

Dell EMC PowerFlex Management Pack for vRealize Operations

Product Guide

Version 1.2

Abstract

This document provides a brief walkthrough of installing and configuring the PowerFlex Management Pack for vRealize Operations (vROps).

April 2021

Revisions

Date	Description
October 2020	Initial release
December 2020	Updated Section 2.3 Adding PowerFlex Adapter instances with PowerFlex Manager Domain Name field details
April 2021	Updated Table 1

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1 Product overview

The PowerFlex Management Pack for vRealize Operations enables the collection of analytical data and monitors health, capacity, and performance of PowerFlex systems.

It also provides alerts based on symptoms and alert definitions.

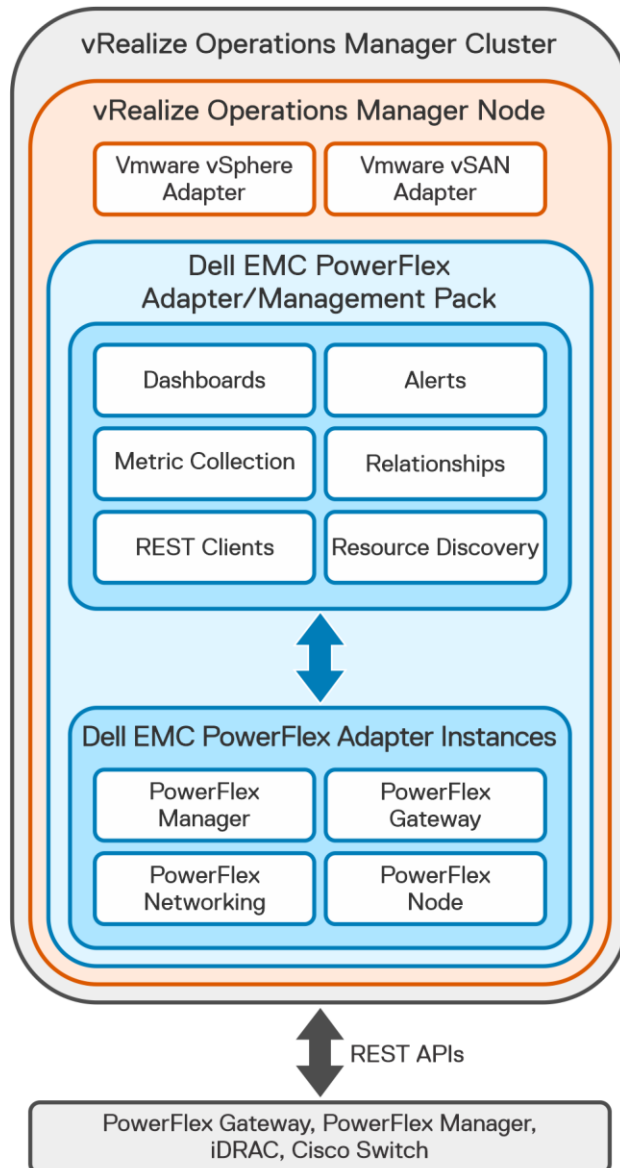


Figure 1 Architecture of PowerFlex Management Pack for vROps

Important: The PowerFlex Management Pack complies with VMware certification requirements and has received the VMware Ready certification.

1.1 Terminology

adapter

A vRealize Operations Manager component that collects performance metrics from an external source such as VMware vCenter, a storage system, or a network switch. Third-party adapters such as the Dell EMC Adapter are installed on the vRealize Operations Manager server to enable creation of adapter instances within vRealize Operations Manager.

adapter instance

A specific external source of performance metrics, such as a specific storage system. An adapter instance resource is an instance of an adapter that has a one-to-one relationship with an external source of data, such as a Dell EMC PowerFlex storage system.

dashboard

A tab on the home page of the vRealize Operations Manager user interface (UI). vRealize Operations Manager ships with default dashboards. Dashboards are fully customizable by the end user. Management packs provide additional custom dashboards on the vRealize Operations Manager UI to enable management views of the resources being monitored.

health rating

An overview of the current state of any resource, from an individual operation to an entire enterprise. vRealize Operations Manager checks internal metrics for the resource and uses its proprietary analytics formulas to calculate an overall health score on a scale of 0 to 100.

icon

A pictorial element in a widget that enables a user to perform a specific function. Hover over an icon to display a tooltip that describes the function.

metric

A category of data collected for a resource. For example, the number of read operations per second is one of the metrics that are collected for each Volume resource.

resource kind

A general type of a resource, such as Volume or SDC. The resource kind dictates the type of metrics that are collected.

resource

Any entity in the environment for which vRealize Operations Manager can collect data. For example, Volume 12 is a resource.

2 Installing Management Pack

This section includes the following topics:

- [Prerequisites](#)
- [Installing PowerFlex Adapter](#)
- [Adding PowerFlex Adapter instances](#)
- [Uninstalling PowerFlex Adapter](#)

2.1 Prerequisites

Before you install PowerFlex Management Pack, verify that you have configured your environment according to the requirements in this section.

Software requirements

Table 1 Software versions

Software	Versions
vRealize Operations	Refer VMware Compatibility Guide for latest supported vROps release versions
Mozilla Firefox	47.0 or later
Google Chrome	68 or later
Microsoft IE	11

Table 2 Minimum required version

Component	Version
PowerFlex	2.6.1.1
iDRAC 8 Firmware	2.60.60.60
iDRAC 9 Firmware	3.21.23.22
PowerFlex Manager	3.0.x
Cisco NXOS	7.0(3)I7(5)
VMware vSphere	6.0

System configuration

- Configure Customer and Controller vCenter servers under the vSphere adapter in vROps.
- Configure Controller vCenter server under the vSAN adapter in vROps.
- Ensure time between PowerFlex Manager and vROps instance is synchronized using Network Time Protocol (NTP). Failure to configure NTP affects the collection of metrics and properties from PowerFlex Manager.
- Ensure that **wbem** service is enabled on all ESXi hosts that are part of PowerFlex system. If disabled, run esxcli command **esxcli system wbem set -e true** to enable it. This command exposes the ESXi

service tag that is used for identifying and creating relationship between ESXi host and the corresponding iDRAC.

- Ensure that **nxapi** feature is enabled on all network switches that are part of the system.

2.2 Installing PowerFlex Adapter

Complete the following steps to install the Dell EMC PowerFlex Adapter and the dashboards:

1. Obtain the `PAK` file from [Flexnetoperations](#) portal and save the file in a temporary folder.
2. Start the vRealize Operations Manager administrative user interface in your web browser and log in as an administrator. For example, enter `vROps_IP_address`.
3. Select **Administration > Solutions > Repository** and then click **Add/ Upgrade** to upload the `PAK` file.

When the message appears that the `PAK` file is ready to install, complete the wizard. Depending on the performance of your system, the installation can take 5 minutes to 15 minutes to complete.

4. Click **Finish** to complete the installation.
The Dell EMC PowerFlex Adapter appears in the list of installed solutions.

NOTE: The management pack name is Dell EMC PowerFlex and its adapter type is PowerFlex Adapter.

2.3 Adding PowerFlex Adapter instances

Adapter instances specify the adapter type and the information that is needed for vRealize Operations Manager to identify and access resources.

PowerFlex Adapter instances provide access to resources of the PowerFlex system.

NOTE: After adapter instances are created, the vRealize Operations Manager Collector requires several minutes to collect statistics, depending on the size of the system. Large system configurations require up to 45 minutes to collect metrics and resources and update dashboards. Once the initial data is collected, subsequent statistical collections run quickly.

Following are the adapter instances that can be configured:

- PowerFlex Gateway
- PowerFlex Manager
- PowerFlex Node
- PowerFlex Networking

Procedure to add adapter instances

1. In a web browser, type `vROps_ip_address` to start the **vRealize Operations Manager Web UI** and log in as an administrator.
2. Select **Administration > Solutions > Other Accounts > Add Account > PowerFlex Adapter**. The **New Account** information page appears.
3. Configure the following **Cloud Account Information** and **Connection Information**:
 - a. **Name:** A descriptive name.
 - b. **Description:** Description with more details.

