IBM System x

IBM Upward Integration for VMware vSphere Installation and User's Guide

Version 3.0.1

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Note

Before using this information and the product it supports, read the information in “Notices” on page 69.

Edition Notice

This edition applies to version 3.0.1 of IBM Upward Integration for VMware vSphere and to all subsequent releases and modifications until otherwise indicated in new editions.

Contents

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About this publication

This book provides instructions for installing IBM Upward Integration for VMware vSphere v3.0.1 and using the features to acquire system information, update firmware, monitor power usage, configure system settings, and create migration rules for the virtual machine in the VMware vCenter management environment.

Conventions and terminology

Paragraphs that start with a bold **Note**, **Important**, or **Attention** are notices with specific meanings that highlight key information.

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

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

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

The following table describes some of the terms, acronyms, and/or abbreviations used in this document.

Table 1. Frequently used terms and acronyms

Term/Acronym	Definition
ASU	Advanced Settings Utility
DSA	IBM Dynamic System Analysis
IMM	Integrated Management Module
IVP	IBM Upward Integration for VMware vSphere
PFA	Predictive Failure Alert
UXSP	UpdateXpress System Packs
UXSPi	UpdateXpress System Package Installer

Information resources

You can find additional information about IBM Upward Integration for VMware vSphere, Version 3.0.1 in the product documentation and on the World Wide Web.

PDF files

View or print documentation that is available in Portable Document Format (PDF).

Downloading Adobe Acrobat Reader

You need Adobe Acrobat Reader to view or print these PDF files. You can download a copy from the Adobe website.

Viewing and printing PDF files

You can view or print PDF files that can be found on the web pages listed in "World Wide Web resources."

World Wide Web resources

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

IBM Upward Integration for VMware vSphere site

IBM Upward Integration for VMware vSphere site

Locate the latest downloads for the IBM Upward Integration for VMware vSphere.

IBM Systems Technical support site

IBM Systems Technical support site

Locate support for IBM hardware and systems-management software.

IBM Systems Management Software: Download Software Registration site

IBM Systems Management Software: Download/Registration site

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

IBM® Systems Management site

IBM System x Systems Management site

This page provides an overview of IBM Systems Management using IBM Director Agent or IBM Director Core Services.

IBM System x ServerProven® and BladeCenter ServerProven sites

System x ServerProven site

BladeCenter ServerProven site

Obtain information about hardware compatibility with IBM System x, IBM BladeCenter, and IBM IntelliStation® hardware.

VMware vCenter Product Family site

VMware vCenter Product Family site

Chapter 1. IBM Upward Integration for VMware vSphere

The topics in this section provide information about IBM Upward Integration for VMware vSphere.

The IBM Upward Integration for VMware vSphere is an extension to the VMware vCenter and provides system administrators with enhanced management capabilities on IBM System x servers, BladeCenter servers and Flex systems. IBM Upward Integration for VMware vSphere expands the management capabilities of VMware vCenter by integrating IBM hardware management functionality and provides the following features:

- Dashboard
- Dynamic System Analysis
- Firmware Update
- Power Metric
- Advanced System Settings
- Predictive Failure Management

To provide the enhanced management features on the managed ESXi endpoints, IBM Upward Integration for VMware vSphere relies on a component called the Provider bundle. This component must be installed on the ESXi host manually for all management functions of the IBM Upward Integration for VMware vSphere to be available. The Provider bundle is contained in the `offline-bundle.zip` file, located in the IBM Upward Integration installation package.

Dashboard

The Dashboard provides an overview of the selected host or cluster. It displays summary information including overall resource utilization, hosts health messages and connection status. It also displays the IMM information for each host and allows you to launch the IMM console directly.

Dynamic System Analysis

Dynamic System Analysis is a tool that collects and analyzes system information to aid in diagnosing system problems.

Firmware Update

The firmware update function acquires and applies IBM UpdateXpress System Packs (UXSPs) and individual updates to the ESXi system. The Rolling System Update function provides non-disruptive system updates with zero downtime, automates the update process of the hosts in a cluster environment without any workload interruption, and supports updating multiple hosts concurrently to save time.

Power Metric

To aid in balancing workloads on hosts, the Power Metric feature monitors power usage, thermal, and fan speed values of the ESXi host and graphically displays this information. Power Metric provides power capping and power throttling features. Power capping allows you to allocate less power and cooling to a system. Power throttling allows you to receive an alert after power consumption exceeds the value you set.

Advanced Settings Utility

Advanced Settings Utility provides a system settings management interface through which you can view and configure frequently-changed settings, such as those for IMM, uEFI, and boot order, on the managed endpoint. To change unsupported settings in IBM Upward Integration for VMware vSphere, use the IMM and uEFI interfaces.

Predictive Failure Management

The predictive failure management feature monitors the server hardware status and automatically evacuates virtual machines in response to predictive failure alerts to protect your workloads.

Chapter 2. Installing IBM Upward Integration for VMware vSphere

The topics in this section provide information about installing IBM Upward Integration for VMware vSphere.

System requirements for IBM Upward Integration for VMware vSphere

IBM Upward Integration for VMware vSphere is an extension to the vCenter server. It must be installed on the server that has VMware vCenter installed.

Supported VMware vCenter Server

The IBM Upward Integration for VMware Vsphere plug-in is an extension to the VMware vCenter Server. It supports VMware vCenter Server 4.1, 5.0, 5.1, and 5.5.

Supported operating systems

The IBM Upward Integration for VMware vSphere plug-in supports the same operating systems as VMware vCenter.

The following operating systems are supported:

- Windows Server 2003 SP2/R2 x64 (Enterprise Edition, DataCenter)
- Windows Server 2008 SP1/SP2 x64 (Enterprise Edition, Standard Edition)
- Windows Server 2008 R2 SP1
- Windows Server 2012

Supported ESXi version

IBM Upward Integration for VMware vSphere supports IBM customized ESXi 4.1, 5.0, 5.1 and 5.5 images. You can download IBM customized ESXi images from IBM x86 solutions for VMware: `http://www-03.ibm.com/systems/x/os/vmware/`.

For generic VMware ESXi, you need to download and install IBM Customization for ESXi offline bundles on Fix Central to enable all management functions. Without the offline bundles being installed, IBM Upward Integration for VMware VSphere provides limited management functionality. It is recommended that you update to the latest patch version on each managed ESXi host at your earliest convenience. You can find VMware vSphere ESXi with IBM Customization offline bundles and patches at Fix Central.

Supported hardware

This topic provides information about the supported hardware for IBM Upward Integration for VMware vSphere.

The plug-in does not have hardware limitations. However, the hardware that the plug-in manages is limited to the IBM System x and Blade servers listed in the following table.

Table 2. Supported hardware

System	Server number
System x Server	dx360 M2 (7321, 7323)
	dx360 M3 (6391)
	dx360 M4 (7912, 7913, 7918, 7919)
	nx360 M4 (5455)
	Smart Analytics System (7949)
	x3100 M4 (2582)
	x3200 M2 (4367, 4368)
	x3200 M3 (7327, 7328)
	x3250 M2 (7657, 4190, 4191, 4194)
	x3250 M3 (4251,4252,4261)
	x3250 M4 (2583)*
	x3250 M5 (5458)
	x3300 M4 (7382)
	x3400 M2 (7836, 7837)
	x3400 M3 (7378, 7379)
	x3500 M2 (7839)
	x3500 M3 (7380)
	x3500 M4 (7383)
	x3530 M4 (7160)
	x3550 M2 (7946, 4198)
	x3550 M3 (7944, 4254)
	x3550 M4 (7914)
	x3620 M3 (7376)
	x3630 M3 (7377)
	x3630 M4 (7158, 7518, 7519)
	x3650 M2 (7947, 4199)
	x3650 M3 (7944, 7945, 4254, 4255, 5454)
	x3650 M4 (7915)
	x3650 M4 HD (5460)
	x3650 M4 BD (5466)
	x3750 M4 (8722, 8733)
	x3755 M4 (7164)
	x3690 X5 (7148, 7149, 7147, 7192)
	x3850 X5/X3950 X5 (7145, 7146, 7143, 7191)

Table 2. Supported hardware (continued)

System	Server number
	x3850 X6 (3837)
Flex Compute Node	Flex System x220 Compute Node (7906, 2585)
	Flex System x222 Compute Node (7916)
	Flex System x240 Compute Node (8737, 8738, 7863)
	Flex System x440 Compute Node (7917)
Blade System	HS22 (7870, 7809, 1911, 1936)
	HS22V (7871, 1949)
	HS23 (7875, 1882, 1929)
	HS23E (8038, 8039)
	HX5 (7872, 7873, 1909, 1910)

* x3250M4 2583 supports only partial functions in the Dashboard and Dynamic System Analysis; update, power, and system configuration functions are not supported.

Installing IBM Upward Integration for VMware vSphere

IBM Upward Integration for VMware vSphere must be installed on a server that has VMware vCenter installed, or the installation will fail.

Before you begin

Administrator privileges are required to install IBM Upward Integration for VMware vSphere.

About this task

IBM Upward Integration for VMware vSphere can be accessed with either vSphere client or vSphere Web Client, depending on the VMware vCenter version.

For VMware vCenter 5.0 and the previous version, you can only access the plug-in with vSphere client. For more information, see Chapter 4, “Using IBM Upward Integration for VMware vSphere with vSphere Client,” on page 47.

For VMware vCenter 5.1, when you install the plug-in, you can choose to access it with either vSphere client or vSphere Web client. It is recommended that you access the plug-in with vSphere Web client, IBM Upward Integration for VMware vSphere integrated with vSphere Web Client provides better usability and performance. For more information, see Chapter 3, “Using IBM Upward Integration for VMware vSphere with vSphere Web Client,” on page 13.

Procedure

1. Extract the files from the downloaded IBM Upward Integration for VMware vSphere installation package.
2. Double click **ibm_sw_vmuim_3.0_windows_64.exe** to launch the installer.
3. Click **Next** on the startup page of the installer.
4. Read and agree to the IBM Upward Integration for VMware vSphere license.
5. Select the destination folder for installing IBM Upward Integration for VMware vSphere, then click **Next**.
6. Input your **user** and **company** information.
7. Click **Confirm** to install. The installation process begins.

   During the installation process, IBM UIM Unified Service will be launched and installed, for details refer to the *IBM UIM Unified Service User's Guide*.

   After the installation is complete, the configuration starts.
8. Enter the VMware vCenter server information and connection information for the product.

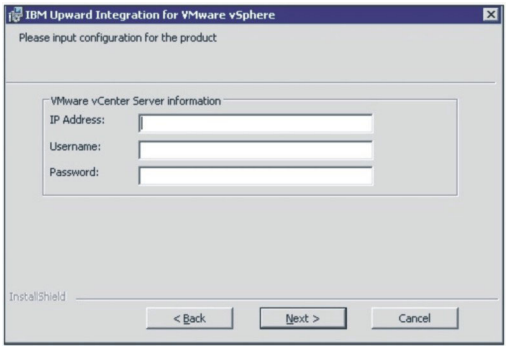

Figure 1. VMware vCenter server configuration

   - In the **IP Address** field, enter the IP address of the management network (used to connect to the vCenter server).
   - In the **Username** and **Password** fields, provide a user name and password that has administrative credentials to manage the vCenter server.
9. Click **Next** to start the configuration. A window opens while IBM Upward Integration for VMware vSphere is being configured. Wait for the configuration to complete.
10. Click **Finish**. IBM Upward Integration for VMware vSphere is successfully installed.

    Note: When you launch the installation package, if an earlier version of IBM Upward Integration for VMware vSphere is detected, an upgrade dialog box is displayed. Click **Upgrade** to upgrade the product. The installer will remove the old version and install the new version.

Installing the IBM License Tool and activating the premium features

IBM Upward Integration for VMware vSphere provides a 90-day trial license by default. When the license expires after 90 days, all of the premium features are disabled. It is suggested that you install the IBM Upward Integration for VMware vSphere License Tool to activate the product license. Activation licenses can be purchased by contacting either your IBM representative or an IBM Business Partner.

After you purchase the IBM Upward Integration for VMware vSphere product license, you are only required to activate the license on the vCenter Server that is running IBM Upward Integration for VMware vSphere. It is not necessary to activate the license on each managed ESXi host. The license token will automatically be delivered to the ESXi host when it is managed by the vCenter server. For more information about activating the premium features, refer to the *IBM Upward Integration for VMware vSphere License Installer Guide*.

Installing and removing the IBM Upward Integration for VMware vSphere Provider bundle

The topics in this section describe how to install and remove the IBM Upward Integration for VMware vSphere Provider bundle.

The IBM Upward Integration for VMware vSphere Provider bundle enables advanced power management capabilities on IBM servers. Depending on the esxi version, you need to install different offline bundles:

- IBM-ibmpowercim-ESX-4.1-00ACN-offline_bundle-1092011.zip is for esxi 4.1
- IBM-ibmpowercim-ESX-5.0-01ACN-1420628.zip is for esxi 5.0 and 5.1
- VMW-ESX-5.5.0-ibmpowercim-5.5-01ACN-1401186.zip is for esxi 5.5

These bundles are located in the installation package.

To install and remove the entire bundle, use VMware Update Manager(Recommended) or VMware vSphere Command-Line Interface (vSphere CLI) utility.

Important: IBM Upward Integration for VMware vSphere Provider bundle is only required for the power metric function, all other UIM functionalities can work without insalling the bundle. If the host is running generic vmware esxi, you need to install IBM Customization for ESXi offline bundles on Fix Central first, otherwise IBM Upward Integration for VMware vSphere Provider bundle will not work. If the host is running IBM customized esxi image downloaded from IBM x86 solutions for VMware web site (http://www-03.ibm.com/systems/x/os/vmware/), you can install IBM Upward Integration for VMware vSphere Provider bundle directly. The IBM customized ESXi 5.1 U1 and later versions already contain the IBM Upward Integration for VMware vSphere Provider bundle. Both IBM Customization for ESXi offline bundles and IBM Upward Integration for VMware vSphere Provider bundle can be installed with VMware Update Manager or VMware vSphere Command-Line Interface (vSphere CLI) utility.

Installing the IBM Upward Integration for VMware vSphere provider bundle using VMware Update Manager

To install the IBM Upward Integration for VMware vSphere Provider bundles using VMware vSphere Update Manager (VUM), you need to log into the vSphere client and import the offline bundles in VUM. For information about configuring VUM, see the VMware product documentation.

Installing the IBM Upward Integration for VMware vSphere bundle using VMware vSphere Command Line Interface

The topics in this section describe how to install the IBM Upward Integration for VMware vSphere bundle using the VMware vSphere Command Line Interface.

The VMware vSphere command-line interface (CLI) command set allows you to use common system administration commands for ESX and ESXi systems from any workstation with network access to the ESX and ESXi systems.

Download the VMware vSphere CLI from the following URL http://www.vmware.com/support/developer/vcli/

Important: You need open the VMware vSphere CLI command prompt before installing or removing the bundle with the instructions below.

Installing the bundle on a host using the IBM customized ESXi 4.1 image

This topic describes how to install the IBM Upward Integration for VMware vSphere bundle on a host using the IBM customized ESXi 4.1 image.

About this task

Use the following procedure to install `IBM-ibmpowercim-ESX-4.1-00ACN-offline_bundle-1092011.zip` for a host using the IBM customized ESXi 4.1 image.

Procedure

1. To enter the maintenance mode for the host, type the following command:

   ```
   vicfg-hostops.pl  --server [TARGET_HOST_IP] --operation enter
   ```

2. Install the package by using the following command:

   ```
   vihostupdate.pl --server [TARGET_HOST_IP] -install -bundle [BUNDLE_PATH] -c
   ```

   `BUNDLE_PATH` stands for the absolute path of the bundle on the host where you run VMware vSphere CLI, for example: `vihostupdate.pl --server 10.0.0.1 -install -bundle c:\offline-bundle.zip –c`

3. Exit maintenance mode by using the following command:

   ```
   vicfg-hostops.pl --server [TARGET_HOST_IP] --operation exit
   ```

4. Reboot the ESXi server and use the following command to verify that the package installed successfully:

   ```
   vihostupdate.pl --server [TARGET_HOST_IP] --query
   ```

Installing the bundle on a host using the IBM customized ESXi 5.x image

This topic describes how to install the IBM Upward Integration for VMware vSphere bundle on a host using the IBM customized ESXi 5.x image.

About this task

Use the following procedure to install `IBM-ibmpowercim-ESX-5.0-00ACN-1054796.zip` for a host using the IBM customized ESXi 5.x image.

Procedure

1. Extract `IBM-ibmpowercim-ESX-5.0-00ACN-1054796.zip`. You will get a VMware Installation Bundle (VIB) and an offline bundle.
2. Enter maintenance mode for the host by using the following command:

   ```
   vicfg-hostops.pl  --server [TARGET_HOST_IP] --operation enter
   ```

3. Install the package by using the following command:

   ```
   esxcli --server [TARGET_HOST_IP] software vib install –d [BUNDLE_PATH]
   ```

   Note: This is different from ESXi 4.1, the `BUNDLE_PATH` listed above should be either a network path or local path on ESXi 5.x host, not a path on the host where you run VMware vSphere CLI.

