Hewlett Packard Enterprise

HPE VAN SDN Controller and Applications Support Matrix

Abstract

This document lists the minimum hardware, firmware, and software requirements for installing the HPE VAN SDN (Virtual Application Network Software-Defined Networking) Controller and Hewlett Packard Enterprise SDN applications.

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1 HPE VAN SDN Controller

This chapter describes the requirements, supported hardware and software, and configuration maximums for the HPE VAN SDN (Virtual Application Network Software-Defined Networking) Controller.

Hardware requirements and recommendations

The recommended hardware for the server on which the controller is installed also depends on the topology and applications in use. Some applications have hardware requirements that exceed those of the controller. See the recommendations for the applications you plan to install.

For information about switches, see “Supported network switches” (page 10).

HPE VAN SDN Controller 2.6.11 and 2.6

Minimum hardware requirements for development or test deployments

These are the minimum hardware requirements for a development or test environment of fewer than 100 virtual switches (Mininet OVS), links, and hosts:

- 2.2 GHz x86-64 4-core processor or equivalent
- 8 GB RAM available to the controller (additional memory is required to run the operating system and other applications)
- 40 GB of available disk space

  See also “About the disk space requirements and recommendations” (page 6).
- One 1 Gbps Ethernet NIC

Hardware recommendations for small to medium production environments

These are the recommended hardware specifications for a small to medium deployment of 100 to 500 devices, links, and hosts:

- 2.2 GHz x86-64 8-core processor or equivalent
- 16 GB RAM
- 150 GB of available disk space

  See also “About the disk space requirements and recommendations” (page 6).
- One 1 Gbps Ethernet NIC

Hardware recommendations for large production deployments

These are the recommended hardware specifications for a large deployment of 500 to 2000 devices, links, and hosts:

- 2.2 GHz x86-64 16-core processor or equivalent
- 32 GB RAM
- 150 GB of available disk space

  See also “About the disk space requirements and recommendations” (page 6).
- One 10 Gbps Ethernet NIC

HPE VAN SDN Controller 2.5.20, 2.5, 2.4, and 2.3

Minimum hardware requirements for development or test deployments

These are the minimum hardware requirements for a development or test environment of fewer than 100 virtual switches (Mininet OVS), links, and hosts:

- 2.2 GHz x86-64 4-core processor or equivalent
- 8 GB RAM available to the controller (additional memory is required to run the operating system and other applications)
- 40 GB of available disk space

  See also “About the disk space requirements and recommendations” (page 6).
- One 1 Gbps Ethernet NIC

Hardware recommendations for small to medium production deployments

These are the recommended hardware specifications for a small to medium deployment of 100 to 500 devices, links, and hosts:

- 2.2 GHz x86-64 8-core processor or equivalent
- 16 GB RAM
- 64 GB of available disk space

  See also “About the disk space requirements and recommendations” (page 6).
- One 1 Gbps Ethernet NIC

Hardware recommendations for large production deployments

These are the recommended hardware specifications for a large deployment of 500 to 2000 devices, links, and hosts:

- 2.2 GHz x86-64 16-core processor or equivalent
- 32 GB RAM
- 64 GB of available disk space

  See also “About the disk space requirements and recommendations” (page 6).
- One 10 Gbps Ethernet NIC

About the disk space requirements and recommendations

The disk space requirements and recommendations are based on a single active partition for the `/` (root), `/var`, and `/opt` directories. If you create additional partitions, Hewlett Packard Enterprise recommends that `/var` and `/opt` be of sufficient size to accommodate controller logs, backup files, persistent storage space for either PostgreSQL or Cassandra (depending on the applications installed on the controller), and additional storage space in the `/opt` directory for controller and application metric data.

For example, a single 128 GB partition is sufficient for most installations. If you want to create a separate partition for `/var`, you can split the size evenly to use 64 GB for the `/` (root) partition and 64 GB for the `/var` partition. This configuration allows sufficient space for backup operations to complete and backup files to be saved in the `/opt/sdn/backup` directory when the backup subsystem backs up data for databases residing in the `/var/lib` directory. Regardless of the configuration of the partitions, Hewlett Packard Enterprise recommends that the total free disk space available to the controller in the `/` (root), `/var`, and `/opt` directories be at least 40 GB.

Applications might require additional disk space. See the hardware requirements for the application.

Files containing persisted metric data from both the controller and installed applications are stored in the `/opt` directory. In development and test environments, if you have applications that store their own metric data, you might need to increase both the available storage space and the number of inodes for the partition that contains the `/opt` directory.

For example, by default, the controller keeps all persisted metric data from all sources for one week. The controller JVM persists metric data files in one-minute intervals. This configuration requires approximately 550 MB of disk space and approximately 140,000 inodes.

Software Requirements

Software requirements for HPE VAN SDN Controller version 2.6.11 and 2.6

The physical or virtual machine you use for the controller must meet the following requirements:

- Connection to a network or network simulation environment that includes one or more switches configured to run OpenFlow
- Access to the Internet to download controller software and prerequisite software dependencies, and to register licenses and obtain license keys
- One of the supported web browsers
- If you are not installing one of the controller virtual appliance options, the supported operating system and hypervisor (if using a virtual machine) must be installed before you begin the controller installation process.
- If you are not planning to use the default Ubuntu NTP (Network Time Protocol) servers, you must configure NTP on the host system to access your NTP server.

Supported operating system

Ubuntu 14.04 LTS 64-bit Server

Supported hypervisors

VMware vSphere 5.5 or later

Software that is installed automatically as part of the controller installation process

- The most recent patch of OpenJDK version 7
- PostgreSQL 9.3
- Cassandra 1.2.19
- Keystone Identity API v3 from the OpenStack Juno release

Software requirements for HPE VAN SDN Controller version 2.5.20, 2.5 and 2.4

The hardware or virtual machine you use for the controller must meet the following requirements:

- Connection to a network or network simulation environment that includes one or more switches configured to run OpenFlow
- Access to the Internet to download controller software and prerequisite software dependencies, and to register licenses and obtain license keys
- One of the supported web browsers
- Operating system and hypervisor software (if used), which must be installed before you begin the controller installation process

- If you are not planning to use the default Ubuntu NTP (Network Time Protocol) servers, you must configure NTP on the host system to access your NTP servers.
- Other software that can be installed as part of the controller installation process if the system that hosts the controller has internet access

Prerequisite software to install before you install the controller

Before you install the controller, you must ensure the following software is installed:

- Operating system: Ubuntu 12.04 LTS 64-bit Server

Software that is installed automatically as part of the controller installation process

- The most recent patch of OpenJDK version 7
- PostgreSQL 9.1
- Cassandra 1.2.19 for HPE VAN SDN Controller version 2.5.20
- Cassandra 1.2.4 for HPE VAN SDN Controller version 2.5 and earlier controller version
- Keystone Identity 2012.2.1 or later versions that support the v2 API and the UUID provider type

Prerequisites for installing the HPE VAN SDN Controller version 2.3

You must have the following software installed before you begin the controller installation process:

- Operating system: Ubuntu 12.04 LTS 64-bit Server
- Patch 25 of the Java 7 JRE

  NOTE: Early versions of Java 7 introduced a defect in the handling of SSL connections. This defect results in a random SSL alert handshake exception in HTTPS connections and requests to the HPE VAN SDN Controller or any of its applications. This defect was corrected in patch 25 of Java 7. However, this problem was reintroduced in patch 40 of Java 7, so Hewlett Packard Enterprise recommends that you do not use patch 40 of Java 7 with the controller.

