Cisco UCS Director EMC VPLEX Management Guide, Release 6.0

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CONTENTS

Preface

Audience

This guide is intended primarily for data center administrators who use Cisco UCS Director and who have responsibilities and expertise in one or more of the following:

- Server administration
- Storage administration
- Network administration
- Network security
- Virtualization and virtual machines

Conventions

Text Type	Indication
GUI elements	GUI elements such as tab titles, area names, and field labels appear in **this font**. Main titles such as window, dialog box, and wizard titles appear in **this font**.
Document titles	Document titles appear in *this font*.
TUI elements	In a Text-based User Interface, text the system displays appears in `this font`.

Text Type	Indication
System output	Terminal sessions and information that the system displays appear in `this font`.
CLI commands	CLI command keywords appear in **this font**. Variables in a CLI command appear in *this font*.
[ ]	Elements in square brackets are optional.
{x | y | z}	Required alternative keywords are grouped in braces and separated by vertical bars.
[x | y | z]	Optional alternative keywords are grouped in brackets and separated by vertical bars.
string	A nonquoted set of characters. Do not use quotation marks around the string or the string will include the quotation marks.
< >	Nonprinting characters such as passwords are in angle brackets.
[ ]	Default responses to system prompts are in square brackets.
!, #	An exclamation point (!) or a pound sign (#) at the beginning of a line of code indicates a comment line.

Note Means *reader take note*. Notes contain helpful suggestions or references to material not covered in the document.

Caution Means *reader be careful*. In this situation, you might perform an action that could result in equipment damage or loss of data.

Tip Means *the following information will help you solve a problem*. The tips information might not be troubleshooting or even an action, but could be useful information, similar to a Timesaver.

Timesaver Means *the described action saves time*. You can save time by performing the action described in the paragraph.

Warning

IMPORTANT SAFETY INSTRUCTIONS

This warning symbol means danger. You are in a situation that could cause bodily injury. Before you work on any equipment, be aware of the hazards involved with electrical circuitry and be familiar with standard practices for preventing accidents. Use the statement number provided at the end of each warning to locate its translation in the translated safety warnings that accompanied this device.

SAVE THESE INSTRUCTIONS

Related Documentation

Cisco UCS Director Documentation Roadmap

For a complete list of Cisco UCS Director documentation, see the *Cisco UCS Director Documentation Roadmap* available at the following URL: http://www.cisco.com/en/US/docs/unified_computing/ucs/ucs-director/doc-roadmap/b_UCSDirectorDocRoadmap.html.

Cisco UCS Documentation Roadmaps

For a complete list of all B-Series documentation, see the *Cisco UCS B-Series Servers Documentation Roadmap* available at the following URL: http://www.cisco.com/go/unifiedcomputing/b-series-doc.

For a complete list of all C-Series documentation, see the *Cisco UCS C-Series Servers Documentation Roadmap* available at the following URL: http://www.cisco.com/go/unifiedcomputing/c-series-doc.

Note The *Cisco UCS B-Series Servers Documentation Roadmap* includes links to documentation for Cisco UCS Manager and Cisco UCS Central. The *Cisco UCS C-Series Servers Documentation Roadmap* includes links to documentation for Cisco Integrated Management Controller.

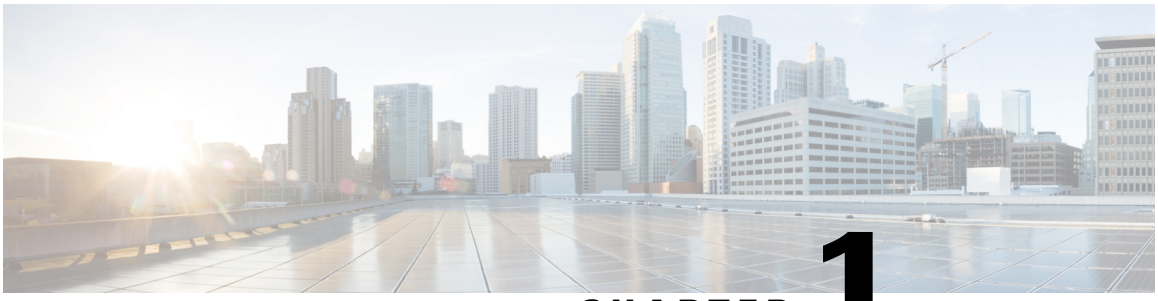
Documentation Feedback

To provide technical feedback on this document, or to report an error or omission, please send your comments to ucs-director-docfeedback@cisco.com. We appreciate your feedback.

Obtaining Documentation and Submitting a Service Request

For information on obtaining documentation, using the Cisco Bug Search Tool (BST), submitting a service request, and gathering additional information, see What's New in Cisco Product Documentation.

To receive new and revised Cisco technical content directly to your desktop, you can subscribe to the What's New in Cisco Product Documentation RSS feed. RSS feeds are a free service.



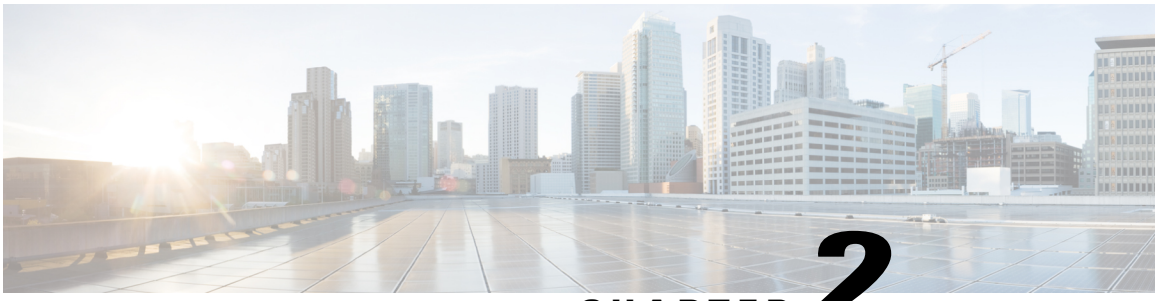
CHAPTER 1

New and Changed Information for this Release

New and Changed Information for this Release

No significant changes were made to this guide for the current release.

New and Changed Information for this Release



CHAPTER 2

Overview

This chapter contains the following sections:

About EMC VPLEX

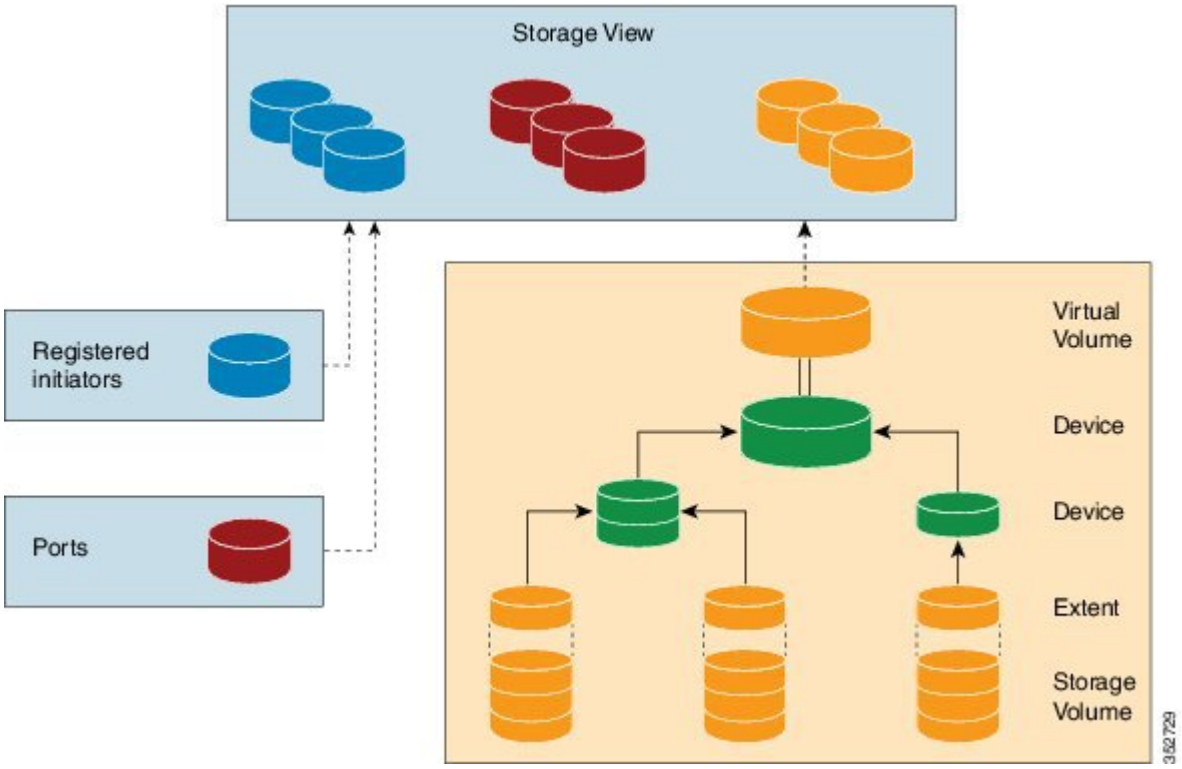
VPLEX is an EMC technology that provides a virtual storage system and access to data in the private cloud. A VPLEX can be implemented on Cisco UCS Director through a pod deployment such as Vblock, or as a standalone device. VPLEX has the following capabilities:

