



Red Hat CloudForms 4.7

Redfish physical infrastructure provider for Red Hat CloudForms User Guide

User Guide

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Abstract

This documentation includes the instructions on adding and using Redfish physical infrastructure provider in Red Hat CloudForms. Functionality covered by CloudForms plug-in for Redfish is described in Release Notes.

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CHAPTER 1. OVERVIEW

DMTF's [Redfish](#) is a standard for Out-Of-Band (OOB) management of physical infrastructure.

This documentation provides configuration steps required by Redfish physical infrastructure provider for Red Hat CloudForms. Functionality covered is described in [Chapter 2, *Redfish Physical Infrastructure Provider Release Notes*](#) section.

CHAPTER 2. REDFISH PHYSICAL INFRASTRUCTURE PROVIDER RELEASE NOTES

The Red Hat CloudForms supports the following Redfish physical infrastructure provider functionality:

- Inventory
- LED Identification Operations
- Power Operations
- Events

2.1. INVENTORY

Redfish physical infrastructure provider collects the inventory on all of the discoverable systems, populating the database behind the scenes. The first inventory operation is automatic, while the subsequent ones occur either regularly or manually. The inventory is currently not updated upon Redfish events.

Depending on the capabilities of the systems under inventory, the Redfish may distinguish between entities such as blocks, racks, sleds, chassis, physical servers and others. These categories are mapped into Red Hat CloudForms categories as follows:

CloudForms Convention.	Redfish Convention.
Physical Rack	Rack
Physical Chassis	Block, Sled, Chassis
Physical Server	System

2.2. LED IDENTIFICATION OPERATIONS

Physical systems may support identification through remotely manipulating a dedicated identification LED located somewhere on the enclosure. Red Hat CloudForms provides the following identification LED operations:

Identity action.	Expected LED state after action.
Turn LED On	On
Turn LED Off	Off
Blink LED	Blinking

2.3. POWER OPERATIONS

Power operations change the status of the power supply of the system and can also trigger a reboot of

the target physical system. It is always possible to request any power operation regardless of the system's current power state. However, depending on the vendor's implementation, some operations may not have any effect if the system is in a wrong state at the time when it receives the request.

Power operation.	Expected power state after action.
Power On	Powering On, On
Power Off	Powering Off, Off
Power Off Immediately	Powering Off, Off
Restart	Powering Off, Off, Powering On, On
Restart Immediately	Powering Off, Off, Powering On, On

The following power actions are **not** supported:

- Restart to System Setup
- Restart Management Controller

2.4. EVENTS

Red Hat CloudForms supports Redfish events from the vendors that support the Server-Side Events (SSE) technology. The events received are then completely dependent on the vendor's implementation and the Baseboard Management Controller (BMC) configuration.

CHAPTER 3. PREREQUISITES

The following prerequisites must be met to start using Redfish physical infrastructure provider for Red Hat CloudForms:

- One or more physical systems with an embedded BMC that supports Redfish.
- Administrator credentials for the BMC.
- CloudForms appliance must be able to reach Redfish server on the physical system's BMC network interface through at least one of the appliance's own network interface.
- For Redfish events to work, the BMC must support the Server-Side Events (SSE) technology.

CHAPTER 4. TESTED SYSTEMS

We have tested the Redfish physical infrastructure provider against the following systems:

