

CEE Installation

Cloud Execution Environment

INSTALLATION INSTRUCTION

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1 Introduction

This document summarizes the complete procedure for deploying a Cloud Execution Environment (CEE) region.

1.1 Prerequisites

This section describes the prerequisites that must be fulfilled before CEE can be installed.

1.2 General Prerequisites

This document covers CEE installation on a hardware configuration that complies to *BOM for Certified HW Configurations*, Reference [1], and is installed according to one of the following documents:

- *HP c7000 HW Installation*
- BSP Installation, Reference [5]
- *HDS End-to-End Installation*, available as described in *Hyperscale Datacenter System 8000 Customer Documentation*, Reference [2]
- Installation documents received from supplier

Note: The current release of CEE is not verified on BSP hardware. The installation flow and document references for CEE on a BSP platform only serve as a reference.

The Single Server setup is a small footprint infrastructure version of CEE. It contains one single compute host and one Virtual Cloud Infrastructure Controller (vCIC) installed on it.

The Single Server setup does **not** contain the following:

- Dedicated traffic switches
- Dedicated storage switches
- Dedicated control switches

However, it is a prerequisite for the installation to have a switch that is not configured by CEE. (It can be a budget switch and configuration has to be performed manually.)

This switch must be capable of the following:



- Configuring the required VLANs (refer to your local version of the *IP and VLAN Plan*, Reference [4], updated with site-specific IP addresses) to perform the installation from the kickstart server.
- Configuring NTP
- Configuring SNMPv3

After configuring the switch, it has to be connected to the following system elements for the single server CEE installation:

- Kickstart server
- Control network interface of the Dell compute server
- iDRAC interface of the Dell compute server

1.3 HW-Specific Prerequisites

For the hardware-specific prerequisites, refer to the prerequisites in each individual procedure for the deployment, as indicated in Table 1.

Table 1 *Hardware-Specific Prerequisites*

	HP Multi-Server	BSP Multi-Server	Dell Multi-Server	HDS Multi-Server	Other Multi-Server	Dell Single Server
<i>HP c7000 HW Installation</i>	Yes				Supplier documentation for HW installation	
<i>Preparation of Kickstart Server</i>	Yes	Yes	Yes		Yes	Yes
<i>Extreme X460 Configuration</i>	Yes		Yes		Yes, or supplier documents for installation and configuration of Control Switches	
<i>Extreme X670V Configuration / Extreme X770 Configuration</i>	Yes		Yes		Yes, or supplier documents for installation and configuration of Switches for Traffic and Storage Network	
<i>VNX5400 SW Installation Optional</i>	Yes		Yes		Yes, or supplier documents for installation and configuration of the used storage system	
<i>HP c7000 Configuration</i>	Yes				Supplier documents for server and server BIOS configuration	
<i>HP c7000 Server BIOS Configuration</i>	Yes					
<i>SW Installation in Multi-Server Deployment</i>	Yes	Yes	Yes		Yes	
<i>Atlas SW Installation</i>	Yes	Yes	Yes	Yes	Yes	Yes



Table 1 Hardware-Specific Prerequisites

	HP Multi- Server	BSP Multi- Server	Dell Multi- Server	HDS Multi- Server	Other Multi-Server	Dell Single Server
<i>Fault Management Configuration Guide</i>	Yes	Yes	Yes		Yes	Yes
<i>External Networking Connectivity for CEE Tenants in HP and Dell Multi-Server Deployment</i>	Yes		Yes		Yes	
<i>DC Firewall Hardening Guide</i>	Yes	Yes	Yes	Yes	Yes	Yes
<i>System Hardening Guideline</i>	Yes	Yes	Yes	Yes	Yes	Yes
<i>Health Check Procedure</i>	Yes	Yes	Yes	Yes	Yes	Yes
<i>Fuel Synchronization</i>	Yes	Yes	Yes	Yes	Yes	Yes
BSP Installation, Reference [5]		Yes				
BSP Hardware Description, Reference [6]		Yes				
Identify BSP Hardware, Reference [7]		Yes				
BSP System Capabilities, Reference [8]		Yes				
BSP Jumpstart Instruction, Reference [9]		Yes				
Add Shelf, Reference [10]		Yes				
BSP Backup and Restore, Reference [11]		Yes				
BSP Initial Configuration, Reference [12]		Yes				
<i>External Networking Connectivity for CEE Tenants in BSP Deployment</i>		Yes				
<i>Configure Northbound Interface in BSP, Reference [13]</i>		Yes				
<i>Dell PowerEdge R630 HW Installation</i>			Yes			
<i>Dell PowerEdge R630 Server Configuration</i>			Yes			Yes
<i>Dell PowerEdge R630 Server BIOS Configuration for CEE</i>			Yes			Yes
<i>SW Installation in Single Server Deployment</i>						Yes
<i>External Networking Connectivity for CEE Tenants in Single Server Deployment</i>						Yes
<i>vFuel On Demand Use</i>						Yes
<i>Atlas On Demand Use</i>						Yes
<i>Hyperscale Datacenter System 8000 Customer Documentation, Reference [2]</i>				Yes		
<i>CEE on HDS Installation, Reference [3]</i>				Yes		

2 Installation Flow for Multi-Server Deployments

This section describes the complete installation procedure for multi-server CEE deployments.