   Examples:

   - If you make the bundle downloadable from an HTTP server, then install the bundle with this command: `esxcli --server 10.0.0.1 software vib install –d http://WEB_SERVER/VMW-ESX-5.0.0-ibmpowercim-1.0-3.0-offline_bundle-914982.zip`
   - If you manually upload the bundle to the target ESXi 5.0 host under a directory such as `/tmp`, then install the bundle with this command: `esxcli --server 10.0.0.1 software vib install –d /tmp/VMW-ESX-5.0.0-ibmpowercim-1.0-3.0-offline_bundle-914982.zip`

4. Exit maintenance mode by using the following command:

   ```
   vicfg-hostops.pl --server [TARGET_HOST_IP] --operation exit
   ```

5. Reboot the ESXi server and use the following command to verify that the package installed successfully:

   ```
   esxcli --server [TARGET_HOST_IP] software vib list
   ```

Removing the bundle using VMware vSphere CLI

The topics in this section describe how to remove the IBM Upward Integration for VMware vSphere bundle by using the VMware vSphere Command Line Interface.

Removing the bundle on a host by using the IBM customized ESXi 4.1 image

This topic describes how to remove the bundle on a host by using the IBM customized ESXi 4.1 image.

About this task

Use the following procedure to remove the IBM Upward Integration for VMware vSphere bundle on a host by using the IBM customized ESXi 4.1 image.

Procedure

1. Use the following command to locate the ID of the bundle you want to remove:
   ```
   vihostupdate.pl --server [TARGET_HOST_IP] --query
   ```
2. Enter the maintenance mode of the host by using the following command:
   ```
   vicfg-hostops.pl  --server [TARGET_HOST_IP] --operation enter
   ```
3. Remove the bundle by using the following command:
   ```
   vihostupdate.pl --server [TARGET_HOST_IP] --remove  -B  [Bulletin ID]
   ```
4. Exit maintenance mode by using the following command:
   ```
   vicfg-hostops.pl --server [TARGET_HOST_IP] --operation exit
   ```
5. Reboot the ESXi server and use the following command to verify that the package was removed:
   ```
   vihostupdate.pl --server [TARGET_HOST_IP] --query
   ```

Removing the bundle on a host by using the IBM customized ESXi 5.x image

This topic describes how to remove the bundle on a host by using the IBM customized ESXi 5.x image.

About this task

Use the following procedure to remove the IBM Upward Integration for VMware vSphere bundle on a host by using the IBM customized ESXi 5.x image.

Procedure

1. Locate the ID of the bundle you want to remove by using the following command:
   ```
   esxcli --server [TARGET_HOST_IP] software vib list
   ```
2. Enter the maintenance mode of the host by using the following command: .
   ```
   vicfg-hostops.pl --server [TARGET_HOST_IP] --operation enter
   ```

3. Remove the bundle by using the following command:
   ```
   esxcli --server [TARGET_HOST_IP] software vib remove -n ibmpowercim
   ```
4. Exit maintenance mode by using the following command:
   ```
   vicfg-hostops.pl --server [TARGET_HOST_IP] --operation exit
   ```
5. Reboot the ESXi server and use the following command to verify that the package was removed:
   ```
   esxcli --server [TARGET_HOST_IP] software vib list
   ```

Chapter 3. Using IBM Upward Integration for VMware vSphere with vSphere Web Client

The topics in this section describe how to access and use the software with vSphere Web Client.

After installation, the **IBM Upward Integration** tabs are added to the vSphere Web Client providing both host level and cluster level management like monitoring, inventory, firmware updates, system configuration, and predictive failure management. To give you a single, heterogeneous view of all host system events within your managed environment, IBM hardware events are integrated into vCenter. Question: remove this list for d2?

- Managing clusters
- Managing servers
- Managing hardware events

You can navigate to each of these functions from the navigation pane located at the top.

Managing clusters

When a cluster is selected in the inventory tree, the **IBM Upward Integration** tab displays below the **Manage** tab and provides the following cluster management functions:

- Cluster Overview
- IMM Discovery
- Rolling System Update
- Predictive Failure Management

You can navigate to each of these functions from the navigation tool bar located below the **IBM Upward Integration** tab.

Working with the Cluster Overview function

The Cluster Overview function collects and analyzes cluster inventory information and health status to assist with the operation and management of the hosts and the cluster.

The Cluster Health section provides a snapshot view of the following aspects of a system:

- The total number of IBM hosts and non-IBM hosts.
- The overall health status of the IBM host, indicating current alerts.
- A Summary of usage information indicating the space used for the cluster disk, memory, and CPU.

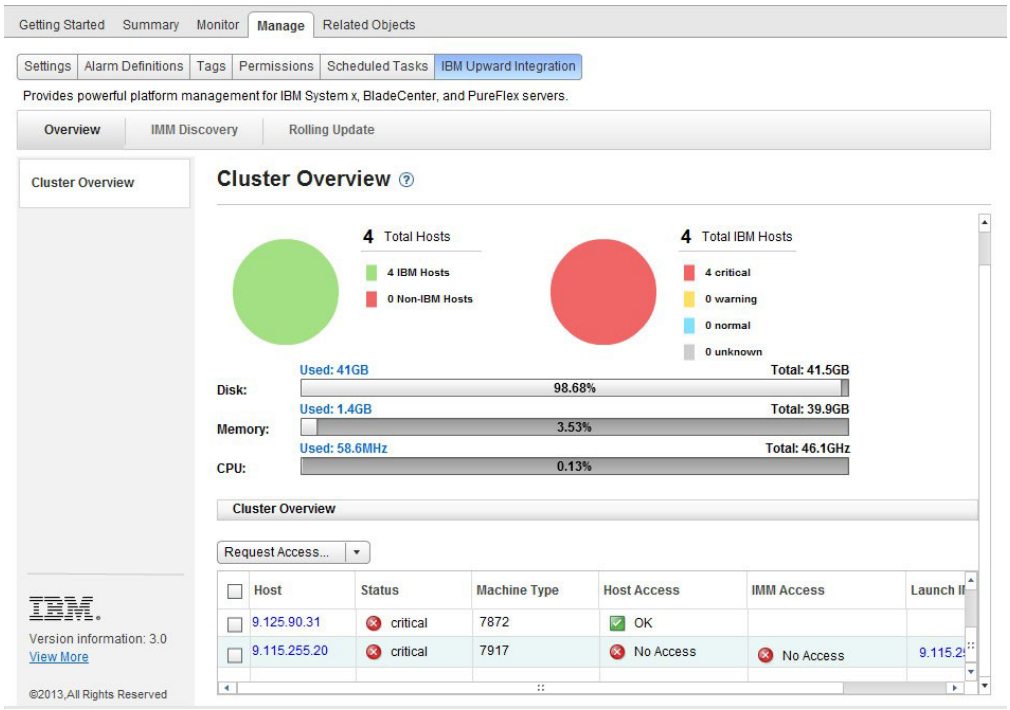

Figure 2. Cluster Overview

The Cluster Overview section provides the following host information:

- host IP address
- host status
- host machine type
- host access level
- host IMM access and IMM console

The **Request Access** list has the following options:

- Request host access
- Request IMM access

Requesting host access

This topic explains how to request host access.

Before you begin

Add hosts into the cluster in vSphere Web Client.

About this task

This task is performed on the Cluster Overview page.

Procedure

1. Select **IBM Upward Integration** > **Overview**.
2. In the Cluster Overview section, select the hosts for which you want to request host access.
3. From the **Request Access** list, select **Request Host Access**.
4. In the Request Host Access dialog box, enter the following information for the host(s) you selected: If any of the hosts selected have the same account information, they are also enabled.Is Request Host Access dialog box the correct name of the dialog box?
   - User Name
   - Password

   What is displayed after entering the credentials?

Requesting IMM access using the Cluster Overview function

This topic explains how to request IMM access from the Cluster Overview page.

Before you begin

To request IMM access, the selected hosts must have been previously discovered using the IMM Discovery page. For more information, see “Working with the IMM Discovery function” on page 16

About this task

This task is performed on the Cluster Overview page.

Procedure

1. Select **IBM Upward Integration** > **Overview**.
2. In the Cluster Overview section, select the hosts for which you want to request IMM access.
3. From the **Request Access** list, select **Request IMM Access**. If the IMMs have been discovered, the IP addresses display in the Cluster Overview table, otherwise the Request IMM Access dialog box displays and requests that you enter the following IMM account information, and then click **OK**.
   - Is Request IMM Access dialog box the correct name of the dialog box?
   - User Name
   - Password

4. Select the IP address link to launch the IMM web console.
   - User Name
   - Password

   What is displayed after entering the credentials?

Working with the IMM Discovery function

The IMM Discovery function provides out of band (OOB) management of your IBM servers using IMMv2 on the vSphere web client. This functionality can assist you with managing your IBM host and lower the risk cluster hardware problems by monitoring hardware events using IMM or setting Predictive Failure policies. The IMM Discovery function discovers the IMMs for your host in the cluster.

About this task

This task is performed on the IMM Discovery page.

Procedure

1. Select **IBM Upward Integration** > **IMM Discovery**.

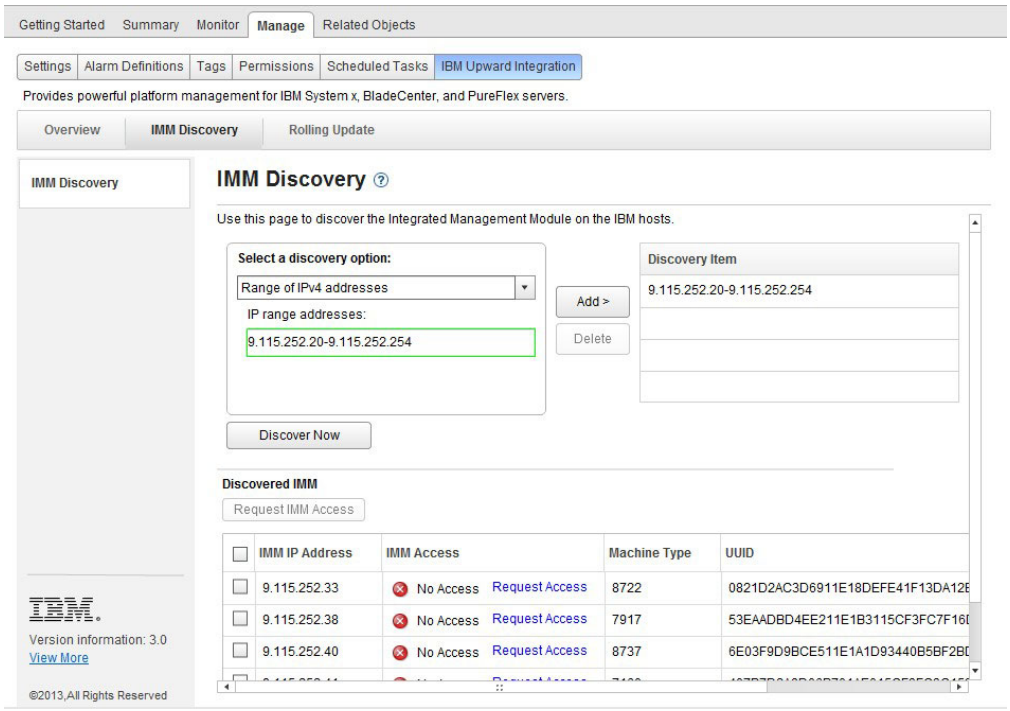

Figure 3. IMM Discovery

2. From the **select a discovery option** dual-list, select a discovery option.
3. Enter a range of IPv4 addresses or a single IPv4 address.
4. Click **Add** to add the discovery items to the **Discovery Item** dual-list. If there are any discovery items added, that you do not want to discover, you can select **Delete** to remove them from the **Discovery Item** list.
5. After adding all of the discovery items, click **Discover Now** to start the discovery process. You cannot stop the discovery operation after it has started. When the discovery operation has finished, the discovered IMMs are listed in the Discovered IMM table.

Requesting IMM access using the IMM Discovery function

This topic explains how to request IMM access from the IMM Discovery page.

About this task

This task is performed on **IBM Upward Integration** > **IMM Discovery** page.

Procedure

1. From the Discovery IMM table, select one or multiple IMM IP addresses that will use the same credentials for IMM access.

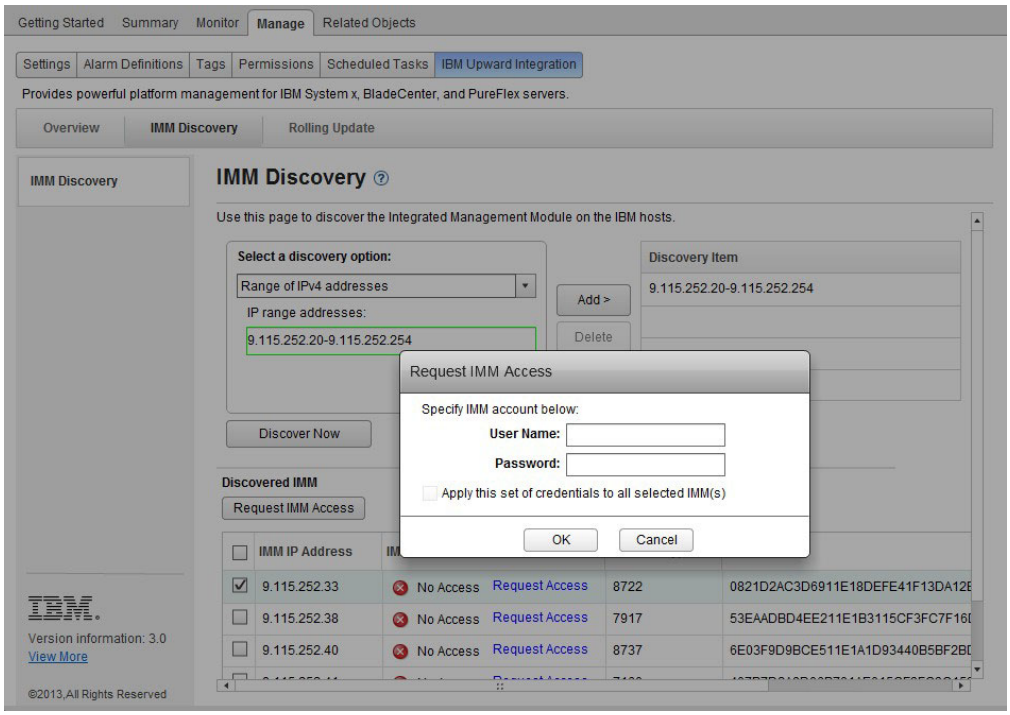

Figure 4. Requesting IMM access on the IMM Discovery page

2. In the Request IMM Access dialog box, enter the following information and then click **OK**. What is displayed after this operation is complete?

Working with the Rolling System Update function

The Rolling System Update (RSU) function updates the firmware in a single batch while the system continues running without interruption to application services on a server host. The Rolling System Update (RSU) provides an approach of non-disruptive firmware updates. It fully manages firmware by orchestrating "rolling" updates leveraging dynamic virtual machine movement within a defined VMware cluster, and completing the whole update process including host reboot automatically without any workload interruption.

Before you begin

The following prerequisites are necessary for using the Rolling System Update function:

- IBM Customization Patch 8 or newer patch must be installed on all the esxi 5.0.x and 5.1.x hosts before performing rolling firmware update, You can download this from Fix Central.
- An IBM customized ESXi image, version 5.0 and later. For a generic VMware ESXi image, IBM offline bundle for ESXi must be installed. You can download this from Fix Central.
- VMware vCenter Enterprise or Enterprise Plus Edition with DRS enabled and running in fully-automated mode.
- Host access has been granted. For more information, see the “Working with the Cluster Overview function” on page 13.

Configuring the Rolling System Update preferences

The Preferences page allows you to configure the update repository for rolling update.

Specify the update repository location:

Specify the update repository location where the Rolling System Update function should look for updates.

Procedure

1. Select **IBM Upward Integration** > **Rolling System Update**.
2. From the left navigation pane, select **Preferences**.
3. On the Preferences page, specify the update location by selecting one of the following options:

   Check the IBM website

   Download the appropriate updates automatically from the IBM website during the rolling update.

   You can configure a proxy if the vCenter server cannot access the website directly, but completing these steps:

   a. Select **Check the IBM website** and click **Require a proxy server for Internet connection**.
   b. Enter proxy configuration and click **Save**. please provide specifics for the proxy configuration.

Look in a directory on vCenter server

On vCenter, locate updates in a local directory : `InstallFolder\webroot\bin\data\repository`

The directory cannot be changed for Rolling System Updates.

Checking for updates automatically:

If you selected the **Check the IBM website** option, you can have UIM automatically download the latest firmware for all managed servers from the IBM website.

Procedure

1. Click **Check available updates periodically**.
2. Configure check cycle based on how frequently you want to check and download updates.
3. Click **Save**.

Checking for updates manually:

Complete the following steps to manually check for updates:

Procedure

1. Click **Check Now**.
2. In the dialog box displayed, click **OK** to begin checking for updates. The results are listed on the vCenter event monitor.
3. In the left pane of the vSphere web client, click **vCenter node** and select **monitor** and then **Events**. When the checking operation has finished, the checking updates results display an update event.

What to do next

Downloading the latest updates on a regular basis are recommended.

Managing the Rolling System Update tasks

Rolling System Update (RSU) provides a task manager that helps you manage rolling update tasks. A task contains all of the information and options for a rolling update.

About this task

The Task Manager has the following task options:

- Create a task
- Edit a task that has not been started
- Delete a task
- Cancel a running task
- Rerun a failed task
- Clone a completed task
- View reports of tasks

Procedure

1. Select **IBM Upward Integration** > **Rolling System Update**. Are these steps correct for accessing the task manager?
2. From the left navigation pane, select **Task Manager**.

