

Oracle® Enterprise Manager

Monitoring an Oracle Private Cloud Appliance



13c Release 3
E93089-02
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The Oracle logo, consisting of a solid red square with the word "ORACLE" in white, uppercase, sans-serif font centered within it.

ORACLE®

Oracle Enterprise Manager Monitoring an Oracle Private Cloud Appliance, 13c Release 3

E93089-02

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Preface

This guide describes how to manage an Oracle Private Cloud Appliance (PCA) using Oracle Enterprise Manager Cloud Control 13c. This document provides detailed steps required to install and configure an Enterprise Manager agent and its related artifacts to manage and monitor an Oracle PCA.

Audience

This document is intended for Oracle Private Cloud Appliance customers, system administrators and data center administrators who are interested in managing their PCA using Oracle Enterprise Manager Cloud Control 13c.

Documentation Accessibility

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Conventions

The following text conventions are used in this document:

Convention	Meaning
boldface	Boldface type indicates graphical user interface elements associated with an action, or terms defined in text or the glossary.
<i>italic</i>	Italic type indicates book titles, emphasis, or placeholder variables for which you supply particular values.
monospace	Monospace type indicates commands within a paragraph, URLs, code in examples, text that appears on the screen, or text that you enter.

What's Changed

This table provides a brief overview of the document changes for the latest publication of the *Oracle® Enterprise Manager Cloud Control Monitoring an Oracle Private Cloud Appliance*:

Part Number	Change Summary
E93089-01	Initial release in support of Enterprise Manager Cloud Control 13c Release 13.3.0.0.0.

1

Introduction to the Oracle PCA Plug-in

This chapter provides a general overview of the Oracle Private Cloud Appliance (PCA) plug-in, including supported hardware and software. The following topics are discussed:

- [About the Oracle Private Cloud Appliance](#)
- [About the Oracle Virtualization Plug-in](#)
- [Oracle Private Cloud Appliance Features](#)
- [Supported Hardware](#)
- [Supported Software](#)

1.1 About the Oracle Private Cloud Appliance

Oracle Private Cloud Appliance (PCA) is an integrated, "wire once," software-defined converged infrastructure system designed for rapid deployment of private cloud at industry-leading price point.

The Oracle PCA supports a large range of mixed workloads hosted in a converged server, network, and storage environment to enable general purpose, business-, and mission-critical application deployments in medium-to-large data centers.

With Oracle Enterprise Manager 13c, the Private Cloud Appliance is transformed into a powerful Cloud Services delivery platform and provides a simple path from on-premise to Oracle Cloud.

1.2 About the Oracle Virtualization Plug-in

The Enterprise Manager for Oracle Virtualization (VT) plug-in has been extended to support monitoring and management of the Oracle PCA Racks by Enterprise Manager. Through Enterprise Manager Cloud Control, you can monitor the various hardware components of the Oracle PCA rack (such as compute nodes, InfiniBand switches, and so forth).

1.3 Oracle Private Cloud Appliance Features

Oracle PCA Features

"Turnkey" converged infrastructure solution automates hardware and software deployment with Oracle Private Cloud Appliance controller software.

Easy private cloud deployment ranging from IaaS to DBaaS by adding Oracle Enterprise Manager 13c.

Support for Oracle VM Templates enables deployment of ready-to-run VMs containing applications in minutes or hours, not days.

Oracle SDN software reduces operational complexity by enabling software-defined infrastructure in a "wire-once" system.

Saving hundreds of hours of installation and configuration time.

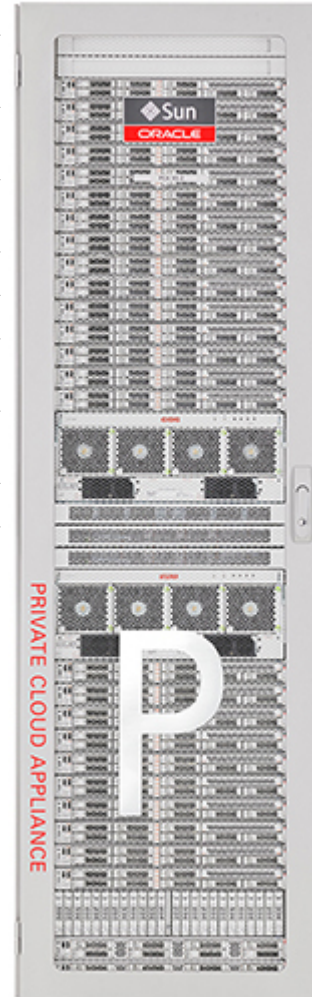
Faster Time-to-Market at industry-leading price point.

Reduced risks by running Microsoft Windows, Linux and Oracle Solaris workloads on one system.

Efficient Oracle software licensing based on what you use, not on the system's total capacity.

Lowered acquisition, deployment and operational costs.

Innovative converged infrastructure solution from a single vendor allows for superior ease-of-purchase, product integration, simplified management and single point of contact for support.



1.4 Supported Hardware

You can use the Oracle VT plug-in to monitor the performance of a wide variety of Oracle PCA targets, including:

- **Base rack:** The Oracle PCA is composed of the following components:
 - 2 to 25 compute nodes.
 - 2 management nodes.
 - 2 NM2-36 Sun InfiniBand Switches.

- 2 ES1-24 Ethernet switches.

 **Note:**

These switches are part of the Opus Switches family. The factory ILOM version is not supported by the system infrastructure plug-in. Until it is updated to the most recent version, the PCA Plug-in supports only Up/Down status monitoring.

- 2 Fabric Interconnect switches.

 **Note:**

The PCA Plug-in supports only Up/Down status monitoring.

- 1 Oracle ZFS Storage Appliance ZS3-ES or ZS5-ES. See note.

 **Note:**

Existing Oracle PCA racks include a ZS3-ES Clustered Storage Array, new models of the Oracle PCA rack include a ZS5-ES Clustered Storage Array.

- **Compute nodes:** The base rack can support a maximum of 25 compute nodes. The base rack supports mixing of compute nodes from the following Oracle Servers:
 - X7-2
 - X6-2
 - X5-2
 - X4-2
 - X3-2
- **Virtual networking:** Each Private Cloud Appliance hardware configuration contains the following multiple redundant components that serve as gateways to the data center's Ethernet network:
 - QDR InfiniBand switches.
 - Oracle Fabric Interconnect systems.
- **Integrated storage:** Oracle Private Cloud Appliance features a fully integrated, enterprise-grade Oracle ZFS Storage ZS3-ES for centrally storing the management environment as well as providing data storage for VMs.

The storage capacity of Private Cloud Appliance can be expanded beyond the internal, included storage, to external data center racks containing Oracle ZFS Storage Appliance or supported storage available from other storage vendors.

1.5 Supported Software

The following software, included with the Private Cloud Appliance, enable scalability, software-defined virtual networking, and GUI-based management:

- **Oracle VM.** Oracle VM application-driven server virtualization is designed to be highly scalable and built to enable rapid application deployment. Oracle VM supports up to 128 vCPUs and a variety of guest OSES such as Linux, Oracle Solaris, and Microsoft Windows. Oracle VM is also optimized to accelerate applications deployments.
- **Oracle SDN software:** Oracle SDN dynamically connects servers to networks and storage. It eliminates the physical storage and networking cards found in every server and replaces them with virtual network interface cards (vNICs) and virtual host bus adapters (vHBAs) that can be deployed on the fly. Applications and operating systems see these virtual resources exactly as they would see their physical counterparts. Oracle Virtual Networking simplifies complex data center deployments with a wire-once solution and simple software-defined network configurations.
- **Oracle Private Cloud Appliance controller software:** The controller software allows users to manage and monitor the systems hardware, perform software upgrades, create and manage virtual resources (virtual servers, virtual networks, and storage), and monitor utilization of all system resources in real-time. The controller software runs on two dedicated management nodes that are configured for high availability with automatic failover in the event of a failure. It is accessible via a GUI dashboard

1.6 Prerequisites

Ensure that the following prerequisites are met:

- The Oracle Private Cloud Appliance (PCA) controller software should be version 2.1.1 or later.
- The ILOM version of the management nodes, compute nodes, InfiniBand switches, and Oracle ZFS Storage Appliance should be version 3.1 or later.
- The agent needs to be installed on the management node on shared storage according to instructions, so that failover capability can be utilized. See [Installing the Management Agent on Oracle PCA](#) for details.
- Linux x86-64 agent software.
- Oracle Enterprise Manager VT Plug-in.

1.7 Prerequisites to Monitor the Fabric Interconnect in Oracle Private Cloud Appliance

Starting with Enterprise Manager for Virtualization 13.3.1.0, the Fabric Interconnect Target in the Private Cloud Appliance will be able to monitor the Fabric Interconnect in greater detail. You must ensure that following prerequisites are met to successfully monitor the Oracle Fabric Interconnects.

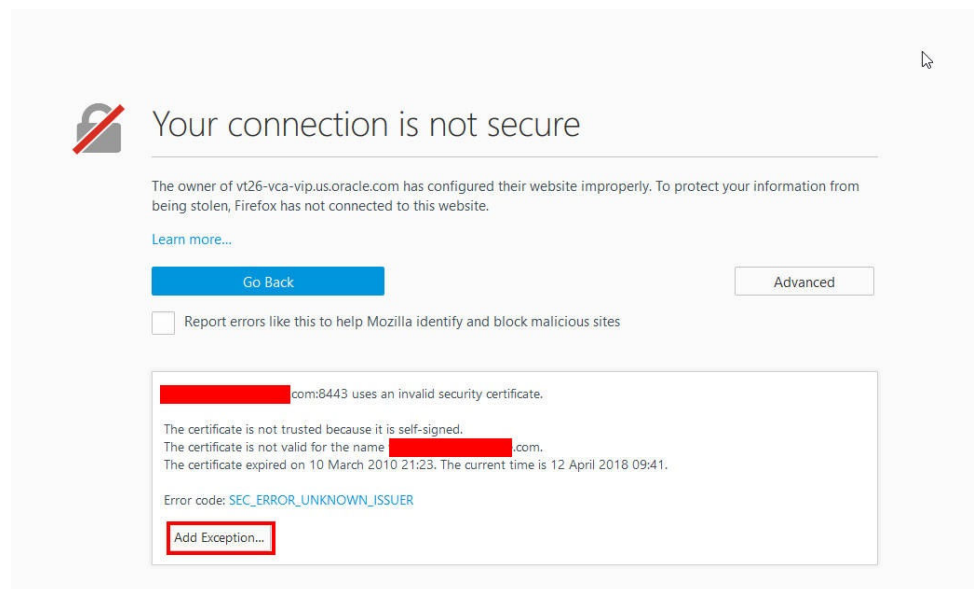
Import the Certificate

1. Log in to OFM UI at `https://<PCA_Management_Node>:8443/xms/Login.jsf` with root credentials for the Oracle Fabric Interconnect.

