VERTIV.

Power Management Application vSphere Plugin

Installer/User Guide

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Technical Support Site

If you encounter any installation or operational issues with your product, check the pertinent section of this manual to see if the issue can be resolved by following outlined procedures.

Visit https://www.vertiv.com/en-us/support/ for additional assistance.

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1 Product Overview

vSphere Plugin is a power management application that enables you to administer the UPS and PDU data of Power Insight in vSphere. It also provides alarms alerts from Power Insight.

1.1 Features and Advantages

Following are the features and advantages of plugin:

- Simple deployment and convenient operation.
- Centralized access to power readings.
- Upload power equipment alarms to vSphere, and users can configure related measures to protect the server.
- Monitoring.

1.2 Compatible vSphere Version

vSphere 6.7 and 7.0.

1.3 Compatible Power Insight Version

Above Power Insight 2.4.

1.4 System Requirements

The hardware and software pre-requisites for the installation of vSphere plugin are:

1.4.1 Hardware

- A normal vSphere environment, with at least one cluster and three servers under vSphere.
- At least one server to run a virtual machine with 2CPU, 2GB memory, and 8GB hard disk.

1.4.2 Network

- Plugin network to access Power Insight.
- Plugin to run in the vSphere network environment.

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2 Installation

The following instructions will help you to download and install the vSphere plugin:

2.1 User Account Registration

If the power management vSphere plugin is the first Vertiv software you want to download, then you need to register on the Vertiv software download portal. After registration, you can download and install the latest version of the application.

To do user registration:

1. Please navigate to www.Vertiv.com in the web browser and hover your mouse over the Support tab.
2. Click *Get Software Downloads*, and then click the *Software Product Downloads*, menu option. The Software Download page appears.
3. Click *View Details* and then click the *Register* menu option.

NOTE: Do not close the web page. The web page will refresh automatically and display the Create an Account for Infrastructure Management Software registration form, where you can enter your account activation code.

4. Enter the mandatory field details, agree to the terms of use, and then click the *Create Account*.
5. Visit the email account you provided during the registration process and obtain the activation code from the *Welcome to Vertiv Software Downloads* email.
6. Type the activation code in the Code field on the Create an Account for Infrastructure Management Software registration form and click *Submit*.

To download the vSphere Plugin application:

1. In the Software Download page, type the application name in the Search box that you want to download.
2. Click the *Download* option. Once the application is downloaded, you can install the power management application. For more information on account registration and application download, refer section 2.2 Software Download of SL-70773_Vertiv™ Power Insight User Manual.

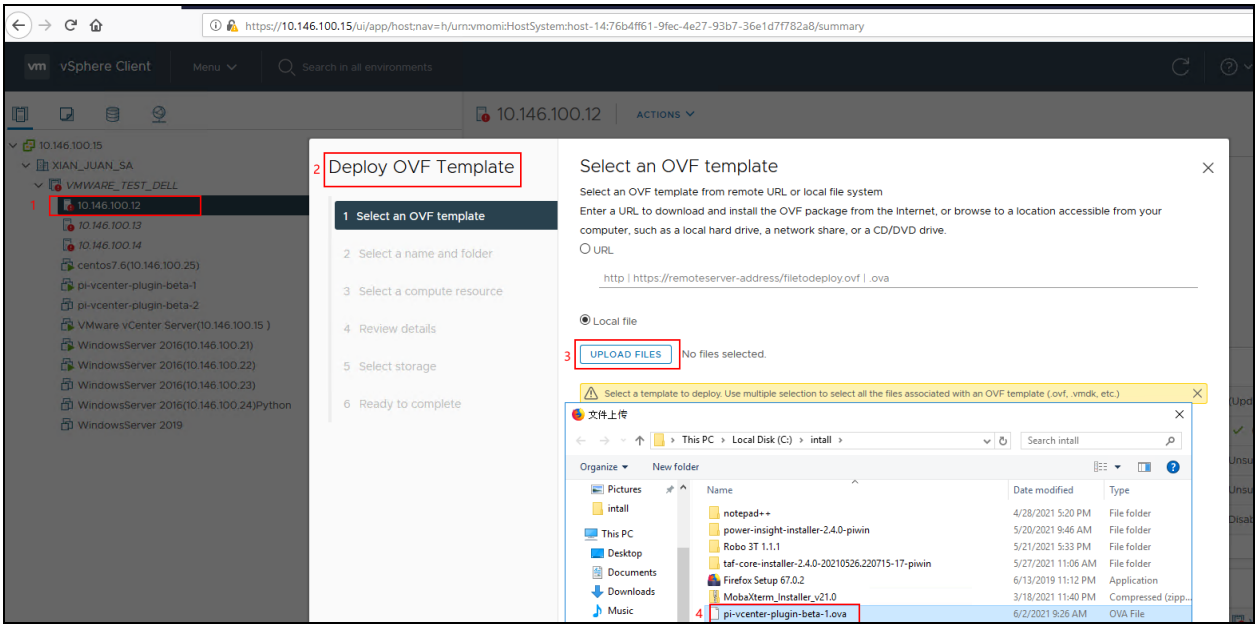
2.2 Power Management vSphere Plugin Installation

Install Plugin in vSphere to generate a virtual machine and set the virtual machine IP address manually or automatically.

1. Type vSphere (1). Select a Host (2). Deploy the Plugin service (3). Upload the Plugin package (4).

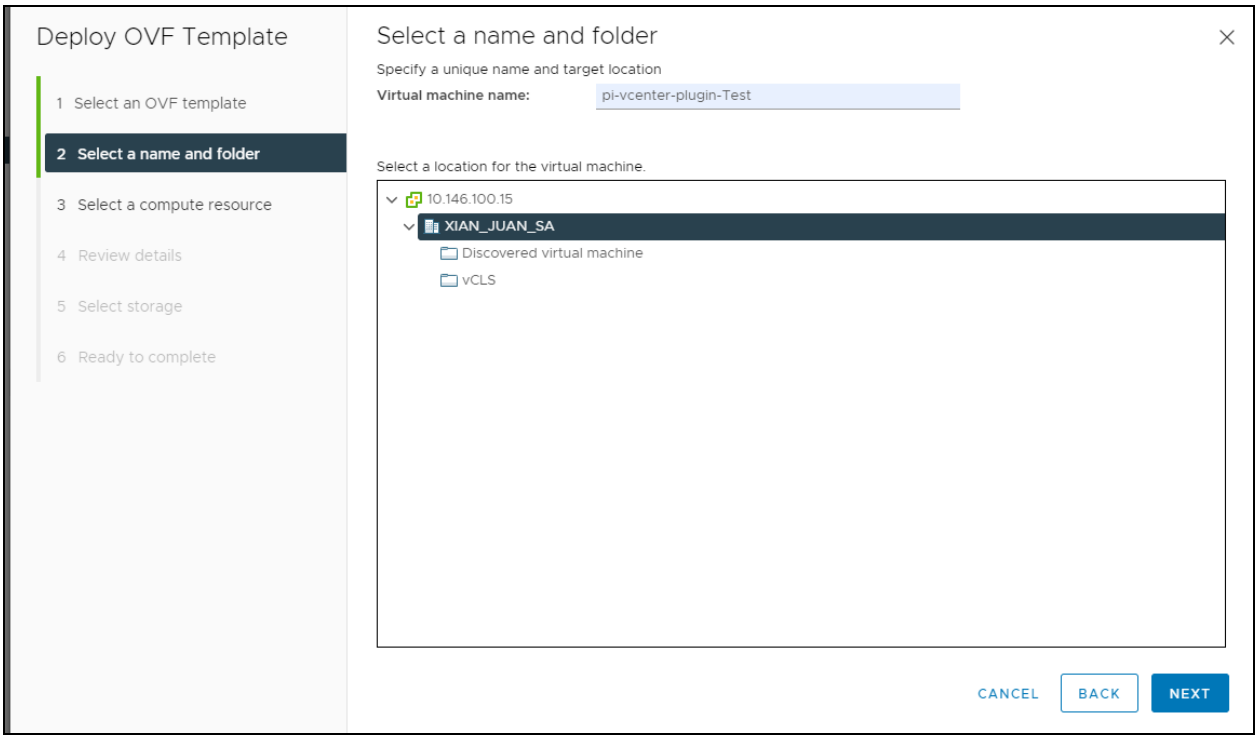
NOTE: Ensure that you have downloaded the Plugin installation package from the www.Vertiv.com website.

Figure 2.1 Upload Installation Package



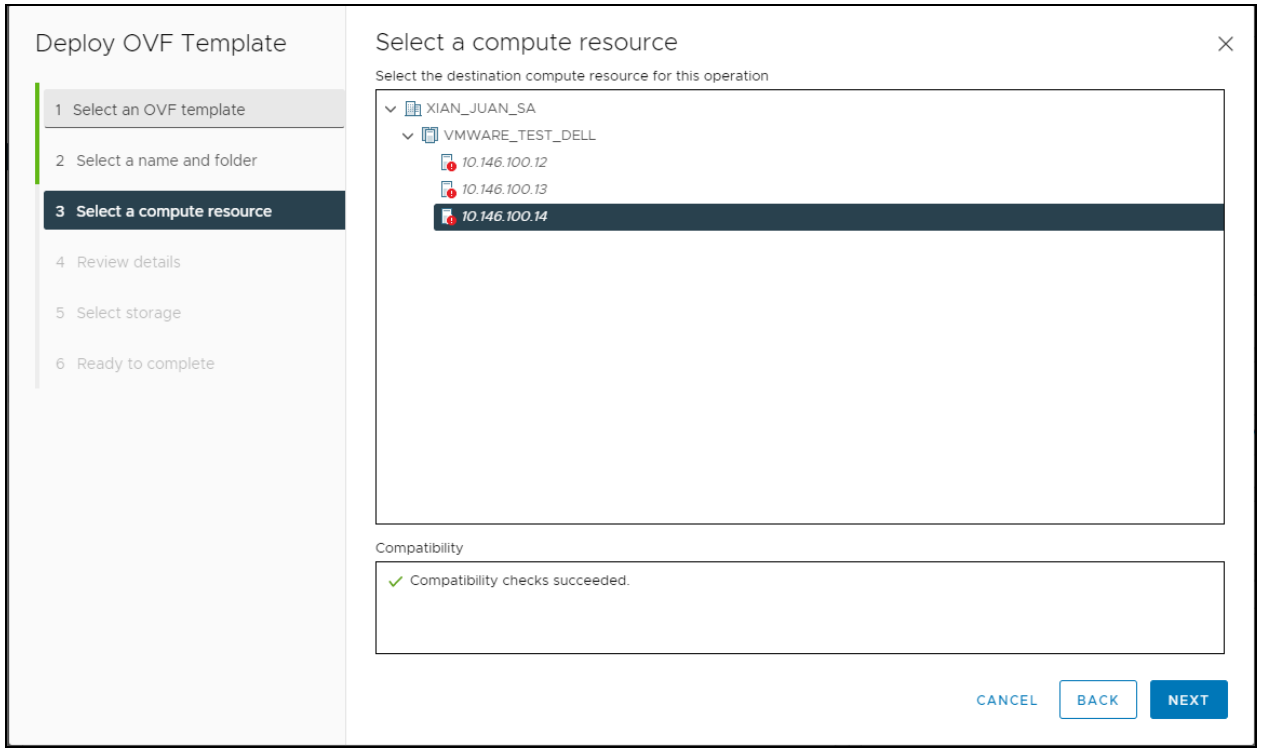
2. Select the name and folder of the Plugin virtual machine.

Figure 2.2 Set Plugin Virtual Machine Name



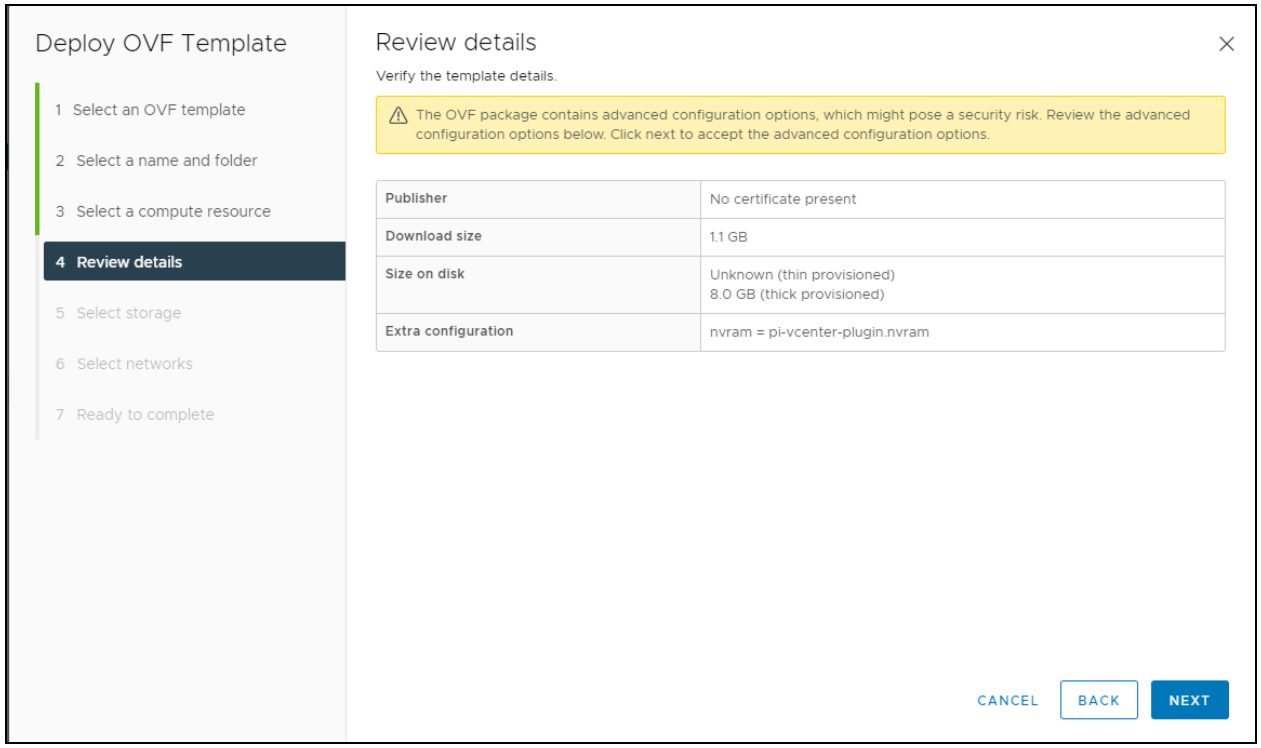
3. Select the host name on which the virtual machine is deployed.

Figure 2.3 Select the Host



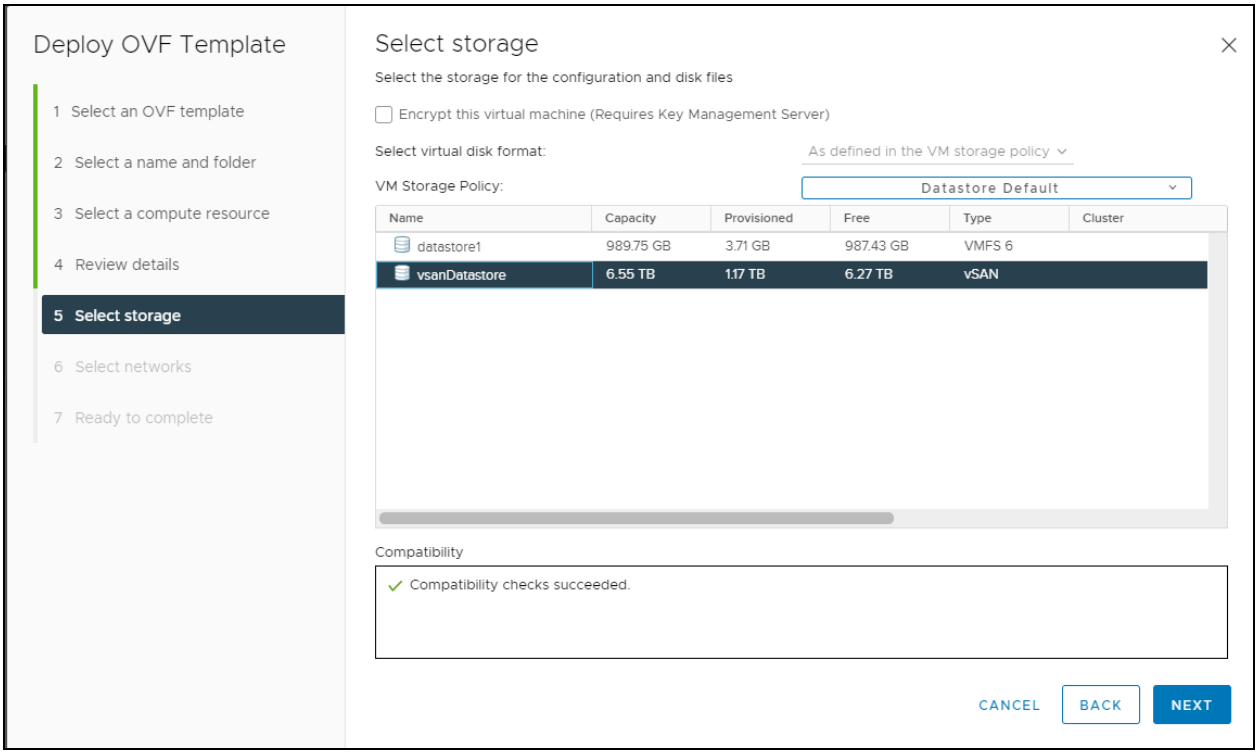
4. Verify the details of the plugin upload package.

Figure 2.4 View Installation Package Information



5. Select the storage device where the virtual machine is installed. Typically, it is installed on vsan storage.

Figure 2.5 Virtual Machine Storage Selection



6. Set up the virtual machine network.

   Specify the correct network configuration as follows:

NOTE: Do not enter the network configuration if the DHCP service is available.

NOTE: The IP Address, Netmask Prefix, Gateway and DNS parameters is effective only when the Hostname is specified.

   a. **Hostname-** Type the host name if you need to set the IP statically.
   b. **IP Address-** Type the IP address If you need to set the IP statically.
   c. **Netmask Prefix-** Type the Netmask Prefix If you need to set the IP statically.
   d. **Gateway-** Type the network gateway if you need to set the IP statically.
   e. Specify the DNS and DNS Domain details if DNS service is available.
   f. **Root Password-** Modify the password corresponding to root used by ssh.

NOTE: If password is not provided, the default password “vertiv” will be used.

