version 3.0. It provides you detailed information on the features of Intel® System Management Software version 3.0 and how to use them.

1.2 Overview

The Intel® System Management Software suite provides a set of applications and useful tools for managing, troubleshooting and maintaining Intel® IPMI-based Servers. It has a set of essential server hardware management tools targeted specifically for small and medium businesses.

The Intel® Server Management Pack for Microsoft® System Center Essentials 2007* provides hardware monitoring capabilities to Intel Servers that support IPMI version 1.5 or later. This Management Pack works on both Microsoft® System Center Essentials* and Microsoft® System Center Operations Manager*.

The Intel® Server Management Pack consists of the following components:

- **Intel® Server Management Pack v3.0**

This is the server side component of Intel® Server Management pack. This contains the management pack and all components required to be installed on Microsoft* SCE or Microsoft* SCOM Management Server.

The installer will detect if the Microsoft* SCE or Microsoft* SCOM Management server is installed in the machine. If Management Server is not installed, the management console part of the Intel® Server Management Pack v3.0 will be installed.

- **Intel® Server Management Agent v3.0**

This has the Agent side components of the management pack. The installer will detect if the Server supports IPMI or not and install appropriate drivers and software.

In Microsoft® System Center Essentials 2007* the managed computers (shown as nodes in the relevant diagram) may be servers, desktop computers, or laptop computers. With the Intel® Server Management Pack, you can manage one Intel server right out of the box. You can then add licenses to manage additional nodes as your business grows. The System Center family of products includes the following three products:

- **Microsoft® System Center Essentials 2007* *Single Server Edition*** (stand-alone system management for one server)
- **Microsoft® System Center Essentials 2007* *Small Network Edition*** (system management for up to four servers and 15 clients)
- **Microsoft® System Center Essentials 2007* *Standard Edition*** (system management for up to 15 servers and 50 clients)

All three Microsoft® System Center Essentials 2007* products are installed on the Microsoft® System Center Essentials 2007* server from the Intel® System Management Software media, then unlocked with the license keys.

NOTE: Microsoft® System Center Essentials 2007* requires Microsoft® Active Directory* service and only one copy of the Server may be installed in a network domain. The prerequisite checker in the installer will inform you if another instance of Microsoft® System Center Essentials 2007* has been detected.

If you have already installed Microsoft® System Center Essentials 2007, you just need to install the Intel® Server Management Pack. You can also use the Intel® Server Management Pack with Microsoft® System Center Operations Manager 2007* (available from Microsoft).

Contact your local reseller to order additional Microsoft® System Center Essentials 2007* license keys.

1.3 Features

The Intel® Server Management Pack has the following features:

- Adds Intel® Agent Managed and Agentless Computers to the Microsoft® System Center Essentials 2007* Monitoring views
- Provides a new hardware event log in the Windows* operating system Event Viewer
- Launches Intel® Command Line Interface (Intel® CLI), and a Serial Over LAN (SOL) console from the Microsoft® System Center Essentials 2007* console
- Supports Intelligent Platform Management Interface (IPMI) based Intel servers
- Supports remote power control and system reset
- Provides power usage graphs for Power Supply Management Interface (PSMI)-supported agent-based servers
- Supports graceful power off and reset when the operating system and management agent are present

- Supports remote BMC configuration from within the Intel® Server Management Pack console and Intel® CLI.
- Includes the Intel® Server Management Pack Console that shows you sensor readings, Field Replaceable Unit (FRU) data, and the System Event Log (SEL) for the selected Intel computer
- Supports “Maintenance Mode” in Microsoft® System Center Essentials 2007*
- Provides monitoring of Server hardware parameters like CPU, memory, hard disks, and RAID status.

1.4 System Requirements

The hardware and software pre-requisites for Intel® Server Management Pack are the same as Microsoft® System Center Essentials 2007* except where noted in this section.

Please refer to the *Intel® Server Management Pack Release Notes* for changes to the system requirements that occurred after this document was published.

1.4.1 Microsoft® System Center Essentials 2007* Server

The system must meet the minimum hardware and software pre-requisites for Microsoft® System Center Essentials 2007. The system must have one of the following versions of Windows® (IA-32 or Intel 64 architecture version) operating system:

- Windows Server® 2003 Standard or Enterprise Edition*, with SP1 or later
- Windows Server® 2003 R2*, with SP1 or later
- Windows Server® 2008*

1.4.2 Managed Intel® Server

The server must meet the minimum hardware and software prerequisites for Microsoft® System Center Essentials 2007* managed nodes, and it must have one of the following versions of Microsoft® Windows* (IA-32 or Intel 64 architecture version, unless otherwise noted) operating system:

- Windows Server® 2003 Standard or Enterprise Edition*, with SP1 or later
- Windows Server® 2003 R2*, with SP1 or later
- Windows® XP Professional*, with SP1 or later
- Windows® 2000 Professional or Server*, with SP4 (IA-32 architecture version)
- Windows® Vista Enterprise Edition*
- Windows® Server 2008*

Intel® Agentless Management solution is Operating System agnostic and supports all Windows* and Linux* flavors.

1.4.3 Management Console

The system must meet the minimum hardware and software prerequisites for Microsoft® System Center Essentials 2007* consoles and it must have one of the following versions of Microsoft® Windows* (IA-32 or Intel 64 architecture version, unless otherwise noted) operating system:

- Windows® Server 2003 Standard or Enterprise Edition*, with SP1 or later
- Windows® Server 2003 R2*, with SP1 or later
- Windows® XP Professional*, with SP1 or later
- Windows® Vista Enterprise Edition*
- Windows® Server 2008*

1.5 Intel® System Management Software Components

Intel® System Management Software contains multiple components. All components shipped as part of media (CD/DVD) can be individually upgraded to advanced versions using the various methods described in this document. In order to get the enhanced current capability of your Intel® SMS, it is advised that you upgrade to the most recent version released by Intel from time to time.

The following table lists the names of the components and their interconnections:

Software	Description	Relationship with other components
Intel® Server Management Agent	Contains all the drivers and agents required for server Management. This component is installed on Managed Node Server Systems. It provides critical monitoring data to the management Server. This component is tightly connected the Intel® Server Hardware Management Pack.	Installed on the managed node, updating this component would require updating of Intel® Server Hardware Management Pack.
Intel® Server Management Pack v3.0	Microsoft System Centre Essential* Plug-in component to monitor chassis and baseboard sensors such as temperature, fan status, and voltage levels.	Installed on the management Server, Upgrading this component would require upgrading of Agent (See SI. # 1)

Software	Description	Relationship with other components
Intel® Active System Console	Software to monitor the server status using a web console.	It can be installed on any node. No dependency on other SMS components while upgrading.
Intel® Modular Server Management Pack	To Manage the Intel® Modular Server	Installed on the management Server. No dependency on other SMS components while upgrading a web version
Intel® AMT Management Pack	Manage AMT enabled Intel® Desktop systems	Installed on the management Server. No dependency on other SMS components while upgrading to a web version
Intel® Server Management Utilities	Contains Intel® One Boot Flash Update, SNMP Sub Agent, and Command line interface to manage servers.	It can be installed on any node. No dependency on other SMS components while upgrading to a web version.

1.6 Related Information

The following table lists the related information:

Document/ Information	Source
Intel® Server Management Pack Release Notes	Available in User Guide folder in the media
Intel® Modular Server Management Pack user Guide	Available in User Guide folder in the media
Intel® AMT Management Pack User guide	Available in User Guide folder in the media
Intel® Server Management Pack Upgrade Guide	Available in User Guide folder in the media
Intel® Command Line Interface User's Guide	Available in User Guide folder in the media
Microsoft® System Center Essentials 2007*	http://www.microsoft.com/systemcenter/sce/default.mspx
Intel Support	http://support.intel.com

1.7 Terminology

The following table lists the terminology used in this document and the description:

Term	Description
Agent	Agent is the Software Development Kit Layer for Extracting the Server Hardware Information from Base Board Management Controller and System Management Basic Input Output System (BIOS)
BMC	Base board Management Controller

Term	Description
CIM	DMTFs Common Information Model - CIM provides a common definition of management information for systems, networks, applications and services, and allows for vendor extensions
GUI	Graphical User Interface
Intel® AMT	Intel® Active Management Technology
Intel® SMS	Intel® System Management Software
IPMI	Intelligent Platform Management Interface. Operates independent of the operating system (OS) and allows you to manage a system remotely even in the absence of the OS
Management Pack	It is a Plug-in module in System Center Essentials software that has all the definitions and configurations of the Intel® Server Hardware Components
RAID	Ra
RMCP	Remote Management Control Protocol – Protocol used by IPMI for communicating over LAN
SCE*	Microsoft® System Center Essential* 2007
SCOM*	Microsoft® System Center Operations Manager*
SEL	State Event Log
SMBIOS	System Management BIOS (SMBIOS) is specification to lay out data structures (and access methods) in a BIOS which allows a user or application to store and retrieve information specifically about the Server
SNMP	Simple Network Management Protocol
SOL	Serial Over LAN
Upgrade	Enhanced versions of Intel® SMS with new platform support or new features are uploaded to Intel Website. Users installing Intel® SMS from a CD can upgrade to a new version using multiple ways. Intel recommends all users to upgrade to a new versions

2 Getting Started

This section provides some basic steps on how to install and use the Intel® Server Management Pack with Microsoft® System Center Essentials 2007* or SCOM*.

The steps involved are as follows:

- Pre-Installation
- Installation
- Post Installation
- Configuring Intel® Agentless Servers
- Monitoring Intel® Management Pack Operations

2.1 Pre-Installation

This section provides quick steps to install Intel® Server Management pack on an installed Microsoft® System Center Essentials* or Microsoft® SCOM* setup.

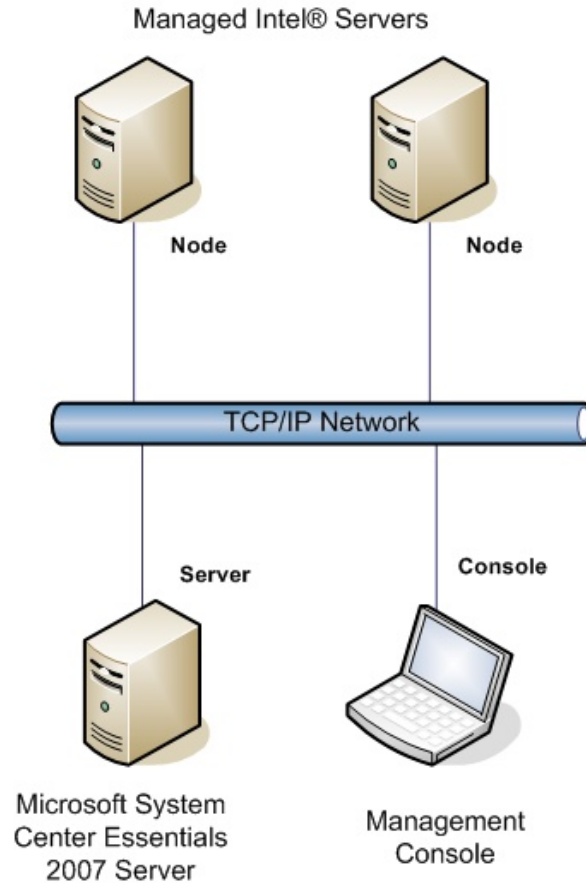
For detailed steps on how to install MS System Center Essentials* refer Chapter 3.

The Microsoft® System Center Essentials* or Microsoft® SCOM* has the following simple architecture:

Management Server: The SCE* or SCOM* is installed on this Server. This is the Root Management Server. The management packs are installed in this server and SCE* Console is viewed from this server.

Managed Nodes: One or more remote servers that you may want to manage and monitor. The SCE* Agent and Intel® Server Agent are installed on these. The nodes should be in the same Windows* domain as Management Server for Agent-based management. For Agentless management there must be IP Network connectivity to these nodes.

Management Console: Remote Management console can be installed on any Windows machine which can connect to Management Server. It is a window to the Management Server. Typically, it is installed either on a laptop or desktop.



NOTES:

- Before proceeding with installation make sure that there is Windows* network connectivity among Management Server, Managed nodes, and Console machines.
- You should be logged in as Domain Administrator to install management pack successfully.

2.2 Installation

Intel® Server Management Pack can be installed from one of the following:

- DVD
- Downloaded from the Intel website
- Downloaded from Microsoft® Partner Catalogs*.

This section details how to install management pack from Intel® System Management Software DVD. For information on installation from other sources refer Chapter 2.

The Intel® Server Management Pack v3.0 consists of two essential set of installers:

- Intel® Server MP version 3.0 installer

- Intel® Server Agent version 3.0.

2.2.1 Installing Intel® Server Management Pack from Intel® System Management Software DVD

This section details the steps to install the Intel® SMS 3.0 from the software DVD.

1. Insert DVD into media bay. The DVD will auto-launch the following page:



2. If you have not installed MS System Center Essentials*, click **Full Server** button. The next pages will take you through the SCE* and Intel management packs installation.
3. If you are installing management pack on SCOM* or already installed SCE*, select Intel® Management Packs option on the second box in the screen. This will install only Intel® Management packs
4. Select/deselect management packs in the next screen selecting check-boxes

- Proceed as follows:
 On **Managed nodes**, install Intel® System Management Software agents from right-side box in the screen shot shown above
 On **Management Console** machines install User-Interface from the top-box in the screen shot shown here.

NOTES

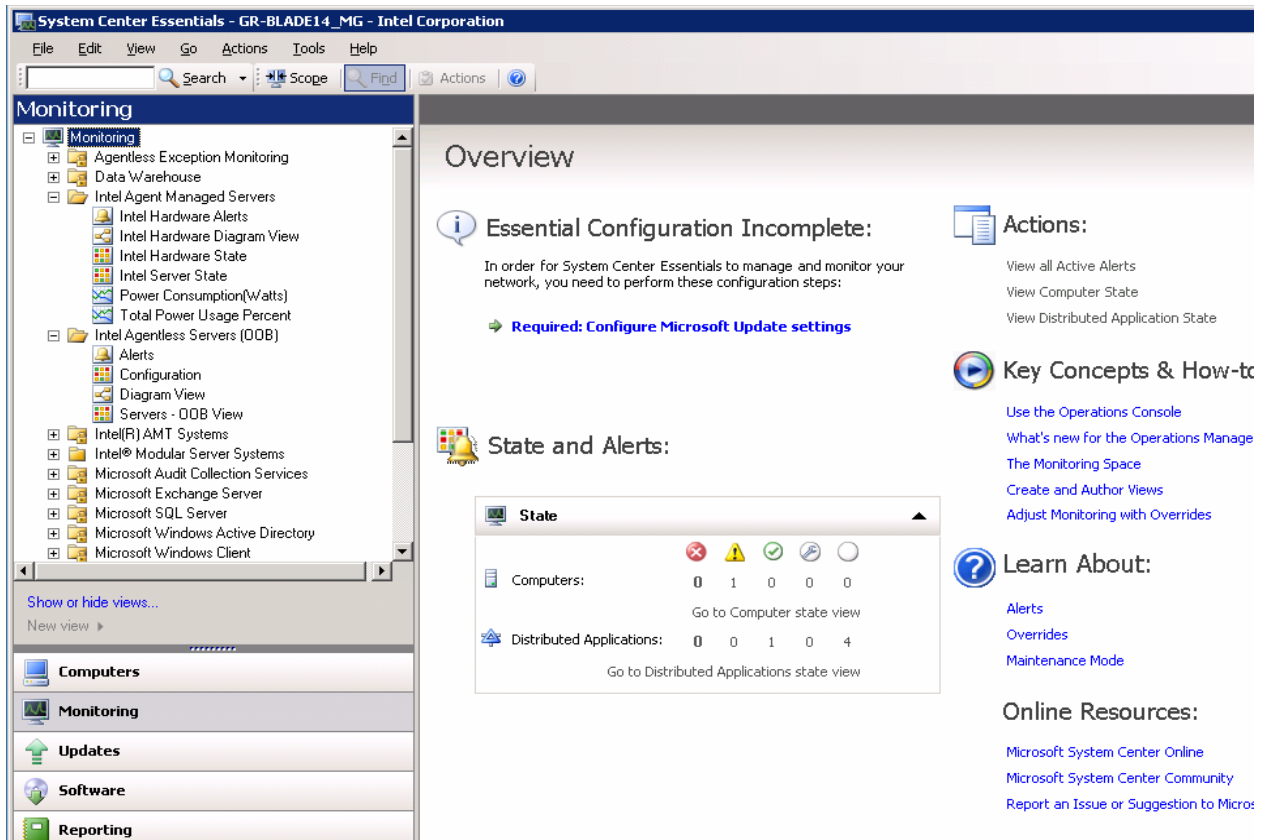
- While installing Intel® Server Management pack at the Management Server you will have to give Domain Administrator Credentials for Intel System Console
- You may need to reboot the Server after installation if you are installing Intel Server Agents. The installer will prompt you if reboot is needed.

2.3 Post Installation

This section briefly explains steps to be followed after successful installation of the Intel ® Server Management pack.