- Uses a single interface for a multi-vendor high-availability storage and compute infrastructure to dynamically move applications and data across different compute and storage locations in real time, with no outage required. VPLEX combines scaled clustering with distributed cache coherence intelligence within the same data center, across a campus, or within a specific geographical region. Cache coherency manages the cache so that data is not lost, corrupted, or overwritten.
- Dynamically makes data available for organizations. For example, a business can be sustained through a failure that would have traditionally required outages or manual restore procedures.
- Presents and maintains the same data consistently within and between sites, and enables distributed data collaboration.
- Establishes itself between ESX hosts that act as servers for virtual machines (VMs) and storage in a storage area network (SAN) where data can be extended within, between, and across pods.

EMC VPLEX Technology

EMC VPLEX encapsulates traditional physical storage array devices and applies three layers of logical abstraction to them. The logical relationships of each layer are shown in the Figure below.

Figure 1: VPLEX Logical Storage Structures



VPLEX uses extents to divide storage volumes. Extents can be all or part of the underlying storage volume. VPLEX aggregates extents and applies RAID protection in the device layer. Devices are constructed using one or more extents.

At the top layer of the VPLEX storage structures are virtual volumes, which are created by underlying devices and inherit their size. A virtual volume can be a single contiguous volume that is distributed over two or more storage volumes.

VPLEX exposes virtual volumes to hosts that need to use them with its front-end (FE) ports, which are visible to hosts. Access to virtual volumes is controlled through storage views. Storage views act as logical containers that determine host initiator access to VPLEX FE ports and virtual volumes.

VPLEX can use a Local or Metro external hardware interface depending on the network implementation described in the following sections. For more information on VPLEX solutions for VPLEX Local or Metro see the Data Center Interconnect Design Guide for Virtualized Workload Mobility with Cisco, EMC, and VMware.

VPLEX Local

Use VPLEX Local when homogeneous or heterogeneous storage systems are integrated into a pod and data mobility is managed between the physical data storage entities.

VPLEX Local has the following attributes:

- Up to four engines
- Up to 8000 logical unit numbers (LUNs)
- Single site
- Single pod

VPLEX Metro

Use VPLEX Metro when access and data mobility is required between two locations that are separated by synchronous distances. VPLEX Metro allows a remote site to present logical unit numbers (LUNs) without needing physical storage for them. VPLEX Metro configurations help users to transparently move and share workloads, consolidate a pod, and optimize resource utilization across pods.

VPLEX Metro has the following attributes:

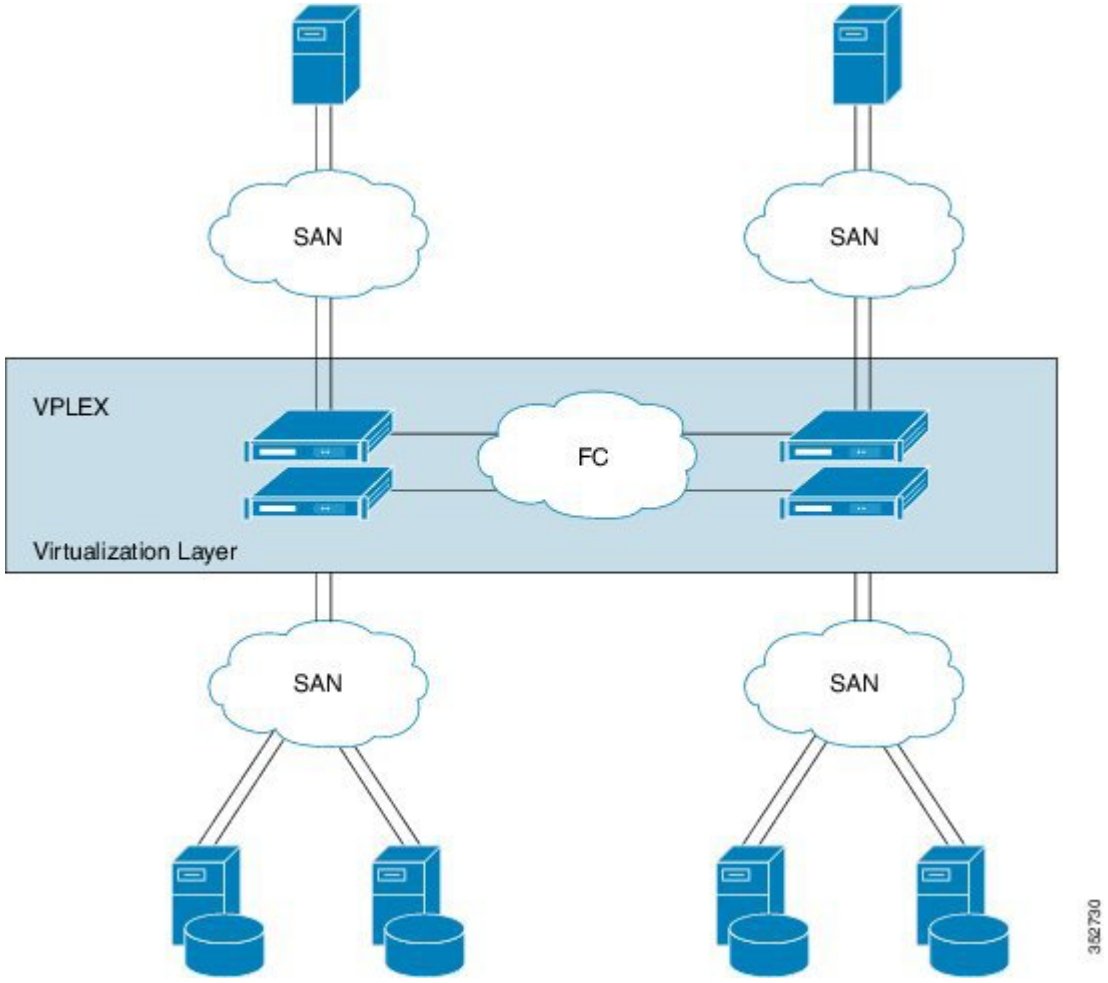
- One to eight engines
- Up to 16,000 LUNs
- Two sites
- Up to 100 kilometers

VPLEX Clustering Architecture

VPLEX uses clusters to break the boundaries of the pod and allow servers of multiple pods to have concurrent read and write access to shared block storage devices. The VPLEX cluster, shown in the Figure below is scalable. You can add up to four engines and connect multiple clusters to form a VPLEX Metro configuration. The engine is responsible for virtualizing the input and output stream and for connecting to hosts and storage using Fibre Channel connections to transfer data. VPLEX Metro currently supports up to two clusters in the

same pod to provide nondisruptive data mobility, heterogeneous storage management, and improved application availability.

Figure 2: VPLEX Cluster Configuration



Managing the VPLEX Storage System for a Pod

The VPLEX virtual storage system technology for accessing data in the private cloud is associated with and supported by a pod. Cisco UCS Director collects data through the VPLEX Element Manager API and connects to the VPLEX server through HTTPS. After you establish a VPLEX account and associate a pod with a VPLEX cluster (made up of one, two, or four engines in a physical cabinet), you can configure, manage, and monitor the following VPLEX features in Cisco UCS Director:

- Cluster inventory of ESX hosts and reports for two or more VPLEX directors that form a single fault-tolerant cluster and that are deployed as one to four engines.
- VPLEX engine inventory and reports for an engine that contains two directors, management modules, and redundant power.