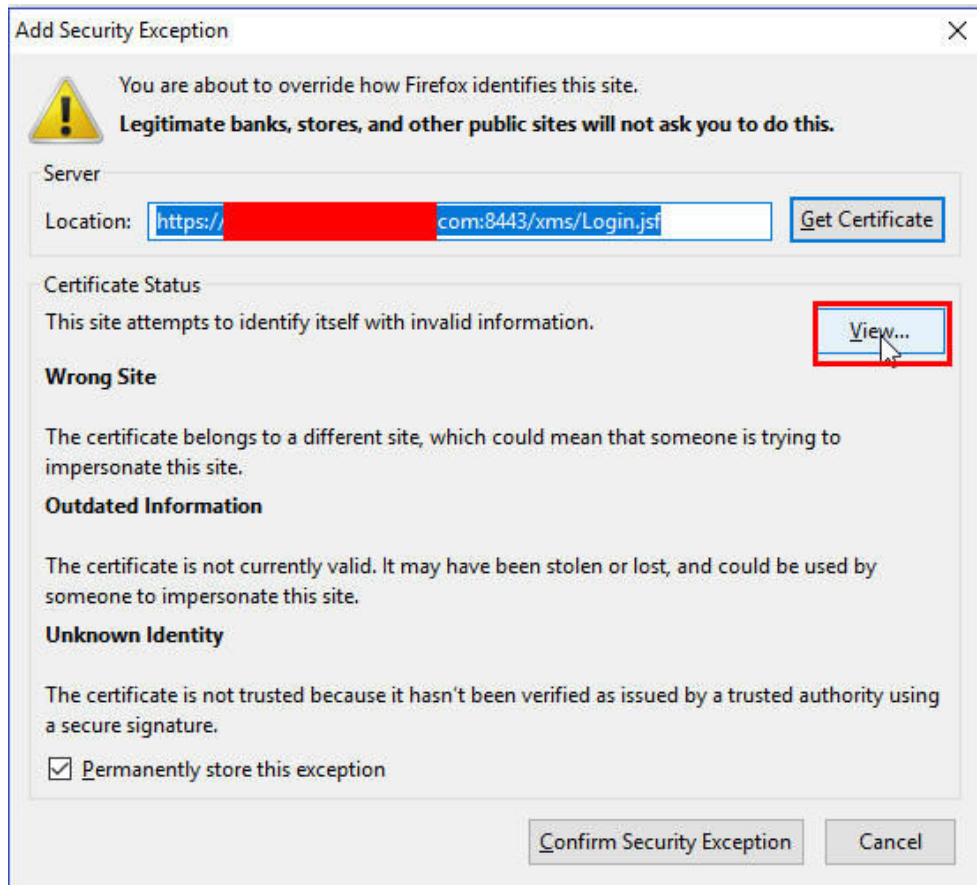
Where, the `PCA_Management_Node` is the VIP hostname.

Add the exception in your browser(if needed) and then export the certificate to a file from your browser's list of stored certificates.

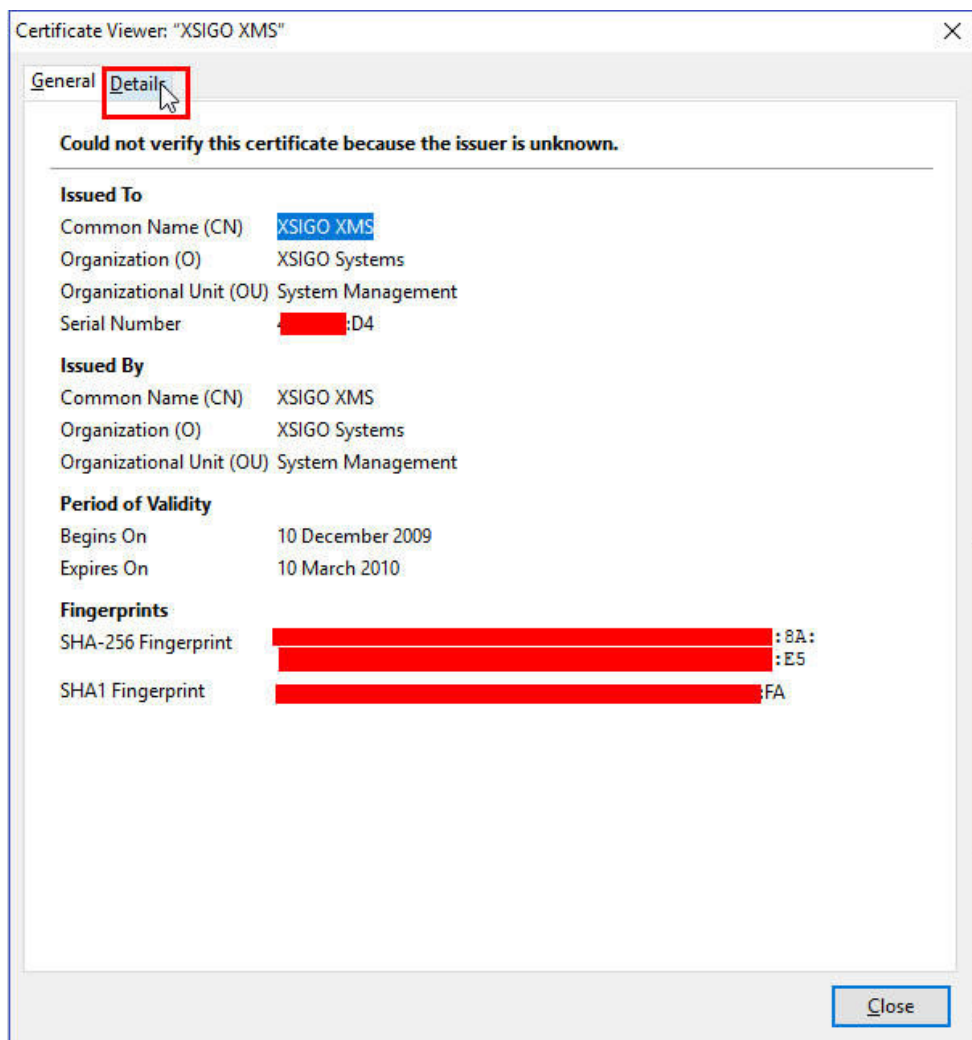
When you access the OFM UI for the first time, you see the following screen for adding the exception.



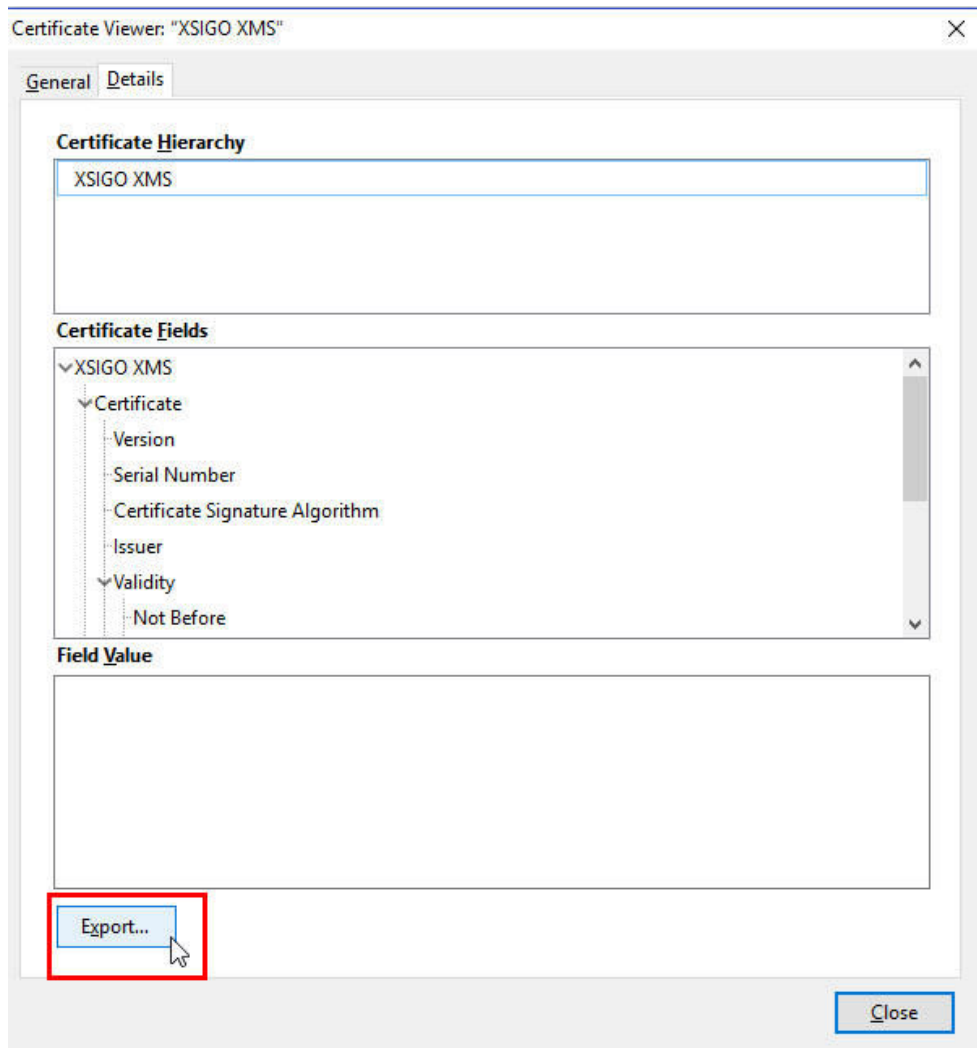
2. Click **Add Exception**
3. Click **view** to see the certificate.



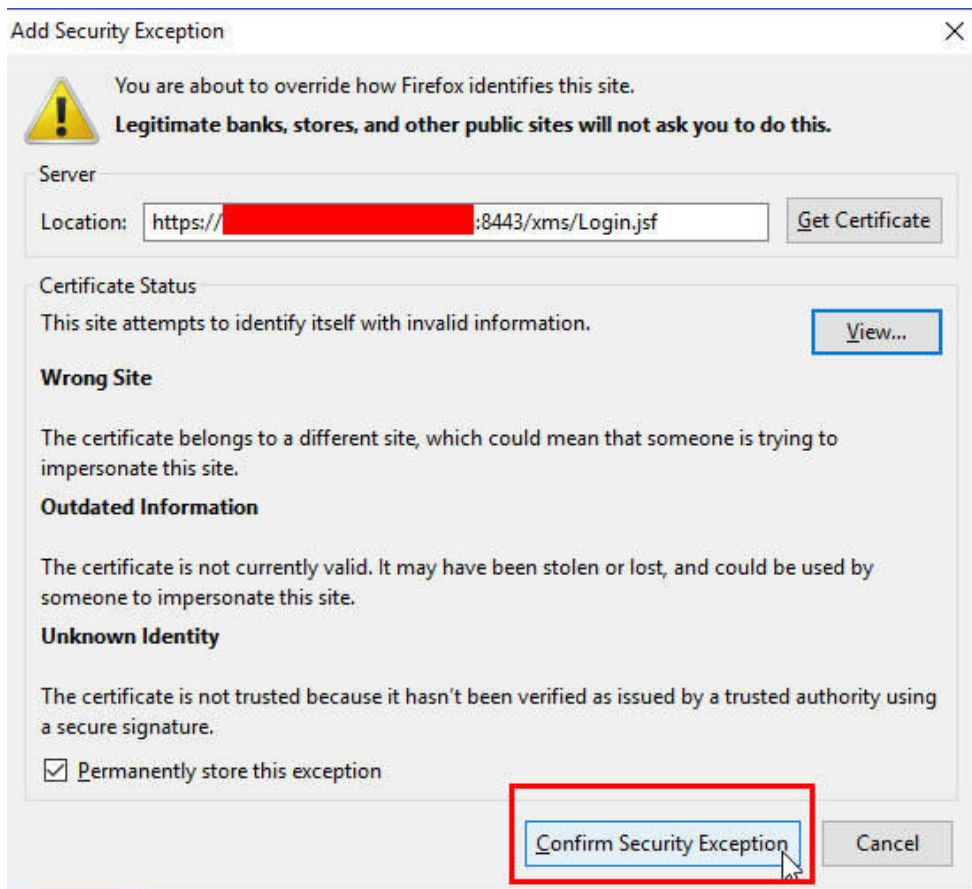
4. Click **Details** tab to view the certificate details.



5. Click **Export** to export/download the certificate to your local host.



6. Click **Confirm Security Exception**.



You are now redirected to the OFM UI login page.

7. Import the Oracle Fabric Manager certificate into the Enterprise Manager agent's keystore on the Private Cloud Appliance active management node, where, the agent is installed.
 - To import Oracle Fabric Interconnect's certificate file, it must be copied to the active PCA management node. You can import the certificate file into the Enterprise Manager Agent using the above screenshots. Run the following command as an Enterprise Manager agent user:

```
#<agentHome>/bin/emctl secure add_trust_cert_to_jks -trust_certs_loc  
<location_of_certificate_file> -alias ofm_cert
```

 **Note:**

Enter password **welcome** when prompted for a password.