Prior to discovering Servers or health monitoring, do the following:

- After successfully installing management packs, launch Operations Console of SCE* or SCOM*
- If you select **Monitoring** tab , the following window displays:



Following two nodes are added to the Monitoring pane of Operations Console

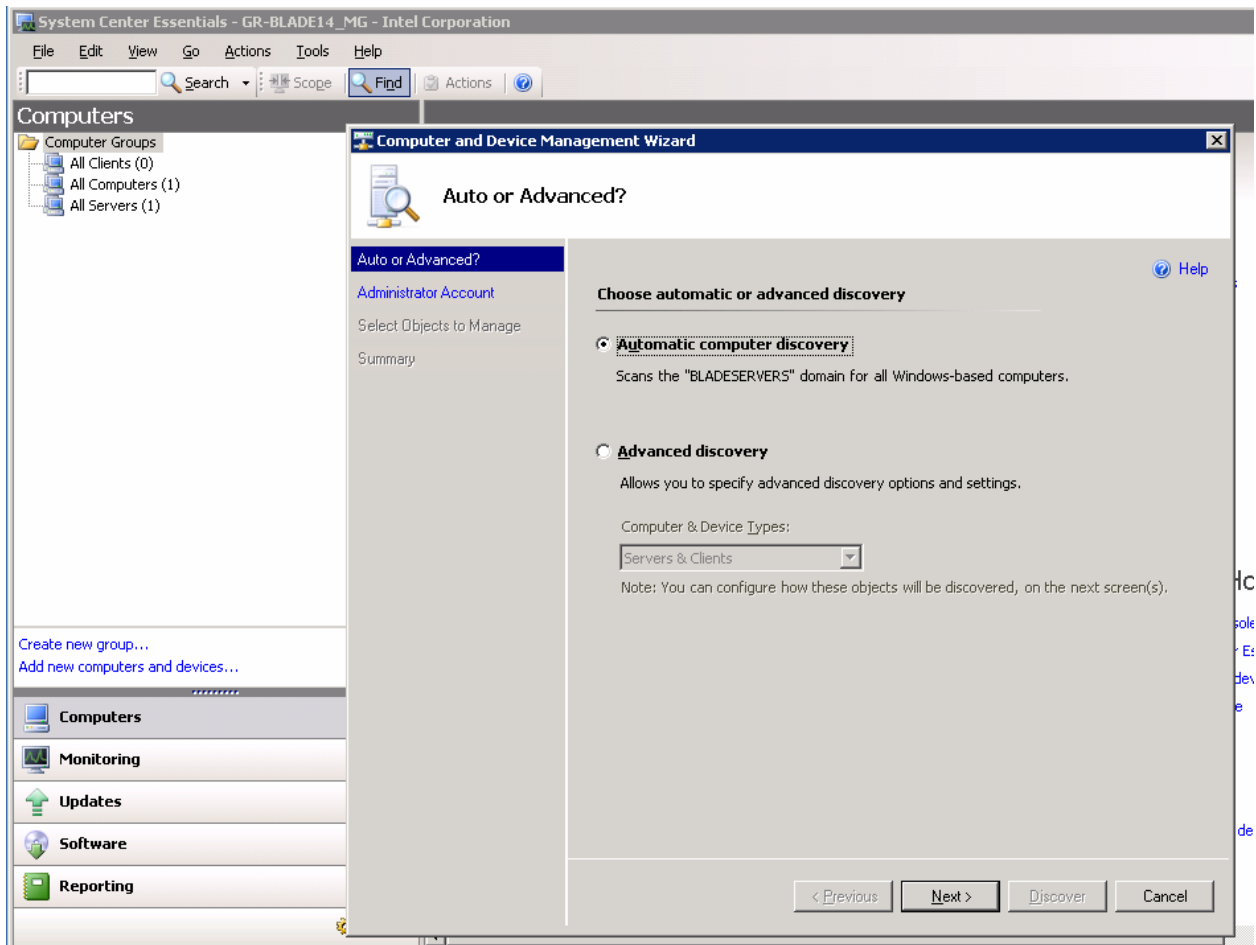
- **Intel® Agent Managed Servers:** This node has all the views related to IPMI-based Servers which has SCE*/ Microsoft* SCOM Agent and Intel® Server Agent installed.
- **Intel® Agentless Servers:** This node has all the views related to IPMI based Servers which does not have Intel Agents or SCE*/ Microsoft* SCOM Agents installed.

NOTE: Servers will appear in the views only after discovery.

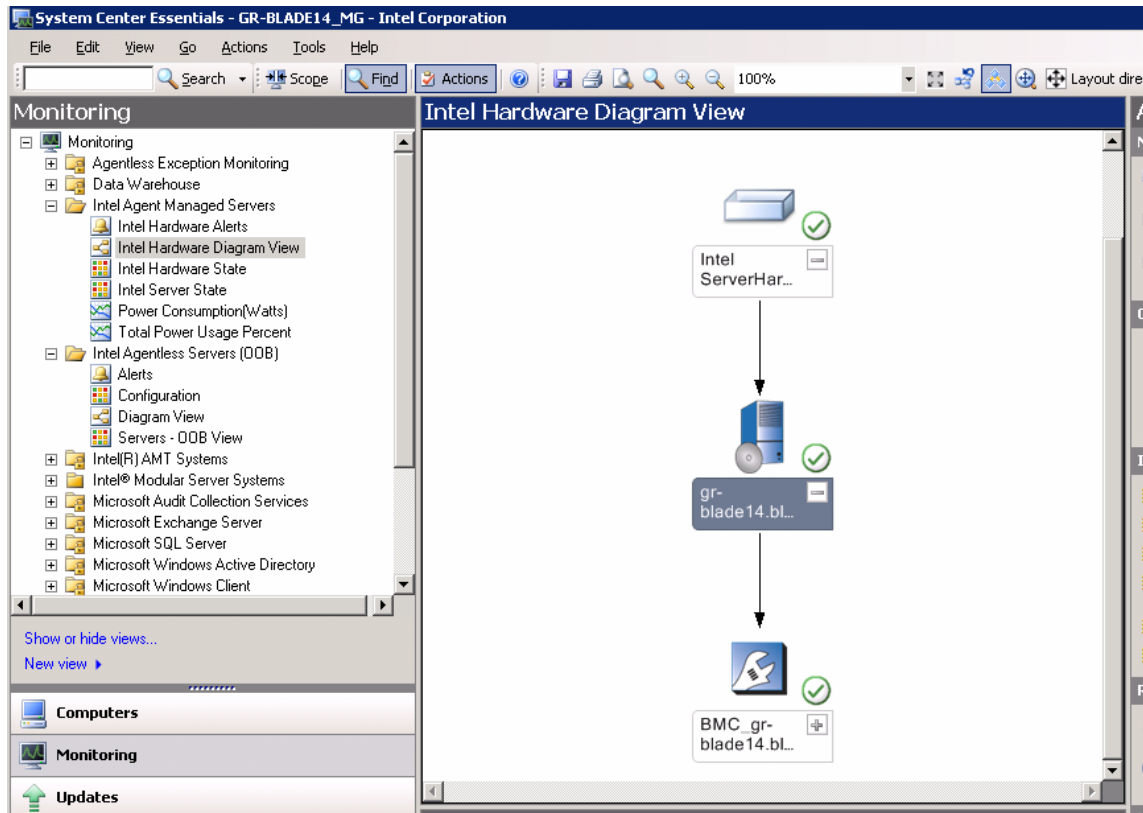
2.3.1 Intel® Agent Managed Servers

To discover Intel® Agent Managed Servers:

1. Launch Computer and Device Management Wizard from the Computers tab of Operations Console.
2. Perform discovery of Windows Computers using either Automatic Discovery or Advanced discovery option.



- Once Windows Computers are discovered and Intel Server Agents successfully installed, the Servers would appear in the Intel® Hardware Diagram View folder and Intel Hardware State View folders as shown below.



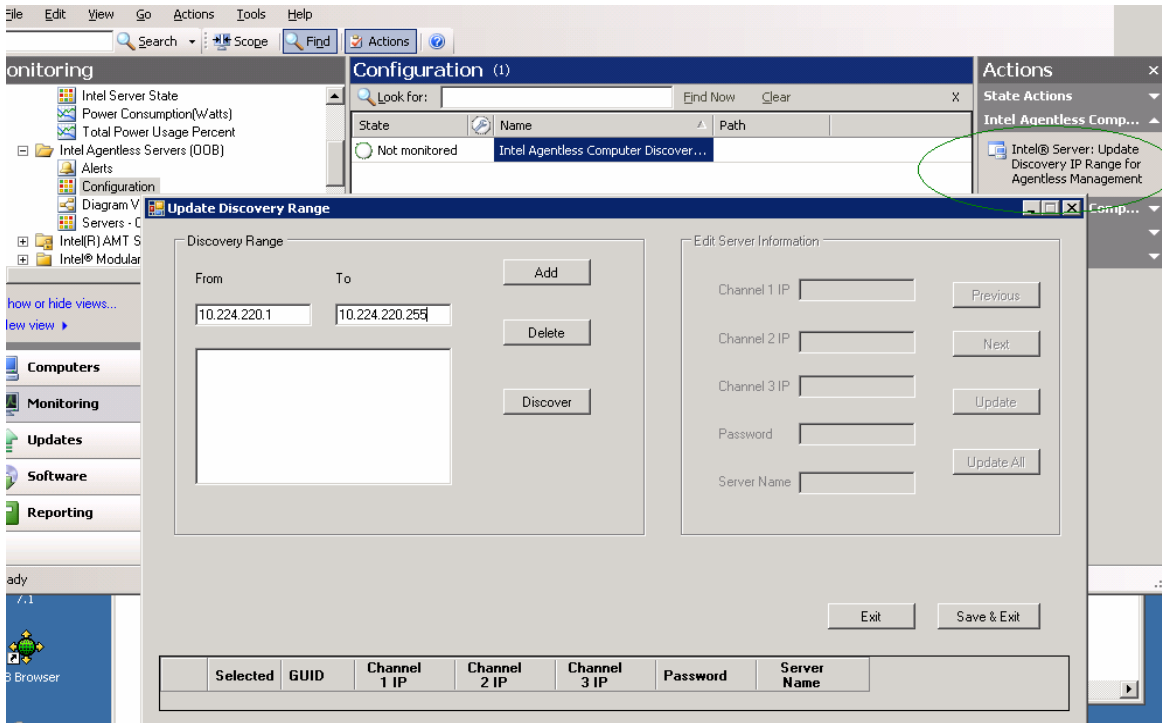
- Hardware Alerts will appear in the Intel® Hardware Alerts folder and health state will appear in the State and Diagram views
- IPMI-based Servers can be discovered and the hardware health monitored via out-of-band Base board controller independent of the host Operating system state.
- To discover and monitor IPMI-based Servers in an Agentless fashion, first the Server's Base board Management Controllers should be configured and connected to network where Management Server is present.

NOTE : To understand how to configure Baseboard Management Controllers refer Section 3.5.2

2.4 Configuring Intel® Agentless Servers

- To discover Agentless Servers click on the Configuration row item in the Configuration folder under Intel® Agentless Servers folder.

2. Launch Discovery Wizard from “Update Discovery IP Range for Agentless Management” console task



3. Input IP Address range in which the Servers Baseboard Management Controller IP Address is present. Click **Add > Discover**
The discovery takes place and discovered Servers would be listed in the UI below as a table
4. Select each Server from the table and configure Base-board Management Controller password and a user-friendly server name.
5. Select Update and repeat the step above for each Server in the table. Once done, click on **Save & Exit** button.
The Servers will be discovered and all sensors will be listed under Diagram View and Hardware State folders

NOTE: The Agent-based and Agentless Server discovery is performed periodically. To understand how to change the periodicity, refer Chapter 3

Now the Intel® Server Management pack is successfully installed and configured for monitoring IPMI-based Servers hardware health.

2.5 Monitoring Intel® Management Pack Operations

This section explains the monitoring capabilities of Intel® Server Management Pack. To understand the operations and capabilities of the management pack in detail please refer Chapter 3.

2.5.1 Monitoring Agent-Based Servers

Intel® Server Management Pack discovers the following items and monitors them:

- Base-board Controller of IPMI Servers and the sensors/devices monitored by BMC
 - Temperature
 - Voltage
 - Current
 - Fan
 - Physical security
 - Processor
 - Power Supply
 - Power Unit
 - Fan Redundancy
 - Memory
- RAID Controller in the Server and the components managed by the controller
 - RAID Enclosure
 - RAID Adaptor
 - RAID Battery Backup Unit
 - RAID Array
 - RAID Physical Drive
 - RAID Virtual Drive
 - RAID Spare Drive
 - RAID Enclosure Sensors

- o RAID Battery Backup Unit Sensors

The Intel Server Management Pack monitors these elements and also waits for any events/alerts generated by these elements.

Intel Hardware Diagram View gives a diagrammatic representation of all hardware components and sensors monitored by the management pack. If the health of one or more components changes, you can view that dynamically on the diagram view and see how it affects the overall system health.

Any change in the health of any of these components results in the health update of the Server.

Intel Hardware State View gives consolidated health state of the Server hardware and health of the component groups immediately under the Server instance.

The alerts related to any health change or any events like chassis intrusion are captured and displayed in the Intel Hardware Alerts View. Alerts are classified as critical, warning and informational alerts and the alerts can be grouped based on severity, source, received time or any other field

TIP: The health of the hardware components are rolled up to the health of the Windows Computers. So any change in hardware health is reflected in the Computer instance present in the Computers pane of Operations Console.

Power Consumption (Watts) View This view gives a graph of power consumption reported by selected servers. You can configure the time range by accessing it by right clicking on the graph. The power consumption on each power supply is shown separately.

Total Power Usage Percentage View This view shows the total power consumption reported by the selected servers as a percent of the total rated power for the power supplies. Only PSMI-capable power supplies with this power reporting capability are supported.

For the Microsoft® System Center Essentials 2007* **Single Server Edition**, the following actions are available:

Intel® Server: Power Shutdown Graceful

Intel® Server: Management Pack Console

Intel® Server: Power Reboot Graceful

For Microsoft® System Center Essentials 2007* **Small Network and Standard Edition**, the following actions are available:

Intel® Server: Power Shutdown Graceful

Intel® Server: Management Pack Console

Intel® Server: Power Reboot Graceful

Intel® Server: Console Redirection (SOL) with Reset

Intel® Server: Command Line Interface (CLI)

Intel® Server: Console Redirection (SOL)

Intel® Server: RMM2 Web Console

Intel® Server: Power Down Forced

Intel® Server: Power Up

Intel® Server: Power Reset Forced

Each task is described in detail in the chapter 3.

Monitoring Agentless Servers

Intel® Server Management Pack discovers the following items under **Agentless Servers** node and monitors them:

- Baseboard Controller of IPMI Servers and the sensors/devices monitored by BMC
 - Temperature
 - Voltage
 - Current
 - Fan
 - Physical security
 - Processor
 - Power Supply
 - Power Unit
 - Fan Redundancy
 - Memory

The Base-board management controller Sensor Event Logs read out-of-band from the controller are then translated into health of the components and health of the Server is calculated.

Alerts folder provides alerts generated by the Baseboard Management Controller and captured by System Center Essentials*/ Microsoft* SCOM.

Configuration folder provides the Discovery configuration instance from which you can launch Agent-less discovery wizard to discover new systems in the network as well as change the stored IP scan range.

Diagram View provides a diagrammatic representation of out-of-band view of base-board controller and all Sensors under it.

Hardware State gives overall health state of the Servers discovered in a concise tabular form.

2.5.2 Intel® Agentless Servers Actions

The following Actions are available for Intel® Agentless Servers:

- Intel® Server: Console Redirection (SOL)
- Intel® Server: Console Redirection (SOL) with Reset
- Intel® Server: Assign Name to the Server
- Intel® Server: Command Line Interface (CLI)
- Intel® Server: Power Shutdown Graceful
- Intel® Server: Management Pack Console
- Intel® Server: Power Down Forced
- Intel® Server: Power Reset Forced
- Intel® Server: Power Up
- Intel® Server: RMM2 Web Console
- Intel® Server: Update Password for Agent-less Management

Each task is described in detail in the Chapter 3

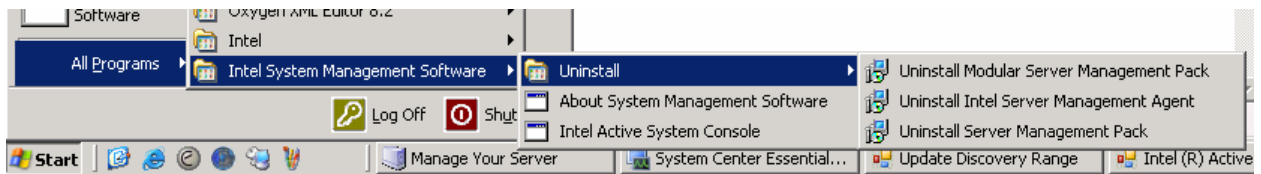
2.6 Uninstallation

Intel® Server Management pack consists of following two program components

- Intel® Server Management Pack version 3.0
- Intel® Server Management Agent version 3.0

You can uninstall the entire management pack by two methods

- Using the Uninstall links in *Intel® System Management Software* program component in your **Start** menu.



OR

- From the Add/Remove application folder in Control Panel

When uninstalling, the Intel® Server Management Pack should be uninstalled first and then followed by Intel Server Management Agent

In Management Server both components can be present.

In Managed nodes only Intel® Server Management Agent will be present.

In Management Console-only machines only Intel® Server Management Pack program will be present.

3 Configuring Intel® Server Management Pack

3.1 Overview

This section explains in detail how to use Intel Server Management pack for managing your Server hardware. Steps to configure and customize the management pack, trouble-shoot are given.

This section assumes that you have

- access to the Intel Systems Management Solution DVD
- access and administrative permission to all managed nodes
- connected and configured all Windows Servers to the same Management domain as where Management Server is residing
- connected all Linux Servers you want to manage to the network reachable by Management Server
- installed Intel® Server Management pack version 3.0 successfully on the Management Server

3.2 Before You Configure Intel® Server Management Pack

Before you use Intel® Server Management pack for monitoring Server hardware you need to decide what way you want to manage the systems- Agent-based or Agent-less, out-of-band way.

Agent-based way: All Windows* Servers can be managed in an agent-based way. In this both System Center Essentials* agent and Intel® Server agent will be installed and running at the managed node. The discovery of all instances as well as the monitoring will be done at the Managed node and the data transferred to Management Server.

You generally get more discovery and monitoring information in an agent-based solution than an agent-less solution.

NOTE: Currently only Windows Servers connected to the same domain as Management Server are supported in an agent-based solution. Non-Windows Servers are not supported.

Agentless way: Any Server with an IP network connection to the Management Server can be managed in an agent-less way. The Management Server will contact the base-board management controller directly and get discovery and health information about the server hardware.

Agentless discovery and monitoring works independent of the Operating System of the managed node. Hence, it supports monitoring of non-Windows Servers as well.

In Agentless way discovery and monitoring is performed by the Management Server, hence the load on the Management Server and network will be higher compared to agent-based way. You need to strike a balance and decide which is more suitable to your environment.

Once you have decided which all Servers you want to manage and how you want to manage go to the next section according to your decision.

For information on Agent-based way, see section Intel® Agent Managed Servers

For information on Agentless way, see section Intel® Agentless Servers

3.3 Intel® Agent Managed Servers

This section discusses Intel® Agent Managed Servers.