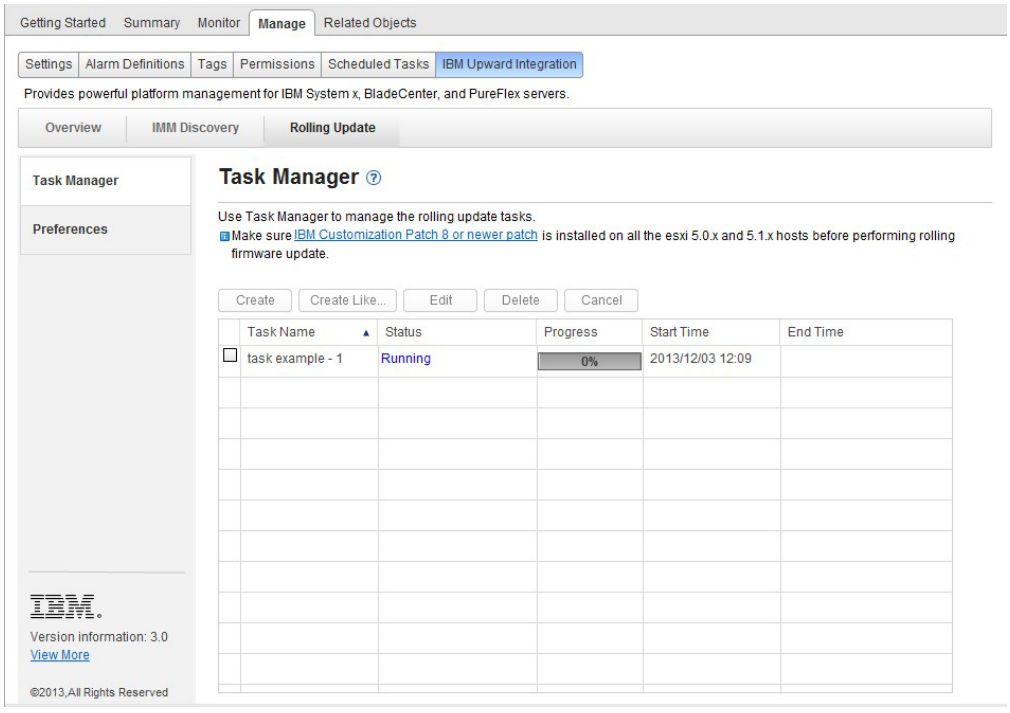

Figure 5. Task Manager

Creating a task:

Each cluster can have only one active task.

About this task

This task is performed from the **IBM Upward Integration** > **Rolling System Update** > **Task Manager** page.

Procedure

1. Click **Create** to open the Rolling System Update Wizard. The **Create** button is enabled only when a task displays as Finished, Canceled, or as a Failed task in the list.

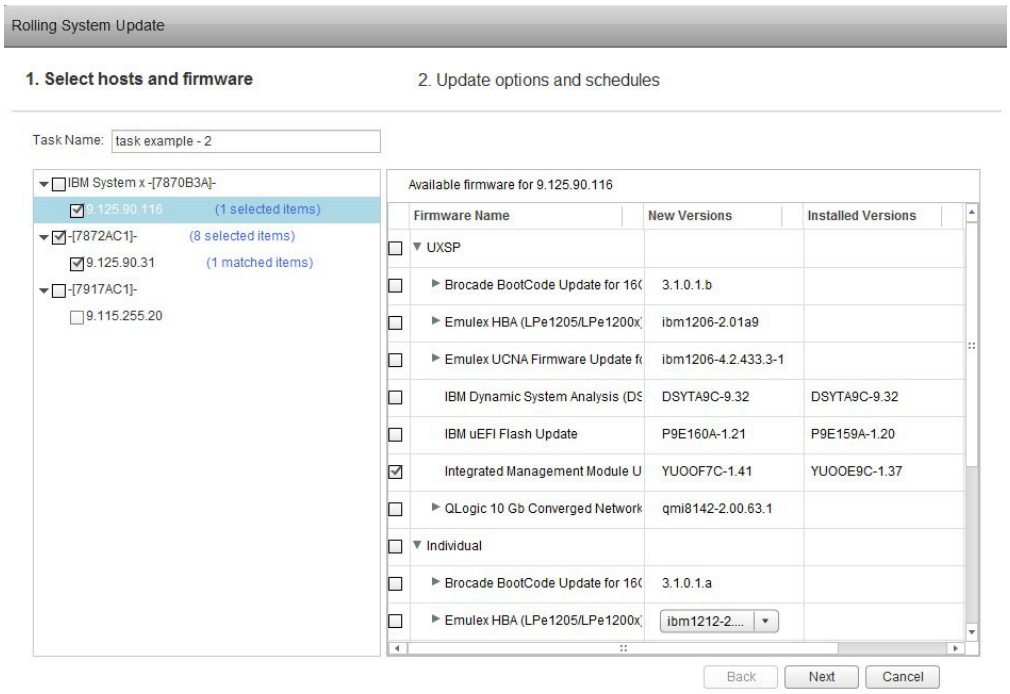

Figure 6. Rolling System Update Wizard

All the hosts in current cluster display on the left and are organized by machine type. Available and installed firmware versions for each machine type and host are listed on the right.

2. Select a host to view available firmware from the right and choose the updates you want to apply.

   If a machine type is selected, the selection of firmware is applied to all the hosts that have this machine type. If a host checkbox is greyed out, there are no available updates in the repository.

   If inventory information has not been collected for a host, RSU displays firmware of its machine type for this host. In this case, you can still select firmware for this host to update. RSU will try to collect host inventory information when updating and install the selected firmware. If a selected firmware is not available for the host, it is skipped.

3. Click **Next**. The available options display. What is the name of the page?

   Update Parallelization
   Specifies the number of hosts that can be updated concurrently. Note that updating multiple hosts concurrently requires more system resources, and you should carefully set the value according to the current available system resources; such as CPU and memory on the vCenter server. The default is 1.

   Reboot after update
   Specifies whether to reboot the host after updates are applied.

   Force downgrade
   Specifies whether to update firmware if the installed version is newer than the one you selected.

   Schedule
   Specifies when to initiate the task.
4. Click **Finish** to save the task. RSU initiates the task according to the schedule.

Editing a not-started task:

You can edit a task from the Task Manager. Only editing a not-started task is supported.

About this task

This task is performed from the **IBM Upward Integration** > **Rolling System Update** > **Task Manager** page.

Procedure

1. Select a not-started task in the list and click **Edit**. The Rolling System Update Wizard opens. The machine type and hosts are listed on the left and the available firmware is listed is up-to-date.
2. Edit the task and then click **Finish** to save changes.

Deleting a task:

All tasks except a running task can be deleted.

About this task

This task is performed from the **IBM Upward Integration** > **Rolling System Update** > **Task Manager** page.

Procedure

1. Select one or more tasks in the list that are not currently running.

2. Click **Delete**. what is displayed after this?

Canceling a running task:

A Rolling System Update (RSU) task can be canceled while it is running. If a task is canceled, the task status changes to `Canceling`.

About this task

This task is performed from the **IBM Upward Integration** > **Rolling System Update** > **Task Manager** page.

Procedure

1. Select a running task in the list.
2. Click **Cancel**.What is displayed after this? RSU first completes the updating of a host that is started and then only cancels the others. This task would may take several minutes to complete.

Rerunning a failed task:

You can rerun a task, if it has failed or has been canceled. The **Rerun** button is only available in these two situations.

About this task

This task is performed from the **IBM Upward Integration** > **Rolling System Update** > **Task Manager** page.

Procedure

Click **Rerun** in the status column.What is displayed? what does the user do next?

Cloning a completed task:

You can clone a finished, failed, or canceled Rolling System Update task as a new task.

About this task

This task is performed from the **IBM Upward Integration** > **Rolling System Update** > **Task Manager** page.

Procedure

1. Select a finished, failed or canceled task from the list.
2. Click **Create Like...** to open the Rolling System Update Wizard.

3. Edit the original selection and click **Finish** to save the new task.

Viewing reports of tasks:

The report of tasks provides Rolling System Update detail information.

About this task

This task is performed from the **IBM Upward Integration** > **Rolling System Update** > **Task Manager** page.

Procedure

In the Status column, click a status link to open Rolling Update Task Report view. The table below lists the status for tasks, hosts, and firmware.

Table 3. Rolling System Update task status

Target	Status	Description
Rolling Update Task	Not Started	The task has not started.
	Running	The task is running.
	Canceled	The task is canceled.
	Failed	Causes of task failure: • Downloading firmware package failed. • Rebooting EXSi host failed. • VM migration failed. • Firmware update failed
	Finished	The task has completed. If firmware is failing to update, the task is also marked as `Finished`.
Host	Not Started	The update for the host has not started.
	Migrating	The host is entering maintenance mode.
	Maintenance	The host is in maintenance mode.
	Updating	The firmware of the host is updating.
	Reboot	The host is rebooting after updating completes.
	Exit Maintenance	The host is exiting maintenance mode.
	Success	The firmware update succeeded.
	Failed	The causes of host failure: • Cannot enter maintenance mode. • Cannot get the update package. • Cannot update the firmware. • Cannot reboot the host. • Cannot exit maintenance mode.
Firmware	Not Started	The firmware update has not started.
	Running	The firmware update is running.
	Success	The firmware update succeeded.
	Failed	The firmware update failed.

Working with Predictive Failure Management

The topics in this section describe how to use the Predictive Failure Management on the vSphere Web Client to protect your running workload. The Policy and Rules page allows you to set management policies for a server based on a hardware Predictive Failure Alert (PFA). Based on a defined policy, the IBM Upward Integration for VMware vSphere evacuates VMs from the server to other hosts in the cluster in response to occurred PFAs. You can view PFAs from the server and the triggered policy history on the Predictive Failures page.

Before you begin

Before using Predictive Failure Management, verify the following prerequisites are met:

- Predictive Failure management policy can be set until you discover the IMMs and request the IMMs access.
- Predictive failure management relies on the hardware PFA capability. The IMM of the server should have the ability to send out Predictive Failure Alerts when a failure is detected, for example, x3850 X6 (3837).
- Proper configuration of the network management policy on the vCenter server is required to enable TCP on the https port that you selected when installing IVP, the default port is 9500. IBM Upward Integration for VMware VSphere listens on this port for incoming indications.
- The host must be put in a properly configured cluster. DRS (Dynamic Resource Scheduler) must be enabled and running in fully automated mode. IBM Upward Integration puts the host in maintenance mode, and the VMWare DRS evacuates VMs to other hosts in the cluster.

Setting a new policy

You can set RAS policy on each supported servers in the cluster. A policy defines the hardware event categories you want to monitor and the corresponding action when the event occurs.

About this task

This task is performed from the **IBM Upward Integration** > **Predictive Failure** > **Policy and rules page.**

Procedure

1. Select one or multi IMM nodes.
2. Click **Set policy**. The Manage RAS Policy page is displayed.

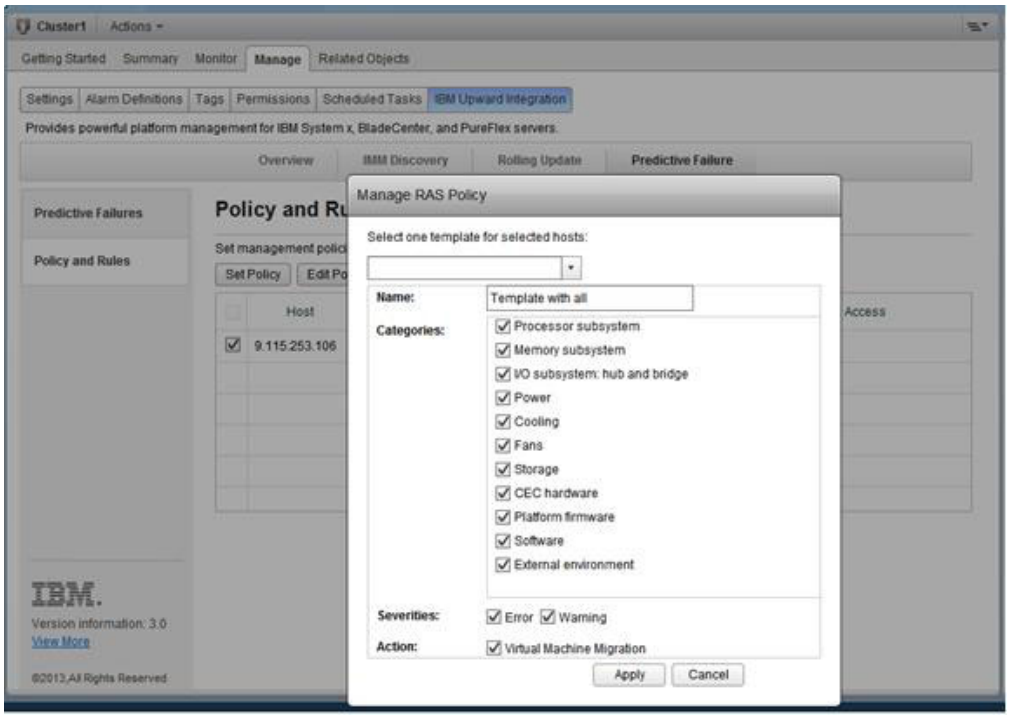

Figure 7. Manage RAS Policy

Event categories:

The following table contains the Predictive Failure Alert Event Categories used on the Manage RAS Policy page.

Table 4. Predictive Failure Alert Event categories

PFA Event	Description
Processor subsystem	Processor subsystem includes the CPU, its internal circuits like cache, the bus controller, and external interface.
Memory subsystem	Memory subsystem includes the memory controller, memory buffer, memory bus interface, memory card, and DIMM.
I/O subsystem	I/O subsystem includes: IO Hub, IO bridge, IO bus, IO processor, IO adapters for various IO protocols, such as PCI and InfiniBand.
Power	Power includes the power supply and power control hardware.
Cooling	All thermal-related events.
Fans	Includes the fan and blower.
Storage	Includes the storage enclosure, storage controller, raid controller, and media (disk, flash).
Platform firmware	Platform firmware includes IMM and uEFI.
Software	Operating system software and application software.
External environment	All events of an external-related environment including: AC power source, Room ambient temperature, and user error.

Event severity:

The following table contains the PFA Event severity levels.

Table 5. Predictive Failure Alert severity levels

Severity	Description
Warning	An indication of a failure. This can be a failure that has no impact on performance. Service action is necessary.
Error	A failure that causes a loss of performance, and can cause machines to be inoperable. Immediate service action is necessary.

Action:

The Virtual Machine Migration action evacuates all of the VMs from the server and put the server in maintenance mode.

After setting event categories and corresponding action, click **Apply** to apply the policy to the host.

Note: New created policy will be saved as a template automatically, so that for any other hosts, you can simply choose a template from the top template dropdown list to apply the same policy.

Editing a policy

You can modify a policy defined on a host using the Edit policy function.

About this task

This task is performed from the **IBM Upward Integration** > **Predictive Failure** > **Policy and rules page.**

Procedure

1. Select a host.
2. Click **Edit policy**.

   Note: When the policy is modified, and the policy is also used by other hosts, a warning message is displayed allowing you to select whether to apply the changes to other hosts or save the changed policy with a different policy name.

Disabling a policy

You can remove a policy from one or more hosts using the Disable policy function.

About this task

This task is performed from the **IBM Upward Integration** > **Predictive Failure** > **Policy and rules page.**

Procedure

1. Select one or more hosts.
2. Click **Disable policy**.
3. Click **Disable** to confirm the deletion of the policy from the hosts.

Viewing Predictive Failure Alert events and the Action History table

IBM Upward Integration for VMware vSphere with vSphere Client monitors Predictive Failure Alerts (PFAs) from IMM. All Predictive Failure events are listed in the Event Log table. When the conditions of a rule are met, the defined action of the rule is launched on the managed endpoint. All of the triggered rules and action results are listed in the Action History table

About this task

This task is performed on the Predictive Failure page.

Procedure

Select **IBM Integration** > **Predictive Failure**.

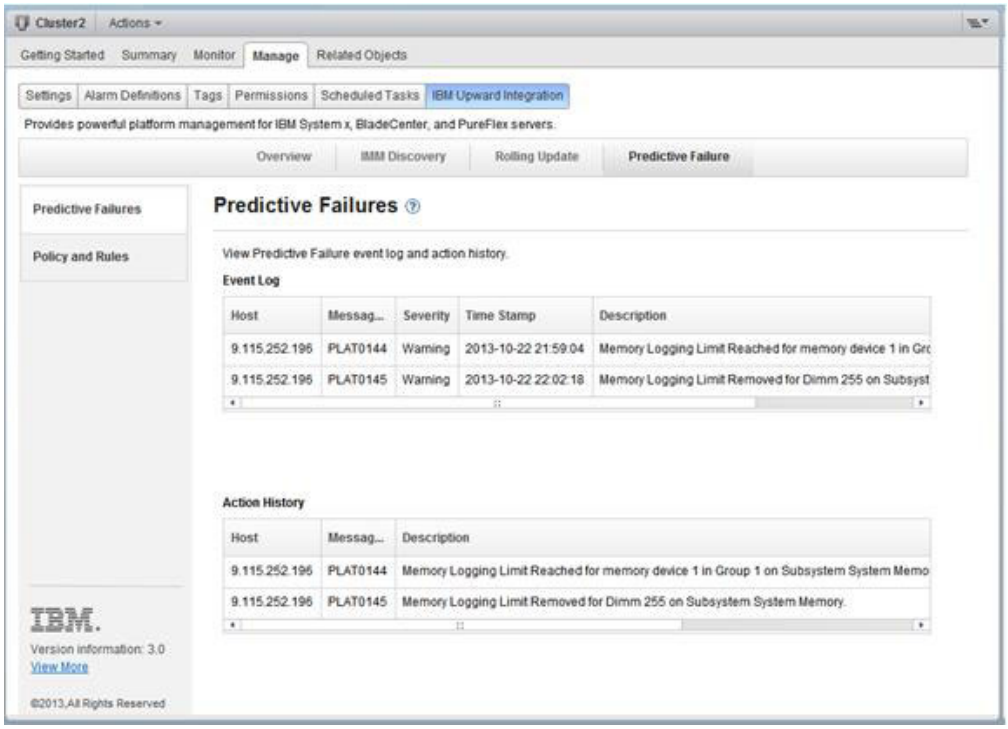

Figure 8. Viewing Predictive Failures

Managing servers

When a host is selected in the inventory tree, the IBM Upward Integration tab displays under the Manage tab providing the following management for a single IBM server:

- System Analysis
- Alerts and Events
- Firmware updates
- Power and cooling
- Advanced system settings

You can navigate to each of these functions from the navigation bar located above the tab.