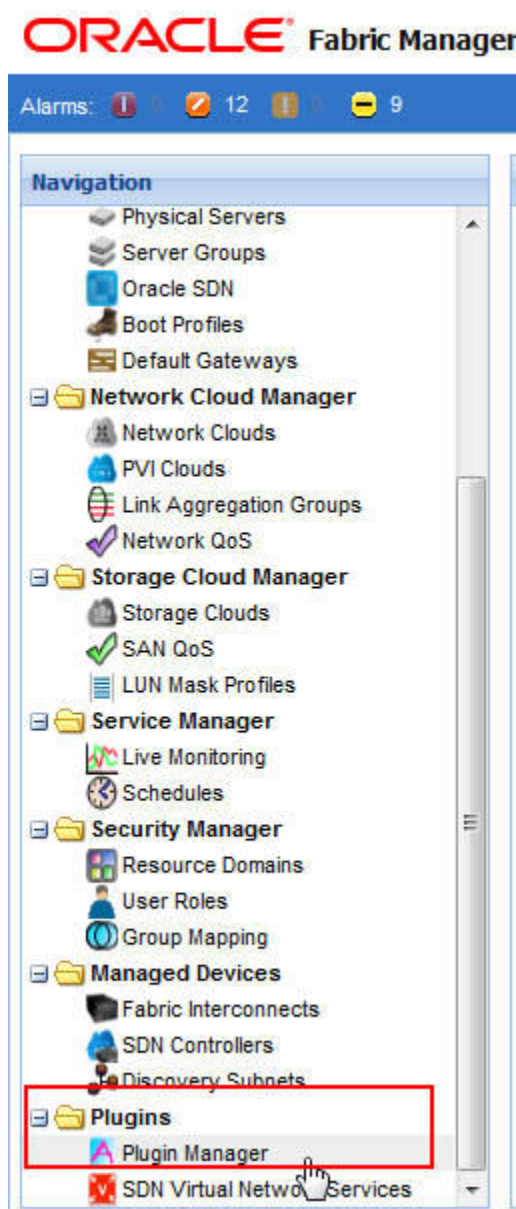
For Oracle Private Cloud Appliance v2.3.3 and below, you must perform the following additional steps:

1. Download the Oracle Enterprise Manager OVN Plug-in.

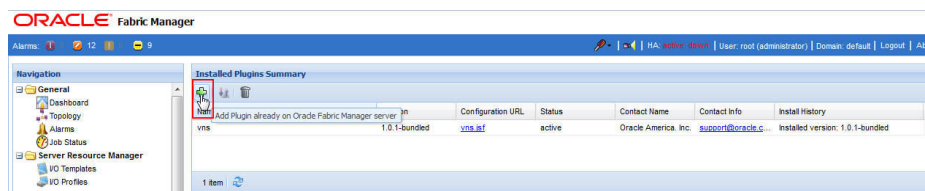
To download, go to <http://www.oracle.com/technetwork/server-storage/xsigo-1870185.html>, then **OFM Plugins->EM-OVN Plug-in**.

2. Install the EM OVN plug-in on the Private Cloud Appliance active management node performing the below steps:
 - a. Upload the downloaded OVM plugin zip file to the active management node in a temporary area.
 - b. Unzip the zip file, which will expose a *.rpm file.
 - c. Install the rpm file by running the following command:

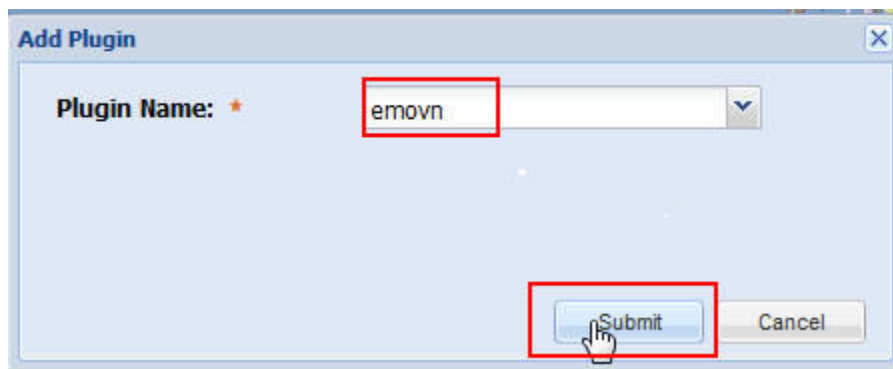
```
rpm -ivh xsigno-xms-emovn-<version>.noarch.rpm
```
 - d. Log in to OFM UI at https://<PCA_Management_Node>:8443/xms/Login.jsf with root credentials for the Oracle Fabric Interconnect.
Where, the PCA_Management_Node is the VIP hostname.
 - e. Go to **Plugins>Plugin Manager** in the Left Panel.



- f. Click the **green +** icon to add plugin.



- g. Enter **emovn** in the popup window, and click **Submit**.



This will add the emovn plug-in.

The screenshot shows the 'Installed Plugins Summary' table after the 'emovn' plugin has been added. The table now contains two rows: 'emovn' and 'vns'. The 'emovn' row is highlighted with a red box.

Name	Version	Configuration URL	Status	Contact Name	Contact Info	Install History
emovn	1.0.0_EMOVN	emovn.iaf	active	Oracle Virtual Net...		Installed version: 1.0.0_EMOVN
vns	1.0.1-bundled	vns.iaf	active	Oracle America, Inc.	support@oracle.com	Installed version: 1.0.1-bundled

The above Installation of the EM OVN plug-in and import of the certificate must also be executed from the Standby management node while its Fabric Manager is running. This is so that in the event of a management node failover, the Oracle Fabric Interconnect monitoring can continue seamlessly.

 **Note:**

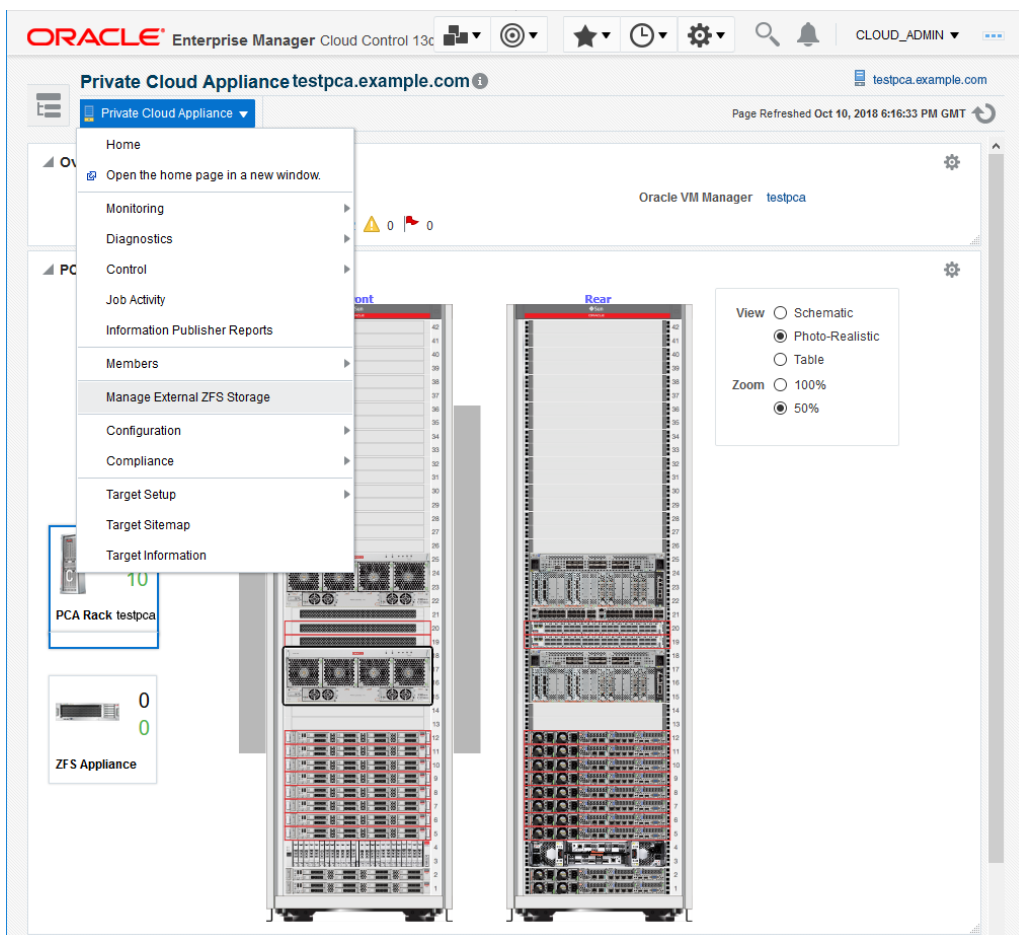
For Oracle Private Cloud Appliance v2.3.3 and below:

- The rpm can be installed remotely, but the user needs to manually failover to standby node and then install the plugin at Fabric manager running on that node.
- If failing over the management node is not an option at the time of this installation, this step may be delayed to when the management node actually fails over to the standby node.
- In the standby node's Fabric Manager instance, until this EM OVN plugin is installed and its certificate imported into the agent, the Fabric Interconnect metrics will show Metric Collection Errors.
- If certificate is not installed, user may also see SSL Handshake errors in Error logs while viewing Metrics and during discovery of Fabric Interconnect Target.

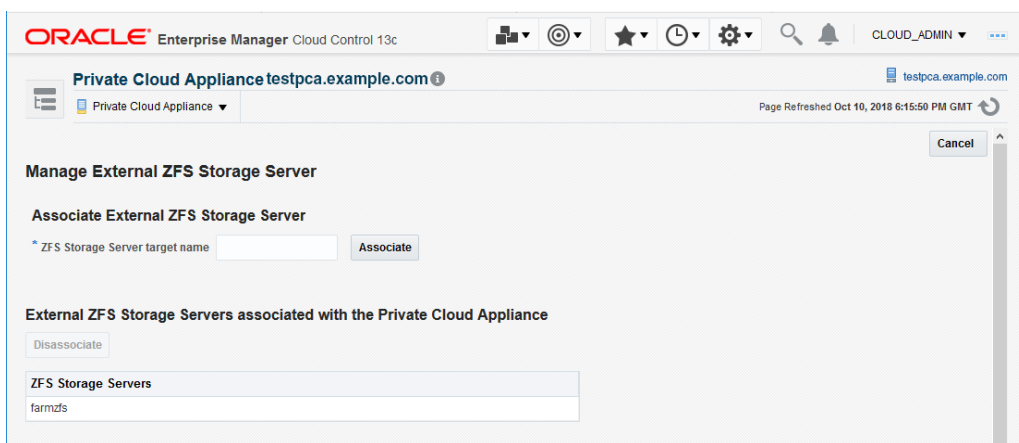
1.8 Prerequisites to Monitor the External ZFS Server Connected to Oracle Private Cloud Appliance

Starting with Enterprise Manager for Virtualization 13.3.1.0, external ZFS servers connected to Private Cloud Appliance can be associated with the Private Cloud Appliance target in the Enterprise Manager. On successful association, the ZFS server will appear on the **Private Cloud Appliance** home page.

To Associate a ZFS server to Private Cloud Appliance, it must already be discovered in the Enterprise Manager using the **Systems Infrastructure ZFS Storage Server** guided discovery process. Then, go to the **Private Cloud Appliance Target** home page and click **Private Cloud Appliance** drop down menu.



Go to **Manage External ZFS Storage** menu item to associate the ZFS server.



After successful association, the ZFS server appears in the **Private Cloud Appliance** Home page.

