



Technical Report

FlexPod Data Center Solutions Upgrade Guide

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Abstract

This guide provides information about upgrading the hardware and software components relevant to the FlexPod™ architecture.

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1 Introduction

1.1 FlexPod Summary

FlexPod is a predesigned, best practice data center architecture that is built on the Cisco® Unified Computing System™ (Cisco UCS™), Cisco Nexus® family of switches, and NetApp® fabric-attached storage (FAS) systems. FlexPod is an ideal platform for running a variety of virtualization hypervisors and enterprise workloads. FlexPod can be scaled up for greater performance and capacity by adding compute, network, or storage resources individually as needed. It can also be scaled out for both virtualized and nonvirtualized environments that need multiple consistent deployments by rolling out additional FlexPod stacks. FlexPod delivers not only a baseline configuration, but also the flexibility to be sized and optimized to accommodate many different use cases.

1.2 Document Purpose

This document contains information required to upgrade a FlexPod data center solution. Procedures for upgrading hardware and software components from the August 2011 to the January 2012 FlexPod Reference Architecture release are illustrated in this document. For a detailed list of the hardware and software components included in each version, refer to Table 1 and Table 2 in section 1.4.

1.3 Important Upgrade Information

This section provides important information that should be considered when developing an upgrade path and procedure for a FlexPod data center solution.

Disruptive Versus Nondisruptive Upgrades

Although some components in the infrastructure may provide a nondisruptive upgrade path, NetApp recommends performing all necessary upgrades during a planned outage period. Some software components do provide a nondisruptive upgrade option, but all hardware component upgrades require downtime. For a complete list of the components and their upgrade options, refer to Table 1 and Table 2 in section 1.4.

Order of Operations for Upgrade

The following information should be considered when planning the upgrade procedure.

Before removing existing hardware components and installing new hardware components, update the software on the new hardware components to the appropriate target software version. This minimizes any downtime associated with the hardware upgrade.

Note: This only applies if you are upgrading both hardware and software.

Upgrade, remove, or install components one at a time. Performing these operations one component at a time helps the upgrades to be done properly and provides assistance should any type of troubleshooting become necessary.

Solutions and Applications Built on FlexPod

Although this document focuses on upgrading the infrastructure layer only, it is also important to understand how this procedure affects solutions and applications built on FlexPod. Before you make any disruptive upgrades to the infrastructure components, most applications require a graceful shutdown. Some applications, such as those running on a virtualization hypervisor, may provide some form of workload mobility to avoid disruption. When upgrading components nondisruptively, be sure to follow the procedures in the document links provided to establish the availability of the applications and solutions on the infrastructure.

Backup Component Configurations

NetApp recommends performing a configuration backup when possible before performing either a hardware or software upgrade. In many instances, the backup configuration can be applied to the upgraded hardware components.

Cisco Nexus NX-OS—Configuration Backup Procedure

www.cisco.com/en/US/docs/switches/datacenter/nexus5000/sw/command/reference/fund/n5k-fund_cmds_c.html#wp1339748

Cisco UCS—Backing Up and Restoring the Configuration

www.cisco.com/en/US/docs/unified_computing/ucs/sw/gui/config/guide/141/UCSM_GUI_Configuration_Guide_141_chapter43.pdf

1.4 FlexPod Hardware and Software Comparison

Table 1) FlexPod hardware comparison.

FlexPod Hardware Components	Current Version (August 2011)	Updated Version (January 2012)	Upgraded in This Version? (Yes or No)	Nondisruptive Upgrade Option
Cisco UCS Fabric Interconnect Hardware	6120P	6248UP	Yes	No
Cisco UCS Blade Chassis	5108	5108	No	N/A
Cisco UCS Fabric Extender Modules	2104XP	2104XP	No	N/A
Cisco UCS Blade VIC Adapter Hardware	M81KR	M81KR	No	N/A
Cisco Nexus Switch Hardware	Nexus 5548P	Nexus 5548UP	Yes	No
NetApp Storage Controller Hardware	FAS3210A	FAS3240A	Yes	No

Table 2) FlexPod software comparison.

FlexPod Software Components	Current Version (August 2011)	Updated Version (January 2012)	Upgraded in This Version? (Yes or No)	Nondisruptive Upgrade Option
Cisco UCS Infrastructure Software Bundle	1.4(1n)	2.0(1t)	See individual firmware components listed in this table.	See individual firmware components listed in this table.
Cisco UCS Manager Firmware	Included in 1.4(1n) Infrastructure Bundle	Included in 2.0(1t) Infrastructure Bundle	Yes	Yes*