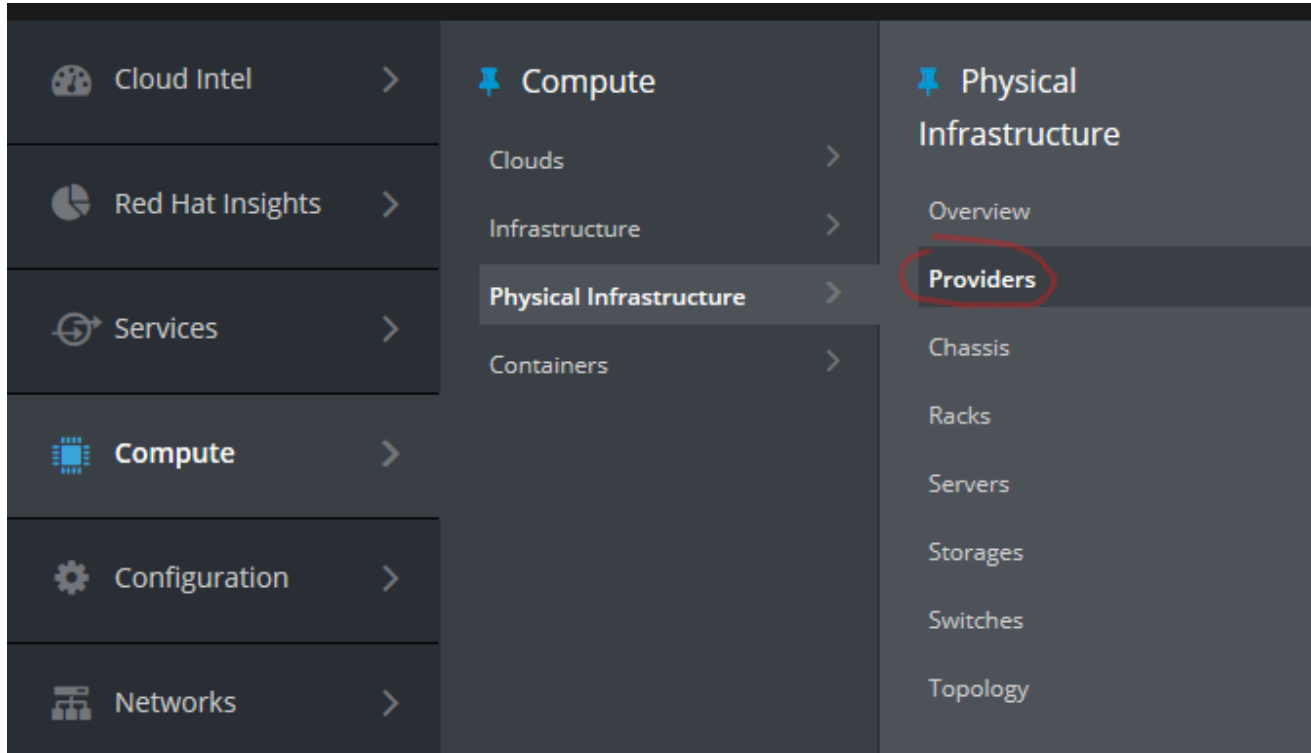
- Dell DSS 9620 with iDRAC9
- Dell PowerEdge R470 with iDRAC9
- HPE CloudLine CL21000 with AMI MegaRAC SP-X (30810600 1.11.0 2018-6-21)
- Lenovo SR 650 with XClarity Controller (CDI320S 1.70 2018-02-28)

CHAPTER 5. INSTALLING RED HAT CLOUDFORMS

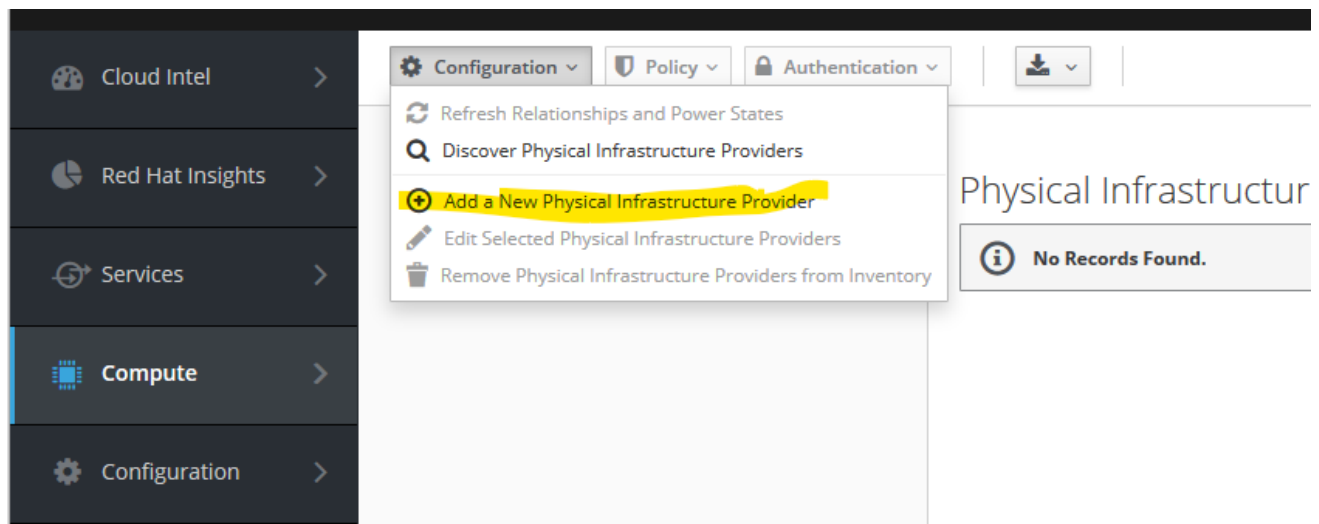
To install Red Hat CloudForms please refer to [Red Hat CloudForms Installation Guide](#).

CHAPTER 6. ADDING A NEW REDFISH PHYSICAL INFRASTRUCTURE PROVIDER TO RED HAT CLOUDFORMS

This section describes how to add a new Redfish physical infrastructure provider to Red Hat CloudForms using CloudForms graphical interface. First step is to log in. Then navigate to **Compute** → **Physical Infrastructure** → **Providers** page from the main navigation on the left.