ORACLE Enterprise Manager Cloud Control 12c

Private Cloud Appliance testpca.example.com

Private Cloud Appliance

Oracle VM Manager testpca

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Overview

Racks 1

Incidents 73 92 0 0

PCA Rack Schematic

3 out of 3 hardware related incident(s) not displayed in the view

View Schematic Photo-Realistic Table

Zoom 100% 50%

PCA Rack testpca: 0 Critical, 10 Warning

ZFS Appliance: 0 Critical, 0 Warning

2

Discovering the Oracle Private Cloud Appliance

This chapter provides instructions for discovery of the Oracle Private Cloud Appliance (PCA) through Enterprise Manager Cloud Control 13c. The following topics are provided:

- [Installing the Management Agent on Oracle PCA](#)
- [Installing the Oracle Enterprise Manager VT \(Virtualization\) Plug-in on Oracle PCA](#)
- [Discovering the Oracle PCA in Enterprise Manager](#)
- [New Features in Oracle Fabric Interconnect Target](#)
- [Registering Oracle VM Manager with Oracle Enterprise Manager 13c \(Oracle Private Cloud Appliance Software Version 2.3.1 and above\)](#)
- [Enterprise Manager Agent Recovery After Oracle PCA Upgrade](#)
- [Important Steps to Enable the Fabric Interconnect Target](#)
- [Removing the Oracle PCA Target from Enterprise Manager](#)

2.1 Installing the Management Agent on Oracle PCA

Before discovering the Oracle Private Cloud Appliance (PCA) in Enterprise Manager, you must first prepare the appliance and install a Management Agent. Follow the steps below to properly configure your Oracle PCA:

1. Change the `oracle` user password to a known password on both management nodes of the Oracle PCA Rack:

```
# passwd oracle
```

2. Verify the VIP and public Enterprise Manager IP are in the `/etc/hosts` file on both management nodes and on the Enterprise Manager Host:

```
YOUR.VIP vip-host1.example.com vcal-vip-vip  
YOUR.EMIP em-host1.example.com em01
```

3. On an the active management node, create an agent directory on the shared NFS directory. The shared `nfs` directory is required for both availability and failover purposes.

```
# mkdir /nfs/shared_storage/oemagent  
# chown oracle:dba /nfs/shared_storage/oemagent
```

 **Note:**

- By default, the Enterprise Manager agent port **3872** is pre-populated by Oracle PCA software. If you use this default Enterprise Manager agent port 3872 for pushing the agent, then this step is not needed.
- However, if the non-default port is used for Enterprise Manager agent, the steps do need to be executed on standby management node.
- If the agent port is different to the default port (3872), you must configure the firewall for that particular port, as **3872** is set by default in the Oracle PCA management node setup.

4. Open an Enterprise Manager agent port in the firewall by running the following command. Make sure you choose the same port while pushing the agent in step 5:

```
iptables -I INPUT <line_num> -m state --state NEW -m tcp -p tcp --dport  
<agent_port> -j ACCEPT  
where line_num is any line number before the rule to block all traffic  
# service iptables save  
#service iptables reload
```

5. Push the Management Agent from the Oracle Management Server (OMS). From Enterprise Manager Cloud Control:
 - a. From the **Setup** menu, select **Add Target**, then select **Add Targets Manually**.
 - b. In the Add Host Targets area of the Add Targets Manually page, click **Install Agent on Host**. The Add Host wizard will begin.
 - c. Add a Host and Platform. On this page, click **Add** and select **Manually**. Enter a host name (fully qualified) in the Host field. This name should be the fully qualified virtual IP host name of the Oracle PCA rack for deploying the agent. Select **Linux x86-64** from the Platform drop-down menu. [Figure 2-1](#) shows an example:

Figure 2-1 Add Host Target: Host and Platform

Add Target

Host and Platform Installation Details Review

Add Host Targets: Host and Platform Back Step 1 of 3 Next Cancel

This wizard enables you to install Management Agents on unmanaged hosts, thereby converting them to managed hosts. Enter a session name, and validate (or add) the hosts and their platforms on which you want to install the Management Agent.

Session Name: ADD_HOST_SYSMAN_Nov_17_2015_9:38:17_AM_PST

Agent Software Options

+ Add X Remove Platform: Same for All Hosts

Host	Platform
host1.example.com	Linux x86-64

TIP The target host's platform is defaulted based on a combination of factors, including hints received from automated discovery and the platform of the OMS host. The default is a suggestion, however, we recommend you to check the platform details before processing to the next step.

TIP If the platform name is appended with "Agent Software Unavailable", then download the software for that platform using Self Update

Click **Next**.

- d. On the Installation Details page (Figure 2-2), enter the following information:
- **Installation Base Directory:** `/nfs/shared_storage/oemagent`
 - **Instance Directory:** `/nfs/shared_storage/oemagent/agent_inst` (This value is automatically completed based on the Installation Base Directory input.)
 - **Named Credential:** `<agent_username>`

Note:

If this is the first time you are adding a credential, an add icon (+) appears. Click this icon for a dialogue box that prompts for the credentials of the agent user (`oracle/password` for example).

Create a Named Credential for the `oracle` user with the password you set in step 1 above.

Once created, that credential and any other credentials that have already been added to Enterprise Manager will be available for selection. For an existing installation of an Enterprise Manager, a user may already have the necessary credentials available for selection for Oracle PCA discovery.

This root privileges field is located in between Name credential and Privileged Delegation Setting in Enterprise Manager 13.3.

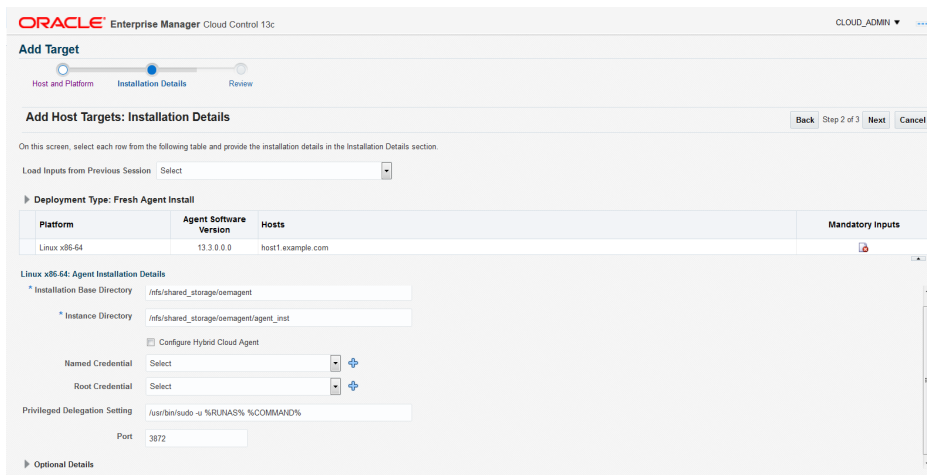
- **Privileged Delegation Setting:** Leave the default. By default, this field is populated with `/usr/bin/sudo -u %RUNAS% %COMMAND%`
- **Port:** By default, this field is populated with `3872`

- **Preinstallation Script:** Leave this field blank.
- **Postinstallation Script:** Leave this field blank.
- **Additional Parameters:** Leave this field blank.


 **Note:**

If you have not used default port of 3872, then you must ensure that on Installation Details page, you enter the particular port that you had used.

Figure 2-2 Add Host Targets: Installation Details



The screenshot shows the 'Add Host Targets: Installation Details' page in Oracle Enterprise Manager Cloud Control 13c. The page is titled 'Add Target' and has three steps: 'Host and Platform', 'Installation Details', and 'Review'. The current step is 'Installation Details'. Below the title bar, there are navigation buttons: 'Back', 'Step 2 of 3', 'Next', and 'Cancel'. The main content area contains a table with the following data:

Platform	Agent Software Version	Hosts	Mandatory Inputs
Linux x86-64	13.3.0.0.0	host1.example.com	

Below the table, there are several input fields for installation details:

- Installation Base Directory:** /nfs/shared_storage/oemagent
- Instance Directory:** /nfs/shared_storage/oemagent/agent_inst
- Configure Hybrid Cloud Agent
- Named Credential:** Select
- Root Credential:** Select
- Privileged Delegation Setting:** /usr/bin/sudo -u %RUNAS% %COMMAND%
- Port:** 3872

Once the fields are complete, click **Next**.

- On the Review page, review the details of the host information. Click **Deploy Agent**.

 **Note:**

During the agent install as a non privileged user, the user interface will display a warning and state that privilege scripts need to be run manually as the root user. Select **Continue All Hosts** and once the agent install has completed, run the following privileged scripts as the root user on the Oracle PCA active management node:

```
/nfs/shared_storage/oemagent/agent_13.3.0.0.0/root.sh
/u01/app/oraInventory/orainstRoot.sh
```

For more information, see Meeting the Generic Prerequisites for Installing Standalone Management Agents Using Add Host Targets Wizard or EM CLI

- On the active management node, set the emd property `AgentListenOnAllNICs` to **false** by running following command with the agent user (i.e., oracle):


```
/nfs/shared_storage/oemagent/agent_inst/bin/emctl setproperty agent -name
"AgentListenOnAllNICs" -value "false"
```

7. Copy the following agent installation files to the passive management node (ovcamn06r1 is passive in this example):

```
# scp /etc/init.d/gcstartup root@ovcamn06r1:/etc/init.d/
# rsync -og /etc/oragchomelist root@ovcamn06r1:/etc/oragchomelist
# rsync -rog /u01/app/oraInventory/ oracle@ovcamn06r1:/u01/app/oraInventory/
```

8. On the active management node, remove all `gc rc.d` links (no startup of agent on startup):

```
# for x in `find /etc/rc.*/*rc* | grep gcstart`; do rm $x; done
```

9. Restart the Enterprise Manager agent on the active management node as `oracle` from the agent's `emctl` command:

```
% /nfs/shared_storage/oemagent/agent_inst/bin/emctl stop agent
% /nfs/shared_storage/oemagent/agent_inst/bin/emctl start agent
```

2.2 Installing the Oracle Enterprise Manager VT (Virtualization) Plug-in on Oracle PCA

The Oracle Enterprise Manager VT Plug-in must be installed on the Enterprise Manager 13c Management Server and on the agent that is installed on the Oracle PCA active management node. It is recommended to use the latest version of the VT Plug-in on both the management server as well as the agent.

For more information, refer to *Downloading, Deploying, and Upgrading Plug-Ins in Enterprise Manager Cloud Control Administrator's Guide*.

2.3 Discovering the Oracle PCA in Enterprise Manager

Once the [pre-requisites](#) have been satisfied, the steps below provide the instructions to discover an Oracle Private Cloud Appliance (PCA) target in Enterprise Manager Cloud Control:

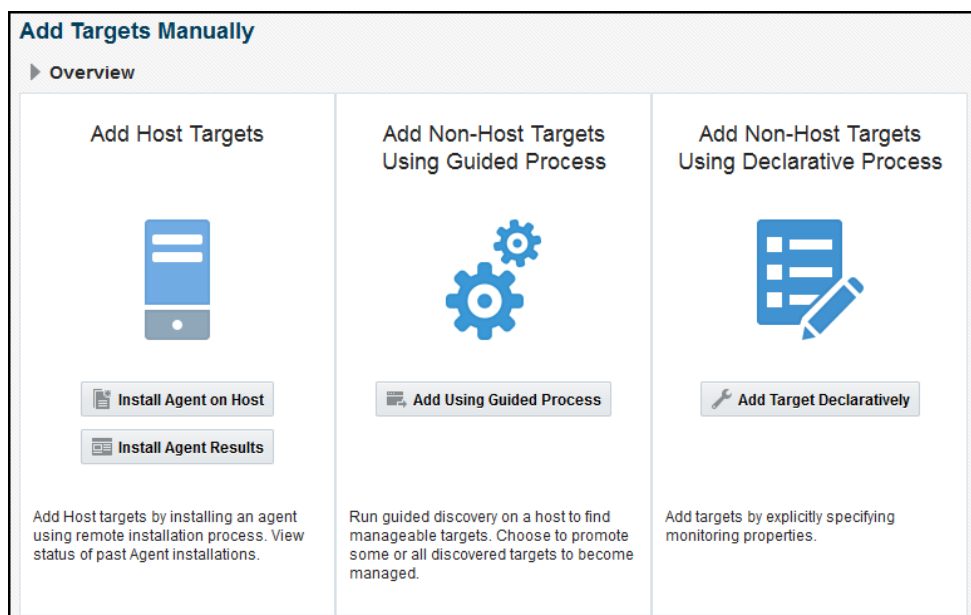
1. From the **Setup** menu, select **Add Targets**, and then select **Add Targets Manually** ([Figure 2-3](#)):

