Installation Guide (COTS deployments)

Dialogic® BorderNet™ Session Border Controller (SBC)

Release 3.8.1

June 2019

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Revision History

Revision	Release Date	Notes
1.0	February 2016	Release 3.3 - editing and styling
1.1	February 2016	Release 3.4 - HP DL360 replaced the current hardware
1.2	May 2016	Release 3.4.1 - HDD size increased - After installation management remote access is allowed.
1.3	October 2016	Release 3.5.0 - Introduced HP DL360 platform with 10 GB interface - Introduced HP DL380 platform
1.4	January 2017	Power supply specifications corrections
2.0	April 2017	Release 3.6.0 - BorderNet SBC replaced the BorderNet 4000 SBC
2.1	October 2017	Release 3.7.0
2.2	January 2019	Updated and edited for Release 3.8.0
2.3	May 2019	Updated and edited for Release 3.8.1

1. Introduction

1.1 Purpose of this Document

This installation and deployment guide is intended to introduce you to the initial installation, setup and configuration of the Dialogic BorderNet Session Border Controller for COTS deployments.

The document is organized according to the following sections:

- System Configuration
- Specifications
- Panels and LEDs
- Safety Consideration
- Installation
- Internet Connectivity
- Deployment
- Redeployment Procedure

1.2 Hardware Limited Warranty

Please refer to the Dialogic web site for information concerning hardware warranty which applies unless different terms have been agreed to in a signed agreement between yourself and Dialogic Corporation or its subsidiaries. The listed hardware warranty periods and terms are subject to change without notice. For purchases not made directly from Dialogic please contact your direct vendor in connection with the warranty period and terms that they offer.

http://www.dialogic.com/warranties

1.3 Glossary

Abbreviation	Meaning
SBC	Session Border Controller
SFF	Short Form Factor

1.4 Contact Us

For a list of Dialogic locations and offices, please visit: https://www.dialogic.com/contact.aspx.

2. System Configurations

The BorderNet SBC is available in the following hardware configurations:

Product Number	Description
BN4-HPO-1000	One BorderNet SBC base hardware, OEM HP DL360, DC power, 12xCopper ports 1GB, OS Software
BN4-HPO-1001	One BorderNet SBC base hardware, OEM HP DL360, AC power, 12xCopper ports 1GB, OS Software
BN4-HPO-1002	One BorderNet SBC base hardware, OEM HP DL360, DC power, 4x10G Optical Interfaces, 4xCopper ports 1GB, OS Software
BN4-HPO-1003	One BorderNet SBC base hardware, OEM HP DL360, AC power, 4x10G Optical Interfaces, 4xCopper ports 1GB, OS Software
BN4-HPO-1004	One BorderNet SBC base hardware, OEM HP DL380, DC power, 12xCopper ports 1GB, OS Software
BN4-HPO-1005	One BorderNet SBC base hardware, OEM HP DL380, AC power, 12xCopper ports 1GB, OS Software
BN4-HPO-1006	One BorderNet SBC base hardware, OEM HP DL380, DC power, 4x10G Optical Interfaces, 4xCopper ports 1GB, OS Software
BN4-HPO-1007	One BorderNet SBC base hardware, OEM HP DL380, AC power, 4x10G Optical Interfaces, 4xCopper ports 1GB, OS Software

Table 1: BorderNet SBC Configurations

3. Specifications

The two BorderNet SBC COTS platform options support similar features and specifications:

- **HP DL360 Gen9 1 rack unit (1RU).**
- This platform, introduced in previous releases, supports the addition of 1 PCIe card for the future DSP-based transcoding.

- **HP DL380 Gen9 2 rack unity (2RU).**
- This platform, introduced in release 3.7.0, supports the addition of 4 PCIe cards for the DSP-based transcoding.

3.1 Environment and Power

Specification	Value
Environment	**Temperature Range Operating: 10°C to 35°C (50°F to 95°F)** **Non-operating: -30°C to 60°C (-22°F to 140°F) Relative Humidity (noncondensing) Operating:** - Minimum to be the higher of -12°C (10.4°F) dew point or 8% relative humidity. - Maximum to be 24°C (75.2°F) dew point or 90% relative humidity. Non-operating: 5% to 95% 38.7°C (101.7°F), maximum wet bulb temperature.
Power	**Power Supplies** Dual hot swappable AC or DC power supplies Each power supply 800W maximum **AC Power Option Input Voltage Range (V rms): 100 to 240 VAC** Frequency Range (Nominal) (Hz): 50 Hz to 60 Hz Nominal Input Current (A rms): 9.1 A at 100 VAC, 4.4 A at 200 VAC: 3.7A at 240 VDC **DC Power Option Input Voltage Range (VDC): -40 to -72** **Nominal Input Voltage (VDC): -40 VDC, -48 VDC, -72 VDC** **Nominal Input Current (A -DC): 22.0 at -40 VDC, 18.1 at -48 VDC, 11.9 at -72 VDC**

Table 2: Environment and Power Specifications

3.2 Platform Specifications

The BorderNet SBC COTS platform is based on the HP DL380 Gen10 platform. DL20 is for the BorderNet Edge SBC and comes preinstalled by Dialogic.

Specifications concerning COTS platform scale and performance are provided here:

Specifications	 HP DL20 Gen10 Server (Enterprise)	 HP DL380 Gen10 Server (High Scale)
Signaling and Media Interfaces	3 x 1 Gb (1 x Private, 2 x Public)	8 x 1 Gb or 4 x 10Gb
High Availability (HA) Interfaces	-	2 x 1 Gb
Management Interfaces	1 x 1 Gb (Management and HA)	2 x 1 Gb
Processor	Intel® Core™ i3-8300 (4 core, 3.7 GHz, 12MB, 62W)	Intel® Xeon® Silver 4114 Processor (10 core, 2.2 GHz, 85W)
Memory	8 GB	64 GB
Expansion Slots	-	6 PCIe slots (4 slots for transcoding cards)
Form Factor	1 Rack Unit (RU)	2 Rack Units (RU)
Dimensions without Bezel (H x W x D)	1.70 x 17.11 x 15.05 in 4.32 x 43.46 x 38.22 cm	17.54 x 28.75 x 3.44 in 44.55 x 73.02 x 8.73 cm
Weight	9.46 kg (20.86 lbs.)	12.25 kg (27 lbs.)

4. Panels and LEDs

4.1 Front Panel

4.1.1 Components

HP DL360 (1U)

The BorderNet SBC front panel houses 2 disk drives, 4 fans with bail handles and a status panel.

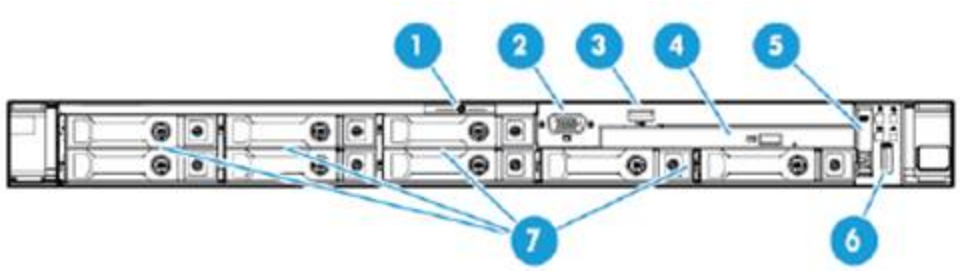


Figure 1: HP DL360 Front Panel (with Cover Removed)

No	Component
1	Serial label pull tab
2	Front video connector (optional)
3	USB 2.0 connector (optional)
4	Optical drive (optional)
5	System insight display (optional)
6	USB 3.0 connector
7	SAS/SATA/SSD drive bays

Table 3: HP DL360 Front Panel Description

HP DL380 (2U)

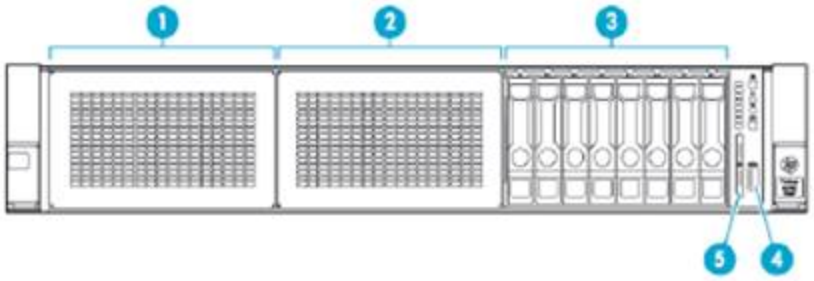


Figure 2: HP DL380 Front Panel (with Cover Removed)

No	Component
1	Bay 1 (optional drives or optical drive, video, USB)
2	Bay 2 (optional drives)
3	Fixed drive bays
4	Front USB 3.0 connector
5	Serial label pull tab