Multi-server CEE deployments consist of the following parts:

- Border Gateways (BGWs)
- Firewalls
- Traffic Switches
- Control Switches
- Storage Switches
- Storage System
- Compute hosts

In most cases, two units are used to achieve redundancy.

For the installation of multi-server CEE, depending on the deployed certified hardware environment, follow the relevant procedure:

- For installation of multi-server CEE on HP hardware, see Section 2.1 on page 6.
- For installation of multi-server CEE on BSP hardware, see Section 2.2 on page 9.
- For installation of multi-server CEE on Dell hardware, see Section 2.3 on page 11
- For installation of multi-server CEE on HDS vPOD, see Section 2.4 on page 14

The general installation flow of multi-server CEE consists of the following steps:

- 1 Creating site-specific configuration file to be used during the SW installation by following the instructions in *Configuration File Guide*.

Note: The configuration file must be in place since data needs to be consistent.

- 2 Installation of CEE hardware according to the supplier documents.
- 3 Preparation to install and configuration of the Control Switches.



4 Preparation to install and configuration of the Switches for Traffic and Storage Network.

5 Installation of the Storage system.

Note: This step is optional.

6 Configuration of the Server System, including the following elements:

- Redundant Array of Independent Disks (RAID) configuration
- Setting the boot mode
- Configuration of NTP settings or setting system time
- Configuration of the subrack management interface

7 Installation and configuration of a kickstart server according to *Preparation of Kickstart Server*.

8 Installation of SW according to the instructions in *SW Installation in Multi-Server Deployment*.

9 Performing the post-installation activities, see Section 4 on page 20.



2.1 Multi-Server CEE Installation on HP Hardware

This section describes multi-server installation on HP hardware.

The server, storage and switching components of the hardware environment with VNX Storage system are shown in Figure 1.

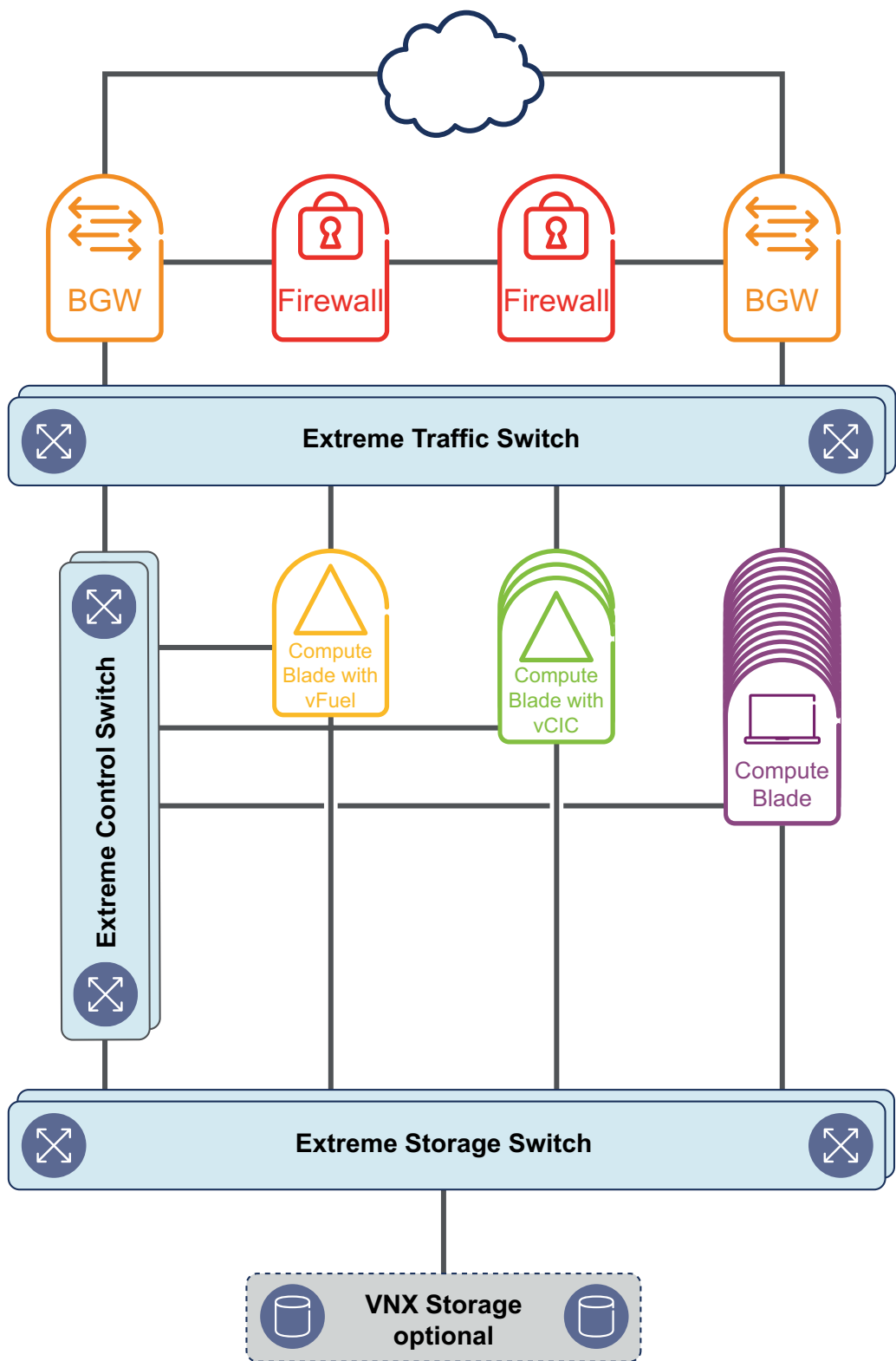


Figure 1 CEE System on HP HW, VNX

The server, storage, and switching components of the HW environment with ScaleIO Storage solution are shown in Figure 2.