Figure 2-3 Add Targets Manually Menu



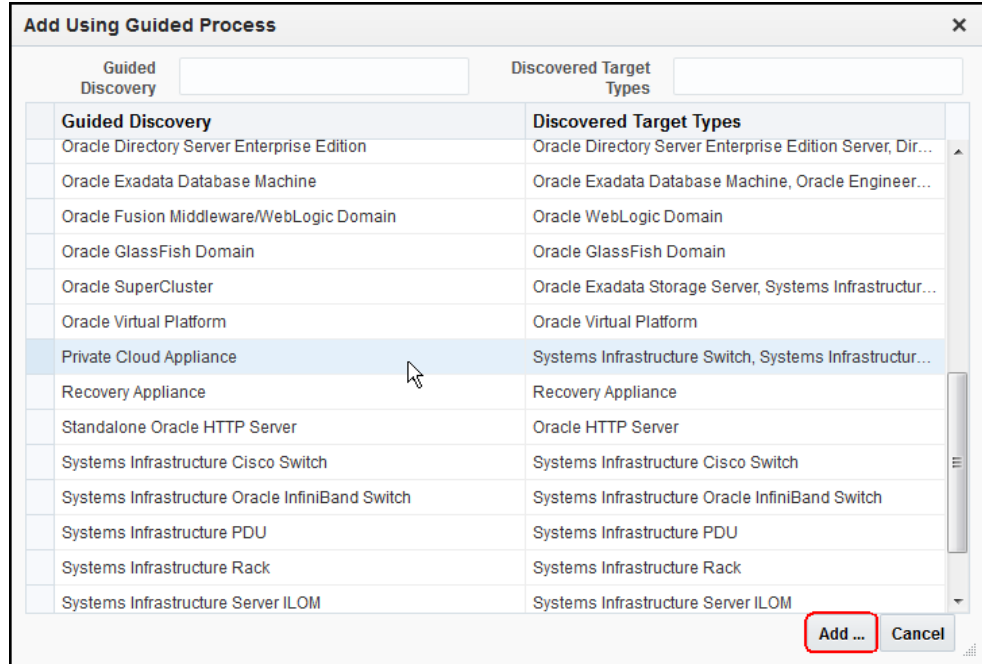
- On the Add Targets Manually page (Figure 2-4), click **Add Targets Using Guided Process**.

Figure 2-4 Add Targets Manually



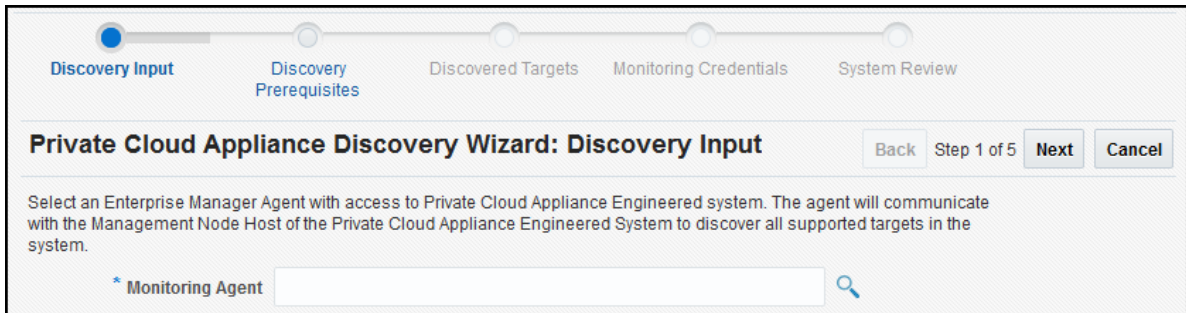
3. On the Add Using Guided Process window, select **Private Cloud Appliance**. Click **Add** (Figure 2-5) to begin the discovery wizard.

Figure 2-5 Select Private Cloud Appliance



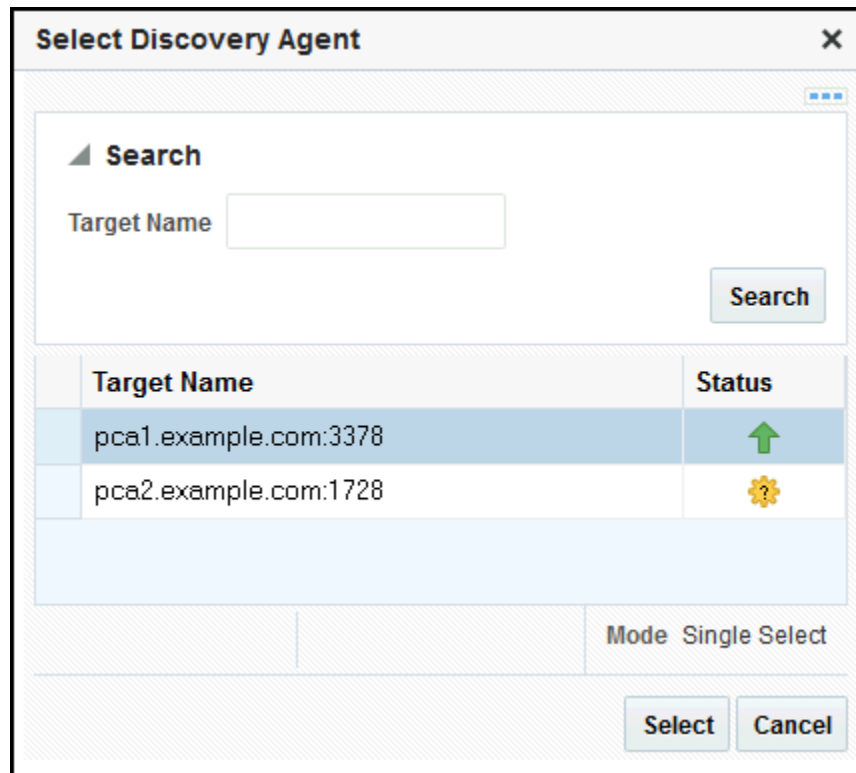
4. On the Discovery Inputs page (Figure 2-6), you will need to enter the Monitoring Agent host location.

Figure 2-6 PCA Discovery Wizard: Discovery Input



Click the **Search** icon to display the Select Discovery Agent pop-up window:

Figure 2-7 Select Discovery Agent

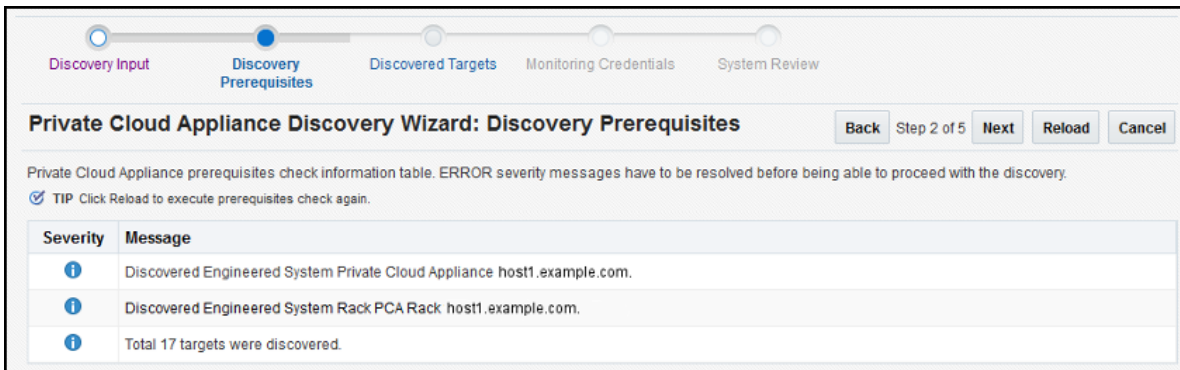


Select the URL from the available list. Once you select the URL, the Management Agent field on the Discovery Input page should auto-populate with the required information.

Click **Next**.

- On the Discovery Prerequisites page (Figure 2-8), a series of checks are conducted automatically. Any errors returned must be resolved before continuing.

Figure 2-8 PCA Discovery Wizard: Discovery Prerequisites



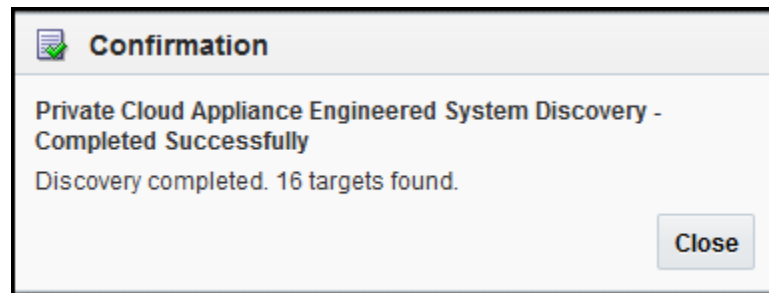
 **Note:**

If you get error severity messages, you must resolve the errors then click **Reload** to run the prerequisites check again.

Click **Next**.

A confirmation pop-up window (Figure 2-9) will appear to show how many targets to be discovered:

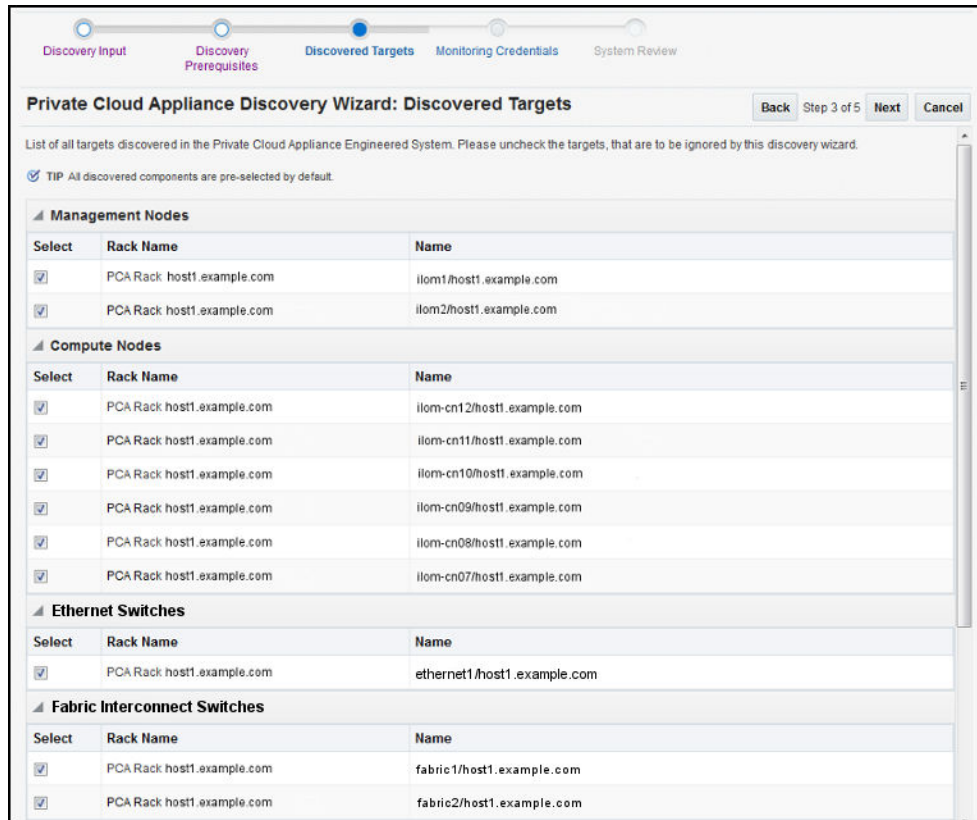
Figure 2-9 Confirmation Window



Click **Close** to continue.

6. On the Discovered Targets page (Figure 2-10), select the targets you want included in the discovered PCA rack. By default, all available targets are pre-selected.