4. Configure these settings based on the adapter instance type:
 - a. **PowerFlex Gateway:** Use the management IP address of PowerFlex Gateway.
 - b. **PowerFlex Manager:** Use the management IP address of PowerFlex Manager.
 - c. **PowerFlex Node:** Use the management IP address range of iDRACs. Configure the following **Advanced Settings:**
 - **PowerFlex Management Controller vCenter Server**
 - d. **PowerFlex Networking:** Use the management IP address range of Cisco network switches.

NOTE: It is recommended to configure not more than 30 iDRAC in one PowerFlex Node instance. If the number of nodes is greater than 30, then create multiple PowerFlex Node instances. For example: To discover 120 nodes, configure 4 PowerFlex Node instances with 30 iDRAC each.

Similarly, it is recommended to configure not more than 40 Cisco switches in each PowerFlex Networking instance.

These recommendations are based on 5 minutes (default) collection interval.

5. In the **System Name** field, provide a name. This name will be used for grouping multiple instance types that are part of a single PowerFlex system.
6. In the **Credential** field, select any previously defined credentials for this product; otherwise, click the **Add New** icon, select the **Credential Kind** and configure with **Credential name**, **Username** and **Password**. For PowerFlex Manager Adapter Credentials, it is mandatory to provide **PowerFlex Manager Domain Name**.

NOTE: `VXFMLOCAL` is the default **PowerFlex Manager Domain Name** for a local user. But, if PowerFlex Manager is integrated to Active Directory (AD) and you want to login as an AD user, then you must enter AD domain in **PowerFlex Manager Domain Name** field.

7. Click **Test Connection** to validate the values you entered.
If the adapter instance is correctly configured, a confirmation box appears.
8. To finish adding the adapter instance, click **Add**.

2.4 Uninstalling PowerFlex Adapter

Complete the following steps to uninstall PowerFlex Adapter:

1. Select **Administration > Solutions > Repository > Dell EMC PowerFlex**.
2. Click **Uninstall** to remove the selected management pack.
A warning dialog box appears.
3. Select **I understand the risk and agree** and click **OK** to complete uninstallation.

NOTE: This action removes Dell EMC PowerFlex Management Pack and it cannot be recovered. All associated data, metadata, and associated out of the box content will be deleted and cannot be recovered.

3 Monitoring your environment

This section includes the following topics:

- PowerFlex dashboards
- Using badges to monitor resources
- Monitoring storage
- Monitoring network
- Monitoring compute
- Monitoring server hardware
- Monitoring management components
- Troubleshooting with inventory trees

3.1 PowerFlex dashboards

Dashboards provide a graphic representation of the status and relationships of selected objects. The standard dashboards are delivered as templates. If a dashboard is accidentally deleted or changed, you can generate a new dashboard. Use the standard vRealize Operations Manager dashboard customization features to create additional dashboards if required (some restrictions might apply).

From the vRealize Operations Manager main menu, select **Dashboards > All Dashboards**. The available dashboards are listed here. Once the required dashboards are selected, it is listed in the navigation panel on the left.

Dashboards include various widgets, depending on the type of dashboard.

- **Resource Tree:** Shows the end-to-end topology and health of resources across vSphere and storage domains. Configure the hierarchy that is shown by changing the widget settings; changing these settings does not alter the underlying object relationships in the database. Select any resource in this widget to view related resources in the stack.
- **Health Tree:** Provides a navigable visualization of resources that have parent or child relationships to the resource you select in the Resource Tree widget. Single-click to select resources or double-click to change the navigation focus.
- **Sparkline Chart:** Shows sparklines for the metrics of the resource you select in the Resource Tree widget.
- **Metric Picker:** Lists all the metrics that are collected for the resource you select in the Resource Tree widget. Double-click a metric to view a graph of the metric in the Metric Chart widget.
- **Metric Chart:** Graphs the metrics that you select in the Metric Picker widget. Display multiple metrics simultaneously in a single graph or in multiple graphs.

Following is the list of custom dashboards and a sample dashboard that is provided by the PowerFlex Management Pack:

- PowerFlex ESXi Cluster Usage
- PowerFlex ESXi Host Usage
- PowerFlex System Overview
- PowerFlex Management Controller
- PowerFlex Manager Details
- PowerFlex Networking Environment
- PowerFlex Networking Performance

- PowerFlex Node Details
- PowerFlex Node Summary
- PowerFlex Details
- PowerFlex Summary
- PowerFlex Replication Details
- PowerFlex SVM Utilization

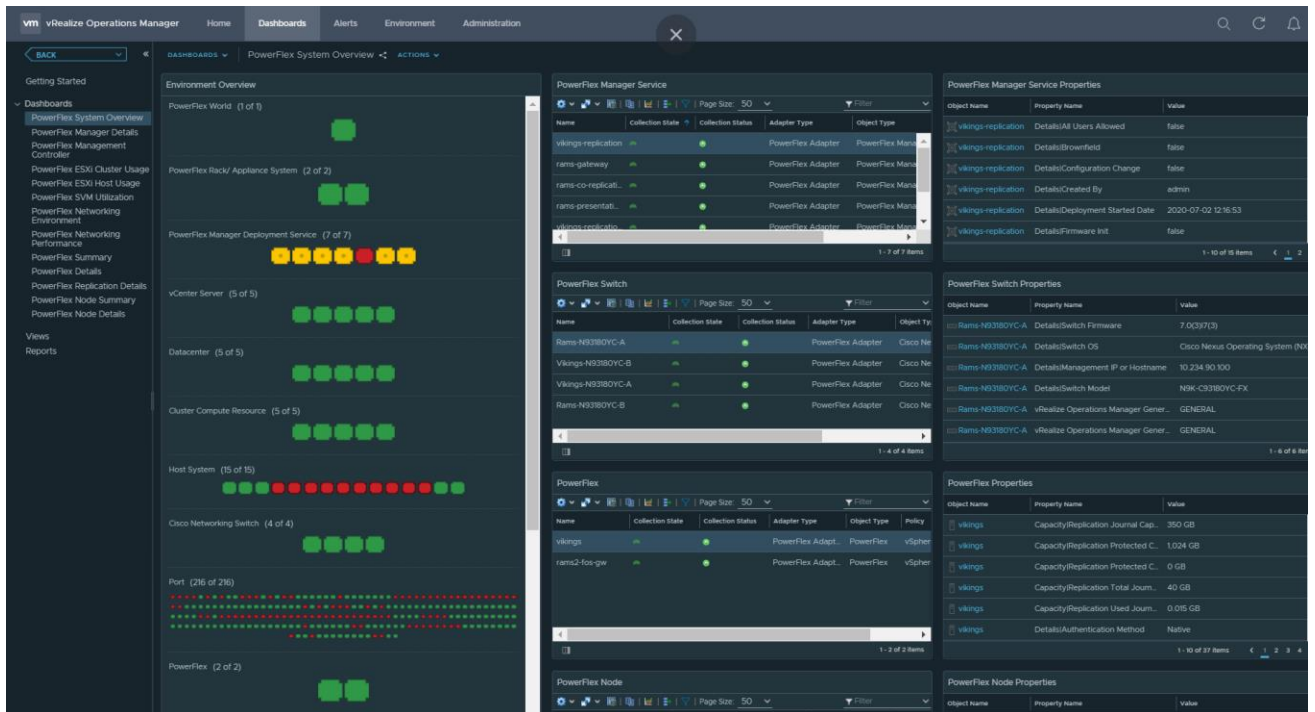


Figure 2 Sample dashboard

3.2 Using badge alerts to monitor resources

vRealize Operations Manager provides badges that report the health, risk, and efficiency of objects in your environment. The state of the badges are based on the number and criticality of the generated alerts for the selected object.

- **Health alerts:** This alert suggests that the health of your resources is affected.
- **Risk alerts:** This alert indicated future problems that are not immediate threats. These alerts must be prioritized to be fixed shortly.
- **Efficiency alerts:** This alert suggests objects where you can improve or reclaim performance.

For detail about symptoms definitions and badges that are impacted, see [Appendix A](#) section. For general details about badges, see [VMware documentation](#).