Table 4: HP DL380 Front Panel Description

4.1.2 LEDs and Buttons

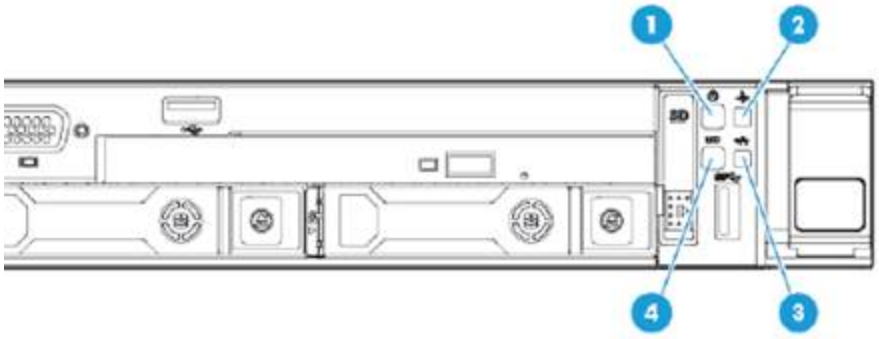


Figure 3: HP DL360 (1U) Front Panel LEDs and Buttons

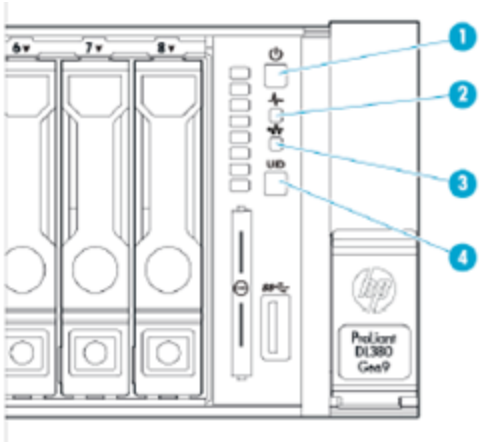


Figure 4: HP DL380 (2U) Front Panel LEDs and Buttons

Item	Description	Status
1	Power On/Standby button and system power LED*	· Solid **green** = System ON · Flashing **green** (1 Hz/cycle per sec) = Performing power on sequence · Solid **amber** = System in standby · Off = No power present**
2	Health LED*	· Solid **green** = Normal · Flashing **green** (1 Hz/cycle per sec) = iLO is rebooting · Flashing **amber** = System degraded · Flashing **red** (1 Hz/cycle per sec) = System critical†
3	NIC status LED*	· Solid **green** = Link to network · Flashing **green** (1 Hz/cycle per sec) = Network active · Off = No network activity
4	UID button/LED*	· Solid **blue** = Activated · Flashing **blue**: o 1 Hz/cycle per sec = Remote management or firmware upgrade in progress o 4 Hz/cycle per sec = iLO manual reboot sequence initiated o 8 Hz/cycle per sec = iLO manual reboot sequence in progress · Off = Deactivated

Table 5: Front Panel LEDs and Buttons

*When all four LEDs described in this table flash simultaneously, a power fault has occurred. For more information, see **Power fault LEDs**.

**Facility power is not present, power cord is not attached, no power supplies are installed, power supply failure has occurred or the power button cable is disconnected.

†If the health LED indicates a degraded or critical state, review the system IML or use iLO to review the system health status.

4.1.3 Power Fault LEDs

The following table provides a list of power fault LEDs, and the subsystems that are affected. Not all power faults are used by all servers.

Subsystem	LED Behavior
System board	1 flash

Subsystem	LED Behavior
Processor	2 flashes
Memory	3 flashes
Riser board PCIe slots	4 flashes
Flexible LOM	5 flashes
Removable HP Flexible Smart Array controller/Smart SAS HBA controller	6 flashes
System board PCIe slots	7 flashes
Power backplane or storage backplane	8 flashes
Power supply	9 flashes

Table 6: Power Fault LEDs

4.2 Systems Insight Display

4.2.1 LEDs

The **Systems Insight Display** LEDs represent the system board layout. The display provides the status of all internal LEDs and enables diagnosis with the access panel installed.

To view the LEDs, access the **Systems Insight Display**.

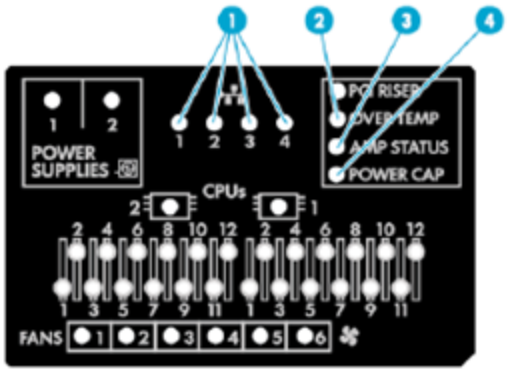


Figure 5: System Insight Display LEDs

Item	Description	Status
1	NIC link/activity	· Off = No link to network. If the power is off, view the rear panel RJ-45 LEDs for status (see Rear panel **LEDS and buttons**). · Solid **green** = Network link · Flashing **green** = Network link with activity
2	Over temp	· Off = Normal · Solid **amber** = High system temperature detected

Item	Description	Status
3	Amp status	· Off = AMP modes disabled · Solid **green** = AMP mode enabled · Solid **amber** = Failover · Flashing **amber** = Invalid configuration
4	Power cap	· Off = System is in standby or no cap is set. · Solid **green** = Power cap applied
5	All other LEDs	· Off = Normal · **Amber** = Failure · For more information on activation of these LEDs, see **LED combinations**.

Table 7: System Insight Display LEDs

4.2.2 LED Combinations

When the health LED on the front panel illuminates either **amber** or **red**, the server is experiencing a health event. Combinations of illuminated Systems Insight Display LEDs, the system power LED and the health LED indicate system status.

System Insight Display LED and Color	Health LED	System Power LED	Status
Processor (**amber**)	**Red**	**Amber**	One or more of the following conditions may exist: · Processor in socket *X* has failed. · Processor *X* is not installed in the socket. · Processor *X* is unsupported. · ROM detects a failed processor during POST.
Processor (**amber**)	**Amber**	**Green**	Processor in socket X is in a pre-failure condition.
DIMM (**amber**)	**Red**	**Green**	One or more DIMMs have failed.
DIMM (**amber**)	**Amber**	**Green**	DIMM in slot X is in a pre-failure condition.
Over temp (**amber**)	**Amber**	**Green**	The Health Driver has detected a cautionary temperature level.
Over temp (**amber**)	**Red**	**Amber**	The server has detected a hardware critical temperature level.
PCI riser (**amber**)	**Red**	**Green**	The PCI riser cage is not seated properly.
Fan (**amber**)	**Amber**	**Green**	One fan has failed or has been removed.
Fan (**amber**)	**Red**	**Green**	Two or more fans have failed/been removed.
Power supply (**amber**)	**Red**	**Amber**	One or more of the following conditions may exist: · Only one power supply is installed and that power supply is in standby · Power supply fault · System board fault

System Insight Display LED and Color	Health LED	System Power LED	Status
Power supply (**amber**)	**Amber**	**Green**	One or more of the following conditions may exist: · Redundant power supply is installed and only one power supply is functional · AC power cord is not plugged into redundant power supply · Redundant power supply fault · Power supply mismatch at POST or power supply mismatch through hot-plug addition
Power cap (off)	-	**Amber**	Standby
Power cap (**green**)	-	Flashing **Green**	Waiting for power
Power cap (**green**)	-	**Green**	Power available
Power cap (flashing **amber**)	-	**Amber**	Power not available

Table 8: LED Combinations

Important:

If more than one DIMM slot LED is illuminated, further troubleshooting is required. Test each bank of DIMMs by removing all other DIMMs. Isolate the failed DIMM by replacing each DIMM in a bank with a known working DIMM.

4.3 Rear Panel

4.3.1 Components

HP DL360 (1U)

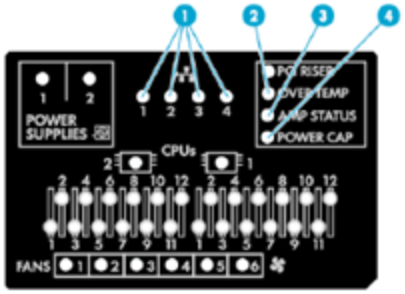


Figure 6: HP DL360 (1U) Rear Panel

No	Component
1	Slot 1 PCIe3 x16 (16, 8, 4, 1)
2	Slot 2 PCIe 3 x8 (8, 4, 1)
3	Slot 3 PCIe 3 x16 (16, 8, 4, 1)*
4	Power supply 2
5	Power supply 1
6	Video connector
7	NIC connector 4
8	NIC connector 3
9	NIC connector 2
10	NIC connector 1
11	iLO 4 connector
12	Serial connector (optional)
13	USB 3.0 connectors
14	FlexibleLOM bay

Table 9: HP DL360 (1U) Rear Panel Description

*The slot 3 PCIe 3 riser is optional and requires a second processor before installation.

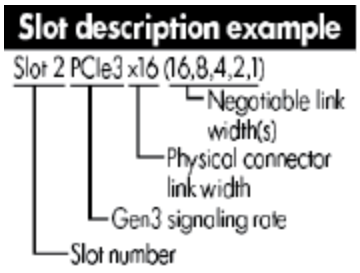


Figure 7: HP DL360 (1U) Slot Description Example

HP DL380 (2U)

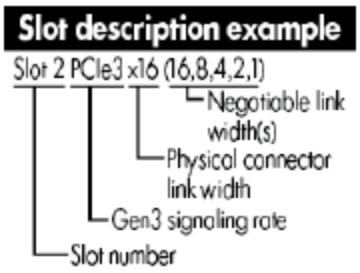


Figure 8: HP DL380 (2U) Rear Panel

No	Component
1	PCIe slots 1-3 (top to bottom)
2	Optional PCIe slots 4-6 (top to button) - requires second processor
3	Optional serial port
4	Power supply 1 (PS1)
5	Power supply 2 (PS2)
6	Video connector
7	1Gb RJ-45 port 4
8	1Gb RJ-45 port 3
9	1Gb RJ-45 port 2
10	1Gb RJ-45 port 1
11	iLO connector
12	USB 3.0 connectors
13	FlexibleLOM bay

Table 10: HP DL380 (2U) Rear Panel Description

4.3.2 LEDs and Buttons

HP DL360 (1U)

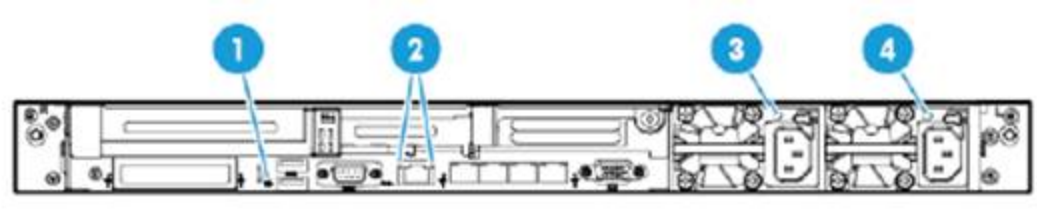


Figure 9: HP DL360 (1U) Rear Panel LEDs and Buttons

Item	Description	Status
1	UID LED	· Solid **blue** = Identification is activated · Flashing **blue** = System being managed remotely · Off = Identification deactivated
2L	HP iLO/standard NIC activity LED	· Solid **green** = Activity exists · Flashing **green** = Activity exists · Off = No activity exists
2R	HP iLO/standard NIC link LED	· Solid **green** = Link exists · Off = No link exists