In the **Configuration** drop-down, select **Add a New Physical Infrastructure Provider**:



Type in the name of the new Redfish physical infrastructure provider in the **Name** field and select **Redfish** in the **Type** drop-down:

Physical Infrastructure Providers > Add New Physical Infrastructure Provider

Add New Physical Infrastructure Provider

Name

Type

Zone

This will reveal fields to describe the endpoint of the new Redfish physical infrastructure provider for Red Hat CloudForms. Populate them as needed:

Add New Physical Infrastructure Provider

Name

Type

Zone

Endpoints

Security Protocol Hostname (or IPv4 or IPv6 address) API Port Username Password

Validation Required

To proceed, click **Validate**. If the credential validation was successful, click **Add**. The Physical Infrastructure Providers list will display the new provider:

Configuration Policy Authentication

No filters defined.

Physical Infrastructure Providers

Physical Infrastructure Providers "My Redfish system" was saved

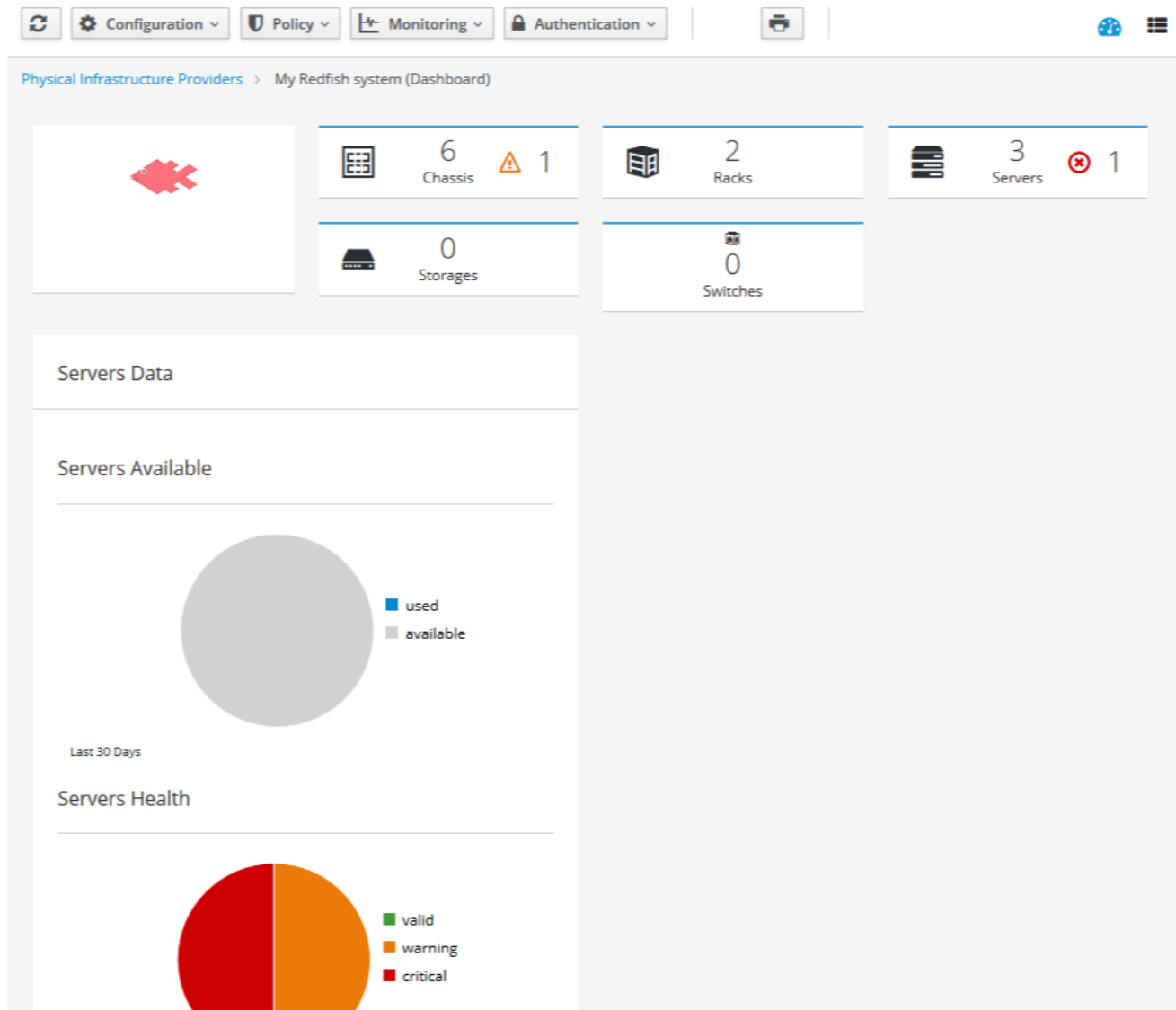
	Name	Hostname	Type	EVM Zone	Physical Servers	Hosts	VMs	Templates	Region	Authentication Status
<input type="checkbox"/>	My Redfish system	10.10.43.158	Redfish	default	0	0	0	0	Region 1	None

It takes about a minute before the inventory gets populated for the first time, so use the browser's refresh function to obtain an updated status.