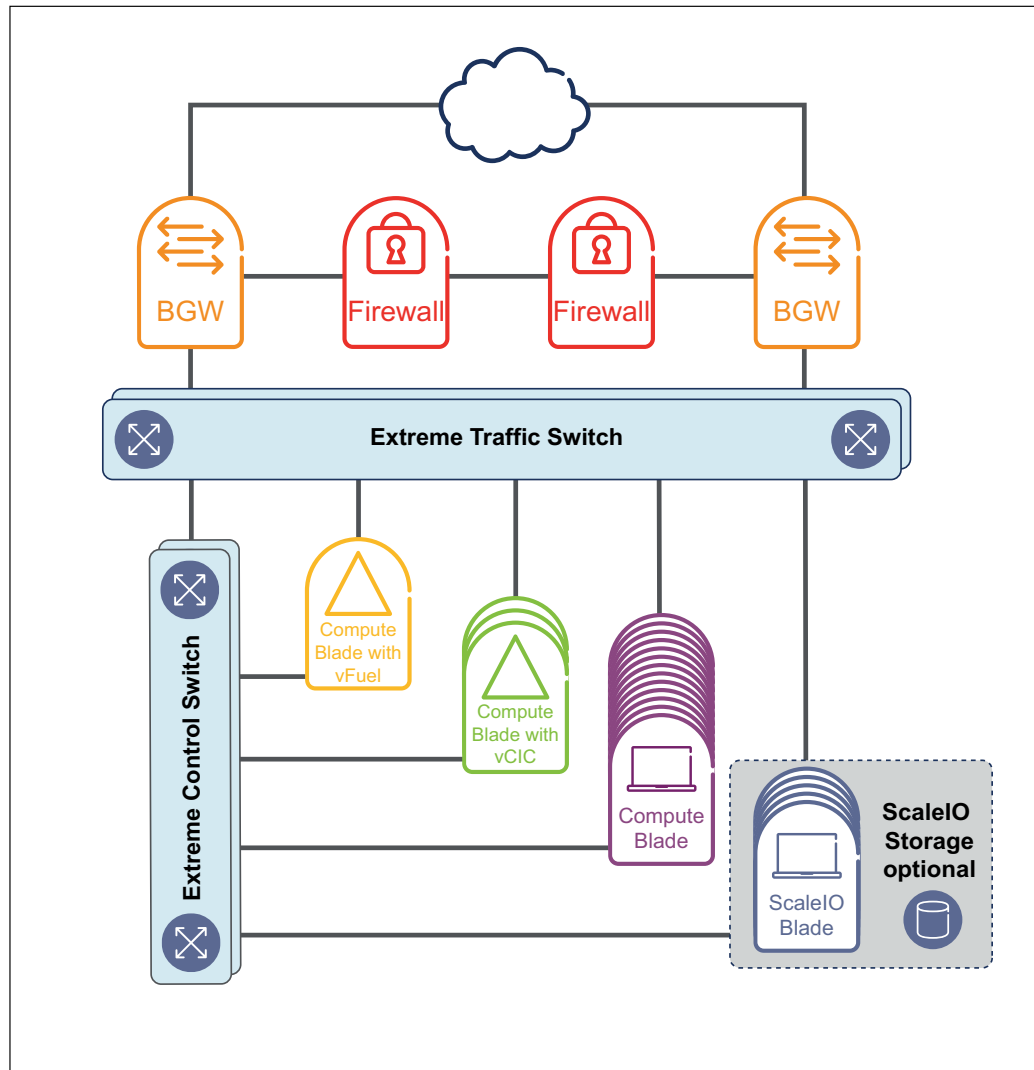


Figure 2 CEE System on HP HW, ScaleIO

Follow the below steps for installation:

1. Create site-specific configuration file to be used during the SW installation by following the instructions in *Configuration File Guide*.

Note: The configuration file must be in place since data needs to be consistent.

2. Install CEE hardware according to *HP c7000 HW Installation*.
3. Prepare to install and configure the Control Switches by following the instructions in *Extreme X460 Configuration*.



4. Prepare to install and configure the Switches for Traffic and Storage Network by following the instructions in *Extreme X670V Configuration* or *Extreme X770 Configuration*.

Note: Configure the Switch for Storage Network only if VNX storage system is used.
5. Install the Storage system according to *VNX5400 SW Installation*.

Note: This step is optional. VNX and EMC² ScaleIO are mutually exclusive. Only perform this step if VNX Storage system is used.
6. Configure the Server System according to the instructions in *HP c7000 Configuration* and *HP c7000 Server BIOS Configuration*.
7. Install and configure a kickstart server according to *Preparation of Kickstart Server*.
8. Install SW according to the instructions in *SW Installation in Multi-Server Deployment*.
9. Perform the post-installation activities, see Section 4 on page 20.