Item	Description	Status
3	Power supply 2 LED	· Solid **green** = Normal · Off = One or more of the following conditions exists: • o AC power unavailable • o Power supply failed • o Power supply in standby mode • o Power supply exceeded current limit
4	Power supply 1 LED	· Solid **green** = Normal · Off = One or more of the following conditions exists: • o AC power unavailable • o Power supply failed • o Power supply in standby mode • o Power supply exceeded current limit

Table 11: HP DL360 (1U) Rear Panel LEDs and Buttons

HP DL380 (2U)

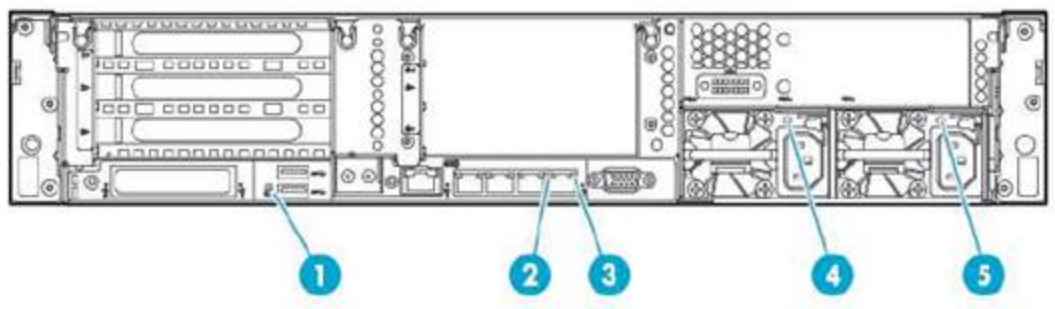


Figure 10: HP DL380 (1U) Rear Panel LEDs and Buttons

Item	Description	Status
1	UID LED	· Off = Deactivated · Solid **blue** = Activated · Flashing **blue** = System is being managed remotely
2	NIC link LED	· Off = No network link · **Green** = Network link
3	NIC activity LED	· Off = No network activity · Solid **green** = Link to network · Flashing **green** = Network activity
4	Power supply 2 LED	· Off = System is off or power supply has failed · Solid **green** = Normal
5	Power supply 1 LED	· Off = System is off or power supply has failed · Solid **green** = Normal

Table 12: HP DL380 (2U) Rear Panel LEDs and Buttons

4.4 Device Numbers

Figure 11: HP DL360 (1U) Device Numbers

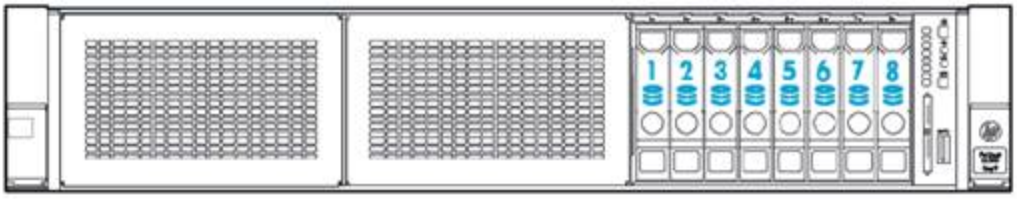


Figure 12: HP DL380 (2U) Device Numbers

4.5 Hot-Plug Drive LED Definitions

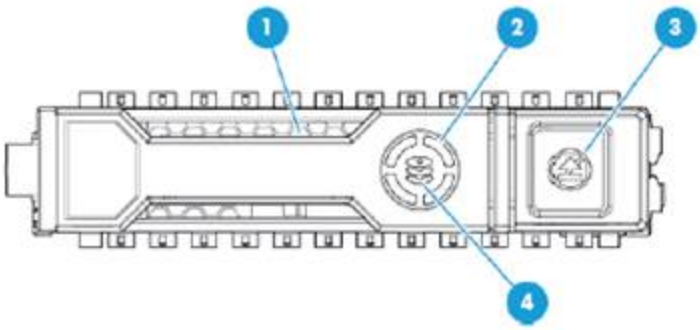


Figure 13: LED Definitions

Item	LED	Status	Description
1	Locate	Solid **blue**	Drive is being identified by a host application.
		Flashing **blue**	Drive carrier firmware is being updated or requires an update.
2	Activity ring	Rotating **green**	Drive activity
		Off	No drive activity
3	Do not remove	Solid **white**	Do not remove the drive. Removing the drive causes one or more of the logical drives to fail.
		Off	Removing the drive does not cause a logical drive to fail.
4	Drive status	Solid **green**	Drive is a member of one or more logical drives.
		Flashing **green**	Drive is rebuilding or performing a RAID migration, strip size.
		Flashing **amber/green**	Drive is a member of one or more logical drives and predicts the drive will fail.

Item	LED	Status	Description
		Flashing **amber**	Drive is not configured and predicts the drive will fail.
		Solid **amber**	Drive has failed.
		Off	Drive is not configured by a RAID controller.

Table 13: LED Definitions

5. Safety Considerations

Before performing service procedures, review all the safety information.

5.1 Preventing Electrostatic Discharge

To prevent damaging the system, be aware of the precautions you need to follow when setting up the system or handling parts. A discharge of static electricity from a finger or other conductor may damage system boards or other static-sensitive devices. This type of damage may reduce the life expectancy of the device.

To prevent electrostatic damage:

- Avoid hand contact by transporting and storing products in static-safe containers.
- Keep electrostatic-sensitive parts in their containers until they arrive at static-free workstations.
- Place parts on a grounded (earthed) surface before removing them from their containers.
- Avoid touching pins, leads or circuitry.
- Always be properly grounded (earthed) when touching a static-sensitive component or assembly.

5.2 Symbols on Equipment

The following symbols on the equipment indicate the presence of potentially hazardous conditions.

Symbol	Description
.	Indicates the presence of hazardous energy circuits or electric shock hazards. Refer all servicing to qualified personnel. Warning: To reduce the risk of injury from electric shock hazards, do not open this enclosure. Refer all maintenance, upgrades and servicing to qualified personnel.
.	Indicates the presence of electric shock hazards. The area contains no user or field serviceable parts. Do not open for any reason. Warning: To reduce the risk of injury from electric shock hazards, do not open this enclosure.
.	When on an RJ-45 receptacle, indicates a network interface connection. Warning: To reduce the risk of electric shock, fire or damage to the equipment, do not plug telephone or telecommunications connectors into this receptacle.
.	Indicates the presence of a hot surface or hot component. If contact is made with this surface, the potential for injury exists. Warning: To reduce the risk of injury from a hot component, allow the surface to cool before touching.
.or .	Indicates that the component exceeds the recommended weight for one individual to handle safely. Warning: To reduce the risk of personal injury or damage to the equipment, observe local occupational health and safety requirements and guidelines for manual material handling.

Symbol	Description
.	When on power supplies or systems, indicates that the equipment is supplied by multiple sources of power. Warning: To reduce the risk of injury from electric shock, remove all power cords to completely disconnect power from the system.

Table 14: Symbols on Equipment

5.3 Server Warnings and Cautions

Before installing a server, be sure that you understand the following warnings and cautions.

WARNING:

To reduce the risk of electric shock or damage to the equipment:

• Do not disable the power cord grounding (earth) plug. The grounding plug is an important safety feature.

• Plug the power cord into a grounded (earthed) electrical outlet that is easily accessible at all times.

• Unplug the power cord from the power supply to disconnect power to the equipment.

• Do not route the power cord where it can be walked on or pinched by items placed against it. Pay particular attention to the plug, electrical outlet and the point where the cord extends from the server.

WARNING:

To reduce the risk of personal injury from hot surfaces, allow the drives and the internal system components to cool before touching them.

CAUTION:

Do not operate the server for long periods with the access panel open or removed. Operating the server in this manner results in improper airflow and improper cooling that can lead to thermal damage.

6. Installation

To install the BorderNet SBC follow the below steps:

1. **Install the rail kit into a rack**.
2. **Connect the power cords**.
3. Connect Ethernet cables (see **Internet Connectivity**).
4. Provision the system using the management system (see **Deployment**).

Ethernet configurations including the number of connections and IP addresses are deployment specific. Please refer to the *BorderNet SBC Provisioning Guide*.

6.1 Hardware Kit Contents

WARNING:

To reduce the risk of personal injury or damage to the equipment, at least two people are required to lift the server during installation or removal.

IMPORTANT:

When installing the rack rails, be sure they are oriented Front Left and Front Right, as indicated on the rails.

Figure 14: Hardware Kit Contents

Item	Hardware (Scale: 1:1)	Quantity/Tool
A	.	4/ Slotted T-25
B	.	4

Item	Hardware (Scale: 1:1)	Quantity/Tool
Y (not shown)	User provided	You must provide the following: • Screws to secure the slide mounting bracket assemblies in a threaded-hole rack • Cage nuts for a round-hole rack

Table 15: Hardware Kit Contents

In addition to the supplied items, you may require the following:

- Screws that fit a threaded-hole rack.
- An appropriate screwdriver.
- Kit 371482-B21 for integrated shipping in a round-hole rack.
- An optional installation tool (695539-001). This tool is available for assistance in installing the server into the rack. Refer to the tool part number when contacting your local service representative.

6.2 Rack Warnings

WARNING:

To reduce the risk of personal injury or damage to the equipment, be sure that:
• The leveling jacks are extended to the floor.
• The full weight of the rack rests on the leveling jacks.
• The stabilizing feet are attached to the rack if it is a single-rack installation.
• The racks are coupled together in multiple-rack installations.
• Only one component is extended at a time. A rack may become unstable if more than one component is extended for any reason.

WARNING:

If you are going to use a lift, be sure to use a lift that can handle the load of the component.

6.3 Anti-Tip Stabilizer

The anti-tip stabilizers provide stability and support when equipment is installed, removed or accessed within the rack. Stabilizer kits are available in both 600-mm and 800-mm versions.

It is recommended to use the side feet, provided with these kits, to stabilize stand-alone racks from the other side. If you are stabilizing racks that are secured together with baying kits, the side feet are optional on either end of the row.