CHAPTER 7. USING REDFISH PHYSICAL INFRASTRUCTURE PROVIDER FOR RED HAT CLOUDFORMS

7.1. EXAMINING REDFISH PHYSICAL INFRASTRUCTURE PROVIDER INVENTORY

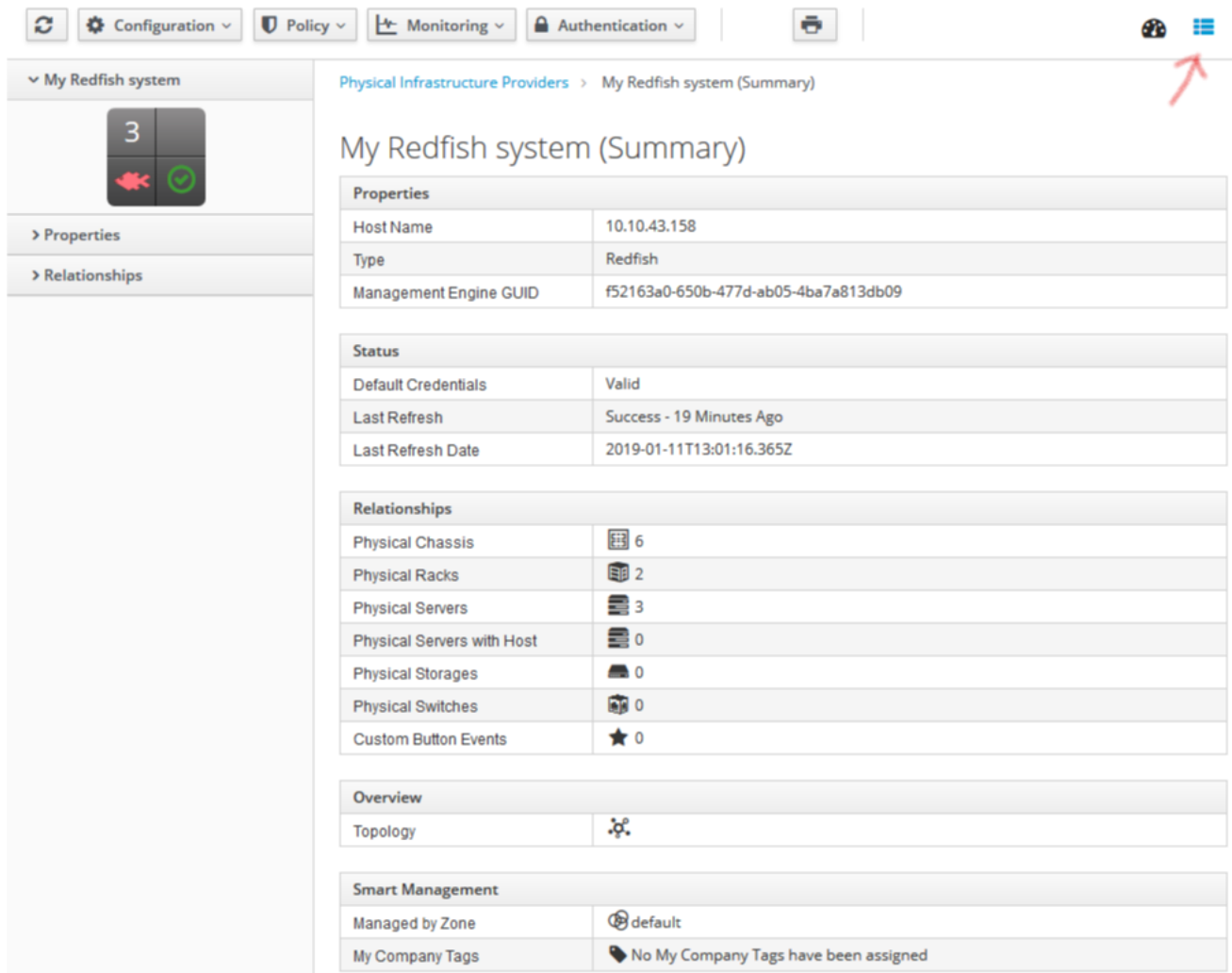
The physical infrastructure provider's dashboard provides an overview of the inventory at a glance. To view it, first navigate to **Compute** → **Physical Infrastructure** → **Providers** page from the main navigation on the left, then click your Redfish physical infrastructure provider.



NOTE

The Redfish physical infrastructure provider does not support targeted refreshing of the inventory. To make sure that the latest information is visible, please perform **Configuration** → **Refresh Relationships and Power States**. The statuses should be up-to-date after a few seconds.