FlexPod Software Components	Current Version (August 2011)	Updated Version (January 2012)	Upgraded in This Version? (Yes or No)	Nondisruptive Upgrade Option
Cisco UCS Fabric Interconnect Firmware	Included in 1.4(1n) Infrastructure Bundle	Included in 2.0(1t) Infrastructure Bundle	Yes	Yes*
Cisco UCS Blade Chassis I/O Module Firmware	Included in 1.4(1n) Infrastructure Bundle	Included in 2.0(1t) Infrastructure Bundle	Yes	Yes*
Cisco UCS B-Series Software Bundle	1.4(1n)	2.0(1t)	See individual firmware components listed in this table.	See individual firmware components listed in this table.
Cisco UCS Blade BIOS Firmware	Included in 1.4(1n) B-Series Software Bundle	Included in 2.0(1t) B-Series Software Bundle	Yes	No**
Cisco UCS Blade CIMC Firmware	Included in 1.4(1n) B-Series Software Bundle	Included in 2.0(1t) B-Series Software Bundle	Yes	No**
Cisco UCS Blade Adapter Firmware	Included in 1.4(1n) B-Series Software Bundle	Included in 2.0(1t) B-Series Software Bundle	Yes	No**
Cisco Nexus Switch Software (system and kickstart images)	5.0(3)N1(1c)	5.0(3)N2(2a)	Yes	Yes*
NetApp Storage Controller Data ONTAP® Software	8.0.1	8.0.2	Yes	Yes*

*See available documentation links provided in the following sections for more specific information on nondisruptive upgrade path options.

**While these specific components cannot be upgraded nondisruptively, it may be possible to eliminate disruption to applications and solutions running on these components if a virtualization hypervisor is used. For example, the VMotion® capability can be leveraged within VMware® vSphere® to perform a workload migration from one UCS B-Series blade server to another, nondisruptively. After the workload migration, the disruptive upgrade can be performed on that specific component.

2 Hardware Upgrade Information

The following sections provide information regarding upgrading and installing the various hardware components within a FlexPod data center solution.

2.1 Cisco Unified Computing System

Cisco 6200 Fabric Interconnect Datasheet

www.cisco.com/en/US/prod/collateral/ps10265/ps11544/data_sheet_c78-675245.pdf

Installing the Cisco UCS 6200 Series Fabric Interconnect

www.cisco.com/en/US/docs/unified_computing/ucs/hw/6200/install/install.pdf

2.2 Cisco Nexus 5000 Series Switches

Cisco Nexus 5000 Series Switches Datasheet

www.cisco.com/en/US/prod/collateral/switches/ps9441/ps9670/data_sheet_c78-618603.pdf

Cisco Nexus 5000 Series Hardware Installation Guide

www.cisco.com/en/US/docs/switches/datacenter/nexus5000/hw/installation/guide/n5k_hig.pdf

2.3 NetApp FAS Storage Controllers

NetApp FAS3200 Series Technical Specifications

www.netapp.com/us/products/storage-systems/fas3200/fas3200-tech-specs.html

FAS32XX/V32XX/SA320 System Installation and Setup Guide

<https://now.netapp.com/NOW/knowledge/docs/hardware/filer/210-05224+A0.pdf>

3 Cisco Unified Computing System Software Upgrade

3.1 Important Information

Note: Valid www.cisco.com login credentials may be required to view and download the various Cisco documents and software using the links provided in this section.

Release Notes for Cisco UCS Software, Release 2.0

www.cisco.com/en/US/docs/unified_computing/ucs/release/notes/OL_25363.pdf

3.2 Acquiring Software

The following links are provided to download the specific Cisco UCS Infrastructure and B-Series Blade software bundles for the specific versions highlighted in Table 2. Login credentials may be required to access downloads.

Cisco UCS Infrastructure Software Bundle 2.0(1t)

[www.cisco.com/cisco/software/release.html?mdfid=283612660&softwareid=283655658&release=2.0\(1t\)&rellifecycle=&relind=AVAILABLE&reltype=latest](http://www.cisco.com/cisco/software/release.html?mdfid=283612660&softwareid=283655658&release=2.0(1t)&rellifecycle=&relind=AVAILABLE&reltype=latest)

Cisco UCS B-Series Blade Server Software Bundle 2.0(1t)

[www.cisco.com/cisco/software/release.html?mdfid=283853163&flowid=25821&softwareid=283655681&release=2.0\(1t\)&rellifecycle=&relind=AVAILABLE&reltype=latest](http://www.cisco.com/cisco/software/release.html?mdfid=283853163&flowid=25821&softwareid=283655681&release=2.0(1t)&rellifecycle=&relind=AVAILABLE&reltype=latest)

3.3 Software Upgrade Procedure

The following documentation provides information about upgrading Cisco UCS Manager software. This includes but is not limited to information regarding prerequisites, planning, execution, and verification.

Upgrading Cisco UCS from Release 1.4 to Release 2.0

www.cisco.com/en/US/docs/unified_computing/ucs/sw/upgrading/from1.4/to2.0/b_UpgradingCiscoUCSFrom1.4To2.0.pdf

4 Cisco Nexus Switch Software Upgrade

4.1 Important Information

Note: Valid www.cisco.com login credentials may be required to view and download the various Cisco documents and software using the links provided in this section.