Working with the System Analysis

The System function collects and analyzes system inventory information and health status to aid in diagnosing system problems.

System collects information about the following aspects of a system:

- Basic system information
- System event logs
- Installed applications and hot fixes
- Network interfaces and settings
- Hardware inventory
- Vital product data and firmware information

System provides an organized view that you can use to perform the following functions:

- View the system information
- Launch system diagnostic collection
- View the categorized system inventory results

Viewing System Overview

The System Overview page provides you with a snapshot view of the current system. You can view basic system information such as the machine type, operating system, version, IMM firmware version, and uEFI firmware version. You can also view the system hardware event summary and system inventory collection history.

Figure 9. System Overview page

Launching the system diagnostic collection

This topic describes how to the launch system diagnostic collection function to get the latest system inventory information.

Procedure

Click **Collect** located in the bottom section of the System Overview page to launch a full analysis of the system. This operation can take up to five minutes to complete.

Note: During the collecting process, the Installed Applications page, Network Settings page, Hardware Inventory page, and Firmware/VPD page are blocked. To avoid possibly disrupting the process, do not navigate to any other host.
When the collection process finishes, the last collection time is displayed on the System Overview page. The hyperlink **Download log** is displayed after the collection time. Click this link to download the latest system diagnostic data. The latest system diagnostic data can be viewed from each of the categorized pages.

Viewing categorized analysis results for the vSphere Web Client

After you launch a full system diagnostic collection, you can view the following analysis categories: Installed Applications, Network Settings, Hardware Inventory, and Firmware/VPD. Each page contains detailed information for each category.

On the left-side of the System Overview page, click to select and view each of the analysis category pages.

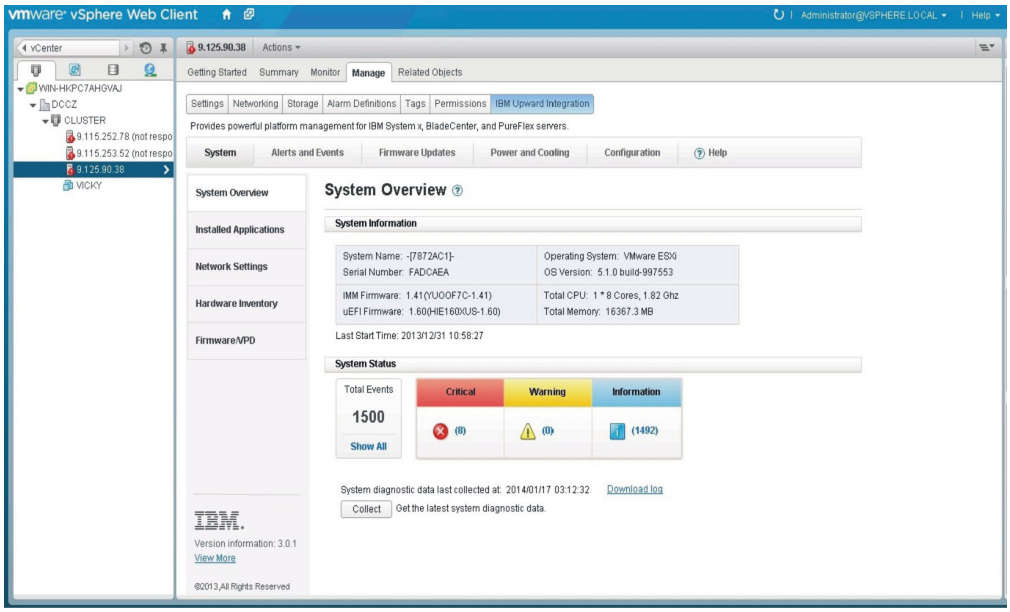

Figure 10. Viewing categorized analysis results

Results are displayed in tables with the applicable analysis category title.

Working with Alerts and Events

The Events and Alerts function collects System Health information and displays hardware events and power throttling alerts.

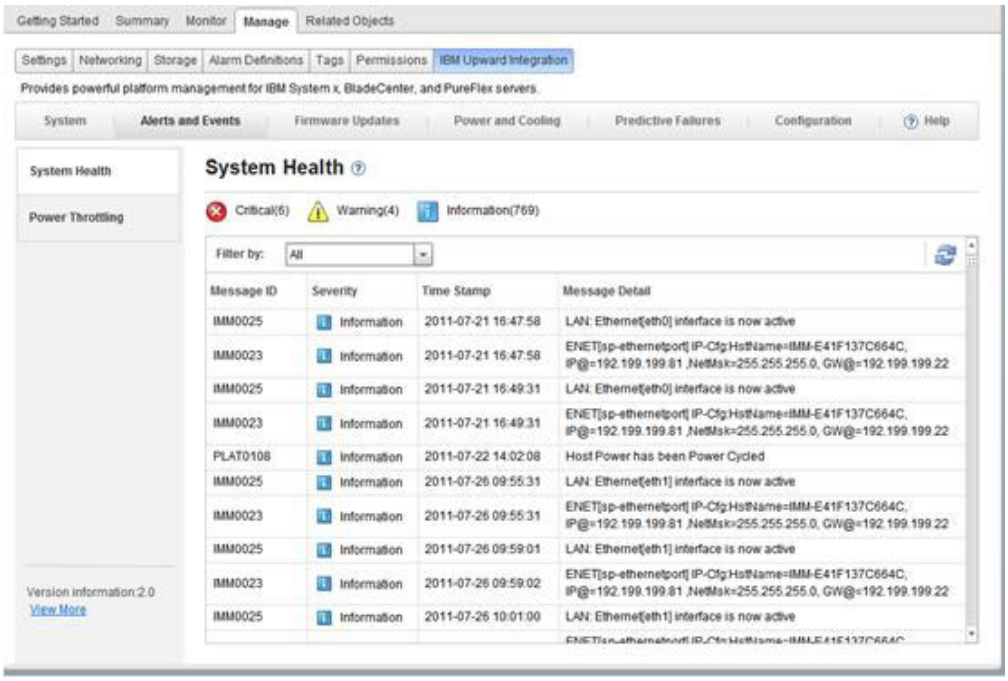

Figure 11. Viewing Alerts and Events

The System Health table contains events and alerts that can be sorted by clicking the table columns. It can also be filtered by choosing the severity from the **Filter by** menu. To collect the latest alerts and events from the host, click **Refresh**.

Working with Firmware Updates

The Firmware Updates function applies Recommended Updates (UXSP) and Individual Updates to your ESXi system. You can use this function to obtain and deploy UpdateXpress System Packs (UXSP) firmware updates and individual firmware updates.

The main functions of the Firmware Updates function include:

Acquire Updates

The Acquire Updates function downloads the UpdateXpress System Pack and individual updates for supported server types from a remote location such as IBM support.

Compare and Update

Inventories the system on which the update is being performed.

Queries the update directory for a list of applicable update packages.

Compares the inventory to the applicable update list.

Recommends a set of updates to apply.

Deploys the updates to the system

Prerequisites for updating firmware

This topic provides information for completing the necessary prerequisites for updating firmware.

Before you begin

Complete the following prerequisite steps before updating the firmware.

1. Enable **Commands** on the USB interface in uEFI by changing the uEFI settings.
2. Reboot the host.

Selecting update preferences

The Firmware Updates function can update a remote ESXi host by using either Recommended (UXSP) or Individual updates acquired from the IBM website or a specific location. On the Updates Preferences page, you can select the method for acquiring the updates package .

Procedure

1. Select **Firmware Updates** on the Manage IBM Upward Integration page. The Updates Preferences page is displayed.

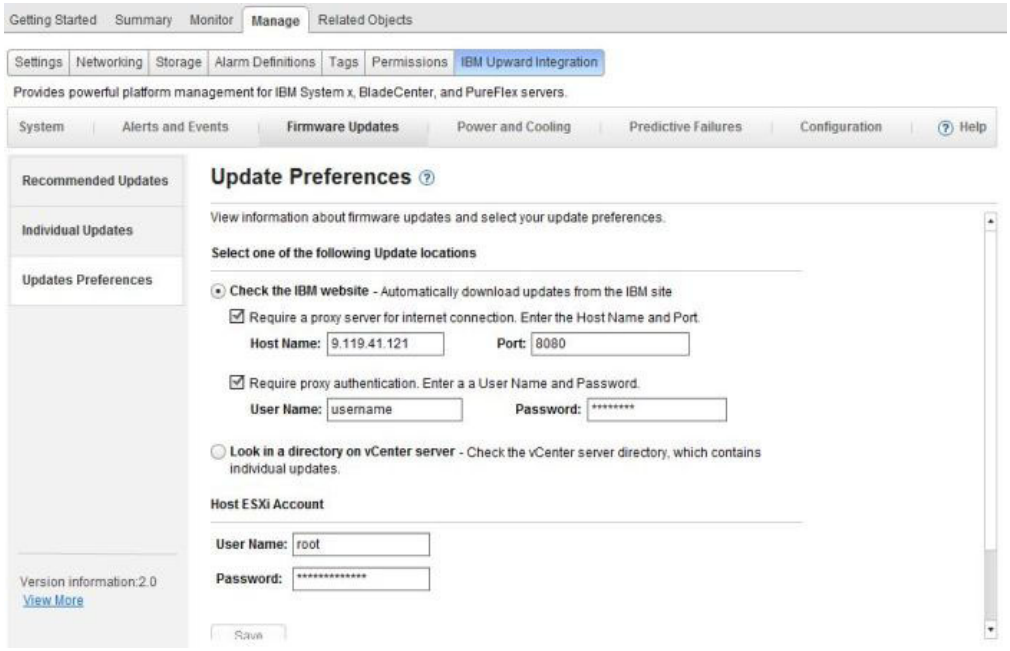

Figure 12. Update Preferences page

2. On the Update Preferences page, click to select one of the following update options.

   Check the IBM website:
   Download the appropriate updates automatically from the IBM site.

   Look in a directory on vCenter server:
   Access a directory on the vCenter server file system containing specific individual updates.

   If the vCenter server cannot access the website directly, then you can enter the proxy server and port.

   When you select the **Look in a directory on vCenter server** option, the firmware updates acquire updates from a specified directory on vCenter server: `Installation folder\IVP\bin\data\uxspi\repository\`. However, you are not allowed to change the directory and put updates under this directory.

   Note: When you select the IBM website option to update firmware, the updates package is saved in the `Installation folder\IVP\bin\data\uxspi\repository\` directory on the vCenter server after download. Select the location method to update the other host servers that have the same machine type. Before updating the host firmware, you need input the root account of the host for updates.

Firmware update scenarios

The topics in this section describe two scenarios for firmware updates: Recommended Updates (UXSP) and Individual Updates.

An UpdateXpress System Pack (UXSP) is an integration-tested bundle of online firmware and driver updates for IBM System x® and IBM BladeCenter® servers. UpdateXpress System Packs simplify the downloading and installation of all online driver and firmware updates for a given system, ensuring that you are always working with a complete, current set of updates that have been tested together and bundled by IBM.

Recommended Updates (UXSP):

If you select **Check the IBM website** on the Update Preferences page, the Recommended Updates option downloads and installs firmware and driver updates from the latest UXSP for IBM System x and IBM BladeCenter servers. If you select **Look in a directory on vCenter server**, Recommended Updates will install firmware and driver updates from a local vCenter directory.

Procedure

1. Verify that either the vCenter Server has internet access to connect with the IBM website, or that the UXSP in the specified vCenter server directory is applicable for the target machine type.

2. Click **Start Update Wizard** on the Recommended Updates page. The Recommended Updates Wizard opens and displays the Check Compliance dialog box.

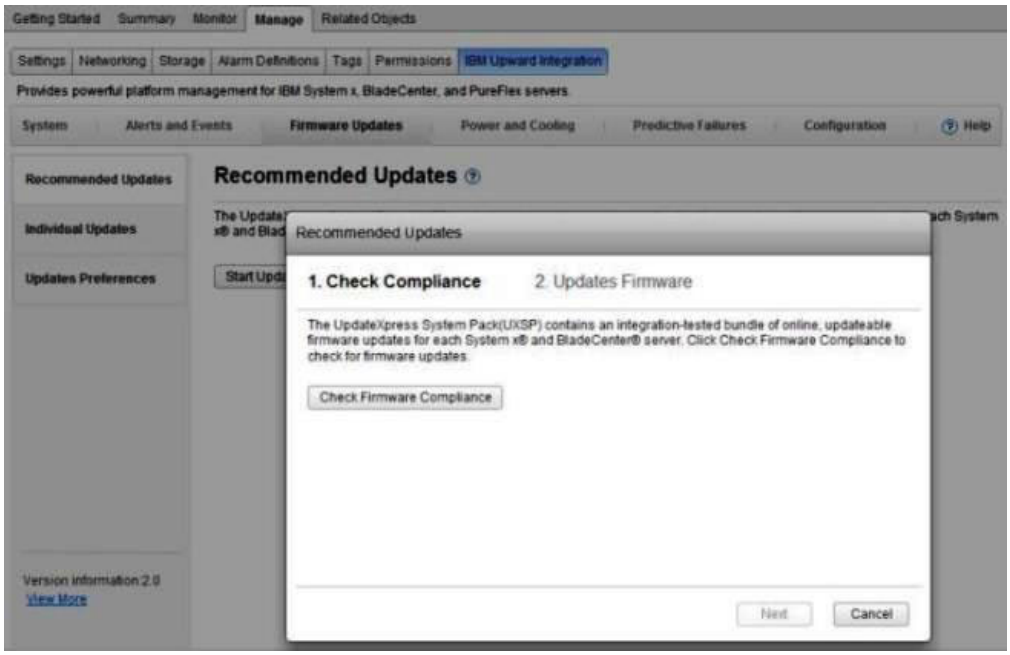

Figure 13. Recommended Updates Wizard - Check Compliance dialog box

3. Click **Check Compliance**. If you do not have this type of account for the target host or if the account is wrong, a dialog box opens and prompts you for the host account information.
4. When the Check Compliance action has completed, make any necessary changes, and click **Next**.

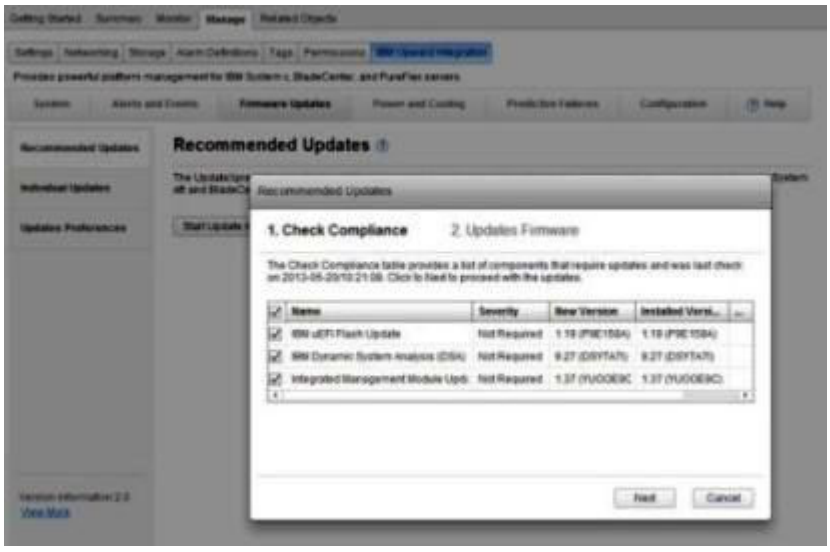

Figure 14. Check Compliance complete

After all the selected downloads are complete, the selected updates will update the target host.

