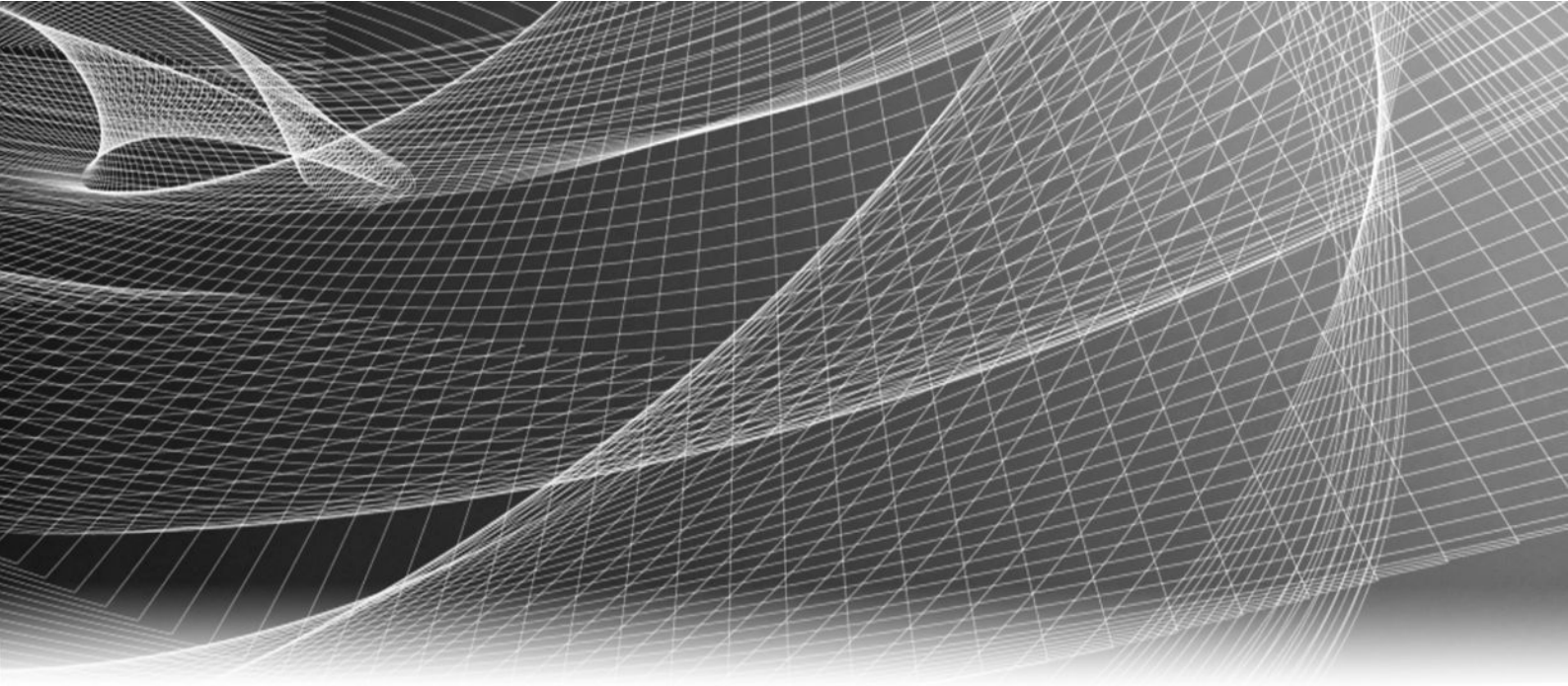

EMC® ViPR™ Analytics Pack for VMware vCenter Operations Management Suite

Version 1.1.0

Installation and Configuration Guide

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For the most up-to-date regulatory document for your product line, go to EMC Online Support (https://support.emc.com). For documentation on EMC Data Domain products, go to the EMC Data Domain Support Portal (https://my.datadomain.com).

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TABLES

CHAPTER 1

Overview

This chapter contains the following topics.