To obtain a tabular view of the inventory, switch to the **Summary View** of the Redfish physical infrastructure provider's dashboard:




Physical Infrastructure Providers > My Redfish system (Summary)



My Redfish system (Summary)

Properties	
Host Name	10.10.43.158
Type	Redfish
Management Engine GUID	f52163a0-650b-477d-ab05-4ba7a813db09

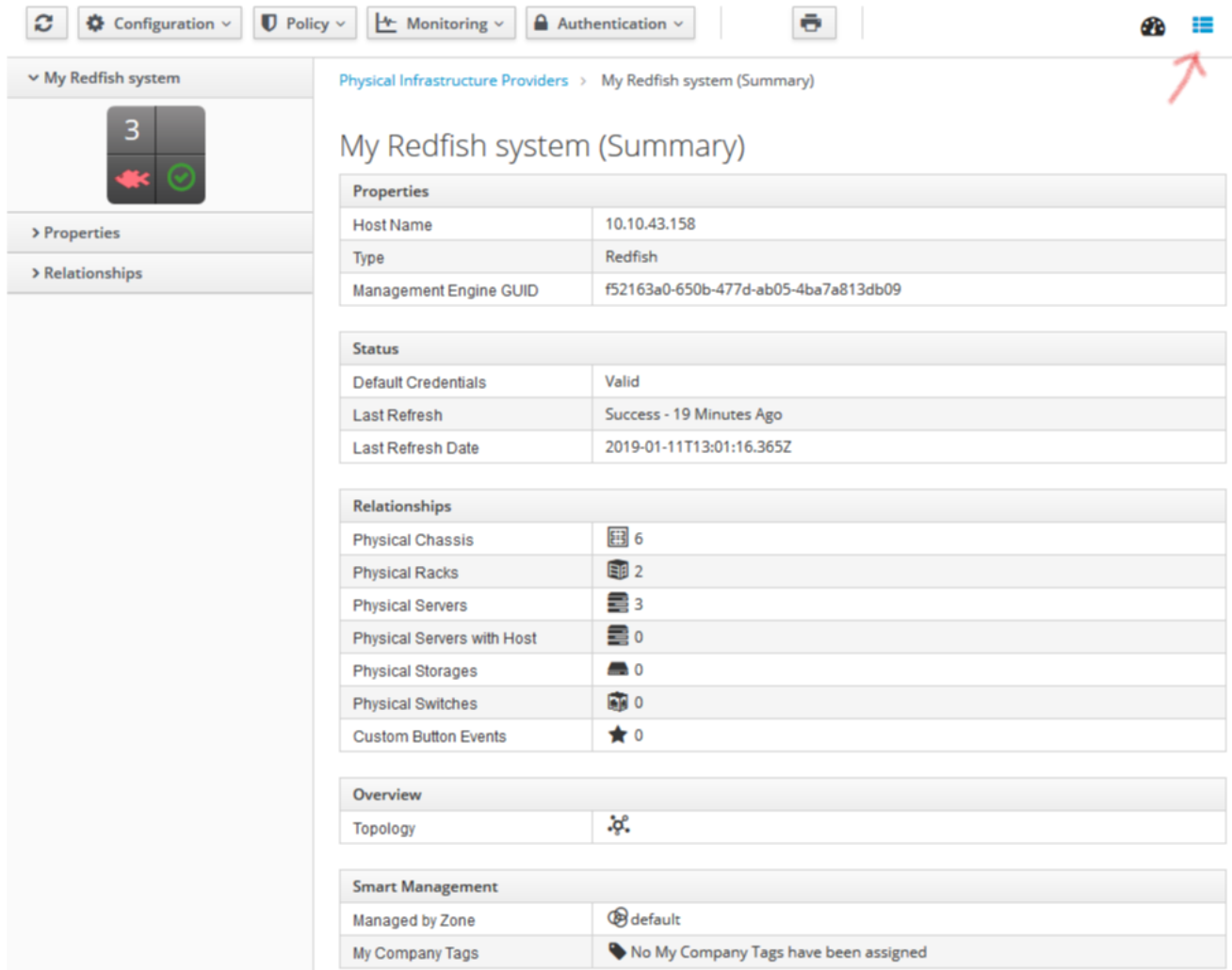
Status	
Default Credentials	Valid
Last Refresh	Success - 19 Minutes Ago
Last Refresh Date	2019-01-11T13:01:16.365Z

Relationships	
Physical Chassis	6
Physical Racks	2
Physical Servers	3
Physical Servers with Host	0
Physical Storages	0
Physical Switches	0
Custom Button Events	0

Overview	
Topology	

Smart Management	
Managed by Zone	 default
My Company Tags	 No My Company Tags have been assigned

To view a list of the resources discovered through the inventory, click on the respective row of the **Relationships** table. For example, clicking on the **Physical Servers** row will take you to the list of physical servers:




Physical Infrastructure Providers > My Redfish system (Summary)



My Redfish system (Summary)

Properties	
Host Name	10.10.43.158
Type	Redfish
Management Engine GUID	f52163a0-650b-477d-ab05-4ba7a813db09

Status	
Default Credentials	Valid
Last Refresh	Success - 19 Minutes Ago
Last Refresh Date	2019-01-11T13:01:16.365Z

Relationships	
Physical Chassis	6
Physical Racks	2
Physical Servers	3
Physical Servers with Host	0
Physical Storages	0
Physical Switches	0
Custom Button Events	0