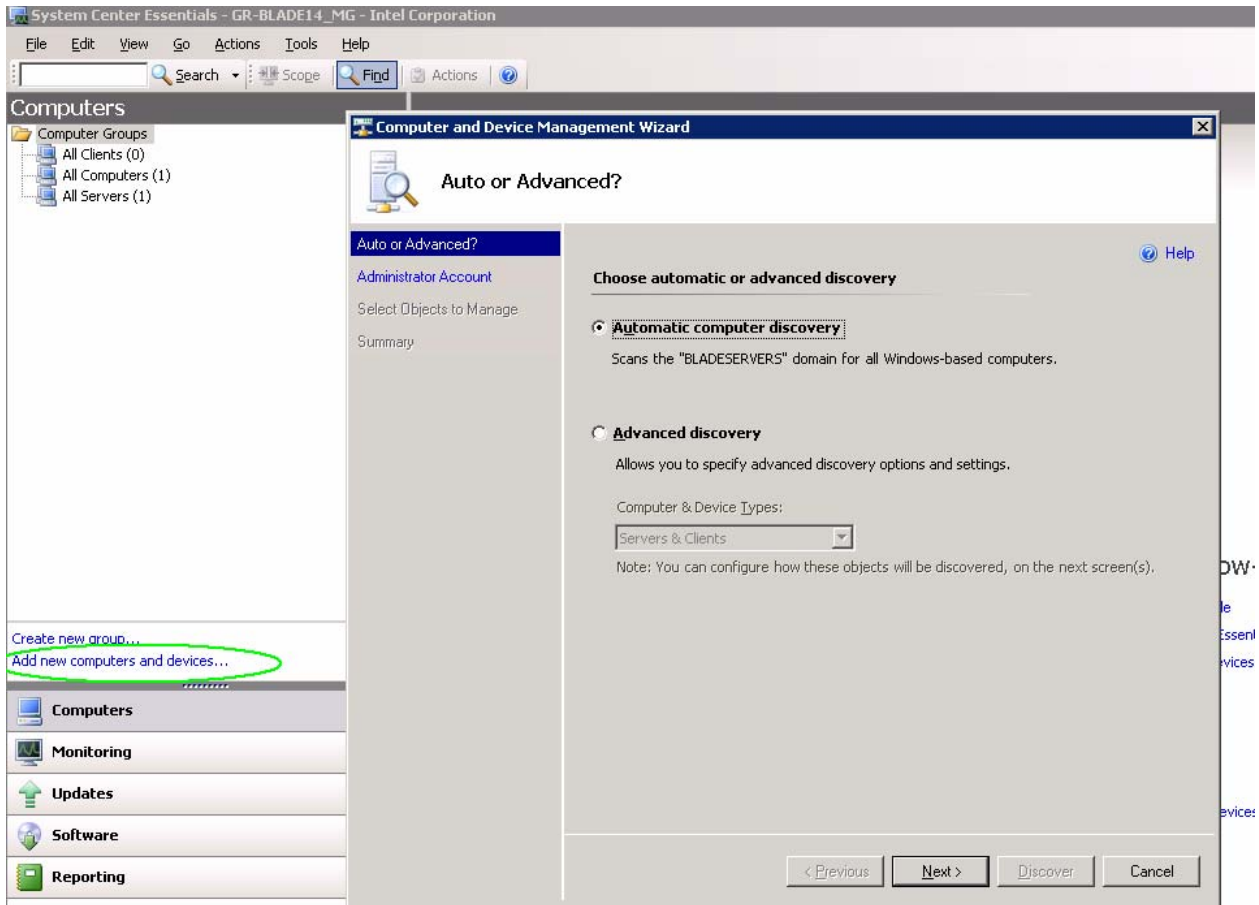
3.3.1 Discovering Intel® Servers

The first step after successfully installing the Intel® Server Management Pack is to do the discovery of Intel® Servers. Intel® Servers are inherited from Microsoft Windows* Computers, so first the Microsoft Windows* Computers should be discovered before the same Server can be discovered under Intel® Agent Managed Servers.

To discover Microsoft Windows* Computers:

- Go to Computers Pane in the Operations Console
- Click on **Add new computers and devices** link above the **Computers** tab
- A new **Computer and Device Management Wizard** launches

Alternatively, the same can be launched from **Actions** tab appearing on the right hand side of the Operations Console.



- Now go through the prompts on the Wizard to discover the Windows Servers you want to manage
- Once you click Discover, the Servers will be identified and SCE*/ Microsoft* SCOM agents will be installed on the Servers
- After discovery, the Servers will appear on All Servers node on the Computers pane

2. Next step is to install Intel® System Management Software agents on the Managed nodes.

Intel® System Management Software agents consist of **Intel® Server Management Agent** and LSI RAID management agents. Intel® Server Management Agent consists of IPMI drivers, other services and agents needed for querying and configuring Base-board controllers and for processing alerts. This is a separate component used by Intel® Server Management Pack and Intel® Active System Console. LSI RAID agents are needed if the managed node has Intel/LSI RAID components and you want to manage using Intel® Server Management pack.

There are two ways to install Intel® System Management Software agents:

- By manually installing Intel® Server Management Agent from the Intel® System Management Software DVD on the managed nodes

<p>Intel Management Packs</p> <p>This software package contains the Intel® Server Management Pack, Intel® Modular Server Management Pack, and Intel® Active Management Technology (Intel® AMT) Management Pack. Use this software package with Microsoft® System Center Essentials or Microsoft® System Center Operations Manager 2007 to monitor, control and provide detailed system inventory of your hardware. This install is required on the Full Server, User Interface (console), and all agents. This package is installed automatically if you install System Center Essentials.</p> <p>Click here for more information on whether you need to install this package.</p> <p>Click to Install</p>	<p>Intel® System Management Software agents and Intel® Active System Console</p> <p>The Intel® System Management Software agents and the Intel® Active System Console can be installed and launched independently from the Microsoft System Center Essentials.</p> <p>Intel® Active System Console and Intel® System Management Software agents Click to Install</p> <p>Intel® System Management Software agents Only Click to Install</p>
---	---

- By using **Software Deployment** action under **Software** pane of Operations Console
 - Create a new software package by selecting **create and deploy new software packages**
 - Give the path of Intel® Systems Management Software agents from the DVD

Intel® Server Management Agent can be found under the following directory in the DVD

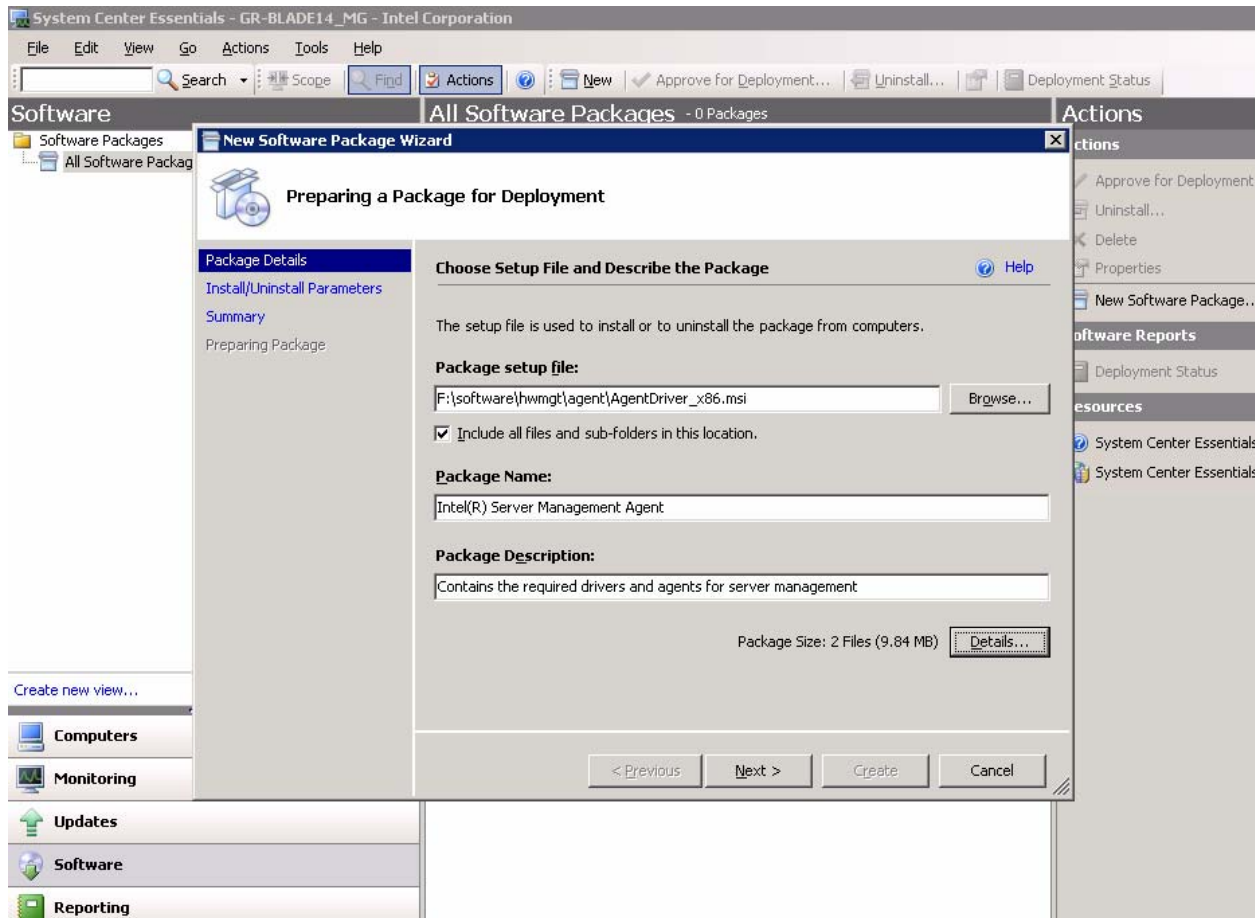
<DVD-root>\software\hwmgt\agent\

There are two files under this directory

- AgentDriver_x86.msi
- AgentDriver_x64.msi

You have to select appropriate file depending on the processor architecture of the Managed node.

TIPS: You can get this information by looking at the properties of the Server under *All Servers* folder in *Computers* pane of Operations Console. You can also launch *Computer Management* task from the same pane and get the system configuration.



The LSI RAID Management agents can be found under

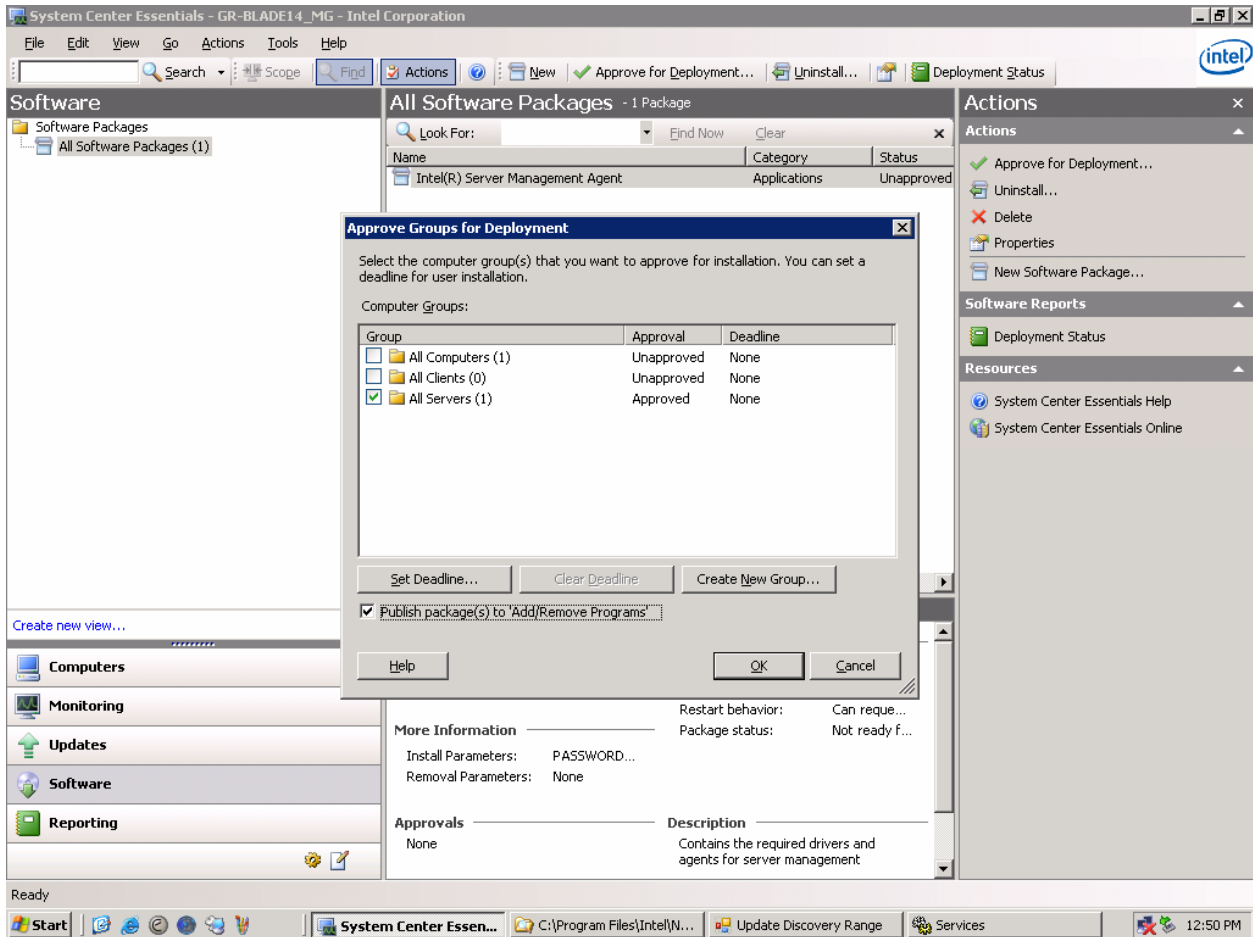
<DVD-root> \software\prereq\RaidAgents\cim-provider

<DVD-root> \software\prereq\RaidAgents\SNMP-agent

The LSI RAID management agents are placed under these directories based on the type of RAID cards. You would have to select appropriate agents based on the RAID card in the managed node.

NOTE: You would have to select and deploy both CIM Provider and SNMP sub-agents on the Managed node.

Once the software packages are created they can be deployed to remote Servers (managed nodes) by selecting the appropriate destinations in the Software Deployment GUI.



TIPS: It is easier to install directly from the DVD using option 1 than to use Software Deployment since the DVD auto-run software would detect the system configuration and RAID cards and select appropriate agents to be installed. However this needs physical access to the Managed node media drive bay.

3. Once the agents are successfully installed on the managed nodes the Servers would appear on the Intel® Agent Managed Servers node in the Operations Console.

4. The Hardware components of the IPMI-based Servers would appear under the *Intel Hardware Diagram View*, *Intel Hardware State* and *Intel Server State*

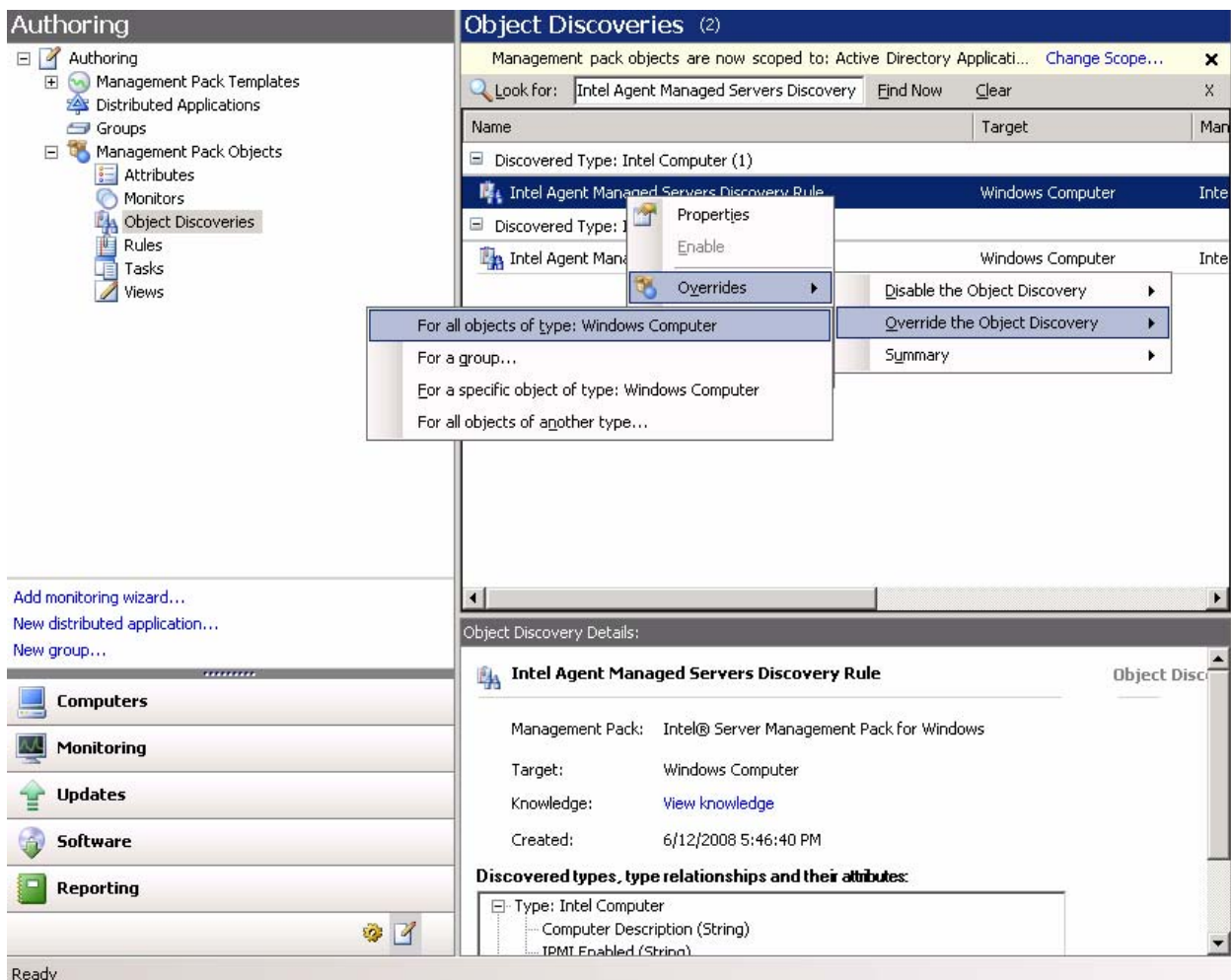
The discovery of Server hardware components by Intel Server Management pack is done by a discovery rule *Intel Agent Managed Servers Discovery Rule*. This rule runs every 30 minutes by default in the managed node and rediscovers the entire hardware components and sensors.