- Director inventory and reports for the CPU module(s) that run GeoSynchrony, the core VPLEX software. Two directors are in each engine; each has dedicated resources that can function independently.
- Port inventory and reports for Fast Ethernet ports and initiator ports.
- VPLEX (local, metro, or global) data cache report for the temporary storage of recent writes and recently accessed data.
- Storage volume inventory and reports for a logical unit number (LUN) exported from an array.
- Extent management (create, delete, report) for a slice (range of blocks) of a storage volume.
- Device management (create, delete, attach/detach mirror, report) for a RAID 1 device whose mirrors are in geographically separate locations.
- Virtual volume management (create, modify, delete, report) for a virtual volume that can be distributed over two or more storage volumes that are presented to ESX hosts.
- Storage views management (create, modify, delete, report) for a combination of registered initiators (hosts), front-end ports, and virtual volumes that are used to control host access to storage.
- Recovery point for determining the amount of data that can be lost before a given failure event.

For more information about VPLEX use cases, see the EMC VPLEX Metro Functional Overview section of the Cisco Virtualized Workload Mobility Design Considerations chapter in the Data Center Interconnect Design Guide for Virtualized Workload Mobility with Cisco, EMC, and VMware.

Cisco UCS Director

Cisco UCS Director is a complete, highly secure, end-to-end management, orchestration, and automation solution for a wide array of Cisco and non-Cisco data infrastructure components, and for the industry's leading converged infrastructure solutions based on the Cisco UCS and Cisco Nexus platforms. For a complete list of supported infrastructure components and solutions, see the Cisco UCS Director Compatibility Matrix.

Cisco UCS Director is a 64-bit appliance that uses the following standard templates:

- Open Virtualization Format (OVF) for VMware vSphere
- Virtual Hard Disk (VHD) for Microsoft Hyper-V

Management through Cisco UCS Director

Cisco UCS Director extends the unification of computing and network layers through Cisco UCS to provide you with comprehensive visibility and management of your data center infrastructure components. You can use Cisco UCS Director to configure, administer, and monitor supported Cisco and non-Cisco components. The tasks you can perform include the following:

- Create, clone, and deploy service profiles and templates for all Cisco UCS servers and compute applications.
- Monitor organizational usage, trends, and capacity across a converged infrastructure on a continuous basis. For example, you can view heat maps that show virtual machine (VM) utilization across all your data centers.
- Deploy and add capacity to converged infrastructures in a consistent, repeatable manner.

- Manage, monitor, and report on data center components, such as Cisco UCS domains or Cisco Nexus network devices.
- Extend virtual service catalogs to include services for your physical infrastructure.
- Manage secure multi-tenant environments to accommodate virtualized workloads that run with non-virtualized workloads.

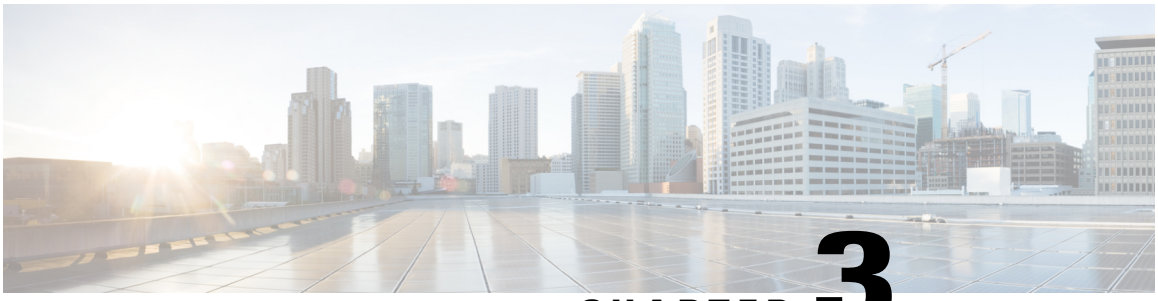
Automation and Orchestration with Cisco UCS Director

Cisco UCS Director enables you to build workflows that provide automation services, and to publish the workflows and extend their services to your users on demand. You can collaborate with other experts in your company to quickly and easily create policies. You can build Cisco UCS Director workflows to automate simple or complex provisioning and configuration processes.

Once built and validated, these workflows perform the same way every time, no matter who runs the workflows. An experienced data center administrator can run them, or you can implement role-based access control to enable your users and customers to run the workflows on a self-service, as needed, basis.

With Cisco UCS Director, you can automate a wide array of tasks and use cases across a wide variety of supported Cisco and non-Cisco hardware and software data center components. A few examples of the use cases that you can automate include, but are not limited to:

- VM provisioning and lifecycle management
- Network resource configuration and lifecycle management
- Storage resource configuration and lifecycle management
- Tenant onboarding and infrastructure configuration
- Application infrastructure provisioning
- Self-service catalogs and VM provisioning
- Bare metal server provisioning, including installation of an operating system



CHAPTER 3

VPLEX Account Management

This chapter contains the following sections:

Creating a VPLEX Account

Step 1 On the menu bar, choose **Administration > Physical Accounts**.

Step 2 Click the **Multi-domain Managers** tab.

Step 3 Click **New**.

Step 4 In the **Add Account** dialog box, choose **EMC VPLEX** from the **Account Type** drop-down list.

Step 5 Click **Submit**.

Step 6 In the **Add Account** dialog box, complete the following fields:

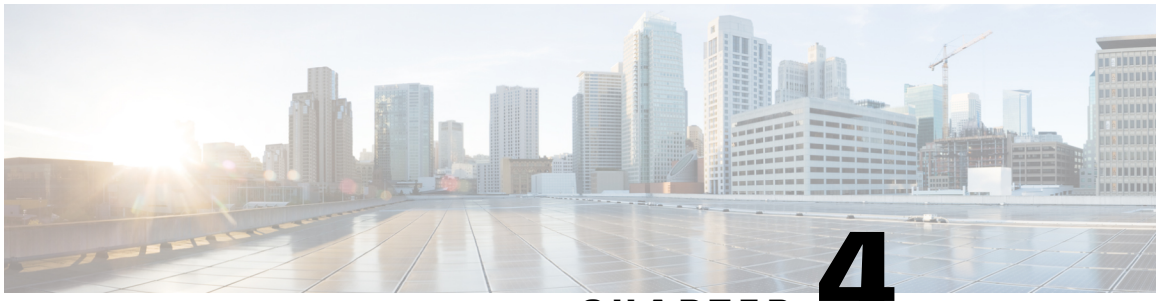
Name	Description
Account Name field	A unique name that you assign to this account.
Server IP field	The IP address of the VPLEX server.
Use Credential check box	Check the check box if you want to use a policy to give the credentials.
Username field	The username that this account uses to access the VPLEX server. This username must be a valid account in the VPLEX server.
Password field	The password associated with the username.
Protocol drop-down list	The **https** parameter is preselected for the transport type protocol. **Note** **http** is not supported for VPLEX.
Port field	The port used to access the VPLEX server. Port 443 is the default secure HTTPS port.

Name	Description
Contact field	The email address that you use to contact the administrator or other person responsible for this account.
Location field	The location of the contact.

Step 7 Click **Submit**.

Step 8 In the **Multi-Domain Managers** tab, choose the EMC VSPEX account that you just created.

Step 9 Click **Test Connection**.
The Test Connectivity dialog box displays and confirms if the connection was successful.



CHAPTER 4

VPLEX Operations

This chapter contains the following sections:

System Requirements

Component	Requirement
Networking	Two Cisco Nexus 5000/5500 or 7000 Series switches Two Cisco UCS 6100 or 6200 Series Fabric Interconnects Cisco Nexus 1000V switch

Component	Requirement
Computing	One or multiple Cisco UCS chassis with modules that have two Fabric Extenders per chassis
Storage	EMC VNX, VMAX, Vblock, or VSPEX storage systems
Cisco UCS Director	See the Compatibility Matrix for all supported versions.
Cisco UCS Director Bare Metal Agent	See the Compatibility Matrix for all supported versions.
Cisco UCS Director—resource reservation	2 GB memory and minimum 3000-GHz CPU
Cisco UCS Director Bare Metal Agent—resource reservation	2 GB memory and minimum 2000-GHz CPU
VMware (vCenter Server/ESXI/ESXi/vSphere, or Microsoft Hyper-V Manager) server	See the Compatibility Matrix for all supported versions.