Figure 2-10 PCA Discovery Wizard: Discovered Targets

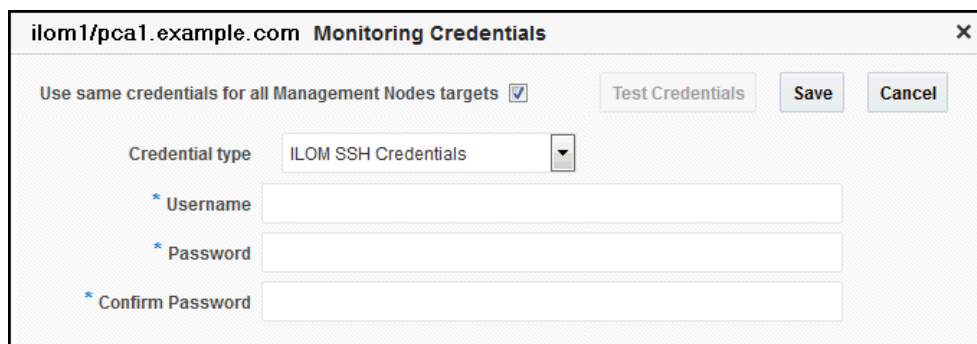


Click **Next**.

- On the Monitoring Credentials page, the credentials must be set for each component in the Oracle PCA rack. A red status flag is shown for all components where the credentials are not set.

For each component type, click the **Edit** icon. In the Monitoring Credentials pop-up (Figure 2-11), enter the user name and password for each component in the Oracle PCA rack:

Figure 2-11 Component Monitoring Credentials



 **Note:**

In a default case, for the InfiniBand Switch, enter **public** in the Community String mandatory field input.

You can select **Use same credentials for all** in the credential's edit dialog to use the same credentials for all targets of the type. [Figure 2-12](#) shows an example of the Monitoring Credentials page with all credentials set:

Figure 2-12 PCA Discovery Wizard: Monitoring Credentials

Private Cloud Appliance Discovery Wizard: Monitoring Credentials

Provide monitoring credentials to enable monitoring of the targets.

TIP You can check 'Use for all...' option in the credentials edit dialog to use same credentials for all targets of the type.

Management Nodes

Managed	Rack Name	Name	Monitoring Credentials		
			Status	Edit	Configured Credentials
	PCA Rack host1.example.com	ilom1/host1.example.com	<input checked="" type="checkbox"/>		ILOM SSH Monitoring Credent...
	PCA Rack host1.example.com	ilom2/host1.example.com	<input checked="" type="checkbox"/>		ILOM SSH Monitoring Credent...

Compute Nodes

Managed	Rack Name	Name	Monitoring Credentials		
			Status	Edit	Configured Credentials
	PCA Rack host1.example.com	cn12/host1.example.com	<input checked="" type="checkbox"/>		ILOM SSH Monitoring Credent...
	PCA Rack host1.example.com	cn11/host1.example.com	<input checked="" type="checkbox"/>		ILOM SSH Monitoring Credent...
	PCA Rack host1.example.com	cn10/host1.example.com	<input checked="" type="checkbox"/>		ILOM SSH Monitoring Credent...
	PCA Rack host1.example.com	cn09/host1.example.com	<input checked="" type="checkbox"/>		ILOM SSH Monitoring Credent...
	PCA Rack host1.example.com	cn08/host1.example.com	<input checked="" type="checkbox"/>		ILOM SSH Monitoring Credent...
	PCA Rack host1.example.com	cn07/host1.example.com	<input checked="" type="checkbox"/>		ILOM SSH Monitoring Credent...

Ethernet Switches

Managed	Rack Name	Name	Monitoring Credentials		
			Status	Edit	Configured Credentials
	PCA Rack host1.example.com	ethernet1/host1.example.com	<input checked="" type="checkbox"/>		This Target does not require ...

Fabric Interconnect Switches

Managed	Rack Name	Name	Monitoring Credentials		
			Status	Edit	Configured Credentials
	PCA Rack host1.example.com	fabric1/host1.example.com	<input checked="" type="checkbox"/>		This Target does not require ...

Click **Next**.

- On the System Review page, click **Promote Targets** to promote all components of the Oracle PCA rack. If any component fails the promotion process, click **Back** to update the inputs for that component. A pop-up window will appear to show the progress. Once complete ([Figure 2-13](#)), click **Close**.

Figure 2-13 Target Promotion Confirmation

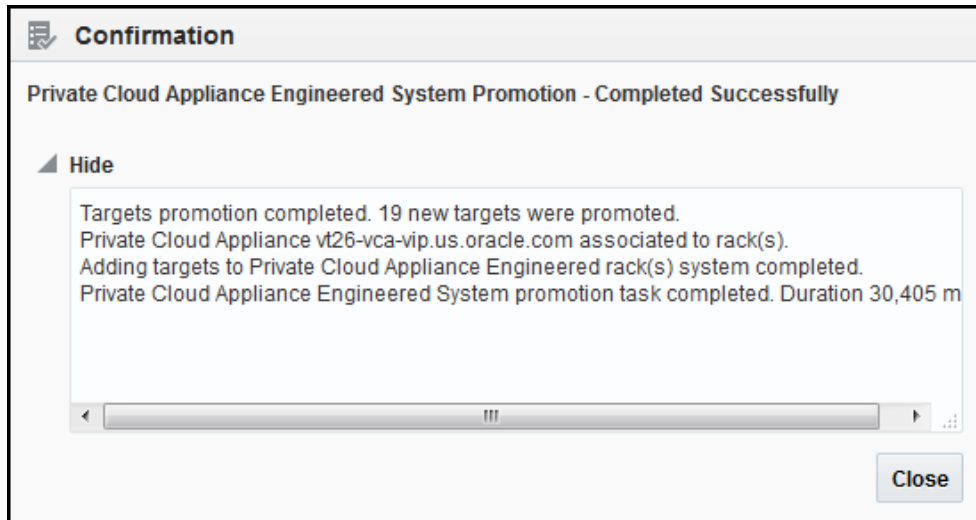


Figure 2-14 shows an example of completed promotion of all components:

Figure 2-14 PCA Discovery Wizard: System Review

Discovery Input Discovery Prerequisites Discovered Targets Monitoring Credentials **System Review**

Private Cloud Appliance Discovery Wizard: System Review Back Step 5 of 5 Close

Promotion of targets can be started by clicking 'Promote Targets' button. After promotion process is completed table is updated with the promotion results.

- ✓ TIP After promotion, you can directly navigate to targets by clicking links in the 'Name' column.
- ✓ TIP If promotion of target(s) failed, you can navigate back fixing inputs and proceeding with 'Promote Targets' again.

Private Cloud Appliance Engineered Systems

Managed	Name	Promoted	Target Promotion Status
<input checked="" type="checkbox"/>	Private Cloud Appliance host1.example.com	<input checked="" type="checkbox"/>	<ul style="list-style-type: none"> • Add target Private Cloud Appliance host1.example.com completed successfully. • Target Private Cloud Appliance host1.example.com association with PCA Rack host1.example.com completed successfully.

Racks

Managed	Name	Promoted	Target Promotion Status
<input checked="" type="checkbox"/>	PCARack host1.example.com	<input checked="" type="checkbox"/>	<ul style="list-style-type: none"> • Add target PCA Rack host1.example.com completed successfully.

Management Nodes

Managed	Rack Name	Name	Promoted	Target Promotion Status
<input checked="" type="checkbox"/>	PCARack host1.example.com	ilom1/host1.example.com	<input checked="" type="checkbox"/>	<ul style="list-style-type: none"> • Add target ilom1/host1.example.com completed successfully. • Target ilom1/host1.example.com is placed in rack PCARack host1.example.com on

Click **Close**.

2.4 New Features in Oracle Fabric Interconnect Target

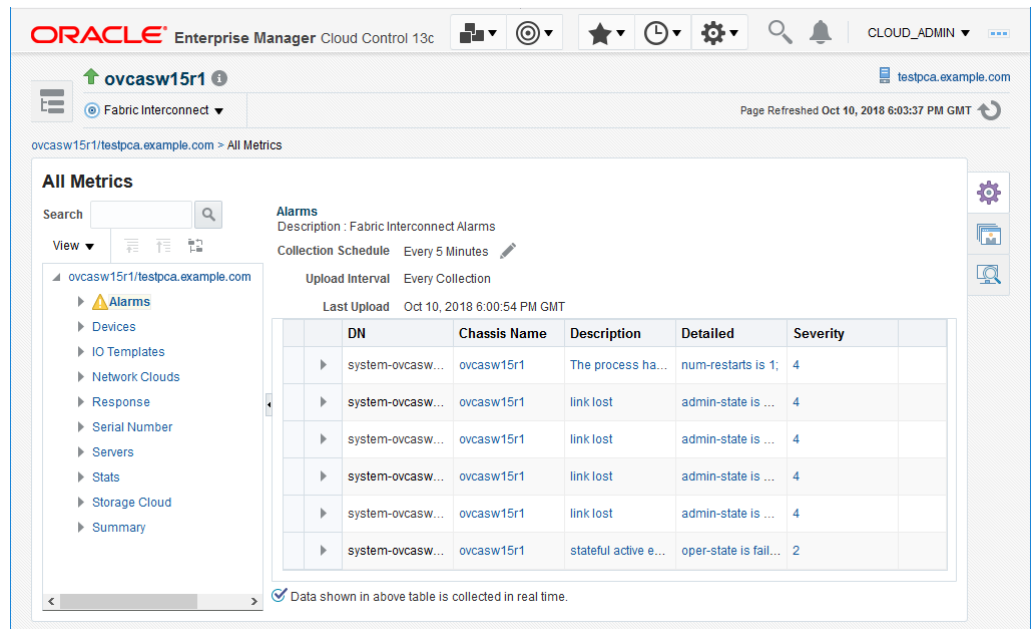
This section provides information about new features in Oracle Fabric Interconnect Target.

Enterprise Manager 13.3 introduces new features to the Oracle Fabric Interconnect Target. The following information can now be monitored:

- Cumulative performance
- The managed devices and their serial numbers
- The discovered servers
- The configured I/O templates
- Network and storage clouds
- The Alarms tracked by the Oracle Fabric Manager

To view this information, select the **Fabric Interconnect Target** from **All Targets** menu or click the **Fabric Interconnects** on the Private Cloud Appliance's Target Navigation Tree.

Figure 2-15 Oracle Fabric Interconnect Target Home Page



Summary

Oracle Fabric Manager supports high availability mode, in which multiple Fabric Manager servers are associated with each other to provide a system of Fabric Manager servers that operate in active or passive roles. The summary section of the Fabric Interconnect home page lists the current Oracle Fabric Manager's status and version, and the high availability mode.

Cumulative Performance

When vNICs and vHBAs are configured and deployed on the host server, it can be seen in the graph of the network and storage total throughput.

Devices

Information about the Oracle Fabric Interconnect chassis and the Oracle SDN that are managed through the Oracle Fabric Manager is displayed in the Fabric Interconnect home page. The Devices table displays the host name of each managed device, the device IP address, the software version currently installed on each managed device, the current state of the managed device and the model of the device.

Servers

Oracle Fabric Manager discovers servers that are connected through the devices and have Oracle Virtual Networking Drivers installed. This table lists the host name of each server that Oracle Fabric Manager has discovered, the operating system currently in use on the host server, the name of the I/O profile bound to each server, and the total number of vNICs and vHBAs that are configured on the server.

I/O Templates

When I/O templates are configured, they are listed in the Fabric Interconnect home page regardless of whether they are deployed to a host server or not. This table lists the name of each configured I/O template, the total number of vNICs and vHBAs configured in each I/O template, and the description that was applied to the I/O template.

Network Clouds

Information about the Private Virtual Interconnect (PVI) clouds is displayed. If Oracle Fabric Interconnect is attached, this table lists the name of each configured cloud, the number of Ethernet ports, and link aggregation groups (LAGs) in the cloud.