Figure 2.6 Virtual Machine Network Selection

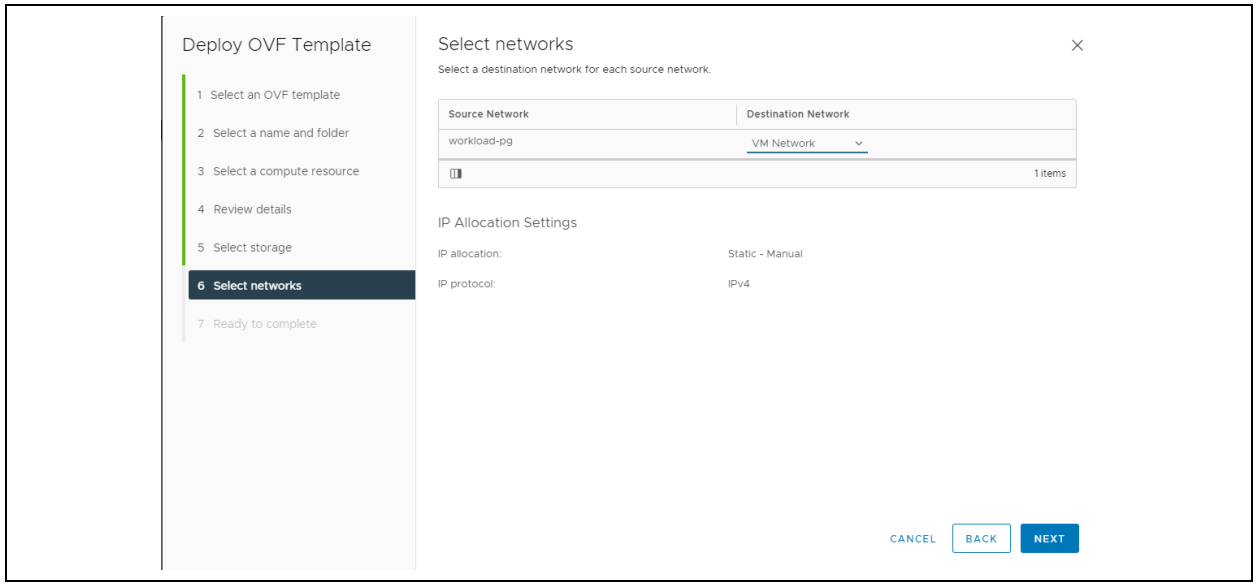


Figure 2.7 Virtual Machine Information View

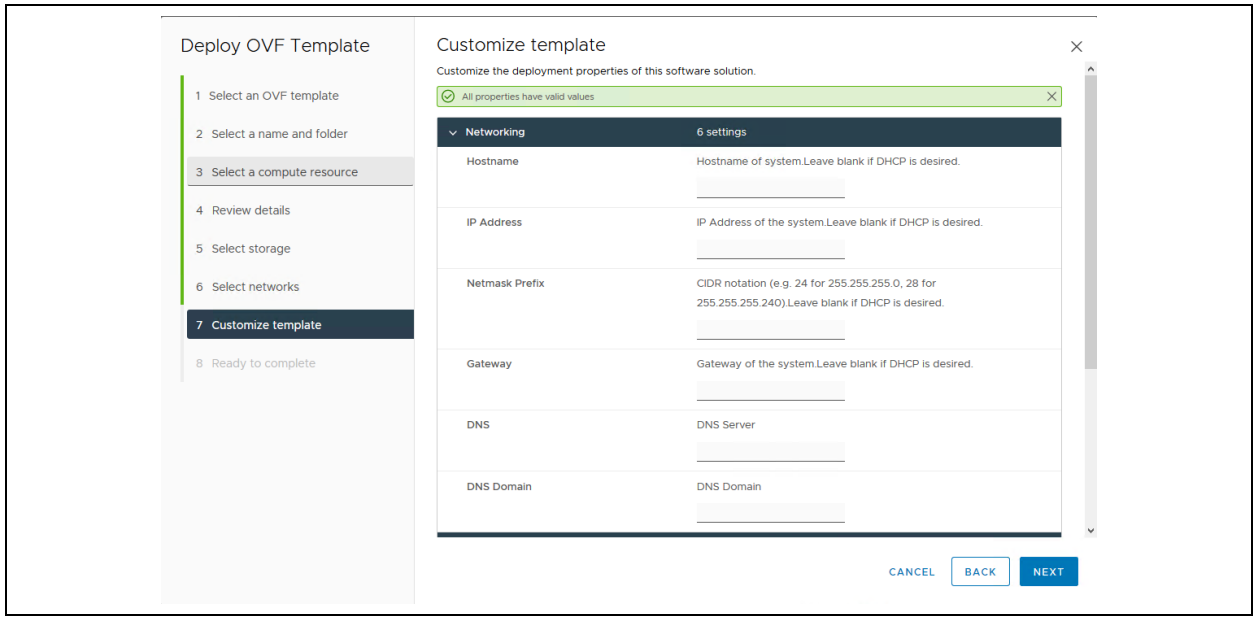
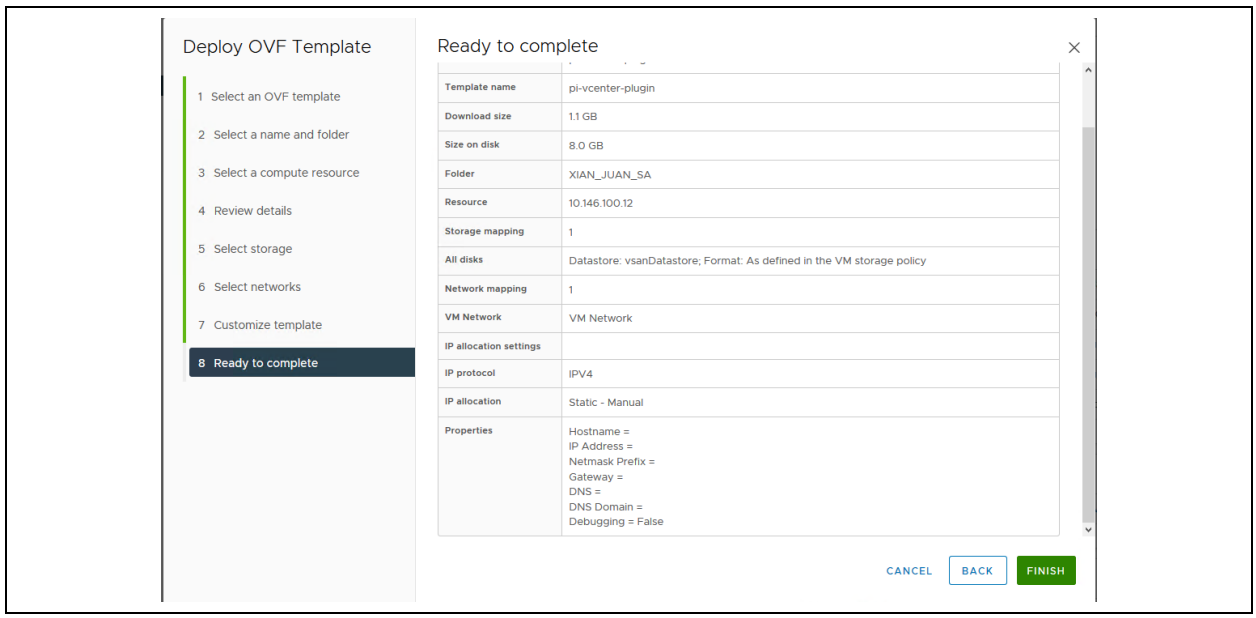
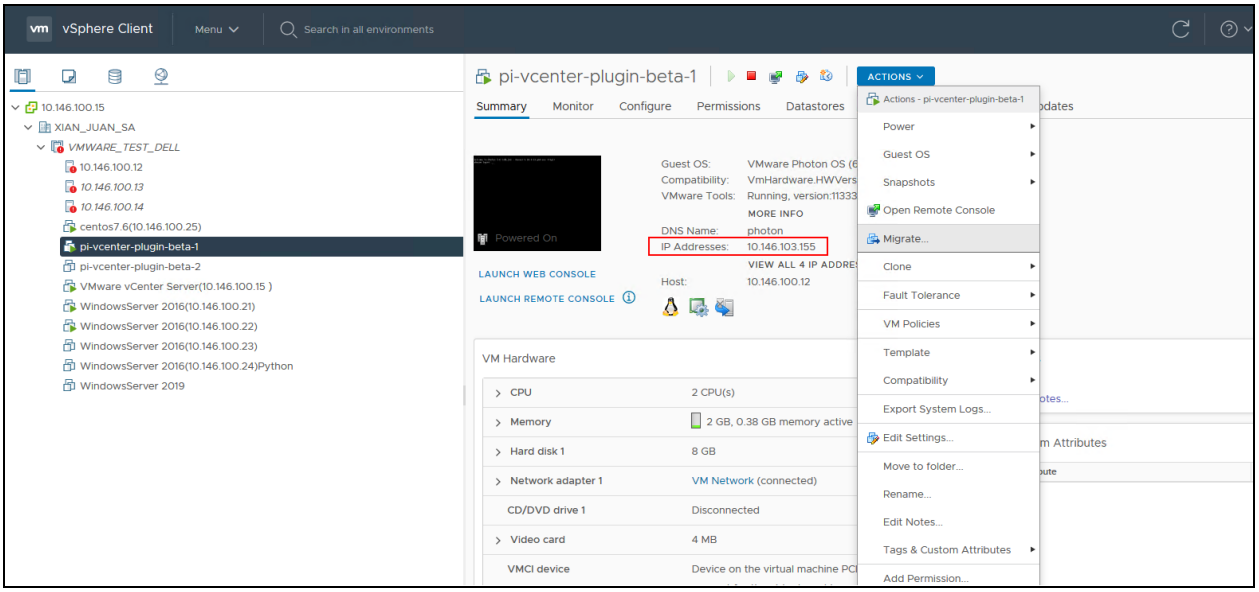


Figure 2.8 Virtual Machine Information View



NOTE: If the user does not enter the host name and other information in the network configuration process, the system uses the DHCP service to obtain the IP address and DNS server address by default. Otherwise, the network parameters set by the user are used. After the virtual machine is turned on, the user can also manually modify the IP address. For the steps, refer to the following link: https://vmware.github.io/photon/assets/files/html/3.0/photon_admin/setting-a-static-ip-address.html.

Figure 2.9 Virtual Machine IP Address



7. Log in to the Plugin registration interface.

   After starting the Plugin virtual machine, enter the IP address of the Plugin in the browser and enter the Plugin service web interface for registration and authentication.

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3 How to Use the Application

The following instructions describe the screen elements of the user interface.

3.1 Configure the Power Insight Plugin

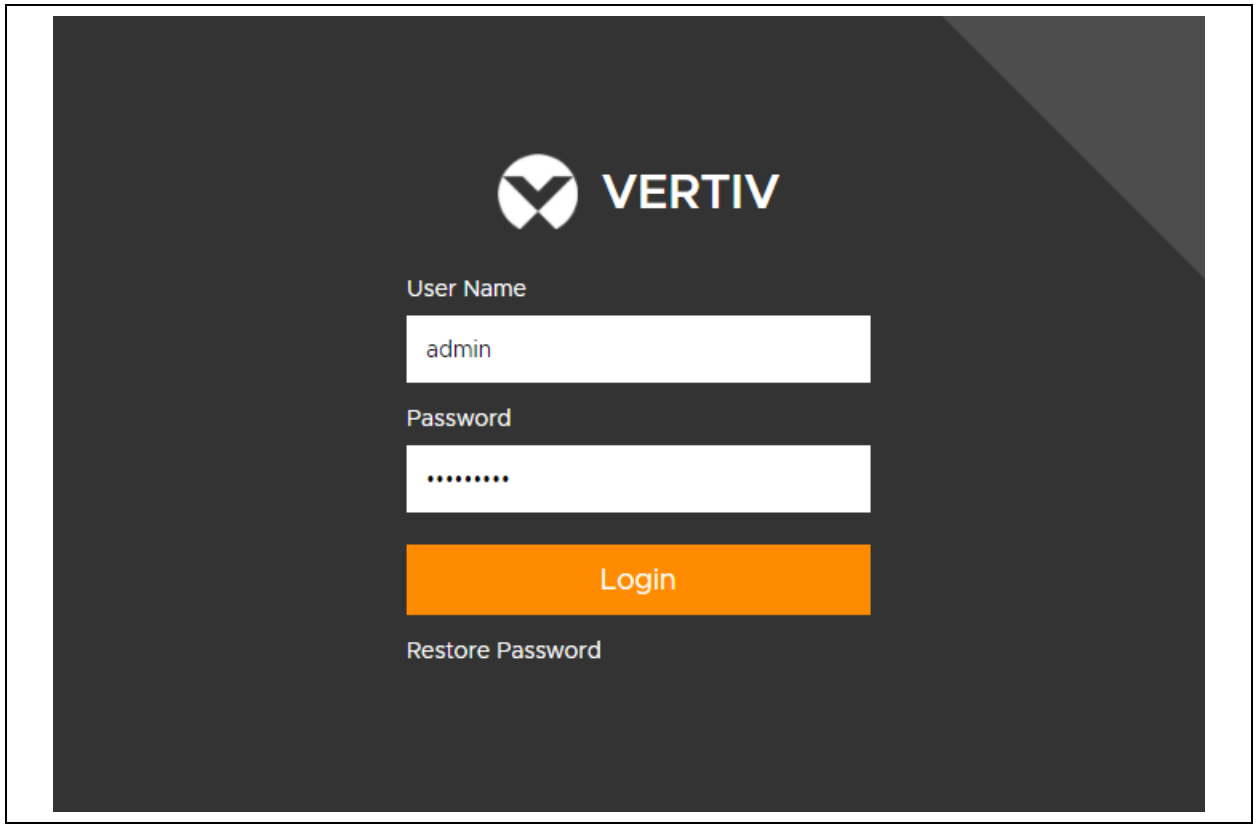
Before using the plugin, select different modes according to the actual scenario. You may need to register the plugin separately with vSphere, PI, VxRail, and Card. This is to ensure normal data interaction.

3.1.1 Logging in to Plugin

Enter the Plugin IP address in the browser to access the Plugin Web service, for example: *https://1.1.1.3/#/*.

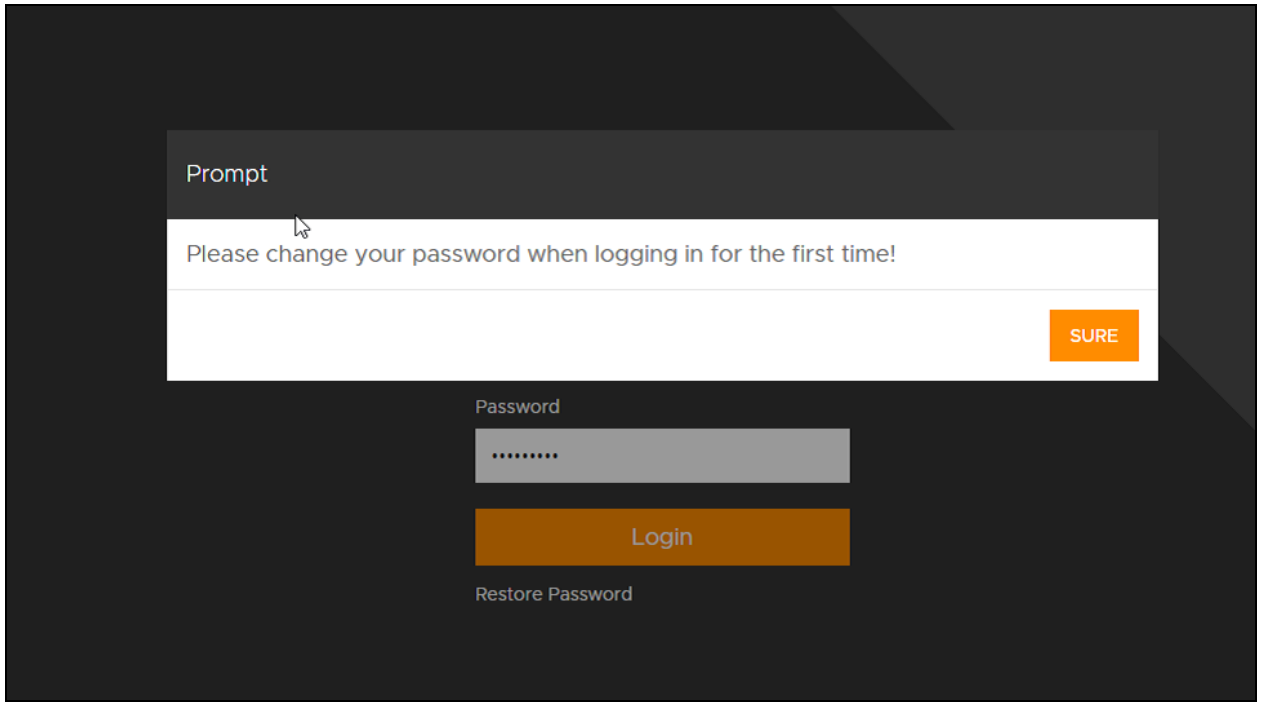
1. Enter the username and password to log in. Default username: admin Password: vertiv-pi.

Figure 3.1 Log in to Plugin Window



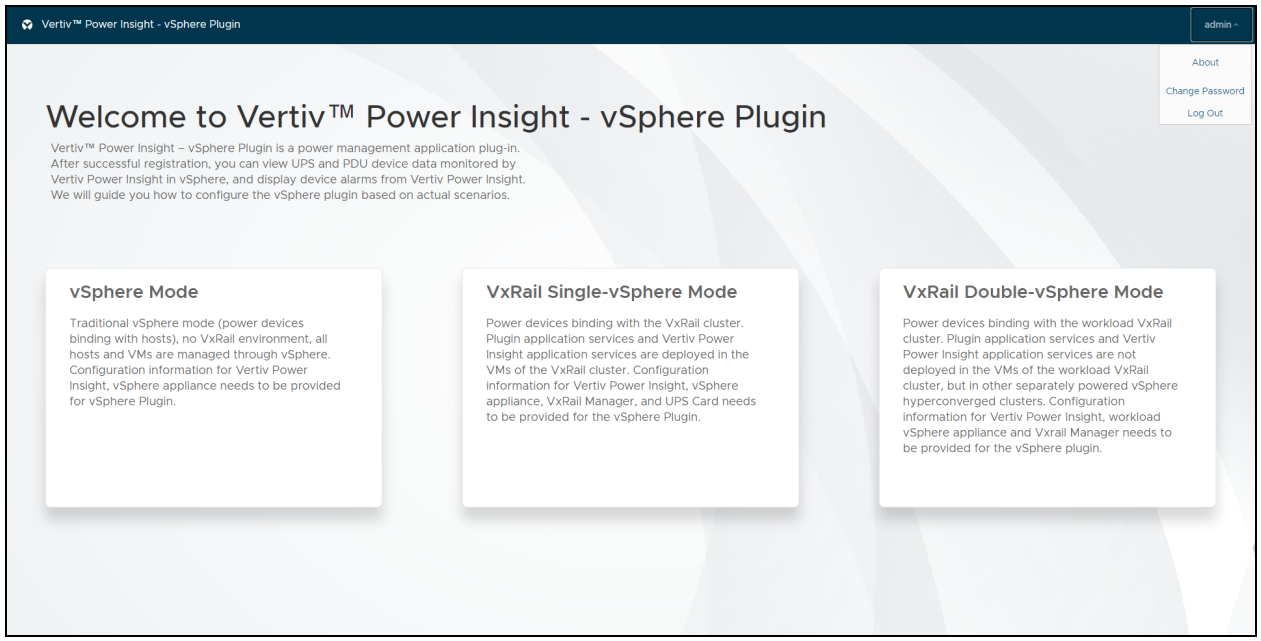
2. You must change your password when you log in for the first time. After you change your password, you can log in with the new password.

Figure 3.2 Change Password for the First time Window



3. Password modification. After successful login, you can modify the password in the user drop-down menu in the upper right corner of the interface. The default username, admin, cannot be modified.

Figure 3.3 Modify Password Window



4. Password Reset. Please remember your modified password. If you lose your password, you can reset it to the default password vertiv-pi.

Figure 3.4 Reset Password Window

3.1.2 Select Registration Mode

1. First entry.

   After successful login, you will enter the plugin page for the first time. Please select from three registration modes according to the actual situation:

   - Traditional Mode:

     In the traditional vSphere mode (the power supply is bound to the host), there is no VxRail environment, and all hosts and virtual machines are managed through vSphere. The configuration information of Power Insight and vSphere devices needs to be provided for plugins.

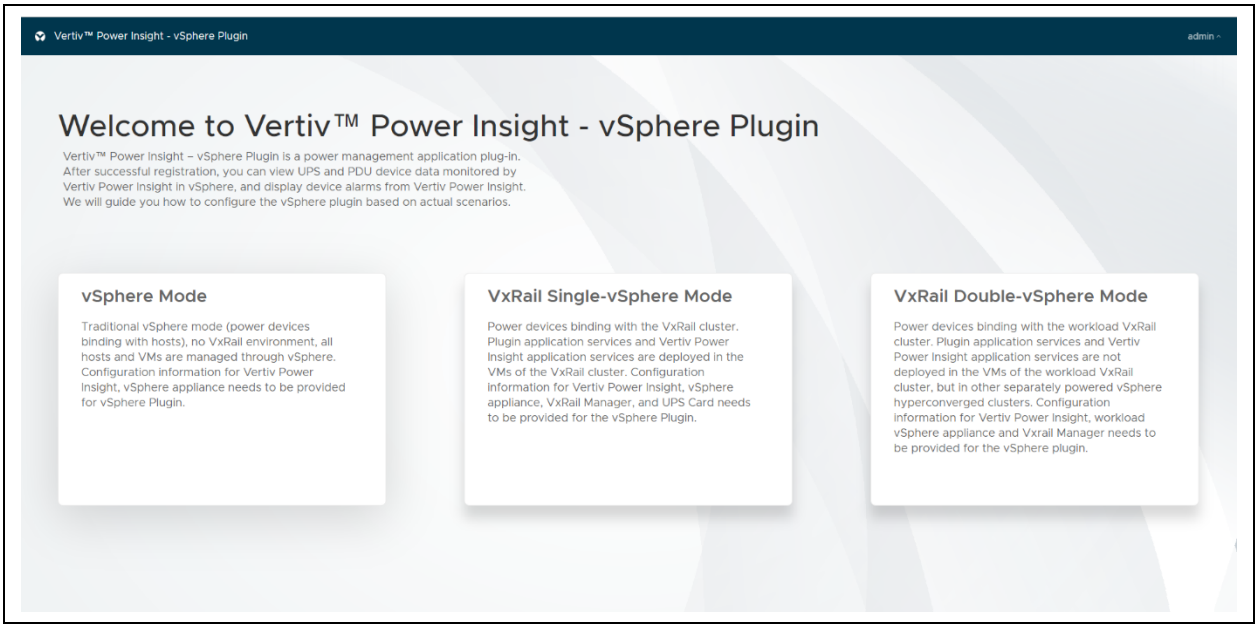
   - VxRail Single vSphere Mode:

     The power supply is bound to the VxRail cluster. Plugin application services and Power Insight application services are deployed in the virtual machines of the VxRail cluster. The configuration information of Power Insight, vSphere, VxRail Manager and UPS Card needs to be provided for vSphere Plugin.

   - VxRail Dual vSphere Mode:

     The power supply is bound to the workload VxRail cluster. Plugin application services and Power Insight application services are not deployed in the virtual machines of the workload VxRail cluster, but are deployed in other vSphere super fusion clusters with separate power supply. The configuration information of Power Insight, workload vSphere and VxRail manager needs to be provided for plugins.

Figure 3.5 Select Mode Page



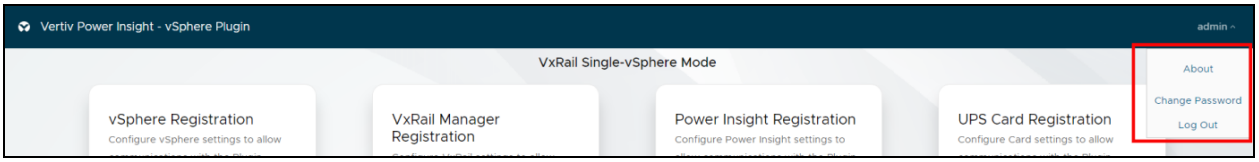
Click the *Card* to enter the registration page of the selected mode.

2. Description of registration page.

   After entering the registration page, click the *Current User* in the upper right corner and three options of the user menu will appear:

   - *About* shows the current plugin version and the title of the plugin.
   - Click *Change Password* to enter the password change interface.
   - Click *Log Out* to log out and return to the login page.

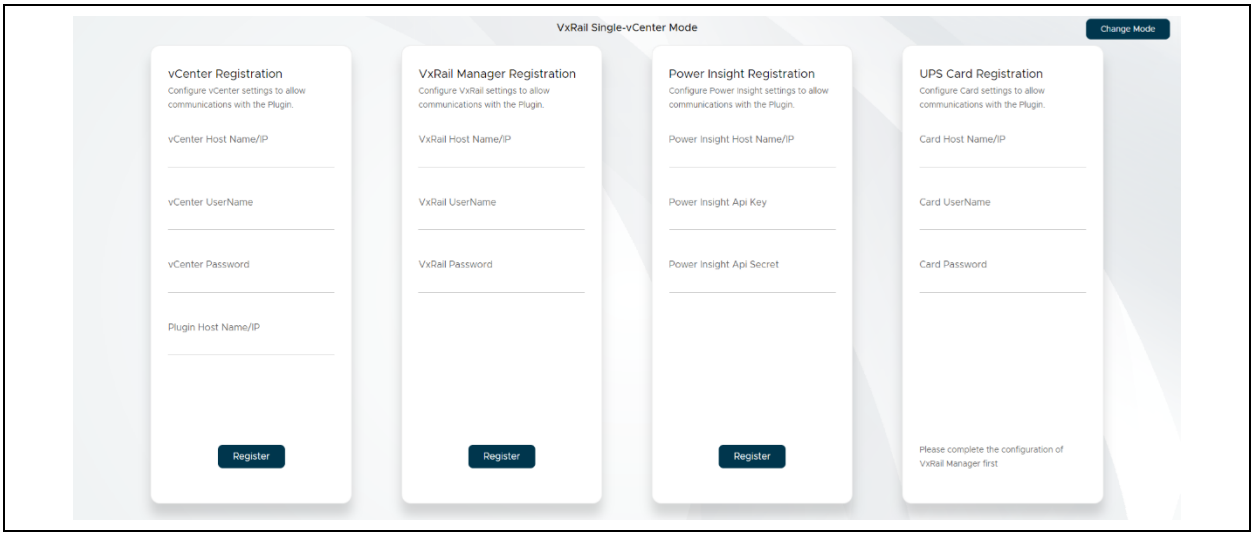
Figure 3.6 User Menu



After the user menu is closed, the name of the current mode and the *Change Mode* button are displayed on the top. About the Change Mode button:

- After clicking the *Change Mode* button, the system will try to log out all the tabs that have been successfully registered.
- After all tabs are logged out successfully, you will return to the mode selection page.
- If you are prompted that the logout failed, you can logout manually at this time. After all logouts are successful, click the *Change Mode* button again to return to the mode selection page.