It is recommended that stabilizer option kits be used when one or more of the following situations occur:

- The standard 600-mm (23.62-in) or 800-mm (31.50-in) front foot is required with deployments of stand-alone racks.

- Side feet, which are included in the stabilizer kits, are recommended to be installed as well.

Rack rows with four or more bayed racks, without a single rack-mountable component exceeding 99.79 kg (220 lb), do not need a stabilizer kit installed.

6.4 Overview

This rack hardware kit supports a variety of products in round-hole, square-hole or threaded-hole racks. Use the legend to identify installation steps appropriate to the type of rack.

Rack Identification Legend

.	.	.
Round-hole racks	Square-hole racks	Threaded-hole racks
No tools required	No tools required	-

Table 16: Rack Identification Legend

6.5 Install the Rail Kit into a Rack

WARNING:

To avoid risk of personal injury or damage to the equipment, do not stack anything on top of rail-mounted equipment or use it as a work surface when extended from the rack.

CAUTION:

Always plan the rack installation so that the heaviest item is on the bottom of the rack. Install the heaviest item first, and continue to populate the rack from the bottom to the top.

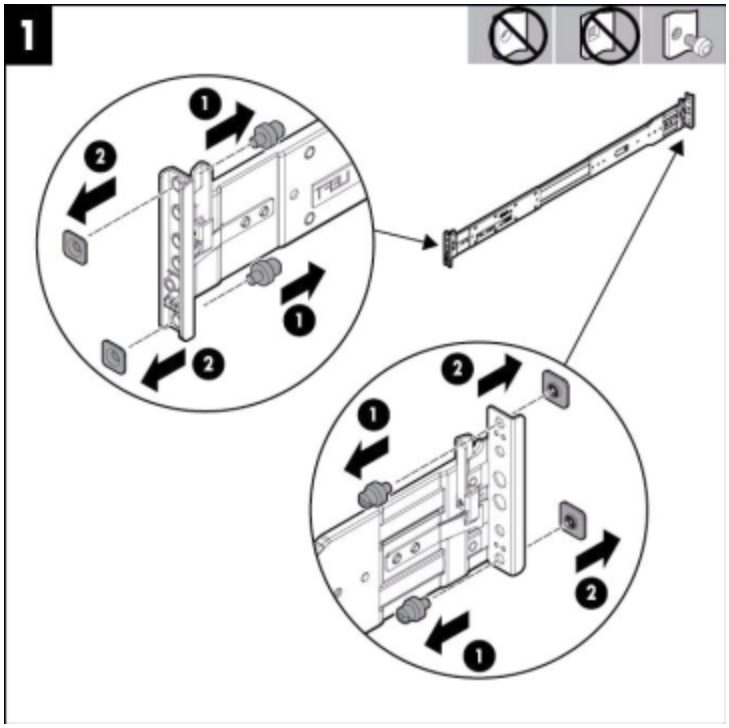


Figure 15: Install the Rail Kit into a Rack - Step 1

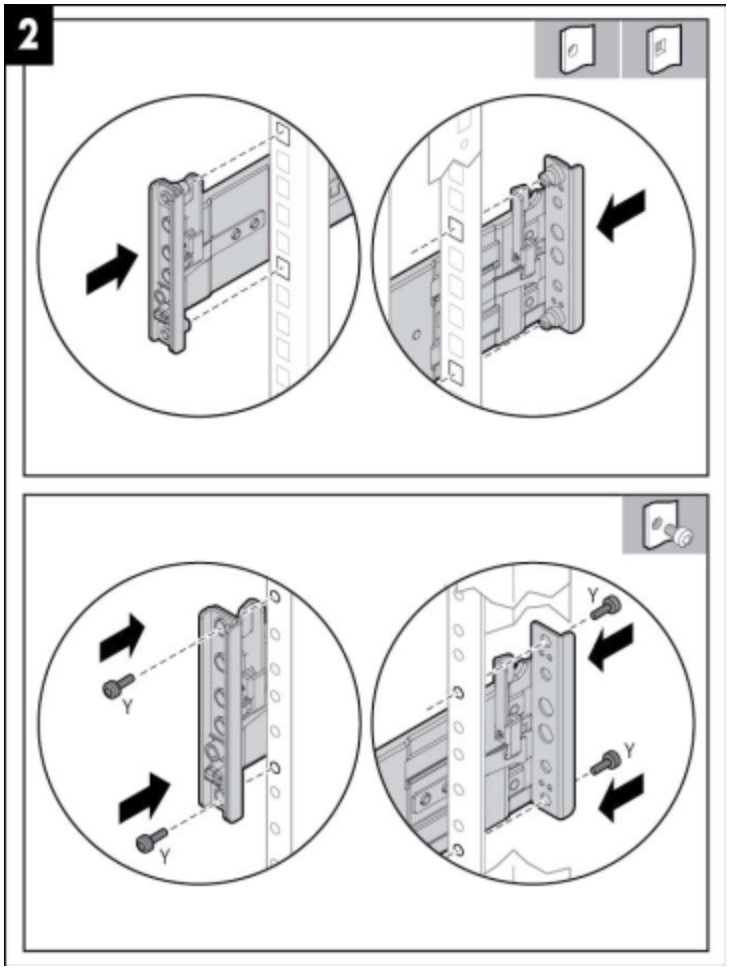


Figure 16: Install the Rail Kit into a Rack - Step 2

WARNING:

To reduce the risk of personal injury or damage to the equipment:

- Be sure that the rack is adequately stabilized before installing the server.
- At least two people are required to lift the server during installation or removal.

IMPORTANT:

To ensure proper installation, install the server into rack rail slots 1 first.

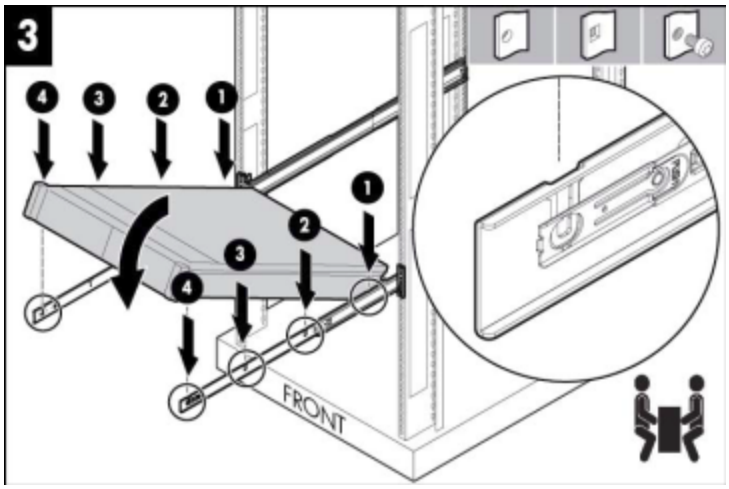


Figure 17: Install the Rail Kit into a Rack - Step 3

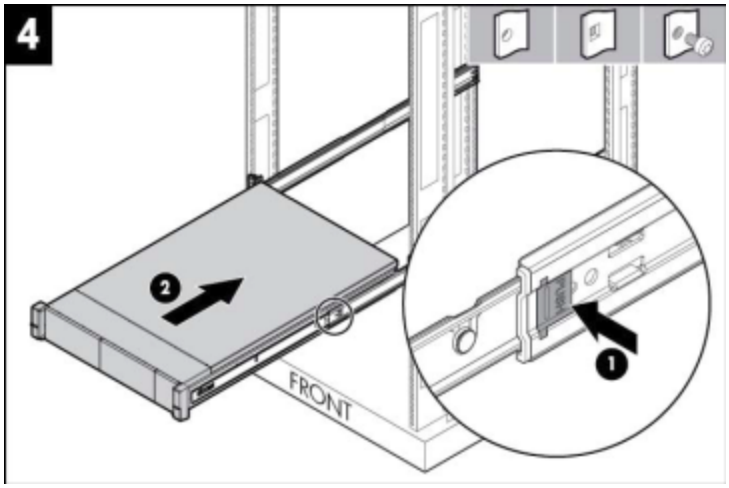


Figure 18: Install the Rail Kit into a Rack - Step 4

6.6 Remove the Rail (Optional)

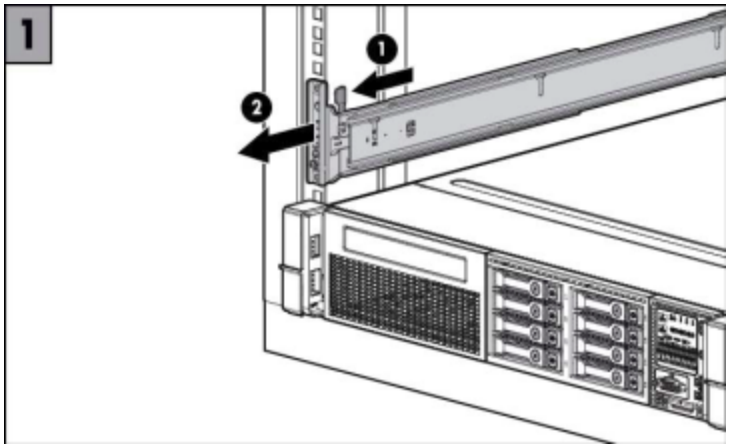


Figure 19: Remove the Rail - Step 1

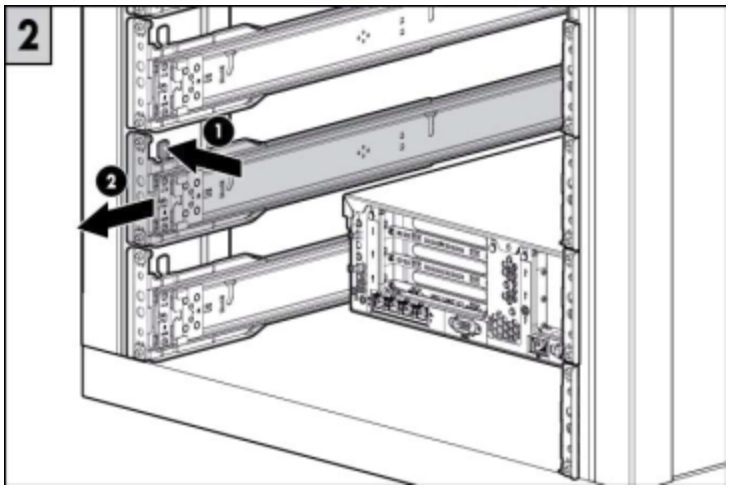


Figure 20: Remove the Rail - Step 2

6.7 Connect the Power Cords

After completing all installation and cable management procedures, you can connect the power cords to the facility power source.