Storage Clouds (only for Oracle Fabric Interconnect)

Information about the configured storage clouds is displayed. This table lists the name of each configured cloud, and the number of Fibre Channel ports in the storage cloud.

Alarms

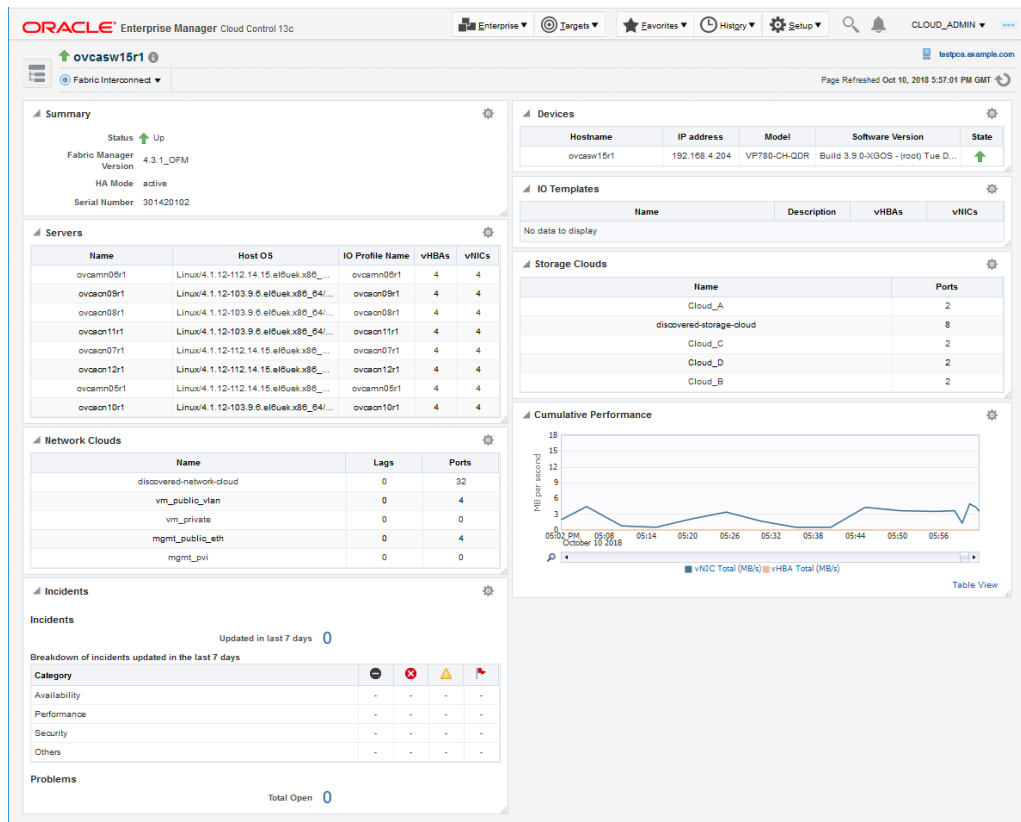
The Oracle Fabric Interconnect target monitors system events and network management alarms tracked by the Oracle Fabric Manager.

The alarms shown in the Fabric Interconnect home page are of one of the following severities:

- Critical
- Major
- Minor
- Warning

To view critical, major, minor, and warning alarms go to the Target's All Metrics page, and select the Alarms metric. Critical alarms are displayed in the Incidents and Problems section of the Fabric Interconnect home page. Major, warning and minor alarms can also appear on the Incidents and Problems section, if the user activates a rule for this purpose.

Figure 2-16 Alarms Shown in the All Metrics Page



2.5 Registering Oracle VM Manager with Oracle Enterprise Manager 13c (Oracle Private Cloud Appliance Software Version 2.3.1 and above)

As the Oracle PCA version 2.3.1 has Oracle VM Server 3.4.2, a tcps certificate is not required for registration with Oracle Enterprise Manager. Oracle VM Manager version 3.4 contains an internal Certificate Authority (CA) that is used to perform certificate-based authentication and to sign the SSL certificate that is used for the web-based user interface. Certificates are generated automatically upon the install of the Oracle PCA 2.3.1 software. The export and import of the Oracle VM Manager Weblogic certificate is required and detailed below.

For a new install of Oracle PCA software 2.3.1 and above, follow this procedure:

- As the root user, and on the Oracle PCA active management node, export the Oracle VM Manager certificate

```
/u01/app/oracle/ovm-manager-3/ovm_upgrade/bin/ovmkeytool.sh exportca > /u01/app/oracle/ovm-manager-3/ws
```

- As the agent user, and on the Oracle PCA active management node, import the Oracle VM Manager certificate using password "welcome"

```
/nfs/shared_storage/oemagent/agent_13.3.0.0.0/bin/emctl secure  
add_trust_cert_to_jks -trust_certs_loc /u01/app/oracle/ovm-manager-3/ws -alias  
ovmm
```

To register Oracle VM Server 3.4.2 and above from the Oracle Enterprise Manager UI, follow these steps:

1. From the **Enterprise** menu, select **Cloud**, then select **Oracle VM Infrastructure Home**.
2. From the **Infrastructure Cloud** menu, select **Register OVM Manager**. The Add Oracle VM Manager page appears.
3. Enter the **Name** for the Oracle VM Manager instance to be registered.

For Example: PCA-OVMM

4. Select the Management Agent to monitor and manage the Oracle VM Manager instance to be registered. Select the agent running on the management nodes.
5. Enter the Oracle VM Manager URL.

For example:

```
- tcps:// (As tcps specification is not required for Oracle VM Manager 3.4.2 and  
later, enter a dummy URL such as tcps://here)
```

Enter the Oracle VM Manager's Console URL. This is the URL to enable the VNC Console for the Guest VMs.

The URL must be in the following format:

```
https://<pca-oracle-vm-manager-FQDN>:7002/
```

By default, data from Oracle VM Manager is automatically synchronized with Enterprise Manager at fixed intervals of time. If you do not wish to enable this option, you must disable the Automatic Synchronization checkbox and manually synchronize the data. For more information on the automatic and manual synchronization options, refer to Synchronizing the Oracle VM Manager Targets for details.

6. Enter the administrator user name and password to connect to the Oracle VM Manager URL provided in **Step 5**. If you want to use separate credentials for managing Oracle VM Manager, check the **Use Administration Credentials** check box. If you do not specify separate credentials, the monitoring credentials are used by default.
7. Click **Submit** to register the Oracle VM Manager. You can now use the Oracle VM Manager to monitor and manage the virtualization targets in Enterprise Manager.

For more information, refer to Registering the Oracle VM Manager in the *Enterprise Manager Cloud Administration Guide*.

2.6 Enterprise Manager Agent Recovery After Oracle PCA Upgrade

This procedure covers Enterprise Manager agent recovery for Oracle PCA upgrades from version 2.3.1. If your Oracle PCA is not 2.3.1 then refer to My Oracle Support note 2242177.1, which includes steps for Oracle Enterprise Manager.

 **Note:**

It is recommended to upgrade the OMS and PCA management node agent to the latest version of the VT and supporting plugins.

1. Backup the `oraInventory` agent to the NFS-shared location:

```
# cd /u01/app
# tar -cvf EMagent_oraInventory.tar oraInventory
# cp EMagent_oraInventory.tar /nfs/shared_storage
```

2. Create the full blackout on Oracle PCA rack.

To create full blackout on Oracle PCA rack, login to the Enterprise Manager 13c UI as the Cloud Administrator and do the following:

- From the **Targets** menu, select **Private Cloud Appliance**.
- From the **Private Cloud Appliance** home page menu, select **Control**, and then select **Create Blackout** option.

Enter suitable information describing the reason for the blackout.

3. Update the Oracle PCA rack.

For more information, refer to [Updating Oracle Private Cloud Appliance](#).

 **Note:**

If you are running or upgrading to Oracle Private Cloud Appliance Software v2.3.4 or higher, then **Steps 4 to 10** are not required.

4. The next step is to recover the Oracle Enterprise Manager agent installed on the NFS shared storage which is presented to both active and passive management nodes.

You should restore the `oraInventory` backup taken in the first step as the root user on the active management node:

```
[root@ovcamn06r1 ~]# pca-check-master
NODE: 192.168.4.4 MASTER: True"

# cp /nfs/shared_storage/EMagent_oraInventory.tar /u01/app
# tar -xvf EMagent_oraInventory.tar
```

5. Keep the same password you created in [Installing the Management Agent on Oracle PCA](#) for the `oracle` user on both management nodes:

```
# passwd oracle
```

6. Run the privileged agent scripts on the active management node:

```
# /nfs/shared_storage/oemagent/agent_13.3.0.0.0/root.sh
# /u01/app/oraInventory/orainstRoot.sh
```

7. The Oracle Enterprise Manager agent needs to be under control of the Oracle Private Cloud Appliance software and not any local OS based startup scripts. Therefore, as the `root` user on the active management node, you should remove any OS based `rc.*` links to scripts.

```
# for x in `find /etc/rc.*/*rc* | grep gcstart`; do rm $x; done
```

8. Copy the following agent installation files to the passive management node as the root user (ovcamn06r1 is passive in this example):

```
# scp /etc/init.d/gcstartup root@ovcamn06r1:/etc/init.d/
# rsync -og /etc/oragchomelist root@ovcamn06r1:/etc/oragchomelist
# rsync -rog /u01/app/oraInventory/ oracle@ovcamn06r1:/u01/app/oraInventory
```

9.  **Note:**

By default, the Enterprise Manager agent port **3872** is pre-populated by PCA software. If you used this default Enterprise Manager agent port 3872 for pushing the agent, then this step is not needed.

Add the Enterprise Manager agent port to the number chosen during agent push (see [Installing the Management Agent on Oracle PCA](#)) (default **3872**) to the firewall settings on both management nodes (active and passive):

```
iptables -I INPUT <line_num> -m state --state NEW -m tcp -p tcp --dport
<agent_port> -j ACCEPT
where line_num is the any line_num before the iptables rule to block all traffic
This line_num can be obtained using # service iptables status
# service iptables save
# service iptables reload
```

10. Restart the Enterprise Manager agent on the active management node as oracle from the agent's emctl command::

```
% /nfs/shared_storage/oemagent/agent_inst/bin/emctl stop agent
% /nfs/shared_storage/oemagent/agent_inst/bin/emctl start agent
```

11. Remove the blackout on Oracle PCA rack.

-  **Note:**

After the upgrade of Private Cloud Appliance is complete and the agent is restored, you must ensure that [Prerequisites to Monitor the Fabric Interconnect in Oracle Private Cloud Appliance](#) are met to enable the new Fabric Interconnect Target features in Oracle PCA.

2.7 Important Steps to Enable the Fabric Interconnect Target

The following steps are important to enable the Fabric Interconnect Target's new features:

- Upgrade the OMS to 13.3.x.
- From both the Fabric Interconnect home page menu, select Control, and then select Create Blackout option to enable blackout for both the Oracle Fabric Interconnect Targets (not a full Private Cloud Appliance blackout):
- Upgrade the agent from 13.2.x to 13.3.x.

- Execute the steps in the [Prerequisites to Monitor the Fabric Interconnect in Oracle Private Cloud Appliance](#) section to setup the Fabric Interconnect.
- Rediscover the Fabric Interconnect Targets by following the steps in [Private Cloud Appliance Rack Discovery](#) section and at Step 7, explicitly enter the root/administrator credentials to access the Oracle Fabric Manager.
- Promote the Target
- Clear the Blackout state for both the Oracle Fabric Interconnect Targets. To clear the Blackout state, perform following steps:
 - From both the **Fabric Interconnect** home page menu, select **Control**.
 - Select **End Blackout** option.

2.8 Removing the Oracle PCA Target from Enterprise Manager

To remove the Oracle Private Cloud Appliance (PCA) target from Enterprise Manager monitoring:

Note:

Removing the Oracle PCA target from Enterprise Manager monitoring will also remove all PCA components from monitoring (for example, the Compute and Management Nodes, InfiniBand switches, Ethernet and Fabric Interconnect switches, Storage Servers, and so forth).