- PostgreSQL 9.1
- Keystone Identity 2012.2.1 or later versions that support the v2 API and the UUID provider type
- One of the supported web browsers

In addition, you must have the following network connections:

- Connection to a network or network simulation environment that includes one or more switches configured to run OpenFlow
- Access to the Internet to download the controller software and prerequisite software dependencies, and to register licenses and obtain license keys

Supported web browsers and versions

HPE VAN SDN Controller version 2.6, 2.5.20, and 2.5

The following web browsers are supported for use with HPE VAN SDN Controller version 2.6:

- Google Chrome 41.0.2272.89
- Firefox 36

HPE VAN SDN Controller version 2.4 and earlier

The following web browsers are tested and qualified for use with HPE VAN SDN Controller version 2.4 and earlier.

- Google Chrome 38.0.2125.11
- Firefox 33

IMPORTANT: Hewlett Packard Enterprise makes every effort to support newer versions of and updates to supported web browsers. However, newer versions do not always work as expected. There might be issues with the web browsers that preclude support with the current release of the HPE VAN SDN Controller or Hewlett Packard Enterprise SDN applications, or there might be a gap between the time when the web browsers are released and the time when browser support is available for the HPE VAN SDN Controller and Hewlett Packard Enterprise SDN applications. In these cases, Hewlett Packard Enterprise will endeavor to support the newer browser versions in the next maintenance release or full release of the HPE VAN SDN Controller and Hewlett Packard Enterprise SDN applications.

If you encounter a problem with a newer, untested version of a web browser, submit a report to your authorized support representative. In some cases, the short-term solution might be to revert to an earlier, supported web browser version.

IPv4 address requirements

The HPE VAN SDN Controller and the devices with which it communicates must use IPv4 addresses on the control plane. The controller does not recognize devices that use only IPv6 addresses on the control plane.

IPv6 traffic running in the data plane of an OpenFlow-hybrid network can be supported. For more information about supporting IPv6 traffic on the data plane, see the *HPE VAN SDN Controller Release Notes*.

Supported OpenFlow versions

HPE VAN SDN Controller 2.3 and later versions of the controller support the following versions of OpenFlow:

- OpenFlow 1.3.2
- OpenFlow 1.0.1

The controller:

- Supports multiple OpenFlow versions at the same time.
- Negotiates with each OpenFlow switch for the highest common OpenFlow version between the switch and controller.

  After the OpenFlow version is identified for a switch, the controller continues to operate using that version as long as the switch is connected to the controller. Rebooting the switch—such as for a software update—or disabling and enabling the OpenFlow instance breaks the connection and results in a new negotiation between the switch and the controller for the highest common OpenFlow version.

  NOTE: The default protocol version for an OpenFlow instance on a switch might not be the highest OpenFlow version. You might need to change the configuration of OpenFlow instances on the switch to ensure that the controller and switch negotiate to use the OpenFlow version that you want them to use.

Use of SNMPv2 by the controller

The controller uses SNMPv2 to access MIB (Management Information Base) objects to collect information from OpenFlow-enabled switches. The controller supports the use of either SNMPv2 or SNMPv3 by applications.

Supported network switches

- The capabilities and functions of switches vary and are optimized for different network environments. For information about choosing the most appropriate switches for your network environment, contact your Hewlett Packard Enterprise representative.
- The controller supports different switches depending on whether the network is an OpenFlow-only network with the controller `hybrid.mode` set to `false`, or an OpenFlow-hybrid network with the controller `hybrid.mode` set to `true`.

  For more information about `hybrid.mode`, see the *HPE VAN SDN Controller Administrator Guide*.

OpenFlow table support

With the exception of MAC group tables on select switches, the HPE VAN SDN Controller and Hewlett Packard Enterprise SDN applications do not use tables other than the default OpenFlow tables for the Aruba and Hewlett Packard Enterprise switches it controls.

Applications that use other tables or structures might interfere with the behavior of the controller and of other applications.

The default OpenFlow tables are the following:

- Table 100 (hardware) and table 200 (software) for ArubaOS-Switch-based switches and HPE ProVision-based switches.

  Using the following configuration options, which change the default OpenFlow table configuration, might interfere with the behavior of the controller and of other applications and are not supported when Hewlett Packard Enterprise SDN applications are enabled:

  - `openflow ip-control-table-mode`
  - `openflow instance` *`instance-name`* `flow-location hardware-only`
  - `openflow instance` *`instance-name`* `pipeline-model ip-control`
  - `openflow instance` *`instance-name`* `software-flow-table {1-4}`
  - `openflow egress-only-ports`

- Table 0 for HPE Comware-based switches.

  Using configuration options that add or change the default OpenFlow table configuration, such as adding a MAC IP table (`flow-table mac-ip 0 extensibility 1`), are not supported.

More information

“MAC group matching and MAC group table support” (page 10)

MAC group matching and MAC group table support

MAC group tables allows the controller to apply the same policy to a set of users, differentiated by the MAC address, using a single rule in the switch policy table. This capability is achieved by exposing the MAC CAM as a separate table to controllers and allowing controllers to create MAC groups.

MAC groups and MAC group tables are supported as follows:

- The HPE VAN SDN Controller must be version 2.6 or later.
- MAC tables are supported for the switches and software versions listed in Table 1 (page 11).
- The switches must be configured to enable MAC group tables.
- The default pipline must be used. Custom pipelines are not supported.

For information about configuration rules for MAC groups, see the *HPE VAN SDN Controller Programming Guide* or the *HPE VAN SDN Controller REST API Reference*.

Table 1 Switches that support MAC group tables

Switch	Minimum software version	Notes
Aruba 2920	ArubaOS-Switch WB.16.01.yyyy	Destination MAC address and destination MAC group matching is not supported
Aruba 3810	ArubaOS-Switch KB.16.01.yyyy	
Aruba 5400R zl2 v2	ArubaOS-Switch KB.16.01.yyyy	
Aruba 5400R zl2 v3	ArubaOS-Switch KB.16.01.yyyy	
HPE 2920	ProVision WB.15.18.yyyy	Destination MAC address and destination MAC group matching is not supported
HPE 3800	ProVision KA.15.18.yyyy	
HPE 5400R zl2 v2	ProVision KB.15.18.yyyy	
HPE 5400R zl2 v3	ProVision KB.15.18.yyyy	
HPE 5400zl v2	ProVision K.15.18.yyyy	
HPE 8200 zl v2	ProVision K.15.18.yyyy	

HPE Comware-based switches and PACKET_IN message cookies

HPE Comware-based switches do not support the use of cookie values to determine if a packet sent to the controller is being sent because of a specific flow modification. HPE Comware-based switches always send a fixed value of `0xffffffffffffffff` in the cookie field of a PACKET_IN message.