WARNING:

To reduce the risk of electric shock or damage to the equipment:

- Do not disable the power cord grounding (earth) plug. The grounding (earth) plug is an important safety feature.
- Plug the power cord into a grounded (earthed) electrical outlet that is easily accessible at all times.
- Unplug the power cord from the power supply to disconnect power to the equipment.
- Do not route the power cord where it can be walked on or pinched by items placed against it. Pay particular attention to the plug, electrical outlet and the point where the cord extends from the server.

The following items are used as the power cable kit and power cord:

#	P/N	Description	Price (USD)

#	P/N	Description	Price (USD)
1	DLS-DCC-HP	HP 2.5M 48V DC Power Cable Kit	$45
2	DLS-ACC-HP	Naked power cord 3M black	$15

Table 17: BorderNet SBC Power Cables

The AC, and DC power supplies and cords are provided as a part of the basic equipment. An AC power connector is provided, which allows you to connect your country specific cable.

6.8 Loosen the Shipping Screws

To slide the server out of the rack, open the latches and loosen the shipping screws.

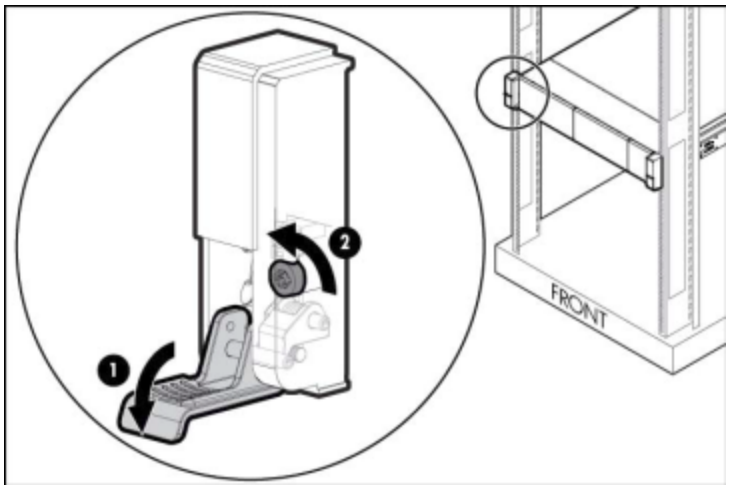


Figure 21: Loosen the Shipping Screws

6.9 MAC Address Mapping

The MAC addresses listed on the compliance label correspond to the Ethernet interfaces.

Use this table to determine the MAC address for a particular Ethernet interface.

MAC Address with Offset	Ethernet Interface

MAC Address with Offset	Ethernet Interface
XX-XX-XX-XX-XX-XX XX-XX-XX-XX-XX-XX + 1 XX-XX-XX-XX-XX-XX + 2 XX-XX-XX-XX-XX-XX + 3 XX-XX-XX-XX-XX-XX + 4 XX-XX-XX-XX-XX-XX + 5 XX-XX-XX-XX-XX-XX + 6 XX-XX-XX-XX-XX-XX + 7 XX-XX-XX-XX-XX-XX + 8 XX-XX-XX-XX-XX-XX + 9 XX-XX-XX-XX-XX-XX + 10 XX-XX-XX-XX-XX-XX + 11	ETH0 motherboard interface ETH1 motherboard interface ETH2 motherboard interface ETH3 motherboard interface ETH4 interface ETH5 interface ETH6 interface ETH7 interface ETH8 interface ETH9 interface ETH10 interface ETH11 interface

Table 18: MAC Addresses and Ethernet Interfaces

6.10 Field Replaceable Units

If a component on the BorderNet SBC fails, field replaceable components are available on order.

Spare parts include all field replaceable units - power supplies, hard drives, fans and pluggable fiber NIC card optical modules. The pluggable fiber NIC card optical modules reside on the Optical NIC PCI card.

The Optical NIC PCI card is not a field replaceable unit. Spare parts modules do not require an additional license.

The following table lists the field replaceable units (FRUs) and accessories:

#	Part Number	Description
1	DLS-PWD-HP	HP 800W FS -48VDC Ht Plug Power Supply Kit
2	DLS-PWA-HP	HP 800W FS Plat Ht Plug AC Power Supply Kit
3	DLS-H300-HP	HP 300GB 6G SAS 10K 2.5in SC ENT HDD
4	DLS-H300-HP	HP DL360 Gen9 High Performance Fan Kit
5	DLS-N1G-HP	HP Ethernet 1Gb 4-port 366T Adapter
6	DLS-R16-HP	HP 16GB 2Rx4 PC4-2133P-R Kit
7	DLS-SF10-HP	HP BLc 10G SFP+ SR Transceiver
9	DLS-ET10-HP	HP Ethernet 10Gb 2P 560SFP+ Adapter

Table 19: Field Replaceable Units

7. Internet Connectivity

This section shows how to connect the BorderNet SBC in the standalone and HA modes to the network, and to each other in the HA mode.

The following cables can be used:

- RJ-45 Ethernet cable - category 6a (CAT 6a) or higher
- LC-OLC-DPLX (optical) - multi-mode fiber LC duplex connector style

Note:

The BorderNet SBC configuration may vary. Your particular model may not include the listed interfaces here.

RJ-45 Ethernet interfaces use the following pin assignments.

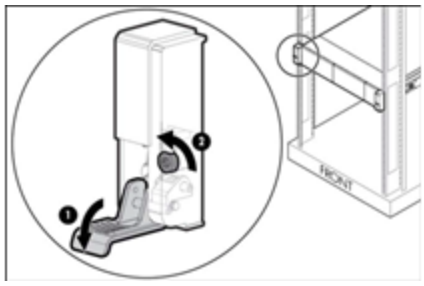


Figure 22: RJ-45 Pin Assignments

- **MDI** = Media Dependent Interface
- **M** = Minus
- **P** = Plus

The optical transceivers are included in the chassis. Insert multi-mode fiber LC duplex connector style cables into the optical transceivers.

The LC-OLC-DPLX optical interface appears as follows:

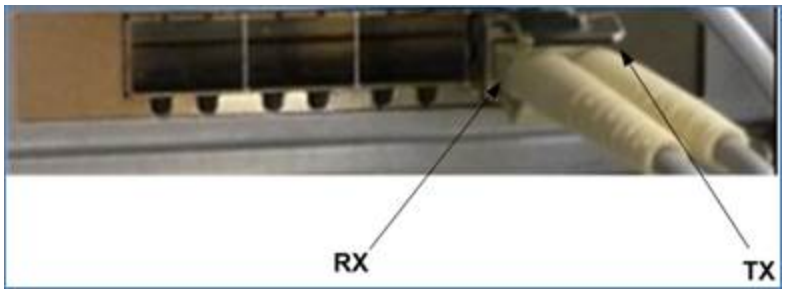


Figure 23: LC-OLC-DPLX (optical)

7.1 Standalone Configuration

The following diagram shows a standalone connectivity example of a basic configuration with 1GB Ethernet.

- **Management**: **Eth0** is the primary management interface, connected to a primary switch. **Eth3** is the secondary management interface, which takes over in case the primary management interface fails.
- **Traffic**: **Eth4** to **Eth7** are the primary traffic interfaces, which are protected by the **Eth8** to **Eth11** secondary interfaces, relatively as shown in the diagram below (Eth8 protects the Eth4 interface and so on).

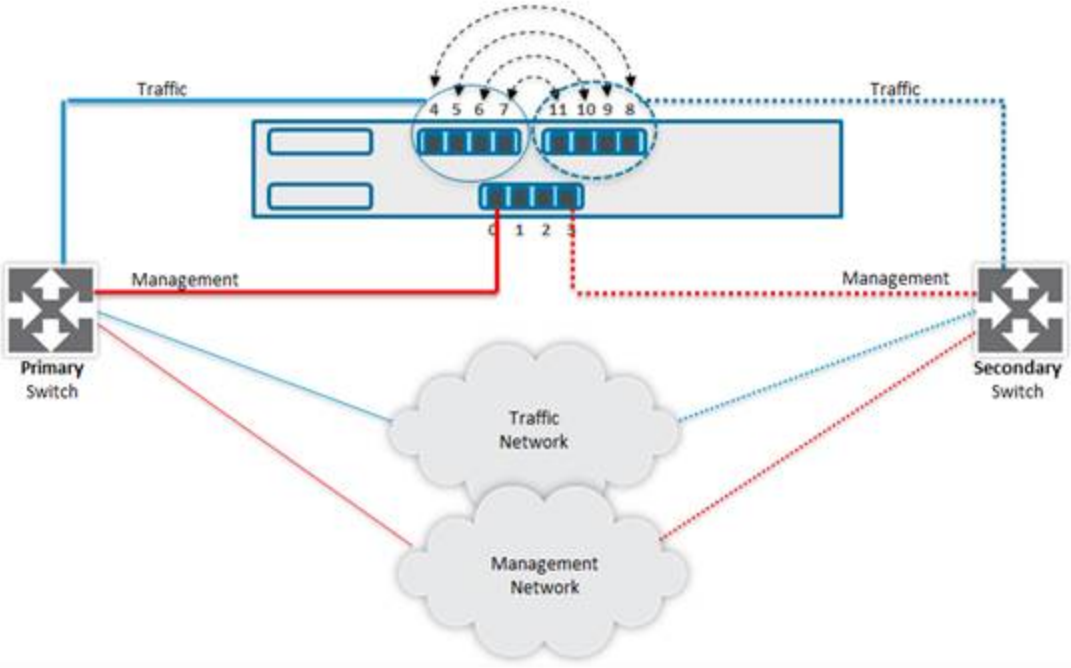


Figure 24: Standalone Configuration (1 GB Interface)

The following diagram shows a standalone connectivity example of a basic configuration with 10 GB Ethernet:

- **Management**: Remains as above through 1 GB interfaces and the same ports.
- **Traffic**: **Eth4** and **Eth5** are the primary traffic interfaces, which are protected by the **Eth8** and **Eth9** secondary interfaces, relatively (10 GB) as shown in the diagram below.