Assigning a Pod to a Cluster

You must also create a pod with each VPLEX cluster (1 and 2).

Step 1 On the menu bar, choose **Physical** > **Storage**.

Step 2 On the **Storage** pane, click the **Multi-Domain Managers** icon to expand the list of connected multi-domain managers.

Step 3 Choose **EMC VPLEX** to expand the connected VPLEX device(s) and click the VPLEX device that you want.

Step 4 Click the **Clusters** tab and click the cluster that you want to assign to the pod.

Step 5 Click **Assign to Pod**.

Step 6 In the **Assign Pod to Cluster** dialog box, complete the following field:

Name	Description
Select Pod drop-down list	Choose a pod type. This can be one of the following: • **Default Pod** • **VSPEX** • **Generic** • **Vblock**

Step 7 Click **Submit.**

Step 8 Repeat the previous steps to assign a pod to the other cluster.

Unassigning a Pod from a Cluster

Step 1 On the menu bar, choose **Physical** > **Storage**.

Step 2 On the **Storage** pane, click the **Multi-Domain Managers** icon to expand the list of connected multi-domain managers.

Step 3 Choose **EMC VPLEX** to expand the connected VPLEX device(s) and click the VPLEX device you want.

Step 4 Click the **Clusters** tab and click the cluster you want.

Step 5 Click **Unassign Pod**.

Step 6 In the **Unassign Pod from Cluster** dialog box, click **Submit** to unassign the pod from the cluster.

Viewing VPLEX Engines

The duel VPLEX engines provide cache and processing power with redundant directors that each include two input and output (I/O) modules per director and one optional WAN COM I/O module for use in a VPLEX Metro configuration.

Step 1 On the menu bar, choose **Physical** > **Storage**.

Step 2 On the **Storage** pane, click the **Multi-Domain Managers** icon to expand the list of connected multi-domain managers.

Step 3 Choose **EMC VPLEX** to expand the connected VPLEX device(s) and click the VPLEX device you want.

Step 4 Click the **Engines** tab.
Information displays for the VPLEX engines, such as the serial numbers, engine IDs, and operational status.

Step 5 To view specific information about a specific engine, click on the engine and click **View Details**.
Information about the director, director ID, port, hostname, cluster, and so on, is displayed.

Rediscovering a Storage Array

Rediscover a storage array to view recently zoned and masked storage that has been presented to VPLEX.

Step 1 On the menu bar, choose **Physical** > **Storage**.
Step 2 On the **Storage** pane, click the **Multi-Domain Managers** icon to expand the list of connected multi-domain managers.
Step 3 Choose **EMC VPLEX** to expand the connected VPLEX device(s) and click the VPLEX device you want.
Step 4 Click the **Clusters** tab and double-click the cluster you want to expand.
Step 5 Click the **Storage Arrays** tab.
Step 6 Click on a storage array.
Step 7 Click **Rediscover**.
Step 8 In the **Rediscover Storage Array** dialog box, click **Submit**.

Storage Volume Claiming

Storage volumes are logical unit numbers (LUNs) that are exported from an array. The claim process ensures that only relevant storage volumes can be processed when presented to the VPLEX cluster.

Claiming a Storage Volume

Step 1 On the menu bar, choose **Physical** > **Storage**.
Step 2 On the **Storage** pane, click the **Multi-Domain Managers** icon to expand the list of connected multi-domain managers.
Step 3 Choose **EMC VPLEX** to expand the connected VPLEX device(s) and click the VPLEX device you want.
Step 4 Click the **Clusters** tab and double-click the cluster you want to expand.
Step 5 Click the **Storage Volumes** tab.
Step 6 Click **Claim**.
Step 7 In the **Claim Storage Volume** dialog box, complete the following fields:

Name	Description
New name field	The user-defined name to be applied to the storage volume.
Thin Rebuild check box	Check the check box to set the LUN to thin provisioning upon rebuilding. Thin provisioning allocates what is needed while taking advantage of the dynamic thin allocation capabilities of the back-end storage volume. **Note** The actual storage allocated on a back-end storage volume is a function of the written portions of the storage volume, rather than the advertised capacity of the storage volume.

Name	Description
Application Consistent check box	Check the check box to allow the importation of existing LUNs that are one-to-one representations of existing storage volumes. These volumes can be easily imported by a host after removing VPLEX from the data path. The ability to easily move from virtualized to nonvirtualized disk storage is the main advantage to this approach. This approach limits the usable extent size to that of the underlying storage volume and imposes upper level limits on device layout and construction.

Step 8 Click **Submit.**

Unclaiming a Storage Volume

Storage volumes are logical unit numbers (LUNs) that are exported from an array. Unclaim storage volumes that are no longer relevant for processing by the VSPEX cluster.

Step 1 On the menu bar, choose **Physical** > **Storage**.
Step 2 On the **Storage** pane, click the **Multi-Domain Managers** icon to expand the list of connected multi-domain managers.
Step 3 Choose **EMC VPLEX** to expand the connected VPLEX device(s) and click the VPLEX device you want.
Step 4 Click the **Clusters** tab and double-click the cluster you want to expand.
Step 5 Click the **Storage Volumes** tab.
Step 6 Choose the storage volume that you want to unclaim.
Step 7 Click **Unclaim**.
Step 8 In the **Unclaim Storage Volume** dialog box, click **Submit** to unclaim the storage volume.

Extents

VPLEX uses extents to divide storage volumes. Extents can be all or part of the underlying storage volume. VPLEX aggregates extents and applies RAID protection in the device layer. Devices are constructed using one or more extents and can be combined into more complex RAID schemes and device structures as wanted.

Extents should be sized to match the desired capacity of the virtual volume. If the storage volume that you want to use for an extent is larger than the desired virtual volume, you should create an extent that is the size of the desired virtual volume.

Note Do not create smaller extents and then use devices to concatenate or stripe the extents.

Creating an Extent

You can create an extent for a storage volume and specify its capacity.

Step 1 On the menu bar, choose **Physical** > **Storage**.

Step 2 On the **Storage** pane, click the **Multi-Domain Managers** icon to expand the list of connected multi-domain managers.

Step 3 Choose **EMC VPLEX** to expand the connected VPLEX device(s) and click the VPLEX device you want.

Step 4 Click the **Clusters** tab and double-click the cluster you want to expand.

Step 5 Click the **Extents** tab.

Step 6 Click **Create**.

Step 7 In the **Create Extent** dialog box, complete the following fields:

Name	Description
Storage Volume field	Click **Select**. In the **Select** dialog box, chose a storage volume name and click **Select**.
Size (GB) field	The size of the extent in gigabytes.
Extent Count field	The number of extents for this storage volume.

Step 8 Click **Submit.**

Deleting an Extent

Step 1 On the menu bar, choose **Physical** > **Storage**.

Step 2 On the **Storage** pane, click the **Multi-Domain Managers** icon to expand the list of connected multi-domain managers.

Step 3 Choose **EMC VPLEX** to expand the connected VPLEX device(s) and click the VPLEX device you want.

Step 4 Click the **Clusters** tab and double-click the cluster you want to expand.

Step 5 Click the **Extents** tab.

Step 6 Choose the appropriate extent to delete.

Step 7 Click **Delete**.

Step 8 In the **Delete Extent** dialog box, click **Submit** to confirm your deletion.

VPLEX Storage Devices

A VPLEX storage device is made up of a single block storage device that uses storage from the VPLEX cluster. The following types of VPLEX devices are available:

- **RAID-0—**Provides a performance-oriented striped or dispersed data mapping technique.
- **RAID-1—**Provides a mirroring data mapping technique to keep two (or more) devices in an identical state at all times. If one device fails, the operating system (OS) can continue, using the remaining disk(s).
- **Concatenated RAID—**Shows that data is concatenated across a linear collection of disks.