Product overview

EMC® ViPR™ Analytics Pack provides enhanced capabilities for VMware vCenter Operations Management Suite (vCOps).

Note

Throughout this document, virtual storage pools are also referred to as virtual pools and virtual storage arrays are also referred to as virtual arrays.

- Import EMC ViPR inventory, metering, and event data to VMware vCenter Operations Management Suite
- Provide preconfigured dashboards for troubleshooting issues in EMC ViPR
- Provide a collection of volume, storage port, storage system, and virtual pool data for computing key resource status scores used in EMC ViPR
- Present dashboard views that summarize resource details, the behavior of individual metrics, and EMC ViPR event alerts
- Improve the health scores of EMC ViPR resources by utilizing performance data from VNX/VMAX adapters

Dashboard overview

EMC® ViPR™ Analytics Pack for VMware vCenter Operations Management Suite provides a set of preconfigured dashboards.

- The EMC ViPR Capacity dashboard allows users to monitor virtual storage pool capacity and datastore disk usage.
- The EMC ViPR Performance dashboard allows users to monitor storage network and datastore latency performance data.
- The EMC ViPR At-A-Glance dashboard allows users to monitor performance and capacity data from a single dashboard.

Refer to Dashboards on page 19 for dashboard details and examples.

Deploying the ViPR analytics pack

Use this procedure to install the EMC ViPR Analytics Pack for VMware vCenter Operations Management Suite.

Procedure

1. Review the minimum system requirements in the *EMC ViPR Data Sheet and Compatibility Matrix* document.
2. Review the minimum VMware vCenter Operations Management Suite configuration requirements in VMware vCenter Operations Management Suite configuration requirements on page 12.
3. Install VMware vCenter Operations Management Suite using the recommended settings in your VMware documentation, before starting the steps in this guide.
4. Review Gathering information needed during installation on page 9 to ensure that you have all of the information needed to complete the installation.

5. Install the ViPR Analytics Pack using the steps in Installation on page 13.
6. Configure the ViPR Analytics Pack using the steps in Configuration on page 15.
7. Configure the ViPR Analytics Pack dashboards using the steps in Dashboards on page 19.

Gathering information needed during installation

Gather configuration information before installing the EMC ViPR Analytics Pack for VMware vCenter Operations Management Suite.

- The hostname or IP address of the VMware vCenter Operations Manager administration console.
- The files included with the EMC ViPR Analytics Pack for VMware vCenter Operations Management Suite distribution:
  - emc-vipr-dist-pak-1.0.0.x.x.pak
    - emc-vipr_adapter3-1.0.0.x.x.zip
    - emc-vipr_adapter3_dashboard-1.0.0.x.x.zip
      - emc-vipr_adapter3_dashboard/EMCViPRDashboard-At-A-Glance.xml
      - emc-vipr_adapter3_dashboard/EMCViPRDashboard-Capacity.xml
      - emc-vipr_adapter3_dashboard/EMCViPRDashboard-Performance.xml
    - emc-vipr-dist-bootstrapper-1.0.0.x.x.jar
    - updatecoordinator.sh
    - emc_create_object_model.sql
    - manifest.txt
    - eula.txt
    - emc_dashboard_list.sql

CHAPTER 2

Configuration Requirements

This chapter contains the following topics.

VMware vCenter Operations Management Suite configuration requirements

VMware vCenter Operations Management Suite must meet specific configuration requirements to support the ViPR Analytics Pack for VMware vCenter Operations Management Suite.

- VMware vCenter Operations Management Suite version 5.7 or 5.7.1.

Note

Users must be part of the VMware vCenter Operations Management Suite administrator privilege group to install the ViPR Analytics Pack, change log files, or change settings. To monitor ViPR using the Analytics Pack, users must have at least read-only privileges in VMware vCenter Operations Management Suite.

Refer to the *VMware vCenter Operations Management Suite* documentation for specific configuration steps or to assign user permissions.