2.2 Multi-Server CEE Installation on BSP Hardware

This section describes multi-server installation on BSP hardware.

The server, storage and switching components of the hardware environment are shown in Figure 3.

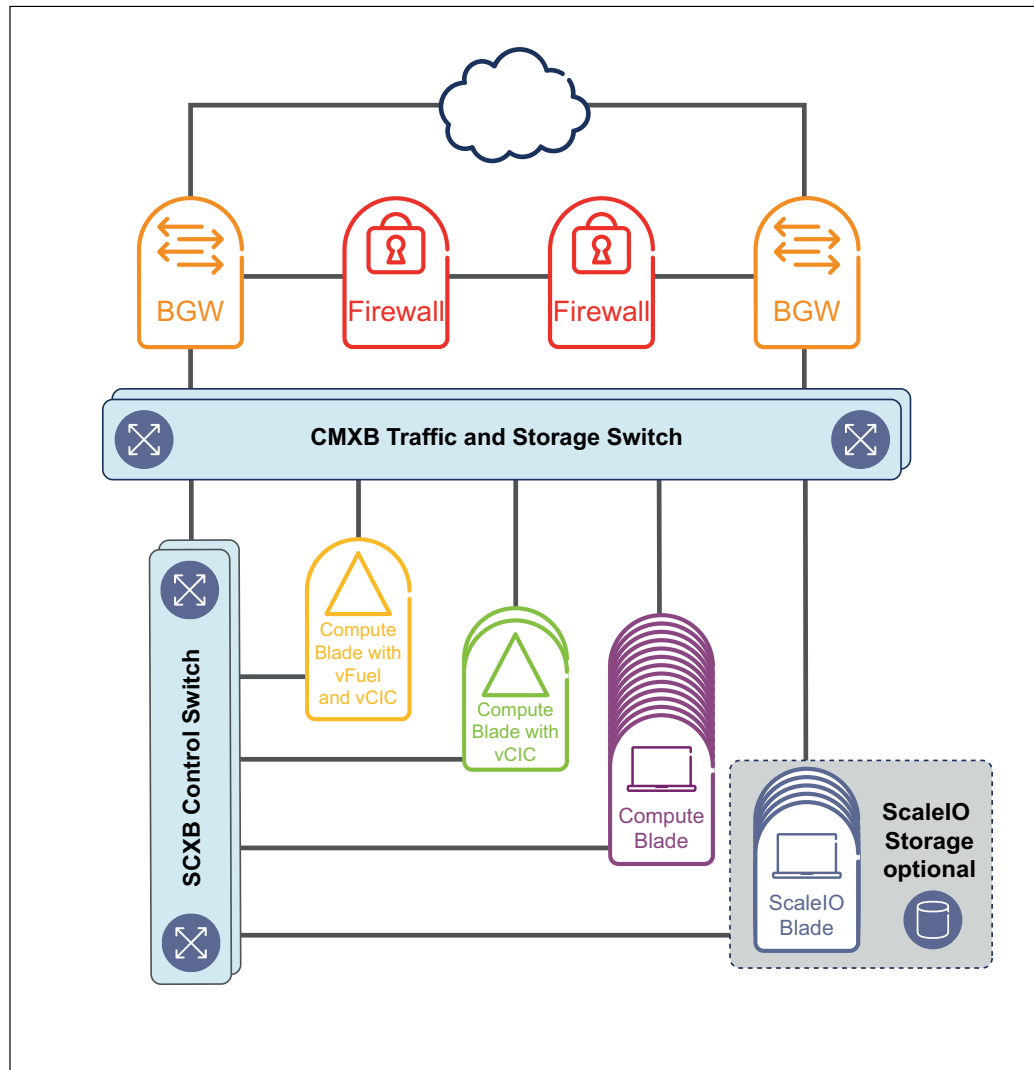


Figure 3 CEE System on BSP HW, ScaleIO

Follow the below steps for installation:

1. Create site-specific configuration file to be used during the SW installation by following the instructions in *Configuration File Guide*.

Note: The configuration file must be in place since data needs to be consistent.

2. Install CEE hardware according to BSP Hardware Installation, see Reference [14].
3. Configure the Server System according to the instructions in BSP Initial Configuration, Reference [12].

By using the BSP instruction Add Shelf, Reference [10], add all the shelves that contain blades to be part of the CEE region to the BSP.



Note: If GEP7 blades are used, CEE can only be deployed if the firmware of the Ethernet interfaces are updated to version 5.04 or later on all GEP7 blades.

4. Create a BSP configuration backup by using BSP Backup and Restore, Reference [11]. The backup name must be in accordance with what is configured in `cmx_switch.yaml`, refer to *Configuration File Guide*.
5. Install and configure a kickstart server according to *Preparation of Kickstart Server*.
6. Install SW according to the instructions in *SW Installation in Multi-Server Deployment*.
7. Perform the post-installation activities, see Section 4 on page 20.

2.3 Multi-Server CEE Installation on Dell Hardware

This section describes Multi-Server installation on Dell hardware.

The server, storage and switching components of the hardware environment with VNX Storage system are shown in Figure 4.