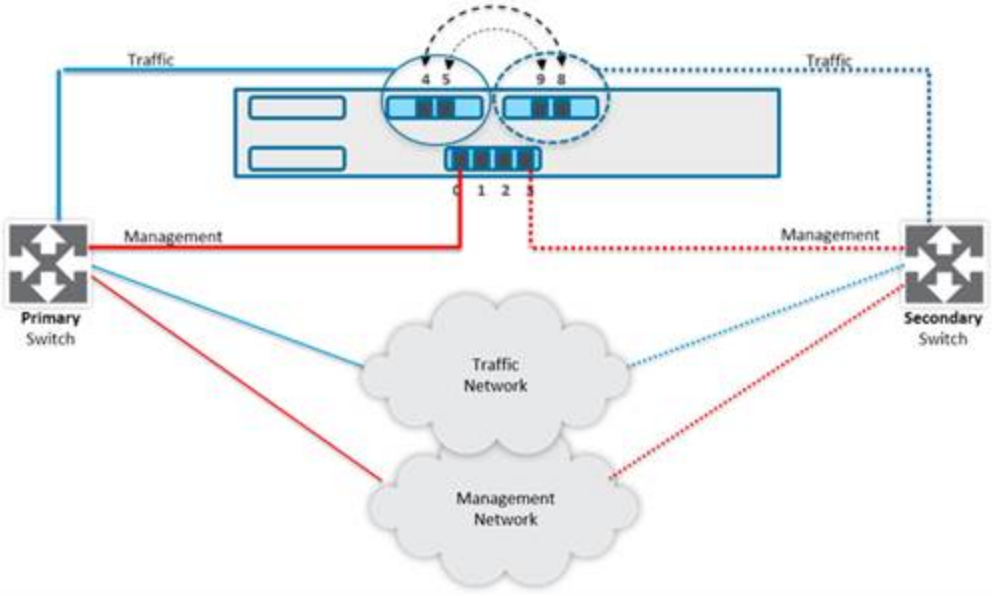


Figure 25: Standalone Configuration (10 GB Interface)

7.2 High Availability (HA) Configuration

In the High Availability (HA) configuration, the two SBC platforms are connected, using **Eth1** (primary), and **Eth2** (secondary) interfaces, as depicted in the diagram below:

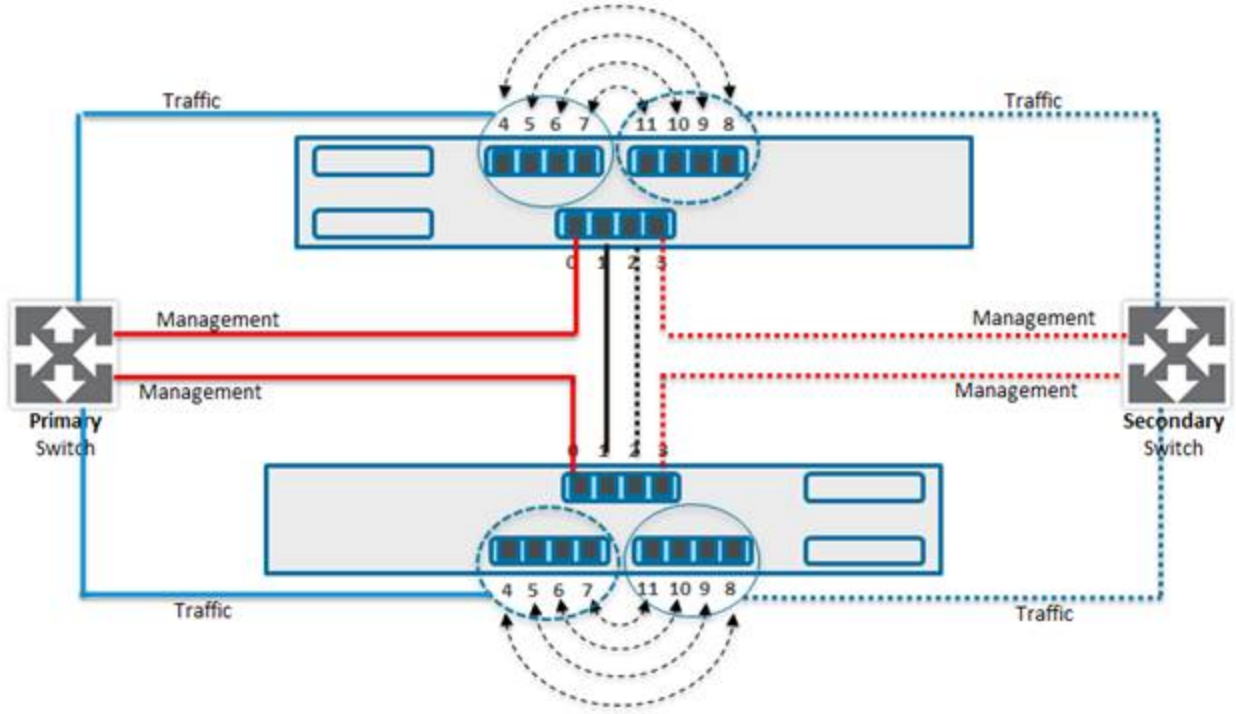


Figure 26: High Availability Configuration (1 GB Interface)

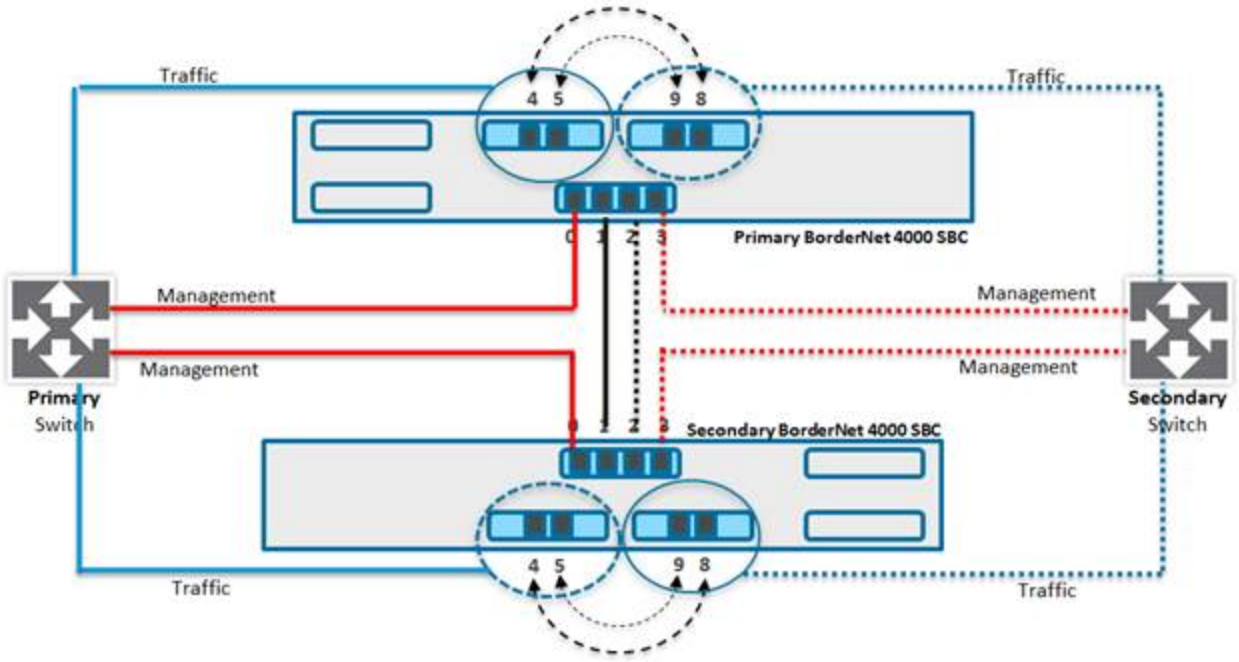


Figure 27: High Availability Configuration (10 GB Interface)

8. Deployment

8.1 Overview

The BorderNet SBC deployment refers to the initial setup of the system in a customer network. It can be performed at the customer site or directly at Dialogic.

Deployment includes the following steps:

- Installing the license. Licenses are tied to BorderNet SBC platforms. You cannot use one license on a different system.
- Pairing the two platforms as one system.
- Completing the initial basic configuration according to the customer network topology.

Note:

The license file can be shipped or emailed separately from the BorderNet SBC.

8.2 Terminology

The following terminology is used to describe the deployment process.

- **Designated Role.** There are two types of deployments, Standalone and High Availability (HA).
- In a Standalone deployment the physical platform has only a primary role.
- In HA deployments, each physical platform can have a designated role as "primary" or "secondary." Once you assign the role, it cannot be changed unless the system is redeployed.
- **Factory Default IP Address.** Each BorderNet SBC is manufactured with a pre-configured factory default IP address (192.168.0.10). This IP address is used only for the initial access of the platform over the network. It is removed from the platform after the deployment is completed.
- **System Management IP Address.** This IP Address is used for the management access of the BorderNet SBC including GUI access via the web. In the case of an HA configuration this IP Address is shared (floating) between the platforms.
- **Utility IP Address.** Each platform is assigned its own Utility IP Address which can be used for specific platform access (for example, FTP, Telnet to specific platform). This IP address is fixed to the platform. It is not shared. The utility IP address may be used to access the management GUI.
- **License File.** The license file is tied to the system and defines the licensed features (for example, HA and H.323.)
- **Virtual MAC.** In an HA configuration, when Virtual MAC is disabled, the new Active platform takes over the ownership of Virtual IP addresses configured on the system. The system sends gratuitous ARPs to update the L2 switch ARP cache, informing the L2 switch to send future traffic for Virtual IP addresses to the MAC addresses of the new Active 0 platform.