You can override the following two properties of the rule via Authoring pane of Operations Console.

- State of the rule
- Frequency of the rule

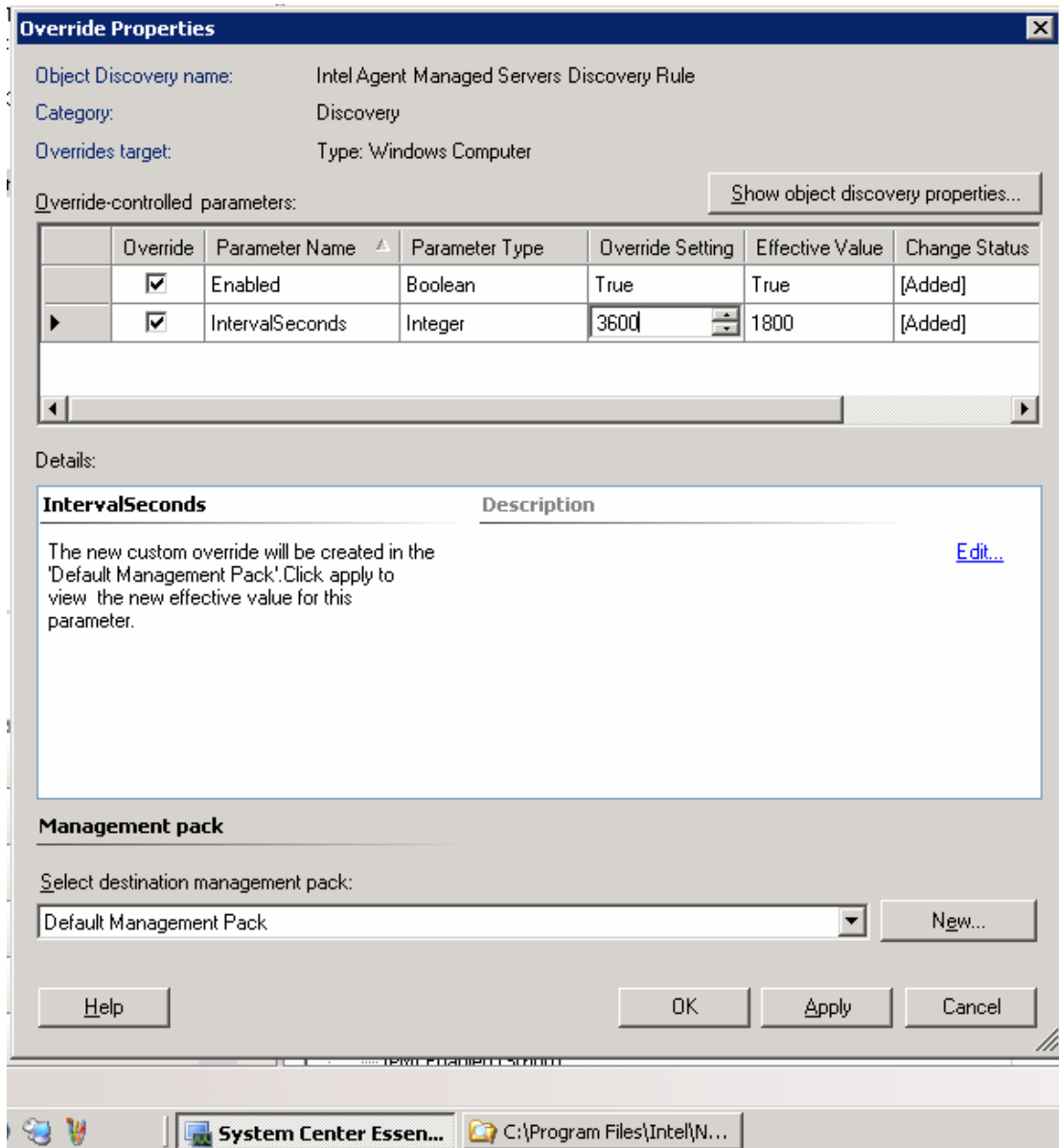
Changing the rule parameters

- Launch Operations Console and go to Authoring pane
- Click on the *Object Discoveries* under *Management Pack Objects* node



- Look for *Intel® Agent Managed Servers Discovery Rule*
- Right-click and double-click on *Override the Object Discovery* on the *Object Discoveries* under *Management Pack Objects* node
- The window similar to one below will appear.

- vi. You can select the parameters and change the value



Objects Discovered and Monitored

The discovery rule discovers following objects in the managed node. Only IPMI-based Servers are supported.

- o Base-board Controller of IPMI Servers
 - o Temperature
 - o Voltage
 - o Current
 - o Fan

- Physical security
- Processor
- Power Supply
- Power Unit
- Fan Redundancy
- Memory

- RAID Controller in the Server and the components managed by the controller
 - RAID Enclosure
 - RAID Adaptor
 - RAID Battery Backup Unit
 - RAID Array
 - RAID Physical Drive
 - RAID Virtual Drive
 - RAID Spare Drive
 - RAID Enclosure Sensors
 - RAID Enclosure Fans
 - RAID Enclosure Power supplies
 - RAID Battery Backup Unit Sensors

NOTE: Only LSI RAID Cards are detected and managed by Intel® Server Management pack. For this the LSI Management agents should be successfully installed as mentioned in previous section.

3.3.2 Intel® Server Management Pack Added Views

The Intel® Server Management Pack adds eight views to the Microsoft® System Center Essentials 2007* console under Monitoring.

View	Intel® Agent Managed Servers	Intel® Agentless Servers (OOB)
Intel® Server State	✓	
Intel® Hardware Alerts	✓	
Intel® Hardware Diagram	✓	
Intel® Hardware State	✓	
Power Consumption (Watts)	✓	
Total Power Usage Percent	✓	
Intel® Agentless Servers		✓
Intel® Agentless Discovery Range		✓

To access these views, in the Microsoft® System Center Essentials 2007*, click on **Monitoring**, and then choose the view.

To customize the view, right click on the view, select **Customize View**.

Intel® Hardware Alerts View

This view lists out all the alerts received for the servers currently being managed by the Intel® Hardware Agent components.

Monitoring

- Active Alerts
- Computers
- Discovered Inventory
- Distributed Applications
- Task Status
- Agentless Exception Monitoring
- Data Warehouse
- Intel Agent Managed Servers
 - Intel Hardware Alerts
 - Intel Hardware Diagram View
 - Intel Hardware State
 - Intel Server State
 - Power Consumption(Watts)
 - Total Power Usage Percent
- Intel Agentless Servers (DOB)
 - Intel Agentless Discovery Range
 - Intel Agentless Servers
- Microsoft Exchange Server
- Microsoft SQL Server
- Microsoft Windows Active Directory
- Microsoft Windows Client
- Microsoft Windows Internet Information Services

Intel Hardware Alerts (92)

Severity	Path	Name	Resolution State
Warning	kasi-sl.VALSCE.COM;Serv...	Physical Security Sensor Monitor	Closed
Information	Isak-Vernonia.VALSCE.C...	Power Down	Closed
Warning	Isak-Vernonia.VALSCE.C...	Fan Sensor Monitor	Closed
Warning	Isak-Vernonia.VALSCE.C...	Power Supply Unit Sensor Monitor	Closed
Warning	Isak-Vernonia.VALSCE.C...	Fan Sensor Monitor	Closed
Information	Isak-Vernonia.VALSCE.C...	Reset Button Pressed	Closed
Warning	Isak-Vernonia.VALSCE.C...	Fan Sensor Monitor	Closed
Warning	Isak-Vernonia.VALSCE.C...	Fan Sensor Monitor	Closed
Warning	Isak-Vernonia.VALSCE.C...	Fan Sensor Monitor	Closed
Warning	Isak-Vernonia.VALSCE.C...	Fan Sensor Monitor	Closed
Information	Isak-Vernonia.VALSCE.C...	Reset Button Pressed	Closed
Warning	Isak-Vernonia.VALSCE.C...	Fan Sensor Monitor	Closed
Warning	Isak-Vernonia.VALSCE.C...	Temperature Sensor Monitor	Closed
Warning	Isak-Vernonia.VALSCE.C...	Temperature Sensor Monitor	Closed

Alert Details

Physical Security Sensor Monitor

Source: Physical Scrtcy

Path: kasi-sl.VALSCE.COM;ServerHardware;BMC_kasi-sl.VALSCE.COM;PhysicalSecurity

Alert Monitor: Chassis Intrusion Monitor

Created: 6/21/2007 11:43:03 AM

Alert Description

Warning assertion event: Physical Scrtcy reports there has been a chassis intrusion.. Unique Sensor Id = 20_0_5.

Knowledge: View additional knowledge...

Resolution: No resolutions were found for this alert.

Causes: No knowledge for causes was available for this alert.

Summary: No summary was available for this problem.

Related Links: No related links were found for

Actions

- View or edit the settings of this monitor
- Close Alert
- Properties
- Health Explorer
- Start Maintenance Mode...
- Edit Maintenance Mode settings...
- Stop Maintenance Mode
- Overrides
- Personalize view...

Intel Physical Security...

- Alert Logging Latency
- Alerts
- Availability
- Configuration Changes
- Event Analysis
- Health

Resources

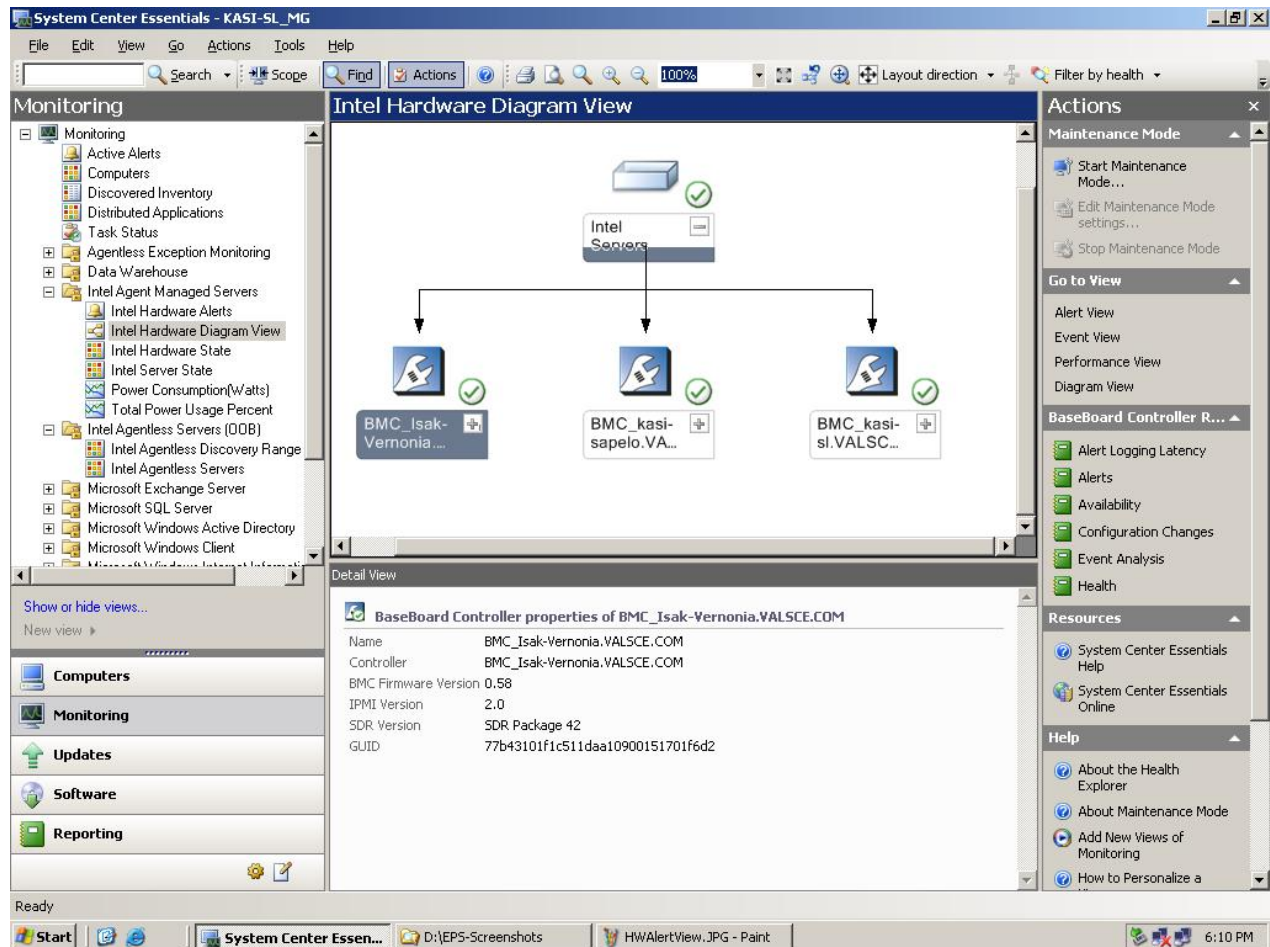
- System Center Essentials Help
- System Center Essentials Online

Help

- About the Health Explorer
- About Maintenance Mode
- Add New Views of

Intel® Hardware Diagram View

This view gives a pictorial representation (including health status) of all the managed servers and their individual components.



For each computer, the health of the computer or component is indicated by one of the standard Microsoft® System Center Essentials 2007* icons. The health at each level is rolled-up from lower levels, when present; otherwise it is based on the on-board sensors reported by the agent.

Intel® Hardware State View

This view gives information about the overall health state of the Servers and the health of each of the component under the server in a tabular format. The view allows you to sort the values by selecting a column.

The screenshot displays the 'Intel Hardware State' view in System Center Essentials. The main window shows a table with the following data:

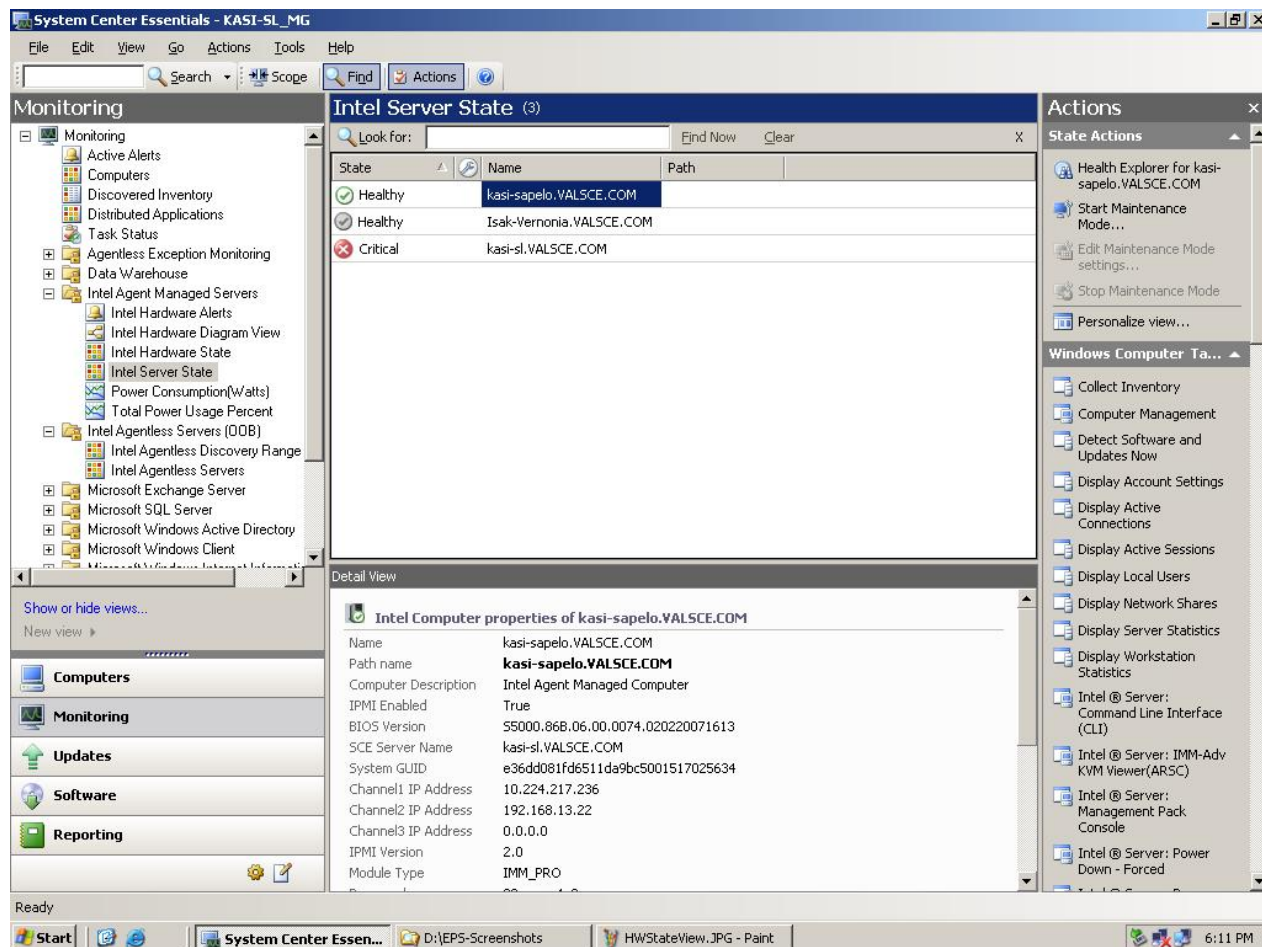
State	Name	Path	Intel Power Supply Device	Intel Power Supply Unit	Intel Memory	Intel Processor	Intel Physical Security
Healthy	BMC_kasi-sapel...	kasi-sapelo.VAL...	Healthy	Healthy	Healthy	Healthy	Healthy
Healthy	BMC_kasi-sl.VAL...	kasi-sl.VALSCE...	Healthy	Healthy	Healthy	Healthy	Healthy
Healthy	BMC_Isak-Verno...	Isak-Vernonia.V...	Healthy	Healthy	Healthy	Healthy	Healthy