Configuration requirements for switches used with the HPE VAN SDN Controller

- Only the switches and software combinations that are explicitly listed are supported for the controller or application.
- Using OpenFlow 1.3 instead of OpenFlow 1.0 can benefit performance.
- The default protocol version for OpenFlow instances for switches can vary. To use OpenFlow 1.3, you might need to configure the switch to set the protocol version for the OpenFlow instance to either `1.3` or `1.3 only`, depending on the requirements of the application.
- Do not connect OpenFlow switches in a controller domain in a loop topology with switches outside the domain. Allowing such connections can create broadcast loops inside the OpenFlow network.
- OpenFlow switches in the network must be configured to allow control by the HPE VAN SDN Controller. In a controller domain, including a switch that does not support OpenFlow or allow control by the HPE VAN SDN Controller creates separate clusters of OpenFlow networks.

- In most cases, use the default configurations for switch OpenFlow tables.
- For ProVision-based switches running K/KA/WB.15.14.yyyy or earlier software versions, Hewlett Packard Enterprise recommends that you configure the switch to enable SNMPv2 with a public community string (or configure a DeviceKey to match the switch's community string) so that the controller can identify the switch using SNMP. If the controller cannot identify the switch, OpenFlow flow modifications sent to the switch might not achieve maximum efficiency.

More information

"OpenFlow table support" (page 10)

Switch support in OpenFlow-only networks

IMPORTANT:

- For information about issues that can occur when the controller `hybrid.mode` is set to `false`, see the *HPE VAN SDN Controller Release Notes* for the controller version you are using.
- See also "Configuration requirements for switches used with the HPE VAN SDN Controller" (page 11).

Table 2 HPE VAN SDN Controller support for switches running ArubaOS-Switch software in an OpenFlow-only network

Switch model	HPE VAN SDN Controller 2.6.11 supports switches with ArubaOS-Switch software version:
Aruba 2920	WB.16.01.yyyy, OpenFlow 1.0, OpenFlow 1.3
Aruba 3810	KB.16.01.yyyy, OpenFlow 1.0, OpenFlow 1.3
Aruba 5400R zl2 v2 modules only	KB.16.01.yyyy,OpenFlow 1.0, OpenFlow 1.3
Aruba 5400R zl2 v3 modules only Aruba 5400R zl2 v2/v3 module mix	KB.16.01.yyyy. Support includes VSF (front plane stacking) for 5400R zl2 v3 modules. Other v3 support is restricted to functions and features in v2. OpenFlow 1.0, OpenFlow 1.3
HPE 3500	K.16.01.yyyy,OpenFlow 1.0, OpenFlow 1.3
HPE 3800	KA.16.01.yyyy,OpenFlow 1.0, OpenFlow 1.3
HPE 5400 zl v1 modules HPE 5400 zl v1/v2 module mix	K.16.01.yyyy,OpenFlow 1.0, OpenFlow 1.3
HPE 5400zl v2 modules only	K.16.01.yyyy,OpenFlow 1.0, OpenFlow 1.3
Legend: y = software build version	

Table 3 HPE VAN SDN Controller support for switches running ProVision K, KA, KB, or WB software in an OpenFlow-only network

Switch model	HPE VAN SDN Controller 2.6.11 supports switches with switch software version:[2] K/KA/KB/WB.15.18.yyyy	HPE VAN SDN Controller 2.6 and 2.5.20 support switches with switch software version:[2] K/KA/KB/WB.15.18.yyyy	HPE VAN SDN Controller 2.5 supports switches with switch software version:[2] K/KA/KB/WB.15.17.0007 or later	HPE VAN SDN Controller 2.4 supports switches with switch software version:[2] K/KA/WB.15.16.yyyy[1]	HPE VAN SDN Controller 2.3 supports switches with switch software version:[2] K/KA/KB/WB.15.15.yyyy

Table 3 HPE VAN SDN Controller support for switches running ProVision K, KA, KB, or WB software in an OpenFlow-only network *(continued)*

Switch model	HPE VAN SDN Controller 2.6.11 supports switches with switch software version:[2] K/KA/KB/WB.15.18.yyyy K/KA/KB/WB.15.17.0007 or later KB.15.17.yyyy versions	HPE VAN SDN Controller 2.6 and 2.5.20 support switches with switch software version:[2] K/KA/KB/WB.15.18.yyyy K/KA/KB/WB.15.17.0007 or later KB.15.17.yyyy versions K/KA/WB.15.16.yyyy[1]	HPE VAN SDN Controller 2.5 supports switches with switch software version:[2] K/KA/KB/WB.15.17.0007 or later KB.15.17.yyyy versions K/KA/WB.15.16.yyyy[1]	HPE VAN SDN Controller 2.4 supports switches with switch software version:[2] K/KA/WB.15.16.yyyy[1] K/KA/KB/WB.15.15.yyyy	HPE VAN SDN Controller 2.3 supports switches with switch software version:[2] K/KA/KB/WB.15.15.yyyy K/KA/WB.15.14.yyyy
	K/KA/KB/WB.15.17.0007 or later KB.15.17.yyyy versions	K/KA/KB/WB.15.17.0007 or later KB.15.17.yyyy versions K/KA/WB.15.16.yyyy[1]	KB.15.17.yyyy versions K/KA/WB.15.16.yyyy[1]	K/KA/KB/WB.15.15.yyyy	K/KA/WB.15.14.yyyy
HPE 2920	OpenFlow 1.0, OpenFlow 1.3	OpenFlow 1.0, OpenFlow 1.3	OpenFlow 1.0, OpenFlow 1.3	OpenFlow 1.0, OpenFlow 1.3	OpenFlow 1.0, OpenFlow 1.3
HPE 3500	OpenFlow 1.0, OpenFlow 1.3	OpenFlow 1.0, OpenFlow 1.3	OpenFlow 1.0, OpenFlow 1.3	OpenFlow 1.0, OpenFlow 1.3	OpenFlow 1.0, OpenFlow 1.3
HPE 3800	OpenFlow 1.0, OpenFlow 1.3	OpenFlow 1.0, OpenFlow 1.3	OpenFlow 1.0, OpenFlow 1.3	OpenFlow 1.0, OpenFlow 1.3	OpenFlow 1.0, OpenFlow 1.3
HPE 5400 zl v1 modules HPE 5400 zl v1/v2 module mix	OpenFlow 1.0, OpenFlow 1.3	OpenFlow 1.0, OpenFlow 1.3	OpenFlow 1.0, OpenFlow 1.3	OpenFlow 1.0, OpenFlow 1.3	OpenFlow 1.0, OpenFlow 1.3
HPE 5400zl v2 modules only	OpenFlow 1.0, OpenFlow 1.3	OpenFlow 1.0, OpenFlow 1.3	OpenFlow 1.0, OpenFlow 1.3	OpenFlow 1.0, OpenFlow 1.3	OpenFlow 1.0, OpenFlow 1.3
HPE 5400R zl2 v2 modules only	OpenFlow 1.0, OpenFlow 1.3	OpenFlow 1.0, OpenFlow 1.3	OpenFlow 1.0, OpenFlow 1.3	OpenFlow 1.0, OpenFlow 1.3	KB.15.15.yyyy on HPE VAN SDN Controller 2.3 only, OpenFlow 1.0, OpenFlow 1.3
HPE 5400R zl2 v3 modules only HPE 5400R zl2 v2/v3 module mix	For v3 modules, support is restricted to functions and features in v2. OpenFlow 1.0, OpenFlow 1.3	KB.15.18.yyyy or KB.15.17.0005 or later KB.15.17.yyyy only, v3 support restricted to functions and features in v2, OpenFlow 1.0, OpenFlow 1.3	KB.15.17.0005 or later KB.15.17.yyyy only, v3 support restricted to functions and features in v2, OpenFlow 1.0, OpenFlow 1.3	Not supported	Not supported
HPE 6200	OpenFlow 1.0, OpenFlow 1.3	OpenFlow 1.0, OpenFlow 1.3	OpenFlow 1.0, OpenFlow 1.3	OpenFlow 1.0, OpenFlow 1.3	OpenFlow 1.0, OpenFlow 1.3
HPE 6600	OpenFlow 1.0, OpenFlow 1.3	OpenFlow 1.0, OpenFlow 1.3	OpenFlow 1.0, OpenFlow 1.3	OpenFlow 1.0, OpenFlow 1.3	OpenFlow 1.0, OpenFlow 1.3