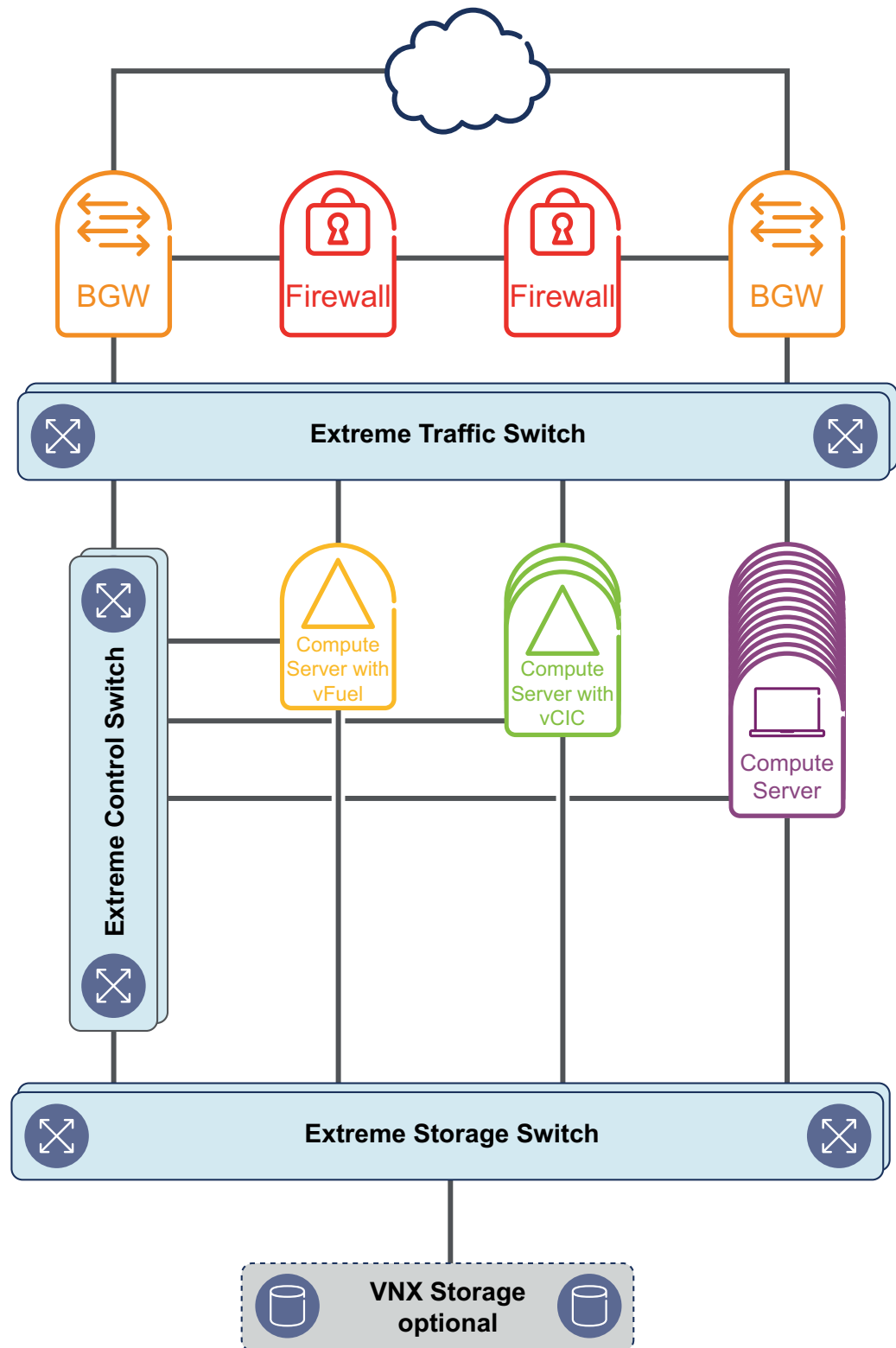


Figure 4 CEE System on Dell HW, VNX



The server, storage, and switching components of the HW environment with ScaleIO Storage solution are shown in Figure 5.