Overview	
Topology	

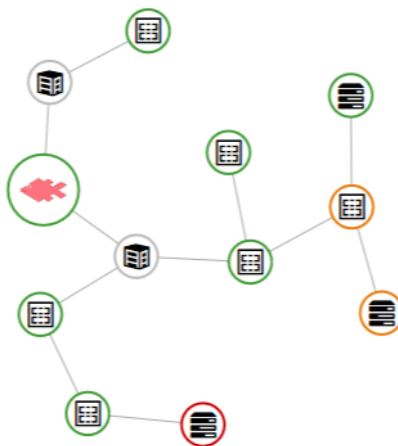
Smart Management	
Managed by Zone	 default
My Company Tags	 No My Company Tags have been assigned

A graphical representation of the managed data center can be displayed by navigating to **Compute** → **Physical Infrastructure** → **Topology**:

Display Names | | |

Health State: ● Valid ● Warning ● Critical ● Unknown

i Click on the legend to show/hide entities, and double click/right click the entities in the graph to navigate to their summary pages. **X**



7.2. IDENTIFYING PHYSICAL SYSTEMS

Many physical servers are equipped with a LED for identifying it as a specific unit. Please use the server's documentation to locate it on the server's chassis.

Depending on previous operation, the states of the identify LEDs may be random. To make sure that only the selected system's LED will be visible, we first make sure that all the physical servers' identify LEDs are off. To do this, we visit **Compute** → **Physical Infrastructure** → **Servers** from the navigation on the left. Here, we can see from the **LED State** column the current states of the identifying LED for the servers. To select all servers, we click on the **Select All** checkbox at the bottom of the page. Now the **Identify** menu becomes active:

The screenshot shows the Red Hat CloudForms interface. At the top, there are tabs for Configuration, Power, Identify, Policy, and Lifecycle. The 'Identify' menu is open, showing options: Blink LED, Turn On LED, and Turn Off LED. The 'Turn Off LED' option is selected. Below the menu is a table of physical servers. The 'LED State' column is highlighted in yellow.

	Name	Type	Health State	Power State	LED State	Hostname	Product Name	Manufacturer
<input checked="" type="checkbox"/>	System-1-1-1-1	Physical Server (Redfish)	OK	PoweringOn	Off			Dell
<input checked="" type="checkbox"/>	System-1-1-1-2	Physical Server (Redfish)	Warning	Off	On			Dell
<input checked="" type="checkbox"/>	System-1-2-1-1	Physical Server (Redfish)	Critical	On	Blinking	hostname.example.com		Dell Inc.

From the **Identify** menu, we click the **Turn LED Off**. We confirm the action by clicking **OK** in the confirmation prompt that appears in the browser. Then we should see the status showing the success of sending the request:

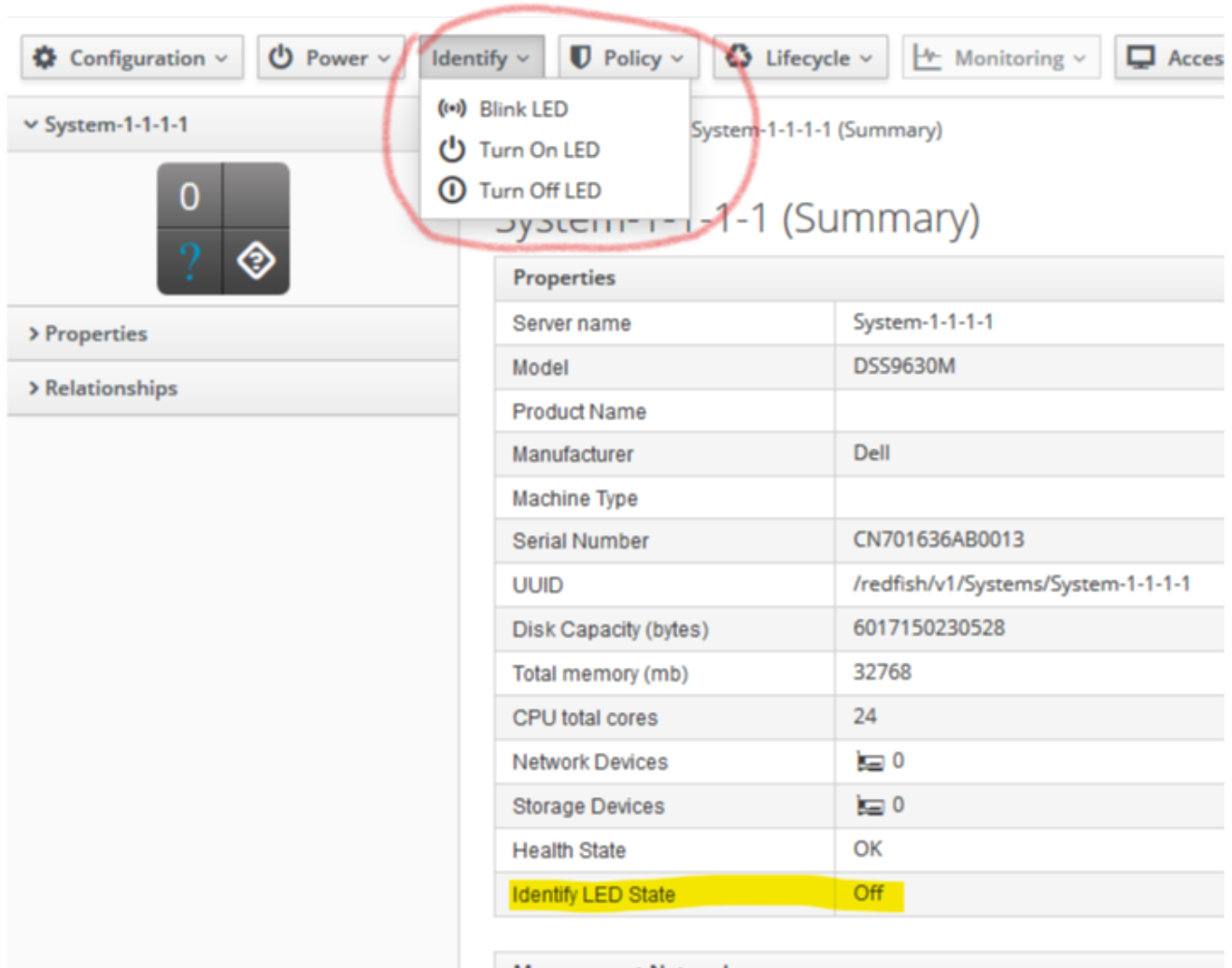
The screenshot shows the Red Hat CloudForms interface with a success message: "Requested turn_off_loc_led of selected items." Below the message is a table of physical servers.