Table 3 HPE VAN SDN Controller support for switches running ProVision K, KA, KB, or WB software in an OpenFlow-only network *(continued)*

Switch model	HPE VAN SDN Controller 2.6.11 supports switches with switch software version:[2] K/KA/KB/WB.15.18.yyyy K/KA/KB/WB.15.17.0007 or later KB.15.17.yyyy versions	HPE VAN SDN Controller 2.6 and 2.5.20 support switches with switch software version:[2] K/KA/KB/WB.15.18.yyyy K/KA/KB/WB.15.17.0007 or later KB.15.17.yyyy versions K/KA/WB.15.16.yyyy[1]	HPE VAN SDN Controller 2.5 supports switches with switch software version:[2] K/KA/KB/WB.15.17.0007 or later KB.15.17.yyyy versions K/KA/WB.15.16.yyyy[1]	HPE VAN SDN Controller 2.4 supports switches with switch software version:[2] K/KA/WB.15.16.yyyy[1] K/KA/KB/WB.15.15.yyyy	HPE VAN SDN Controller 2.3 supports switches with switch software version:[2] K/KA/KB/WB.15.15.yyyy K/KA/WB.15.14.yyyy
HPE 8200 zl v1 modules HPE 8200 zl v1/v2 module mix	OpenFlow 1.0, OpenFlow 1.3	OpenFlow 1.0, OpenFlow 1.3	OpenFlow 1.0, OpenFlow 1.3	OpenFlow 1.0, OpenFlow 1.3	OpenFlow 1.0, OpenFlow 1.3
HPE 8200 zl v2 modules only	OpenFlow 1.0, OpenFlow 1.3	OpenFlow 1.0, OpenFlow 1.3	OpenFlow 1.0, OpenFlow 1.3	OpenFlow 1.0, OpenFlow 1.3	OpenFlow 1.0, OpenFlow 1.3
Legend: y = software build version					

[1] Requires HPE VAN SDN Controller 2.4 or later versions. If your system is running earlier versions of the controller, upgrade your controller software before you upgrade your switch software.

[2] See "Configuration requirements for switches used with the HPE VAN SDN Controller" (page 11)

Table 4 HPE VAN SDN Controller support for switches running Comware R*xxxx* software in an OpenFlow-only network

Switch model	HPE VAN SDN Controller 2.6.11 supports switches with switch software version:	HPE VAN SDN Controller 2.6 supports switches with switch software version:	HPE VAN SDN Controller 2.5.20 and 2.5 support switches with switch software version:	HPE VAN SDN Controller 2.4 supports switches with switch software version:	HPE VAN SDN Controller 2.3 supports switches with switch software version:
HPE 5130	R3108P03 only, OpenFlow 1.3 only	R3108P03 only, OpenFlow 1.3 only	R3108P03 only, OpenFlow 1.3 only	R3108P01 or later, OpenFlow 1.3 only	Not supported
HPE 5500EI	R2221P08 or later, OpenFlow 1.3 only	R2221P08 or later, OpenFlow 1.3 only	R2221P08 or later, OpenFlow 1.3 only	R5501P06 or later, OpenFlow 1.3 only	R2221 or later, OpenFlow 1.3 only
HPE 5500HI [1]	R5501P06 or later, OpenFlow 1.3 only	R5501P06 or later, OpenFlow 1.3 only	R5501P06 or later, OpenFlow 1.3 only	R5501P05 or later, OpenFlow 1.3 only	R5501 or later, OpenFlow 1.3 only
HPE 5700	R2418P06 or later, OpenFlow 1.3 only	Not supported	Not supported	Not supported	Not supported
HPE 5800	R7006P15 or later, OpenFlow 1.3 only	Not supported	Not supported	Not supported	Not supported
HPE 5900	R2416-B or later, OpenFlow 1.3 only	R2416-B or later, OpenFlow 1.3 only	R2416-B or later, OpenFlow 1.3 only	R2308P01 or later, OpenFlow 1.3 only	R2308P01 or later, OpenFlow 1.3 only
HPE 5920	R2416-B or later, OpenFlow 1.3 only	R2416-B or later, OpenFlow 1.3 only	R2416-B or later, OpenFlow 1.3 only	R2308P01 or later, OpenFlow 1.3 only	R2308P01 or later, OpenFlow 1.3 only
HPE 5930	R2416-B or later, OpenFlow 1.3 only	R2416-B or later, OpenFlow 1.3 only	R2416-B or later, OpenFlow 1.3 only	Not supported	Not supported

Table 4 HPE VAN SDN Controller support for switches running Comware Rxxxx software in an OpenFlow-only network *(continued)*

Switch model	HPE VAN SDN Controller 2.6.11 supports switches with switch software version:	HPE VAN SDN Controller 2.6 supports switches with switch software version:	HPE VAN SDN Controller 2.5.20 and 2.5 support switches with switch software version:	HPE VAN SDN Controller 2.4 supports switches with switch software version:	HPE VAN SDN Controller 2.3 supports switches with switch software version:
HPE 7904	R2135 or later, OpenFlow 1.3 only[2]	R2135 or later, OpenFlow 1.3 only[2]	Not supported	Not supported	Not supported
HPE 10504	R2111P06 or later, OpenFlow 1.3 only	R2111P06 or later, OpenFlow 1.3 only	R2111P06 or later, OpenFlow 1.3 only	Not supported	Not supported
HPE 12508	R7328P04 or later, OpenFlow 1.3 only	R7328P04 or later, OpenFlow 1.3 only	R7328P04 or later, OpenFlow 1.3 only	Not supported	Not supported
HPE 12908	R1032 or later, OpenFlow 1.3 only	Not supported	Not supported	Not supported	Not supported
HPE 12910 EA, EB, EC	R1005P16 or later, OpenFlow 1.3 only	R1005P16 or later, OpenFlow 1.3 only	R1005P16 or later, OpenFlow 1.3 only	Not supported	Not supported
HPE 12910 FC	R1130 or later, OpenFlow 1.3 only	R1130 or later, OpenFlow 1.3 only	R1130 or later, OpenFlow 1.3 only	Not supported	Not supported

[1] This product has additional capacity and features that are optimized for larger campus (wired and wireless) SDN deployments.

[2] The **OpenFlow Monitor** screen does not display the serial number for this switch.

Table 5 HPE VAN SDN Controller support for switches in an OpenFlow-only network, other switch software versions

Switch model or type	With controller version...	Supports OpenFlow version...
Open Virtual Switch (OVS) 2.3.2	2.6.11, 2.6, 2.5.20, 2.5, 2.4, 2.3	OpenFlow 1.0, OpenFlow 1.3

Switch support in OpenFlow-hybrid networks

IMPORTANT:

- When used in an OpenFlow-hybrid network, for HPE ArubaOS-Switch-based and ProVision-based switches, you must configure the OpenFlow instances to use passive mode.
- See also "Configuration requirements for switches used with the HPE VAN SDN Controller" (page 11).