Figure 3.7 Registration Tab Page



Depending on the selected mode, 2-4 registration tabs will be displayed on the registration page. Please enter the required information for each tab according to the interface prompts, and you can register, update or log out, the registration process of different modes will be described in the following three sections:

- Traditional Mode Registration Process on the next page .
- VxRail Single vSphere Mode Registration Process on page 17 .
- VxRail Dual vSphere Mode Registration Process on page 18 .

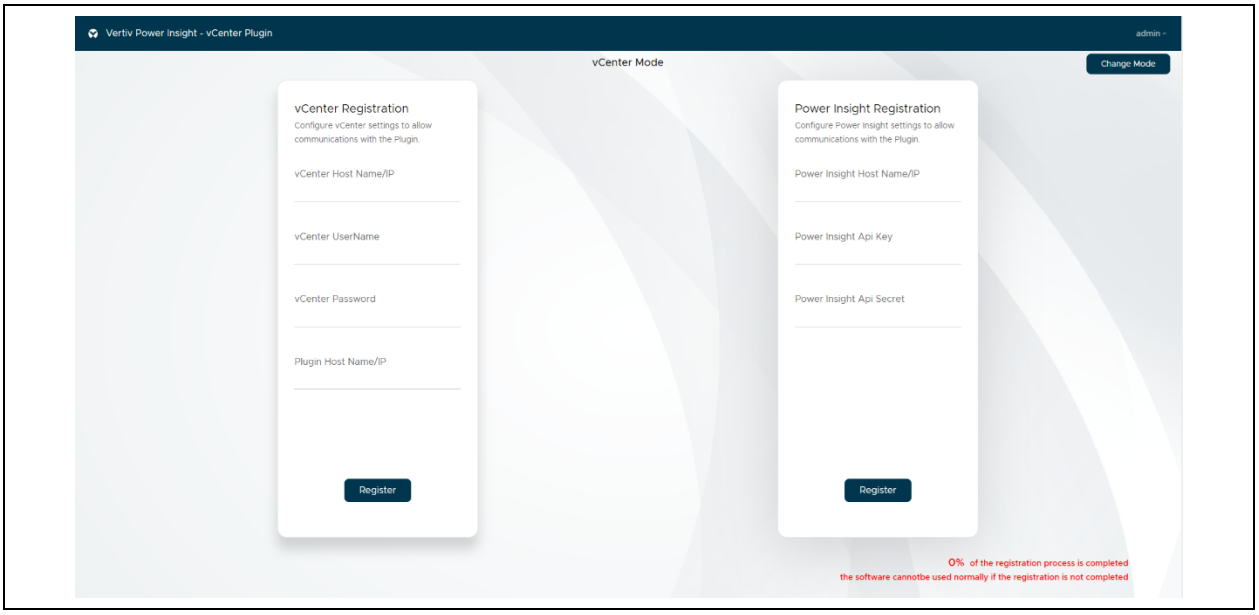
The lower right corner will show the current registration progress according to the number of successful card registrations. The plugin can only be used after the progress reaches 100%.

Figure 3.8 Registration 100% Completed

3.1.3 Traditional Mode Registration Process

Register the plugin to vSphere and complete the plugin and Power Insight authentication.

Figure 3.9 Traditional Mode Registration Page



To register a plugin to vSphere:

- Enter the vSphere IP address, login username, password, and Host Name/IP of the plugin.
- Click *Install*.

To register and authenticate the plugin and Power Insight:

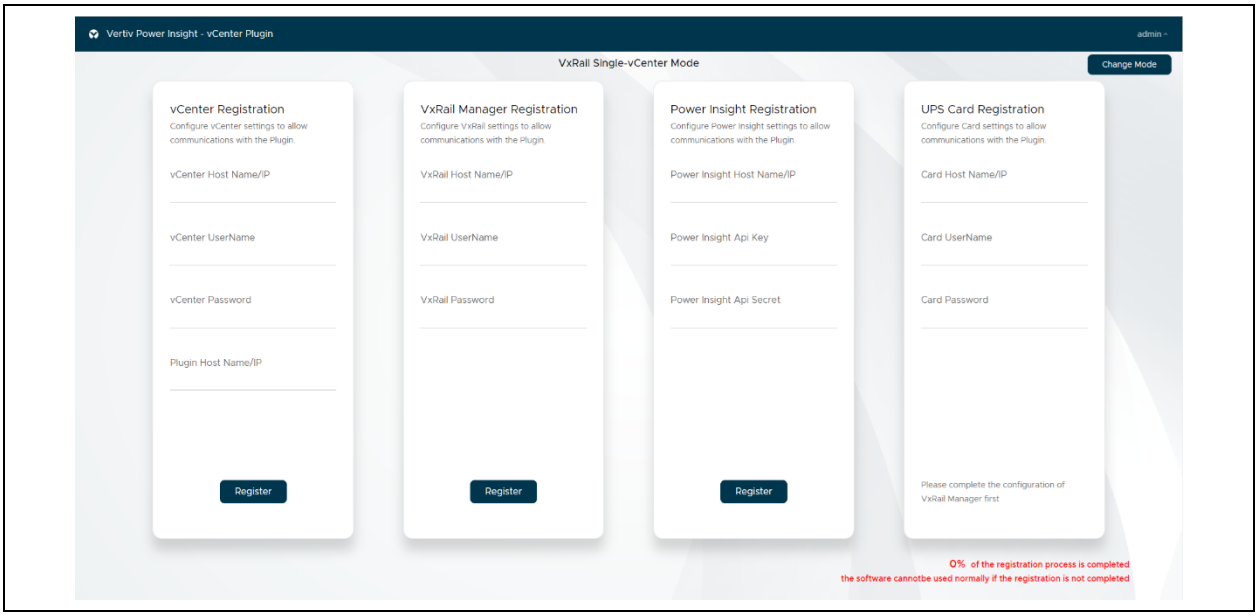
- Enter the Power Insight IP address, Power Insight API key, and Power Insight API password according to the interface prompts.
- Click *Install*. The Power Insight API key and API password can be obtained from the *System Settings* →*Integrated Management menu of Power Insight*. For more details, see SL-70773_Vertiv™ Power Insight User Manual.

NOTE: The following conditions may cause plugin registration failure:
The authentication information entered is incorrect. In this case, confirm the information and try again.
Plugin has been registered previously. When uninstalling the plugin, the warning information of the Vertiv power supply will remain in vSphere. You need to enter vSphere to manually delete the global and custom alarms of the Vertiv power supply.

3.1.4 VxRail Single vSphere Mode Registration Process

Register the plugin to vSphere and VxRail Manager, and complete the authentication of the plugin and Power Insight, as well as the plugin and UPS Card.

Figure 3.10 VxRail Single vSphere Mode Registration Page



To register a plugin to vSphere:

- Enter the vSphere IP address, login username, password, and Host Name/IP of the plugin.
- Click *Install*.

To register the plugin to VxRail Manager:

- Enter VxRail Host Name/IP, VxRail login username, and VxRail password.
- Click *Install*.

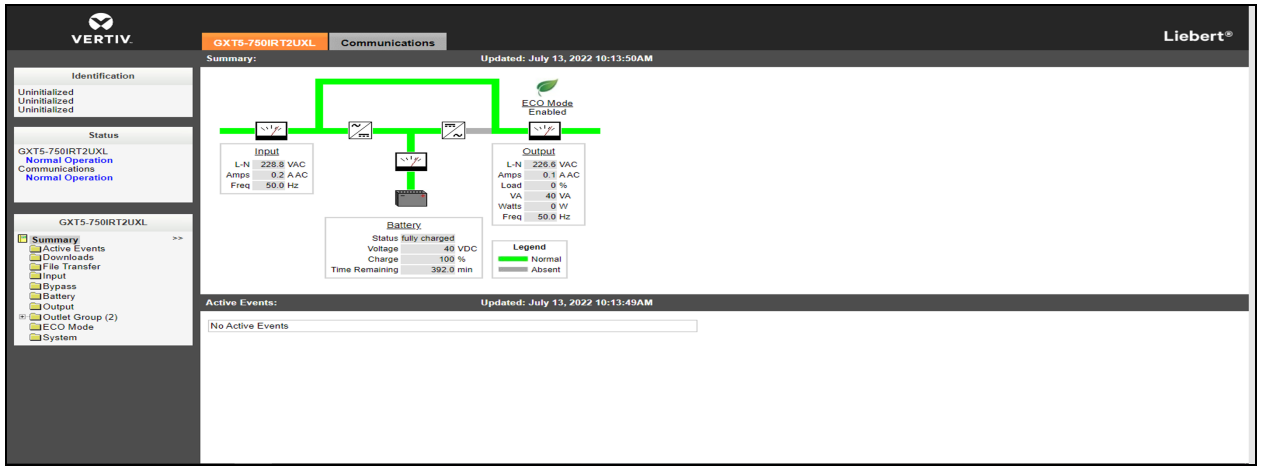
To register and authenticate the plugin and Power Insight:

- Enter the Power Insight IP address, Power Insight API key, and Power Insight API password according to the interface prompts.
- Click *Install*. The Power Insight API key and API password can be obtained from the *System Settings* → *Integrated Management menu of Power Insight*. For more details, see SL-70773_Vertiv™ Power Insight User Manual.

To register the plugin and UPS Card, you need to register the plugin to VxRail Manager first, and then take the following actions:

- Enter the IP address of the UPS Card in the browser (it is recommended that the UPS Card be installed on a UPS with stable power supply, which does not need to be bound to VxRail), enter the selected username and password, and enter the management page of the UPS Card, as shown in Figure 3.11 on the next page .

Figure 3.11 UPS Card Configuration Page



- Select the Communications tab above, then select the Configuration drop-down box in the left drop-down menu, select the Local Users drop-down box, select the Local Users to be added, and click the *edit* button above to create or update the account name and password of the UPS Card.

NOTE: User authorization should be Gapi Access.

- Return to the plugin registration page and enter the account name and password in the registration tab of the UPS Card.
- Click *Install*.

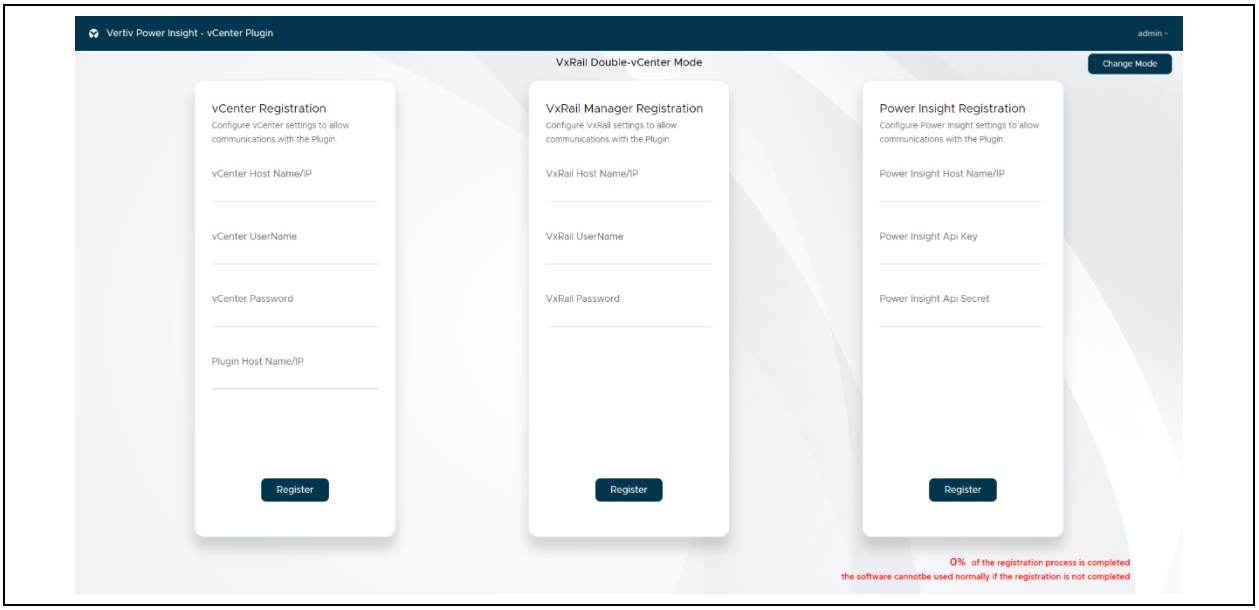
NOTE: In the VxRail single vSphere mode, plugins and UPS Cards can be registered and authenticated only after they are successfully registered with the VxRail Manager.
When registering and authenticating plugins and UPS Cards, users will not be able to register with the correct password after several incorrect password attempts. Users will need to wait 15 minutes to re-register.

3.1.5 VxRail Dual vSphere Mode Registration Process

In this mode, the VxRail that triggers the shutdown process due to the power supply device alarm is called workload VxRail. The plugin will then need to be installed in another VxRail environment, called management VxRail.

You will need to register the plugin to the workload vSphere and VxRail Manager, and complete the registration and authentication of the plugin and Power Insight.

Figure 3.12 VxRail Dual vSphere Mode Registration Page



To register a plugin to vSphere:

- Enter the vSphere IP address, login username, password, and Host Name/IP of the plugin.
- Click *Install*.

To register the plugin to VxRail Manager:

- Enter VxRail Host Name/IP, VxRail login username, and VxRail password.
- Click *Install*.

To register and authenticate the plugin and Power Insight:

- Enter the Power Insight IP address, Power Insight API key, and Power Insight API password according to the interface prompts.
- Click *Install*. The Power Insight API key and API password can be obtained from the *System Settings* → *Integrated Management menu of Power Insight*. For more details, see SL-70773_Vertiv™ Power Insight User Manual.

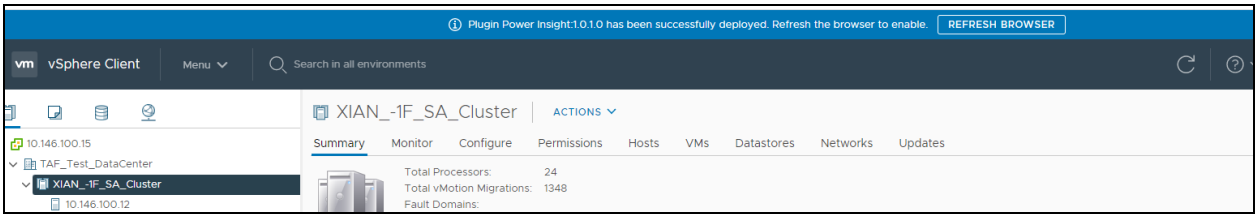
NOTE: If vSphere 6.7 is used, you need to log in to the vSphere interface again after uninstalling vSphere from the plugin interface and registering vSphere.

3.2 Traditional Mode

3.2.1 Enabling Power Insight Plugin

1. VMware vSphere V7.0 and above-After users register PI Plugin to vSphere, re-enter the vSphere interface, a ***Plugin has been successfully deployed*** prompt will appear at the top of the page, click *Refresh Browser* to refresh the browser, as shown in Figure 3.13 on the next page .

Figure 3.13 Plugin has been Successfully Deployed Prompt

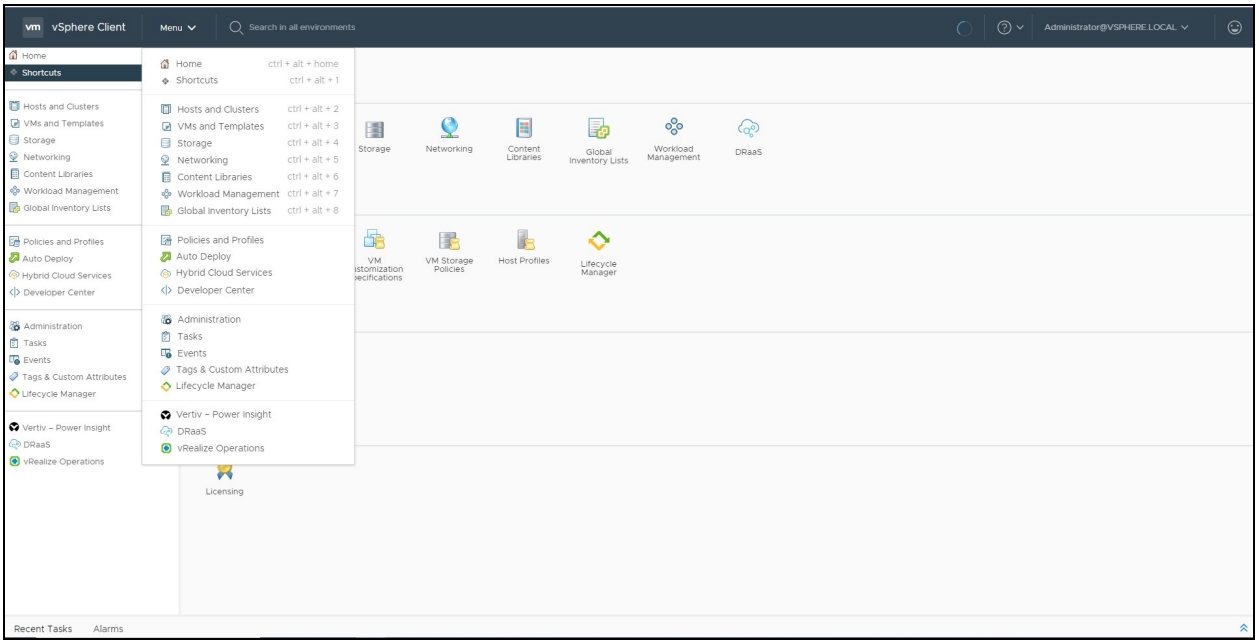


2. VMware vSphere V6.7 Version- After users register PI Plugin to vSphere, you need to log out and log in to vSphere again, and after that the blue prompt will appear in the vSphere interface, click *Refresh Browser* to enable the PI Plugin.

3.2.2 Associate Server and Power Supply Equipment

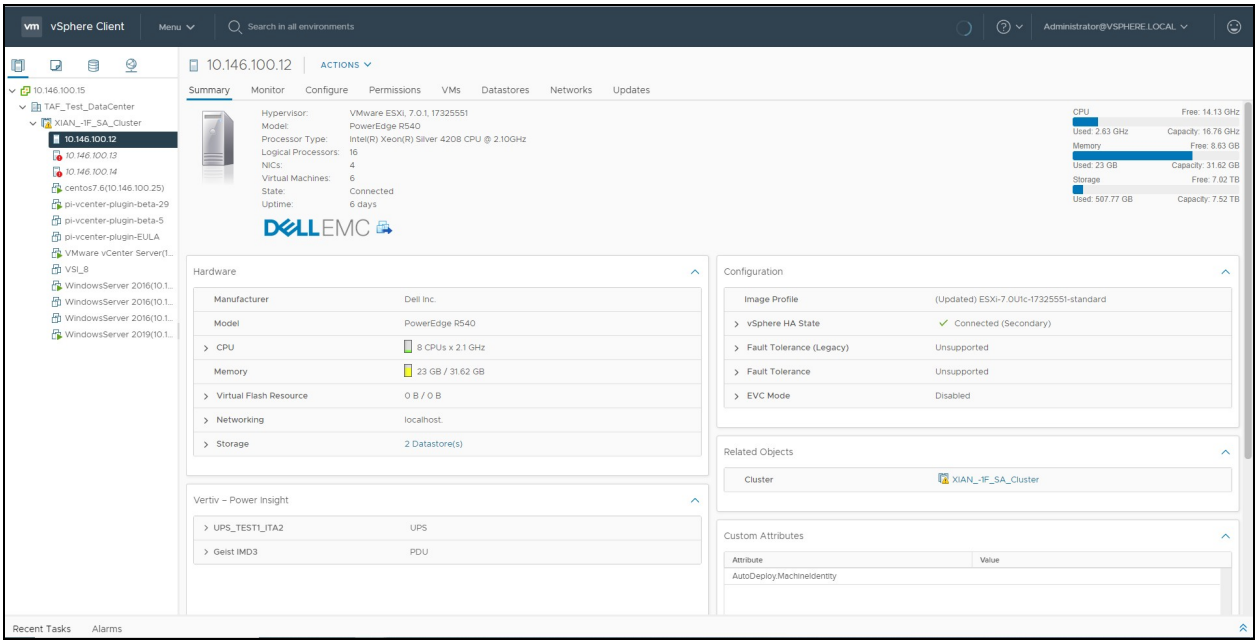
1. On specifying the vSphere interface, click *Menu* at the top of the page, and then select the Host and Clusters option, as shown in **Figure 3.14** below .

Figure 3.14 Device Association Entrance



2. Now, select a host under the cluster and click to enter the *current host summary interface*. For example, 10.146.100.12 is a host name, as shown in **Figure 3.15** on the facing page .