1. From the **Targets** menu, select the Private Cloud Appliance item ([Figure 2-17](#)):

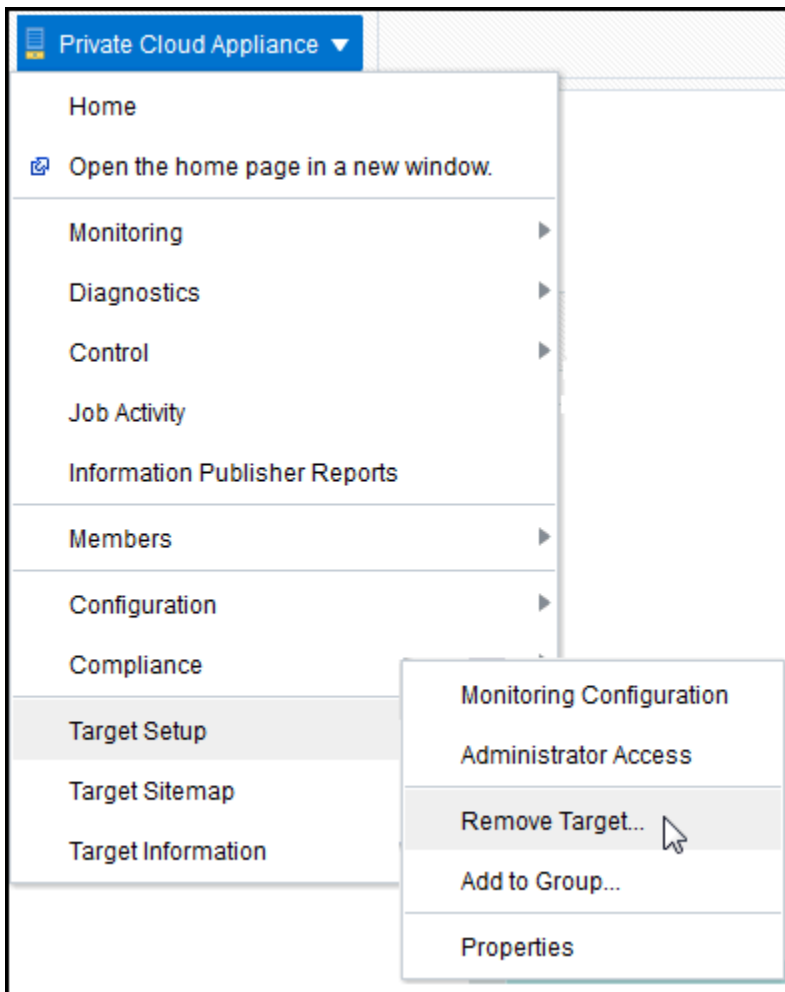
Figure 2-17 Targets Menu

All Targets	Ctrl+Shift+T
Groups	
Systems	
Services	
Hosts	
Databases	
Middleware	
Business Applications	
Composite Applications	
Private Cloud Appliance	

Then, on the Targets page, select the Private Cloud Appliance item and click **Remove**.

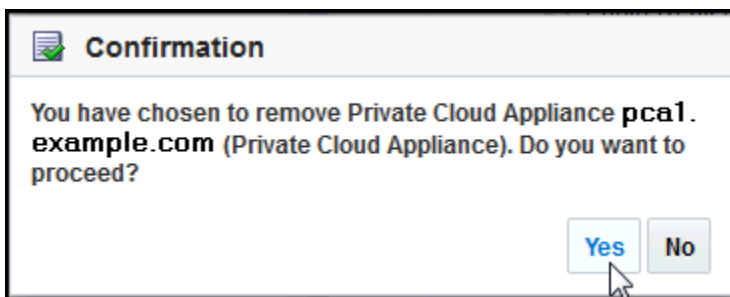
2. Alternatively, you can remove the target from the PCA target home page. Click the **Private Cloud Appliance** menu, then select **Target Setup**, then select **Remove Target** (Figure 2-18):

Figure 2-18 Remove Target



3. A confirmation pop-up window appears (Figure 2-19):

Figure 2-19 PCA Target Removal Confirmation



Click **Yes** to continue.

- After the PCA target is removed, the All Targets page will reload. A confirmation message will show that the PCA target and all of its components have been removed (Figure 2-20):

Figure 2-20 Oracle PCA Target Removed - All Targets Page

The screenshot shows the 'All Targets' page in Oracle Enterprise Manager. At the top, a green confirmation banner reads: 'Confirmation: The specified Private Cloud Appliance and all its targets were removed.' Below this, the 'All Targets' section is visible, including an 'Auto Refresh' dropdown set to 'Off' and a 'Page Refreshed' timestamp of 'Sep 11, 2015 10:13:55 AM PDT'. A 'Refine Search' sidebar on the left lists categories like 'Cloud', 'Groups, Systems and Services', and 'Middleware'. The main table displays the following targets:

Target Name	Target Type	Target Status
/EMGC_EMGC_DOMAIN/EMGC_DOMAIN	Oracle WebLogic Domain	N/A
/EMGC_EMGC_DOMAIN/EMGC_DOMAIN/emgc	Domain Application Deployment	N/A
/EMGC_EMGC_DOMAIN/EMGC_DOMAIN/EMGC_ADMINSERVER	Oracle WebLogic Server	🔴
/EMGC_EMGC_DOMAIN/EMGC_DOMAIN/EMGC_ADMINSERVER/mds-ow...	Metadata Repository	N/A
/EMGC_EMGC_DOMAIN/EMGC_DOMAIN/EMGC_ADMINSERVER/mds-sys...	Metadata Repository	N/A
/EMGC_EMGC_DOMAIN/EMGC_DOMAIN/EMGC_OMS1	Oracle WebLogic Server	🔴
/EMGC_EMGC_DOMAIN/EMGC_DOMAIN/EMGC_OMS1/emgc	Application Deployment	🔴
/EMGC_EMGC_DOMAIN/EMGC_DOMAIN/EMGC_OMS1/empbs	Application Deployment	🔴
/EMGC_EMGC_DOMAIN/EMGC_DOMAIN/EMGC_OMS1/jvmdengine(13.1.1...	Application Deployment	🔴
/EMGC_EMGC_DOMAIN/EMGC_DOMAIN/empbs	Domain Application Deployment	N/A

3

Monitoring the Oracle Private Cloud Appliance

This chapter provides instructions for monitoring the Oracle Private Cloud Appliance (PCA) through Enterprise Manager Cloud Control 13c. The following topics are provided:

- [About the Private Cloud Appliance Homepage](#)
- [Using the Incident Manager](#)
- To monitor and administer an IaaS Cloud, see *Administering and Monitoring and IaaS Cloud* in *Oracle Enterprise Manager Cloud Administration Guide*.

3.1 About the Private Cloud Appliance Homepage

The Private Cloud Appliance homepage lets you keep track of all your Private Cloud Appliance components.

From the Private Cloud Appliance homepage you can view and search for the following:

- Name
- Type
- Members within the Private Cloud Appliance
- Member Status Summary

From the Member Status Summary you can drill down to:

- Down Alerts
- Up Alerts
- Maintenance Alerts
- Time-out Alerts
- N/A Alerts
- Metric availability error Alerts
- Critical Error Alerts

- Incidents

From the Incidents section you can drill down to:

- Fatal errors
- Critical errors
- Warnings
- Flagged incidents

From the Private Cloud Appliance Rack Schematic page, selecting a target with a red ring and clicking on the target's address will take you to the target's summary page. From the target's summary page, the menu on the right side of the screen will let you see the target's:

- Photorealistic or table view.
- Resource utilization graphs.
- Temperature and Fan speed graphs.
- Interface graphs.
- Firmware and configuration summary.

3.2 Using the Incident Manager

The incident summary page is a tool to check the incident status of your selected system.

From the Private Cloud Appliance homepage, click on a system to view the Private Cloud Appliance Rack Schematic page. From this page, you can:

- See the Overview summary for this system.
- View the Private Cloud Appliance Rack Schematic.

From the Rack Schematic you can:

- See the rack in Schematic, Photo-Realistic, or Table views.
- Click on a component to check the current status
- Targets with a red box around it have critical errors and require your attention.

Incident Overview Page

From the Incident Overview page, clicking on an incident will take you to the Incident Manager page of the selected incident in which you will see:

- The Incident Details section will give you more information such as incident ID, incident creation date, reported state of the target, and event type.
- The Tracking section will show who was assigned this incident, the incident's priority, the incident's status, and last comment.
- The Guided Resolution section will offer more insight with recommended links to visit in order to proceed with a corrective action.

4

Troubleshooting the Oracle Private Cloud Appliance

This chapter describes some common problems you may encounter with your Oracle Private Cloud Appliance (PCA).

The following troubleshooting topics are covered:

- [Oracle ZFS Storage Appliance Error Message](#)
- [Targets Still Appear as Pending](#)
- [Import Component Step Failed for New VM Request](#)

4.1 Oracle ZFS Storage Appliance Error Message

Problem: You may encounter a warning message in the agent log file about the Oracle ZFS Storage Appliance.

Resolution: This is a known issue. The warning message can be ignored. Typically, the message will look like this:

```
2015-05-15 13:06:04,896 [87:75FBA055] WARN - Can not evaluate push properties for
target
oracle_si_zfssa_diskshelf_server_akcli.zfs1.example.com/akcli/1/diskshelf/
chassis-001_akcli
for metric ComponentFaults - skipping this metric
oracle.sysman.emSDK.agent.fetchlet.exception.FetchletException:
Can't resolve a non-optional query descriptor property [MatchAgentAddr]
(StorageServerIpAddress) at
oracle.sysman.gcagent.metadata.impl.PropertiesEvaluatorImpl$QueryPropsComputer.comput
e(PropertiesEvaluatorImpl.java:1013) at
oracle.sysman.gcagent.metadata.impl.PropertiesEvaluatorImpl$QueryPropsComputer.<init
>(PropertiesEvaluatorImpl.java:859) at
oracle.sysman.gcagent.metadata.impl.PropertiesEvaluatorImpl.init(PropertiesEvaluatorI
mpl.java:346) at
oracle.sysman.gcagent.metadata.impl.PropertiesEvaluatorImpl.<init>(PropertiesEvaluato
rImpl.java:210) at
oracle.sysman.gcagent.metadata.impl.TargetInstanceImpl.getPropertiesEvaluator(TargetI
nstanceImpl.java:1255) at
oracle.sysman.gcagent.target.interaction.execution.ReceiveletManager.addMetric(Receiv
eletManager.java:344) at
oracle.sysman.gcagent.target.interaction.execution.ReceiveletInteractionMgr.addMetri
c(ReceiveletInteractionMgr.java:1446)
```

4.2 Targets Still Appear as Pending

Problem: After discovering the PCA Rack, you may still see all SI targets are in *Pending* state.

Resolution: You must kill the stuck availability job in the OMS:

```
$ sqlplus sysman/sysman
SQL> SELECT job_subname, elapsed_time, cpu_used FROM dba_scheduler_running_jobs
WHERE job_name = 'EM_REPOS_SEV_EVAL';
SQL> BEGIN dbms_scheduler.stop_job('EM_REPOS_SEV_EVAL'); COMMIT; END;
```

4.3 Import Component Step Failed for New VM Request

Problem: Import Component step failed for new VM request.

Resolution: In the OMS setup, determine the upload port, and update `/etc/tinyproxy/tinyproxy.conf` file on both management nodes.

1. Get the "HTTPS Upload Port" for the OMS
 - On OMS host, login using the OMS install user. Example: `oracle`
 - `$ emctl status oms -details -sysman_pwd <Sysman Password> | grep "HTTPS Upload Port"`
2. Below the existing block of `ConnectPort` lines, add the following line by replacing the `<yyyy>` with actual "HTTPS Upload Port" to `/etc/tinyproxy/tinyproxy.conf` file.

```
===
ConnectPort <yyyy>
===
```
3. Restart `tinyproxy` (service `tinyproxy` restarts).
4. If you have a firewall enabled, add this port to the list of ports enabled using `iptables` and restart `iptables` service.

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