The 'Detail View' at the bottom shows the following information for the selected 'Power Supply Unit':

State	Instance	Availability	Configuration	Performance	Security	Intel Power Supply Unit Sensor
Healthy	Power Supply Unit	Healthy	Not monitored	Not monitored	Not monitored	Healthy

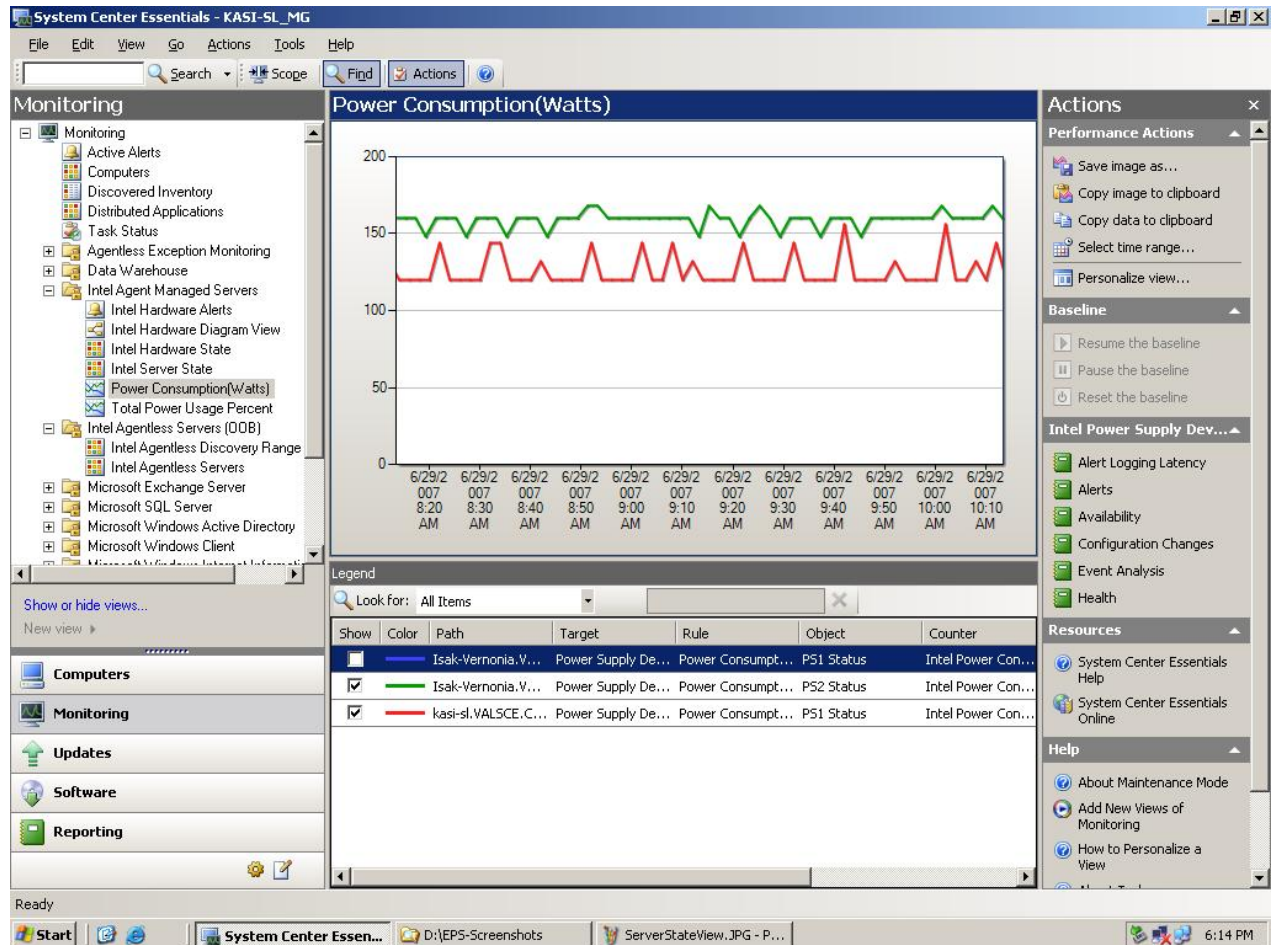
Intel® Server State View

This view lists out the servers currently have hardware agent components installed on them, and allows launch of specific console tasks (under 'Actions' window pane of SCE) for any of them. It gives information of the current health of the server hardware and its specific information in the detail view for that server.



Power Consumption (Watts) View

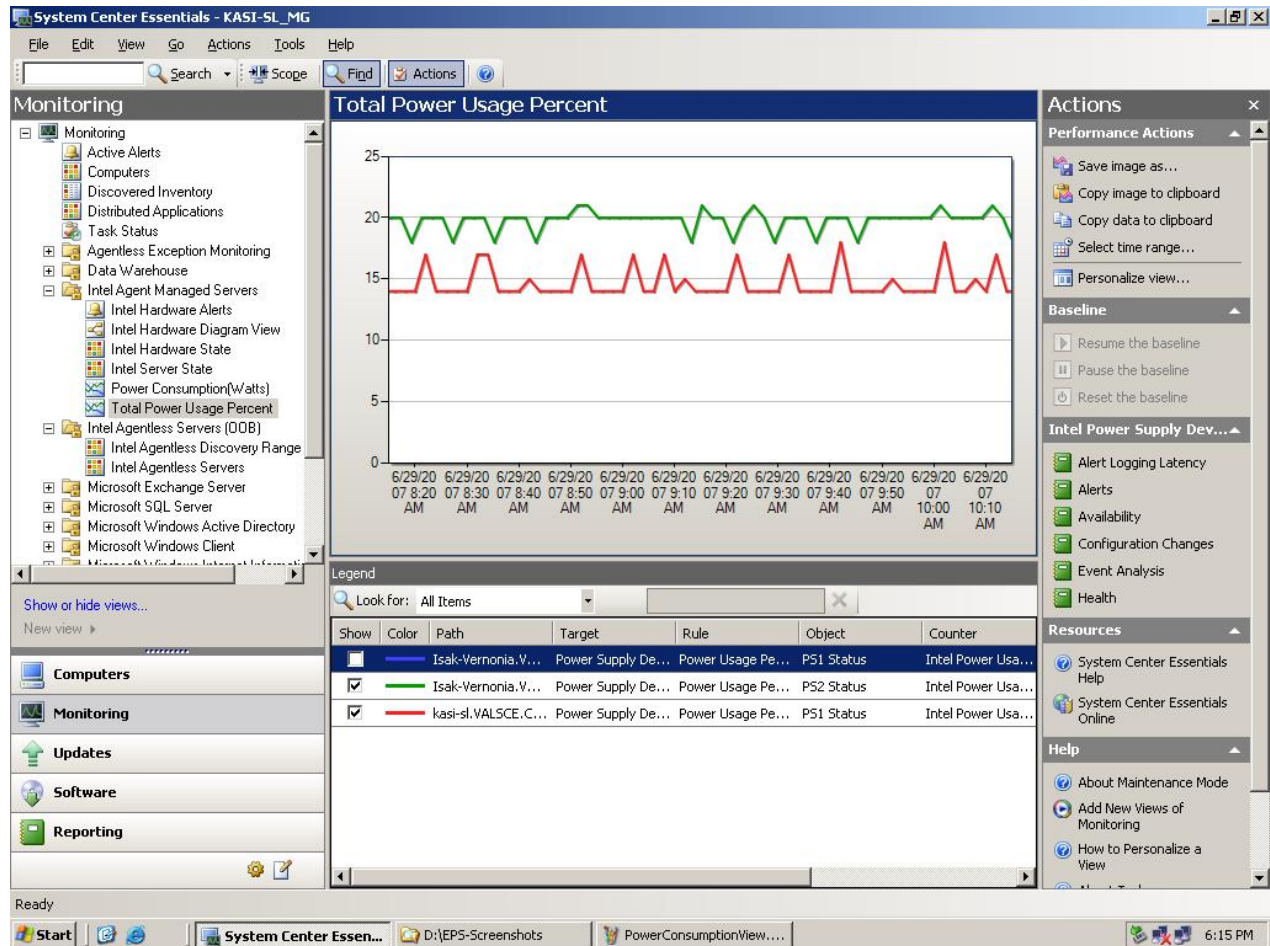
This view gives a graph of power consumption for a selected particular server. The time range can be configured by you accessing it by right clicking on the graph. The power consumption on each power supply is shown separately.



NOTE: Only PSMI-capable power supplies are supported in this view

Total Power Usage Percent View

The **Total Power Usage Percent** view shows the total power consumption reported by the selected servers as a percent of the total rated power for the power supplies. Only PSMI-capable power supplies with this power reporting capability are supported.



3.3.3 Intel® Server Management Pack Added Tasks

The Intel® Server Management Pack adds several new tasks.

For the Microsoft® System Center Essentials 2007* **Single Server Edition**, the following tasks are available:

- Intel® Server: Power Shutdown Graceful
- Intel® Server: Management Pack Console
- Intel® Server: Power Reboot Graceful

For Microsoft® System Center Essentials 2007* **Small Network and Standard Edition**, the following tasks are available:

- Intel® Server: Power Shutdown Graceful
- Intel® Server: Management Pack Console
- Intel® Server: Power Reboot Graceful
- Intel® Server: Console Redirection (SOL) with Reset
- Intel® Server: Command Line Interface (CLI)
- Intel® Server: Console Redirection (SOL)
- Intel® Server: RMM2 Web Console
- Intel® Server: Power Down Forced
- Intel® Server: Power Up
- Intel® Server: Power Reset Forced

Each task is briefly described in the following sections.

Intel® Server: Power Shutdown Graceful

This task issues a Shut Down command to the Windows® Operating System for the selected Intel server.

Intel® Server: Management Pack Console

This task launches the Intel® Server Management Pack Console for the selected Intel server.

Intel® Server: Power Reboot Graceful

This task issues a Restart command to the Windows® Operating System for the selected Intel server. This command will end your Windows® operating system session, reboot the server, and restart the Windows® operating system.

Intel® Server: RMM2 Web Console

This task launches the Intel® Remote Management Module 2 Web Console for the selected Intel server. This task is only available for Intel servers that have the Intel® RMM2 module. The Intel® RMM2 Web Console allows you to configure the Intel® RMM2.

For more information, refer to the *Intel® Remote Management Module User's Guide* provided with the Intel® Remote Management Module.

Intel® Server: Console Redirection (SOL)

This task launches a Serial Over LAN (SOL) connection with the selected server without issuing a reboot command. A console window will be opened with text-based input and output to the server. The standard IPMI SOL hotkeys are available in the console window.

You must enable SOL on the selected server before you can launch this task. To configure SOL, do the following:

1. Select an Intel server from Intel® Computers.
2. Choose Launch Intel® Server Management Pack Console.
3. Choose BMC Configuration.
4. Choose SOL Options
5. Configure the desired LAN channel for SOL.

Intel® Server: Console Redirection (SOL) with Reset

This task issues a hard reboot command to the server then launches a Serial Over LAN (SOL) connection with the selected server. A console window will be opened with text-based input and output to the server. The standard IPMI SOL hotkeys are available in the console window.

You must enable SOL on the selected server before you can launch this task (see Launch SOL task).

Intel® Command Line Interface (Intel® CLI)

The Intel® Command Line Interface (Intel® CLI) is a command line tool that allows you to issues commands directly to the baseboard management controller (BMC) on the Intel server. You must install the Intel® CLI proxy before launching this task.

Launching the Intel® CLI will open a command window and will connect to the computer selected in Intel Computers. The BMC will prompt for a user name and password.

Refer to the *Intel® Command Line Interface User's Guide* for the command syntax.

Use the Intel® System Management Software media to install the Intel® CLI proxy and the *User's Guide*.

Intel® Server: Power Down Forced

This task issues a hardware power off command to the selected Intel server. This task is only available when the selected Intel Computer is powered on.

Intel® Server: Power Up

This task issues a hardware power on command to the selected Intel server. This task is only available when the selected Intel Computer is powered off.

Intel® Server: Power Reset Forced

This task issues a hardware reset command to the selected Intel server. This task is only available when the selected Intel server is powered on.

3.3.4 Monitoring and Alerting

One of the primary requirements of Server Management Software is to accurately report the health of the server, and raise health state change alerts.

In Microsoft® Windows Essentials 2007* default views, the health of an IPMI-based Windows* Server with an Intel agent is an aggregate of 'Hardware Health' and other Windows* based health indicators.

Intel® Server Management Pack Monitors

The Intel® Server Management Pack defines a set of Unit and Dependency monitors for each of the health contributing entities (sensors) of the managed node. Each Unit and Dependency Monitor will roll up to one of the following aggregate monitors:

- *Availability Monitors*
 - Power Supply Monitors
 - Power Unit Monitors
 - Cooling Device Redundancy Monitors
 - Memory Monitors
- *Configuration Monitors*
 - No monitors under configuration
- *Security Monitors*
 - Physical Security Monitors
- *Performance Monitors*
 - Temperature Monitor
 - Voltage Monitor
 - Current Monitor
 - Fan Monitor
 - Processor Automatically Throttled Monitor
 - Memory Automatically Throttled Monitor

Alerts

An alert is raised for each change of health state of the monitor.

- *Auto Resolved Alerts.* All the alerts are auto-resolved when the corresponding OK event is logged for a monitor.
- *Manual Resolution Alerts.* **NOTE:** An exception for this are memory events for which no OK events are logged by BIOS in the SEL. There are alerts that do not receive OK events such as *Drive Slot Sensors* and *Button Sensors* alerts. You need to close them manually after noting or resolving the issue.
 - Drive Slot Removed Alert
 - Drive Slot Inserted Alert
 - Power Button Pressed Alert
 - Power Button Depressed Alert
 - Sleep Button Pressed Alert
 - Sleep Button Depressed Alert
 - Reset Button Pressed Alert
 - Reset Button Depressed Alert
 - FRU Latch Open Alert
 - FRU Latch Open Deasserted Alert
 - FRU Service Request Alert
 - FRU Service Request Deasserted Alert
 - Fan Removed Alert
 - Fan Inserted Alert
 - Power Unit Power Down Alert

Intel® Agent Managed Servers Monitors

Following is the list of monitors that aid the health of Intel® Agent Managed Servers:

NOTE: The monitors rules and alerts can be enabled, configured, and disabled per your requirements by overrides.

Monitor	Action
Server Hardware Health Monitors	
Temperature Sensor Warning Monitor	Alerts if the temperature reading crosses non critical threshold value
Temperature Sensor Error Monitor	Alerts if the temperature reading crosses critical threshold value
Voltage Sensor Warning Monitor	Alerts if the voltage reading crosses non critical threshold value
Voltage Sensor Error Monitor	Alerts if the voltage reading crosses critical threshold value
Current Sensor Warning Monitor	Alerts if the current reading crosses critical threshold value
Current Sensor Error Monitor	Alerts if the current reading crosses critical threshold value
Fan Sensor Warning Monitor	Alerts if the fan reading crosses non critical threshold value
Fan Sensor Error Monitor	Alerts if the fan reading crosses critical threshold value
Chassis Intrusion Monitor	Alerts if there is chassis intrusion
Drive Bay Intrusion Monitor	Alerts if there is drive bay intrusion
IO Card Area Intrusion Monitor	Alerts if there is an IO Card Area intrusion
Processor Area Intrusion Monitor	Alerts if there is processor area intrusion
LAN Leash Monitor	Alerts if a LAN cable is disconnected
Dock Action Monitor	Alerts if there is unauthorized dock action
Fan Area Intrusion Monitor	Alerts if there is fan area intrusion
Processor IERR Monitor	Alerts if IERR error occurs in the processor
Processor Thermal Trip Monitor	Alerts if thermal trip occurs in the processor
Processor FRB1 Monitor	Alerts if FRB1 failure occurs in the processor
Processor FRB2 Monitor	Alerts if FRB2 (Hang in POST) failure occurs in the processor
Processor FRB3 Monitor	Alerts if FRB3 (Processor start up) failure occurs in the processor
Processor Configuration Monitor	Alerts if there is processor configuration error
Processor Smbios Monitor	Alerts if there is processor smbios uncorrectable cpu complex error
Processor Presence Monitor	Alerts if the processor is removed/ disabled
Processor Terminator Presence Monitor	Alerts if the processor terminator is not present
Processor Throttling Monitor	Alerts if processor throttling occurs to limit power consumption or for thermal reasons
Power Supply Presence Monitor	Alerts if power supply is not present
Power Supply Failure Monitor	Alerts if there is failure in power supply
Power Supply Predictive Failure Monitor	Alerts if there is predictive failure in power supply
Power Supply Input Monitor	Alerts if power supply input is lost
Power Supply Input Lost or Out of Range Monitor	Alerts if power supply input is lost or out of range
Power Supply Input Present but Out of Range Monitor	Alerts if power supply input is present but out of range
Power Supply Configuration Monitor	Alerts if there is power supply configuration error
Power Unit Redundancy Warning Monitor	Alerts if power unit redundancy is degraded
Power Unit Redundancy Error Monitor	Alerts if power unit redundancy is lost
Power Cycle Monitor	Alerts if the power unit is power cycled
240VA Power Down Monitor	Alerts if the 240 VA power unit is down
Interlock Power Down Monitor	Alerts if the interlock power unit is down
AC Lost Monitor	Alerts if the AC power is lost
Soft Power Control Monitor	Alerts if there is soft power control failure (unit did not respond to request to turn on)