3.3 Monitoring storage

You can use the following dashboards to monitor PowerFlex storage health and performance:

- PowerFlex Summary
- PowerFlex Details
- PowerFlex Replication Details
- PowerFlex SVM Utilization

3.4 Monitoring network

You can use the following dashboards to monitor network health status and performance:

- PowerFlex Networking Environment
- PowerFlex Networking Performance

3.5 Monitoring compute

You can use the following dashboards to monitor ESXi cluster and host usage:

- PowerFlex ESXi Cluster Usage
- PowerFlex ESXi Host Usage

3.6 Monitoring server hardware

You can use the following dashboards to monitor server hardware health status:

- PowerFlex Node Summary
- PowerFlex Node Details

3.7 Monitoring management components

You can use the following dashboards to monitor PowerFlex Manager and Management Controller cluster:

- PowerFlex Manager Details
- PowerFlex Management Controller

3.8 Troubleshooting with inventory tree

The inventory tree in vRealize Operations Manager allows you to navigate through the PowerFlex system resources and help troubleshoot problems that you encounter by filtering out irrelevant data.

To view the inventory tree:

1. Start the **vRealize Operations Manager Web UI** and log in as an administrator.
2. Got to the **Environment** tab.
 - a. PowerFlex Manager
 - b. PowerFlex Networking
 - c. PowerFlex Nodes
 - d. PowerFlex
3. Select required PowerFlex resource and expand **PowerFlex World** to select the required object.
4. Use the menu tabs to find the details you need. A sample is shown in the following figure:

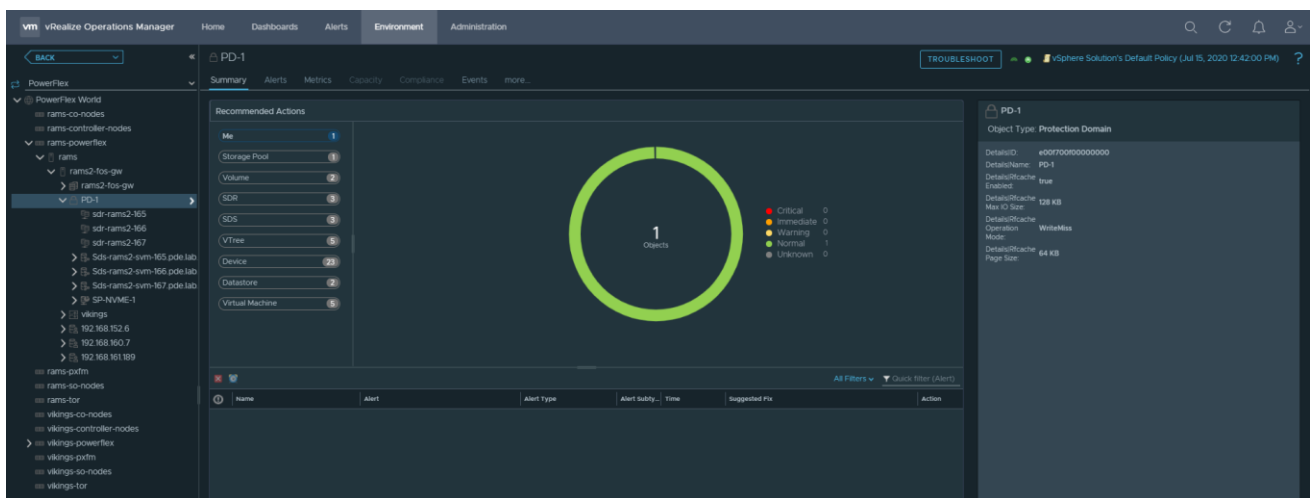


Figure 3 Inventory tree in vRealize Operations Manager

4 Managing alerts

This section includes the following topics:

- View alerts and alert settings
- Find resource alerts

4.1 View alerts and alert settings

The PowerFlex Management Pack provides set of pre-defined alerts and symptoms for resources that the PowerFlex Adapter instance monitors. To view symptoms and alerts for PowerFlex Adapter instances through the vRealize Operations Manager UI perform the following steps:

Alerts

Select **Alerts > All Alerts** to display available alerts.

Alert settings

Select **Alerts > Alert settings** to view Alert Definitions, Symptom Definitions, and so on.

4.2 Find resource alerts

An alert that is generated by PowerFlex Adapter is associated with a specific resource.

1. Select a resource from the inventory tree.
2. Click the **Alerts** tab to view the list of alerts for the resource.

5 Troubleshooting

This section includes the following topics:

- View adapter logs
- Create and download a support bundle
- Common troubleshooting tips

NOTE: Contact VMware support to identify whether the issue is related to vROps or the management pack itself. If the issue is determined to be with the PowerFlex Management Pack, you will be directed to Dell EMC support for assistance.

5.1 View adapter logs

You can view the PowerFlex Management Pack adapter logs at the following location:

1. Select **Administration > Support > Logs**.
2. Expand the Node > **Collector > adapters > PowerFlexAdapter** folder to view the list of available log files.
3. Double-click a log entry to view the complete log details in the content pane.

Or

1. Use SSH to log in to vRealize Operations Manager as root.
2. Logs generated by PowerFlex Adapter is available here: `/usr/lib/vmware-vcops/user/log/adapters/PowerFlexAdapter`.

5.2 Create and download a support bundle

1. Select **Administration > Support > Support Bundles**.
The bundle provides a detailed summary of all necessary logs.
2. Click the **Create Support Bundle** icon (+).
3. Select **Full support bundle** and the nodes to include in bundle and click **OK**.
4. Click **OK** to generate the support bundle that appears in the **Support Bundles** pane.
5. Select bundle when the status indicates **Succeeded** and click the **Download Support Bundle** icon.
The bundle is downloaded to your local drive.

5.3 Common troubleshooting tips

Table 3 Troubleshooting tips

Adapter instance type	Troubleshooting tip
PowerFlex Gateway	<ul style="list-style-type: none"> • Ensure PowerFlex Gateway is up and running. • Ensure you are using the right credentials while configuring the adapter instance. • Verify network connectivity to PowerFlex Gateway IP from vROps using ping.
PowerFlex Networking	<ul style="list-style-type: none"> • Ensure that the switches are up and running. • Ensure you are using the right credentials while configuring the adapter instance. • Verify that nxapi feature is enabled on the switches.
PowerFlex Node(s)	<ul style="list-style-type: none"> • Ensure iDRAC is accessible. • Ensure you are using the right credentials while configuring the adapter instance.
PowerFlex Manager	<ul style="list-style-type: none"> • Ensure PowerFlex Manager is up and running. • Ensure that NTP is correctly configured in PowerFlex Manager. • Ensure you are using the right credentials and PowerFlex Manager Domain Name while configuring the adapter instance.

A Appendix: Alert symptom definitions

This section provides complete information pertaining to alert symptom definitions and the respective badges impacted.

Table 4 PowerFlex (Overall System) as Resource Kind

Symptoms	Impacts/Badges	Severity
SDC-SDS, SDC-SDR, SDR-SDS connectivity status (21 symptoms)	Risk	

Table 5 MDM Cluster as Resource Kind

Symptoms	Impacts/Badges	Severity
MDM cluster State is not ClusteredNormal	Health	Critical

Table 6 MDM as Resource Kind

Symptoms	Impacts/Badges	Severity
MDM status is not normal	Health	Info

Table 7 Protection Domain as Resource Kind

Symptoms	Impacts/Badges	Severity
Protection Domain State is inactive	Health	Critical

Table 8 SDS as Resource Kind

Symptoms	Impacts/Badges	Severity
SDS state is not Normal	Health	Critical
Membership State is not Joined	Health	Critical
SDS Maintenance state is InMaintenance	Health	Warning
SDS disconnected	Health	Critical

Table 9 Storage Pool as Resource Kind

Symptoms	Impacts/Badges	Severity
Storage Pool capacity usage state is high	Risk	Warning
Storage Pool spare capacity is less than largest fault unit	Risk	Critical
Storage Pool data layout is fine granularity	Risk	Info

Symptoms	Impacts/Badges	Severity
Storage Pool capacity utilization is above threshold	Risk	Warning
Storage Pool capacity usage state is critical	Risk	Critical
Storage Pool capacity utilization is above threshold	Risk	Critical
Storage Pool media type is HDD	Risk	Info
Storage Pool capacity usage state is full	Risk	Critical