Creating a VPLEX Storage Device

Step 1 On the menu bar, choose **Physical** > **Storage**.

Step 2 On the **Storage** pane, click the **Multi-Domain Managers** icon to expand the list of connected multi-domain managers.

Step 3 Choose **EMC VPLEX** to expand the connected VPLEX device(s) and click the VPLEX device you want.

Step 4 Click the **Clusters** tab and double-click the cluster you want to expand.

Step 5 Click the **Devices** tab.

Step 6 Click **Create**.

Step 7 In the **Create Device** dialog box, complete the following fields:

Name	Description
Type of Device drop-down list	Choose the type of storage device: • **RAID-0** • **RAID-1** • **Concatenated RAID**
Select Extents field	Click the **Select** button. In the **Select** dialog box, choose one or more extents to create this local device and click **Select**. An extent is a slice (range of blocks) of a storage volume.
Device Name field	The name of this single block storage device that is unique across all clusters.
Stripe Depth drop-down list	Choose how large you would like the stripe depth to be. The block size is 4 kilobytes.

Step 8 Click **Submit**.

Mirroring a VPLEX Storage Device

When a VPLEX storage device is mirrored, it creates a single view of storage data and makes this data accessible immediately to the host. This process eliminates the need for host-based mirroring, which saves the host CPU processing resources and increases high availability for critical applications.

Step 1 On the menu bar, choose **Physical** > **Storage**.

Step 2 On the **Storage** pane, click the **Multi-Domain Managers** icon to expand the list of connected multi-domain managers.

Step 3 Choose **EMC VPLEX** to expand the connected VPLEX device(s) and click the VPLEX device you want.

Step 4 Click the **Clusters** tab and double-click the cluster you want to expand.

Step 5 Click the **Devices** tab.

Step 6 Click **Attach Mirror**.

Step 7 In the **Attach Local/Remote Mirror** dialog box, complete the following fields:

Name	Description
Mirror Type drop-down list	Choose the type of storage device: • **Local—**Local storage device. • **Remote—**Remote storage device.
Mirror Device button	Click the **Select**. In the **Select** dialog box, choose the device that is to be attached to the VPLEX storage device as a mirror and click **Select**.

Step 8 Click **Submit.**

Viewing a VPLEX Storage Device

You can view VPLEX storage device information such as its total capacity in gigabytes, whether it is local or global (remote), if a rebuild is allowed, and whether it is RAID 1, RAID 0, or RAID C (concatenated).

Step 1 On the menu bar, choose **Physical** > **Storage**.

Step 2 On the **Storage** pane, click the **Multi-Domain Managers** icon to expand the list of connected multi-domain managers.

Step 3 Choose **EMC VPLEX** to expand the connected VPLEX device(s) and click the VPLEX device you want.

Step 4 Click the **Clusters** tab and double-click the cluster you want to expand.

Step 5 Click the **Devices** tab.

Step 6 Click **View Details**.

Step 7 Click **Submit.**

Detaching a Mirror from a VPLEX Storage Device

Step 1 On the menu bar, choose **Physical** > **Storage**.
Step 2 On the **Storage** pane, click the **Multi-Domain Managers** icon to expand the list of connected multi-domain managers.
Step 3 Choose **EMC VPLEX** to expand the connected VPLEX device(s) and click the VPLEX device you want.
Step 4 Click the **Clusters** tab and double-click the cluster you want to expand.
Step 5 Click the **Devices** tab.
Step 6 Click **Detach Mirror** icon.
Step 7 In the **Detach Local/Remote Mirror** dialog box, click **Select**. In the **Select** dialog box, choose the name of the mirrored device and click **Submit** to remove it from the VPLEX storage device.

Deleting a VPLEX Storage Device

You can delete a single block storage device that uses storage from the cluster.

Step 1 On the menu bar, choose **Physical** > **Storage**.
Step 2 On the **Storage** pane, click the **Multi-Domain Managers** icon to expand the list of connected multi-domain managers.
Step 3 Choose **EMC VPLEX** to expand the connected VPLEX device(s) and click the VPLEX device you want.
Step 4 Click the **Clusters** tab and double-click the cluster you want to expand.
Step 5 Click the **Devices** tab.
Step 6 Choose the appropriate device to delete.
Step 7 Click **Delete**.
Step 8 In the **Delete Device** dialog box, click **Submit** to confirm your deletion.

Consistency Groups

Volumes are protected by consistency groups. If two data sets are dependent on one another (such as a database and a database log), they should be part of the same consistency group.

Virtual volumes are added to a consistency group when a consistency group is created. A consistency group ensures that there is application-dependent write consistency of application data on distributed virtual volumes within the system if a disaster occurs. The properties of the consistency group are then immediately applied to the added volumes.

Use the following guidelines for consistency groups:

- Only volumes with visibility and storage-at-cluster properties that match those properties of the consistency group can be added to the consistency group.
- The maximum number of volumes in a consistency group is 1000.
- You should group together volumes used by the same application or host in a consistency group.
- Only volumes with storage at both clusters (distributed volumes) are allowed in remote consistency groups.
- If any of the specified volumes are already in the consistency group, these volumes are skipped.
- When you initiate a detach rule for a consistency group, it takes 5 seconds to suspend the nonpreferred cluster and maintain input and output functions on the preferred cluster.

Creating a Consistency Group

Consistency groups allow you to group volumes together and apply a set of properties to the entire group.

Step 1 On the menu bar, choose **Physical** > **Storage**.

Step 2 On the **Storage** pane, click the **Multi-Domain Managers** icon to expand the list of connected multi-domain managers.

Step 3 Choose **EMC VPLEX** to expand the connected VPLEX device(s) and click the VPLEX device you want.

Step 4 Click the **Clusters** tab and double-click the cluster you want to expand.

Step 5 Click the **Consistency Groups** tab.

Step 6 Click **Create**.

Step 7 In the **Create Consistency Group** dialog box, complete the following fields:

Name	Description
Group Name field	The group name, which is unique among all clusters.
Type drop-down list	Choose the type of virtual volumes that need to be added to the consistency group. This can be one of the following: • **Local:cluster-1** • **Global: All clusters**
Global Visibility check box	Check the check box to synchronize and make all global consistency groups visible to clusters.

Name	Description
Detach Rule drop-down list	Choose from the following detach (win) rules for each volume (cluster): • **cluster 1 detaches—**In any failure scenario, the preferred cluster for that volume is declared as cluster 1. • **cluster 2 detaches—**In any failure scenario, the preferred cluster for that volume is declared as cluster 2. • **no automatic winner—**The input/output (I/O) operation suspends at both VPLEX clusters if either the link partitions or an entire VPLEX cluster fails.
Delay field	The number of seconds after an inter-cluster link fails before the winning cluster detaches.
Virtual volume(s) field	Click **Select**. In the **Select** dialog box, choose the virtual volume(s) to add to the consistency group and click **Select**.

Step 8 Click **Submit.**

Adding a Virtual Volume to an Existing Consistency Group

You can add one or more virtual volumes to an existing consistency group.

Note You can also add virtual volumes when you create a consistency group.

Step 1 On the menu bar, choose **Physical** > **Storage**.
Step 2 On the **Storage** pane, click the **Multi-Domain Managers** icon to expand the list of connected multi-domain managers.
Step 3 Choose **EMC VPLEX** to expand the connected VPLEX device(s) and click the VPLEX device you want.
Step 4 Click the **Clusters** tab and double-click the cluster you want to expand.
Step 5 Click the **Consistency Groups** tab.
Step 6 Click **Add Virtual Volumes**.
Step 7 In the **Add Virtual Volume(s) to Consistency Groups** dialog box, click **Select**.
Step 8 In the **Select** dialog box, choose the virtual volume(s) to add to the consistency group and click **Select**.
Step 9 Click **Submit.**

Removing a Virtual Volume from a Consistency Group

You can remove one or more virtual volumes from an existing consistency group.