Monitor	Action
Power Unit Failure Monitor	Alerts if there is failure in power unit
Power Unit Predictive Failure Monitor	Alerts if there is predictive failure of power unit
Fan Redundancy Warning Monitor	Alerts if fan redundancy is degraded
Fan Redundancy Error Monitor	Alerts if fan redundancy is lost
Memory Correctable ECC Error Monitor	Alerts if there is memory correctable ECC error
Memory Uncorrectable ECC Error Monitor	Alerts if there is memory uncorrectable ECC error
Memory Parity Error Monitor	Alerts if there is memory parity error
Memory Scrub Monitor	Alerts if there is memory scrub failure
Memory Device Failure Monitor	Alerts if there is memory device failure
Memory Logging Limit Monitor	Alerts if there is memory logging limit correctable error
Memory Presence Monitor	Alerts if memory is not present
Memory Configuration Monitor	Alerts if there is memory configuration error
Memory Spare Monitor	Alerts if there is no spare memory detected
Memory Redundancy Warning Monitor	Alerts if memory redundancy is degraded
Memory Redundancy Error Monitor	Alerts if memory redundancy is lost
Asset Management: Memory and Processor	
Hardware Asset Management Monitor for Memory	A warning alert will be raised whenever after a reboot or reconnection a processor or memory configuration changes. This is to track the hardware resources of the Server.
Hardware Asset Management Monitor for Processor	
RAID Monitors	
Virtual Drive Polling Monitor	Alerts if Virtual Drive's State is unhealthy
Enclosure Polling Monitor	Alerts if Enclosure State is unhealthy
Enclosure Power Supply Polling Monitor	Alerts if Enclosure Power Supply State is unhealthy
Enclosure Temperature Sensor Polling Monitor	Alerts if Enclosure Temperature Sensor State is unhealthy
RAID Physical Drive Polling Monitor	Alerts if Physical Drive State is unhealthy
RAID Physical Drive Presence Detection Monitor	Alerts if Physical Drive State is unhealthy
RAID Physical Drive Rebuild Monitor	Alerts if Physical Drive Rebuild fails
RAID Physical Drive Initialization Monitor	Alerts if Physical Drive Initialization fails
RAID Physical Drive ClearConfiguration Monitor	Alerts if Clear Configuration failure error happens
RAID Virtual Drive BGI Monitor	Alerts if Background Initialization error happens
RAID Virtual Drive Clear Configuration Monitor	Alerts if Clear Configuration error happens
RAID Virtual Drive Initialization Monitor	Alerts if Initialization error happens
RAID Virtual Drive Reconstruction Monitor	Alerts if Reconstruction error happens
RAID Virtual Drive Consistency Monitor	Alerts if Consistency failure error happens
RAID Adaptor Cache Data Configuration Monitor	Alerts if Cache Data configuration failure error happens
RAID Adaptor Firmware Flash Status Monitor	Alerts if Firmware Flash Status failure error happens
RAID Adaptor Cache Controller Monitor	Alerts if Controller cache is corrupted
RAID Physical Drive Fatal Error Monitor	Alerts if fatal error happens in a Physical Drive

3.4 Health Explorer

The Health explorer available in SCE* Console can be used to check the monitors contributing to the over all health of the system. The monitors are grouped into Security, Configuration, Performance and Availability. You can disable/enable a particular instance or all instances of a health contributors contributing to the health of the system. The history of health change can also be viewed from this console

The screenshot displays the 'Health Explorer for intel-217wwlmg6.SMSW1' window. The left pane shows a tree of health monitors, including Entity Health, Security, Performance, Configuration, and Availability, with sub-monitors like Intel Hardware, Windows Local Application, and WSUS. The middle pane shows a table of state change events with columns for Time, From, To, and Operational State. The right pane shows details for a specific event, including Date and Time, Description, Log Name, Source, Event Number, Level, Logging Computer, and User.

Time	From	To	Operational State
12/4/2006 2:47:21 PM	✓	✗	
12/4/2006 2:52:07 PM	✗	✓	
12/4/2006 2:44:57 PM	✗	✓	
12/4/2006 2:19:09 PM	✗	✓	
12/4/2006 2:17:20 PM	✗	✓	
12/4/2006 2:52:36 PM	✓	✗	
12/4/2006 2:17:21 PM	✓	✗	
12/4/2006 2:16:34 PM	✓	✗	
12/4/2006 2:20:07 PM	✓	✗	

Details

Date and Time: 12/4/2006 9:13:57 AM

Description: Summary: 1 rule (s)/monitor(s) failed and got unloaded, 1 of them reached the failure limit that prevents automatic reload.

Log Name: Operations Manager

Source: HealthService

Event Number: 1103

Level: 2

Logging Computer: INTEL-217WWLMG6

User: N/A

3.5 Intel® Agentless Servers

3.5.1 Discovery of Servers

Intel® Agentless Servers node is used when you want to manage a non-Windows Server or when you do not want to install Intel® Server Agent in the managed node of a Windows Servers.

The agentless method can be used to monitor any Server in an Operating System agnostic way. It also provides access to base board management controller of an IPMI-based Server even when it is in powered off state.

To manage an IPMI-based Server in an agent-less way, following are the steps to be performed:

- Initialize and configure the base-board management controller of the Server.
- Configure access permission to connect to BMC out-of-band.
- Configure BMC such that its IP Address is reachable to the Management Server

3.5.2 Initializing and Configuring Base-Board Controller for Out-Of-Band Management

If the managed node is a Windows* Server, install Intel® Server Management Agent either from DVD or by pushing the agent via SCE Software Distribution task.

The Base-board controller has a default user (Null user) which should be configured with a valid password to be able to connect to BMC in out-of-band way. To configure password, any Intel® Server utilities like sysconfig or Intel® System Console can be used.

The Intel® Server Management Agent version 3.0 also accepts the password as an installer parameter. The format to be given is

```
AgentDriver_x86.msi PASSWORD=<bmc password>
```

Where <bmc password> is an alphanumeric string of maximum 16 characters long.

NOTE: Do not use this method in an un-secure environment since the installer parameters can be read from Windows* registry.

If the managed node is a Linux Server, the following steps can be done to initialize the base-board controller.

Install the BMC Configuration utility from the DVD.

The location of the utility in DVD is

```
<DVD-root>\software\utilities\linux\BMC-Util\
```

A separate installer is given for Redhat* and SUSE* Linux

Run `installme.sh` to install the base-board controller configuration utility

After installing the utility run the command `bmcutil` from a terminal as root user

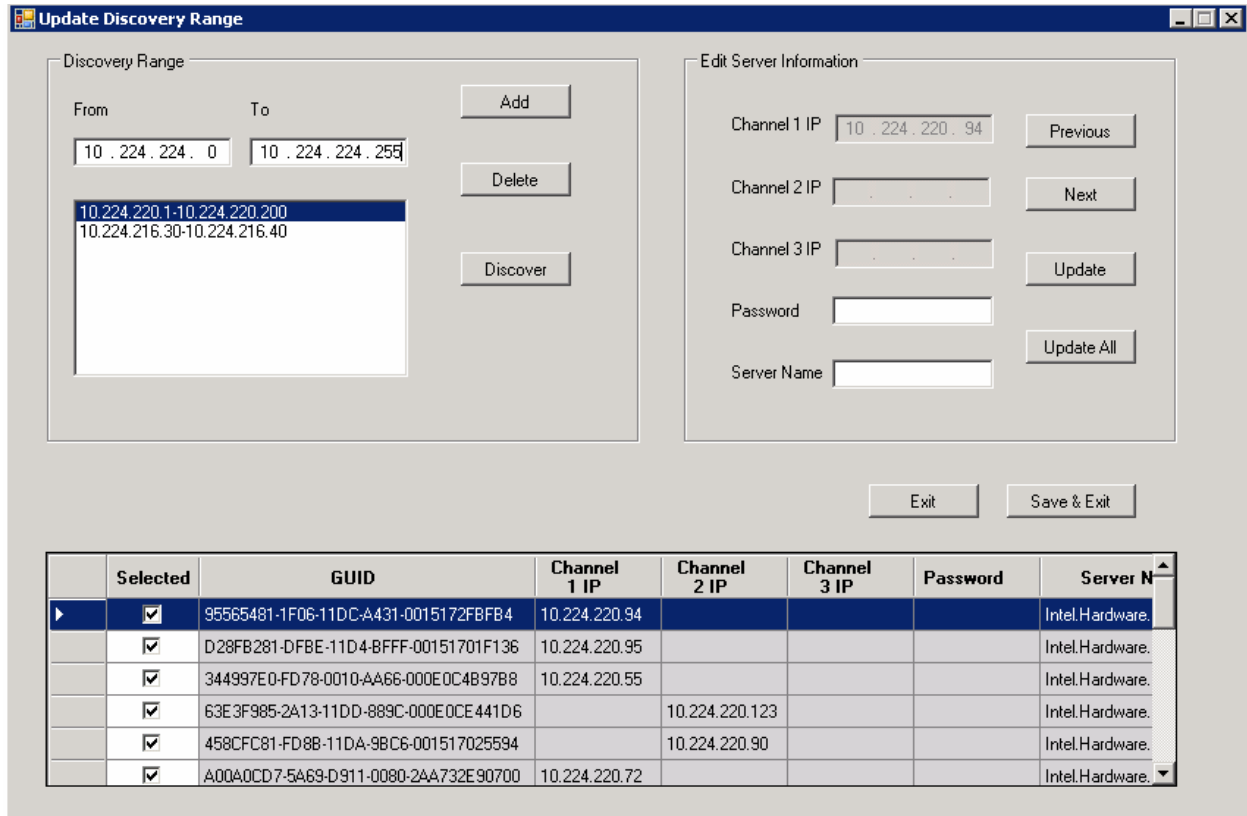
- The utility is an interactive program, it will ask for details to be configured like the LAN channel IP address, address mask and the Gateway IP Address. It also asks for password for the default user (Null user) of base-board controller.
- Once successfully run, the BMC is ready for out-of-band management. You can uninstall the utility if wanted.

Once BMC is configured and connected to network as explained above, the managed node is ready to be discovered and monitored.

3.5.3 Discovering New Managed Nodes under Intel® Agentless Servers

Following are the steps to discover managed nodes:

1. Launch Operations Console and select Monitoring pane.
2. Expand *Intel® Agentless Servers* node and *Configuration* folder.
3. There is a single entry “Intel® Agentless Computer Discovery Range” in the view.
4. Select the row by clicking on the “Intel® Agentless Computer Discovery Range” column.
5. A new task “Update Discovery Range for Agentless Management” appears on the Action pane of Operations Console.
6. Launch the task, the following UI appears.



7. Input the IP Address range in which the base-board controller IP Address of a Managed Node can be present in the *From* and *To* boxes in "Discovery Range" box.
8. Click **Add** button to save the range in IP address scan range list.
9. Click **Discover** button to do immediate discovery of the IPMI Servers in all the IP ranges saved.

NOTE: If you select a range and click discover, only the selected range is scanned for IPMI Servers.
10. You can delete a range by selecting the range and pressing **delete** button.
11. Discovery of servers take few minutes depending on the range given. During discovery you can go to any other task or views and continue monitoring of other devices.
12. Once the discovery scan is complete, the discovered servers would be listed under the grid below the discover button.
13. The row will have a unique GUID of each Base-board controller in the Server as well as the IP Address of the Lan Channel on which the BMC is discovered.
14. Now you will have to provide the BMC Null user (Anonymous User) password as well as a readable name to each Server in the "Edit Server Information" box in the right hand top corner.

15. Once you provide BMC password and a Server name click on Update button to save the information.

To traverse through the list, click on the **Previous** or **Next** button.

16. If you click on **Update All** button the password entered in the current box will be applied to all Servers in the list. A common Server name *ServerXX* where XX is the row number is also automatically applied.

17. Click on **Save& Exit** to submit the selected Servers to the SQL database.

After submitting the Servers to the SCE database, there are two periodic rules that keep updating the Servers in the IP Address range saved.

- **Intel® Agentless Servers Discovery Rule.** This rule discovers the IPMI-based Base board Controllers in the IP address range given. The System GUID and IP Addresses are updated to the database.
- **Intel® Agentless OOB Sensors Discovery Rule.** This rule connects to each Base-board controller discovered and gets all hardware information needed for monitoring by reading up the SMBIOS/SEL records.

The credentials provided by you in the **Update IP Address range** task are used for connecting to base-board controller. The discovery of the hardware information and subsequent health monitoring will be successful only if the credentials given are correct.

NOTES:

- You can launch **Update Discovery Range for Agentless Management** task any time to add/delete a Server or update password or Server name.
- You cannot save the discovered servers without giving BMC password or Server name. The UI will throw a warning if no password is given.

Intel® Server Management Pack discovers the following items under **Agent-less Servers** node and monitors them:

- Base-board Controller of IPMI Servers and the sensors/devices monitored by BMC
 - Temperature
 - Voltage
 - Current
 - Fan
 - Physical security
 - Processor
 - Power Supply
 - Power Unit
 - Fan Redundancy

- o Memory

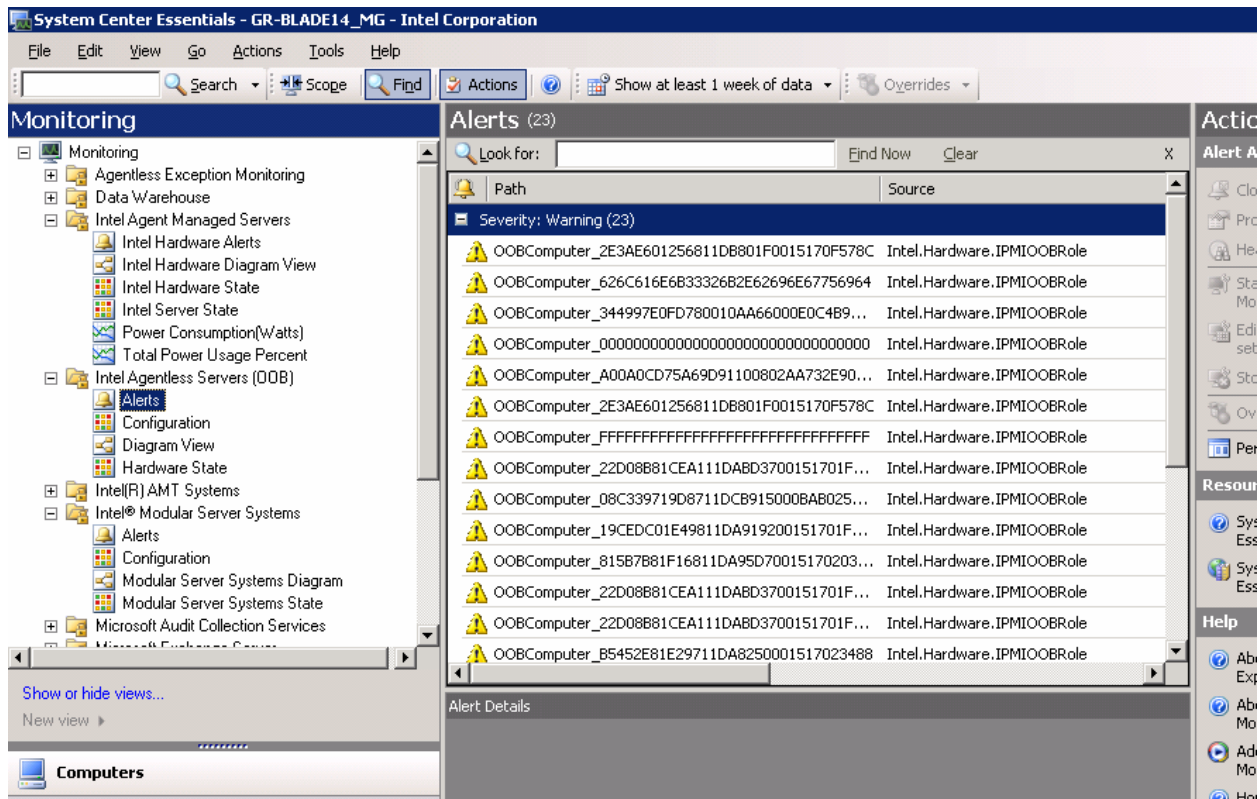
NOTE: RAID Controller cannot be discovered in an agentless way. Using Intel® Agent Managed Servers is the available alternative if you want to manage RAID Controller using Intel® Server Management Pack.

3.5.4 Intel® Agentless Servers Views

The following views are defined for Intel® Agentless Servers:

Alerts View

All alerts generated on discovered out-of-band Servers are listed under this view. The alerts are sorted by default based on the severity. However, you can select any column and sort alerts based on the column field.



Configuration View

This view displays the current IP address discovery range for out of band servers, and allows the launch of a console task for update of this range and discovery of Servers.

Diagram View

This view shows the out-of-band Servers in a diagrammatic representation. The Server sensor components that contribute to the health of the Server are shown with associated health icons.

Hardware State View

This view displays the out of band Servers in a tabular form and allows launching of console tasks for these servers present in 'Actions' pane. The overall health state of the Servers and health of individual components are displayed.

The screenshot displays the 'Hardware State' view in System Center Essentials. The main pane shows a table of server health states:

State	Channel1 IP Ad...	Channel2 IP Ad...	Channel3 IP Ad...	Module Type
Warning	10.224.220.94			BMC
Warning	10.224.220.95			BMC
Warning	10.224.220.55			MBMC
Healthy		10.224.220.123		BMC
Healthy		10.224.220.90		BMC
Warning	10.224.220.72			MBMC
Warning	10.224.220.45			BMC
Warning	10.224.220.40			BMC
Warning	10.224.220.51			BMC
Healthy		10.224.220.68		BMC
Warning	10.224.220.50			BMC
Warning	10.224.220.82			BMC
Healthy		10.224.220.41		BMC
Warning	10.224.220.63			BMC
Warning	10.224.220.46			BMC
Healthy		10.224.220.25		BMC

The right pane shows the 'Actions' pane for the selected server, including:

- Health Explorer for Intel.Hardware.IPMIOBRole
- Start Maintenance Mode...
- Edit Maintenance Mode settings...
- Stop Maintenance Mode
- Personalize view...
- Intel Agentless Server...
 - Intel® Server: Console Redirection (SOL)
 - Intel® Server: Console Redirection (SOL) with Reset
 - Intel® Server: Assign Name to the Server
 - Intel® Server: Command Line Interface (CLI)
 - Intel® Server: Management Pack Console
 - Intel® Server: Power Down - Forced
 - Intel® Server: Power Reset - Forced
 - Intel® Server: Power up
 - Intel® Server: RMM2 Web Console
 - Intel® Server: Update Password for Agentless Management

The bottom pane shows the 'Detail View' for the selected server:

```

Intel Agentless Server properties of Intel.Hardware.IPMIOBRole
Name: Intel.Hardware.IPMIOBRole
Path name: OOBComputer_955654811F0611DCA4310015172FBFB4\Intel.Hardware.IPMIOBRole
Description: Intel OOB Computers
System GUID: 955654811F0611DCA4310015172FBFB4
Channel1 IP Address: 10.224.220.94
Channel2 IP Address:
Channel3 IP Address:
IPMI Version: 2
Module Type: BMC
Management Server: GR-BLADE14
    
```

3.5.5 Intel® Agentless Server Management Pack Tasks

The Intel® Server Management Pack provides several tasks for Agentless Servers. Each task and its description is as follows:

- **Intel® Server: Management Pack Console**

This task launches the Intel® Server Management Pack Console for the selected Intel server.