Table 6 HPE VAN SDN Controller support for switches running ArubaOS-Switch software in an OpenFlow-hybrid network

Switch model	HPE VAN SDN Controller 2.6.11 supports switches with ArubaOS-Switch software version:
Aruba 2920	WB.16.01.yyyy, OpenFlow 1.0, OpenFlow 1.3
Aruba 3810	KB.16.01.yyyy, OpenFlow 1.0, OpenFlow 1.3
Aruba 5400R zl2 v2 modules only	KB.16.01.yyyy,OpenFlow 1.0, OpenFlow 1.3

Table 6 HPE VAN SDN Controller support for switches running ArubaOS-Switch software in an OpenFlow-hybrid network *(continued)*

Switch model	HPE VAN SDN Controller 2.6.11 supports switches with ArubaOS-Switch software version:
Aruba 5400R zl2 v3 modules only Aruba 5400R zl2 v2/v3 module mix	KB.16.01.yyyy. Support includes VSF (front plane stacking) for 5400R zl2 v3 modules. Other v3 support is restricted to functions and features in v2. OpenFlow 1.0, OpenFlow 1.3
HPE 3500	K.16.01.yyyy,OpenFlow 1.0, OpenFlow 1.3
HPE 3800	KA.16.01.yyyy,OpenFlow 1.0, OpenFlow 1.3
HPE 5400 zl v1 modules HPE 5400 zl v1/v2 module mix	K.16.01.yyyy,OpenFlow 1.0, OpenFlow 1.3
HPE 5400zl v2 modules only	K.16.01.yyyy,OpenFlow 1.0, OpenFlow 1.3
Legend: y = software build version	

Table 7 HPE VAN SDN Controller support for switches running ProVision K, KA, KB, or WB software in an OpenFlow-hybrid network

Switch model	HPE VAN SDN Controller 2.6.11 supports switches with switch software version: K/KA/KB/WB.15.18.yyyy K/KA/KB/WB.15.17.0007 or later KB.15.17.yyyy versions	HPE VAN SDN Controller 2.6 and 2.5.20 support switches with switch software version: K/KA/KB/WB.15.18.yyyy K/KA/KB/WB.15.17.0007 or later KB.15.17.yyyy versions K/KA/WB.15.16.yyyy[1]	HPE VAN SDN Controller 2.5 supports switches with switch software version: K/KA/KB/WB.15.17.0007 or later KB.15.17.yyyy versions K/KA/WB.15.16.yyyy[1] K/KA/KB/WB.15.15.yyyy	HPE VAN SDN Controller 2.4 supports switches with switch software version: K/KA/WB.15.16.yyyy[1] K/KA/KB/WB.15.15.yyyy	HPE VAN SDN Controller 2.3 supports switches with switch software version: K/KA/KB/WB.15.15.yyyy K/KA/WB.15.14.yyyy
HPE 2920	OpenFlow 1.0, OpenFlow 1.3	OpenFlow 1.0, OpenFlow 1.3	OpenFlow 1.0, OpenFlow 1.3	OpenFlow 1.0, OpenFlow 1.3	OpenFlow 1.0, OpenFlow 1.3
HPE 3500	OpenFlow 1.0, OpenFlow 1.3	OpenFlow 1.0, OpenFlow 1.3	OpenFlow 1.0, OpenFlow 1.3	OpenFlow 1.0, OpenFlow 1.3	OpenFlow 1.0, OpenFlow 1.3
HPE 3800	OpenFlow 1.0, OpenFlow 1.3	OpenFlow 1.0, OpenFlow 1.3	OpenFlow 1.0, OpenFlow 1.3	OpenFlow 1.0, OpenFlow 1.3	OpenFlow 1.0, OpenFlow 1.3
HPE 5400 zl v1 modules HPE 5400 zl v1/v2 module mix	OpenFlow 1.0, OpenFlow 1.3	OpenFlow 1.0, OpenFlow 1.3	OpenFlow 1.0, OpenFlow 1.3	OpenFlow 1.0, OpenFlow 1.3	OpenFlow 1.0, OpenFlow 1.3
HPE 5400zl v2 modules only	OpenFlow 1.0, OpenFlow 1.3	OpenFlow 1.0, OpenFlow 1.3	OpenFlow 1.0, OpenFlow 1.3	OpenFlow 1.0, OpenFlow 1.3	OpenFlow 1.0, OpenFlow 1.3
HPE 5400R zl2 v2 modules only	OpenFlow 1.0, OpenFlow 1.3	OpenFlow 1.0, OpenFlow 1.3	OpenFlow 1.0, OpenFlow 1.3	OpenFlow 1.0, OpenFlow 1.3	KB.15.15.yyyy only, OpenFlow 1.0, OpenFlow 1.3
HPE 5400R zl2 v3 modules only HPE 5400R zl2 v2/v3 module mix	For v3 modules, support is restricted to functions and features in v2. OpenFlow 1.0, OpenFlow 1.3	KB.15.18.yyyy or KB.15.17.0005 or later KB.15.17.yyyy only, v3 support restricted to functions and features in v2, OpenFlow 1.0, OpenFlow 1.3	KB.15.17.0005 or later KB.15.17.yyyy only, v3 support restricted to functions and features in v2, OpenFlow 1.0, OpenFlow 1.3	Not supported	Not supported
HPE 6200	OpenFlow 1.0, OpenFlow 1.3	OpenFlow 1.0, OpenFlow 1.3	OpenFlow 1.0, OpenFlow 1.3	OpenFlow 1.0, OpenFlow 1.3	OpenFlow 1.0, OpenFlow 1.3
HPE 6600	OpenFlow 1.0, OpenFlow 1.3	OpenFlow 1.0, OpenFlow 1.3	OpenFlow 1.0, OpenFlow 1.3	OpenFlow 1.0, OpenFlow 1.3	OpenFlow 1.0, OpenFlow 1.3
HPE 8200 zl v1 modules HPE 8200 zl v1/v2	OpenFlow 1.0, OpenFlow 1.3	OpenFlow 1.0, OpenFlow 1.3	OpenFlow 1.0, OpenFlow 1.3	OpenFlow 1.0, OpenFlow 1.3	OpenFlow 1.0, OpenFlow 1.3

Table 7 HPE VAN SDN Controller support for switches running ProVision K, KA, KB, or WB software in an OpenFlow-hybrid network *(continued)*

Switch model	HPE VAN SDN Controller 2.6.11 supports switches with switch software version: K/KA/KB/WB.15.18.yyyy K/KA/KB/WB.15.17.0007 or later KB.15.17.yyyy versions	HPE VAN SDN Controller 2.6 and 2.5.20 support switches with switch software version: K/KA/KB/WB.15.18.yyyy K/KA/KB/WB.15.17.0007 or later KB.15.17.yyyy versions K/KA/WB.15.16.yyyy[1]	HPE VAN SDN Controller 2.5 supports switches with switch software version: K/KA/KB/WB.15.17.0007 or later KB.15.17.yyyy versions K/KA/WB.15.16.yyyy[1] K/KA/KB/WB.15.15.yyyy	HPE VAN SDN Controller 2.4 supports switches with switch software version: K/KA/WB.15.16.yyyy[1] K/KA/KB/WB.15.15.yyyy	HPE VAN SDN Controller 2.3 supports switches with switch software version: K/KA/KB/WB.15.15.yyyy K/KA/WB.15.14.yyyy
module mix					
HPE 8200 zl v2 modules only	OpenFlow 1.0, OpenFlow 1.3	OpenFlow 1.0, OpenFlow 1.3	OpenFlow 1.0, OpenFlow 1.3	OpenFlow 1.0, OpenFlow 1.3	OpenFlow 1.0, OpenFlow 1.3
Legend: y = software build version					

[1] Requires HPE VAN SDN Controller 2.4 or later versions. If your system is running earlier versions of the controller, upgrade your controller software before you upgrade your switch software.