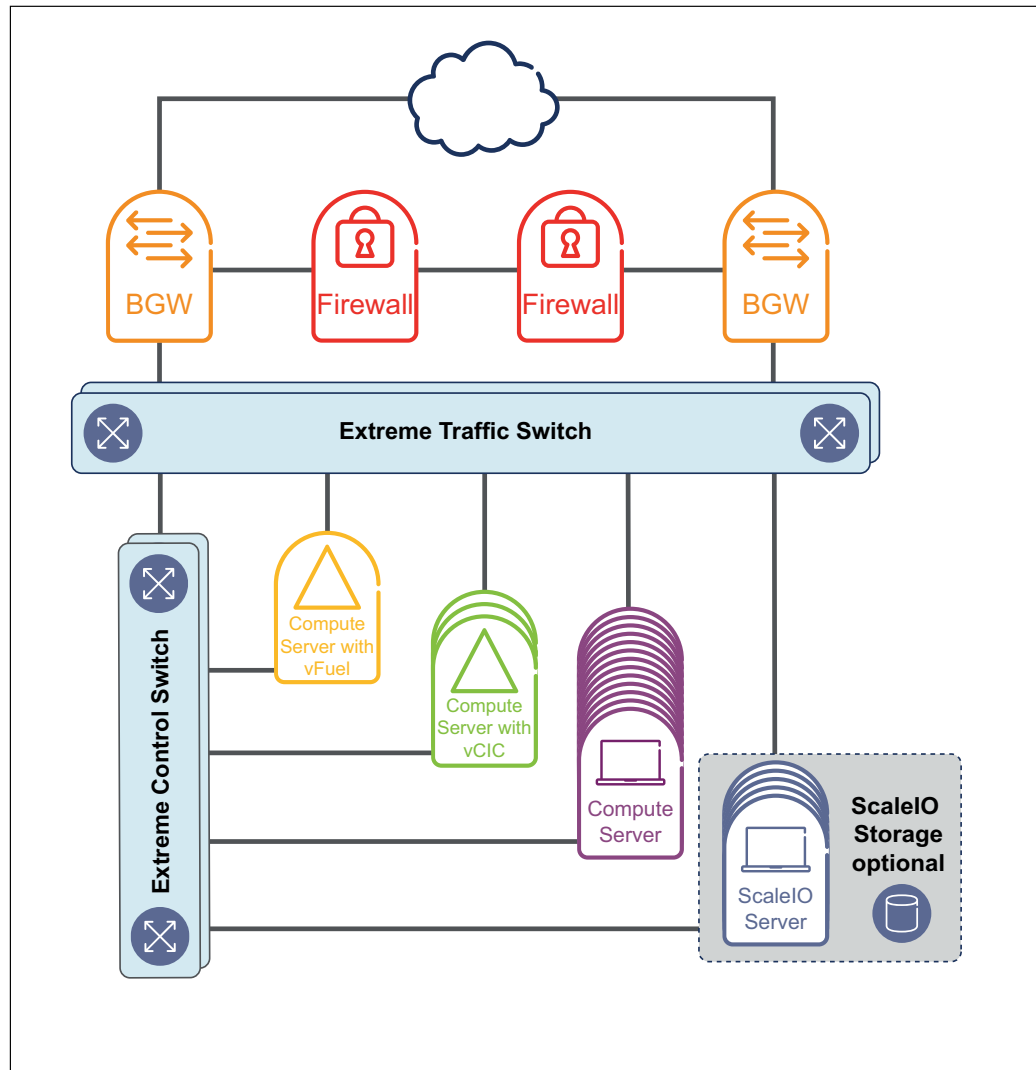


Figure 5 CEE System on Dell HW, ScaleIO

Follow the below steps for installation:

1. Create site-specific configuration file to be used during the SW installation by following the instructions in *Configuration File Guide*.

Note: The configuration file must be in place since data needs to be consistent.

2. Install CEE hardware according to *Dell PowerEdge R630 HW Installation*
3. Prepare to install and configure the Control Switches by following the instructions in *Extreme X460 Configuration*.



4. Prepare to install and configure the Switches for Traffic and Storage Network by following the instructions in *Extreme X770 Configuration*.
Note: Configure the Switch for Storage Network only if VNX storage system is used.
5. Install the Storage system according to *VNX5400 SW Installation*.
Note: This step is optional. VNX and EMC² ScaleIO are mutually exclusive. Only perform this step if VNX Storage system is used.
6. Configure the Server System according to the instructions in *Dell PowerEdge R630 Server Configuration* and *Dell PowerEdge R630 Server BIOS Configuration for CEE*.
7. Install and configure a kickstart server according to *Preparation of Kickstart Server*.
8. Install SW according to the instructions in *SW Installation in Multi-Server Deployment*.
9. Perform the post-installation activities, see Section 4 on page 20.

2.4 Multi-Server CEE Installation on HDS vPOD

This section describes Multi-Server installation on an HDS Virtualized Performance Optimized Datacenter (vPOD).

The server, storage, and switching components of the environment with ScaleIO Storage solution are shown in Figure 6