Figure 3.15 Host Summary Interface

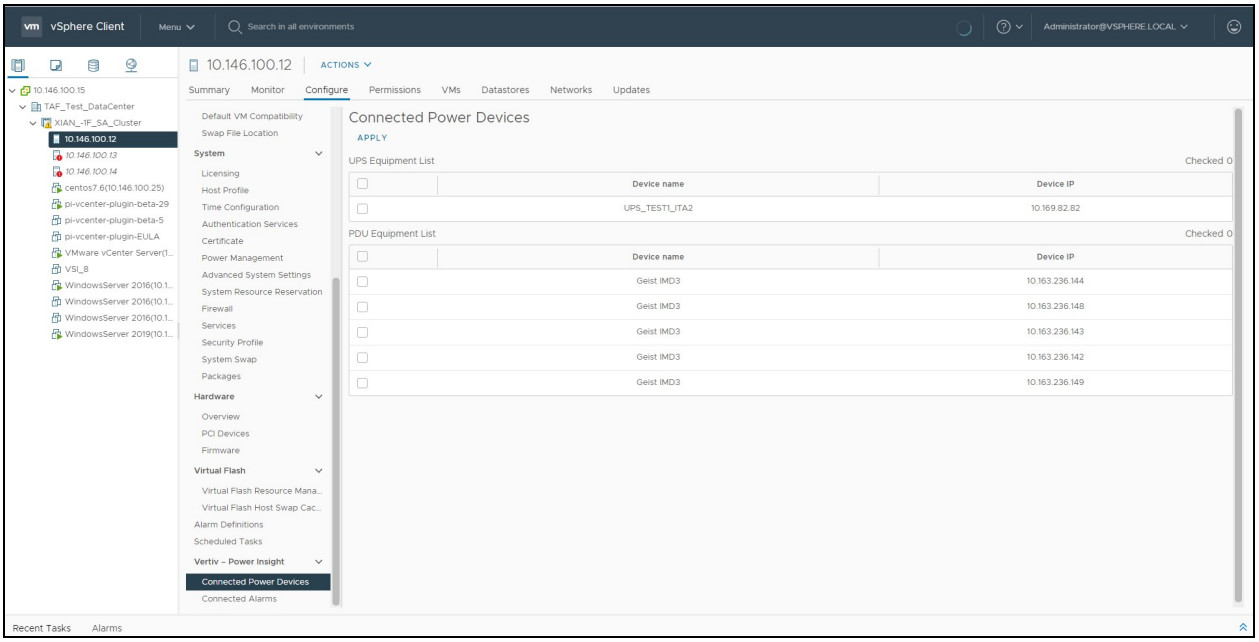


3. After entering the summary interface, since the current host is not connected to the device, the user can see the Vertiv - Power Insight interface prompts that the device is not connected, as shown in **Figure 3.16** below .

Figure 3.16 Summary Interface of Unbound Device

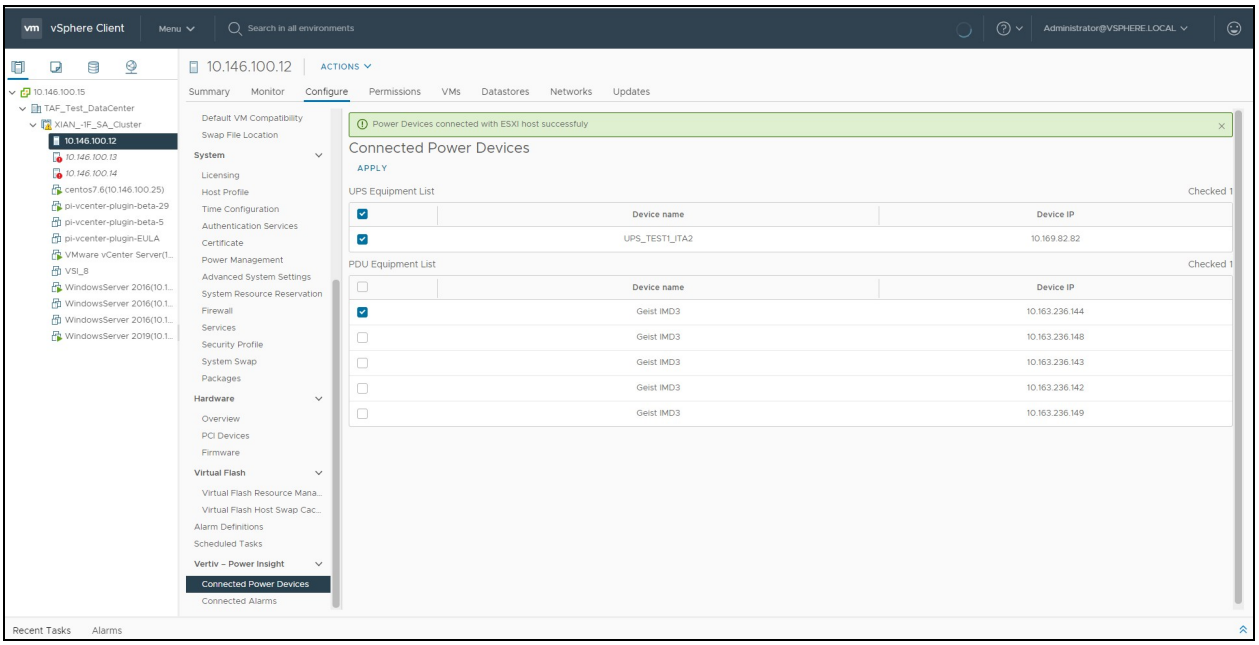
4. The user can switch to the configuration interface by clicking the *Configure* tab. Select *Vertiv - Power Insight* → *Connected Power Device* in the left menu bar to enter the vertiv configuration interface, as shown in **Figure 3.17** on the next page .

Figure 3.17 Vertiv Device Association Interface



5. In the configuration interface, you can view the UPS Equipment List and the PDU Equipment List. Click the *check box* against the UPS and PDU devices that need to be configured, and then click the *Apply* in the upper left corner. The prompt **Power Devices connected with ESXI host successfuly** is displayed which indicates that the selected UPS and PDU equipments are connected to the server, as shown in **Figure 3.18** below .

Figure 3.18 Device Binding Successfully



To associate devices to other hosts, repeat step 2 , step 3 , step 4 and step 5 .

3.2.3 Setting Alarms for a Single Server

Overview

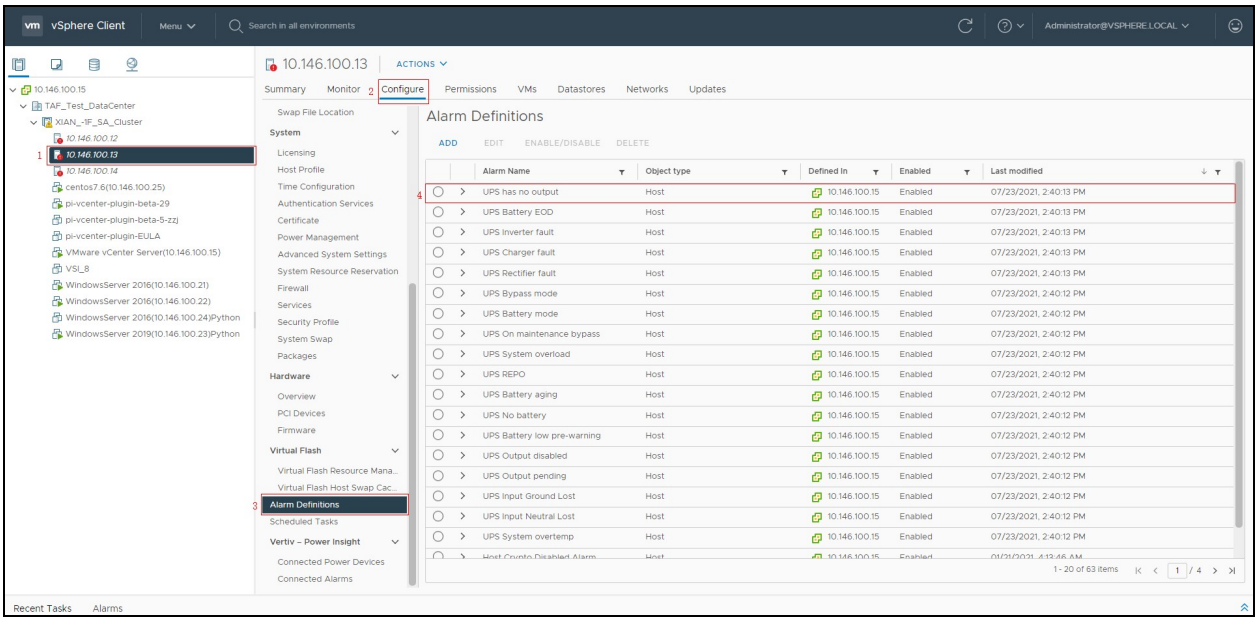
For the Host level, we provide two types of alarms:

- Global alarms: These are the default Vertiv power supply alarms installed by Plugin to all hosts under vSphere when it is registered and installed in vSphere. These alarms need not be set manually by the user.
- Custom alarms: These alarms need to be selected from the list according to the power supplied by the device to the Host. Only the custom alarms installed on the device can be triggered on vSphere, and the linkage actions preset in the alarm definition can be executed.

Function Module

View the global alarms of vSphere-level installations. When the Plugin is installed, the global alarm gets installed on all Hosts in vSphere.

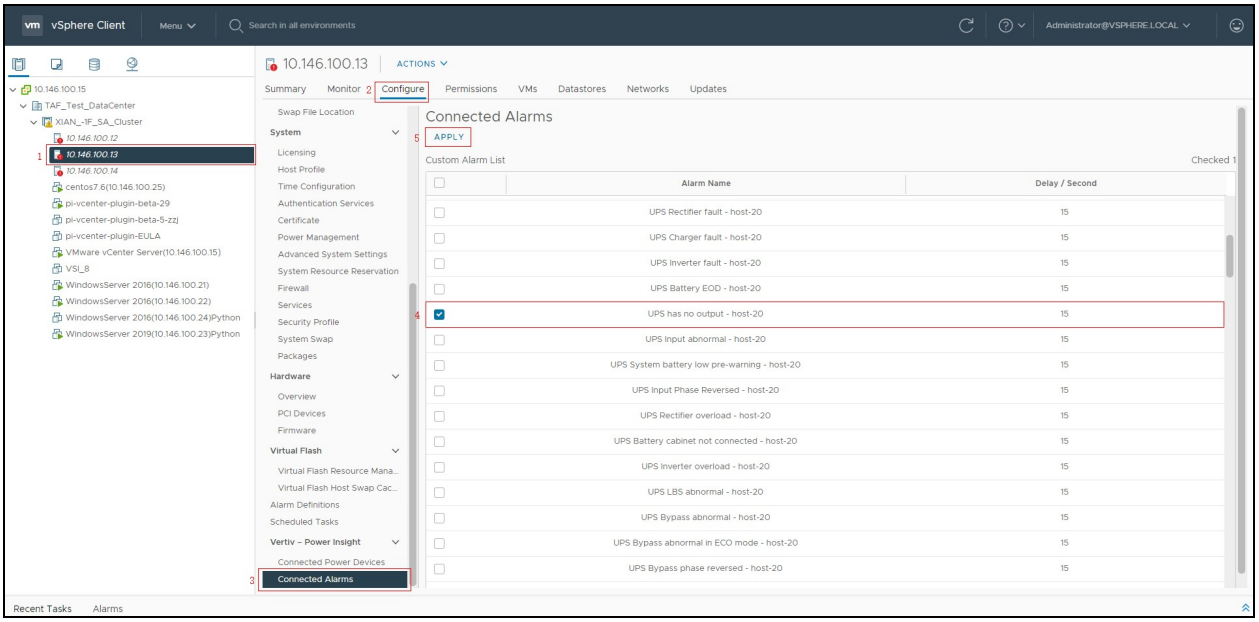
Figure 3.19 Host Installed Global Alarm



Associate Custom Alarms on Host

1. Select Host in the left pane. Click the *Configure tab*, and then select *Vertiv-Power Insight* → *Connected Alarms menu option*.
2. In the Connected Alarms page, list of custom alarms is displayed, select the alarm that needs to be installed on the Host, and then click *Apply*.

Figure 3.20 Host Association Custom Alarm

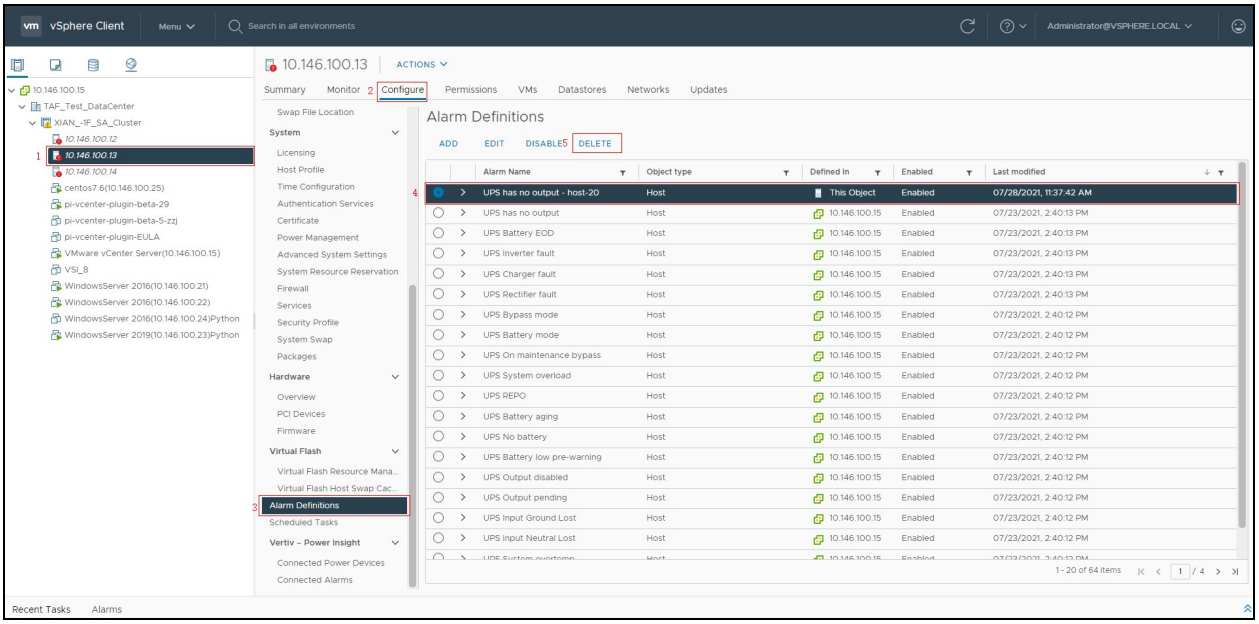


Cancel the Connected Custom Alarm

You can cancel the associated custom alarms in any of the following ways:

- Delete the associated custom alarm in the Alarm Definitions page.
- Uncheck the associated custom alarms in the Connected Alarms page, and then click *Apply*.

Figure 3.21 Host Delete Custom Alarm

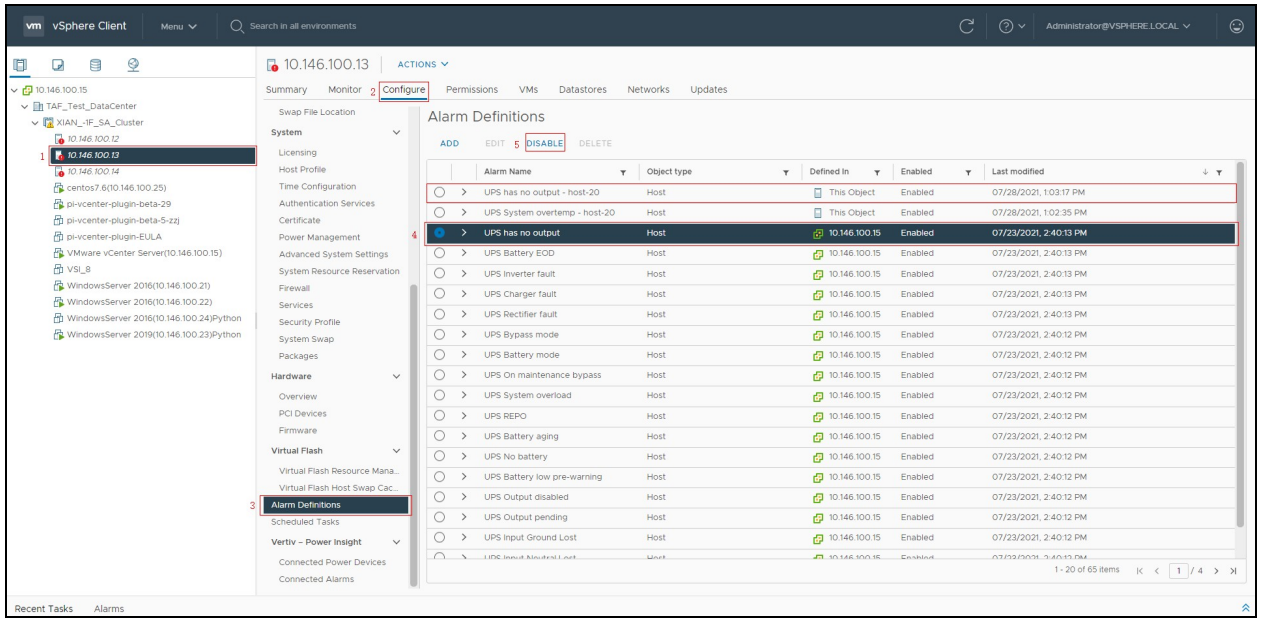


CAUTION: When an alarm occurs on the power device connected the Host, it must be pre-installed on the Host to trigger the alarm in vSphere, and then execute the alarm preset action. The alarms installed on the host can be global alarms or manually associated custom alarms.

The custom alarms also include some alarms with the same name as the global alarms, but their scope of action is different. By default, the global alarms are installed on all hosts and are effective for all hosts. Custom alarms are only effective for the associated Host.

If the global alarm and custom alarm installed by a Host have the same name, it is recommended to disable the global alarm manually on the Host to avoid conflicts.

Figure 3.22 Host Alarm

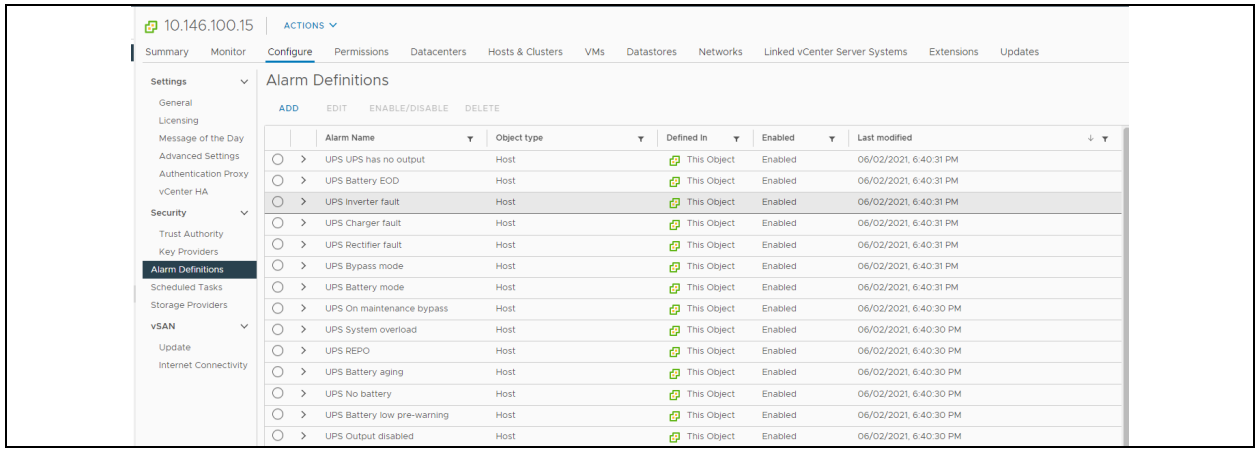


3.2.4 Power Equipment Alarm

Alarm Definition

After the Plugin is registered to vSphere, the pre-installed alarms is displayed under the *vSphere → Configure → Alarm Definitions page.*

Figure 3.23 Alarm Definition



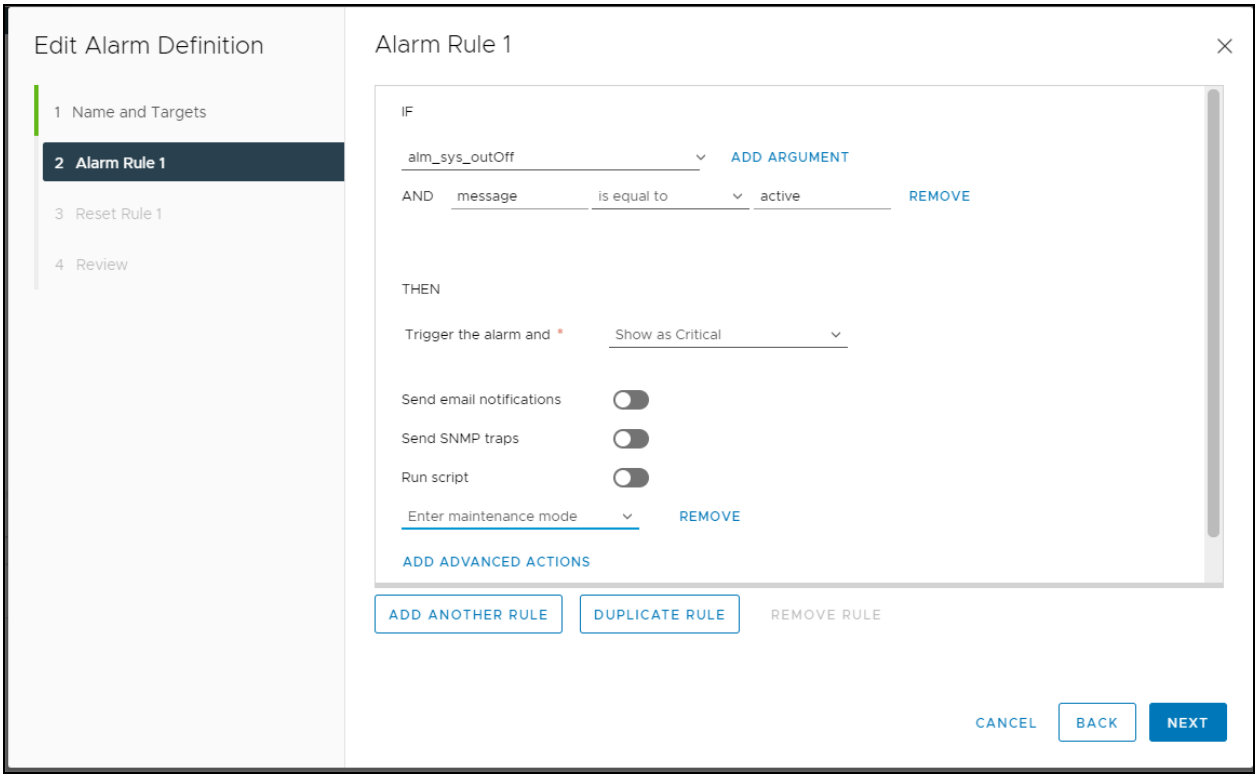
- For the newly added alarm definition, the object type is the host, and the definition scope is the entire vSphere.
- 10.146.100.15 represents the name of vSphere.
- You can edit, disable/enable, and delete alarm definitions.