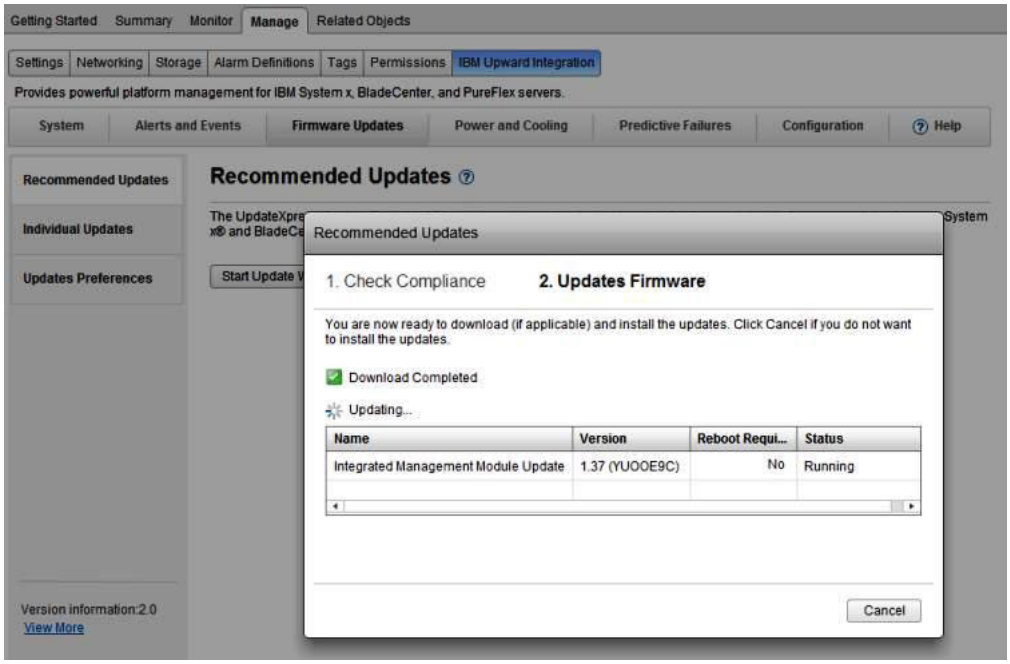

Figure 15. Recommended Updates wizard - updating firmware

5. After all of the updates have been applied, click **Close** to exit the wizard.

Individual Updates:

If you selected **Check the IBM website** on the Update Preferences page, the Individual Updates option will download and install the firmware and driver updates from the IBM website for IBM System x and IBM BladeCenter servers. In the location mode, Individual Updates will install firmware and drive updates from the latest UXSP of location for IBM System x and IBM BladeCenter servers.

About this task

To update a remote server by using the Individual Updates option, perform the following steps.

Procedure

1. Verify that the vCenter Server has internet access to connect with the IBM website, or make sure the directory of vCenter Server has an UXSP which can apply to the target machine type when you selected location mode in Update Preferences.
2. Click **Start Update Wizard** on the Individual Updates page. The Individual Updates Wizard opens.

3. Click **Check Firmware Compliance**. If you do not have this type of account for the target host or if the account is wrong, a dialog box opens and prompts you for the host account information.
4. When the Check Compliance action has completed, make any necessary changes, and click **Next**.

   After all the selected downloads are complete, the selected updates will be applied to the target host.
5. After all of the updates have been applied, click **Close** to exit the wizard.

Working with Power and Cooling on the vSphere Web Client

The topics in this section describe Power® Metric options and provide you with the ability to manage power usage through power capping and power throttling.

Power Metric page

The Power Metric page has options for viewing the Power Usage History, Thermal History, and Fan Summary. If the host is being monitored, the current power usage, thermal history, fan history, and the time of the monitor reading are displayed. This information is automatically refreshed every five minutes. This information is helpful for determining whether to reassign the workload.

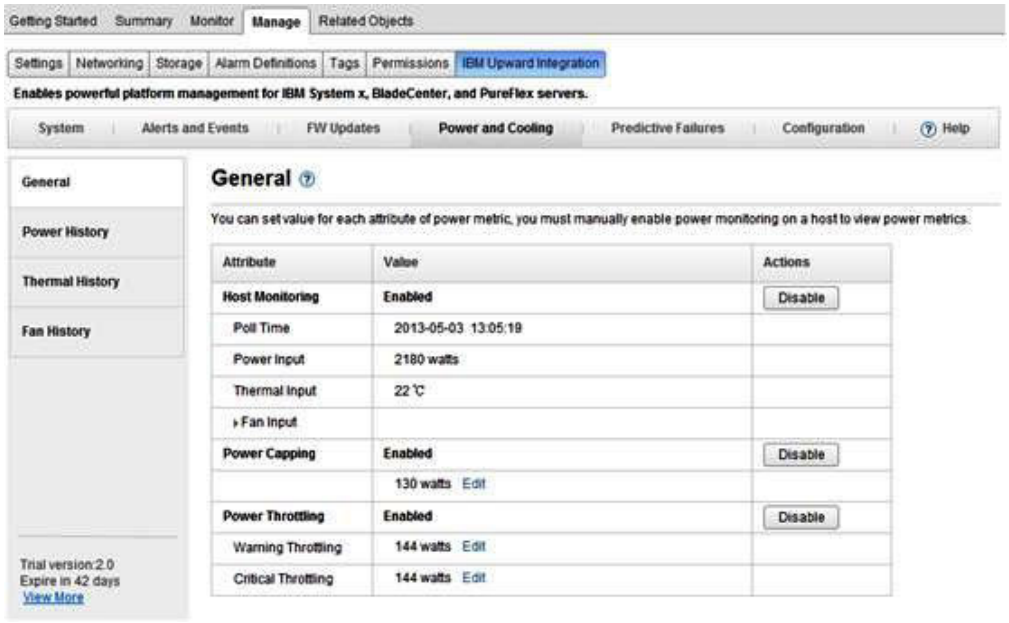

Figure 16. Power Metric page

Enabling and disabling power monitoring

This topic provides a description of how to enable and disable power monitoring.

Procedure

1. Click the **Power and Cooling** tab.
2. Select one of the following options:
   - Click **Enable** to enable Power Monitor on a host.

     Note: The **Enable** button is visible when Power Metric is not enabled on a host.
   - Click **Disable** to disable the monitoring.
3. In the credentials dialog box, enter the credentials for the host, and click **OK**. The host credentials are saved in a database, and the monitoring of power usage begins.

Setting Power Capping

Through the Power Capping feature, you can allocate less power and cooling to a system if the firmware supports capping and it is enabled. This feature can help lower datacenter infrastructure costs and potentially allow more servers to be put into an existing infrastructure. By setting a power capping value, you can ensure that system power consumption stays at or below the value defined by the setting. The power cap value is the value you set for a rack or blade server that will be capped by the firmware. The power cap value is persistent across power cycles for both rack and blade servers.

If the server supports power capping, UIM retrieves the minimum and maximum power capping values from the server and shows it as a range. In the following screen capture, 78 is the minimum value, and 144 is the maximum value.

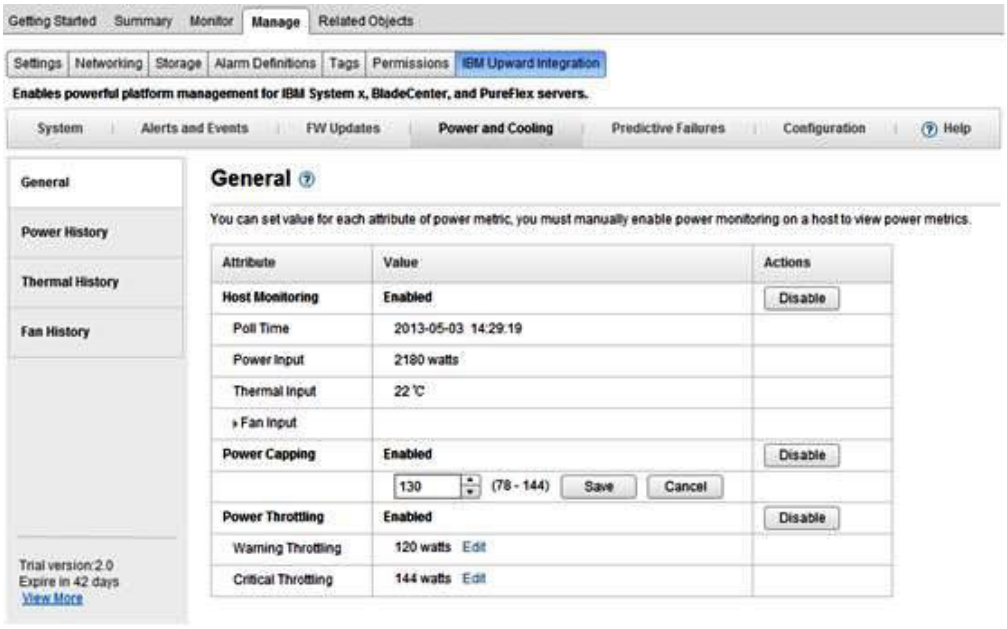

Figure 17. Setting Power Capping on the vSphere Web Client

Setting Power Throttling

Through the Power Throttling feature, you can receive alerts when power consumption exceeds a value you have set. You can set two power throttling values: one for a warning and one for a critical alert. When the power consumption exceeds a defined power throttling value, IVP receives a throttling event, which is then displayed in the Power Throttling Indications table.

Click Enable to enable Power Throttling feature before attempting to set a value. The value you specify is for Watts.

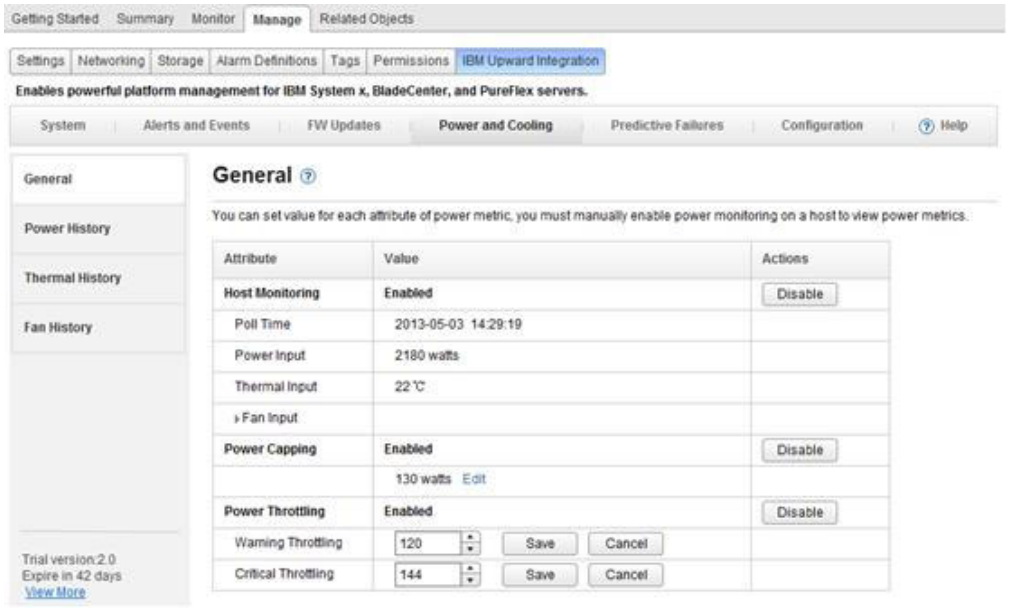

Figure 18. Setting Power Throttling on vSphere Web Client

Viewing Power Usage History, Thermal Usage History, and Fan Usage History on the vSphere Web Client

The Power History, Thermal History, and Fan History charts are displayed on the right pane of the page. You can customize the duration and intervals for each of these charts.

Procedure

1. Click the **Power and Cooling** tab. For each of the history charts, you can:
   - Use the mouse wheel to zoom in and out of the charts, and use the drag and drop feature to move charts.
   - Click **Set Duration** to change the collection of history data to a different time interval.

2. Select one of the following options from the left pane.

General

On this page, you can set the value of each power metric attribute after enabling power monitoring on a host.

Power History

The Power Usage History chart provides power consumption readings for a 24-hour period.

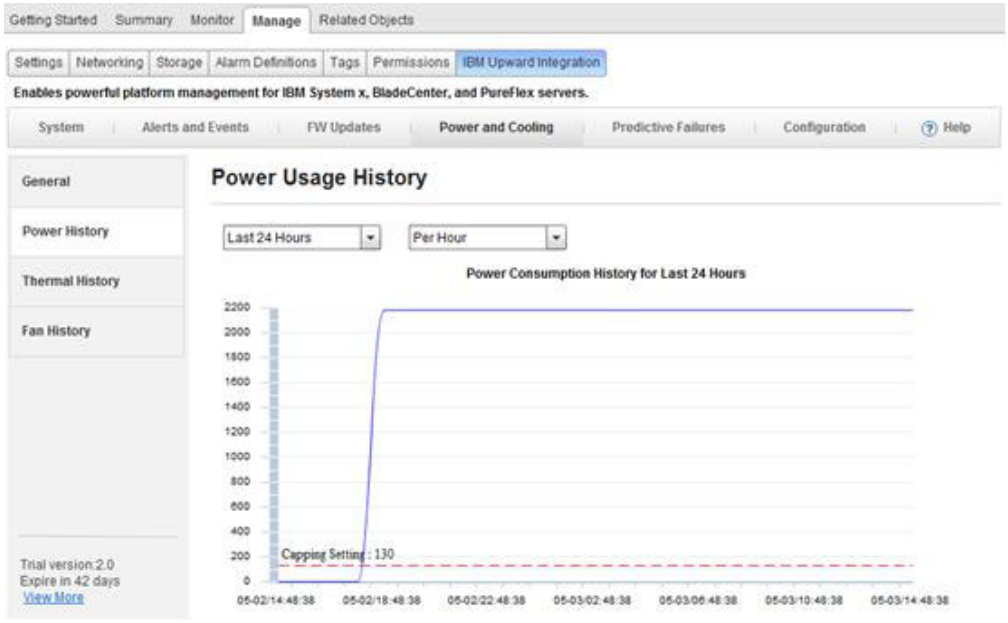

Figure 19. Power Usage History for vSphere Web Client

Thermal History

The Thermal Usage History chart provides temperature readings for a 24-hour period.

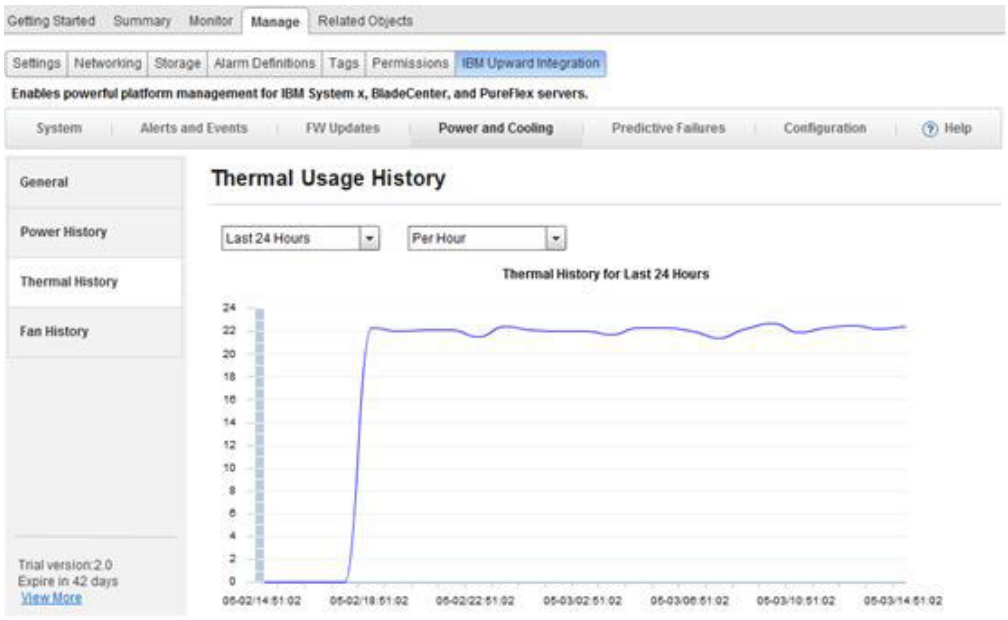

Figure 20. Thermal Usage History for vSphere Web Client

Fan History

The Fan Usage History chart provides fan usage readings for a 24-hour period.

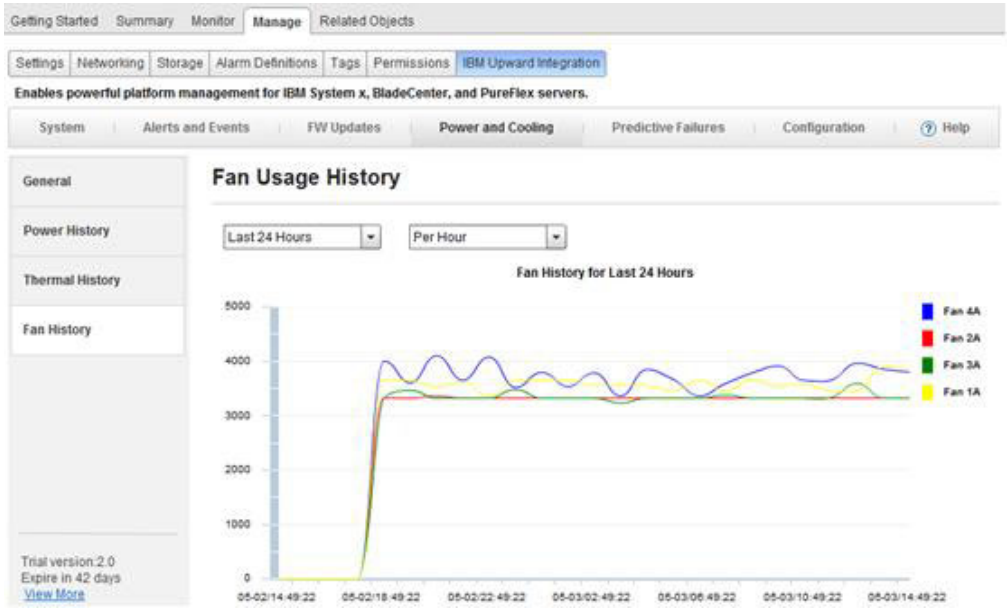

Figure 21. Fan Usage History for vSphere Web Client

Working with Configuration

The configuration page manages the system settings on the host. This includes settings for IMM, uEFI, and the boot order of the host.