Table 10 Device as Resource Kind

Symptoms	Impacts/Badges	Severity
Device not in normal operating state	Health	Critical

Table 11 SDC as Resource Kind

Symptoms	Impacts/Badges	Severity
SDC disconnected	Health	Critical

Table 12 iDRAC as Resource Kind

Symptoms	Impacts/Badges	Severity
iDRAC health is in Critical state	Health	Critical
iDRAC health is in Warning state	Health	Warning
iDRAC state is disabled	Health	Critical

Table 13 PowerFlex Compute-Only/ Storage-Only/ Hyperconverged/ Management Controller Nodes as Resource Kind

Symptoms	Impacts/Badges	Severity
PowerFlex Compute-Only Node health is in Warning state	Health	Warning
PowerFlex Compute-Only Node health is in Critical state	Health	Critical
PowerFlex Compute-Only Node healthrollup is in Warning state	Health	Warning
PowerFlex Compute-Only Node healthrollup is in Critical state	Health	Critical
PowerFlex Compute-Only Node state is disabled	Health	Warning
PowerFlex Compute-Only Node Power state is Off	Health	Critical

Table 14 Voltages Sensor as Resource Kind

Symptoms	Impacts/Badges	Severity
Voltage Sensor health is in Critical state	Health	Critical
Voltage Sensor health is in Warning state	Health	Warning
Voltage Sensor state is disabled	Health	Critical

Table 15 Temperature Sensor as Resource Kind

Symptoms	Impacts/Badges	Severity
Temperature Sensor health is in Critical state	Health	Critical
Temperature Sensor health is in Warning state	Health	Warning
Temperature Sensor state is disabled	Health	Critical

Table 16 Network Interface as Resource Kind

Symptoms	Impacts/Badges	Severity
Network Interface health is in Critical state	Health	Critical
Network Interface health is in Warning state	Health	Warning
Network Interface healthrollup is in Critical state	Health	Critical
Network Interface healthrollup is in Warning state	Health	Warning
Network Interface state is disabled	Health	Warning

Table 17 Processor as Resource Kind

Symptoms	Impacts/Badges	Severity
Processor Health is in Critical state	Health	Critical
Processor Health is in Warning state	Health	Warning
Processor State is disabled	Health	Critical

Table 18 Fan as Resource Kind

Symptoms	Impacts/Badges	Severity
Fans Health is in Critical state	Health	Critical
Fans Health is in Warning state	Health	Warning
Fans State is disabled	Health	Warning

Table 19 Power Supply Unit as Resource Kind

Symptoms	Impacts/Badges	Severity
Power Supply Unit health is in Warning state	Health	Warning
Power Supply Unit health is in Critical state	Health	Critical
Power Supply Unit state is disabled	Health	Critical

Table 20 Storage Controller as Resource Kind

Symptoms	Impacts/Badges	Severity
Storage Controller health is in Critical state	Health	Critical
Storage Controller health is in Warning state	Health	Warning
Storage Controller healthrollup is in Critical state	Health	Critical
Storage Controller healthrollup is in Warning state	Health	Warning
Storage Controller state is disabled	Health	Critical

Table 21 PowerFlex Node Device as Resource Kind

Symptoms	Impacts/Badges	Severity
PowerFlex Node Device health is in Warning state	Health	Warning
PowerFlex Node Device health is in Critical state	Health	Critical
PowerFlex Node Device healthrollup is in Warning state	Health	Warning
PowerFlex Node Device healthrollup is in Critical state	Health	Critical
PowerFlex Node device state is disabled	Health	Critical

Table 22 Memory Device as Resource Kind

Symptoms	Impacts/Badges	Severity
Memory device health is in critical state	Health	Critical
Memory device health is in warning state	Health	warning
Memory device state is disabled	Health	Critical

Table 23 PowerFlex Manager Deployment Service as Resource Kind

Symptoms	Impacts/Badges	Severity
PowerFlex Manager Service Deployment Status warning	Health	Warning
PowerFlex Manager Service Deployment Status critical	Health	Critical
PowerFlex Manager Service Status warning	Health	Warning
PowerFlex Manager Service Status critical	Health	Critical

Table 24 PowerFlex Manager Resource as Resource Kind

Symptoms	Impacts/Badges	Severity
Resource non Compliant	Health	Warning

Table 25 Snapshot Policy

Symptoms	Impacts/Badges	Severity
Snapshot policy state is paused	Health	Warning

Table 26 VLAN as Resource Kind

Symptoms	Impacts/Badges	Severity
VLAN is in shutdown state	Health	Critical
VLAN state is inactive	Health	Critical

Table 27 vPC as Resource Kind

Symptoms	Impacts/Badges	Severity
VPC consistency is not consistent	Health	Warning
VPC port state is not 1	Health	Warning

Table 28 vPC Peer Status as Resource Kind

Symptoms	Impacts/Badges	Severity
VPC peer consistency status is not SUCCESS	Health	Warning
VPC peer status is not peer-ok	Health	Warning

Table 29 Port as Resource Kind

Symptoms	Impacts/Badges	Severity
Switch port is in down state	Health	Critical

Table 30 Port Channel as Resource Kind

Symptoms	Impacts/Badges	Severity
Port channel status is not Up	Health	Warning

Table 31 RCG as Resource Kind

Symptoms	Impacts/Badges	Severity
RCG is not consistent	Health	Critical
RCG is stopped by user	Health	Critical
RCG is in Error state	Health	Critical
RCG is violating RPO	Health	Critical

Table 32 SDR as Resource Kind

Symptoms	Impacts/Badges	Severity
SDR disconnected	Health	Critical
SDR authentication error	Health	Critical
SDR state is not normal	Health	Critical
SDR state is in maintenance	Health	Warning

Table 33 Peer MDM as Resource Kind

Symptoms	Impacts/Badges	Severity
Peer MDM Membership state is not Joined	Health	Critical
Peer MDM Coupling RC is not SUCCESS	Health	Critical

B Appendix: Metrics list

This section provides complete metrics data that is collected by the Management Pack.

Table 34 PowerFlex (Overall System object) as Resource Kind

Resource Group	Metric Type	Metric
Details	Property	ID
Details	Property	Name
Details	Property	Performance Profile
Details	Property	Authentication Method
Details	Property	Upgrade Status
Details	Property	Management IP or Host Name
Details	Property	System Version
Details	Property	Capacity Warning Threshold (%)
Details	Property	Capacity Critical Threshold (%)
Capacity	Metric	In Use Capacity (GB)
Capacity	Metric	In Use Capacity (%)
Capacity	Metric	Unused Capacity (GB)
Capacity	Metric	Unused Capacity (%)
Capacity	Metric	Capacity available for Volume Allocation (GB)
Capacity	Metric	Capacity available for Volume Allocation (%)
Capacity	Metric	Spare Capacity (GB)
Capacity	Metric	Spare Capacity (%)
Capacity	Metric	Thick Capacity In Use (GB)
Capacity	Metric	Thick Capacity In Use (%)
Capacity	Metric	Protected Capacity (GB)
Capacity	Metric	Thin Capacity In Use (GB)
Capacity	Metric	Thin Capacity In use (%)
Capacity	Metric	Total Capacity (GB)
Capacity	Metric	Snapshot Capacity in Use (GB)
Capacity	Metric	Snapshot Capacity in Use (%)
Capacity	Metric	Failed Capacity (GB)
Capacity	Metric	Unreachable Unused Capacity (GB)
Capacity	Metric	Unreachable Unused Capacity (%)