CHAPTER 3

Installation

This chapter contains the following topics.

Installing the analytics pack

Use this procedure to install the EMC ViPR Analytics Pack for VMware vCenter Operations Management Suite.

Before you begin

You must have administrator access to the vCenter Operations Manager administration console.

Procedure

1. Log into the vCenter Operations Manager administration console, as an administrator.

   For example, `https://<Hostname>/admin` where **<Hostname>** is the IP address or hostname of the user interface virtual machine for the vCenter Operations Manager virtual appliance.
2. Select **Update**.
3. Browse to the location of the package (.pak) file and click **Update**.
4. Follow the on-screen instructions to complete the installation.

After you finish

Installation logs reside in the `/var/log/emc/install-<timestamp>.log` file on the user interface virtual machine for the vCenter Operations Manager virtual appliance.

CHAPTER 4

Configuration

This chapter contains the following topics.

Configuring the analytics pack

Use this procedure to configure the EMC ViPR Analytics Pack for VMware vCenter Operations Management Suite.

Before you begin

You must have administrator access to the vCenter Operations Manager administration console.

Procedure

1. Log into the vCenter Operations Manager custom console, as an administrator.

   For example, `https://<Hostname>/vcops-custom` where **<Hostname>** is the IP address or hostname of the user interface virtual machine for the vCenter Operations Manager virtual application.
2. Click **Environment** › **Configuration** › **Adapter Instances**.
3. Click the following icon to add a new adapter instance.

   
4. Choose **VCenter Standard Operations Server** from the Collector list.
5. Choose **EMC ViPR Adapter** from the Adapter Kind list.
6. Enter an adapter instance name.

   For example, ViPR135.
7. Type a hostname, fully qualified domain name (FQDN), or IP address of the ViPR instance.

   For example, 192.168.1.135.
8. For **Enable Filtering of Non-vCenter Related Objects**, click **True** or **False**.

   Note

   Setting the value to false disables filtering. You must manually remove any resources that are created due to the lack of filtering from vCenter Operations Manager. Disabling filtering can result in vCenter Operations Manager exceeding the maximum number of objects it can support.
9. Create a new credential, or select an existing credential. If you are creating a new credential, follow these steps.
   a. Click **Add.**
   b. For **Credential Kind**, select **EMC ViPR Credential**.
   c. Type the instance name.

      For example, ViPRCre.
   d. Type the EMC ViPR user name.

      For example, myadmin@corpname.com.
   e. Type the EMC ViPR password.

      For example, sysadminpassword.
   f. Click **OK**.

10. Click **OK**.

After you finish

Once the analytics pack is created, it can take several minutes for the initial data collection to complete. If there is data collected from ViPR, navigate to **Environment** › **Environment Overview** to find new resources.

Reconfiguring the analytics pack properties

Use this procedure to reconfigure the analytic pack properties.

Before you begin

You must have administrator access to the vCenter Operations Manager administration console.

Procedure

1. Open the vCenter Operations Manager custom console as an administrator.
2. Click **Environment** › **Configuration** › **Adapter Instances**.
3. Choose an adapter from the Adapter Instances list.
4. Click the following icon to edit an adapter instance.

5. Edit the analytic pack instance properties.

Table 1 Reconfigurable analytic pack properties

Property name	Description
Adapter Instance Name	Analytic pack instance name
Host Name	ViPR hostname
Enable Filtering	Turn filtering on or off. Filtering is used to limit the import of resources from ViPR to the vCenter being monitored by vCenter Operations Manager. **Note** Setting the value to **false** disables filtering. Any resources that are created due to the lack of filtering must be removed from vCenter Operations Manager manually. Disabling filtering can result in vCenter Operations Manager exceeding the maximum number of objects it can support.
Credential	ViPR credentials assigned to the analytic pack instance. Changing this property will assign a different set of credentials to the analytic pack instance.

6. (Optional) Click **Test** to check the connection between the analytic pack instance and ViPR.
7. Click **OK**.