Viewing Advanced System Settings

Configuration settings are listed in the left pane. The last update date and time is displayed to the right of **Refresh** button.

About this task

The following steps illustrate how to view two advanced system settings: IMM Port Assignments and Boot Order.

Procedure

1. Select **IMM Port Assignments**.
2. Click **Refresh** to get the latest advanced system settings values for IMM Port Assignments.

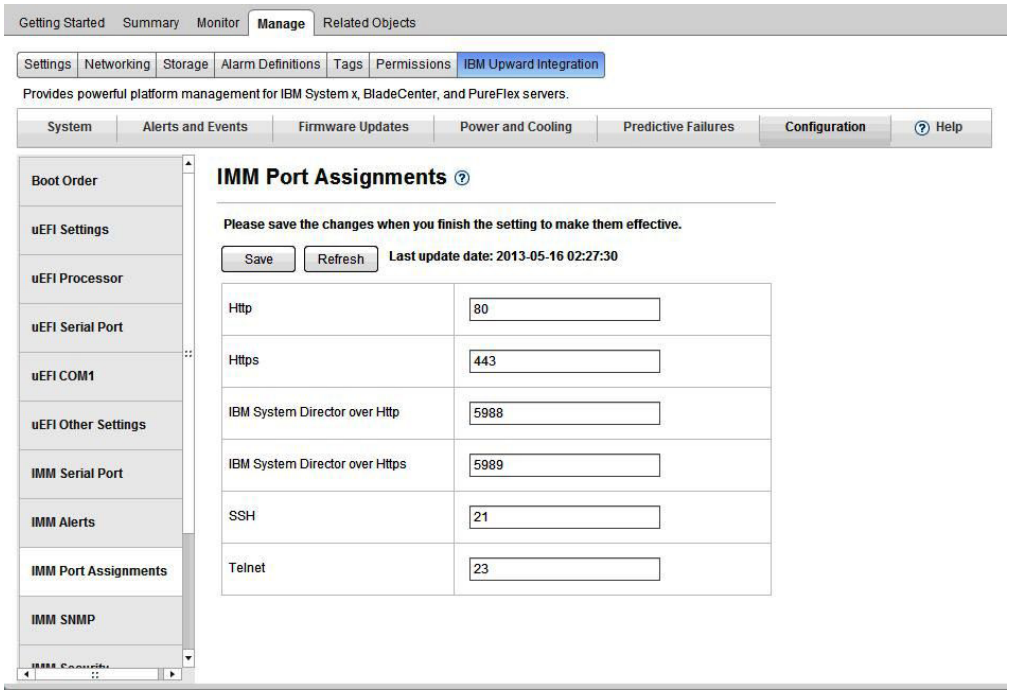

Figure 22. Viewing IMM Port Assignments

Some settings, such as uEFI settings, are only supported on a certain machine type or firmware version. If your host does not support a setting, it is disabled to indicate that it is not supported on your host.

3. Select **Boot Order**.

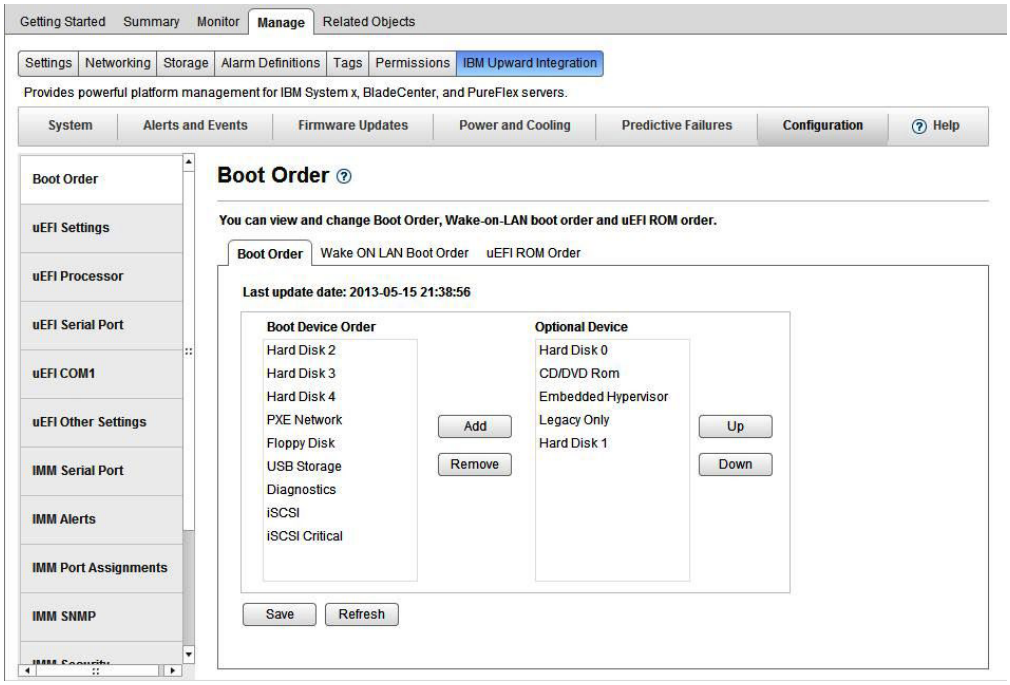

Figure 23. Viewing Boot Order

Changing Advanced System Settings

This topic describes how to change advanced system settings on the host.

Procedure

1. To change an advanced system setting, enter the new value, and click **Save**. The change is executed on the endpoint.
   - If the change is successfully executed, the following symbol is displayed.

Figure 24. Setting change success symbol

   - If the change is not successfully executed, the following symbol is displayed.

Figure 25. Setting change not success symbol

     To view detailed information about why the setting change failed, place the cursor over the symbol.

2. Click **IMM Alerts** to view the Alerts section of IMM Settings.

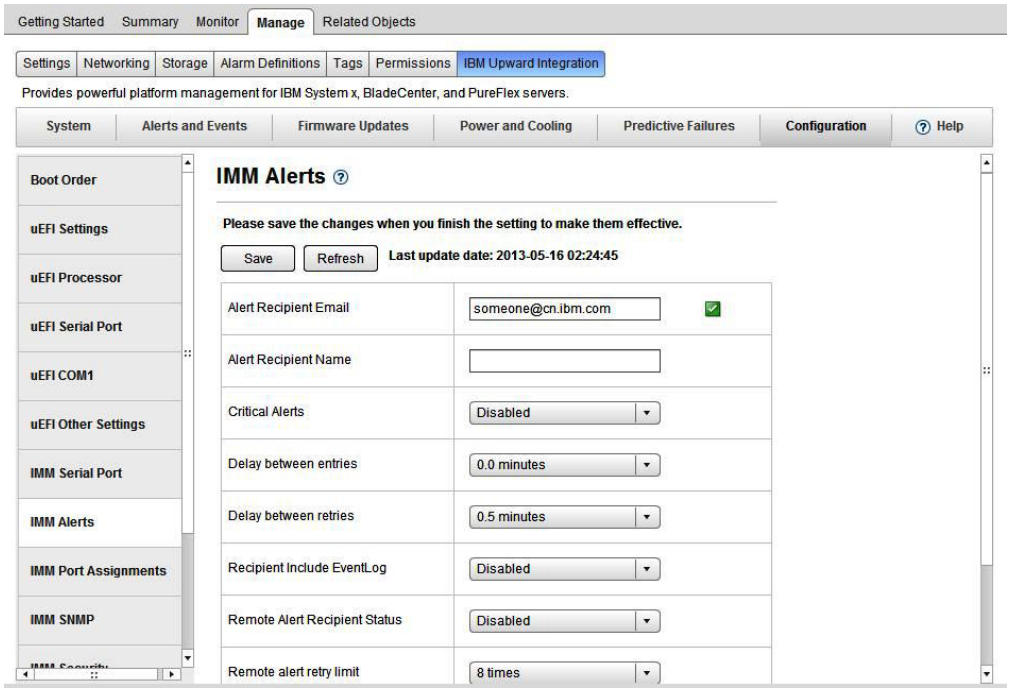

Figure 26. Viewing IMM Alerts

Example

The following list provides an example for some of the different types of settings and how to change these settings. The manner in which each setting is changed varies.

text string:
Before you enter any information, a prompt showing the requirements is displayed. If the information you entered does not match the requirements, place the cursor over the text string to view the description.

selection type:
Select the value from the drop-down menu.

boot order:
The left column displays the current boot order, and the right column displays the optional device. To change the order, you can move a boot order option up or down and between the two columns, by clicking the corresponding button.

Managing hardware events

The topics in this section describe IBM hardware events and alarms that are integrated into vCenter.

Prerequisites

This topic provides information about prerequisites for managing hardware events.

Before you begin

Complete the following prerequisite steps before updating the firmware.

Procedure

1. vCenter server has Out-Of-Band network connection with IMM of managed esxi servers, you can find the IMMs and request the IMMs access on cluster overview page.
2. Enable TCP on the https port that you selected for IBM Upward Integration for VMware VSphere. The default is 9500 when you install IVP. IBM Upward Integration for VMware VSphere listens on this port for incoming indications.

Events

IBM Upward Integration for VMware vSphere loads events from IMM nodes Out of Band into vCenter Server, enabling administrators to view and manage them from the vSphere Web Client. This provides administrators with a single, heterogeneous view of all host system events within the managed environment. To view IBM hardware events, navigate to the Events tab in the vSphere Web Client.

Alarms

When an IBM event is delivered to vCenter Server, the overall host status changes based on the corresponding event severity. An alarm is triggered when the changes to the host status meet the criteria assigned by the administrator.

When an alarm occurs, an icon appears to the right of the vSphere Client window along the bar above the vSphere Client tabs or on the host icon in the inventory tree.

Click the alarms icon to view alarms contained in the **Alarms** tab. The Alarms tab displays a list of all alarms.

Chapter 4. Using IBM Upward Integration for VMware vSphere with vSphere Client

The topics in this section describe how to use IBM Upward Integration for VMware vSphere with vSphere Client.

IBM Upward Integration for VMware vSphere with vSphere Client provides the following functions:

- Dashboard
- Dynamic System Analysis
- Firmware updates
- Power Metric
- Advanced System Settings

You can navigate to each of these functions from the navigation pane on the left side.

Working with the Dashboard

The Dashboard displays an overview of the host status.

It provides summaries of:

- System Information
- System Health
- Power Throttling
- Predictive Failure Alerts

System Information Summary

System Information Summary contains information about the managed host.

The System Information Summary provides the following information:

- Manufacturer
- Model
- Serial number
- Operating system
- Operating system version
- Last boot

The System Health, Power Throttling, and Predictive Failure Alert Summaries

These summaries contain an overview of the system running status (health messages from the host), the power throttling status, and PFA status.

All the messages are grouped into three categories by severity.

- *Critical events* are events that can or already have caused a host failure that requires your immediate attention.
- *Attention events* are events that indicate that there is something abnormal on the host but the abnormality will not cause immediate failure of the host.
- *Information Events* are events that indicate that something happened on the host that will not inhibit the host running.

Each of the Summary categories is grouped in an accordion box. The title indicates how many events are in the category. Because the events are effective for a limited period, a maximum of 20 events are shown in each category; however, you can check all power throttling events on the Power Metric page and all PFA indication events on the Predictive Failure Management page.

If you click on the title, the box extends and lists the following information:

- Message
- Event time
- MessageID

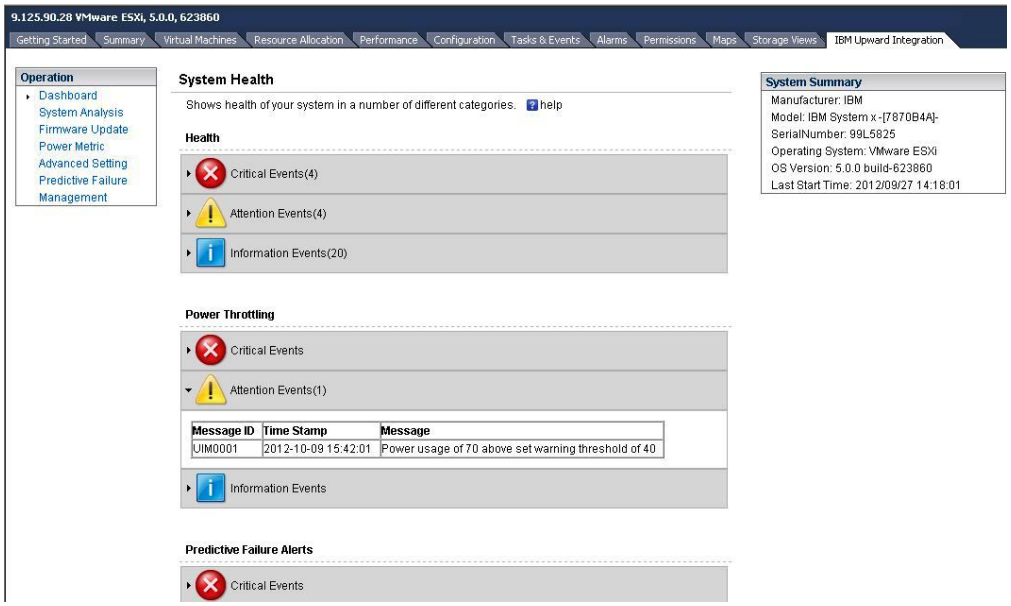

Figure 27. System Health Summary Dashboard view

Working with Dynamic System Analysis

Dynamic System Analysis collects and analyzes system information to aid in diagnosing system problems.

Dynamic System Analysis collects information about the following aspects of a system:

- System configuration
- Installed applications and hot fixes
- Device drivers and system services
- Network interfaces and settings
- Performance data and running process details
- Hardware inventory, including PCI information
- Vital product data and firmware information
- SCSI device sense data
- ServeRAID configuration
- Application, system, security, ServeRAID, and service processor system event logs

The plug-in provides functions inherited from the standalone Dynamic System Analysis and provides an organized view that you can use to do the following functions:

- Launch system inventory collection
- View and manage system inventory history
- View the categorized system inventory results

Working with Firmware Updates

The firmware update function applies the latest UpdateXpress System Packs and individual updates to your ESXi system. The UpdateXpress System Packs contain updates for Windows and Linux firmware.

Use this function to obtain and deploy UpdateXpress System Packs firmware updates and individual firmware updates.

The main functions of Firmware Updates are:

- *Acquire Updates*

  The Acquire Updates function downloads the UpdateXpress System Pack and individual updates for supported server types from a remote location such as IBM support.
- *Compare and Update*

  Compare and Update performs the following functions:
  - Inventories the system on which the update is being performed
  - Queries the update directory for a list of applicable update packages
  - Compares the inventory to the applicable update list
  - Recommends a set of updates to apply
  - Deploys the updates to the system

Prerequisites

This topic provides information for completing the necessary prerequisites for updating firmware.

Before you begin

Complete the following prerequisite steps before updating the firmware.

Procedure

1. Enable **Commands** on the USB interface in uEFI by changing the uEFI settings.
2. Reboot the host.

Firmware update scenarios

The topics in this section describe two scenarios for firmware updates: updating a remote server from the IBM website and updating a remote server from a local directory.

Updating a remote server from the IBM website

The firmware update function can update a remote ESXi host with either UXSPs or individual updates that are acquired from the IBM website.

About this task

Perform the following steps to update a remote server from the IBM website.

Procedure

1. Click **Update Link** in the navigation pane on the left.
2. On the Updates page, select **IBM website**.

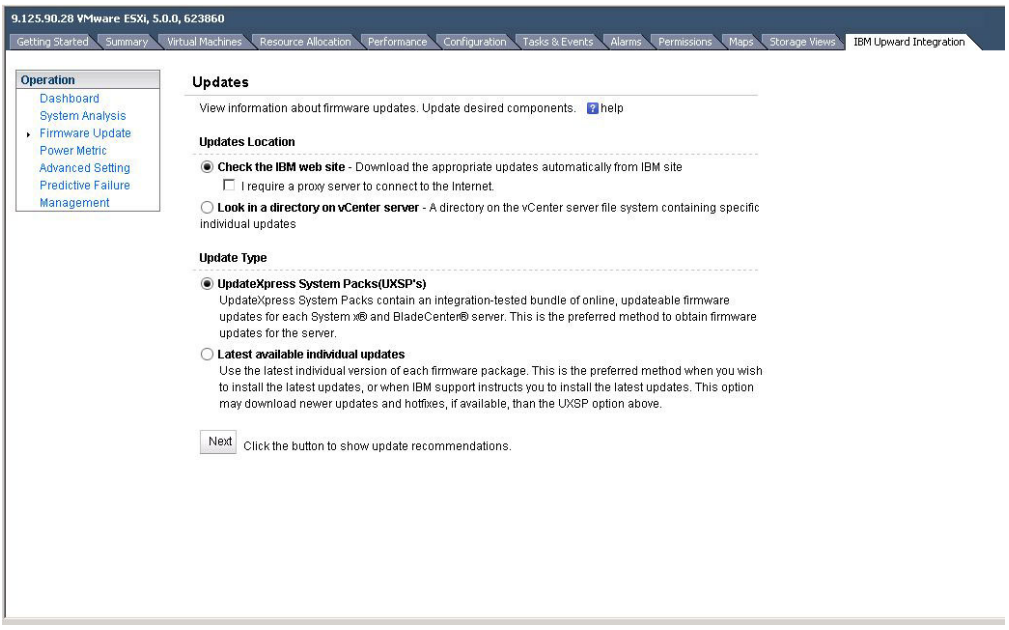

Figure 28. Updates page

3. On the HTTP Proxy Setting page, specify the proxy information if required.
4. On the Update Type page, select the type of updates you want to acquire. Possible updates are:
   - **UpdateXpress System Packs (UXSPs)** contain an integration-tested bundle of online, updatable firmware and device driver updates for each system. This is the preferred method for obtaining firmware updates for the server.
   - **Individual updates** use the latest individual version of each firmware and device driver package. This is the preferred method when you want to install the latest updates, or when IBM support instructs you to install the latest updates. This option can download newer updates and hotfixes, if available, than the UXSP option.
5. Click **Next**. The Update Recommendation page is displayed.