Step 1 On the menu bar, choose **Physical** > **Storage**.
Step 2 On the **Storage** pane, click the **Multi-Domain Managers** icon to expand the list of connected multi-domain managers.
Step 3 Choose **EMC VPLEX** to expand the connected VPLEX device(s) and click the VPLEX device you want.
Step 4 Click the **Clusters** tab and double-click the cluster you want to expand.
Step 5 Click the **Consistency Groups** tab.
Step 6 Click **Remove Virtual Volumes**.
Step 7 In the **Remove Virtual Volume(s) from Consistency Groups** dialog box, click Select.
Step 8 In the **Select** dialog box, choose the virtual volume(s) to add to the consistency group and click **Select**.
Step 9 Click **Submit.**

Enabling or Disabling a RecoverPoint for a Consistency Group

A RecoverPoint can be enabled for a consistency group to provide any-point-in-time recovery for diversified storage environments both within and across pods to provide continuous data protection for operational and disaster recovery on VPLEX distributed virtual volumes within the VPLEX system. RecoverPoint can also be disabled for a consistency group.

Step 1 On the menu bar, choose **Physical** > **Storage**.
Step 2 On the **Storage** pane, click the **Multi-Domain Managers** icon to expand the list of connected multi-domain managers.
Step 3 Choose **EMC VPLEX** to expand the connected VPLEX device(s) and click the VPLEX device you want.
Step 4 Click the **Clusters** tab and double-click the cluster you want to expand.
Step 5 Click the **Consistency Groups** tab.
Step 6 Click **Enable/Disable Recoverpoint**.
Step 7 In the **Enable/Disable Recoverpoint on Consistency Group** dialog box, choose either **Enable** or **Disable** from the **Select Option** drop-down list.
Step 8 Click **Submit.**

Viewing a Consistency Group

You can view the virtual volumes that belong to a consistency group.

Step 1 On the menu bar, choose **Physical** > **Storage**.
Step 2 On the **Storage** pane, click the **Multi-Domain Managers** icon to expand the list of connected multi-domain managers.
Step 3 Choose **EMC VPLEX** to expand the connected VPLEX device(s) and click the VPLEX device you want.
Step 4 Click the **Clusters** tab and double-click the cluster you want to expand.
Step 5 Click the **Consistency Groups** tab.
Step 6 Choose the consistency group that you want to view.
Note In the **Virtual Volumes** tab you can see a list of the virtual volumes that belong to the consistency group.

Deleting an Existing Consistency Group

Step 1 On the menu bar, choose **Physical** > **Storage**.
Step 2 On the **Storage** pane, click the **Multi-Domain Managers** icon to expand the list of connected multi-domain managers.
Step 3 Choose **EMC VPLEX** to expand the connected VPLEX device(s) and click the VPLEX device you want.
Step 4 Click the **Clusters** tab and double-click the cluster you want to expand.
Step 5 Click the **Consistency Groups** tab.
Step 6 Choose the consistency group that you want to delete.
Step 7 Click **Delete**.
Step 8 In the **Delete Consistency Groups** confirmation dialog box, click **Submit**.

Distributed Devices and RuleSets

Creating a distributed device allows you to use storage from both clusters in a single VPLEX cluster (plex).

Each distributed device that spans two VPLEX clusters must have a RuleSet assigned to it. The RuleSet defines which cluster is declared a preferred cluster that maintains access to the volume and which cluster should be declared the nonpreferred cluster in a failure event. Once these roles are declared, the clusters' distributed devices detach so that they can resume normal input and output operations (I/O).

Viewing a RuleSet for a Distributed Device

Step 1 On the menu bar, choose **Physical** > **Storage**.
Step 2 On the **Storage** pane, click the **Multi-Domain Managers** icon to expand the list of connected multi-domain managers.
Step 3 Choose **EMC VPLEX** to expand the connected VPLEX device(s) and click the VPLEX device you want.
Step 4 Click the **RuleSets** tab.

Creating a Distributed Device

Step 1 On the menu bar, choose **Physical** > **Storage**.
Step 2 On the **Storage** pane, click the **Multi-Domain Managers** icon to expand the list of connected multi-domain managers.
Step 3 Choose **EMC VPLEX** to expand the connected VPLEX device(s) and click the VPLEX device you want.
Step 4 Click the **Distributed Devices** tab.
Step 5 Click **Create**.
Step 6 In the **Create Distributed Device** dialog box, complete the following fields:

Name	Description
Souce Cluster	Click **Select**. In the **Select** dialog box, choose the source cluster to display source devices and click **Select**.
Souce Device	Click **Select**. In the **Select** dialog box, choose a local device as a source to create a distributed device and click **Select**.
Target Device field	Click **Select**. In the **Select** dialog box, choose a local device that you want to add as target to create as a distributed device and click **Select**.
Logging Volume(s) field	Click **Select**. In the **Select** dialog box, choose one or more logging volumes that you want to add to this distributed device and click **Select**.
Device Name field	The new device name that is unique across VPLEX.
RuleSet field	Click **Select**. In the **Select** dialog box, choose the RuleSet name that you previously configured and want to add to this distributed device and click **Select**.

Step 7 Click **Submit.**

Deleting a Distributed Device

Step 1 On the menu bar, choose **Physical** > **Storage**.
Step 2 On the **Storage** pane, click the **Multi-Domain Managers** icon to expand the list of connected multi-domain managers.
Step 3 Choose **EMC VPLEX** to expand the connected VPLEX device(s) and click the VPLEX device you want.
Step 4 Click the **Distributed Devices** tab.
Step 5 Choose the distributed device that you want to delete.
Step 6 Click **Delete**.
Step 7 In the **Delete Distributed Device** dialog box, click **Submit** to confirm your deletion.

Initiators

An initiator is a host that is registered with a port so that it can access the VPLEX storage network.

Creating an Initiator

Step 1 On the menu bar, choose **Physical** > **Storage**.
Step 2 On the **Storage** pane, click the **Multi-Domain Managers** icon to expand the list of connected multi-domain managers.
Step 3 Choose **EMC VPLEX** to expand the connected VPLEX device(s) and click the VPLEX device you want.
Step 4 Click the **Clusters** tab and double-click the cluster you want to expand.
Step 5 Click the **Initiators** tab.
Step 6 Click **Register**.
Step 7 In the **Register Host Initiator** dialog box, complete the following fields:

Name	Description
Type drop-down list	Choose the type of intiator: • **default—** Other software initiator. • **hpux—** HP (Hewlett Packard)-UX iSCSI software initiator • **sun-vcs—**Sun Microsystems, Inc and Veritas Cluster Server (VCS) software initiator • **aix—**IBM AIX software initiator • **recoverpoint—**EMC RecoverPoint initiator

Name	Description
Initiator Name field	The initiator hostname that is assigned to the registered port.
Port WWN	The worldwide name (WWN) in a Fibre Channel fabric that is a unique port identifier in the storage network.
Node WWN field	The WWN in a Fibre Channel fabric that is a unique node identifier in the storage network.

Step 8 Click **Submit.**

Viewing an Initiator

You can view an initiator host that has access to VPLEX storage:

Step 1 On the menu bar, choose **Physical** > **Storage**.
Step 2 On the **Storage** pane, click the **Multi-Domain Managers** icon to expand the list of connected multi-domain managers.
Step 3 Choose **EMC VPLEX** to expand the connected VPLEX device(s) and click the VPLEX device you want.
Step 4 Click the **Clusters** tab and double-click the cluster you want to expand.
Step 5 Click the **Initiators** tab.
Step 6 Click the initiator you want and click **View Details**.

Deleting an Initiator

You can delete an initiator that currently has VPLEX storage access.

Step 1 On the menu bar, choose **Physical** > **Storage**.
Step 2 On the **Storage** pane, click the **Multi-Domain Managers** icon to expand the list of connected multi-domain managers.
Step 3 Choose **EMC VPLEX** to expand the connected VPLEX device(s) and click the VPLEX device you want.
Step 4 Click the **Clusters** tab and double-click the cluster you want to expand.
Step 5 Click the **Initiators** tab.
Step 6 Choose the name of the initiator host and click **Delete**.
Step 7 In the **Deregister Initiator Port** confirmation dialog box, click **Submit**.
Note Optionally, check the **Force** check box to delete the initiator port if the initiator host attached to the port.

Virtual Volumes

VPLEX uses extents to divide storage volumes. Extents can be all or part of the underlying storage volume. VPLEX aggregates extents and applies RAID protection in the device layer. Devices are constructed using one or more extents.

At the top layer of the VPLEX storage structures are virtual volumes, which are created by underlying devices and inherit their size. A virtual volume can be a single contiguous volume that is distributed over two or more storage volumes.