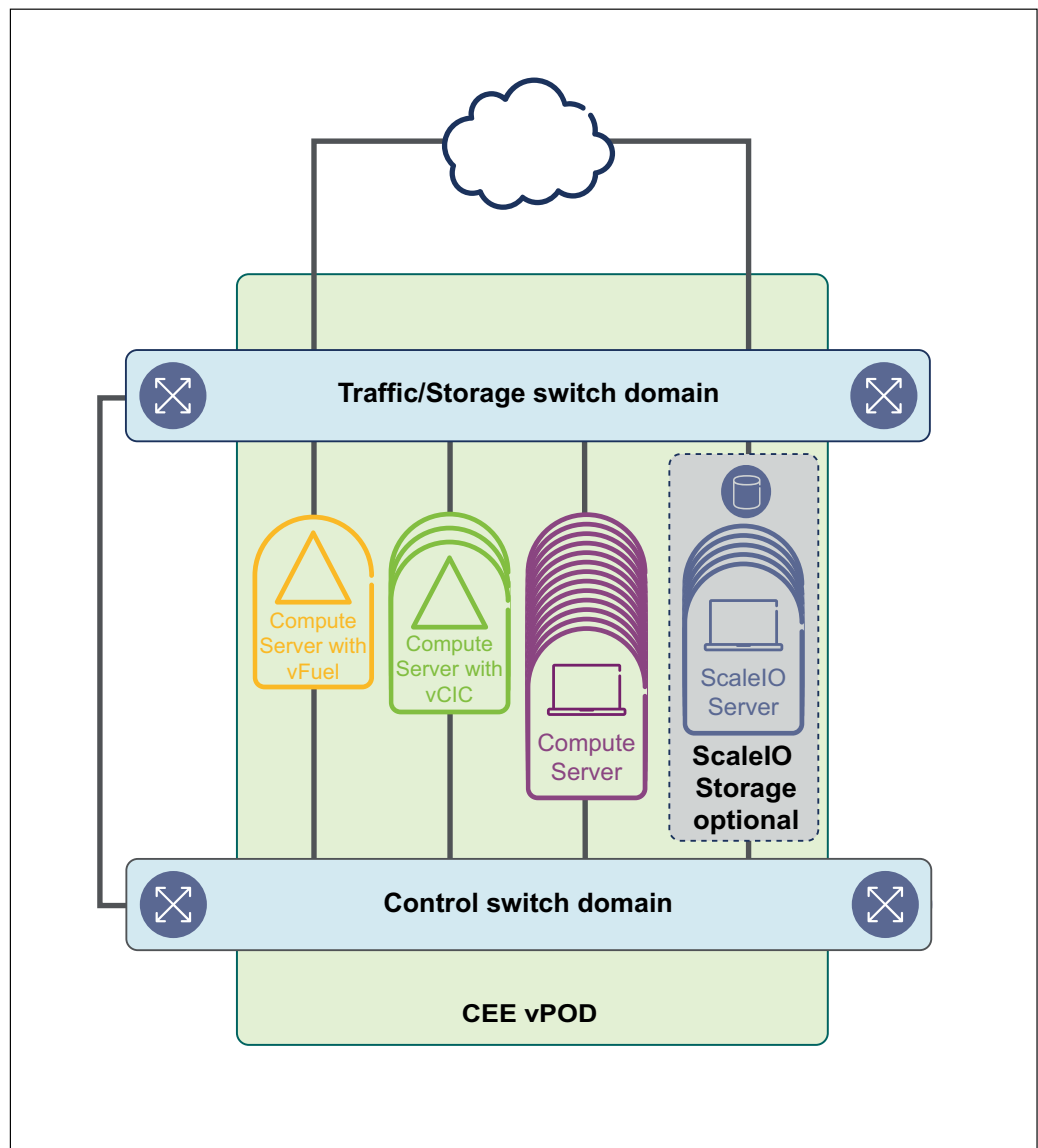


Figure 6 CEE System on HDS vPOD, ScaleIO

Follow the below steps for installation:

1. If required, install and configure HDS hardware according to the *End-to-End Installation Guide* document of *Hyperscale Datacenter System 8000 Customer Documentation*, Reference [2].
2. Create and configure vPOD for the CEE region, and assign compute to the vPOD, according to *Multi-Server System Dimensioning Guide*, *CEE R6* and *Hyperscale Datacenter System 8000 Customer Documentation*, Reference [2].

If applicable, note down the output of vPOD creation to use in Step 3. For more information, refer to the *Configuration File Guide*



Note: If you are a DC customer, order a vPOD from the DC owner with the required capacity planned in accordance with *Multi-Server System Dimensioning Guide, CEE R6*.

3. Create site-specific configuration file to be used during the SW installation by following the instructions in *Configuration File Guide* and, if applicable, using the output of vPOD creation and configuration in Step 2.

Note: The configuration file must be in place since data needs to be consistent.

4. Perform CEE installation on the vPOD as described in *CEE on HDS Installation, Reference [3]*, including the following:
 - Preparation of the kickstart server
 - Configuration of networks
 - Deployment of CEE
5. Perform the post-installation activities, see Section 4 on page 20.



3 Installation Flow for Single Server Deployments

This section describes the complete installation procedure for single server CEE deployments.

Single server CEE deployments consist of the following parts:

- One compute blade hosting:
 - One Virtual Cloud Infrastructure Controller (vCIC)
 - Atlas VM during provisioning time
 - Tenant VMs

No redundancy or high availability is provided.

3.1 Single Server CEE Installation on Dell Hardware

This section describes single server installation on Dell hardware.