Table 8 HPE VAN SDN Controller support for switches running Comware R*xxxx* software in an OpenFlow-hybrid network

Switch model	HPE VAN SDN Controller 2.6.11 supports switches with switch software version:	HPE VAN SDN Controller 2.6 supports switches with switch software version:	HPE VAN SDN Controller 2.5.20 and 2.5 support switches with switch software version:	HPE VAN SDN Controller 2.4 supports switches with switch software version:	HPE VAN SDN Controller 2.3 supports switches with switch software version:
HPE 5130	R3108P03 only, OpenFlow 1.3 only	R3108P03 only, OpenFlow 1.3 only	R3108P03 only, OpenFlow 1.3 only	R3108P01 or later, OpenFlow 1.3 only	Not supported
HPE 5500EI	R5501P06 or later, OpenFlow 1.3 only	R5501P06 or later, OpenFlow 1.3 only	R5501P06 or later, OpenFlow 1.3 only	R5501P06 or later, OpenFlow 1.3 only	Not supported
HPE 5500HI [1]	R5501P05 or later, OpenFlow 1.3 only	R5501P05 or later, OpenFlow 1.3 only	R5501P05 or later, OpenFlow 1.3 only	R5501P05 or later, OpenFlow 1.3 only	R5501P05 or later, OpenFlow 1.3 only
HPE 5700	R2418P06 or later, OpenFlow 1.3 only	Not supported	Not supported	Not supported	Not supported
HPE 5800	R7006P15 or later, OpenFlow 1.3 only	Not supported	Not supported	Not supported	Not supported
HPE 5900	R2416-B, OpenFlow 1.3 only	R2416-B, OpenFlow 1.3 only	R2416-B, OpenFlow 1.3 only	Not supported	Not supported
HPE 5920	R2416-B, OpenFlow 1.3 only	R2416-B, OpenFlow 1.3 only	R2416-B, OpenFlow 1.3 only	Not supported	Not supported
HPE 5930	R2416-B, OpenFlow 1.3 only	R2416-B, OpenFlow 1.3 only	R2416-B, OpenFlow 1.3 only	Not supported	Not supported
HPE 7904	Not supported	R2135 or later, OpenFlow 1.3 only[2]	Not supported	Not supported	Not supported

Table 8 HPE VAN SDN Controller support for switches running Comware R*xxxx* software in an OpenFlow-hybrid network *(continued)*

Switch model	HPE VAN SDN Controller 2.6.11 supports switches with switch software version:	HPE VAN SDN Controller 2.6 supports switches with switch software version:	HPE VAN SDN Controller 2.5.20 and 2.5 support switches with switch software version:	HPE VAN SDN Controller 2.4 supports switches with switch software version:	HPE VAN SDN Controller 2.3 supports switches with switch software version:
HPE 10504	R7150 or later, OpenFlow 1.3 only	Not supported	Not supported	Not supported	Not supported
HPE 12508	R7375 or later, OpenFlow 1.3 only	Not supported	Not supported	Not supported	Not supported
HPE 12908	R1032 or later, OpenFlow 1.3 only	Not supported	Not supported	Not supported	Not supported
HPE 12910 EA, EB, EC	Not supported	R1032 only, OpenFlow 1.3 only	Not supported	Not supported	Not supported
HPE 12910 FC	Not supported	R1130 or later, OpenFlow 1.3 only	Not supported	Not supported	Not supported

[1] This product has additional capacity and features that are optimized for larger campus (wired and wireless) SDN deployments.

[2] The **OpenFlow Monitor** screen does not display the serial number for this switch.

Table 9 HPE VAN SDN Controller support for switches in an OpenFlow-hybrid network, other switch software versions

Switch model or type	With controller version...	Supports OpenFlow version...
Open Virtual Switch (OVS) 2.3.2	2.6.11, 2.6, 2.5.20, 2.5, 2.4, 2.3	OpenFlow 1.0, OpenFlow 1.3

Configuration maximums

For measuring flows-per-second, the controller was configured to use command-line execution with the `learn.IP` and `hybrid.mode` options set to `false`. Setting `hybrid.mode` to `false` causes all new packets to be sent to the controller. When `hybrid.mode` is set to `true`, the switch determines the forwarding behavior, resulting in a minimal number of packets being sent to the controller.

Maximums vary based on the type and configuration of server used for the controller.

Maximums listed in this table are based on controllers running on an HPE DL560 Gen8 server with 16 cores at 2693 MHz and 64 GB RAM.

Resource	HPE VAN SDN Controller
Controller team size[1]	3 controllers
Maximum connected OpenFlow devices (single controller)	4,000
Maximum connected OpenFlow devices (controller team)[1]	4,000
Maximum number of connected hosts	20,000
Maximum connected OpenFlow ports (single controller)	50,000
Maximum connected OpenFlow ports (controller team)[1]	50,000

Resource	HPE VAN SDN Controller
Flows (packets) per second (single controller)	2.3M
Flows (packets) per second (controller team)[1]	6.5M

[1] For HPE VAN SDN Controller 2.4, controller teams are supported as a technical preview only. Not supported for HPE VAN SDN Controller 2.3. For more information, see the *HPE VAN SDN Controller Release Notes*

2 HPE Network Optimizer SDN Application

Except where noted, applications have the same host hardware and software requirements as the supported version of the controller. For detailed information about these requirements, see “HPE VAN SDN Controller” (page 5).

Controller version support

Application name and version	Supported controller version	Notes
HPE Network Optimizer SDN Application 1.3.41	2.6.11, 2.6, and 2.5.20	• Not supported with earlier or later controller versions.
HPE Network Optimizer SDN Application 1.3	2.5	• Does not support controller teaming. • Not supported with earlier or later controller versions.
HPE Network Optimizer SDN Application 1.2	2.4	• Does not support controller teaming. • Not supported with later controller versions.
HPE Network Optimizer SDN Application 1.1	2.3	• Does not support controller teaming. • Not supported with earlier controller versions.

Hardware requirements

This application has the same hardware requirements as the controller and the following additional requirements:

- One or more additional front-end servers running Microsoft Lync Server 2013 or Microsoft Lync Server 2010.
- An additional server running the Microsoft Lync SDN Manager (included in the Lync SDN API). This server must not be running Lync Server or a virtualized instance of a Lync Server.