CHAPTER 5

Dashboards

This chapter contains the following topics.

ViPR Capacity dashboard

Use the ViPR Capacity dashboard to monitor virtual storage pool capacity and datastore disk usage.

The ViPR Capacity dashboard has the following components:

- **Virtual Storage Pool Workload** — displays the provisioned capacity used by the datastores
- **Virtual Storage Pool Capacity Remaining** — displays the free capacity for storage pools
- **Resource selector** — used to search for a specific resource
- **Status boards** — displays various status and relationship information for ViPR resources
- **Clusters in Workload** — displays the top clusters in disk capacity workload
- **Datastores in Workload** — displays the top datastores in disk capacity workload

Using the ViPR Capacity dashboard

Use the ViPR Capacity dashboard to monitor capacity-related data.

Below are some common examples for using the ViPR Capacity dashboard.

- In this example, a datastore is examined due to a high workload, and multiple steps are taken to alleviate some of the workload. To do this, a datastore is checked for reclaimable resources, and then the datastore's storage pools are checked for additional capacity.
  1. Examine the top-10 chart in the **Datastores in Workload** component of the **Capacity** dashboard to determine which datastore has the highest workload.
  2. Type the name of the datastore into the **Resource selector**. The datastore is selected and the related resources from ViPR and vSphere are highlighted on the **Status board**.
  3. On the **Status board**, click **Reclaimable Waste view**. A green reclaimable waste status indicates there are little or no reclaimable resources for this datastore.
  4. On the **Status board**, click **Capacity Remaining view**. A green capacity remaining status indicates the associated virtual storage pool and the related storage pools have capacity remaining and the datastore could possibly be expanded.

- In this example, a virtual storage pool is checked for a high workload and reclaimable resources.
  1. Examine the **Virtual Storage Pool Workload** component of the **Capacity** dashboard to determine which virtual storage pool has a high workload.
  2. Type the name of the virtual storage pool into the **Resource selector**. The virtual storage pool is selected and the related resources from ViPR and vSphere are highlighted on the **Status board**.
  3. On the **Status board**, click **Reclaimable Waste view**. A yellow reclaimable waste status indicates more than 75% of the resources are reclaimable. To reclaim resources, use vCenter to delete unused virtual machines or snapshots.

ViPR Performance dashboard

Use the ViPR Performance dashboard to monitor storage network and datastore latency performance data.

The ViPR Performance dashboard has the following components:

- **Storage Network Workload** — displays the collected IO utilization for all storage ports in a network
- **Storage Port Workload** - displays the IO workload for storage ports
- **Resource selector** — used to search for a specific resource
- **Status boards** — displays various status and relationship information for ViPR resources
- **Datastores with highest IO workload** — displays the top datastores with the highest IO workload
- **Datastores with highest read latency** — displays the top datastores with the highest read latency
- **Datastores with highest write latency** — displays the top datastores with the highest write latency

Using the ViPR Performance dashboard

Use the ViPR Performance dashboard to monitor performance-related data.

Below is a common example for using the ViPR Performance dashboard.
In this example, a datastore is examined due to a high latency, and multiple steps are taken to find the cause of the high latency. To do this, the traffic workload of the storage port and the volumes are checked to determine the cause of the high latency.

1. Examine the top-5 chart in the **Datastores with highest IO workload** and the **Datastores with highest read latency** components of the **Performance** dashboard to determine if any datastore has high latency problems.
2. Type the name of the datastore into the **Resource selector**. The datastore is selected and the related resources from ViPR and vSphere are highlighted on the **Status board**. The **Status board** allows you to examine the traffic workload of the storage port and the volumes for this datastore.
3. On the **Status board**, double-click a volume or storage port to open the **Resource Details view** which displays additional performance data you can use for troubleshooting a busy storage port or volume.

ViPR At-A-Glance dashboard

Use the ViPR At-A-Glance dashboard to monitor performance and capacity data from a single dashboard.