Cisco Nexus 5000 Series and Cisco Nexus 2000 Series Release Notes, Cisco NX-OS Release 5.0(3)N2(2a)

www.cisco.com/en/US/docs/switches/datacenter/nexus5000/sw/release/notes/Rel_5_0_3_N2_1/Nexus5000_Release_Notes_5_0_3_N2.pdf

4.2 Acquiring Software

The following links are provided to download the necessary Cisco Nexus NX-OS kickstart and system image files for the specific versions highlighted in Table 2 in section 1.4. Login credentials may be required for access to downloads.

Cisco Nexus NX-OS 5.0(3)N2(2a) Kickstart Image

[www.cisco.com/cisco/software/release.html?mdfid=283823782&flowid=26622&softwareid=282088130&release=5.0\(3\)N2\(2a\)&reind=AVAILABLE&rellifecycle=&reltype=latest](http://www.cisco.com/cisco/software/release.html?mdfid=283823782&flowid=26622&softwareid=282088130&release=5.0(3)N2(2a)&reind=AVAILABLE&rellifecycle=&reltype=latest)

Cisco Nexus NX-OS 5.0(3)N2(2a) System Image

[www.cisco.com/cisco/software/release.html?mdfid=283823782&flowid=26622&softwareid=282088129&release=5.0\(3\)N2\(2a\)&reind=AVAILABLE&rellifecycle=&reltype=latest](http://www.cisco.com/cisco/software/release.html?mdfid=283823782&flowid=26622&softwareid=282088129&release=5.0(3)N2(2a)&reind=AVAILABLE&rellifecycle=&reltype=latest)

4.3 Software Upgrade Procedure

The following documentation provides information about upgrading Cisco Nexus NX-OS software. This includes but is not limited to information regarding prerequisites, planning, execution, and verification.

Cisco Nexus 5000 Series NX-OS Upgrade and Downgrade Guide, Release 5.0

www.cisco.com/en/US/docs/switches/datacenter/nexus5000/sw/upgrade/503_N1_1/n5k_upgrade_downgrade_503.pdf

When performing a nondisruptive NX-OS software upgrade, refer to the section in this Cisco guide titled “In Service Software Upgrades” for more information.

5 NetApp FAS Storage Software Upgrade

5.1 Important Information

Note: Valid <http://now.netapp.com> (NetApp Support) login credentials are required to view and download the various NetApp documents and software using the links provided in this section.

Upgrade and Revert Cautions Page

<https://now.netapp.com/NOW/knowledge/docs/ontap/rel81rc2/html/ontap/rnote/GUID-4713CAB1-F980-4400-A293-9678ACDABCDD.html>

5.2 Acquiring Software

The following link is provided to download the necessary file for upgrading NetApp Data ONTAP to the specific version highlighted in Table 2.

NetApp Data ONTAP 8.0.2 Operating in 7-Mode

<https://now.netapp.com/NOW/download/software/ontap/8.0.2/>

5.3 Software Upgrade Procedure

The following section provides information about upgrading NetApp Data ONTAP. This includes but is not limited to information regarding prerequisites, planning, execution, and verification.

Data ONTAP 8.0 7-Mode: Upgrade and Revert/Downgrade Guide

<https://now.netapp.com/NOW/knowledge/docs/ontap/rel802/pdfs/ontap/upgrade.pdf>

My AutoSupport and Upgrade Advisor

The NetApp My AutoSupport portal provides a tool called Upgrade Advisor that uses data collected by the AutoSupport™ tool to generate a custom upgrade plan for each controller. In order to use Upgrade Advisor, AutoSupport must be enabled on the storage controllers being upgraded. You should also review the NetApp Data ONTAP Upgrade Guide when using the Upgrade Advisor tool to verify that all requirements are met and all caveats, if any, are known prior to an upgrade.

To use Upgrade Advisor:

1. Log in to <http://now.netapp.com> using your NetApp Support (formerly NOW®) login credentials.
2. Click on My Support, then My AutoSupport.
3. Click Launch My AutoSupport.
4. Enter one or more of the following criteria to search for the appropriate storage controller: Hostname, System ID, and/or Serial #.
5. Click Search.
6. Once results are returned, click on the row that corresponds to the appropriate storage controller.
7. In the left pane, choose Upgrade Advisor.
8. Make sure this system and its HA partner is chosen. Click Continue.
9. Choose the Target Version from the drop-down list as well as the upgrade method desired. Click Continue.
10. Review and follow the resulting custom upgrade plan.

Both the NetApp Data ONTAP Upgrade Guide and the Upgrade Advisor tool provide information for performing nondisruptive software upgrades.

Refer to the [Interoperability Matrix Tool](#) (IMT) on the NetApp Support site to validate that the exact product and feature versions described in this document are supported for your specific environment. The NetApp IMT defines the product components and versions that can be used to construct configurations that are supported by NetApp. Specific results depend on each customer's installation in accordance with published specifications.

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