You can add some advanced operations to the alert rule when editing alarm rule. These operations are:

- Entering the maintenance mode.
- Adding the maintenance mode.
- Exiting the maintenance mode.

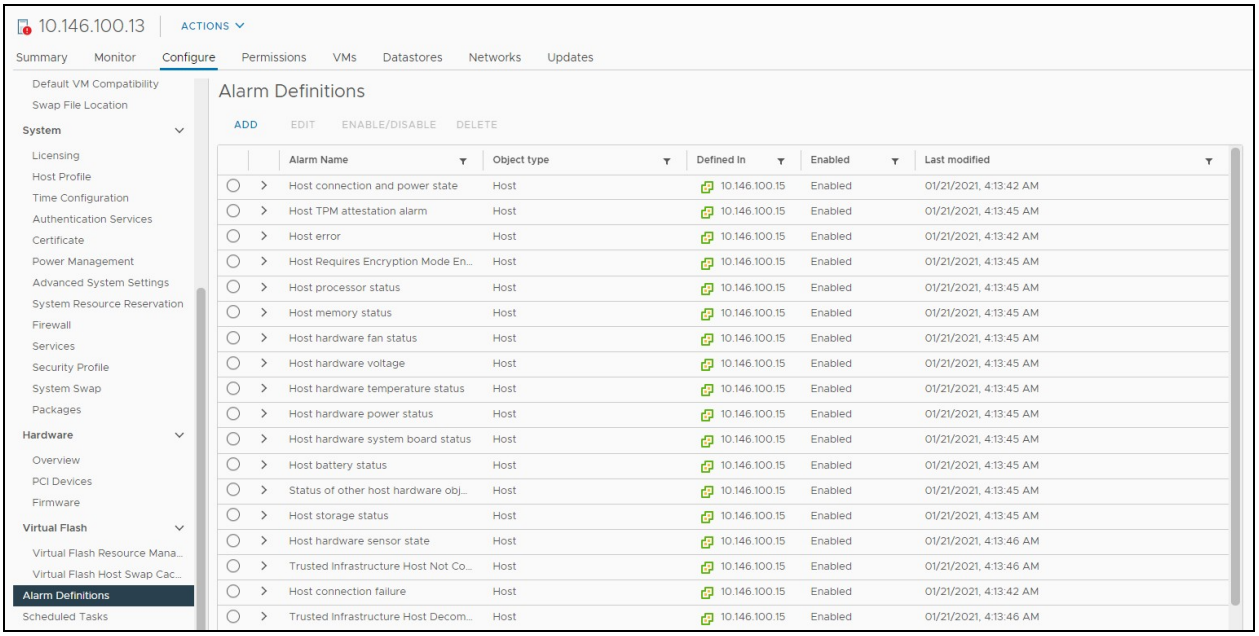
NOTE: Do not modify the IF rules. Otherwise, alarms will not be triggered.

Figure 3.24 Edit Alarm Definition



After configuring the alarms for a single server, the corresponding alarms will be displayed under the selected *Server* → *Configure* → *Alarm Definitions list.*

Figure 3.25 Single Server Alarm Definition List



For newly added alarm definitions, the Object Type is Host, and the Definition Scope is the current server.

NOTE: You can edit, disable/enable, and delete alarm definitions.

While editing, you can add advanced operations to the alert rule. These operations are:

- Entering the maintenance mode.
- Adding the maintenance mode.
- Exiting the maintenance mode.

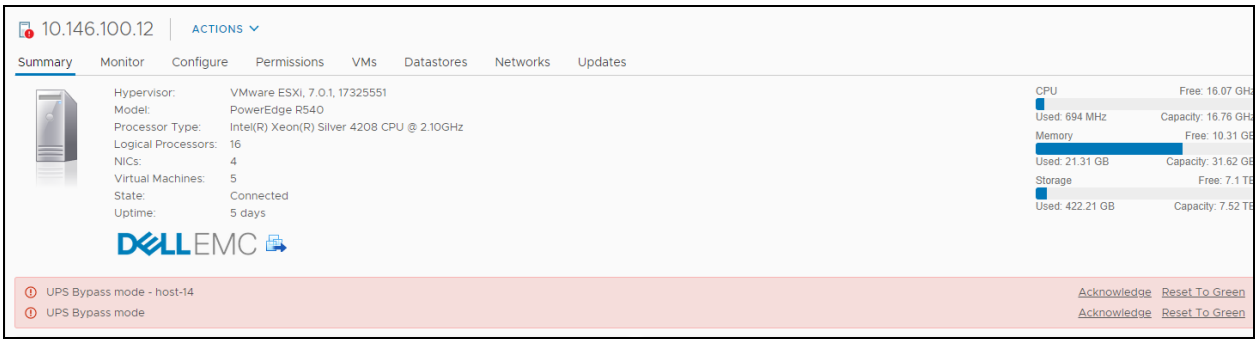
NOTE: You cannot edit the alarm definitions at the vSphere level. You can only disable/enable the alarm definitions at vSphere level. However, you can edit the alarm definitions at Host level.

NOTE: All operations on this interface are only applicable to the selected server.

Trigger an Alarm

Once the device is connected as mentioned in section Associate Server and Power Supply Equipment on page 20 , vSphere displays the alarm information received from Power Insight.

Figure 3.26 Summary



The alarm name is displayed in the Summary tab.

Figure 3.27 Monitoring-All Problems

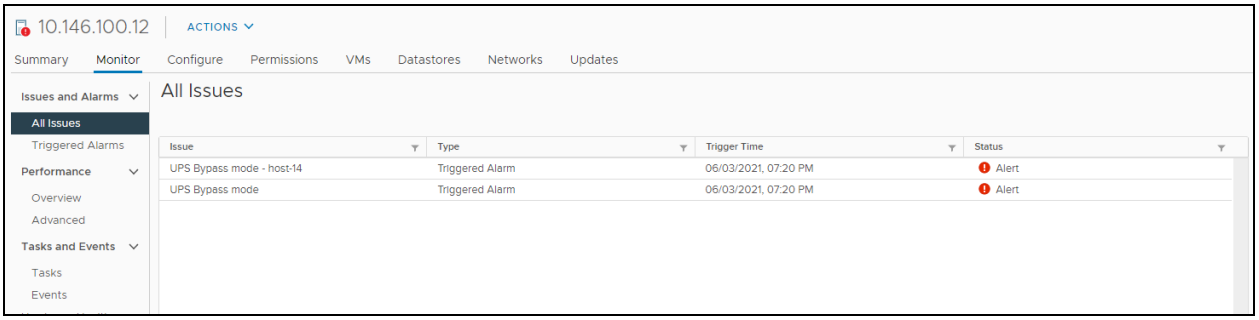
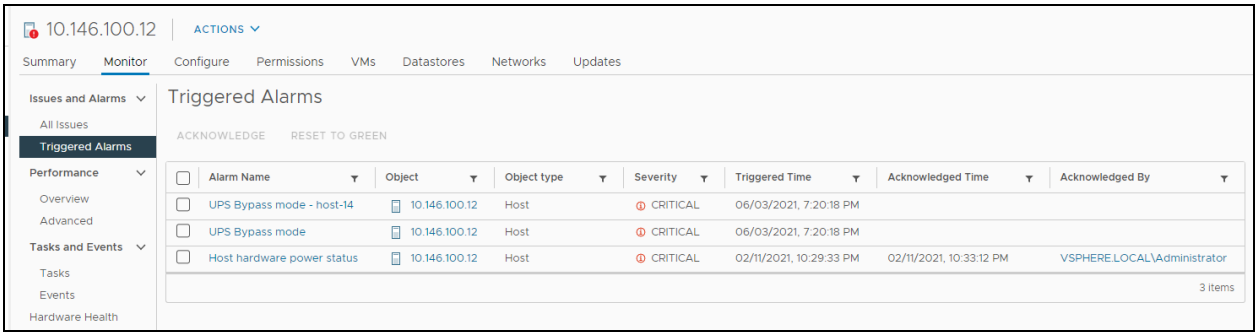


Figure 3.28 Monitoring-Triggered Alarm



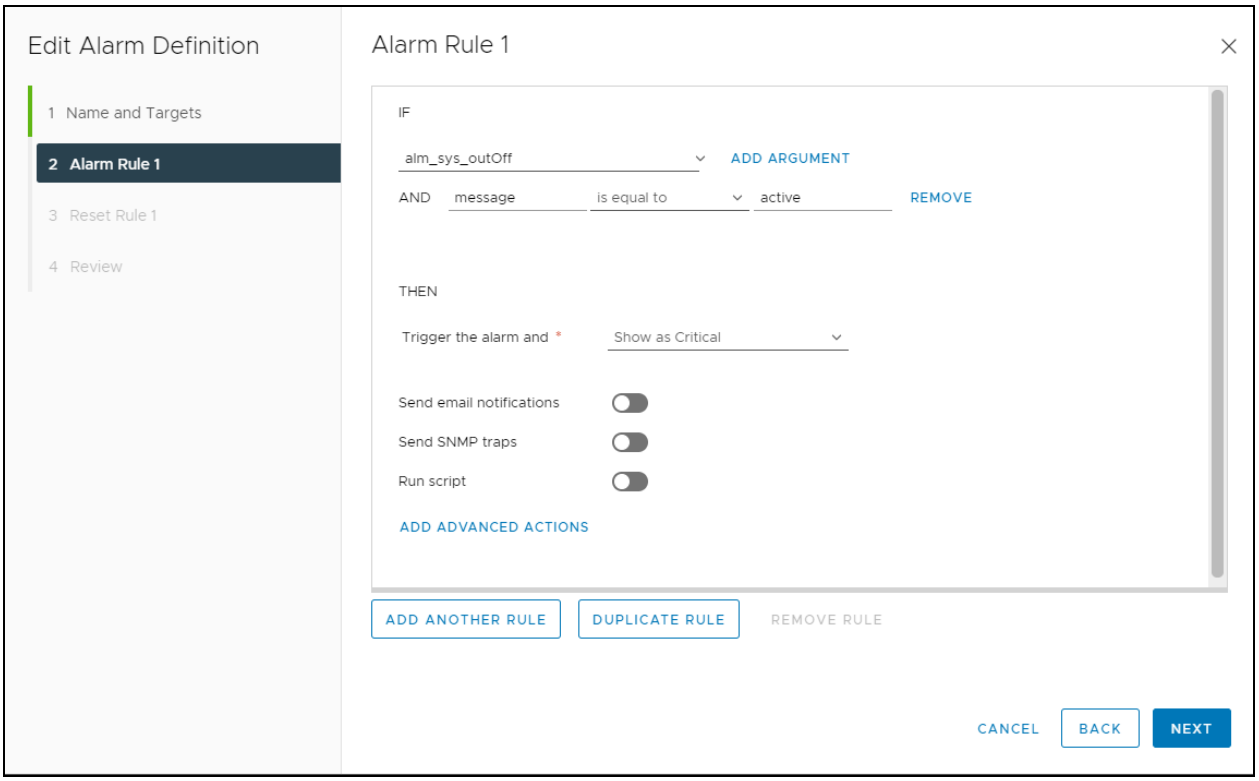
Monitoring Triggered Alarms:

Triggered alarm are monitored as follow:

To view the details of triggered alarms:

1. Click *Monitor* tab, and then select Issues and Alarms menu option.
2. In the All Issues list, select Triggered Alarms option.

Figure 3.29 Alarm Rule



Alarm Rule

When an alarm occurs, the alarm rules will be executed, as shown in **Figure 3.29** above .

For example, An Alarm operation is set for sending emails, SNMP traps, run scripts etc. It indicates that you have configured these options in advance.

NOTE: In this example, the Maintenance mode is selected. Entering the maintenance mode will migrate the virtual machines running on the server, and then shuts down the server. For more details on the migration strategy of virtual machines, please read https://www.vmware.com/products/vsphere/drs-dpm.html.

NOTE: Entering and exiting the maintenance mode requires a time duration. If alarms are frequently generated and ended, it prevents the maintenance mode from completing and ending normally. It is strongly recommended not to set the warning rule to *enter maintenance mode* and to *exit maintenance mode* as well.

End of Alarm

When the alarm is over, the alarm information in the Triggered Alarms page will no longer be displayed.

Figure 3.30 Summary Window: After the Alarm Ends

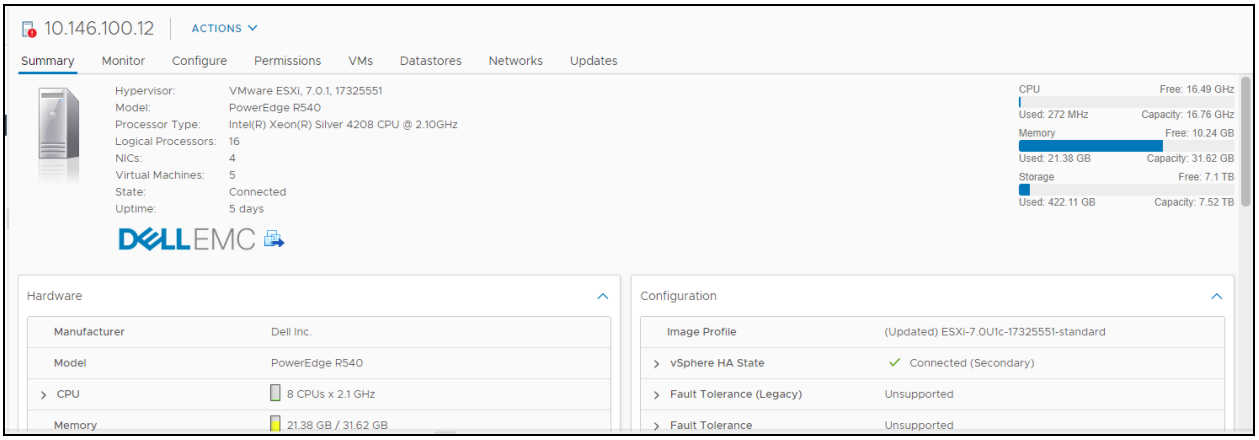
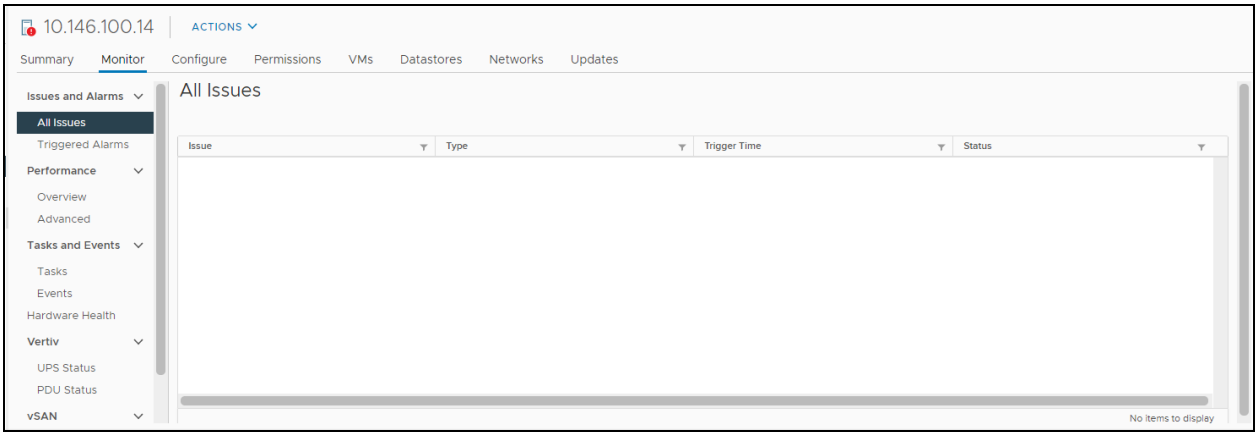
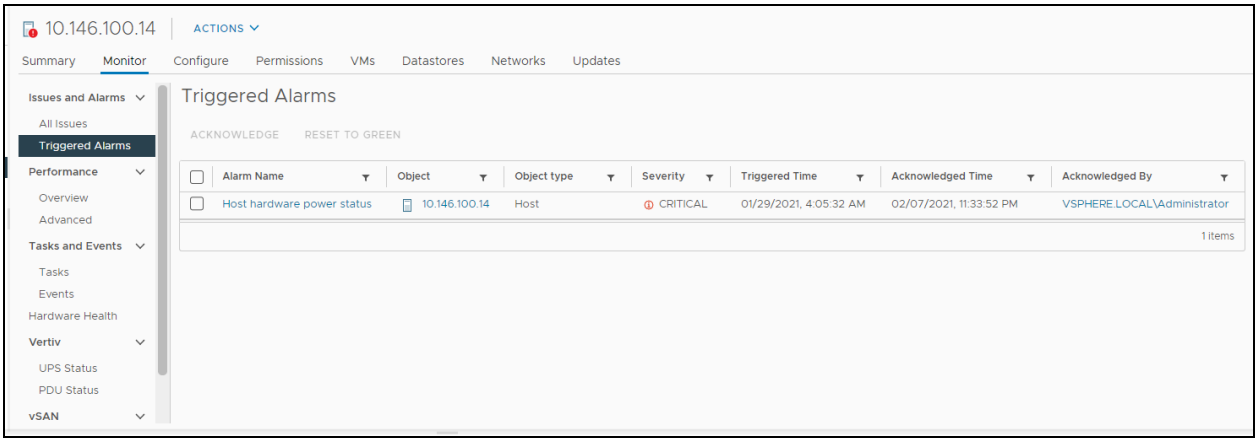


Figure 3.31 Monitor-All Issues: After the Alarm Event



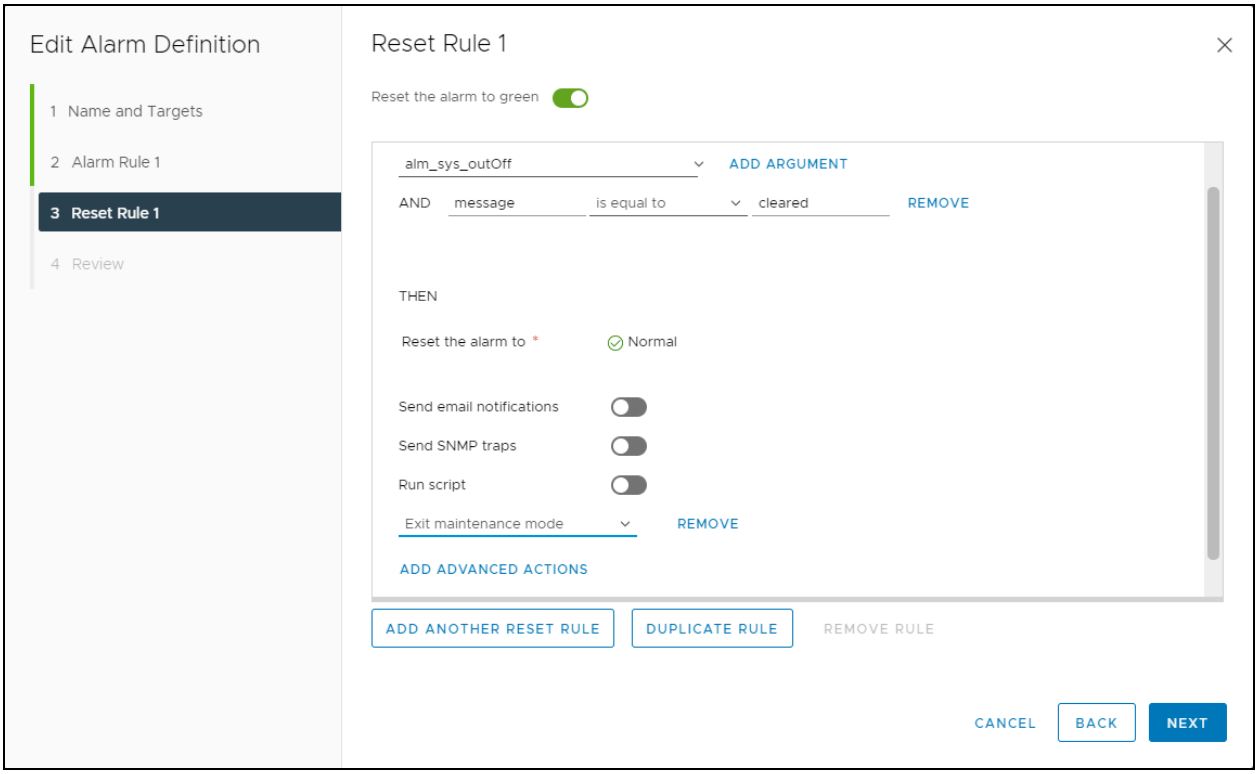
The *Monitor* → *All Issues* window after the alarm is over. The figure do not show the UPS PDU alarms.

Figure 3.32 Monitor->All Issues: After the Alarm is Over



vSphere will execute the Reset Rule in the Alarm Definition.

Figure 3.33 Reset Rules



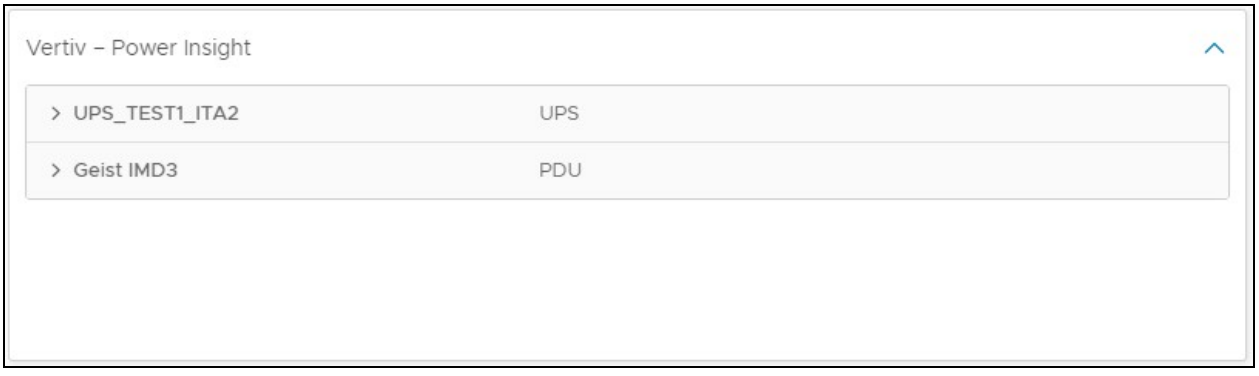
If the user is configured to send emails or scripts, it implies that these actions are executed when the alarm is triggered.