More information

“HPE VAN SDN Controller” (page 5)

Software requirements

This application has the same software requirements as the controller and the following additional requirements:

- A working Microsoft Lync infrastructure, not running on the same server as the HPE VAN SDN Controller, that includes Lync Server 2013 or Lync Server 2010. For more information about the Lync infrastructure, see the Microsoft documentation for the Microsoft Lync SDN Interface.
- The correct version of the Microsoft Lync SDN API for the version of the HPE Network Optimizer SDN Application you are running (see Table 10 (page 22)). The API must be running on a server that is not running Lync Server or a virtualized instance of a Lync Server.

NOTE: Microsoft's Lync SDN API release notes state that Windows Server 2012 and 2008 are the only platforms on which LSM can be installed. Hewlett Packard Enterprise recommends that you follow Microsoft recommendations. However, if you encounter installation problems with those platforms, you can try installing LSM on Windows 7 Professional x64, Windows 7 Ultimate x64, or Windows 7 Enterprise x64. Hewlett Packard Enterprise testers have successfully installed and used LSM on those platforms.

Table 10 Microsoft Lync SDN API version support

HPE Network Optimizer version	Microsoft Lync SDN API version
1.3.41	2.2[1] or 2.1.1
1.3	2.1.1 or 2.1
1.2 and 1.1	2.1 or 2.0

[1] Microsoft Lync SDN API 2.2 is installed with schema D. You must change the configuration to schema C to use Microsoft Lync SDN API 2.2 with HPE Network Optimizer 1.3.41.

More information

"HPE VAN SDN Controller" (page 5)

IPv4 address requirements

This application supports the use of IPv4 addresses. IPv6 addresses are not supported.

Supported network switches

The capabilities and functions of switches vary and are optimized for different network environments. For information about choosing the most appropriate switches for your network environment, contact your Hewlett Packard Enterprise representative.

Switch support in OpenFlow-only networks

The HPE Network Optimizer SDN Application requires OpenFlow-hybrid networks. See "Switch support in OpenFlow-hybrid networks" (page 23).

Switch support in OpenFlow-hybrid networks

IMPORTANT: In addition to the switch configuration requirements for the controller, this application has the following requirements:

- OpenFlow-hybrid switches that are used with this application must support DSCP remark in OpenFlow.
- For ArubaOS-Switch-based and ProVision-based switches, you must configure the switches to use OpenFlow 1.3—and no other versions—when negotiating with the controller. To configure switch OpenFlow instances to use OpenFlow 1.3 only, set the OpenFlow instances to protocol version `1.3 only` (instead of `1.3` or `1.0`). For example:

```
openflow
   controller-id 1 ip 192.0.2.11 controller-interface vlan 20
   instance aggregate
      controller-id 1
      version 1.3 only
      mode passive
      enable
      exit
   enable
   exit
```

See also "Configuration requirements for switches used with the HPE VAN SDN Controller" (page 11).

Table 11 HPE Network Optimizer SDN Application support for switches running ArubaOS-Switch software in an OpenFlow-only network

Switch model	HPE Network Optimizer 1.3.41 with HPE VAN SDN Controller 2.6.11 supports switches with ArubaOS-Switch software version:
Aruba 2920	WB.16.01.yyyy, OpenFlow 1.0, OpenFlow 1.3
Aruba 3810	KB.16.01.yyyy, OpenFlow 1.0, OpenFlow 1.3
Aruba 5400R zl2 v2 modules only	KB.16.01.yyyy,OpenFlow 1.0, OpenFlow 1.3
Aruba 5400R zl2 v3 modules only Aruba 5400R zl2 v2/v3 module mix	KB.16.01.yyyy. For v3 modules, support is restricted to functions and features in v2. OpenFlow 1.0, OpenFlow 1.3
HPE 3500	K.16.01.yyyy,OpenFlow 1.0, OpenFlow 1.3
HPE 3800	KA.16.01.yyyy,OpenFlow 1.0, OpenFlow 1.3
HPE 5400 zl v1 modules HPE 5400 zl v1/v2 module mix	K.16.01.yyyy,OpenFlow 1.0, OpenFlow 1.3
HPE 5400zl v2 modules only	K.16.01.yyyy,OpenFlow 1.0, OpenFlow 1.3
Legend: y = software build version	

Table 12 HPE Network Optimizer SDN Application support for switches running ProVision K, KA, KB, or WB software in an OpenFlow-hybrid network

Switch model	HPE Network Optimizer 1.3.41 with HPE VAN SDN Controller 2.6 or 2.5.20 supports switches with switch software version: K/KA/KB/WB.15.18.yyyy KB.15.17.0007 or later KB.15.17.yyyy versions	HPE Network Optimizer 1.3 with HPE VAN SDN Controller 2.5 supports switches with switch software version: KB.15.17.0007 or later KB.15.17.yyyy versions K/KA/WB.15.16.yyyy[1] K/KA/KB/WB.15.15.yyyy	HPE Network Optimizer 1.2 with HPE VAN SDN Controller 2.4 supports switches with switch software version: K/KA/WB.15.16.yyyy[1] K/KA/KB/WB.15.15.yyyy	HPE Network Optimizer 1.1 with HPE VAN SDN Controller 2.3 supports switches with switch software version: K/KA/WB.15.14.yyyy K/KA/KB/WB.15.15.yyyy
HPE 2920	OpenFlow 1.3 only	OpenFlow 1.3 only	OpenFlow 1.3 only	OpenFlow 1.3 only
HPE 3500	OpenFlow 1.3 only	OpenFlow 1.3 only	OpenFlow 1.3 only	OpenFlow 1.3 only
HPE 3800	OpenFlow 1.3 only	OpenFlow 1.3 only	OpenFlow 1.3 only	OpenFlow 1.3 only
HPE 5400 zl v1 modules HPE 5400 zl v1/v2 module mix	OpenFlow 1.3 only	OpenFlow 1.3 only	OpenFlow 1.3 only	OpenFlow 1.3 only
HPE 5400 zl v2 modules only	OpenFlow 1.3 only	OpenFlow 1.3 only	OpenFlow 1.3 only	OpenFlow 1.3 only
HPE 5400R zl2 v2 modules only	OpenFlow 1.3 only	OpenFlow 1.3 only	OpenFlow 1.3 only	KB.15.15.yyyy only, OpenFlow 1.3 only
HPE 5400R zl2 v3 modules only HPE 5400R zl2 v2/v3 module mix	For v3 modules, support is restricted to functions and features in v2. OpenFlow 1.0, OpenFlow 1.3	KB.15.18.yyyy or KB.15.17.0005 or later KB.15.17.yyyy only, v3 support restricted to functions and features in v2, OpenFlow 1.0, OpenFlow 1.3	Not supported	Not supported
HPE 8200 zl v1 modules HPE 8200 zl v1/v2 module mix	OpenFlow 1.3 only	OpenFlow 1.3 only	OpenFlow 1.3 only	OpenFlow 1.3 only
HPE 8200 zl v2 modules only	OpenFlow 1.3 only	OpenFlow 1.3 only	OpenFlow 1.3 only	OpenFlow 1.3 only
Legend: y = software build version				

[1] Requires HPE VAN SDN Controller 2.4 or later versions. If your system is running earlier versions of the controller, upgrade your controller software before you upgrade your switch software.