The ViPR At-A-Glance dashboard has the following components:

- **Capacity Status Monitoring** — combines the **Virtual Storage Pool Workload**, **Virtual Storage Pool Capacity Remaining**, and **Clusters in Workload** components to create a single dashboard for monitoring capacity status.
- **Performance Status Monitoring** — combines the **Storage Network Workload**, **Storage Port Workload**, and **Datastores with highest latency** components to create a single dashboard for monitoring performance status.

Dashboard view status indicators and thresholds

A status board appears on the EMC ViPR Capacity and EMC ViPR Performance dashboards.

Note

The thresholds for each status board are configurable.

Table 2 Dashboard view status board values and thresholds

Status Board Value	Value description	Default thresholds
EMC ViPR Capacity View		
Workload values	The color indicates the level of used capacity compared to the provisioned capacity. For example, a red capacity workload status indicates the used capacity level is high.	Green — under 75% Yellow — 75% to 90% Orange — 90% to 95% Red — above 95%
Reclaimable waste values	The color indicates the level of reclaimable waste. For example, a red reclaimable waste status indicates there is a high number of reclaimable resources for the datastore.	Green — under 75% Yellow — 75% to 90% Orange — 90% to 95% Red — above 95%
Capacity remaining values	The color indicates the level of capacity remaining. For example, a green capacity remaining status indicates the associated virtual storage pool and the related storage pools have capacity remaining and the datastore could possibly be expanded.	Green — above 25% Yellow — 10% to 25% Orange — 5% to 10% Red — under 5%
EMC ViPR Performance View		
Workload values	The color indicates the level of IO utilization. For example, a red performance workload status indicates the IO utilization level is high.	Green — under 75% Yellow — 75% to 90% Orange — 90% to 95% Red — above 95%

Collected metrics per device type

Different metric data is collected for each device type.

Table 3 Metrics collected for each device type

Resource kind	Category	Raw metric/Calculated metric	Available device type
Volume	Capacity	AllocatedCapacity	VMAX Block, VNX Block, NetApp, Isilon

Table 3 Metrics collected for each device type (continued)

Resource kind	Category	Raw metric/Calculated metric	Available device type
		ProvisionedCapacity	VMAX Block, VNX Block, NetApp, Isilon
		SnapshotCapacity	VMAX Block, VNX Block
	Performance	Reads IO(KB/s) = BandwidthOut delta	VMAX Block, VNX Block
		Writes IO(KB/s) = BandwidthIn delta	VMAX Block, VNX Block
		Busy = (IOTime delta) / (IOTime delta + IdleTime delta)	VNX Block
		KbytesTransferred	VMAX Block, VNX Block
		QueueLength	VNX Block
		ReadIOs	VMAX Block, VNX Block
		TotalIOs	VMAX Block, VNX Block
		WriteIOs	VMAX Block, VNX Block
FileSystem	Capacity	AllocatedCapacity	VNX File, Isilon
		ProvisionedCapacity	VNX File, Isilon
		SnapshotCapacity	VNX File, Isilon
	Performance	Reads IO(KB/s) = BandwidthOut delta	VNX File
		Writes IO(KB/s) = BandwidthIn delta	VNX File
StoragePort	Performance	KbytesTransferred	VMAX Block, VNX Block
		TotalIOs	VMAX Block, VNX Block
	Badge	Workload = Performance|KBytesTransferred / port_speed (from the topology feed)	VMAX Block, VNX Block
StorageSystem	Performance	Reads IO(KB/s) = BandwidthOut delta	VMAX Block
		Reads IO(KB/s) = BandwidthOut delta	VMAX Block
		KbytesTransferred	VMAX Block, VNX Block
		ReadIOs	VMAX Block, VNX Block
		ReadHitIOs	VMAX Block, VNX Block
		TotalIOs	VMAX Block, VNX Block
		WriteHitIOs	VMAX Block, VNX Block
		WriteIOs	VMAX Block, VNX Block