3.2.5 Displaying the Power Insight Device Information

Host Level Summary Interface

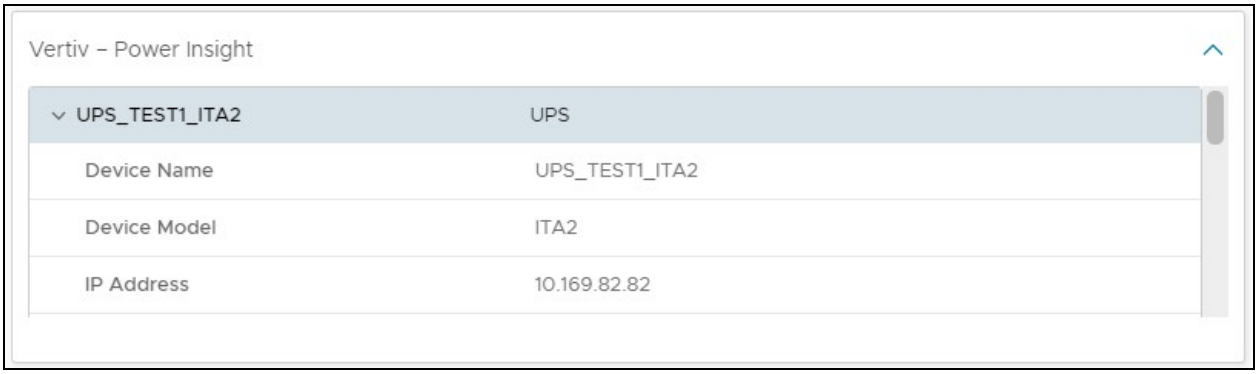
Once the device is connected, click *Summary* to return to the summary interface. The Summary area lists all the devices that are connected to Vertiv – Power Insight.

Figure 3.34 Summary Window



NOTE: Click the '>' sign on the left of the device name view the detailed information of device.

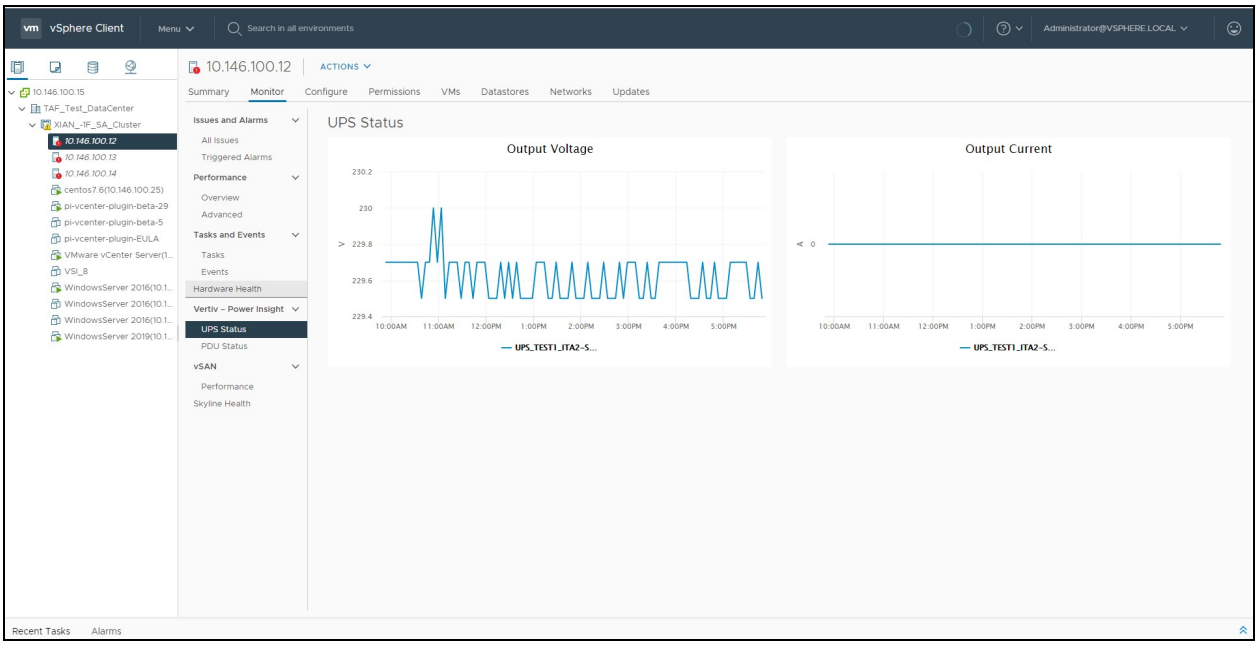
Figure 3.35 Summary Expand



Host-Level Monitoring Page

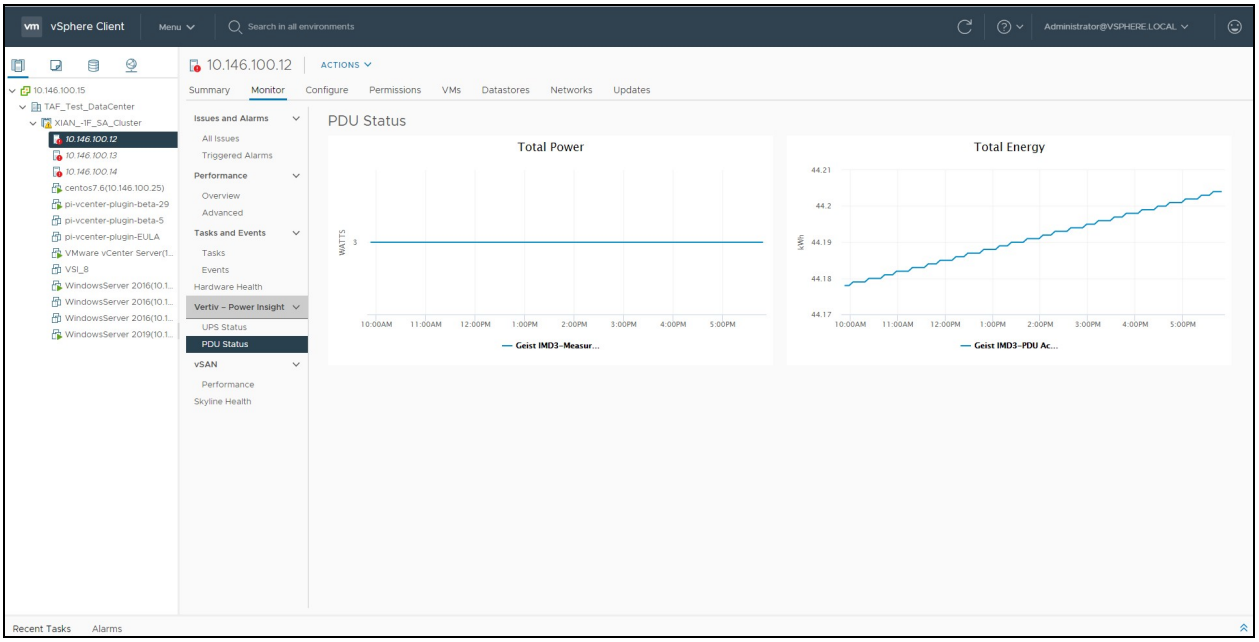
You can view the UPS device status. Click the *Monitor* tab and select Vertiv - Power Insight → UPS Status menu option on the left side of the monitoring page, as shown in **Figure 3.36** below .

Figure 3.36 UPS Status



- The UPS Status page displays the Output Voltage and Output Current trend through the line chart.
- Click the *PDU status* option to view the PDU device status.

Figure 3.37 PDU Status Page

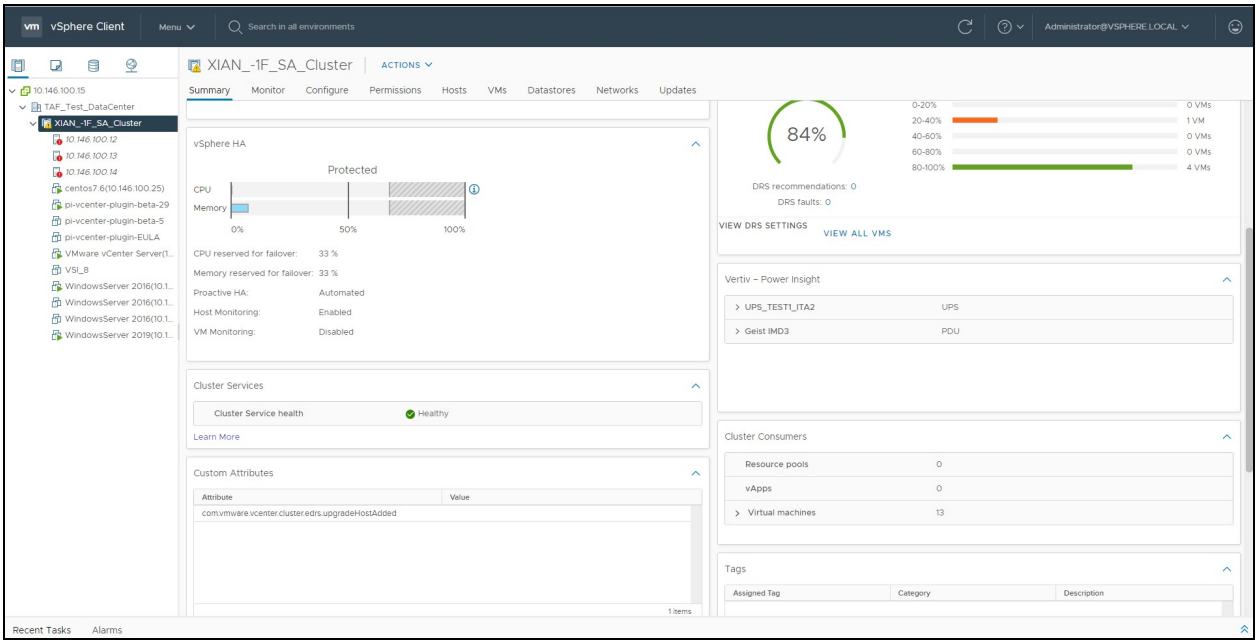


The PDU Status area displays the Total Power and Total Energy trend through the line chart.

Cluster Level Summary Interface

Since the same device can be connected by multiple hosts, users can view the entire cluster-level host-bound devices on the Cluster-level Summary Page, as shown in Figure 3.38 below .

Figure 3.38 Cluster Level Summary Page

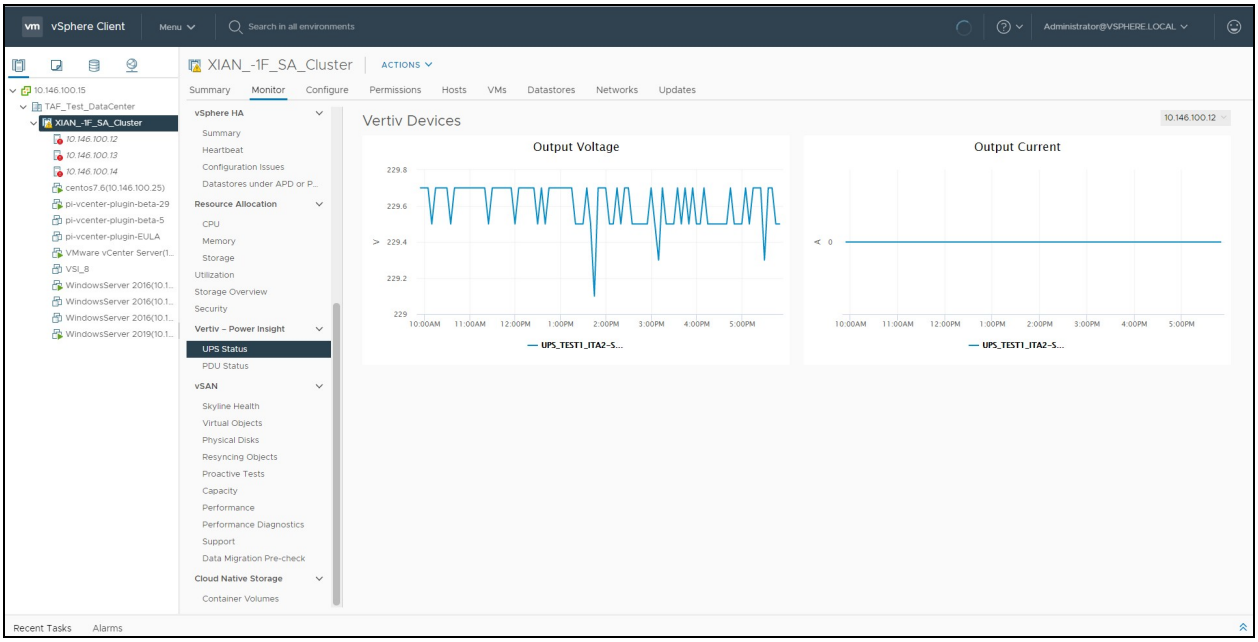


Users can view the summary of all host-bound devices on the current page.

Cluster-Level Monitoring Page

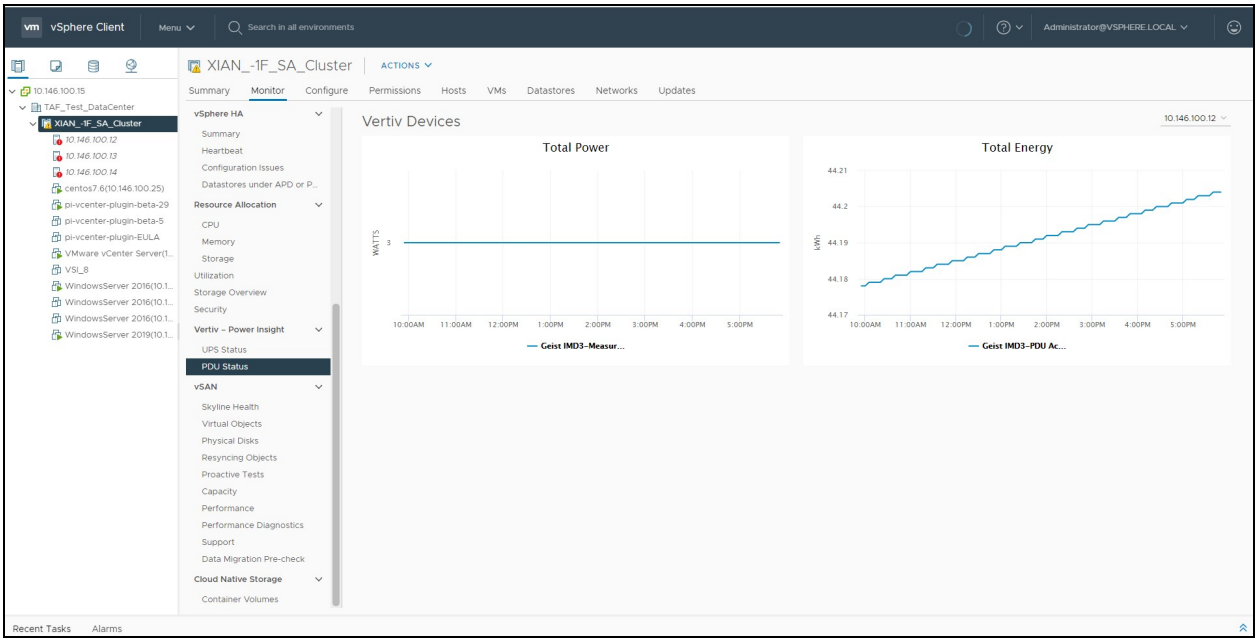
You can view the UPS and PDU operation status at cluster level when the current host device is connected. Select the cluster in the left pane, and then click the *Monitor tab*. Now, select Vertiv-Power Insight → UPS Status menu option, as shown in Figure 3.39 below .

Figure 3.39 Cluster-Level Monitoring UPS Status Page



To view the Output Voltage and Output Current line graph of other host connected to the UPS device, select a host name in the drop-down box displayed on the top-right corner of the page. Click the *PDU Status* menu option to view the cluster-level PDU status, as shown in Figure 3.40 on the next page .

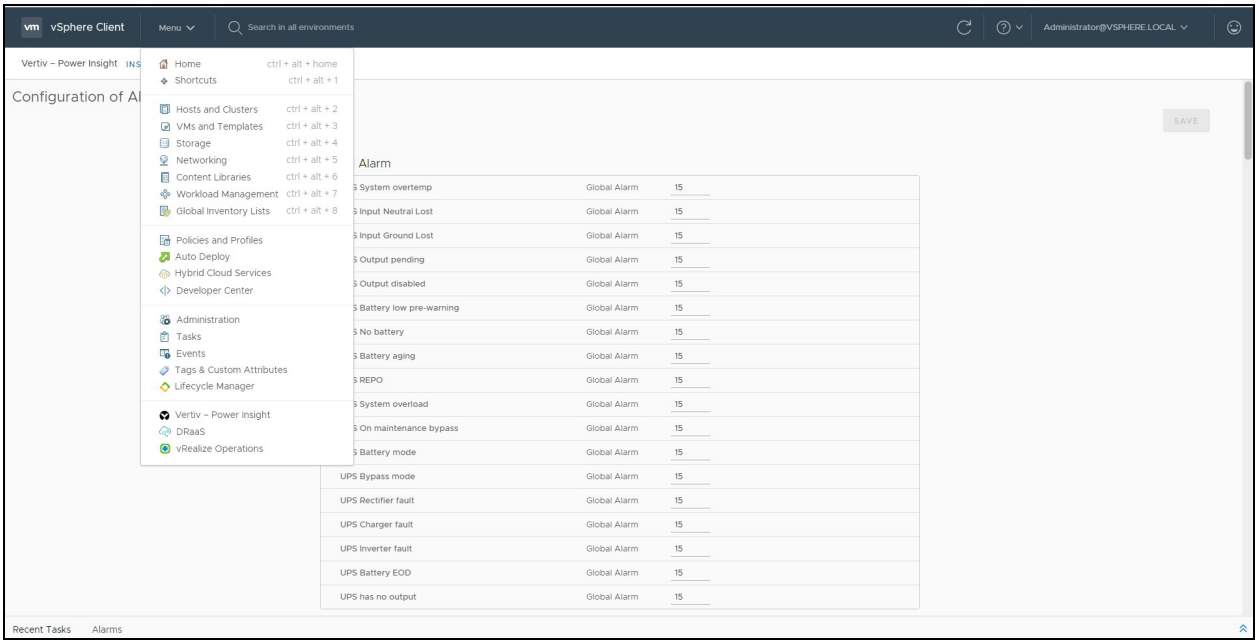
Figure 3.40 Cluster-Level Monitoring PDU Status Page



3.2.6 Alarm Delay

The alarm delay function triggers the alarm rules and prompts the alarm based on the delay time. For unnecessary impact on vSphere, avoid the short interval between the generation and end of the alarm (for example, thunderstorms may cause fluctuations in the power supply network and UPS generates an alarm with a very short duration. In this situation, the time interval between Alarm occurrence and end of alarm is very short and hence it is not recommended to trigger safety action.) You can view the alarm delay interface in the menu Vertiv - Power Insight.

Figure 3.41 Vertiv-Power Insight Window



Alarm Classification

Alarms are classified as:

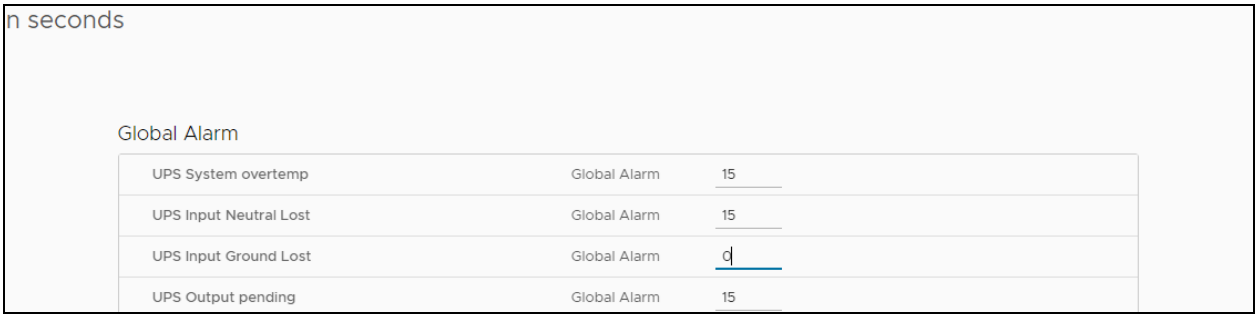
- Global alarms: These are the default alarms which gets installed when the plugin is registered to vSphere.
- Custom alarms: These are extended alarms. It is used to configure special alarms for a single server.

The alarm data displayed in three columns indicates the alarm name, alarm type, and delay time (in seconds).

Modify Delay

To modify the alarm time, enter the delay time (in seconds)in the text box , and then click *Save*.

Figure 3.42 Vertiv Window



As shown in Figure 3.42 above , the delay time of the UPS Input Ground Lost alarm is modified to 0 seconds. It indicates that the alarm will trigger immediately and the warning rule will be executed.