- **Intel® Server: Console Redirection (SOL)**

This task launches a Serial Over LAN (SOL) connection with the selected server without issuing a reboot command. A console window will be opened with text-based input and output to the server. The standard IPMI SOL hotkeys are available in the console window.

You must enable SOL on the selected server before you can launch this task. To configure SOL, do the following:

1. Select a Server from the Hardware State or Diagram View.
2. Choose Launch Intel® Server Management Pack Console.
3. Choose BMC Configuration.
4. Choose SOL Options
5. Configure the desired LAN channel for SOL.

- **Intel® Server: RMM Web Console**

The Intel® Server: RMM Web Console task is not available for Intel® Agentless Servers as the RMM can not be discovered over out-of-band channel using RMCP+.

- **Intel® Server: Console Redirection (SOL) with Reset**

This task issues a hard reboot command to the server then launches a Serial Over LAN (SOL) connection with the selected server. A console window will be opened with text-based input and output to the server. The standard IPMI SOL hotkeys are available in the console window.

You must enable SOL on the selected server before you can launch this task (see Launch SOL task).

- **Intel® Server: Command Line Interface (CLI)**

The Intel® Command Line Interface (Intel® CLI) is a command line tool that allows you to issue commands directly to the baseboard management controller (BMC) on the Intel server. You must install the Intel® CLI proxy before launching this task.

Launching the Intel® Command Line Interface will open a command window and will

connect to the computer selected in Intel Computers. The BMC will prompt for a user name and password.

Refer to the *Intel® Command Line Interface User's Guide* for the command syntax.

Use the Intel® System Management Software media to install the Intel® CLI proxy and the *User's Guide*.

- **Intel® Server: Power Down Forced**

This task issues a hardware power off command to the selected Intel server. This task is only available when the selected Intel Computer is powered on.

- **Intel® Server: Power Up**

This task issues a hardware power on command to the selected Intel server. This task is only available when the selected Intel Computer is powered off.

- **Intel® Server: Power Reset Forced**

This task issues a hardware reset command to the selected Intel server. This task is only available when the selected Intel Server is powered on.

Intel® Server: Update Password for Agentless Management

This opens a window that allows you to configure the Baseboard Management Controller password for the selected Intel server.

- **Intel® Server: Assign Name to the Server**

This opens a window that allows you to name the selected Intel server in agent-less mode.

3.5.6 Intel® Agentless Server Monitors

Monitoring of server hardware health primarily consists of the following:

- Calculation and display of server health on SCE console
- Display of all 'Alerts' and 'Events' that occur on the managed node for entities managed by Intel® Server Management Pack (for example, hardware sensors).

Intel® Agentless Server health is an aggregate of the health of the following entities:

- Temperature
- Voltage
- Current
- Fan
- Physical security
- Processor
- Power Supply
- Power Unit
- Fan Redundancy
- Memory

The change in state of the monitors associated with the above entities indicates a change in health status of the particular entity, that also rolls up to overall 'HardwareHealth'. This change in state is also accompanied by a generation of alert that is displayed in the 'Alert View'.

Apart from sensors listed above whose change in health raises alerts, the following sensors do not contribute to the System Health status but all events for these sensors are tracked and alerts are displayed.

- Drive Slot Presence Sensors
- Button/Switch Sensor

You can configure the frequency of a regular monitoring of the SEL events.

BMC PET traps will be configured to send SNMP traps in case of a sudden change in health state for preconfigured filters. [This feature is however not available for platforms that do not support platform event filtering, for example, miniBMC, current iBMC platforms.]

- BMC PET traps will be configured for Channel 1 or Channel2. Channel 3 will not be configured for PET traps.

The health of the managed node would be one of the following values:

- OK
- Warning
- Critical
- Unknown

The following table lists the PET/PEF filters used by Intel® Agentless Servers in the IPMI-based BMC:

Event Filter Number	Offset Mask	Events
1	Non-critical, critical and non-recoverable	Temperature sensor out of range
2	Non-critical, critical and non-recoverable	Voltage sensor out of range
3	Non-critical, critical and non-recoverable	Fan failure
4	General chassis intrusion	Chassis intrusion (security violation)
5	Failure and predictive failure	Power supply failure
6	Uncorrectable ECC	BIOS
7	POST error	BIOS: POST code error
8	FRB1, FRB2, and FRB3	Not supported
9	–	Reserved (no source for fatal NMI)
10	Power down, power cycle, and reset	Watchdog timer
11	OEM system boot event	System restart (reboot)
12	–	Reserved (That is, not preconfigured; reserved for future use)

The monitors available for Intel® Agentless Servers are mostly the same as Intel® Agent Managed Servers.

Alerts that Need Manual Closure: There are other alerts that do not receive an OK event like *Drive Slot Sensors* and *Button Sensors* alerts. Following is a list of alerts you must close manually after noting or resolving the issue.

- Drive Slot Removed Alert
- Drive Slot Inserted Alert
- Power Button Pressed Alert
- Power Button Depressed Alert
- Sleep Button Pressed Alert
- Sleep Button Depressed Alert
- Reset Button Pressed Alert
- Reset Button Depressed Alert
- FRU Latch Open Alert
- FRU Latch Open Deasserted Alert
- FRU Service Request Alert
- FRU Service Request Deasserted Alert
- Fan Removed Alert

- Fan Inserted Alert
- Power Unit Power Down Alert

The following table lists monitors that aid the health of the Intel® Agentless Servers and their corresponding actions:

NOTE: The monitors rules and alerts can be enabled, configured, and disabled per your requirements by overrides.

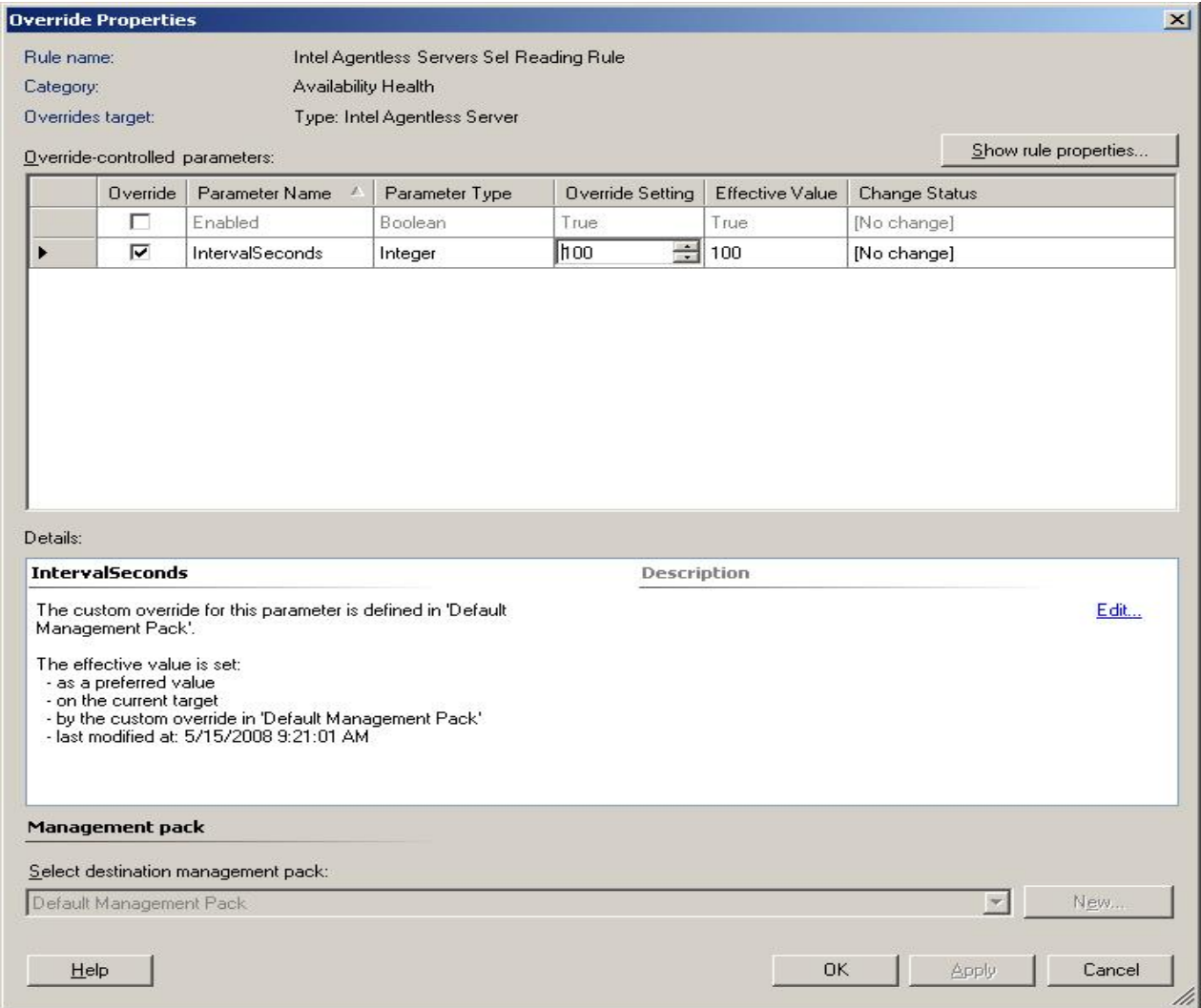
Monitor	Action
Server Hardware Health Monitors	
Temperature Sensor Warning Monitor	Alerts if the temperature reading crosses non critical threshold value
Temperature Sensor Error Monitor	Alerts if the temperature reading crosses critical threshold value
Voltage Sensor Warning Monitor	Alerts if the voltage reading crosses non critical threshold value
Voltage Sensor Error Monitor	Alerts if the voltage reading crosses critical threshold value
Current Sensor Warning Monitor	Alerts if the current reading crosses critical threshold value
Current Sensor Error Monitor	Alerts if the current reading crosses critical threshold value
Fan Sensor Warning Monitor	Alerts if the fan reading crosses non critical threshold value
Fan Sensor Error Monitor	Alerts if the fan reading crosses critical threshold value
Chassis Intrusion Monitor	Alerts if there is chassis intrusion
Drive Bay Intrusion Monitor	Alerts if there is drive bay intrusion
IO Card Area Intrusion Monitor	Alerts if there is an IO Card Area intrusion
Processor Area Intrusion Monitor	Alerts if there is processor area intrusion
LAN Leash Monitor	Alerts if a LAN cable is disconnected
Dock Action Monitor	Alerts if there is unauthorized dock action
Fan Area Intrusion Monitor	Alerts if there is fan area intrusion
Processor IERR Monitor	Alerts if IERR error occurs in the processor
Processor Thermal Trip Monitor	Alerts if thermal trip occurs in the processor
Processor FRB1 Monitor	Alerts if FRB1 failure occurs in the processor
Processor FRB2 Monitor	Alerts if FRB2 (Hang in POST) failure occurs in the processor
Processor FRB3 Monitor	Alerts if FRB3 (Processor start up) failure occurs in the processor
Processor Configuration Monitor	Alerts if there is processor configuration error
Processor Smbios Monitor	Alerts if there is processor smbios uncorrectable cpu complex error
Processor Presence Monitor	Alerts if the processor is removed/ disabled
Processor Terminator Presence Monitor	Alerts if the processor terminator is not present
Processor Throttling Monitor	Alerts if processor throttling occurs to limit power consumption or for thermal reasons
Power Supply Presence Monitor	Alerts if power supply is not present
Power Supply Failure Monitor	Alerts if there is failure in power supply
Power Supply Predictive Failure Monitor	Alerts if there is predictive failure in power supply
Power Supply Input Monitor	Alerts if power supply input is lost
Power Supply Input Lost or Out of Range Monitor	Alerts if power supply input is lost or out of range
Power Supply Input Present but Out of Range Monitor	Alerts if power supply input is present but out of range
Power Supply Configuration Monitor	Alerts if there is power supply configuration error
Power Unit Redundancy Warning Monitor	Alerts if power unit redundancy is degraded
Power Unit Redundancy Error Monitor	Alerts if power unit redundancy is lost
Power Cycle Monitor	Alerts if the power unit is power cycled
240VA Power Down Monitor	Alerts if the 240 VA power unit is down
Interlock Power Down Monitor	Alerts if the interlock power unit is down
AC Lost Monitor	Alerts if the AC power is lost

Monitor	Action
Soft Power Control Monitor	Alerts if there is soft power control failure (unit did not respond to request to turn on)
Power Unit Failure Monitor	Alerts if there is failure in power unit
Power Unit Predictive Failure Monitor	Alerts if there is predictive failure of power unit
Fan Redundancy Warning Monitor	Alerts if fan redundancy is degraded
Fan Redundancy Error Monitor	Alerts if fan redundancy is lost
Memory Correctable ECC Error Monitor	Alerts if there is memory correctable ECC error
Memory Uncorrectable ECC Error Monitor	Alerts if there is memory uncorrectable ECC error
Memory Parity Error Monitor	Alerts if there is memory parity error
Memory Scrub Monitor	Alerts if there is memory scrub failure
Memory Device Failure Monitor	Alerts if there is memory device failure
Memory Logging Limit Monitor	Alerts if there is memory logging limit correctable error
Memory Presence Monitor	Alerts if memory is not present
Memory Configuration Monitor	Alerts if there is memory configuration error
Memory Spare Monitor	Alerts if there is no spare memory detected
Memory Redundancy Warning Monitor	Alerts if memory redundancy is degraded
Memory Redundancy Error Monitor	Alerts if memory redundancy is lost
Base Board Management Controller Connection Warning Monitor	Monitors if there is connectivity to the BMCs or not. Alerts if the BMC becomes not reachable

3.6 Management Server Performance Tuning

3.6.1 Server State Polling Rule in Intel® Agentless Servers Management Pack

The Intel® Agentless Servers Management Pack has a periodic rule that, by default, runs every 15 minutes in the Management Server. This rule – the **Intel® Agentless Servers Sel Reading Rule** -- connects to a baseboard management controller and reads the State Event Log every 15 minutes. If the IPMI PET/PEF traps are supported by the Server platform then the rule runs at every one hour. This rule makes sure that the Server state reported in Operations Console and actual Server state are in sync.



If you have any concerns about the network load and Management server load due to Intel® Agentless discovery and monitoring the following rules can be over-ridden to run at lower frequency. The parameter **IntervalSeconds** can be increased to run the rules less frequently.

- Intel® Agentless Servers Discovery Rule
- Intel® Agentless OOB Sensors Discovery Rule
- Intel® Agentless Servers Sel Reading Rule

Changing the two discovery rules together with the SEL reading rule will reduce the Server and network load due to out-of-band management.

4 Intel® Server Management Pack Console/Intel® Active System Console

The Intel Server Management Pack Console/ Intel® Active System Console is available within Intel® Server Management Pack and also as an independent utility in Intel® SMS. It displays the hardware sensors, Field Replaceable Unit (FRU) data, and System Event Log (SEL) for the Intel® Computer selected in the Intel Computers view. This console is only available for Intel servers that have a baseboard management controller or National Semiconductor* PC87431x “mini” BMC or Integrated BMC (iBMC).

To launch the Intel® Active System Console, go to the **Intel Computers** view, select a computer, and then choose the **Launch Intel® Server Management Pack Console** task. Alternatively you can install the Intel® Active System Console using the Intel® SMS DVD as a stand-alone utility and launch from the Windows Start menu.

4.1 Navigating Intel® Server Management Pack/Intel® Active System Console

Intel® Server Management Pack Console/ Intel® Active System Console has a navigation menu on the left side of the screen. The navigation menu includes the following choices:

4.1.1 Hardware Information

This section lists the following Hardware choices available.

- **Summary Page.** A summary page showing components and overall health. You have an option to enable or disable SEL Alerting in the form of popup as mentioned in section 4.1.3.
- **Sensor Readings.** Displays a table of all hardware sensors and the threshold settings.
- **Cooling.** Displays a table of all fan sensors and the threshold settings.
- **Voltage.** Displays a table of all voltage sensors and the threshold settings.
- **Power Supply.** Displays a table of all power supply sensors and the threshold settings.
- **Chassis Information.** Displays the state of the chassis intrusion sensor and sets the Chassis ID LED.
- **System Event Log.** Allows you to view and clear the SEL.

- **Memory.** Displays the memory size and type information.
- **Processor.** Displays the processor speed information.
- **Cache.** Displays the size information.
- **Storage.** Displays information about the hard disk drives, logical disk drives, and media or DVD drives.
- **FRU.** Field Replaceable Unit information.

4.1.2 BMC Configuration

This section lists the following BMC Configuration choices available.

- **User Password.** Sets the BMC password for the null user.
- **Boot Options.** Sets the boot device for the next reboot.

*(**Warning:** The system will be rebooted in 60 seconds after you click the **Apply** button.)*

- **LAN Channel.** Sets the LAN channel properties for the BMC.
- **Power Options.** Sets the power restore options.
- **SOL Options.** Sets the Serial Over LAN options.

4.1.3 Intel® Server Management Pack Console/ Intel® Active System Console Options

This section lists the following Intel® Server Management Pack Console/ Intel® Active System Console choices available:

- A summary page showing components and overall health
- SEL Alerting in the form of popup

Enabling/Disabling SEL Alerting Popup

SEL alerts from Intel® Active System Console are disabled by default.

To view the SEL alerts online from the System Summary page in Intel® Active System Console, do the following:

- The value has to be modified from False to True in web.config in %Drive%:\inetpub\wwwroot\IntelSystemConsole folder.

Popup blocker must be turned off in the browser to enable the alerts.

Replace
<appSettings>
 <add key="EnablePopup" value="false"/>
</appSettings>

with

```
<appSettings>  
  <add key="EnablePopup" value="true"/>  
</appSettings>
```

5 System Management Upgrade Scenarios

This section discusses the System Management upgrade scenarios.