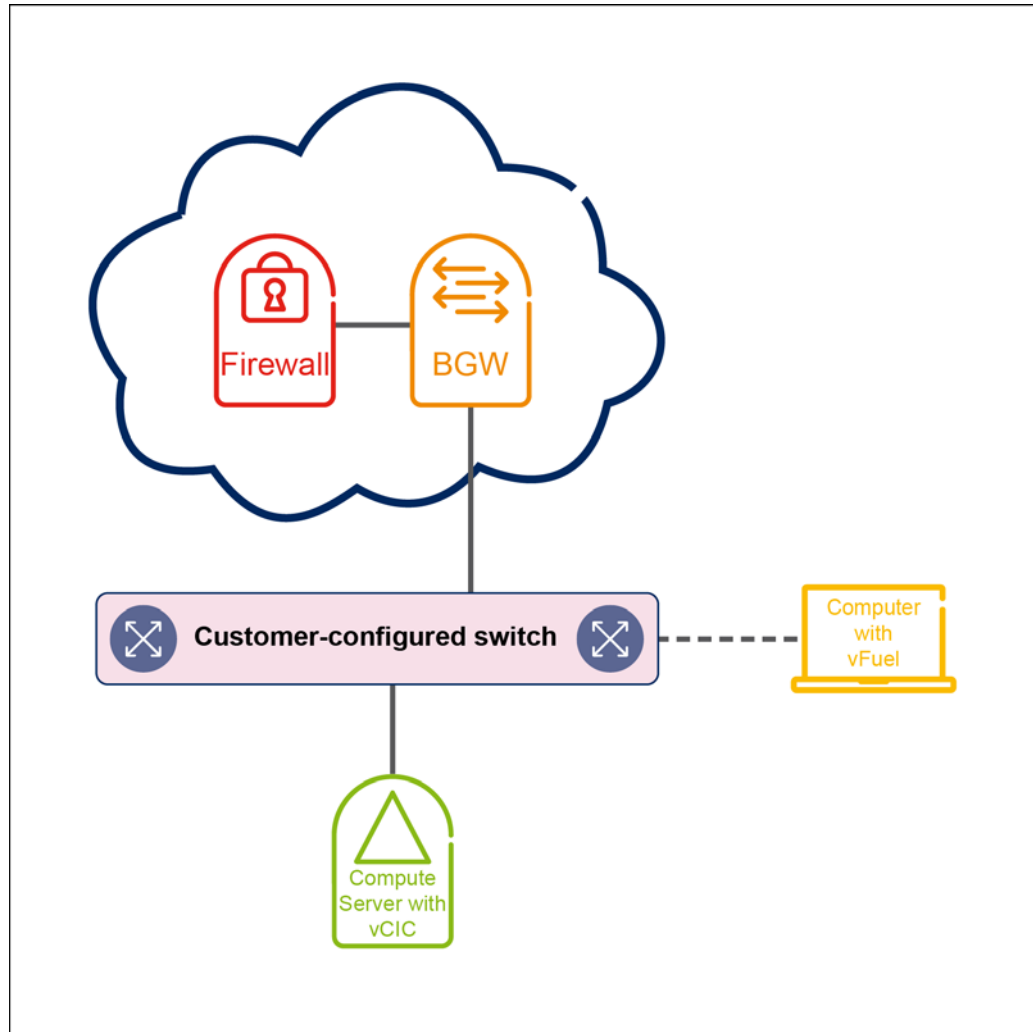


Figure 7 CEE System on Dell HW

Follow the below steps for installation:

1. Create site-specific configuration file to be used during the SW installation by following the instructions in *Configuration File Guide*.

Note: The configuration file must be in place since data needs to be consistent.
2. Install CEE hardware according to the supplier documents.
3. Configure the Server System according to the instructions in *Dell PowerEdge R630 Server Configuration* and *Dell PowerEdge R630 Server BIOS Configuration for CEE*.



4. Install and configure a kickstart server according to *Preparation of Kickstart Server*.
5. Install SW according to the instructions in *SW Installation in Single Server Deployment*.
6. Perform the post-installation activities, see Section 4 on page 20.



4 Post-Installation Activities

This section describes the post-installation activities needed for CEE.

Do the following:

1. Configure alarm destinations by following the instructions in *Fault Management Configuration Guide*.
2. Set up the firewall according to the recommendations in *DC Firewall Hardening Guide*.
3. Perform system hardening by following the instructions in *System Hardening Guideline*.
4. Configure external connections by following the instructions in the user guide relevant to the CEE hardware deployment:
 - *External Networking Connectivity for CEE Tenants in HP and Dell Multi-Server Deployment*
 - *External Networking Connectivity for CEE Tenants in BSP Deployment*

Note: For the configuration of the Northbound Interface (NBI) on BSP, refer to *Configure Northbound Interface in BSP*, Reference [13].

 - *External Networking Connectivity for CEE Tenants in Single Server Deployment*
5. Install CEE management software by following the instructions in *Atlas SW Installation*.
6. In case of single server deployment, disable Atlas by following the instructions in *Atlas On Demand Use*.
7. For disaster recovery purposes, fetch vFuel image and copy the backup to another storage place out of scope of CEE. To identify the location of the vFuel image within the CEE region, refer to the document *Fuel Synchronization*.
8. In case of single server deployment, disable vFuel by following the instructions in *vFuel On Demand Use*.
9. Execute health check according to *Health Check Procedure*.



Reference List

- [1] *BOM for Certified HW Configurations*, 1/006 51-CSA 113 125/5 Uen
- [2] *Hyperscale Datacenter System 8000 Customer Documentation*, 2/1551-LZN 901 5032
- [3] *CEE on HDS Installation*, 1/1531-CNA 403 3305/2
- [4] *IP and VLAN Plan*, 2/102 62-CRA 119 1862/5 Uen
- [5] *BSP Installation*, 1531-APP 111 01 Uen
- [6] *BSP Hardware Description*, 1/1551-APP 111 01 Uen
- [7] *Identify BSP Hardware*, 1551-CRA 119 1772 Uen
- [8] *BSP System Capabilities*, 4/1551-APP 111 01 Uen
- [9] *BSP Jumpstart Instruction*, 2/1531-APP 111 01 Uen
- [10] *Add Shelf*, 16/1543-APR 901 0549/1 Uen
- [11] *BSP Backup and Restore*, 25/1543-APR 901 0549/1 Uen
- [12] *BSP Initial Configuration*, 3/1531-APP 111 01 Uen
- [13] *Configure Northbound Interface in BSP*, 2/1543-APR 901 0549/1 Uen
- [14] *BSP Hardware Installation*, 1/1531-CRA 119 1772 Uen