	Name	Type	Health	Power	LED	Hostname	Product	Manufacturer
--	------	------	--------	-------	-----	----------	---------	--------------

The LEDs on the servers should be off within a few seconds. To see the updated status in the CloudForms graphical interface, use the **Configuration** → **Refresh Relationships and Power States**, wait a few seconds, then refresh the page in the browser.

The screenshot shows the Red Hat CloudForms interface with the 'Refresh Relationships and Power States' button highlighted.

To control the LED for an individual server, we can first click on the physical server's name in the table. We obtain the physical server's summary view, which provides the same **Identify** menu as before. Here, we can also see the state of the identification LED:



To make the server's identification LED blink, we click **Identify** → **Blink LED**. We get a prompt for confirming the action. After clicking **OK**, the :product-gui: shows confirmation of the request sent. Shortly afterwards, the selected server's LED should start blinking.

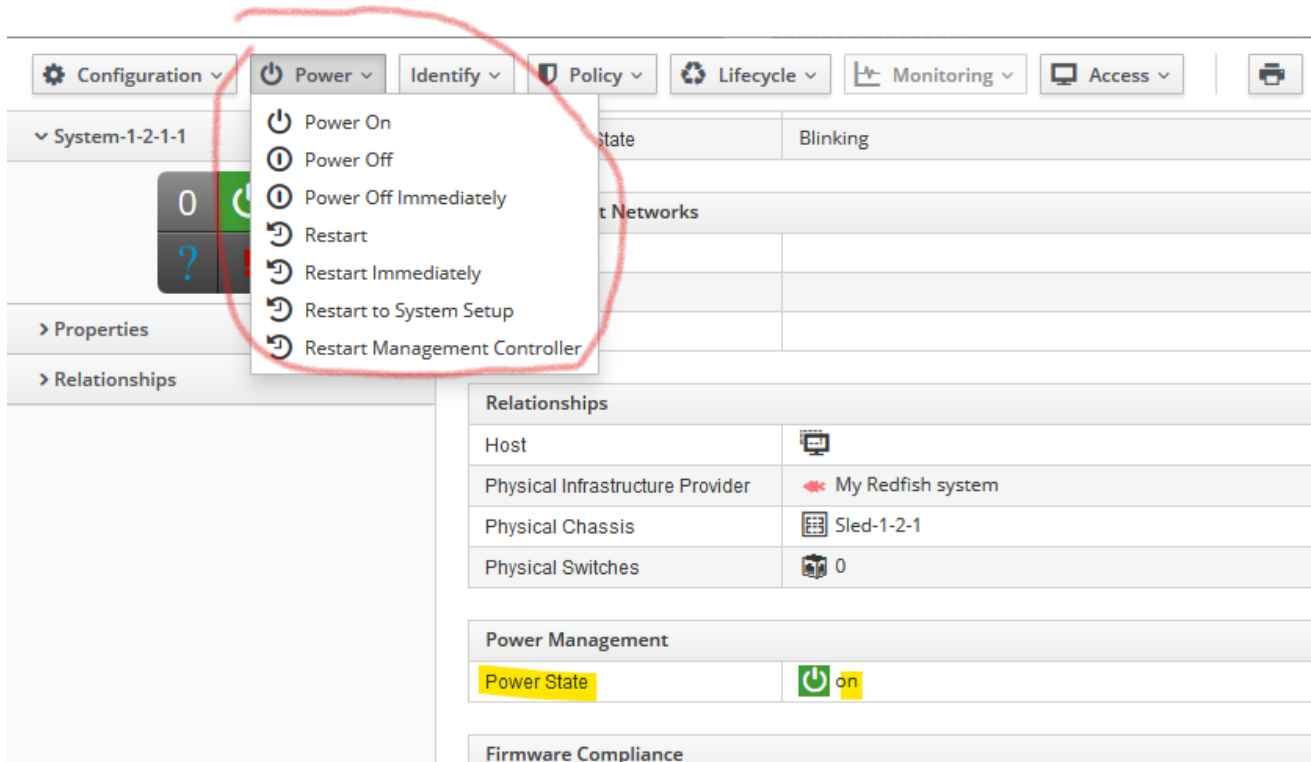
To see the status updated in the CloudForms graphical interface, we use the **Configuration** → **Refresh Relationships and Power States** function, then after a few seconds we refresh the page in the browser.