For easy installation of the upgradeable components, the IT environment on which the Intel® SMS is installed needs to have Internet connection. An isolated network environment would necessitate a manual installation/upgrade process to be carried out.

5.1 Scenario 1: SCE Server with Internet Connection

Upgrade Option	Component Supported	Comments
Microsoft System Centre Essentials*update option	Download and update management packs and agent components	See Section 5.5 for details.
About SMS Utility	Intel® Active System Console Intel® Server Management Utilities	See section 5.3 for detailed steps.

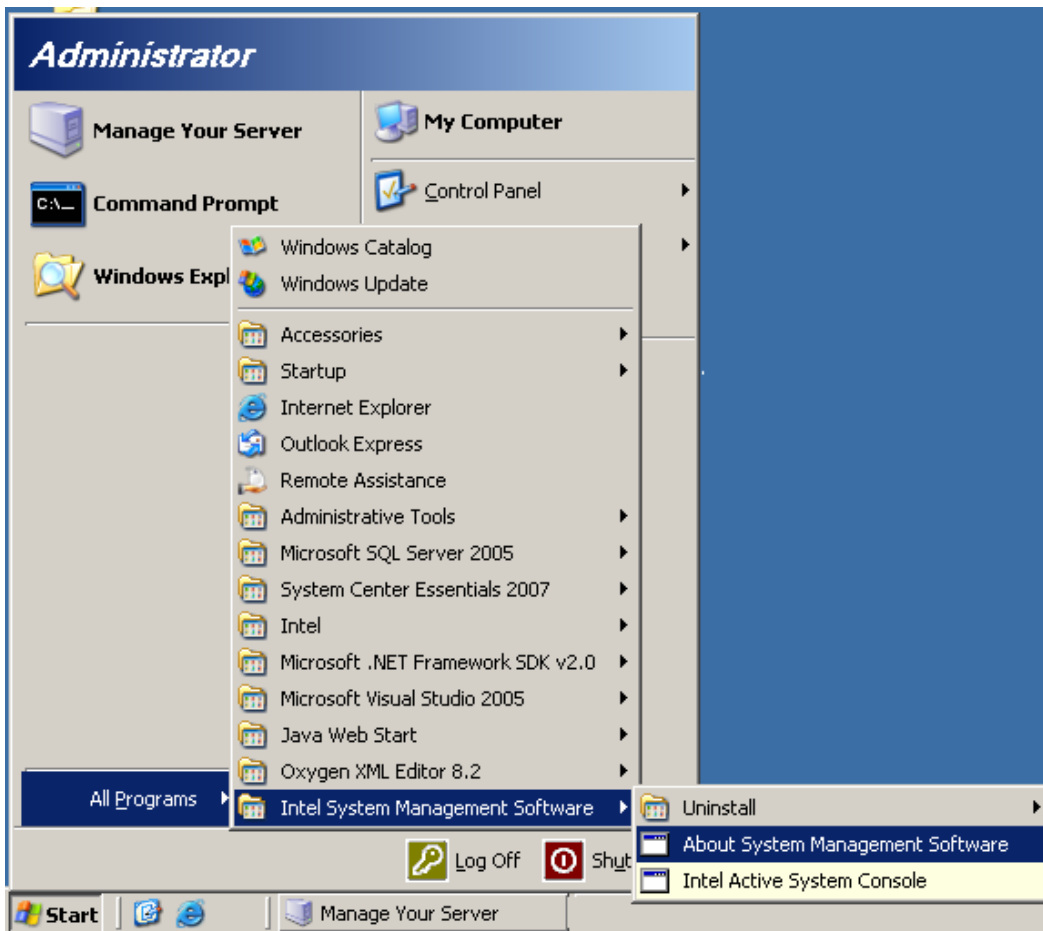
5.2 Scenario 2: Server without Internet Connection

Refer to section 5.4 for more information.

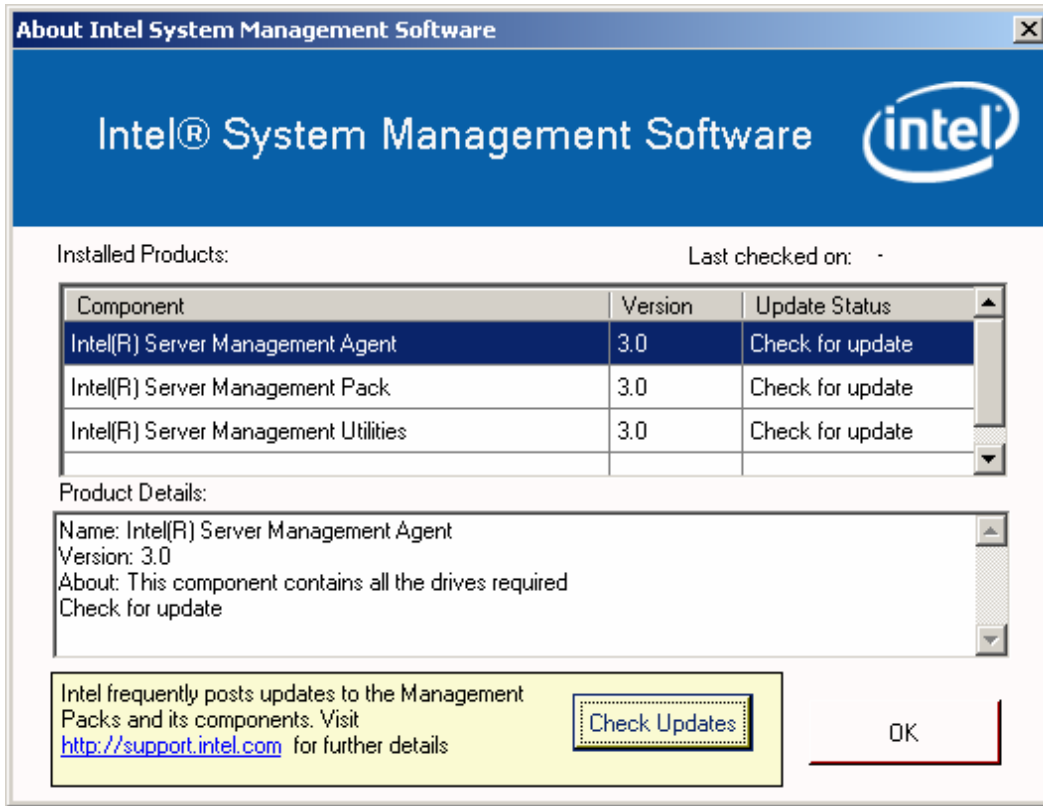
5.3 Upgrading Intel® System Management Software from About System Management Software

This method of upgrade is primarily targeted for components that do not run within the Microsoft* SCE environment (such as Intel® Active System Console, Intel® Server Management Utilities, Linux* Utilities and so on). However, it can also be used to upgrade other components.

1. To launch the **About System Management Software** from the Start menu, click **Start > All Programs > Intel System Management Software > About Server Management Software**.



2. If your server is connected to the Internet, click the **Check Updates** button.



The **About System Management Software** checks if any updates are available for download. The application also shows the status of each application as shown in following table:

Update Status	Description
Check for update	Latest update is not checked yet
No update available	Installed version is latest.
Updates are available	Download and install the latest available software packages available in the Intel Support Website at http://support.intel.com .
Contact Customer Support	Latest version is available. In order to upgrade, contact Intel Customer Support. NOTE: Direct upgrade not possible.

3. Click software that are out of date, copy the link, and download the software component to install.

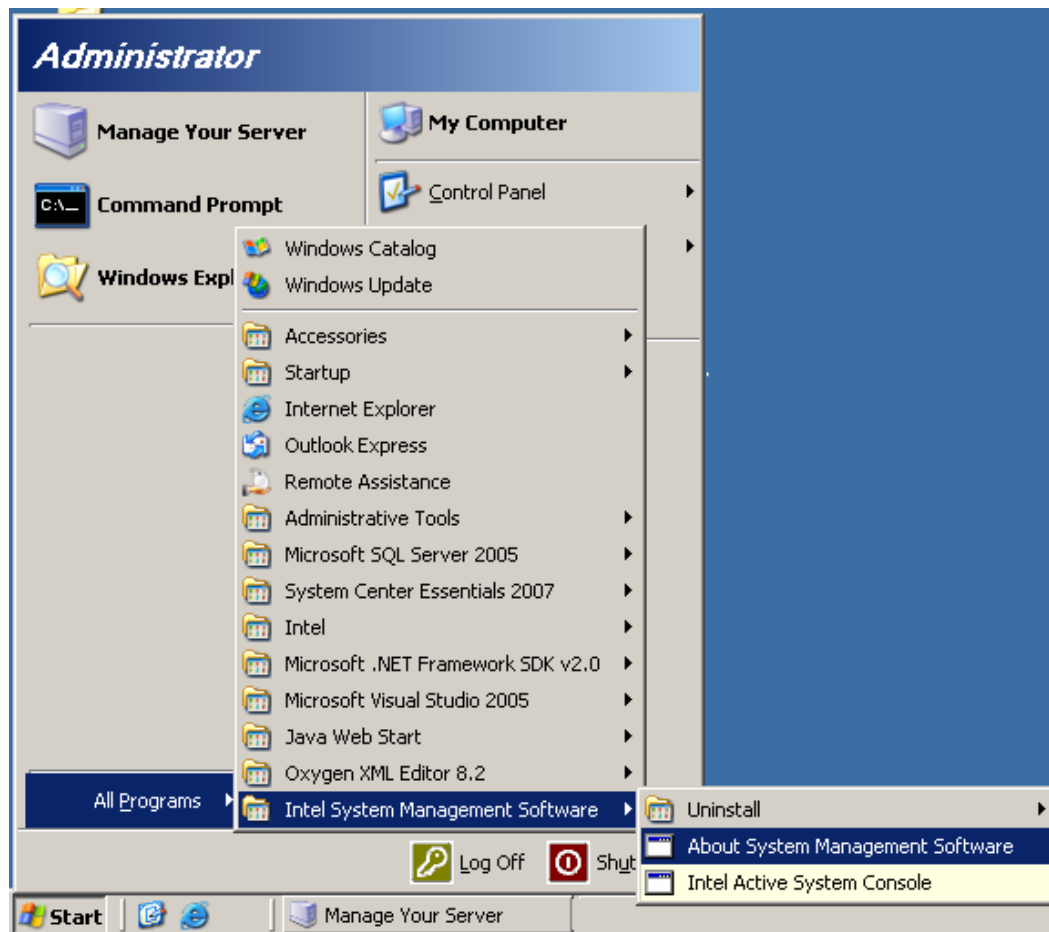
5.4 Upgrading Intel® System Management Software when your server is not connected to the Internet

This section applies to the following scenarios:

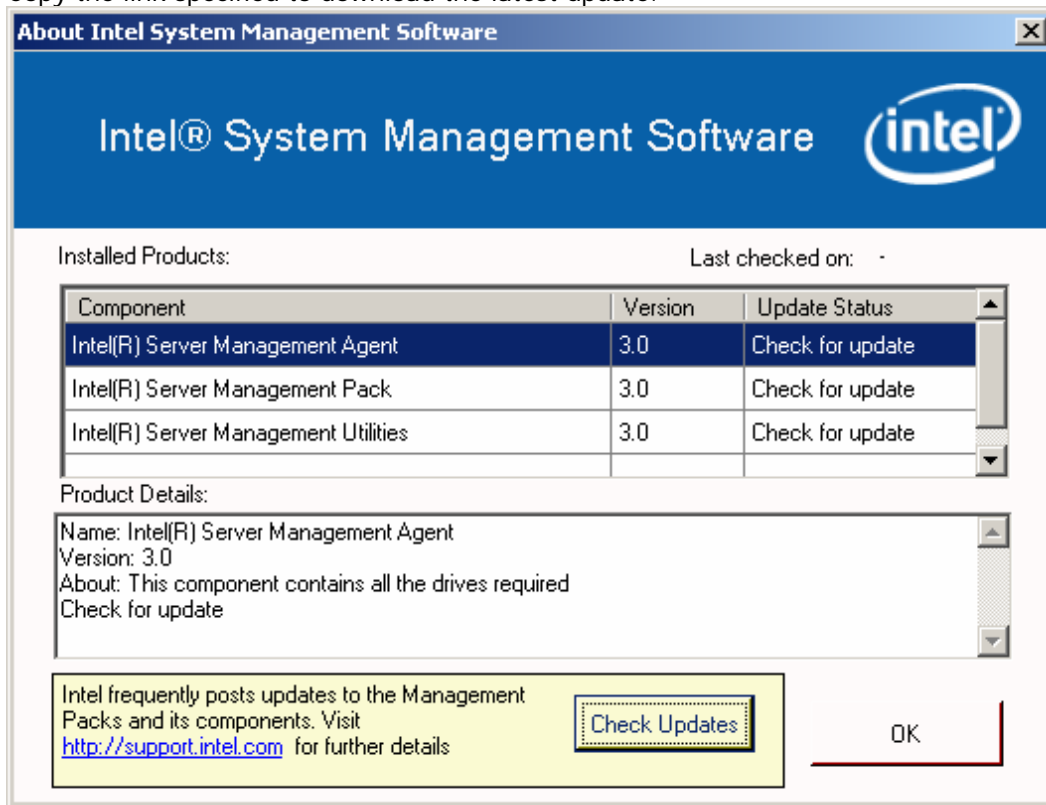
- Servers with all required Management Packs installed with or without System Center Essentials

AND

- Your system not connected to Internet
1. To launch the **About System Management Software** from the Start menu, click **Start > All Programs > Intel® System Management Software > About Server Management Software**.



2. **About System Management Software** provides the list of packages installed in the server. Copy the link specified to download the latest update.



3. Open the displayed URL on another system which is connected to Internet. Save the updates to a transferable media such as USB Drive or CD.
4. Copy and install all the updates to the servers which are not connected to the Internet.

NOTE: Please refer the *Intel® System Management Software User Guide* for details on how to upgrade the component.

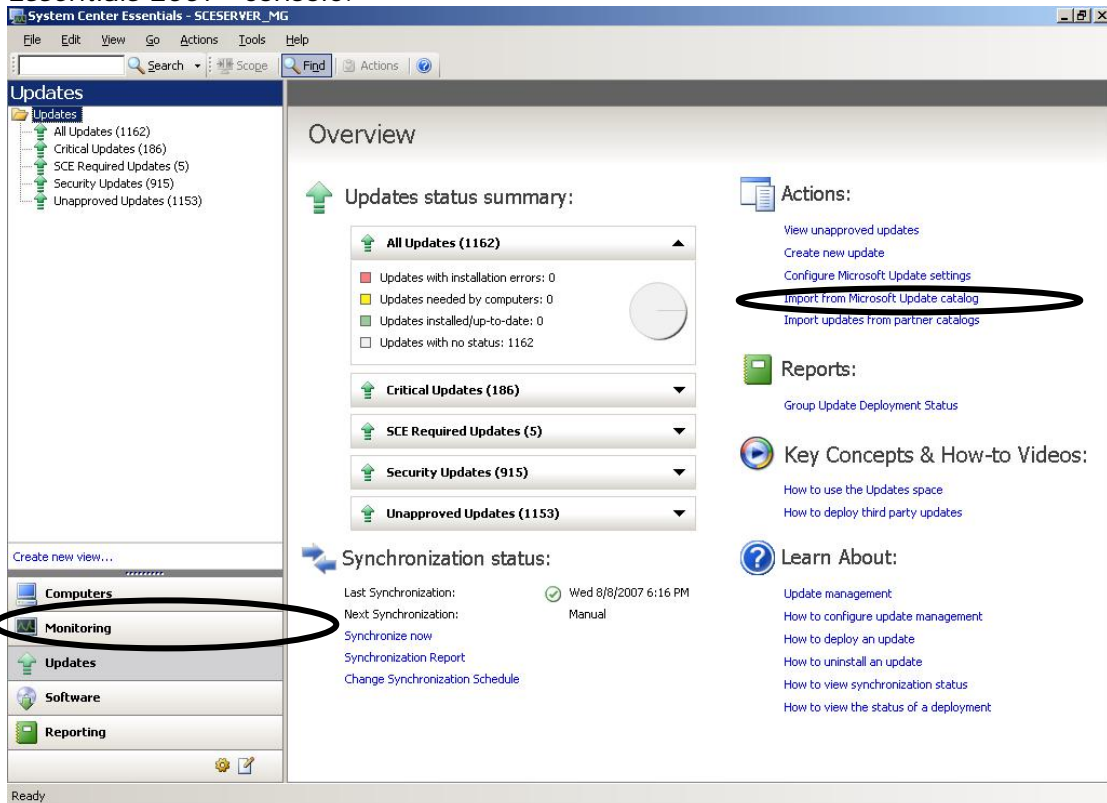
5.5 Upgrading the Management Packs from Microsoft® System Center Essentials 2007*

This section applies to servers with Microsoft® System Center Essentials 2007* console and all required Management Packs installed.

1. Launch the Microsoft® System Center Essentials 2007* console.
2. Upgrade *Microsoft® System Center Essentials** to **Service Pack 1**.
If you used the Intel® System Management Software 2.5 or greater CD or DVD to install *Microsoft System Center Essentials**, SP1 was loaded at the time of the install.
3. If not, use the Microsoft* Upgrade functionality to upgrade *Microsoft® System Center Essentials** to SP1
4. Use the *Microsoft® System Center Essentials 2007** Partner Updates feature to bring the Intel® Management Packs to full functionality with the latest releases.

NOTE: An internet connection is required to use this feature.

a) Click the **Updates** tab in the lower left corner of the *Microsoft® System Center Essentials 2007** console.



b) In the upper right hand section of the **Updates Overview** screen, click **Import updates from partner catalogs**.

A wizard will display to assist you with the rest of the update.

Click **Next** to begin, then select "Intel Corporation" from the catalog list, click **Next** and then click the **Import** button to download all updates from Intel.

Once downloaded, the updates must be "approved" for deployment to the computer group you select. Intel recommends that you select *All Servers* for your deployment.

If the update is not needed on a specific server no action will be taken on that server.

NOTE: The update can take up to 24 hours to apply on each of the systems. Once the update has been applied to your systems, they will be fully functional.