

VPLEX™ Upgrades

Implementation Planning and Best Practices

Abstract

This White Paper provides an overview of VPLEX upgrades. This document includes topics for scale up and scale out upgrades as well as generational hardware upgrades. It provides guidance for VS2 and VS6 hardware platforms.

March 2019

Revisions

Date	Description
March 2019	Revision 2

Acknowledgements

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Executive summary

This document covers scale-up and scale-out as well as generational upgrades (GenU). The focus of this document is hardware related. While software non-disruptive upgrade (ndu) is discussed as part of the hardware upgrades, it is not the intent of this document to deep-dive into ndu specific content. Scale-up is a feature within the VPLEX product that allows for adding engines to a single or dual engine cluster increasing its I/O scale limits. Scale-out is the capability of the VPLEX Local configuration to be converted to a VPLEX Metro spanning datacenters at a later date following the implementation of a VPLEX Local cluster. A GenU allows for hardware replacement non-disruptively as new versions of hardware become available.

Audience

These technical notes are for EMC field personnel and partners and customers who will be configuring, installing, and supporting VPLEX. An understanding of these technical notes requires an understanding of the following:

- SAN technology and network design
- Fiber Channel block storage concepts
- VPLEX concepts and components

Document Organization

This technical note is one of a set of documents that supersede the monolithic Implementation Planning and Best Practices for EMC VPLEX Technical Notes document that had previously been available. It is intended to provide more concise, per-topic information that will be easier to maintain and keep up-to-date.

All documents are available on <http://support.emc.com>.

The following list represents the technical note best practice documents that will be made available:

- EMC VPLEX Overview and General Best Practices
- EMC VPLEX SAN Connectivity
- EMC VPLEX Host Multipathing
- EMC VPLEX Networking
- EMC VPLEX and RecoverPoint Interoperability
- EMC VPLEX Data Mobility and Migrations
- EMC VPLEX Upgrades

1 Scale Up Upgrades

1.1 Description

A scale-up upgrade is one that increases the number of VPLEX engines in a cluster. Currently, the upgrade options available are single engine to dual engine or dual engine to quad engine upgrades. A scale-up upgrade may be needed for the following reasons:

- A pre-planned change in scale of the customer environment
- An increase in workload resulting in sustained high CPU utilization

VPLEX performance engineering recommends upgrading when sustained CPU utilization reaches 90%. This can be determined through the VPLEX Performance Monitoring UI or the EMC SRM Suite VPLEX plug-in.

Procedures for scale-up upgrades are covered in the Solve Desktop tool and should only be performed by qualified EMC personnel.

1.2 Caveats

In the case of a single-engine upgrade to either dual or quad engine, **host rebalancing across engines will be required to ensure continuous availability during all planned and unplanned outages**. Further information about host connectivity best practices can be found in the *EMC VPLEX SAN Connectivity Implementation Planning and Best Practices*.

Under certain circumstances a host may not be rebalanced across engines to conform to host connectivity best practices prior to upgrading the software

If an NDU were to be attempted prior to rebalancing the hosts, the NDU pre-check requirements would not be met and the upgrade would fail.

The NDU pre-check requirements for host connectivity can be mitigated under these circumstances by using the `--skip-group-fe-checks` option to the `ndu pre-check` command. This will skip all NDU pre-checks related to front-end validation. This includes the unhealthy storage views and storage view configuration pre-checks. If choosing this option, the recommended best practice would be to run the normal pre-check first which would flag all the unhealthy Storage Views allowing the customer to verify host connectivity for those Storage Views. The recommendation would be to correct connectivity issues for all hosts running critical apps. Customers may also wish to perform an NDU after upgrading but haven't had the opportunity to reconfigure all the host connectivity yet.

For Dual or Quad engine clusters the NDU requirements require spreading the host initiators across engines. This may pose a problem when upgrading from a single engine to a dual as the customer would be required to reconfigure host connectivity

2 Scale Out Upgrades

2.1 Description

A scale out upgrade is converting an existing VPLEX Local cluster to a VPLEX Metro. This is a supported operation as long as one of the following conditions have been met:

- At least one cluster has never been configured and is in the factory default condition.
- Two existing VPLEX Locals were configured with unique Cluster IDs during the initial configuration. This option is currently only available via RPQ and must have been implemented during the initial configuration.

2.1.1 WAN COM I/O Modules

VPLEX Local clusters are shipped without WAN COM I/O modules. In order to upgrade, the appropriate WAN COM I/O modules must be ordered, and they will be installed during the upgrade procedure.

Attaching another cluster for a VPLEX Metro configuration allows for the addition of a cluster with a different engine count than the first cluster as long as all requirements are met. All directors on one cluster must communicate with all directors on the other cluster over the two different port groups. Configuring a single port group on one fabric or network for the WAN COM is not supported.

Procedures for scale-out upgrades are covered in the SolVe Desktop and should only be performed by qualified EMC personnel.

2.2 Caveats

Please note the following caveats:

- Combining two active VPLEX Local clusters to form a Metro is not supported. (See above for exception.)
- Splitting a configured, active VPLEX Metro (VS2 only) to two VPLEX Locals is supported from GeoSynchrony Releases 5.5 SP2 Patch 3 and later, 6.0 SP1 and later and is non-disruptive with the caveat that one of the Local cluster will retain the cluster 2 ID.

3 Generational Hardware Upgrades (VS1 to VS2 or VS2 to VS6)

Procedures for generational hardware upgrades are covered in the Solve Desktop tool and should only be performed by qualified EMC personnel.

It is critical for all parties to be familiar with the procedure to ensure a successful upgrade.

The generational hardware upgrades are non-disruptive for both VS1 to VS2 and VS2 to VS6.

VS1 must be upgraded to a VS2 before upgrading to a VS6. VS1 to VS6 upgrades are not supported.