Please refer to the [Chapter 2, Redfish Physical Infrastructure Provider Release Notes](#) section for further information about the identify LED management actions and statuses.

7.3. MANAGING THE PHYSICAL SYSTEM'S POWER STATUS

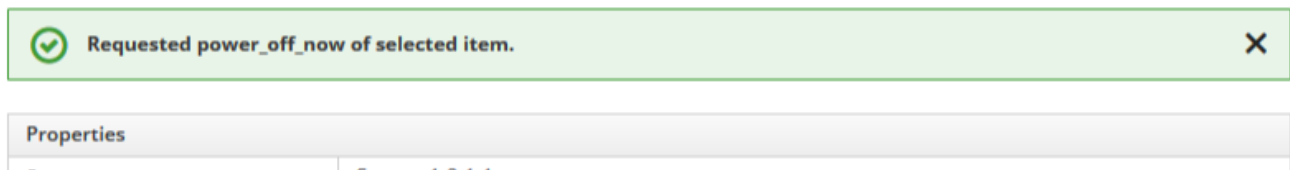
Physical servers may be powered off, powered on or restarted remotely through CloudForms graphical interface using Redfish physical infrastructure provider.

To power off a particular physical server, we first navigate **Compute** → **Physical Infrastructure** → **Servers** from the navigation on the left. On the server list, we click on the server's name. This takes us to the server's summary page, which provides the **Power** menu and displays the server's current power state:



We can see that the server is currently powered on. To have it powered off, we click on **Power** → **Power Off Immediately**. We get a prompt to confirm the selected action. After we click **Ok**, we will see the status showing the success of sending the request:

System-1-2-1-1 (Summary)



The server should be powered off within a few seconds. To see the updated status in the CloudForms graphical interface, use the **Configuration** → **Refresh Relationships and Power States**, wait a few seconds, then refresh the page in the browser. Subject to server's vendor's Redfish implementation, the power status should cycle from **On** over **PoweringOff** to finally **Off**.

To turn on all the physical servers in a single batch operation, we visit **Compute** → **Physical Infrastructure** → **Servers** from the navigation on the left. Here, we can see from the **Power State** column the current states of the power supply for the servers. To select all servers, we click on the **Select All** checkbox at the bottom of the page. Now the **Power** menu becomes active:

The screenshot displays the Red Hat CloudForms interface for managing servers. The 'Power' menu is open, showing options like 'Power On', 'Power Off', and 'Restart'. The 'Servers' table is visible, with columns for Name, Type, Health State, Power State, LED State, Hostname, Product Name, and Manufacturer. The Power State column is highlighted in yellow, showing 'PoweringOn', 'Off', and 'On' for the three servers listed. A red arrow points to the 'Select All' checkbox at the bottom of the table.

Name	Type	Health State	Power State	LED State	Hostname	Product Name	Manufacturer
System-1-1-1-1	Physical Server (Redfish)	OK	PoweringOn	Off			Dell
System-1-1-1-2	Physical Server (Redfish)	Warning	Off	On			Dell
System-1-2-1-1	Physical Server (Redfish)	Critical	On	Blinking	hostname.example.com		Dell Inc.

From the **Power** menu, we click the **Power On**. We confirm the action by clicking **OK** in the confirmation prompt that appears in the browser. Then we should see the status showing the success of sending the request.

The servers should be powered on within a few seconds. To see the updated status in the CloudForms graphical interface, use the **Configuration** → **Refresh Relationships and Power States**, wait a few seconds, then refresh the page in the browser. Again depending on the Redfish implementation, the statuses will cycle from **Off** to **PoweringOn** and finally to **On**.

Please refer to the [Chapter 2, Redfish Physical Infrastructure Provider Release Notes](#) section for further information about the power management actions and statuses.