3.3 VxRail Mode (Single vSphere/Dual vSphere)

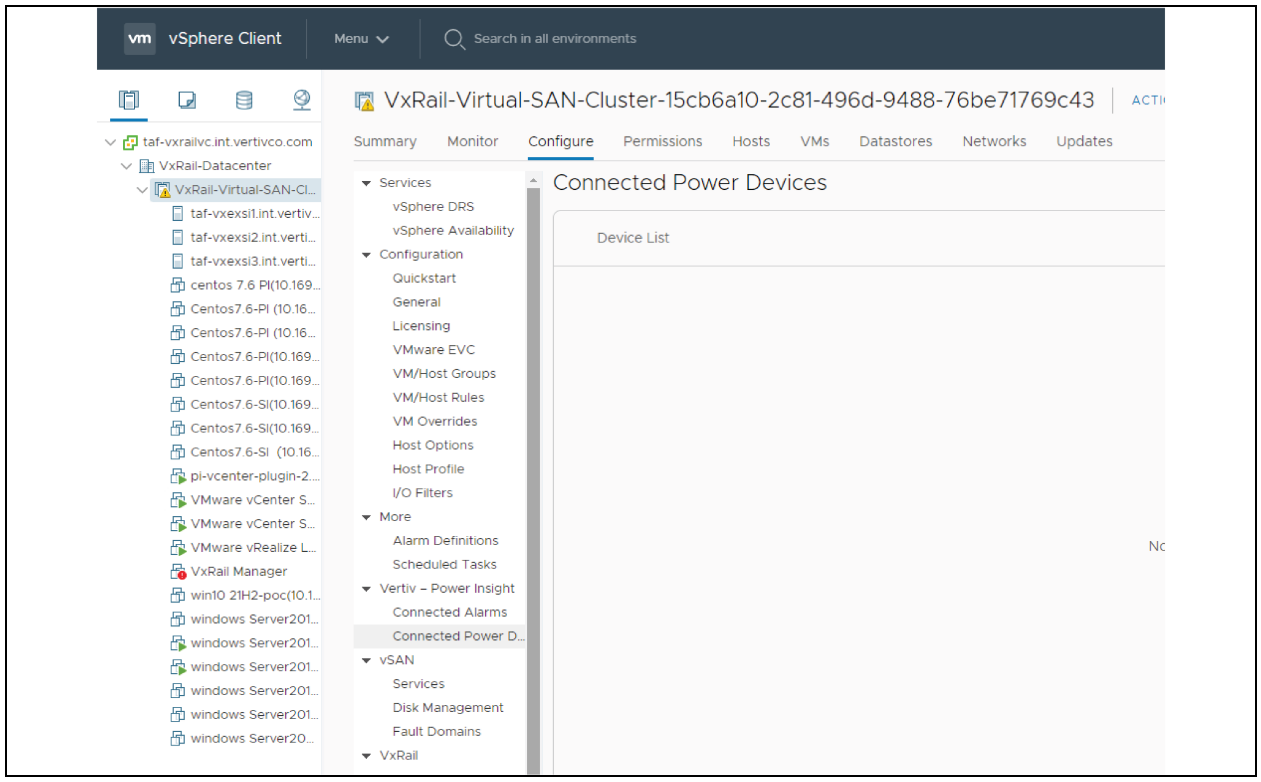
3.3.1 Overview

The VxRail mode is mainly used to integrate VMware's Hyper Convergence Infrastructure (HCI)-VxRail. After configuration, when the alarm goes off on the power equipment, the plugin and UPS Card can trigger the shutdown of VxRail. The VxRail mode is the same as the traditional mode, in that before utilizing the automatic shutdown process, you need to set the power supply, alarm, delay, etc. Users need to select either the single VxRail mode or the dual VxRail mode according to the number of VxRails; if you select the single VxRail mode, you need to use the UPS Card to complete the shutdown process.

3.3.2 Connect the Power Supply Equipment

1. Log in to vSphere, click the *Menu* at the top of the page, and select Host and Cluster.

Figure 3.43 vSphere Menu



2. Select the Vxrail-Virtual-SAN-Cluster layer.
3. Click the *Configuration* tab to switch to the Configuration screen. In the left menu bar, select Vertiv-Power Insight.
4. Select the Power Supply Connection tab to enter the page for setting the power supply connection Connecting power supply equipment includes two steps: one is to select the UPS that supplies power to VxRail, and the other is to select the power supply mode of the UPS.

Figure 3.44 Power Supply Equipment Connection

5. Select the UPS to supply power to VxRail.
    - Only one or two UPS devices can be selected as UPS devices supplying power to VxRail.
    - After selecting the appropriate number of devices, click *Next* to jump to the power supply mode selection.
6. Power Supply Mode Selection.

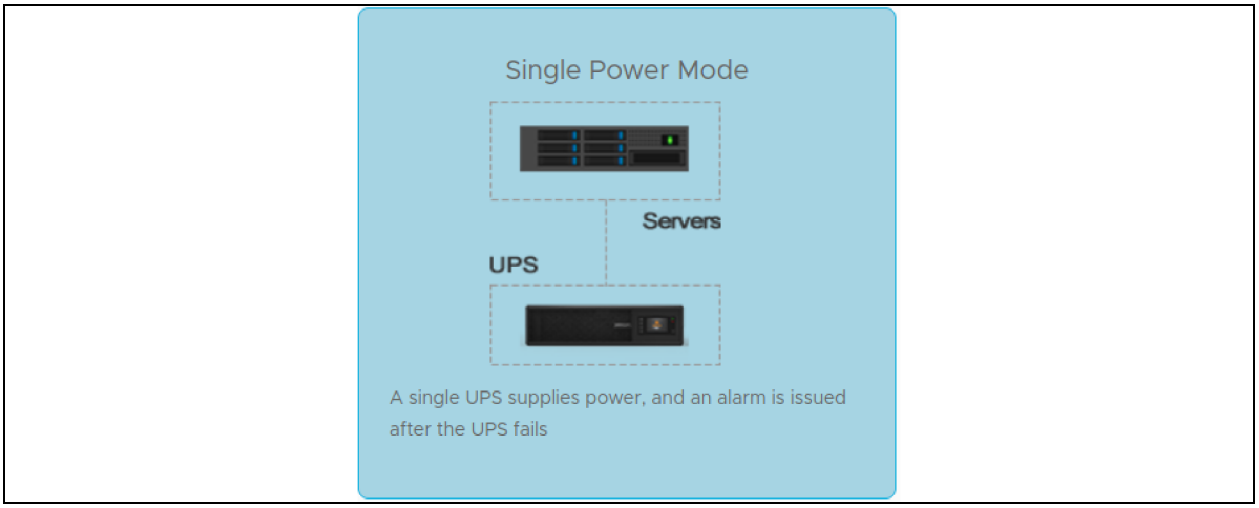
According to the number of UPS devices selected in the Select the UPS to supply power to VxRail. above , there are three power supply modes:

- Single power supply mode.
- Active/standby mode.
- Parallel mode.

after entering the mode selection interface, you can click the *Previous* button at the lower left corner to return to the device list page to re-select the device to be bound.

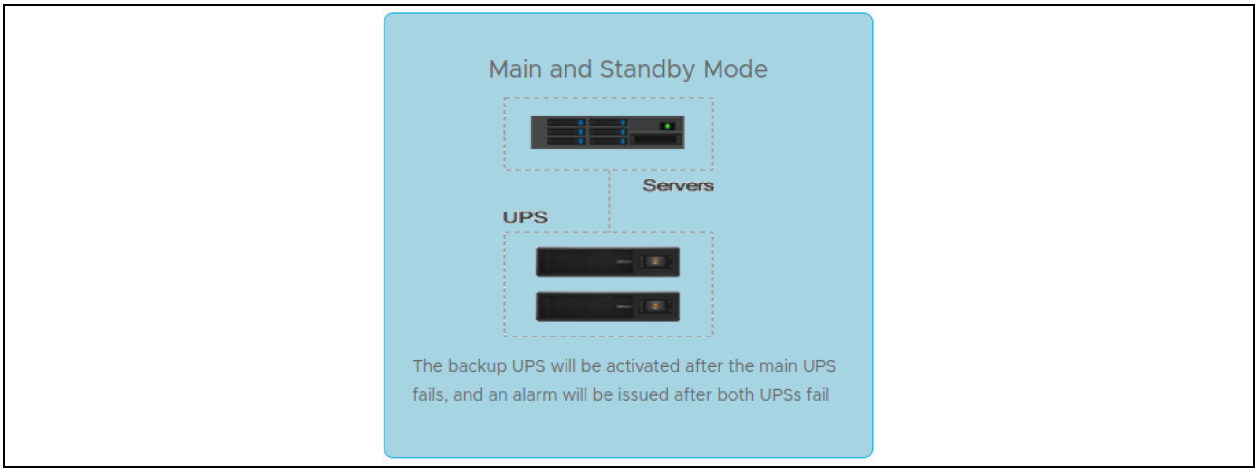
- **Single power supply mode:** in case of single UPS power supply, an alarm will go off when UPS fails.

Figure 3.45 Schematic Diagram of Single Power Supply Mode



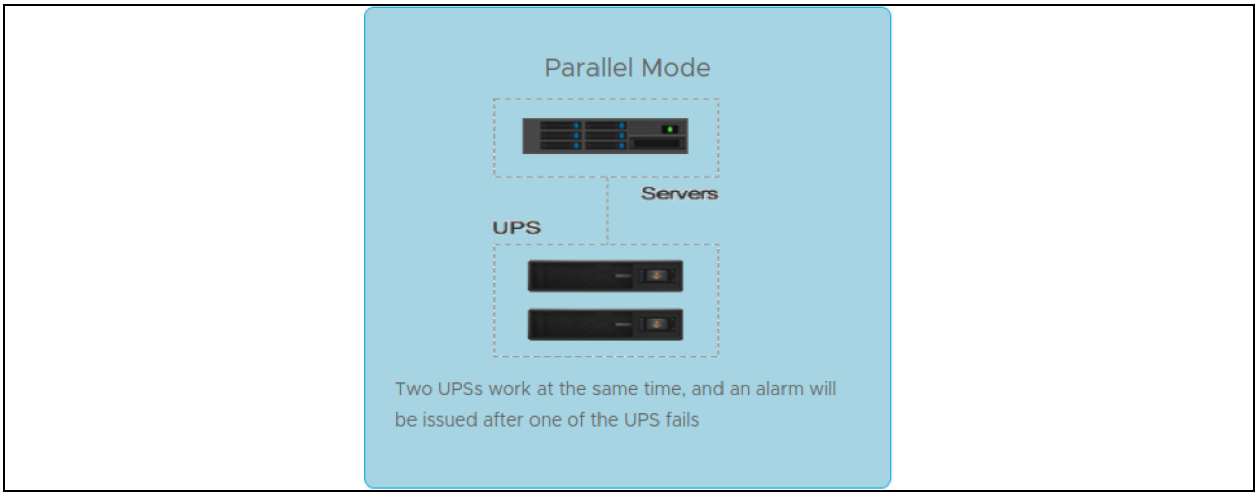
- **Active/standby mode:** when both the active and the standby UPSs can supply power independently, the standby UPS will be enabled after the primary UPS fails, and an alarm will go off when both of them fail.

Figure 3.46 Schematic Diagram of Main/Standby Mode



- **Parallel mode:** when two UPSs supply power at the same time, an alarm will go off when one UPS fails.

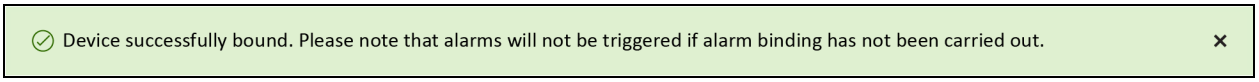
Figure 3.47 Schematic Diagram of Parallel Mode



7. Successfully Bound Page.

- After the device is successfully bound, a Successfully Bound notification will pop up, as shown in Figure 3.48 below .

Figure 3.48 Prompt after the device is successfully bound



After the device is bound, you need to connect to the alarm in order to trigger the UPS alarm notifications in vSphere.

- Rebind

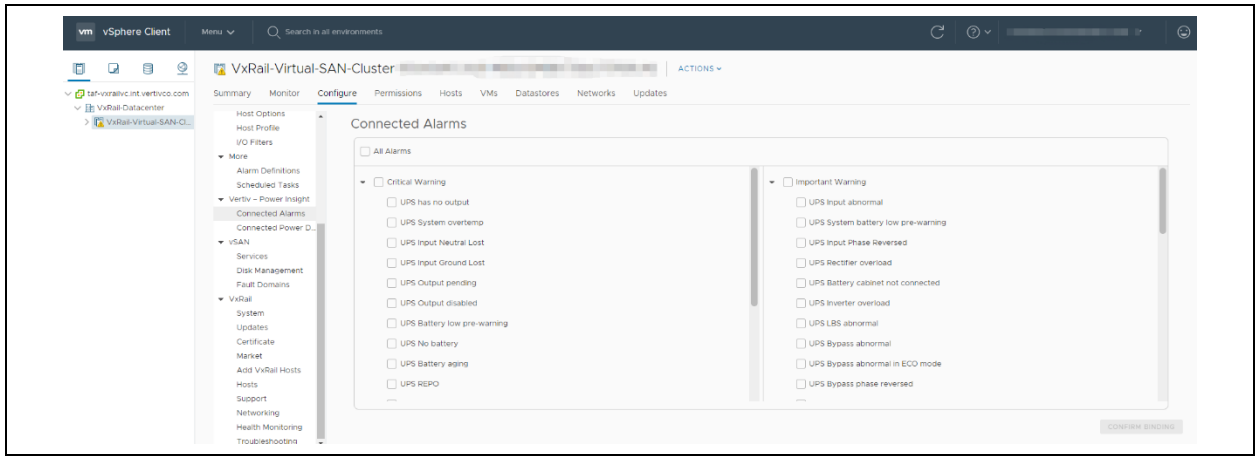
Click the *Rebind* button in the lower right corner to delete the currently bound device, re-enter the device list page, and rebind.

3.3.3 Connect to the Alarm Signal

After the device is bound, you must manually connect to the emergency or important alarms to be monitored before you can monitor the UPS alarm in vSphere:

1. Select the Vxrail-Virtual-SAN-Cluster in the left pane, and click the *Configuration* tab.

Figure 3.49 Connect to the Alarm Signal Page



2. In the Vertiv - Power Insight column, select Connect Alarm. The alarms here include emergency alarm and important alarm. After checking the appropriate alarm, click *Confirm Change* in the lower right corner for it to take effect. If the UPS alarm is among the connected alarms, shutdown of VxRail will be triggered when it goes off.

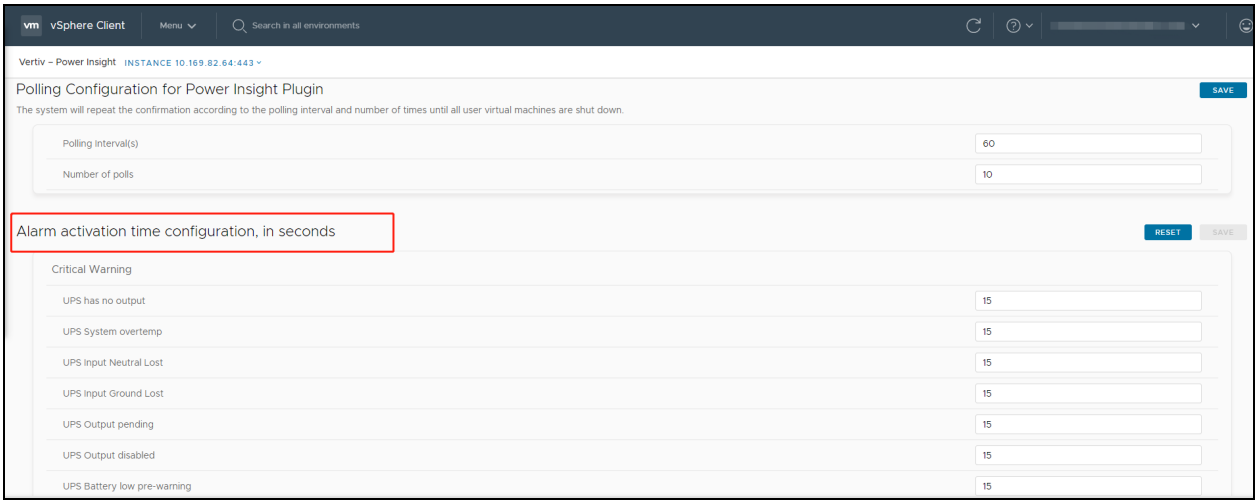
3.3.4 Alarm Delay

The alarm delay function allows for the warning rules and warnings to be triggered after a period of time has elapsed since the actual occurrence of the alarm. This is to avoid unnecessary impact on vSphere caused by short alarm intervals (for example, thunderstorms may cause fluctuations in the power supply network, and UPS will generate an alarm with very short duration. It is unnecessary for vSphere to trigger the warning rule in this case.)

To set the alert delay function:

1. Click *Menu* and select Vertiv - Power Insight. You can see **Figure 3.50** below .

Figure 3.50 Alarm Activation Time Configuration Window



2. You can set the delay time of each alarm. The default delay time of each alarm is 15s. That is, after these alarms are triggered, if they last more than 15s, the shutdown function will be triggered. If the alarm ends within 15s, the shutdown will not be triggered. The maximum configuration time is 86400s (24h).

3.3.5 Shutdown Polling Configuration

When Vertiv vSphere plugin triggers VxRail to shut down, the plugin will shut down the user virtual machine first, and then shut down the system virtual machine and physical cluster. If the user virtual machine cannot be shut down, the subsequent shutdown process will not be performed. Polling is a process to confirm whether the user virtual machine has been shut down completely. The polling time and interval can be configured as follows:

1. Click *Menu*, and then click *Vertiv - Power Insight*.
2. You can see Figure 3.51 below . The configuration is divided into two parameters, one is the number of polls (range: 5 to 20), and the other is the polling interval (range: 60-600, unit: seconds).

Figure 3.51 Shutdown Polling Configuration Window

3. After the configuration is saved.

- After entering the shutdown process in dual vSphere mode, the plugin will repeatedly seek confirmations from VxRail according to the number of polls and the polling interval until all the virtual machines of the user are shut down.
- After entering the shutdown process in the single vSphere mode, the plugin synchronizes the shutdown polling configuration with the UPS Card, and the UPS Card will repeatedly confirm with VxRail according to the number of polls and the polling interval until all the virtual machines of the user are shut down.

3.3.6 Alarm-Triggered Shutdown Process

1. Single vSphere Mode

VSphere Shutdown Process: after the UPS device alarm triggers the shutdoswn process, the plugin will notify the UPS Card to start the VxRail shutdown process. At the same time, vSphere starts to shut down the user virtual machines (you can view the shutdown of the user virtual machines in [Recent Tasks] or [Tasks]). After all the user virtual machines are shut down (when the virtual machines deployed by the plugin have been shut down), the UPS Card will take over and complete the shutdown of the system virtual machines.