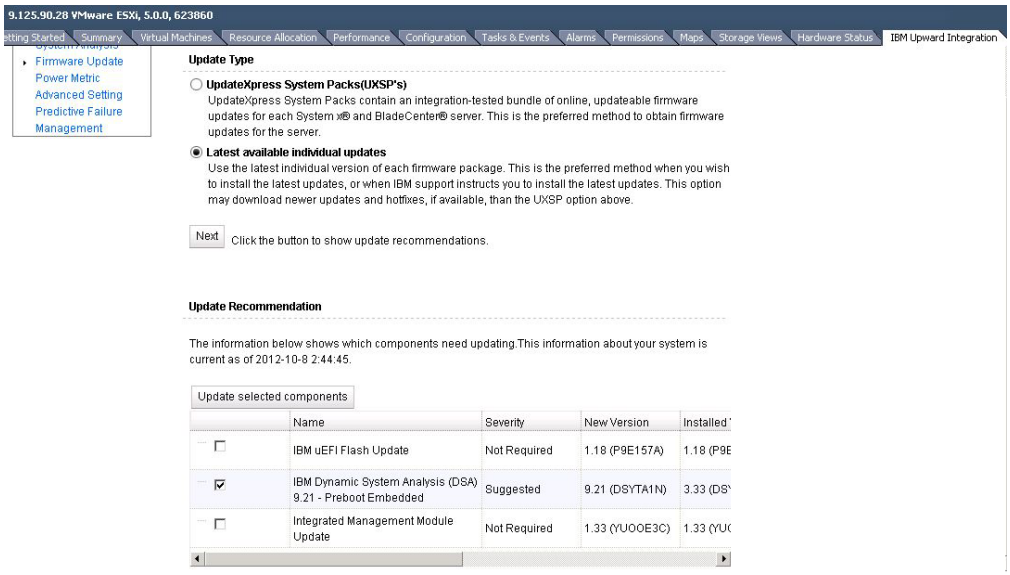

Figure 29. Update Recommendation example

6. On the Update Recommendation page, make the required changes and then click **Update**.

   The plug-in acquires the updates from IBM website. The progress bar indicates that the installer is processing, and shows the percentage of progress completed. If necessary, click **Cancel** to stop the download. Once you click **Cancel**, the **Cancel** button is replaced with the **Begin** button. Use the **Begin** button to resume the download.

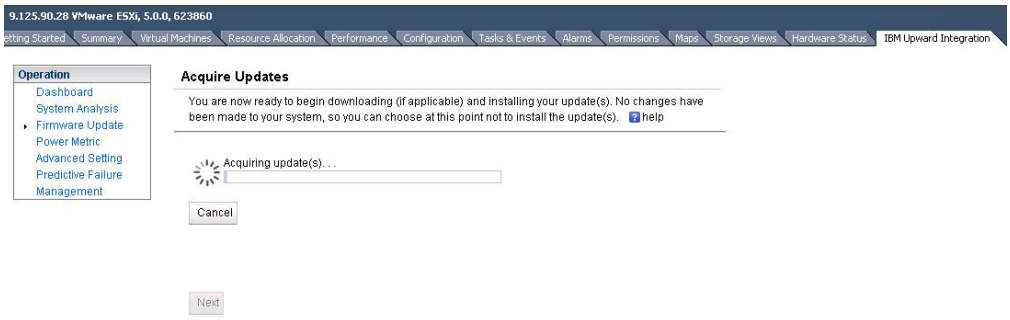

Figure 30. Acquire Updates

7. After all the selected downloads are complete, click **Next**.

   On the ESXi credentials page, enter the administrative account information of the target ESXi, and click **Next**.

Figure 31. Update Authentication page

The Update Execution page is displayed while the updates are installing to the target host. The progress bar indicates that the installer is processing, and shows the percentage of progress completed.

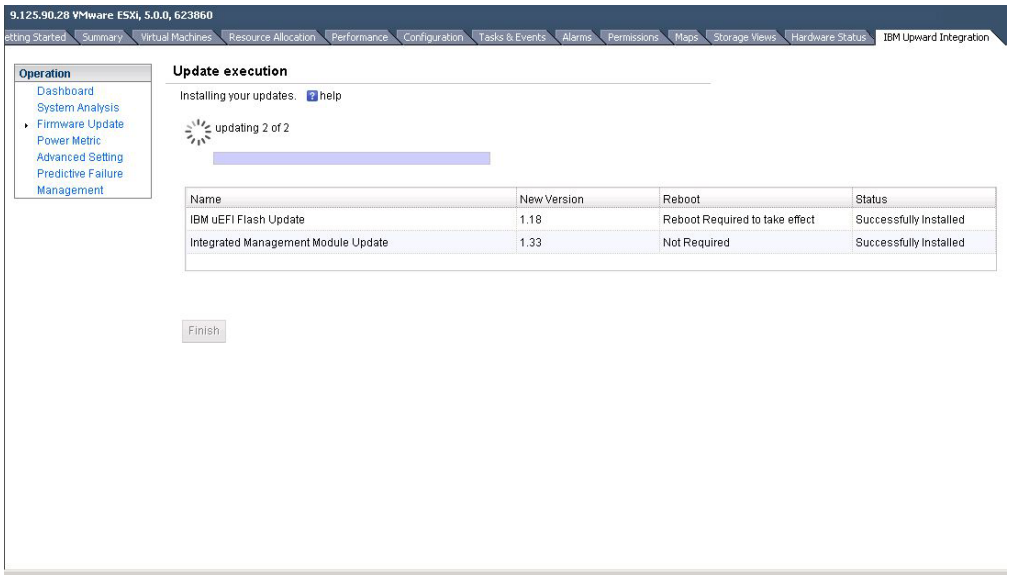

Figure 32. Update execution page

8. After the updates are applied, click **Finish** to complete the update.

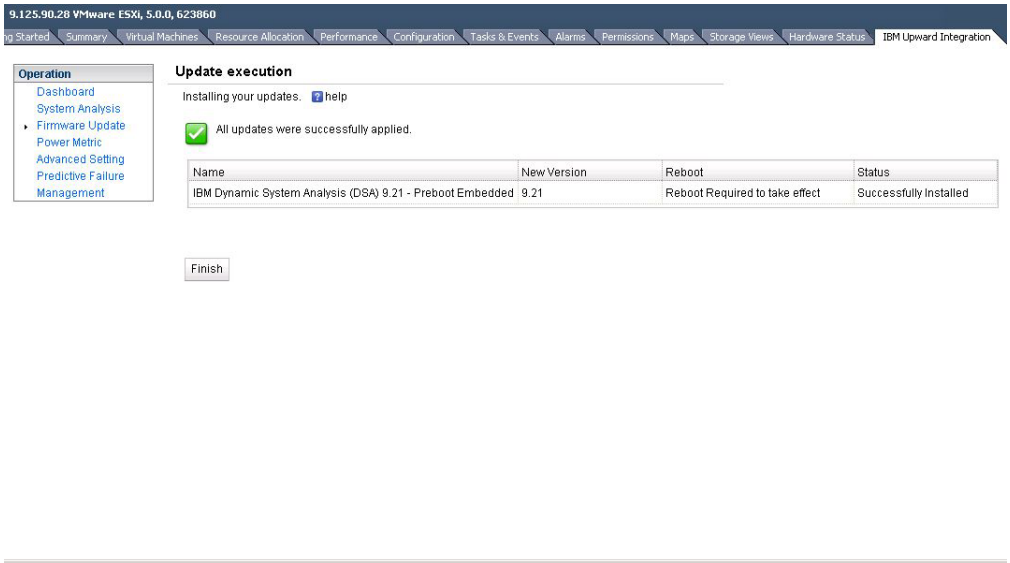

Figure 33. All updates successfully applied

Updating a remote server from a local directory

The firmware update function can update a remote ESXi host with either UXSPs or individual updates that are stored in a directory (repository) on the vCenter server.

Procedure

1. Click **Update** in the navigation pane on the left.
2. On the Updates page, select **Look in a directory on vCenter server**. A gray text box displays the absolute path of the directory. Once the plug-in is installed, it is a fixed directory. You must save all updates there manually, before the update.
3. On the Update Type page, select the type of updates you want to acquire.
4. Click **Next**. The Update Recommendation page is displayed.
5. On the Update Recommendation page, make the required changes, and then click **Update**.
6. On the ESXi credential page, enter the administrative account information of the target ESXi host, and then click **Next**.

   The Update Execution page is displayed while updates are installed on the target host. The progress bar indicates the installer is processing, and shows the percentage of progress completed.
7. After the updates are applied, click **Finish** to complete the updates.

Working with Power Metric

Power Metric shows the power usage, thermal, and fan speed values and the trend for a managed host. This information is helpful for determining whether to reassign the workload. Power capping sets the upper limit of power work. Power throttling allows you to receive warning or critical alerts when power consumption exceeds the values you set.

Enabling and disabling Power Metric

To use the Power Metric features, enable Power Metric on a host.

The **Enable** button is visible when Power Metric is not enabled on a host. When you click **Enable**, a dialog box requiring credentials for the host is displayed. After you enter the correct credentials for the host, the monitoring of power usage begins.

You can disable the monitoring by clicking **Disable**.

Enable **Commands** on the USB Interface in uEFI by changing the uEFI settings before booting the OS.

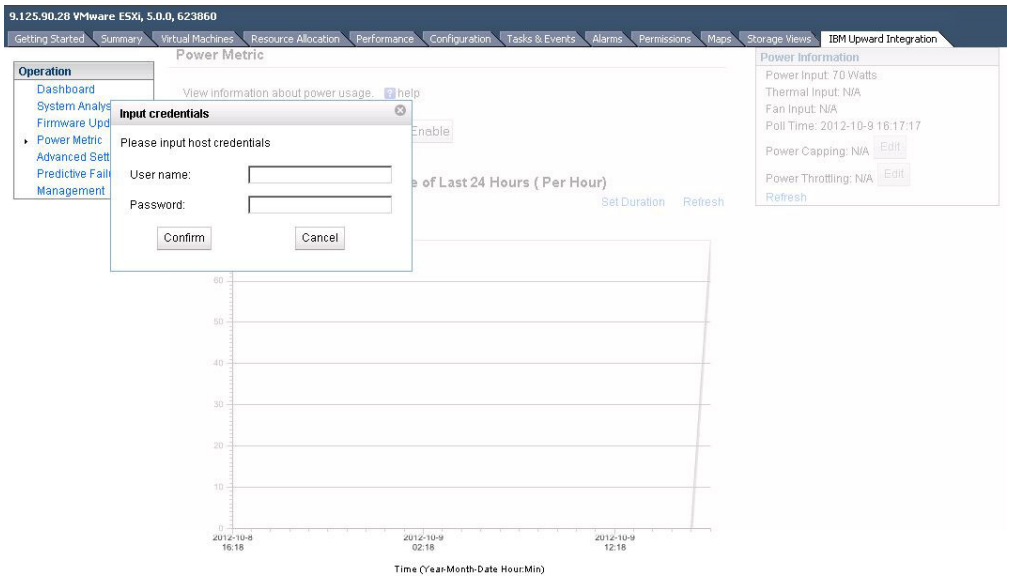

Figure 34. Enabling Power Metric

Viewing the power usage, thermal history, and fan summary

The power usage, thermal history, and fan summaries are displayed on the right pane of the page. If the host is being monitored, the current power usage, thermal history, fan summary, and the time of the monitor reading are shown. Click **Refresh** to see the latest reading for the power usage, thermal history, and fan summary.

Viewing the Power Usage, Thermal History, and Fan Summary charts

The default Power Usage, Thermal History, and Fan Summary charts provide power usage information for the past 24 hours in 1-hour intervals.

You can customize the duration and intervals of the Power Usage chart. Click **Set Duration** to view the power usage history data for a different period. Select the required duration and interval.

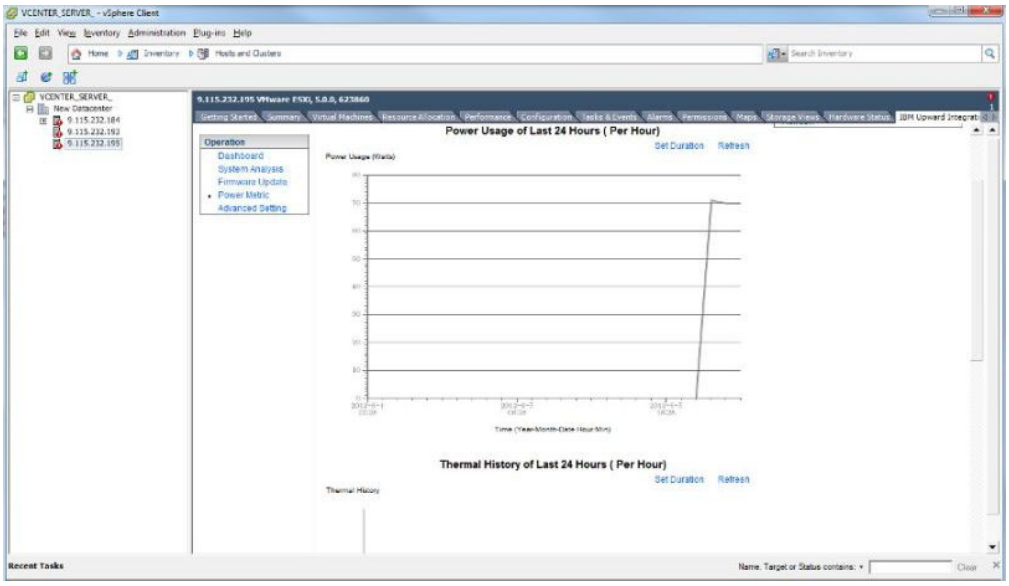

Figure 35. Power Usage Chart

The following figure provides an example of the Thermal History Chart.

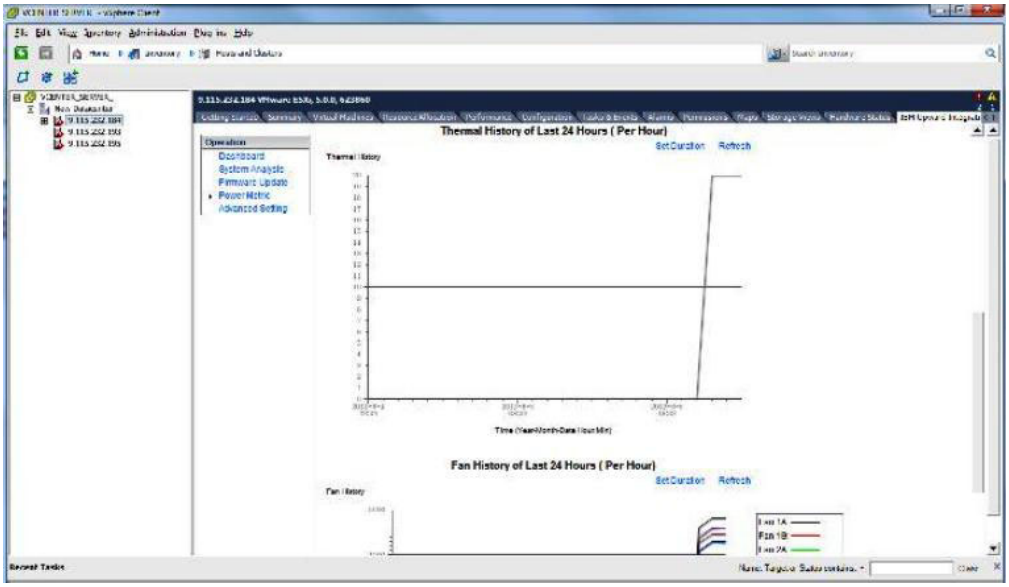

Figure 36. Thermal History Chart

The following figure provides an example of the Fan Chart.