Resource Group	Metric Type	Metric
Capacity	Metric	RAM Cache Size (MB)
Capacity	Metric	RAM Cache Size in Use (MB)
Capacity	Metric	Replication Journal Capacity Allowed (GB)
Capacity	Metric	Replication Protected Capacity Destination (GB)
Capacity	Metric	Replication Protected Capacity Source (GB)
Capacity	Metric	Replication Total Journal Capacity (GB)
Capacity	Metric	Replication Used Journal Capacity (GB)
Capacity	Metric	FGL Compressed Data Size (GB)
Capacity	Metric	FGL Uncompressed Data Size (GB)
Performance	Metric	Read IOPS (IOPS)
Performance	Metric	Read Bandwidth (MBps)
Performance	Metric	Write IOPS (IOPS)
Performance	Metric	Write Bandwidth (MBps)
Performance	Metric	Rfcache Avg Read Time(ms)
Performance	Metric	Rfcache Avg Write Time(ms)
Performance	Metric	Journaler Read Bandwidth (MBps)
Performance	Metric	Journaler Read IOPS (IOPS)
Performance	Metric	Journaler Read Latency (ms)
Performance	Metric	Journaler Write Bandwidth (MBps)
Performance	Metric	Journaler Write IOPS (IOPS)
Performance	Metric	Journaler Write Latency (ms)
Performance	Metric	Replication Receive Bandwidth (MBps)
Performance	Metric	Replication Receive Latency (ms)
Performance	Metric	Replication Transmit Bandwidth (MBps)
Performance	Metric	Replication Transmit Latency (ms)
Performance	Metric	User Data SDC Read Latency (ms)
Performance	Metric	User Data SDC Write Latency (ms)
Summary	Metric	Compression Ratio
Summary	Metric	Connectivity Info
Summary	Metric	Number of Peer MDMs
Summary	Metric	Number of Replication Pairs
Summary	Metric	Number of RPO Violating RCGs Destination
Summary	Metric	Number of RPO Violating RCGs Source

Resource Group	Metric Type	Metric
Summary	Metric	Peer MDM IDs
Summary	Metric	RCG RPO Compliance (%)

Table 35 MDM Cluster as Resource Kind

Resource Group	Metric Type	Metric
Details	Property	ID
Details	Property	Name
Details	Property	Cluster Mode
Details	Property	Virtual IPs
Details	Property	Manager Standby MDMs
Details	Property	TieBreaker Standby MDMs
Health	Metric	Cluster State

Table 36 MDM as Resource Kind

Resource Group	Metric Type	Metric
Details	Property	ID
Details	Property	Name
Details	Property	Port
Details	Property	IPs
Details	Property	Management IPs
Details	Property	Role
Details	Property	Version Info
Details	Property	Virtual Interface
Details	Property	Open SSL Version
Details	Property	MDM Type
Health	Metric	Status

Table 37 Protection Domain as Resource Kind

Resource Group	Metric Type	Metric
Details	Property	ID
Details	Property	Name
Details	Property	Rfcache Operation Mode
Details	Property	Rfcache Enabled
Details	Property	Rfcache Page Size (KB)
Details	Property	Rfcache Max IO Size (KB)
Health	Metric	State
Capacity	Metric	Total Capacity (GB)
Capacity	Metric	In Use Capacity (GB)
Capacity	Metric	In Use Capacity (%)
Capacity	Metric	Unused Capacity (GB)
Capacity	Metric	Unused Capacity (%)
Capacity	Metric	Capacity Available for Volume allocation (GB)
Capacity	Metric	Capacity Available for Volume allocation (%)
Capacity	Metric	Spare Capacity (GB)
Capacity	Metric	Spare Capacity (%)
Capacity	Metric	Thin Capacity In Use (GB)
Capacity	Metric	Thin Capacity In Use (%)
Capacity	Metric	Thin Capacity Allocated (GB)
Capacity	Metric	Thin Capacity Allocated (%)
Capacity	Metric	Thick Capacity In Use (GB)
Capacity	Metric	Thick Capacity In Use (%)
Capacity	Metric	Snapshot Capacity In Use (GB)
Capacity	Metric	Snapshot Capacity In Use (%)
Capacity	Metric	Protected Capacity (GB)
Capacity	Metric	Failed Capacity (GB)
Capacity	Metric	In Maintenance Capacity (GB)

Resource Group	Metric Type	Metric
Capacity	Metric	FGL Uncompressed Data Size (GB)
Capacity	Metric	FGL Compressed Data Size (GB)
Capacity	Metric	Replication Total Journal Capacity (GB)
Capacity	Metric	Replication Used Journal Capacity (GB)
Performance	Metric	Read IOPS (IOPS)
Performance	Metric	Write IOPS (IOPS)
Performance	Metric	Read Bandwidth (MBps)
Performance	Metric	Write Bandwidth (MBps)
Performance	Metric	Average Write IO Size (KB)
Performance	Metric	Average Read IO Size (KB)
Performance	Metric	Journaler Read Bandwidth (MBps)
Performance	Metric	Journaler Read Latency (ms)
Performance	Metric	Journaler Write Bandwidth (MBps)
Performance	Metric	Journaler Write Latency (ms)
Performance	Metric	Replication Apply Latency (ms)
Performance	Metric	Replication Receive Bandwidth (MBps)
Performance	Metric	Replication Receive Latency (ms)
Performance	Metric	Replication Transmit Bandwidth (MBps)
Performance	Metric	Replication Transmit Latency (ms)
Summary	Metric	Number of Mapped to All Volumes
Summary	Metric	Number of Thin Base Volumes
Summary	Metric	Number of Thick Base Volumes
Summary	Metric	Compression Ratio
Summary	Metric	Number of Acceleration Pools
Summary	Metric	Number of Replication Pairs
Summary	Metric	Number of RPO Violating RCGs Destination
Summary	Metric	Number of RPO Violating RCGs Source
Summary	Metric	RCG RPO Compliance (%)

Table 38 Storage Pool as Resource Kind

Resource Group	Metric Type	Metric
Details	Property	ID
Details	Property	Name
Details	Property	Capacity Critical Threshold (%)
Details	Property	Capacity Warning Threshold (%)
Policy	Property	Rebuild IO Priority Policy
Policy	Property	Rebalance IO Priority Policy
Policy	Property	Zero Padding Enabled Policy
Policy	Property	Checksum Enabled
Policy	Property	Background Scanner Mode
Policy	Property	Rebuild Enable
Policy	Property	Rebalance Enable
Capacity	Metric	Total Capacity (GB)
Capacity	Metric	Forward Rebuild Capacity (GB)
Capacity	Metric	Backward Rebuild Capacity (GB)
Capacity	Metric	Snapshot Capacity In Use (GB)
Capacity	Metric	Snapshot Capacity In Use (%)
Capacity	Metric	Capacity Available for Volume Allocation (GB)
Capacity	Metric	Capacity Available for Volume Allocation (%)
Capacity	Metric	Protected Capacity (GB)
Capacity	Metric	In Use Capacity (GB)
Capacity	Metric	In Use Capacity (%)
Capacity	Metric	Unused Capacity (GB)
Capacity	Metric	Unused Capacity (%)
Capacity	Metric	Spare Capacity (GB)
Capacity	Metric	Spare Capacity (%)
Capacity	Metric	Thin Capacity (GB)
Capacity	Metric	Thin Capacity (%)

Resource Group	Metric Type	Metric
Capacity	Metric	Thick Capacity (GB)
Capacity	Metric	Thick Capacity (%)
Capacity	Metric	Failed Capacity (GB)
Capacity	Metric	Capacity Utilization (%)
Capacity	Metric	Max Fault Unit (GB)
Capacity	Metric	Replication Journal Capacity Allowed (GB)
Capacity	Metric	Replication Total Journal Capacity (GB)
Capacity	Metric	Replication Used Journal Capacity (GB)
Performance	Metric	Read IOPS (IOPS)
Performance	Metric	Read Bandwidth (MBps)
Performance	Metric	Write IOPS (IOPS)
Performance	Metric	Write Bandwidth (MBps)
Performance	Metric	User Data SDC Read Latency (ms)
Performance	Metric	User Data SDC Write Latency (ms)
Performance	Metric	Target Read Latency (ms)
Performance	Metric	Target Write Latency (ms)
Summary	Metric	Capacity Usage State
Summary	Metric	Compression Method
Summary	Metric	Data Layout
Summary	Metric	External Acceleration Type
Summary	Metric	FGL Accept ID
Summary	Metric	FGL Performance Profile
Summary	Metric	Media Type
Summary	Metric	Number Of Marked Volumes For Replication
Summary	Metric	Number Of Replication Journal Volumes
Summary	Metric	Persistent Checksum State
Summary	Metric	Replication Capacity Max Ratio