In an HA configuration, when the Virtual MAC is enabled, it enables the MAC address to share between the two platforms of the HA system. The Virtual MAC addresses, in addition to the Virtual IP addresses are shared between two BorderNet SBC platforms of an HA system.

In case of a failover, the new Active platform takes over the ownership of the Virtual MAC addresses and all of the Virtual IP addresses configured on the system. The system sends gratuitous ARPs to update L2 Switch MAC to port tables, establishing the

Virtual MAC addresses on the ports connected to the new Active BorderNet SBC platform.

8.3 Procedure

Deploy the system using a web-based interface.

Setup the BorderNet SBC, selecting one of the following system setup types:

- **Standalone**
- **High Availability**
- Geo-Redundancy

For HA deployments, the primary platform must be deployed first.

- Before starting the secondary platform deployment, the secondary platform must be connected to the primary on the HA link.
- The primary platform must be up and running while you deploy the secondary.

The procedure below includes deployment for a standalone system and an HA system. The first three steps are the same for either deployment.

→ To deploy the system:

1. Power on the BorderNet SBC, ready to deploy from the following URL:
   http://192.168.0.10/192.168.0.10 - the factory default IP address, configured on management ports **eth0** and **eth3**.
2. If a message appears in your browser regarding the certificate, select **Continue**.
3. Connect the platform **eth0** port on a network which can reach the **192.168.0** subnet.
4. Use a PC or laptop with a web browser that can reach the **192.168.0.10** IP address to start the deployment process.

Note:

In case of an HA system deployment, connect one BN4K SBC to the 192.168.0 subnet at a time.

Both platforms have the same factory default IP address.

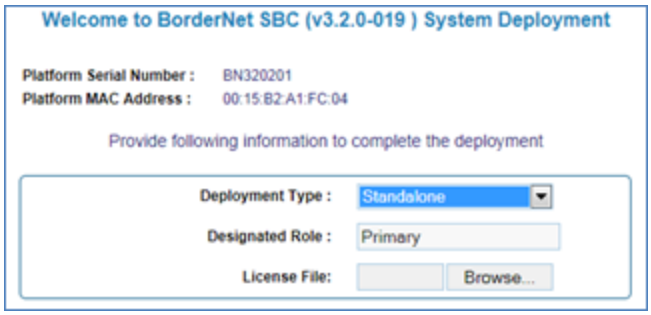
Deploy each BorderNet SBC before it can start SBC functionality.

8.3.1 Standalone

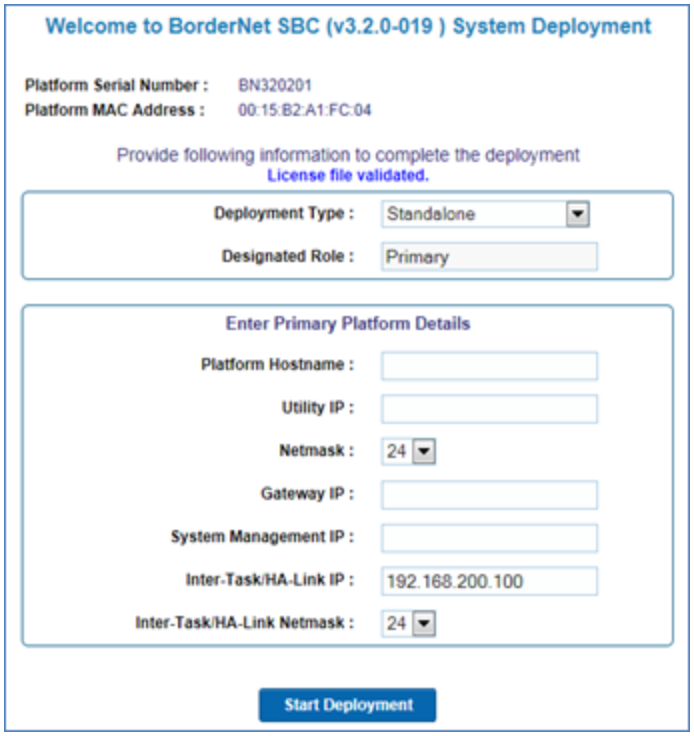
→ To deploy the Standalone system:

1. In the **Deployment Type** field, select **Standalone**.

1. Browse to the **License File** and select it.



2. Complete the remaining fields below.



3. Click **Start Deployment**.
4. Once the deployment is complete, the following screen appears.

5. 
6. After the deployment is complete, access the BorderNet SBC Web UI using the system management IP address entered in the deployment process.

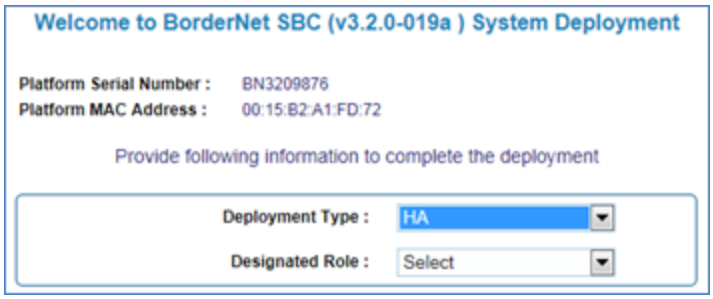
Refer to the *BorderNet SBC Quick Start Guide* for first-time access instructions.

8.3.2 HA System

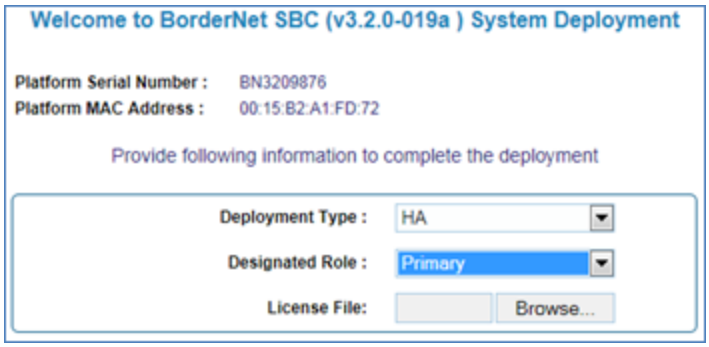
→ To deploy the HA system:

1. In the **Deployment Type** field, select **HA**.

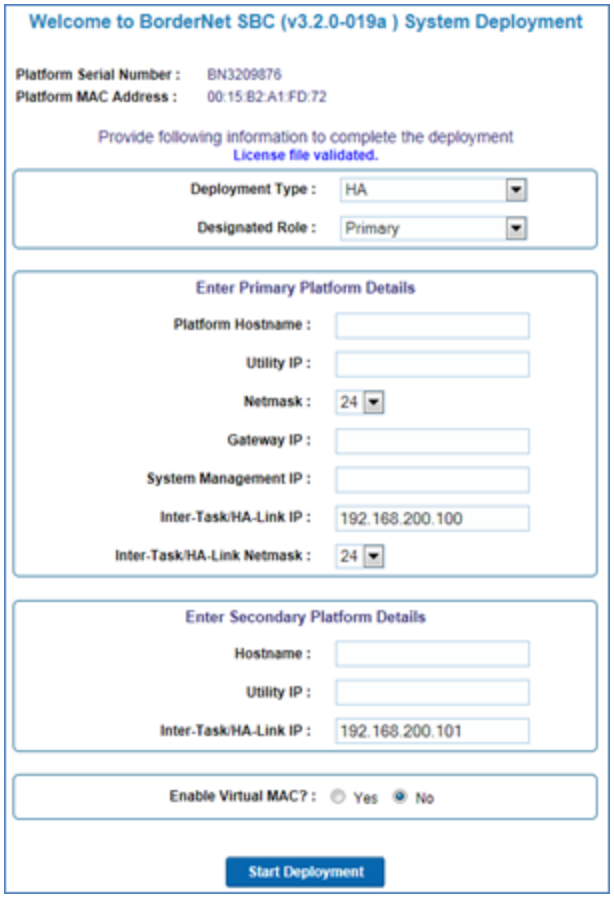
2. In the **Designated Role** field, select **HA**.



3. Browse to the **License File** and select it.



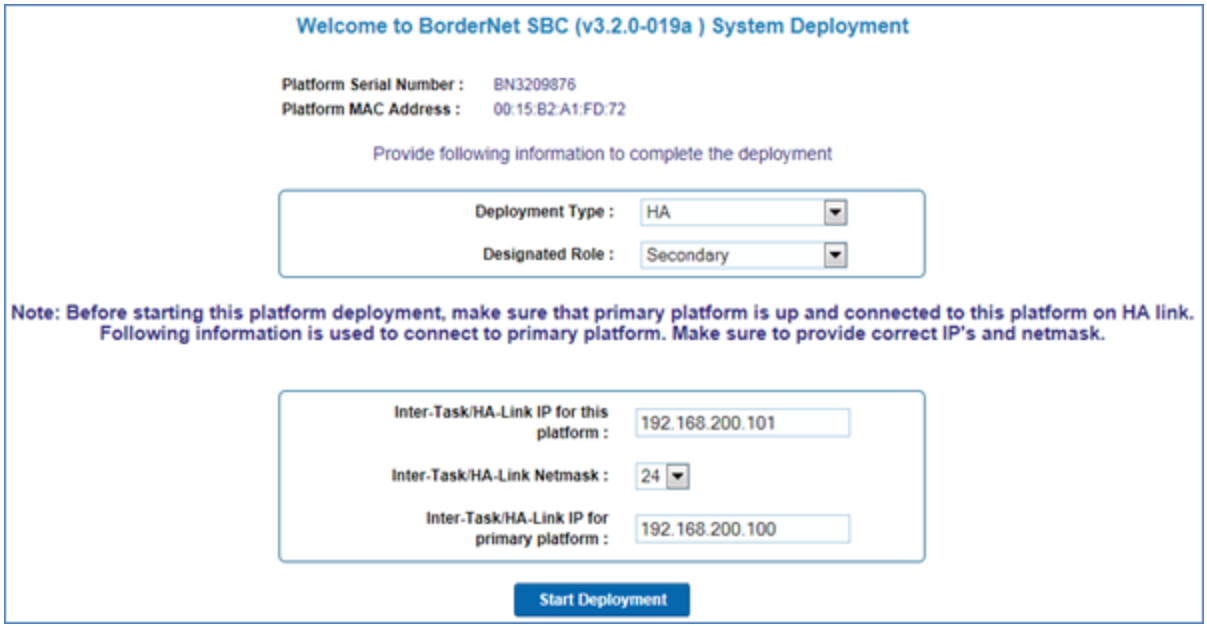
1. Complete the remaining fields below.