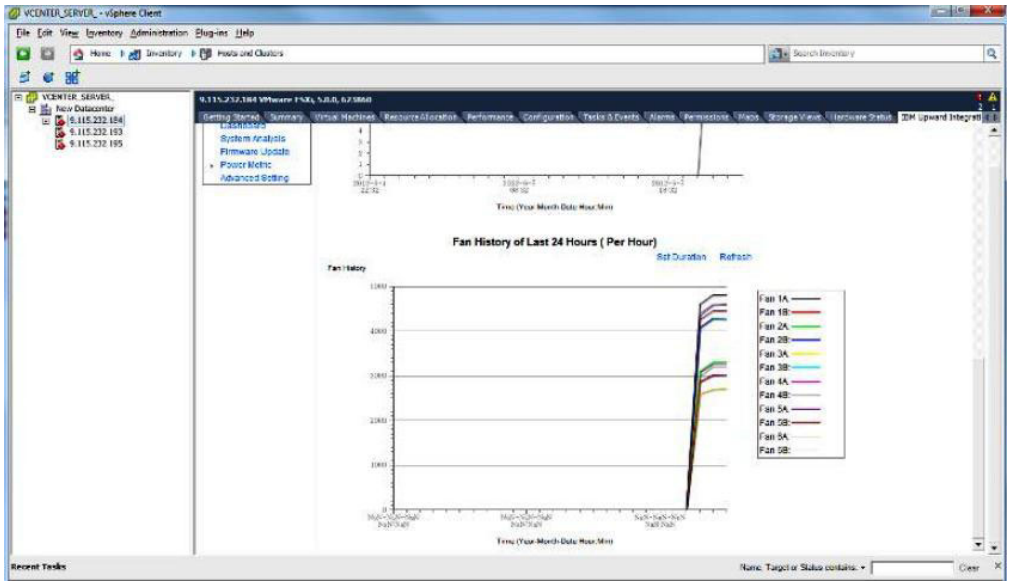

Figure 37. Fan Chart

Setting Power Capping

The Power Capping feature allows you to allocate less power and cooling to a system. This feature can help lower datacenter infrastructure costs and potentially allow more servers to be put into an existing infrastructure. By setting a power capping value, you can ensure that system power consumption stays at or below the value defined by the setting. The power capping value is the value you set for a rack or blade server that will be capped by the firmware, if the firmware supports capping. The power capping value is persistent across power cycles for both rack and blade servers.

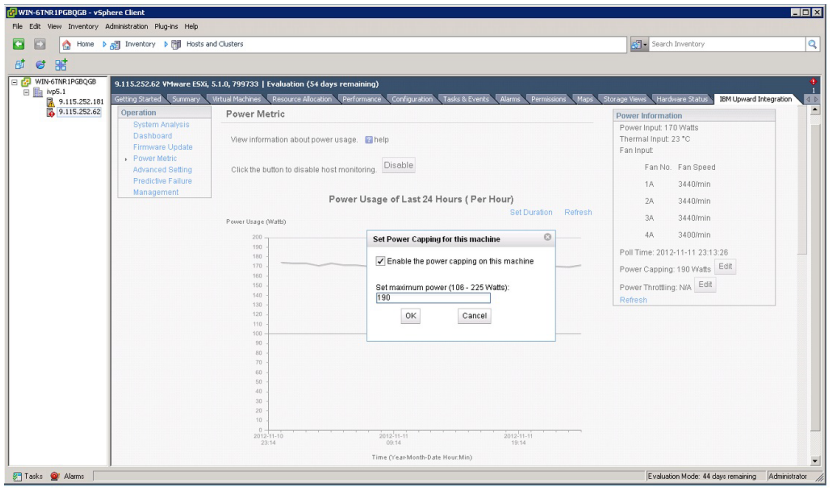

Figure 38. Setting Power Capping

Setting Power Throttling

By setting a value for Power Throttling, you can receive alerts when power consumption exceeds the value you set. You can set two Power Throttling values individually: one for a warning and one for a critical alert. When the power consumption exceeds a defined Power Throttling value, IBM Upward Integration for VMware vSphere with vSphere Client receives a throttling event, which is then displayed in the Power Throttling Indications table.

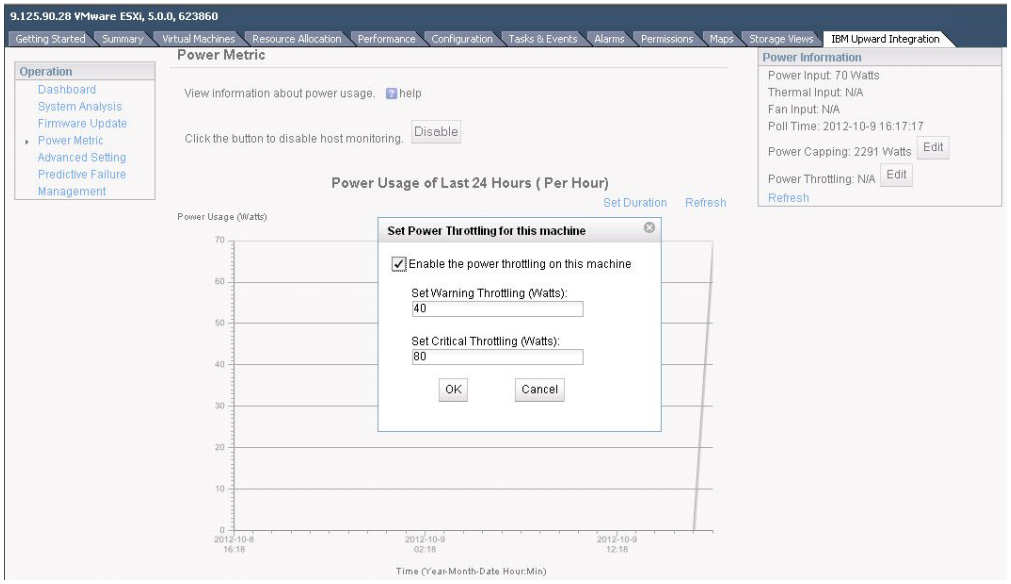

Figure 39. Set Power Throttling

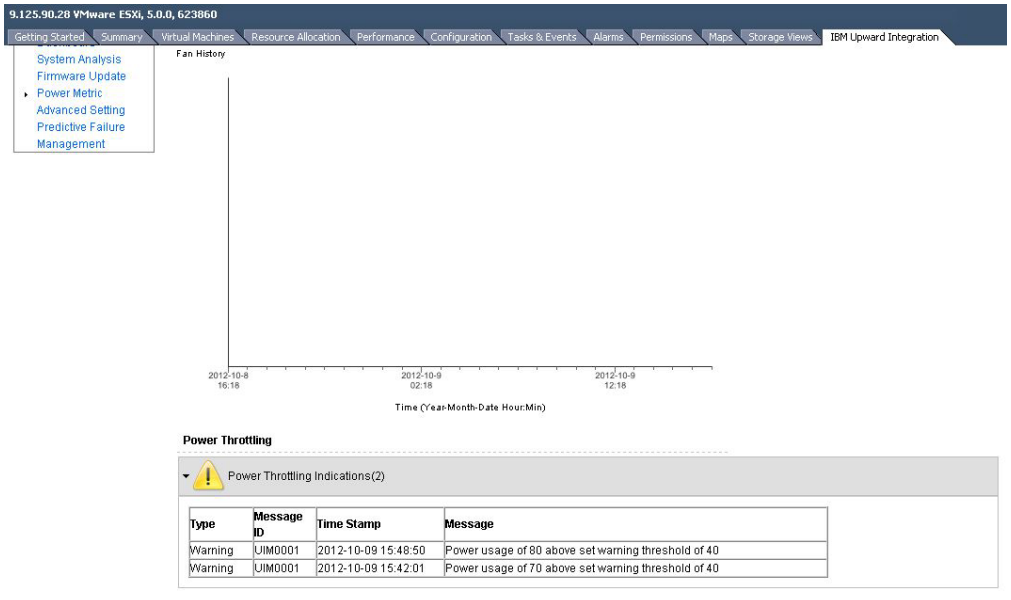

Figure 40. Power Throttling Indications

Working with Advanced System Settings

The Advanced System Settings page shows the current system settings on the host. This includes settings for IMM, uEFI, and the boot order of the host.

Viewing Advanced System Settings

This topic describes how to view Advanced System Settings on the host.

Settings are grouped into three categories represented by the following three tabs:

- IMM Settings
- uEFI Settings
- Boot Order Settings

Settings in each tab are further categorized into expandable subsections. You can easily find a setting by expanding the subsection. On the initial view, each subsection provides a description of the field functions. Scroll down to view all of the fields.

To view a setting, click to expand and display all of the settings with a subsection.

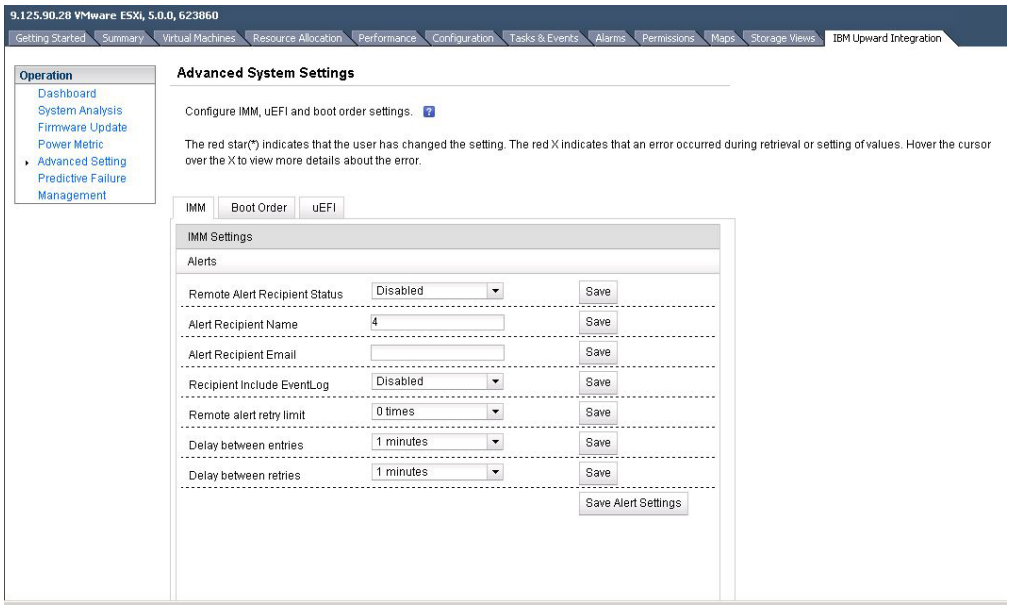

Figure 41. Viewing Advanced System Settings

Some settings, such as uEFI settings, are only supported on a certain machine type or firmware version. If your host does not support a setting, the following symbol is displayed to indicate this setting is currently not supported on your host:

Figure 42. Setting not supported symbol

Changing Advanced System Settings

This topic describes how to change Advanced System Settings on the host.

To change an Advanced System Setting, change the value to the required value, and then click **Save**. The change is executed on the endpoint, and the following symbol is displayed when complete.

Figure 43. Setting change is successful symbol

If there is a problem with the setting change, the following symbol is displayed:

Figure 44. Setting change is not successful symbol

To view detailed information about why the setting change failed, place the cursor over the symbol.

You can also click **Save xxx Settings** in each section, to save all the settings contained within that section. This will not impact settings in other sections. The setting result for each setting will show up as a single setting result. The following image provides an example of the Alert section in IMM Settings. To save all settings in the IMM section, click **Save Alert Settings**.

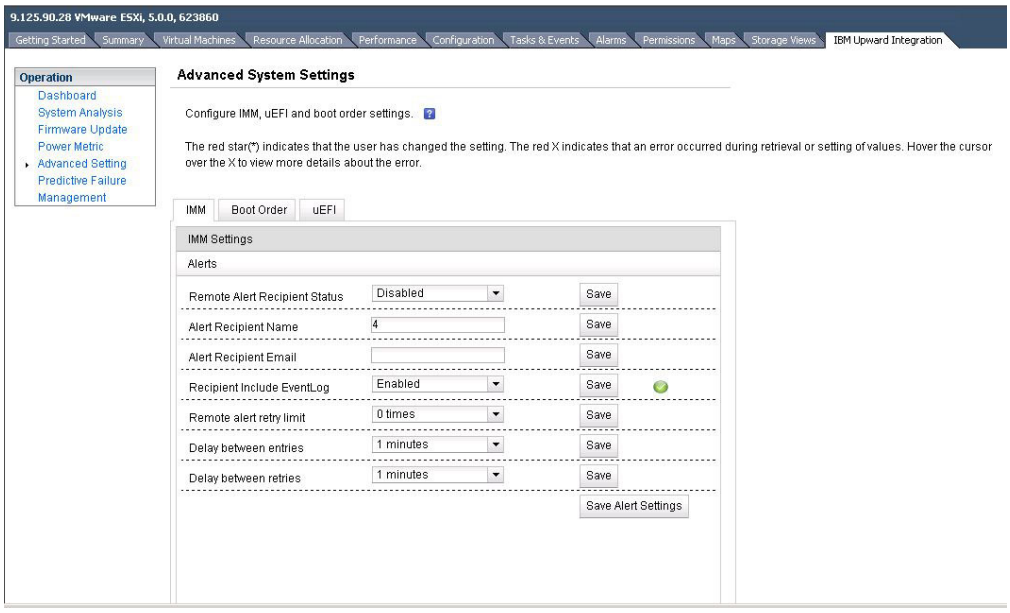

Figure 45. Changing Advanced System Settings

The following list provides an example for some of the different types of settings and how to change these settings. The manner in which each setting is changed varies.

- *text string*: Place the cursor on the text string to view the type of required input.
- *selection type*: Select the value from the list.
- *password*: Enter the password and then re-enter the password to confirm the new password. Click **Clear the password** to clear the password field.

Note: Save and **Clear the password** are executed immediately on the managed endpoint.

- *boot order*: The left column shows the current boot order, and the right column shows the optional device. To change the order, you can move a boot order option up or down and between the two columns, by clicking the corresponding button.

Appendix A. Troubleshooting

The topics in this section will assist you with troubleshooting.

Help information

Online help is available from each page through one or more links. When you click on one of these links, online help is displayed.

Finding the version of the plug-in

This topic describes how to find the plug-in version.

1. In the vCenter interface, select **Plug-in** > **Manage Plug-in**.
2. Locate **IBM Upward Integration for VMware vSphereIBM Upward Integration for VMware vSphere**. The version column displays the version of the installed plug-in.

Site certification

Each time you activate the plug-in on a host, you are asked to trust the certification of the site. Click **Yes** to trust the certification.

This also occurs the first time you access a help link. Click **Yes** to trust the certification.

First time loading page

Each time you switch to a different host and activate the plug-in, a loading page is displayed. Loading typically lasts about 1 or 2 minutes. During that time the plug-in is gathering the required host information for the managed host.

Poll Status displays N/A on Power Metric

The Poll Status represents the status of the latest poll.

About this task

If the Poll Status displays `N/A`, perform the following steps:

Procedure

1. Verify that Power Monitoring is enabled for a host. You must wait for a few minutes after Power Monitoring is enabled.

   The Power Monitoring windows service is started.
2. Click **Refresh** to view the latest power information.

Poll Status displays Failed on Power Metric

This topic can assist you with resolve a Poll Status that displays `Failed`.

About this task

If the Poll Status displays `Failed`, verify the following:

Procedure

1. The host is Alive.
2. The network connection between vCenter and the host is OK.
3. The CIM Object Manager (CIMOM) is running on the host.
4. The credentials for the host have not changed since you enabled the Power Monitoring on the host.

   If you changed the credentials for the host, you will need to disable and enable the Power Monitoring again to input new credentials for polling.

Acquire Ticket Failure

If an Acquire Ticket Failure is displayed on the Dashboard during a Dynamic System Analysis or during Firmware Update, either the vCenter Server status is incorrect or the vCenter connection to the managed ESXi endpoint is temporarily inaccessible.

Procedure

1. Wait and retry.
2. Restart the vSphere Client.
3. Restart the vCenter Server.

   Note: You must have administrator privileges to restart this server.
4. Check the network connectivity from the vCenter Server to the ESXi endpoint.

Installed version field shows Undetected in firmware updates

The **Installed version** field in the firmware update recommendation table indicates `Undetected`.

About this task

If the **Installed version** field displays `Undetected`, try restarting the IMM and ESXi host.

Connection to the plug-in

After loading the plug-in, an error message is displayed indicating `Fail to connect server` or `Unable to find the server`.

About this task

The vSphere client uses the Internet Explorer proxy to connect to the plug-in server.

Procedure

1. Check your Internet Explorer configuration.
2. Verify that it can connect to the server where the plug-in is installed.

IMM Discovery Failure

If the IMM Discovery list is not displaying correctly, the IMM discovery process has failed.

About this task

If the discovery list fails to display after clicking **Discovery** , do the following:

Procedure

1. Verify the network connection between vCenter and the host is Ok.
2. Try the discovery process again by clicking the **Discovery**.

Appendix B. Accessibility features

Accessibility features help users who have a physical disability, such as restricted mobility or limited vision, to use information technology products successfully.

IBM strives to provide products with usable access for everyone, regardless of age or ability.

IBM Upward Integration for VMware vSphere, Version 3.0.1 Installation and User's Guide supports the accessibility features of the system-management software in which they are integrated. Refer to your system-management software documentation for specific information about accessibility features and keyboard navigation.

Tip: The VMware vSphere topic collection and its related publications are accessibility-enabled for the IBM Home Page Reader. You can operate all features by using the keyboard instead of the mouse.

You can view the publications for IBM Upward Integration for VMware vSphere, Version 3.0.1 in Adobe Portable Document Format (PDF) by using the Adobe Acrobat Reader. You can access these PDFs from the IBM Upward Integration for VMware vSphere, Version 3.0.1 Installation and User's Guide product site.

IBM and accessibility

See the Human Ability and Accessibility Center website for more information about the commitment that IBM has to accessibility.

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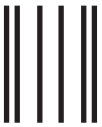

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