Figure 3.52 Home Page-Recent Tasks

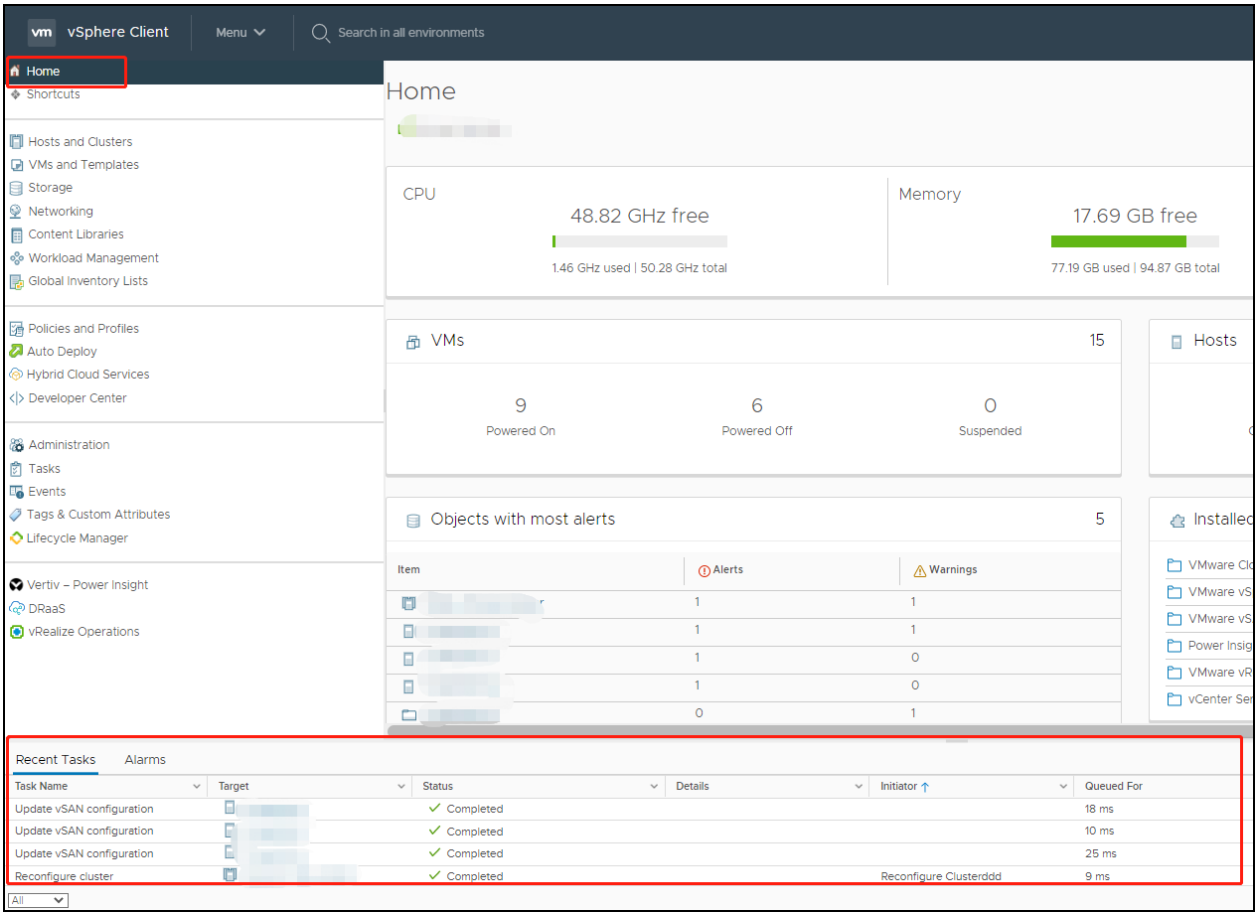
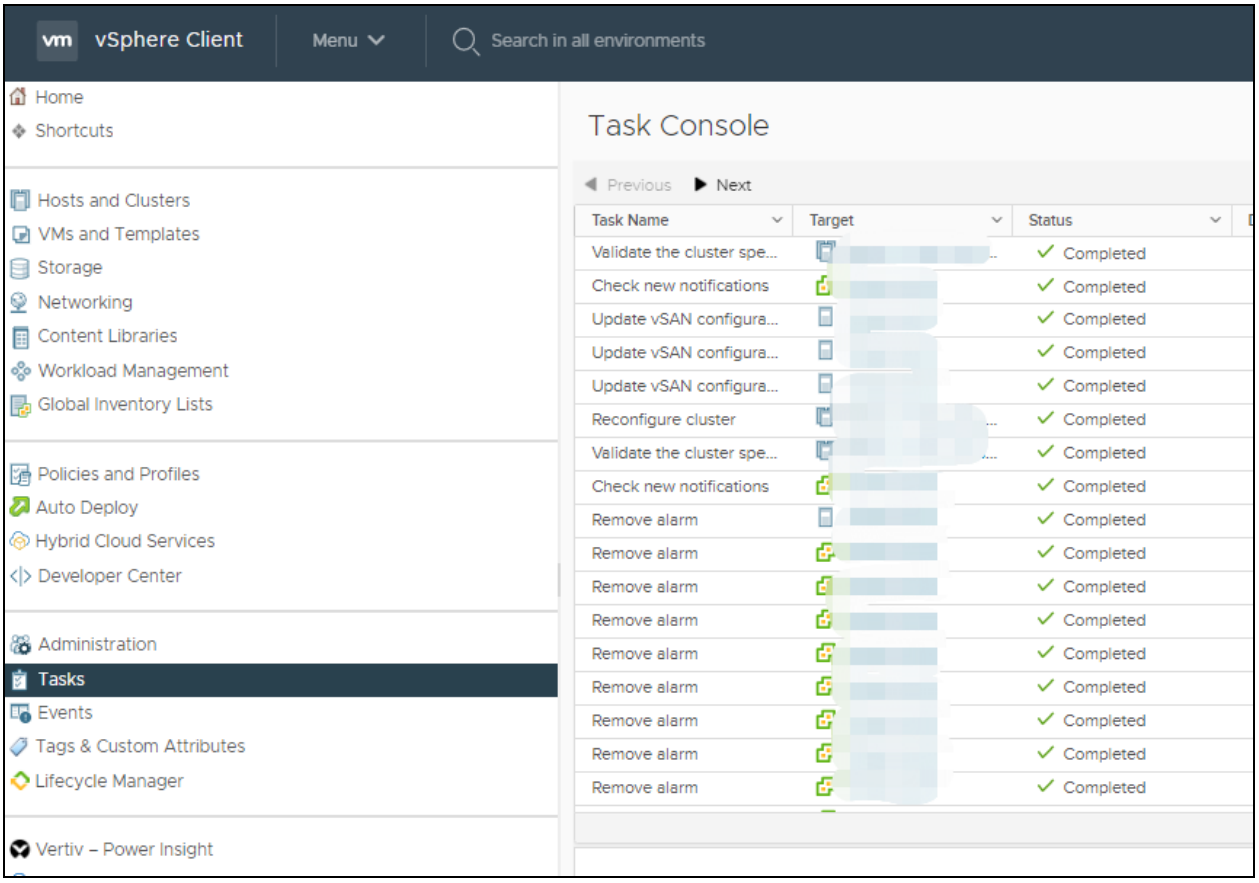
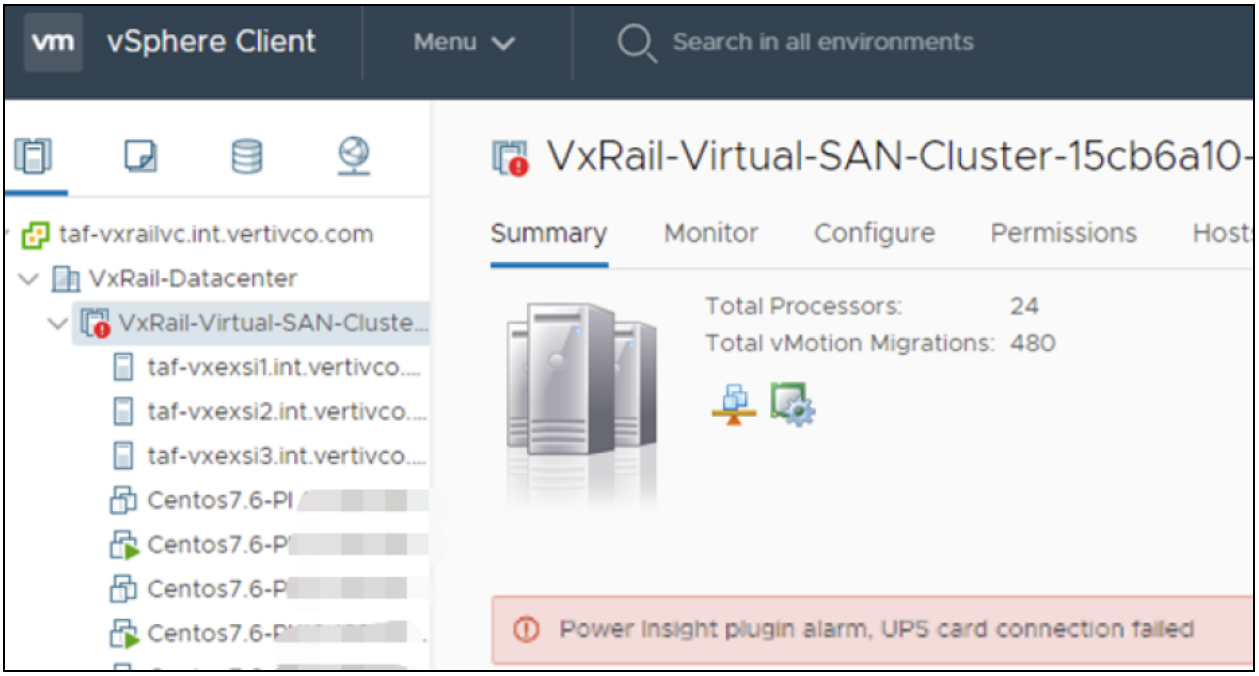


Figure 3.53 Menu-Tasks



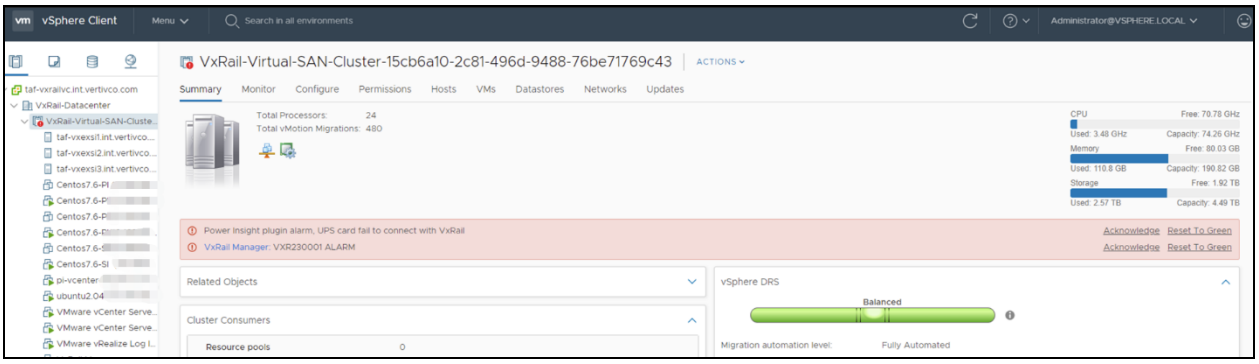
NOTE: After the registration process is completed and the power supply has been bound, in order to ensure that the UPS Card can successfully take over and complete the vSphere shutdown process when the Power Insight alarm is triggered, the plugin and the UPS Card, as well as the UPS Card and the VxRail Manager, will check on communication regularly. If communication fails, the following alarms will appear:

Figure 3.54 Alarm for Communication Failure between Plugin and UPS Card



NOTE: The Figure 3.54 above shows the alarm of communication failure between vSphere Plugin and UPS communication card. The alarm prompt is Power Insight plugin alarm, UPS Card connection failed. If the communication between the UPS communication card and VxRail fails, the following alarm will appear:

Figure 3.55 Alarm for Communication Failure between UPS Card and VxRail Manager



NOTE: The alarm is Power Insight plugin alarm, UPS Card failed to connect with VxRail. When such an alarm occurs, please check the communication between the three devices or the network condition of the devices. If the subsequent communication is successful, the alarm will be cleared.

Restart of vSphere and Plugin: after clearing the relevant UPS alarm, restart vSphere, system virtual machines, Power Insight and plugin in turn. After the plugin restarts, it will display or clear the Power Insight alarm on vSphere according to the current alarm status. At this time, in the summary window on vSphere, all problems and triggered alarms have been cleared.

Figure 3.56 Successful Shutdown Summary Window

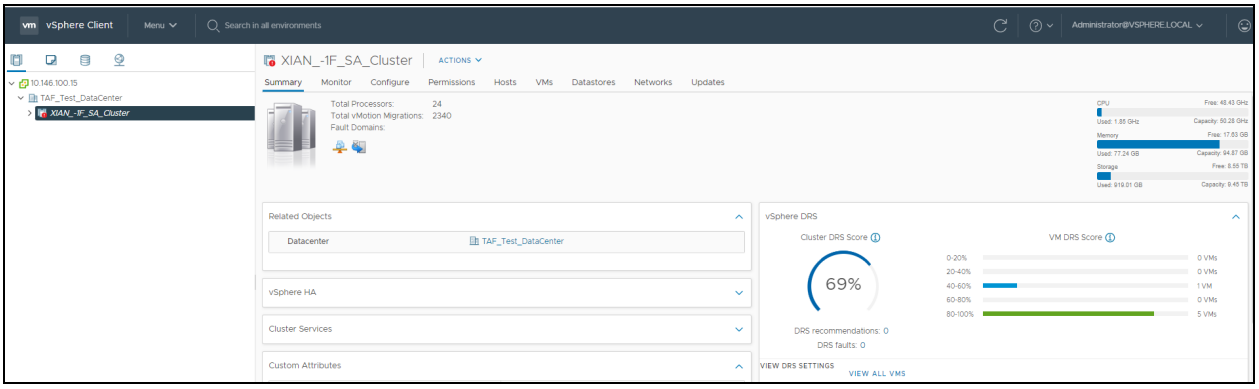


Figure 3.57 Monitoring-All Issues

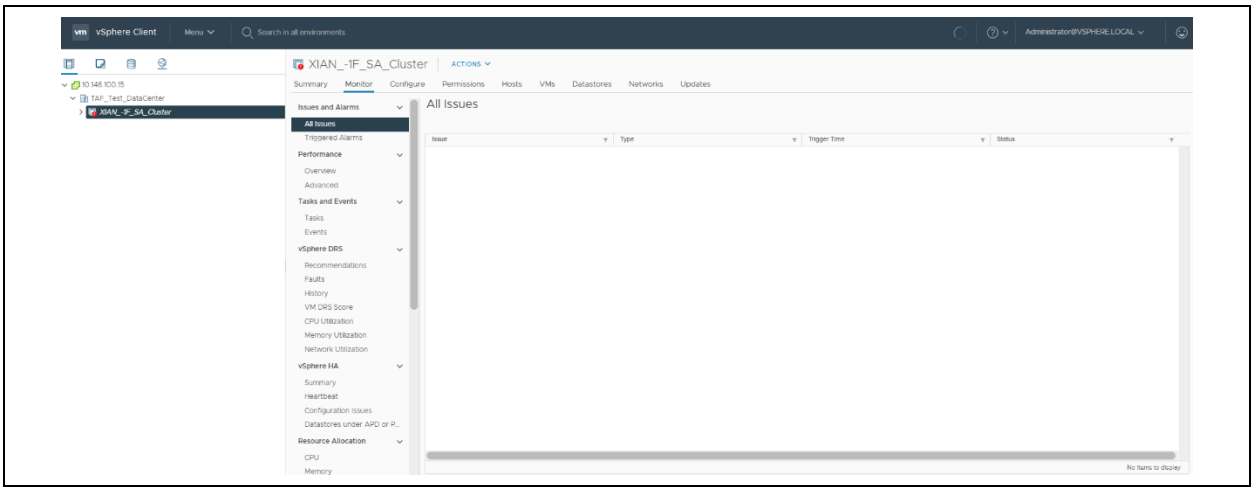
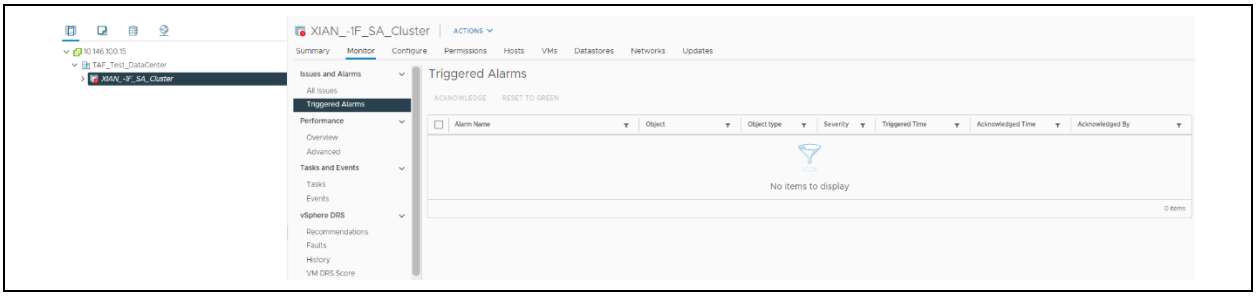
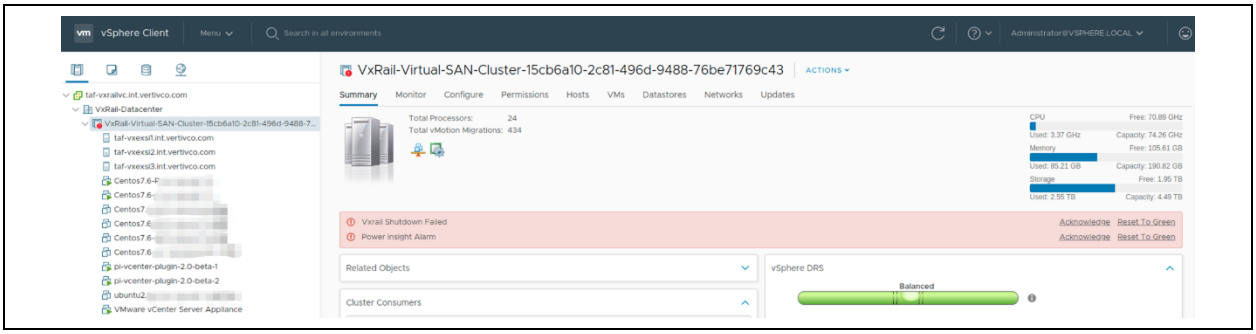


Figure 3.58 Monitoring-Alarms Triggered



Troubleshooting: In case of shutdown failure, vSphere will display an alarm of the failure.

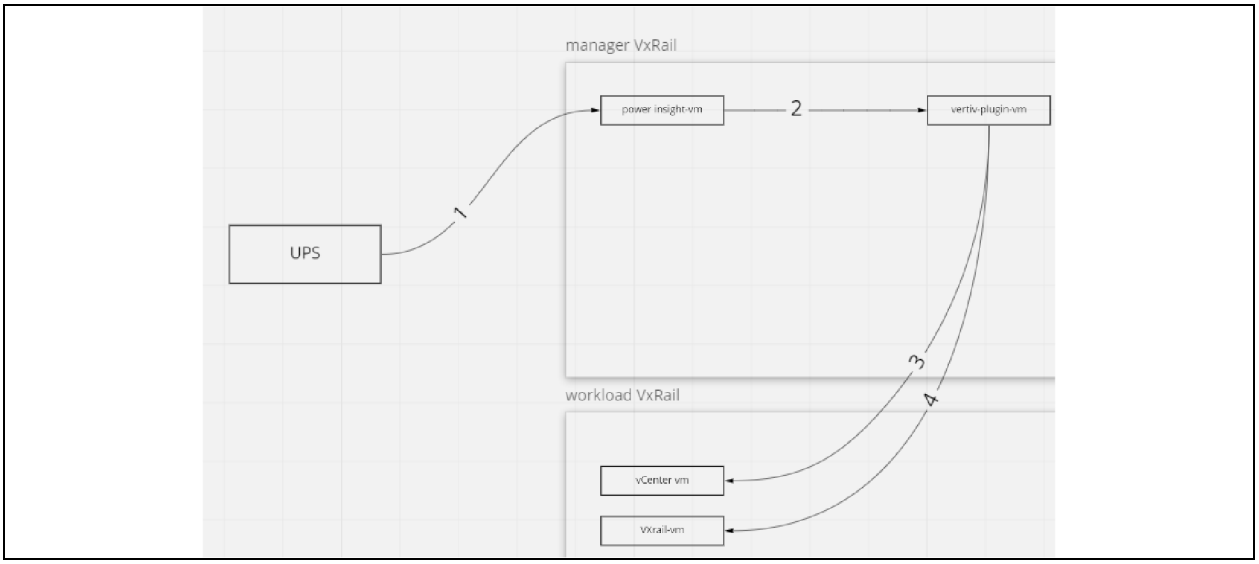
Figure 3.59 Shutdown Failure Summary Window



2. Dual vSphere Mode

If you have two or more VxRail environments, it is recommended to use the dual vSphere mode. In this mode, the VxRail that triggers the shutdown process due to power equipment alarms is called workload VxRail, while plugins and Power Insight need to be installed in another VxRail environment, called management VxRail.

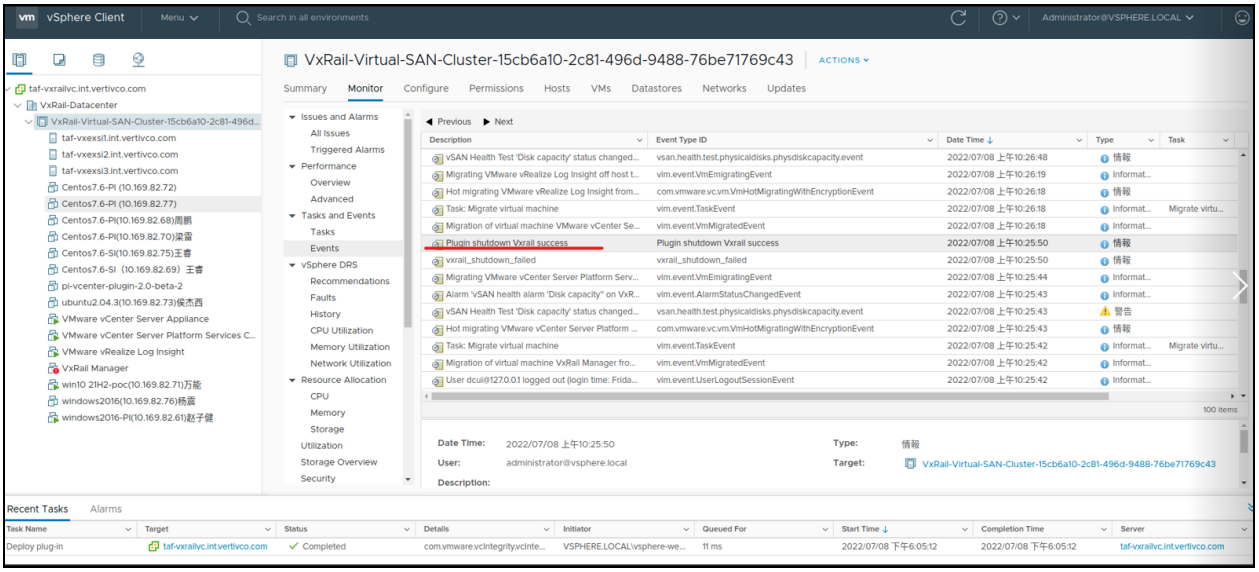
Figure 3.60 Topology Diagram of the Dual vSphere Mode



After the UPS generates an alarm, if the alarm meets the existing alarm configuration (conforms to the associated power supply equipment, the associated alarm signal, and is not cleared after the alarm delay time has passed), vSphere will display the alarm information received from Power Insight and start the shutdown process:

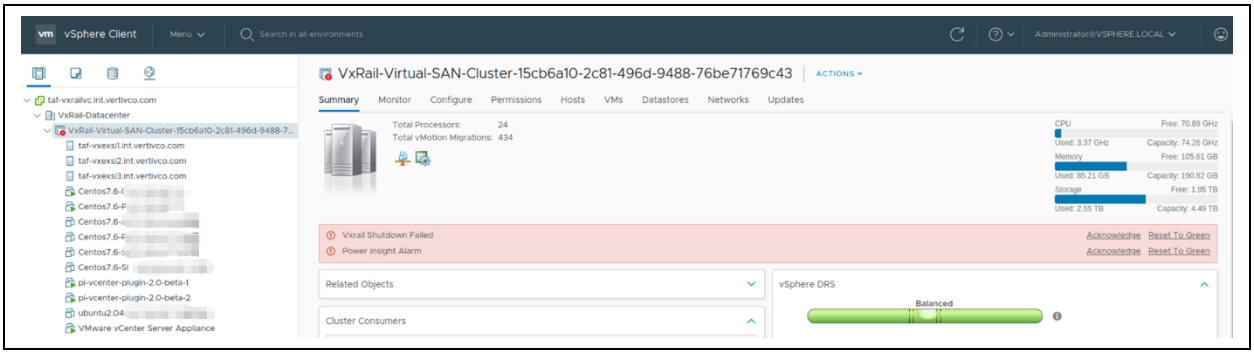
- The plugin first shuts down all user virtual machines in the workload VxRail, leaving only the system virtual machines running.
- After the plugin sends a shutdown command to the VxRail Manager, it starts to wait for the workload VxRail to perform the final confirmation-whether the entire workload VxRail can be shut down according to the settings of the shutdown polling interval and number of polls described in Shutdown Polling Configuration on page 43 .
- If the workload VxRail confirms that it can be closed within the specified time, it will start to close the workload VxRail and push the event log Plugin shutdown Vxrail success to vSphere.

Figure 3.61 Plugin shutdown Vxrail success



NOTE: If the specified time is exceeded and it is still impossible to confirm whether the workload VxRail can be closed: The shutdown operation is aborted, and the event log VxRail shutdown failed is pushed to vSphere.

Figure 3.62 vxrail Shutdown Failed



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4 Common Problem

1. To uninstall the Plugin from vSphere and Power Insight:
   - Click *Uninstall* on the Plugin Management interface.
   - Shut down the virtual machine on the vSphere interface and delete the virtual machine.
2. If the plugin alarm is not eliminated after the power supply is recovered, please check whether the Power Insight alarm is cleared first. If not, you can manually click the *End* button.
3. In the dual vSphere mode, the workload VxRail can install and run the Power Insight plugin to shut down other VxRail clusters, that is, a VxRail cluster can be used as a workload VxRail. You can also manage VxRail to manage and close other VxRail clusters.

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