2. Click **Start Deployment.**
3. Once the deployment is complete, the following screen appears.

4. Connect the secondary BorderNet SBC to the **192.168.0** subnet.

1. Complete each field below for the secondary platform.

2. 

3. Click **Start Deployment**.
4. Once the deployment is complete, the following screen appears.
5. 
6. After the deployment is complete, access the BorderNet SBC Web UI using the system management IP address entered in the deployment process.

Refer to the *BorderNet SBC Quick Start Guide* for first-time access instructions.

Note:

To allow remote access, after the installation, the incoming management packets are not blocked. It is recommended to prepare the access list and block the relevant ports.

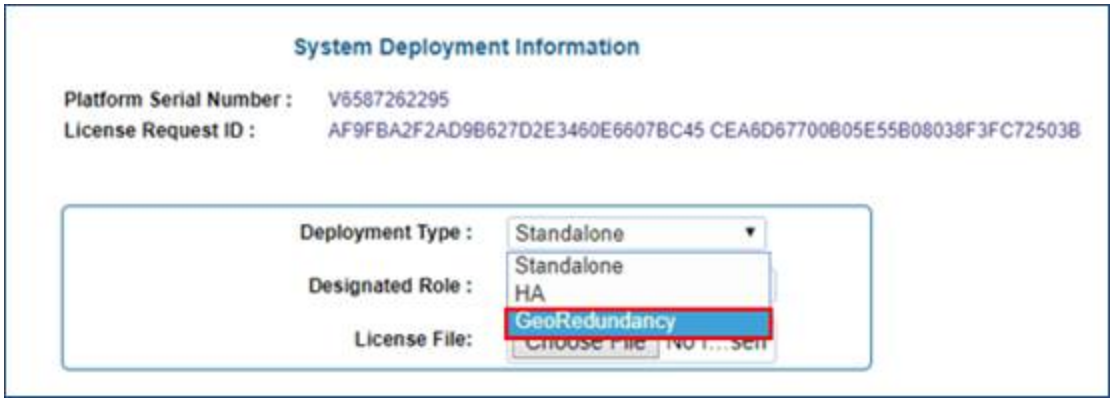
8.3.3 Geo-Redundancy

Geo-Redundancy enables the deployment of the BorderNet SBC in High Availability mode where each platform/instance (primary and secondary) is located on two different networks or sites.

There is no restriction with regards to the locations of the BorderNet SBCs. This enables more complex deployments where each BorderNet entity has its own set of IP addresses that can be on a totally different network. Therefore Geo-Redundancy allows each BorderNet SBC on a High Availability deployment to be located in cities or countries thousands of miles apart from each other.

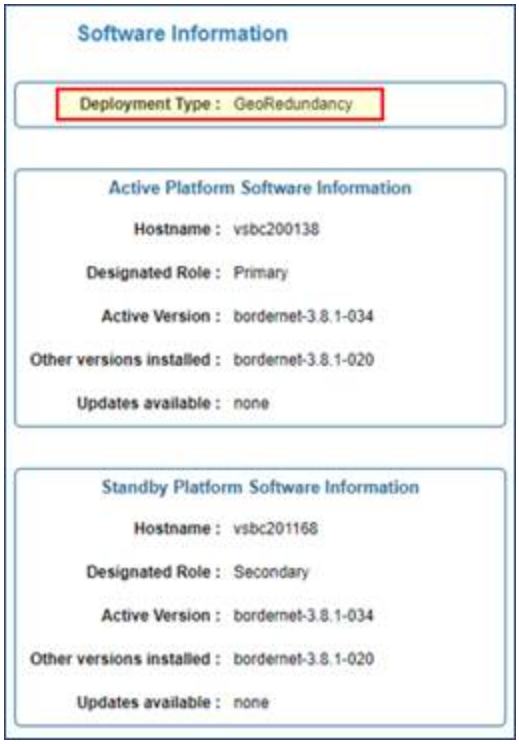
→ To setup the BorderNet SBC in a Geo-Redundancy configuration:

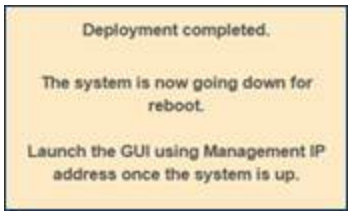
1. From the vSphere Client, right-click the BorderNet SBC VM instance and select Power > Power ON.
2. Open a browser window, and use the Utility IP Address to access the web-based management interface.

3. If a message appears indicating that the certificate is untrusted, select **Continue**.
4. The certificate for the BorderNet SBC will be made trusted in a subsequent procedure.
5. Use a PC/virtual machine or laptop with a web browser that can reach the **Utility IP Address** to start the deployment process.
6. In the **Deployment Type** field select **Geo-Redundancy**.
7. 

8. In the **Designated Role** field select **Primary.**
9. Click the **Browse** button to and select the license file.
10. Click **OK**.
11. Each platform/instance will have its own set of IP addresses which can be on a totally different network.
12. Enter the **Active Platform** details:
13. **Platform Host Name**. Any alpha-numeric entry (such as VSBC01).
14. **Utility IP**
15. **Netmask**
16. **Gateway IP**
17. **System Management IP** (management IP address)
18. **Inter-Task/HA-Link IP**. Enter for each virtual instance on the same HA network. This IP address must be from a different subnet than the System Management IP address.
19. **HA Link Gateway IP** (HA link gateway IP address)
20. Enter the **Standby Platform** details:
21. **Platform Host Name**. Any alpha-numeric entry (such as VSBC01).
22. **Utility IP**
23. **Netmask**
24. **Gateway IP**
25. **System Management IP** (management IP address)
26. **Inter-Task/HA-Link IP**. Enter for each virtual instance on the same HA network. This IP address must be from a different subnet than the System Management IP address.
27. **HA Link Gateway IP** (HA link gateway IP address)

1. Click **Start Deployment**.

2. 

3. Once the deployment is complete, the following window is displayed:
4. 

NOTE:

When the BorderNet SBC is deployed in Geo-Redundancy mode, two Management IP addresses are available, one for each platform or instance. In order to access the management GUI you can either try each IP address separately or access via the DNS server, as only the active platform/instance will respond.

9. Redeployment Procedure

Redeploy the BorderNet SBC when you want to change the basic system configuration such as:

- System management IP address
- HA link IP address
- Utility IP address

You need to redeploy the system to convert a Standalone to an HA system and vice versa.

The redeployment window is accessed from the system management GUI (using the system management IP address).

To perform redeployment, **Sysmanager** privileges are required. This does not affect the system configuration data (provisioning data).

For HA configurations:

- Existing data on the selected primary platform is retained.
- Both the primary and secondary platforms have to be redeployed.
- Redeploy the primary platform before the secondary platform.
- The primary platform must run and connect to the secondary, when the secondary platform is deployed.

Caution:

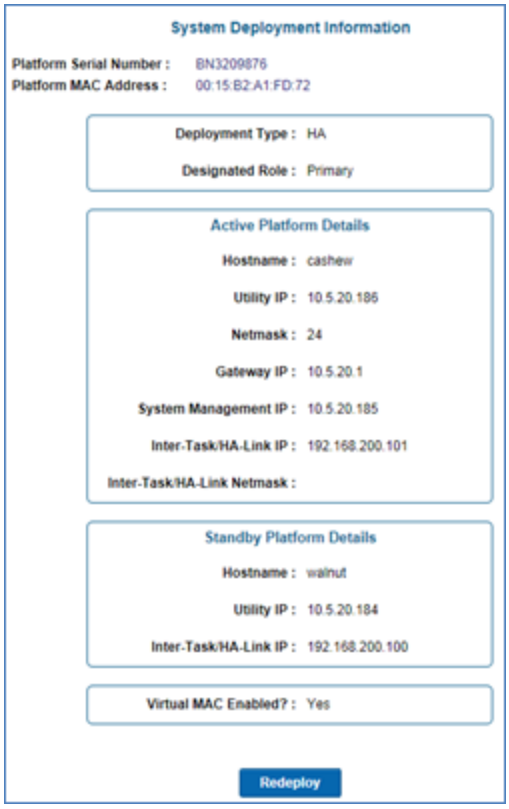
The platform being redeployed has to be restarted since it can affect traffic.

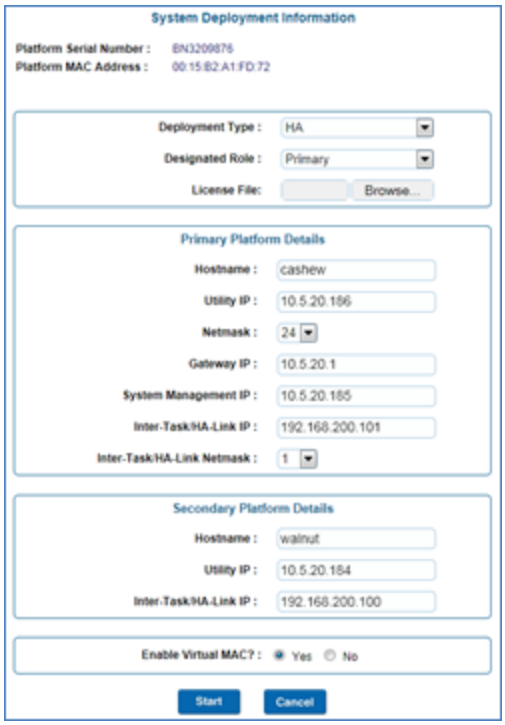
If these are live systems, make sure redeployment is performed during a maintenance window.

The procedure below provides an example of redeployment.

→ To redeploy the system:

1. In the **System** menu, select **Deployment under Administration**.

2. 

3. Click **Redeploy**.
4. The following screen appears:
5. 

6. Complete the fields and click **Start**.