Table 39 SDS as Resource Kind

Resource Group	Metric Type	Metric
Details	Property	ID
Details	Property	Name
Details	Property	Performance Profile
Health	Metric	SDS State
Health	Metric	Membership State
Health	Metric	Maintenance State
Health	Metric	MDM Connection State
Capacity	Metric	Total Capacity
Capacity	Metric	In Use Capacity (GB)
Capacity	Metric	In Use Capacity (%)
Capacity	Metric	Unused Capacity (GB)
Capacity	Metric	Unused Capacity (%)
Capacity	Metric	Thin Capacity In Use (GB)
Capacity	Metric	Thin Capacity In Use (%)
Capacity	Metric	Thick Capacity In Use (GB)
Capacity	Metric	Thick Capacity In Use (%)
Capacity	Metric	Snapshot Capacity In Use (GB)
Capacity	Metric	Snapshot Capacity In Use (%)
Performance	Metric	Read IOPS (IOPS)
Performance	Metric	Read Bandwidth (MBps)
Performance	Metric	Write IOPS (IOPS)
Performance	Metric	Write Bandwidth (MBps)

Table 40 Device as Resource Kind

Resource Group	Metric Type	Metric
Details	Property	ID
Details	Property	Name
Health	Metric	Device State
Health	Metric	Error State
Health	Metric	Aggregated State
Health	Metric	Temperature State
Health	Metric	SSD End of Life State
Capacity	Metric	Total Capacity (GB)
Capacity	Metric	In Use Capacity (GB)
Capacity	Metric	In Use Capacity (%)
Capacity	Metric	Unused Capacity (GB)
Capacity	Metric	Unused Capacity (%)
Capacity	Metric	Thin Capacity In Use (GB)
Capacity	Metric	Thin Capacity In Use (%)
Capacity	Metric	Thick Capacity In Use (GB)
Capacity	Metric	Thick Capacity In Use (%)
Capacity	Metric	Snapshot Capacity In Use (GB)
Capacity	Metric	Snapshot Capacity In Use (%)
Performance	Metric	Read IOPS (IOPS)
Performance	Metric	Read Bandwidth (MBps)
Performance	Metric	Write IOPS (IOPS)
Performance	Metric	Write Bandwidth (MBps)
Performance	Metric	Average Read Latency (ms)
Performance	Metric	Average Write Latency (ms)
Summary	Metric	Acceleration Pool ID
Summary	Metric	Auto Detect Media Type
Summary	Metric	External Acceleration Type

Resource Group	Metric Type	Metric
Summary	Metric	Media Type
Summary	Metric	Persistent Checksum State

Table 41 Volume as Resource Kind

Resource Group	Metric Type	Metric
Details	Property	ID
Details	Property	Name
Details	Property	Ancestor Volume ID
Details	Property	Consistency Group ID
Details	Property	VTree ID
Summary	Property	Creation Time
Summary	Metric	Access Mode Limit
Summary	Metric	Number of Mapped SDC
Summary	Metric	Mapped SDC
Summary	Metric	Child Volume IDs
Summary	Metric	Compression Method
Summary	Metric	Data Layout
Summary	Metric	Descendant Volume IDs
Summary	Metric	Managed By
Summary	Metric	Mapped SDC IDs
Summary	Metric	Not Genuine Snapshot
Summary	Metric	Number of Child Volumes
Summary	Metric	Number of Descendant Volumes
Summary	Metric	Pair IDs
Summary	Metric	Replication Journal Volume
Summary	Metric	Storage Pool ID
Summary	Metric	Volume Replication State
Summary	Metric	Volume Type

Resource Group	Metric Type	Metric
Capacity	Metric	Total Capacity (GB)
Capacity	Metric	Replication Total Journal Capacity (GB)
Capacity	Metric	Replication Used Journal Capacity (GB)
Performance	Metric	Read IOPS (IOPS)
Performance	Metric	Write IOPS (IOPS)
Performance	Metric	Read Bandwidth (MBps)
Performance	Metric	Write Bandwidth (MBps)
Performance	Metric	User Data SDC Read Latency (ms)
Performance	Metric	User Data SDC Write Latency (ms)

Table 42 SDC as Resource Kind

Resource Group	Metric Type	Metric
Summary	Metric	MDM Connection State
Summary	Metric	Volumes Mapped
Summary	Metric	Performance Profile
Summary	Metric	Peer MDM ID
Summary	Metric	SDC Approved
Summary	Metric	SDC Type
Summary	Metric	SDR ID
Summary	Metric	Volume IDs
Summary	Property	SDC IP
Summary	Property	OS Type
Performance	Metric	Read IOPS (IOPS)
Performance	Metric	Write IOPS (IOPS)
Performance	Metric	Read Bandwidth (MBps)
Performance	Metric	Write Bandwidth (MBps)
Performance	Metric	User Data SDC Read Latency (ms)
Performance	Metric	User Data SDC Write Latency (ms)

Resource Group	Metric Type	Metric
Details	Property	Installed Software Version Info
Details	Property	SDC Approved Ips
Details	Property	SDC Guid
Details	Property	SDC Ips
Details	Property	Software Version Info
Details	Property	Version Info

Table 43 Fault Sets as Resource Kind

Resource Group	Metric Type	Metric
Details	Property	ID
Details	Property	Name
Capacity	Metric	In Use Capacity (GB)
Capacity	Metric	In Use Capacity (%)
Capacity	Metric	Thick Capacity in Use (GB)
Capacity	Metric	Thick Capacity in Use (%)
Capacity	Metric	Thin Capacity in Use (GB)
Capacity	Metric	Thin Capacity in Use (%)
Capacity	Metric	Thin Capacity Allocated (GB)
Capacity	Metric	Thin Capacity Allocated (%)
Capacity	Metric	Snapshot Capacity In Use (GB)
Capacity	Metric	Snapshot Capacity In Use (%)
Capacity	Metric	Unreachable Used Capacity (GB)
Capacity	Metric	Unreachable Used Capacity (%)
Capacity	Metric	Unused Capacity (GB)
Capacity	Metric	UnUsed Capacity (%)
Capacity	Metric	Total Capacity (GB)
Performance	Metric	Read IOPS (IOPS)
Performance	Metric	Read Bandwidth (MBps)

Resource Group	Metric Type	Metric
Performance	Metric	Write IOPS (IOPS)
Performance	Metric	Write Bandwidth (MBps)

Table 44 VTree

Resource Group	Metric Type	Metric
Details	Property	ID
Details	Property	Name
Summary	Metric	Compression Method
Summary	Metric	Data Layout
Summary	Metric	Root Volumes
Summary	Metric	Storage Pool ID
Capacity	Metric	Actual Net Capacity In Use (GB)
Capacity	Metric	Base Net Capacity In Use (GB)
Capacity	Metric	Compression Ratio
Capacity	Metric	Net Capacity In Use (GB)
Capacity	Metric	Net Snapshot Capacity (GB)
Capacity	Metric	Net User Data Capacity (GB)
Capacity	Metric	Number Of Volumes
Capacity	Metric	Snapshot Net Capacity In Use (GB)
Capacity	Metric	Volume IDs

Table 45 Acceleration Pool

Resource Group	Metric Type	Metric
Details	Property	ID
Details	Property	Name
Summary	Metric	Acceleration Device IDs
Summary	Metric	Media Type
Summary	Metric	Protection Domain ID

Table 46 Snapshot Policy

Resource Group	Metric Type	Metric
Details	Property	ID
Details	Property	Name
Summary	Metric	Auto Snapshot Volume IDs
Summary	Metric	Expired But Locked Snapshot IDs
Summary	Metric	Last Auto Snapshot Creation Failure Reason
Summary	Metric	Last Auto Snapshot Creation Failure Time
Summary	Metric	Snapshot Access Mode
Summary	Metric	Snapshot Policy State
Summary	Metric	System ID
Summary	Metric	Total Auto Snapshots
Summary	Metric	Total Creation Failures
Summary	Metric	Total Expired But Locked Snapshots
Summary	Metric	Total Locked Snapshots