VPLEX exposes virtual volumes to hosts that need to use them with its front-end (FE) ports, which are visible to hosts. Access to virtual volumes is controlled through storage views. Storage views act as logical containers that determine host initiator access to VPLEX FE ports and virtual volumes.

Creating a Virtual Volume

Step 1 On the menu bar, choose **Physical** > **Storage**.

Step 2 On the **Storage** pane, click the **Multi-Domain Managers** icon to expand the list of connected multi-domain managers.

Step 3 Choose **EMC VPLEX** to expand the connected VPLEX device(s) and click the VPLEX device you want.

Step 4 Click the **Clusters** tab and double-click the cluster you want to expand.

Step 5 Click the **Virtual Volumes** tab.

Step 6 Click **Create**.

Step 7 In the **Create Virtual Volume** dialog box, complete the following fields:

Name	Description
Select Local Device Name field	Click **Select**. In the **Select** dialog box, choose a local storage device and click **Select**.
Storage Tier ID field	The storage tier number that is used to manage the local storage volume as a single unit. Storage tiers are used to manage arrays based on price, performance, capacity and other attributes.

Step 8 Click **Submit**.

Enabling Remote Access on a Virtual Volume

You can allow remote access to a virtual volume for a host that needs to use it.

Step 1 On the menu bar, choose **Physical** > **Storage**.
Step 2 On the **Storage** pane, click the **Multi-Domain Managers** icon to expand the list of connected multi-domain managers.
Step 3 Choose **EMC VPLEX** to expand the connected VPLEX device(s) and click the VPLEX device you want.
Step 4 Click the **Clusters** tab and double-click the cluster you want to expand.
Step 5 Click the **Virtual Volumes** tab.
Step 6 Choose a virtual volume name from the list.
Step 7 Click **Remote Access**.
Step 8 In the **Remote Access on Virtual Volume** dialog box, complete the following field:

Name	Description
Select Access Type drop-down list	Choose from the following: • **Enable—**Activates remote access to this virtual volume. • **Disable—**Removes remote access to this virtual volume.

Step 9 Click **Submit**.

Expanding a Virtual Volume

A virtual volume is presented to a host that needs to use it.

Note A virtual volume can be expanded to include either extents or local devices.

Step 1 On the menu bar, choose **Physical** > **Storage**.
Step 2 On the **Storage** pane, click the **Multi-Domain Managers** icon to expand the list of connected multi-domain managers.
Step 3 Choose **EMC VPLEX** to expand the connected VPLEX device(s) and click the VPLEX device you want.
Step 4 Click the **Clusters** tab and double-click the cluster you want to expand.
Step 5 Click the **Virtual Volumes** tab.
Step 6 Click **Expand**.
Step 7 In the **Expand Virtual Volume** dialog box, complete the following fields:

Name	Description
Device Type drop-down list	Choose from the following: • **Extent—**A slice (range of blocks) of a storage volume. • **Local Device—**One or more extents that have additional specific RAID properties. The local device must come from a cluster.
Select Extent field	This parameter is available if **Extent** was chosen as the device type. Click **Select**. In the **Select** dialog box, choose the extent that you want and click **Select**.
Select Local Device field	This parameter is available if **Local Device** was chosen as the device type. Click **Select**. In the **Select** dialog box, choose the local device that you want and click **Select**.

Step 8 Click **Submit**.

Viewing a Virtual Volume

You can view a single virtual volume from the cluster.

Step 1 On the menu bar, choose **Physical** > **Storage**.
Step 2 On the **Storage** pane, click the **Multi-Domain Managers** icon to expand the list of connected multi-domain managers.
Step 3 Choose **EMC VPLEX** to expand the connected VPLEX device(s) and click the VPLEX device you want.
Step 4 Click the **Clusters** tab and double-click the cluster you want to expand.
Step 5 Click the **Virtual Volumes** tab.
Step 6 Choose the appropriate virtual volume to view.
Step 7 Click **View**.
Information about the virtual volume appears in a new view that describes the virtual volume attributes.

Deleting a Virtual Volume

You can delete a single block storage device that uses storage from the cluster.

Step 1 On the menu bar, choose **Physical** > **Storage**.
Step 2 On the **Storage** pane, click the **Multi-Domain Managers** icon to expand the list of connected multi-domain managers.
Step 3 Choose **EMC VPLEX** to expand the connected VPLEX device(s) and click the VPLEX device you want.
Step 4 Click the **Clusters** tab and double-click the cluster you want to expand.
Step 5 Click the **Virtual Volumes** tab.
Step 6 Choose the appropriate virtual volume to delete.
Step 7 Click **Delete**.
Step 8 In the **Delete Virtual Volume** dialog box, click **Submit** to confirm your deletion.

Viewing Target Ports

Target ports are front-end (FE) ports where the director port is connected to host initiators. These ports are visible to hosts and contain such information as their name, node worldwide number (WWN), port WWN, whether they are enabled, their Director IDs, and so on.

Step 1 On the menu bar, choose **Physical** > **Storage**.
Step 2 On the **Storage** pane, click the **Multi-Domain Managers** icon to expand the list of connected multi-domain managers.
Step 3 Choose **EMC VPLEX** to expand the connected VPLEX device(s) and click the VPLEX device you want.
Step 4 Click the **Clusters** tab and double-click the cluster you want to expand.
Step 5 Click the **Target Ports** tab.
Step 6 Click **View Details** to see more detailed information about an individual target port.

Storage Views

VPLEX allows host access to virtual volumes through storage views. Storage views act as logical containers that determine host initiator access to VPLEX front-end (FE) ports and virtual volumes.

Creating a Storage View

You can create a storage view that includes virtual volumes, and VPLEX ports to control host access to the virtual volumes.

Step 1 On the menu bar, choose **Physical** > **Storage**.

Step 2 On the **Storage** pane, click the **Multi-Domain Managers** icon to expand the list of connected multi-domain managers.

Step 3 Choose **EMC VPLEX** to expand the connected VPLEX device(s) and click the VPLEX device you want.

Step 4 Click the **Clusters** tab and double-click the cluster you want to expand.

Step 5 Click the **Storage Views** tab.

Step 6 Click **Create**.

Step 7 In the **Create Storage View** dialog box, complete the following fields:

Name	Description
Select Target Port field	Click **Select**. In the **Select** dialog box, choose one or more target ports to add to the storage view and click **Select**.
Storage View Name Name field	The storage view that is unique across all clusters.

Step 8 Click **Submit**.

Deleting a Storage View

Step 1 On the menu bar, choose **Physical** > **Storage**.

Step 2 On the **Storage** pane, click the **Multi-Domain Managers** icon to expand the list of connected multi-domain managers.

Step 3 Choose **EMC VPLEX** to expand the connected VPLEX device(s) and click the VPLEX device you want.

Step 4 Click the **Clusters** tab and double-click the cluster you want to expand.

Step 5 Click the **Storage Views** tab.

Step 6 Click **Delete**.

Step 7 In the **Delete Storage View** confirmation dialog box, click **Submit**.

Note Optionally, check the **Force** check box to delete the storage view if hosts are attached to this view.

Step 8 Click **Submit**.

Adding an Initiator to a Storage View

You can create a storage view that includes one or more initiator ports.

Step 1 On the menu bar, choose **Physical** > **Storage**.
Step 2 On the **Storage** pane, click the **Multi-Domain Managers** icon to expand the list of connected multi-domain managers.
Step 3 Choose **EMC VPLEX** to expand the connected VPLEX device(s) and click the VPLEX device you want.
Step 4 Click the **Clusters** tab and double-click the cluster you want to expand.
Step 5 Click the **Storage Views** tab.
Step 6 Choose the storage view you want from the **Storage Views** panel.
Step 7 Click **Add Initiator**.
Step 8 In the **Add Initiators to Storage View** dialog box, click **Select**. In the **Select** dialog box, choose one or more initiator host accounts to add to the storage view and click **Select**.
Step 9 Click **Submit**.

Removing an Initiator from a Storage View

You can remove one or more initiator ports from a storage view.