Table 47 SDR

Resource Group	Metric Type	Metric
Details	Property	ID
Details	Property	Name
Capacity	Metric	Replication Total Journal Capacity (GB)
Capacity	Metric	Replication Used Journal Capacity (GB)
Performance	Metric	Read Journal Bandwidth (MBps)
Performance	Metric	Read Journal IOPS (IOPS)
Performance	Metric	Read Journal Latency (ms)
Performance	Metric	Write Journal Bandwidth (MBps)
Performance	Metric	Write Journal IOPS (IOPS)
Performance	Metric	Write Journal Latency (ms)
Summary	Metric	Authentication Error
Summary	Metric	IP List

Resource Group	Metric Type	Metric
Summary	Metric	Journal Capacity Mode
Summary	Metric	Maintenance State
Summary	Metric	MDM Connection State
Summary	Metric	Membership State
Summary	Metric	Number of Active Sessions
Summary	Metric	Number of Recovery Sessions
Summary	Metric	Performance Profile
Summary	Metric	Protection Domain ID
Summary	Metric	SDR State
Summary	Metric	Software Version Info
Summary	Metric	System ID

Table 48 Peer MDM

Resource Group	Metric Type	Metric
Details	Property	ID
Details	Property	Name
Capacity	Metric	Replication Protected Capacity Destination (GB)
Capacity	Metric	Replication Protected Capacity Source (GB)
Performance	Metric	Replication Apply Latency (ms)
Performance	Metric	Replication Receive Bandwidth (MBps)
Performance	Metric	Replication Receive Latency (ms)
Performance	Metric	Replication Transmit Bandwidth (MBps)
Performance	Metric	Replication Transmit Latency (ms)
Summary	Metric	Coupling RC
Summary	Metric	IP List
Summary	Metric	Membership State
Summary	Metric	Network Type
Summary	Metric	Number Of Replication Pairs

Resource Group	Metric Type	Metric
Summary	Metric	Number SDR-SDR Disconnections
Summary	Metric	Peer System ID
Summary	Metric	Performance Profile
Summary	Metric	RCG RPO Compliance (%)
Summary	Metric	Software Version Info
Summary	Metric	System ID

Table 49 RCG

Resource Group	Metric Type	Metric
Details	Property	ID
Details	Property	Name
Summary	Metric	Abstract State
Summary	Metric	Active Local
Summary	Metric	Active Remote
Summary	Metric	Current Consist Mode
Summary	Metric	Disaster Recovery State
Summary	Metric	Error
Summary	Metric	Failover State
Summary	Metric	Failover Type
Summary	Metric	Freeze State
Summary	Metric	Lifetime State
Summary	Metric	Number of Replication Pairs
Summary	Metric	Pause Mode
Summary	Metric	Peer Mdm ID
Summary	Metric	Protection Domain ID
Summary	Metric	RCG RPO Compliance (%)
Summary	Metric	Remote Disaster Recovery State
Summary	Metric	Remote ID

Resource Group	Metric Type	Metric
Summary	Metric	Remote Mdm ID
Summary	Metric	Remote Protection Domain ID
Summary	Metric	Replication Direction
Summary	Metric	Replication Pair IDs
Summary	Metric	RPO In Seconds
Summary	Metric	Target Volume Access Mode
Performance	Metric	RCG Local Read Bandwidth (MBps)
Performance	Metric	RCG Local Write Bandwidth (MBps)
Performance	Metric	RCG Remote Read Bandwidth (MBps)
Performance	Metric	RCG Remote Write Bandwidth (MBps)
Performance	Metric	Replication Apply Latency (ms)
Performance	Metric	Replication Receive Bandwidth (MBps)
Performance	Metric	Replication Receive Latency (ms)
Performance	Metric	Replication Transmit Bandwidth (MBps)
Performance	Metric	Replication Transmit Latency (ms)

Table 50 Replication Pair

Resource Group	Metric Type	Metric
Details	Property	ID
Details	Property	Name
Capacity	Metric	Remote Capacity (GB)
Summary	Metric	Copy Type
Summary	Metric	Initial Copy State
Summary	Metric	Lifetime State
Summary	Metric	Local Volume ID
Summary	Metric	Peer System Name
Summary	Metric	Remote ID
Summary	Metric	Remote Volume ID

Resource Group	Metric Type	Metric
Summary	Metric	Remote Volume Name
Summary	Metric	Replication Consistency Group ID

Table 51 iDRAC as Resource Kind

Resource Group	Metric Type	Metric
Details	Property	iDRAC Firmware Version
Details	Property	ID
Details	Property	IP Address
Summary	Metric	Total Voltage Sensors
Summary	Metric	Total Temperature Sensors
Summary	Metric	Total Fans
Summary	Metric	Total PSUs
Summary	Metric	Total NICs
Summary	Metric	Total Processors
Summary	Metric	iDRAC Health
Summary	Metric	iDRAC State

Table 52 PowerFlex Compute-Only, Storage-Only, Hyperconverged, and Management Controller Node as Resource Kind

Resource Group	Metric Type	Metric
Details	Property	Type
Details	Property	Description
Details	Property	ID
Details	Property	Location Info
Details	Property	Manufacturer
Details	Property	Model
Details	Property	Name
Details	Property	Part Number

Resource Group	Metric Type	Metric
Details	Property	SKU
Details	Property	Serial Number
Summary	Metric	Indicator LED
Summary	Metric	Power State
Summary	Metric	Health
Summary	Metric	Health Rollup
Summary	Metric	State
Physical Security	Metric	Intrusion Sensor
Physical Security	Metric	Intrusion Sensor Number
Physical Security	Metric	Intrusion Sensor Rearm

Table 53 Voltages Sensors as Resource Kind

Resource Group	Metric Type	Metric
Details	Property	Member ID
Details	Property	Name
Details	Property	Physical Context
Details	Property	Sensor Number
Details	Property	Lower Threshold Critical
Details	Property	Lower Threshold Fatal
Details	Property	Lower Threshold Non Critical
Details	Property	Upper Threshold Critical
Details	Property	Upper Threshold Fatal
Details	Property	Upper Threshold Non Critical

Table 54 Temperature Sensors as Resource Kind

Resource Group	Metric Type	Metric
Details	Property	Member ID
Details	Property	Name
Details	Property	Physical Context
Details	Property	Lower Threshold Critical
Details	Property	Lower Threshold Fatal

Resource Group	Metric Type	Metric
Details	Property	Lower Threshold Non-Critical
Details	Property	Upper Threshold Critical
Details	Property	Upper Threshold Fatal
Details	Property	Upper Threshold Non-Critical
Details	Property	Sensor Number
Summary	Metric	Max Rading Range Temperature
Summary	Metric	Min Rading Range Temperature
Summary	Metric	Reading Celsius
Summary	Metric	Thermal Health
Summary	Metric	Thermal State

Table 55 Network Interfaces as Resource Kind

Resource Group	Metric Type	Metric
Details	Property	ID
Details	Property	Name
Details	Property	Description
Details	Property	Network Port Count
Details	Property	Firmware Pkg Version
Details	Property	Model
Details	Property	Manufacturer
Details	Property	Part Number
Details	Property	Serial Number
Summary	Metric	Health
Summary	Metric	Health Rollup
Summary	Metric	State

Table 56 Network Port Partition as Resource Kind

Resource Group	Metric Type	Metric
Details	Property	ID
Details	Property	Name
Details	Property	Description
Details	Property	Max Virtual functions
Details	Property	Network Interface ID

Resource Group	Metric Type	Metric
Details	Property	Function type
Details	Property	MAC Address
Details	Property	MTU Size
Details	Property	Permanent MAC Address
Details	Property	Authentication method
Details	Property	IP Address type
Details	Property	IP mask DNS via DHCP
Details	Property	Initiator default gateway
Details	Property	Initiator IP Address
Details	Property	Initiator Name
Details	Property	Initiator Net Mask
Details	Property	Primary DNS
Details	Property	Primary LUN
Details	Property	Primary Target IP Address
Details	Property	Primart Target Name
Details	Property	Primary Target TCP Port
Details	Property	Target Info via DHCP
Summary	Metric	Health
Summary	Metric	Health Rollup
Summary	Metric	State

Table 57 Processors as Resource Kind

Resource Group	Metric Type	Metric
Details	Property	ID
Details	Property	Name
Details	Property	Description
Details	Property	Manufacturer
Details	Property	Max Speed (MHz)
Details	Property	Model
Details	Property	Processor Type
Details	Property	Socket
Details	Metric	Total Cores
Details	Metric	Total Threads

Resource Group	Metric Type	Metric
Summary	Metric	Health
Summary	Metric	State
Summary	Property	Effective Family
Summary	Property	Effective Model
Summary	Property	Identification Registers
Summary	Property	Microcode Info
Summary	Property	Step
Summary	Property	Vendor ID

Table 58 Fan as Resource Kind

Resource Group	Metric Type	Metric
Details	Property	Member ID
Details	Property	Name
Details	Property	Lower Threshold Critical
Details	Property	Lower Threshold Fatal
Details	Property	Lower Threshold Non Critical
Details	Property	Upper Threshold Critical
Details	Property	Upper Threshold Fatal
Details	Property	Upper Threshold Non Critical
Details	Property	Physical context
Details	Metrics	Max reading range
Details	Metrics	Min reading range
Summary	Metric	Reading Units
Summary	Metric	Health Status
Summary	Metric	State
Summary	Metric	Reading

Table 59 Power Supply Unit as Resource Kind

Resource Group	Metric Type	Metric
Details	Property	Name
Details	Property	Power Supply Type
Details	Property	Member ID
Details	Property	Part Number

Resource Group	Metric Type	Metric
Details	Property	Firmware Version
Details	Property	Model
Details	Property	Serial number
Details	Property	Line Input Voltage Type
Details	Property	Spare part number
Details	Property	Input Type
Details	Property	Max Frequency (Hz)
Details	Property	Max Voltage
Details	Property	Min Frequency (Hz)
Details	Property	Min Voltage
Details	Property	Output Wattage
Capacity	Metric	Power Capacity (Watts)
Performance	Metric	Line Input Voltage
Performance	Metric	Last Power Output (Watts)
State	State	Health
State	State	State

Table 60 Storage Controller as Resource Kind

Resource Group	Metric Type	Metric
Details	Property	ID
Details	Property	Name
Details	Property	Description
Summary	Metric	Device Count
Summary	Metric	Health
Summary	Metric	Health Rollup
Summary	Metric	State

Table 61 PowerFlex Node Device as Resource Kind

Resource Group	Metric Type	Metric
Details	Property	Controller Id
Details	Property	Manufacturer
Details	Property	Model
Details	Property	Name

Capacity	Metric	Capacity (GB)
Summary	Metric	Health
Summary	Metric	Health Rollup
Summary	Metric	State

Table 62 Memory Device as Resource Kind

Resource Group	Metric Type	Metric
Details	Property	ID
Details	Property	Name
Details	Property	Description
Details	Property	Manufacturer
Details	Property	Memory Device Type
Details	Property	Part Number
Details	Property	Serial Number
Details	Property	Rank count
Details	Property	Bus Width (Bits)
Details	Property	Capacity (MB)
Details	Property	Data width (Bits)
Details	Property	Device Locator
Details	Property	Error Correction
Details	Property	Operating Speed (MHz)
Summary	Metric	Health
Summary	Metric	State

Table 63 PowerFlex Manager Service as Resource Kind

Resource Group	Metric Type	Metric
Details	Property	ID
Details	Property	Name
Details	Property	Created By
Details	Property	Created Date
Details	Property	Updated Date
Details	Property	Updated By

Resource Group	Metric Type	Metric
Details	Property	deployment Started Date
Details	Property	Brown Field
Details	Property	Individual Tear down
Details	Property	All Users Allowed
Details	Property	Can Scaleup Storage
Details	Property	Can Scaleup Server
Details	Property	Can Scaleup VM
Details	Property	Can Scaleup Cluster
Details	Property	Can Scaleup Network
Details	Property	Can Edit
Details	Property	Can Delete
Details	Property	Can Cancel
Details	Property	Can Delete Resources
Details	Property	Can Retry
Details	Property	Can Scaleup Application
Details	Property	noOp
Details	Property	Firmware Init
Details	Property	Number Of Deployments
Details	Property	Can Migrate
Details	Property	Template Valid
Details	Property	Scale Up
Details	Property	Configuration Change
Health	Metric	Status
Health	Metric	Compliant
Health	Metric	Deployment Health Status Type
Deployment Device	Metric	Device Health
Deployment Device	Metric	Health Message
Deployment Device	Metric	Compliant State

Resource Group	Metric Type	Metric
Deployment Device	Property	Device Type
Deployment Device	Property	IP Address
Deployment Device	Property	ServiceTag
Deployment Device	Property	Brownfield
Deployment Device	Property	Brownfield Status

Table 64 PowerFlex Manager Resource as Resource Kind

Resource Group	Metric Type	Metric
Details	Property	Service Tag
Details	Property	IP Address
Details	Property	Firmware Repository Name
Details	Property	Device Type
Details	Property	Model
Details	Property	Available
Details	Property	Embedded Repository
Health	Metric	Compliant
Health	Metric	Managed State
Health	Metric	Device State
Firmware Compliance	Property	ID
Firmware Compliance	Property	Name
Firmware Compliance	Property	Software
Firmware Compliance	Property	Is Compliant
Firmware Compliance	Property	Firmware Name
Firmware Compliance	Property	Firmware Version
Firmware Compliance	Property	Firmware Level
Firmware Compliance	Property	Firmware Last Update Time
Firmware Compliance	Property	Firmware Name
Firmware Compliance	Property	Firmware Version

Resource Group	Metric Type	Metric
Firmware Compliance	Property	Firmware Level
Firmware Compliance	Property	Firmware Last Update Time

Table 65 Cisco Networking Switch as Resource Kind

Resource Group	Metric Type	Metric
Details	Property	Switch OS
Details	Property	Switch Firmware
Performance	Metric	Total Throughput (bitps)
Performance	Metric	Inbound Throughput (bitps)
Performance	Metric	Outbound Throughput (bitps)
Performance	Metric	Inbound Errors
Performance	Metric	Outbound Errors
Performance	Metric	Inbound Discards
Performance	Metric	Outbound Discards
Summary	Metric	Health
Summary	Metric	CPU Utilization (%)
Summary	Metric	Memory Utilization (%)
Details	Metric	Switch Up Time
Details	Property	Switch Model
Details	Property	Management IP or Hostname

Table 66 Port as Resource Kind

Resource Group	Metric Type	Metric
Details	Property	Name
Details	Property	Speed
Details	Property	Ethernet Address
Performance	Metric	Inbound Throughput (bitps)
Performance	Metric	Inbound Packet Discards

Resource Group	Metric Type	Metric
Performance	Metric	Inbound Packets
Performance	Metric	Inbound Packets Rate (/sec)
Performance	Metric	Outbound Throughput (bitps)
Performance	Metric	Outbound Packet Discards
Performance	Metric	Outbound Packets
Performance	Metric	Outbound Packets rate (/sec)
Performance	Metric	Maximum bandwidth (kbitps)
Performance	Metric	Inbound Errors
Performance	Metric	Outbound Errors
Summary	Metric	Health
Summary	Metric	Port State Description
Summary	Metric	Reliability

Table 67 VLAN as Resource Kind

Resource Group	Metric Type	Metric
Details	Property	ID
Details	Property	Name
Details	Property	VLAN State
Details	Property	Shutdown State
Details	Property	VLAN Ports

Table 68 Port channels as Resource Kind

Resource Group	Metric Type	Metric
Details	Metric	Group
Details	Metric	Channel Name
Details	Metric	Status

Resource Group	Metric Type	Metric
Details	Metric	Protocol
Details	Metric	Port
Details	Metric	Port Status

Table 69 vPC Peer Status as Resource Kind

Resource Group	Metric Type	Metric
Details	Property	vPC Domain ID
Details	Metric	vPC Peer Status
Details	Metric	vPC Peer Keep-alive Status
Details	Metric	vPC Per Vlan Peer Consistency
Details	Metric	vPC Peer Consistency Status
Details	Metric	vPC Role

Table 70 vPC as Resource Kind

Resource Group	Metric Type	Metric
Details	Property	vPC ID
Details	Metric	vPC If Index
Details	Metric	vPC Port State
Details	Metric	vPC Consistency
Details	Metric	vPC Consistency Status