Step 1 On the menu bar, choose **Physical** > **Storage**.
Step 2 On the **Storage** pane, click the **Multi-Domain Managers** icon to expand the list of connected multi-domain managers.
Step 3 Choose **EMC VPLEX** to expand the connected VPLEX device(s) and click the VPLEX device you want.
Step 4 Click the **Clusters** tab and double-click the cluster you want to expand.
Step 5 Click the **Storage Views** tab.
Step 6 Choose the storage view you want from the **Storage Views** panel.
Step 7 Click **Remove Initiator**.
Step 8 In the **Remove Initiators from Storage View** dialog box, click **Select**. In the **Select** dialog box, choose one or more initiator host accounts to remove from the storage view and click **Select**.
Step 9 Click **Submit.**

Adding a Virtual Volume to a Storage View

You can create a storage view that includes virtual volumes.

Step 1 On the menu bar, choose **Physical** > **Storage**.
Step 2 On the **Storage** pane, click the **Multi-Domain Managers** icon to expand the list of connected multi-domain managers.
Step 3 Choose **EMC VPLEX** to expand the connected VPLEX device(s) and click the VPLEX device you want.
Step 4 Click the **Clusters** tab and double-click the cluster you want to expand.
Step 5 Click the **Storage Views** tab.
Step 6 Choose the storage view you want from the **Storage Views** panel.
Step 7 Click **Add Virtual Volume**.
Step 8 In the **Add Virtual Volume to Storage View** dialog box, complete the following fields:

Name	Description
Virtual Volume field	Click **Select**. In the **Select** dialog box, choose a virtual volume (see the **Name** column) and click **Select**.
LUN ID field	(Optional) enter the logical unit number (LUN) identifier.

Step 9 Click **Submit**.

Removing a Virtual Volume from a Storage View

Step 1 On the menu bar, choose **Physical** > **Storage**.
Step 2 On the **Storage** pane, click the **Multi-Domain Managers** icon to expand the list of connected multi-domain managers.
Step 3 Choose **EMC VPLEX** to expand the connected VPLEX device(s) and click the VPLEX device you want.
Step 4 Click the **Clusters** tab and double-click the cluster you want to expand.
Step 5 Click the **Storage Views** tab.
Step 6 Choose the storage view you want from the **Storage Views** panel.
Step 7 Click **Remove Virtual Volume**.
Step 8 In the **Remove Virtual Volume from Storage View** dialog box, click **Select** from the **Virtual volume** field.
Step 9 In the **Select** dialog box, choose a virtual volume and click **Select**.
Step 10 Click **Submit**.

Adding a Port to a Storage View

You can create a storage view that includes target ports. Target ports are front-end (FE) ports where the director port is connected to host initiators. These ports are visible to hosts and contain such information as their name, node worldwide number (WWN), port WWN, whether they are enabled, their Director IDs, and so on.

Step 1 On the menu bar, choose **Physical** > **Storage**.
Step 2 On the **Storage** pane, click the **Multi-Domain Managers** icon to expand the list of connected multi-domain managers.
Step 3 Choose **EMC VPLEX** to expand the connected VPLEX device(s) and click the VPLEX device you want.
Step 4 Click the **Clusters** tab and double-click the cluster you want to expand.
Step 5 Click the **Storage Views** tab.
Step 6 Choose the storage view you want from the **Storage Views** panel.
Step 7 Click **Add Port**.
Step 8 n the **Add Target Ports to Storage View** dialog box, click **Select**.
Step 9 In the **Select** dialog box, choose one or more target ports to add to the storage view and click **Select**.
Step 10 Click **Submit.**

Removing a Port from a Storage View

You can remove target port(s) from a storage view.

Step 1 On the menu bar, choose **Physical** > **Storage**.
Step 2 On the **Storage** pane, click the **Multi-Domain Managers** icon to expand the list of connected multi-domain managers.
Step 3 Choose **EMC VPLEX** to expand the connected VPLEX device(s) and click the VPLEX device you want.
Step 4 Click the **Clusters** tab and double-click the cluster you want to expand.
Step 5 Click the **Storage Views** tab.
Step 6 Choose the storage view you want from the **Storage Views** panel.
Step 7 Click **Remove Port**.
Step 8 n the **Remove Target Ports from Storage View** dialog box, click **Select**.
Step 9 In the **Select** dialog box, choose one or more target ports to remove from the storage view and click **Select**.
Step 10 Click **Submit**.

Logging Volumes

VPLEX uses logging volumes to track changes during a loss of connectivity or loss of a volume (mirror in a distributed device). You should create a logging volume on each cluster. Each logging volume must be large enough to contain one bit for every page of distributed storage space (approximately 10 gigabytes of logging volume space for every 320 terrabytes of distributed devices). The logging volumes can experience a lot of input and output during and after-link outages, so each logging volume should be striped across many disks for speed, and have a mirror on another fast disk to secure this information.

Creating a Logging Volume

Step 1 On the menu bar, choose **Physical** > **Storage**.

Step 2 On the **Storage** pane, click the **Multi-Domain Managers** icon to expand the list of connected multi-domain managers.

Step 3 Choose **EMC VPLEX** to expand the connected VPLEX device(s) and click the VPLEX device you want.

Step 4 Click the **Clusters** tab and double-click the cluster you want to expand.

Step 5 Click the **Logging Volumes** tab.

Step 6 Click **Create**.

Step 7 In the **Create Logging Volume** dialog box, complete the following fields:

Name	Description
Type of Device drop-down list	Choose the type of storage device: • **RAID-0—**Performance-oriented striped or dispersed data mapping technique. • **RAID-1—**Mirroring data mapping technique that keeps two (or more) devices in an identical state at all times.
Select Extents field	Click the **Select** button. In the **Select** dialog box, choose one or more extents for this device and click **Select**. An extent is a slice (range of blocks) of a storage volume.
Volume Name field	The volume name that is unique across all clusters.
Stripe Depth field	The stripe depth for a RAID-0 device.

Step 8 Click **Submit**.

Adding a Mirror to a Logging Volume

Step 1 On the menu bar, choose **Physical** > **Storage**.
Step 2 On the **Storage** pane, click the **Multi-Domain Managers** icon to expand the list of connected multi-domain managers.
Step 3 Choose **EMC VPLEX** to expand the connected VPLEX device(s) and click the VPLEX device you want.
Step 4 Click the **Clusters** tab and double-click the cluster you want to expand.
Step 5 Click the**Logging Volumes** tab.
Step 6 Choose a logging volume from the list.
Step 7 Click **Add Mirror**.
Step 8 In the **Select** dialog box, choose a storage volume and click **Select**.
Step 9 Click **Submit**.
The mirror is added to the logging storage volume.

Deleting a Logging Volume

Step 1 On the menu bar, choose **Physical** > **Storage**.
Step 2 On the **Storage** pane, click the **Multi-Domain Managers** icon to expand the list of connected multi-domain managers.
Step 3 Choose **EMC VPLEX** to expand the connected VPLEX device(s) and click the VPLEX device you want.
Step 4 Click the **Clusters** tab and double-click the cluster you want to expand.
Step 5 Click the **Logging Volumes** tab.
Step 6 Choose the appropriate logging volume to delete.
Step 7 Click **Delete**.
Step 8 In the **Delete Logging Volume** dialog box, click **Submit** to confirm your deletion.

Managing VPLEX System Tasks

Step 1 On the menu bar, choose **Physical** > **Storage**.

Step 2 On the **Storage** pane, click the **Multi-Domain Managers** icon to expand the list of connected multi-domain managers.

Step 3 Choose **EMC VPLEX** to expand the connected VPLEX device(s) and click the VPLEX device you want.

Step 4 Click the **System Tasks** tab.

Step 5 Double-click the **EMC VPLEX Tasks** folder icon.

Step 6 Choose a VPLEX task and click **Manage Task**.

Step 7 In the **Manage Task** dialog box, complete the following fields:

Name	Description
Task Execution drop-down list	Choose **Enable** or **Disable** to enable or disable this VPLEX task.
System Task Policy drop-down list	Choose either the **default-system-task-policy** or the **local-run-policy** assigned to this VPLEX task.
Minutes drop-down list	Choose the frequency in minutes for how often the VPLEX task is executed.

Step 8 Click **Submit.**

Step 9 If you want to run this VPLEX task, click **Run Now**.

Step 10 If you want to view this VPLEX task, click **View Details**.