Table 13 HPE Network Optimizer SDN Application support for switches running Comware R*xxxx* software in an OpenFlow-hybrid network

Switch model	HPE Network Optimizer 1.3.41 with HPE VAN SDN Controller 2.6.11, 2.6,	HPE Network Optimizer 1.3 with HPE VAN SDN Controller 2.5	HPE Network Optimizer 1.2 with HPE VAN SDN Controller 2.4 supports switches	HPE Network Optimizer 1.1 with HPE VAN SDN Controller 2.3 supports switches

Table 13 HPE Network Optimizer SDN Application support for switches running Comware R*xxxx* software in an OpenFlow-hybrid network *(continued)*

Switch model	HPE Network Optimizer 1.3.41 with HPE VAN SDN Controller 2.6.11, 2.6, or 2.5.20 supports switches with switch software version:	HPE Network Optimizer 1.3 with HPE VAN SDN Controller 2.5 supports switches with switch software version:	HPE Network Optimizer 1.2 with HPE VAN SDN Controller 2.4 supports switches with switch software version:	HPE Network Optimizer 1.1 with HPE VAN SDN Controller 2.3 supports switches with switch software version:
	or 2.5.20 supports switches with switch software version:	**supports switches with switch software version:**	**with switch software version:**	**with switch software version:**
HPE 5130	R3108P03 only, OpenFlow 1.3 only	R3108P03 only, OpenFlow 1.3 only	R3108P01 or later, OpenFlow 1.3 only	Not supported
HPE 5500EI	R5501P06 or later, OpenFlow 1.3 only	R5501P06 or later, OpenFlow 1.3 only	Not supported	Not supported
HPE 5500HI	R5501P05 or later, OpenFlow 1.3 only	R5501P05 or later, OpenFlow 1.3 only	R5501P05 or later, OpenFlow 1.3 only	R5501P05 or later, OpenFlow 1.3 only
HPE 5900	R2416-B, OpenFlow 1.3 only	R2416-B, OpenFlow 1.3 only	Not supported	Not supported
HPE 5920	R2416-B, OpenFlow 1.3 only	R2416-B, OpenFlow 1.3 only	Not supported	Not supported
HPE 5930	R2416-B, OpenFlow 1.3 only	R2416-B, OpenFlow 1.3 only	Not supported	Not supported

Table 14 HPE Network Optimizer SDN Application support for switches in an OpenFlow-hybrid network, other switch software versions

Switch model or type	OpenFlow version
OpenFlow-hybrid switches (must support DSCP remark in OpenFlow)	OpenFlow 1.0
Open Virtual Switch (OVS) (must support DSCP remark in OpenFlow)	OpenFlow 1.0, OpenFlow 1.3[1]

[1] OpenFlow 1.3 on OVS supported for HPE Network Optimizer 1.3 and later versions

3 HPE Network Protector SDN Application

Except where noted, applications have the same host hardware and software requirements as the supported version of the controller. For detailed information about these requirements, see “HPE VAN SDN Controller” (page 5).

Controller version support

Application name and version	Supported controller Version	Notes
HPE Network Protector SDN Application 1.3.55	2.6.11	Not supported with earlier controller versions.
HPE Network Protector SDN Application 1.3.53	2.6 and 2.5.20	Not supported with earlier controller versions.
HPE Network Protector SDN Application 1.3	2.5	Does not support controller teaming
HPE Network Protector SDN Application 1.1	2.4 and 2.3	Does not support controller teaming

Hardware requirements

The HPE Network Protector SDN Application has hardware requirements that are different from the hardware requirements of the controller. Use these requirements *instead* of those listed for the controller.

- 3.0 GHz x86-64 or equivalent processor with the following system cores:

Value	Notes
8 cores	For larger deployments with more than 2000 end users or multiple SDN applications
4 cores	For smaller deployments with up to 2000 end users and fewer SDN applications

- Minimum installed RAM:

Value	Notes
32 GB	For larger deployments with multiple SDN applications
16 GB	For smaller deployments with fewer SDN applications

- Minimum available disk space:

Value	Notes
200 GB	For larger deployments with multiple SDN applications
128 GB	For smaller deployments with fewer SDN applications

- Ethernet NIC:

Value	Notes
One 10 GB Ethernet NIC	Required for configurations that do not use link aggregation or separate NICs for Service Insertion tunnels.
Multiple 1 GB or 10 GB Ethernet NICs	Required for configurations that use one or more of the following: ◦ Multiple NICs for link aggregation. When you use link aggregation, all NICs used for link aggregation must be the same speed. For example, if you are aggregating links using three NICs, you can use either three 1 GB NICs or three 10 GB NICs. ◦ Separate NICs for Service Insertion tunnels from OpenFlow traffic. When you use multiple NICs to separate Service Insertion tunnels from OpenFlow traffic, you can use NICs that have different speeds. For example you can use a 1 GB NIC for OpenFlow traffic and a 10 GB NIC for Service Insertion tunnels. If your configuration includes only two NICs, but they are the same speed, you can use them for link aggregation or for separation of Service Insertion tunnels from OpenFlow traffic, but not both.

Software requirements and optional software

Software requirements

This application has the same software requirements as the controller and the following additional requirement:

- The curl command line tool (required for installing HPE Network Protector 1.0 only).

Optional software

In addition to the required software, you might want to install the following optional software:

Product	Version	Purpose
HPE ArcSight Logger	5.3.1.6838.0	Logging
HPE IMC User Access Management (UAM) Software	7.0	End-user correlation

HPE Network Protector RepDV subscription license

To receive updates to the RepDV database, you must purchase a subscription license. HPE Network Protector RepDV subscription licenses are separate from Care Pack contracts.

More information

“HPE VAN SDN Controller” (page 5)

IPv4 address requirements

This application supports the use of IPv4 addresses. IPv6 addresses are not supported.

Supported network switches

The capabilities and functions of switches vary and are optimized for different network environments. For information about choosing the most appropriate switches for your network environment, contact your Hewlett Packard Enterprise representative.

Switch support in OpenFlow-only networks

The HPE Network Protector SDN Application requires OpenFlow-hybrid networks. See “Switch support in OpenFlow-hybrid networks” (page 28).

Switch support in OpenFlow-hybrid networks

IMPORTANT: See the following:

- “Configuration requirements for switches used with the HPE VAN SDN Controller” (page 11)
- “Required SNMP settings for ProVision-based switches running K/KA/WB.15.14.yyyy software versions” (page 31)

Table 15 HPE Network Protector SDN Application support for switches running ArubaOS-Switch software in an OpenFlow-hybrid network

Switch model	HPE Network Protector 1.3.55 with HPE VAN SDN Controller 2.6.11 supports switches with ArubaOS-Switch software version:
Aruba 2920[1]	WB.16.01.yyyy, OpenFlow 1.0, OpenFlow 1.3
Aruba 3810	KB.16.01.yyyy, OpenFlow 1.0, OpenFlow 1.3
Aruba 5400R zl2 v2 modules only[2]	KB.16.01.yyyy, OpenFlow 1.0, OpenFlow 1.3
Aruba 5400R zl2 v3 modules only[2] Aruba 5400R zl2 v2/v3 module mix[2]	KB.16.01.yyyy, For v3 modules, support is restricted to functions and features in v2. OpenFlow 1.0, OpenFlow 1.3
HPE 3800[1]	KA.16.01.yyyy,OpenFlow 1.0, OpenFlow 1.3
HPE 5400zl v2 modules only[3]	K.16.01.yyyy,OpenFlow 1.0, OpenFlow 1.3
Legend: y = software build version	

[1] For this switch, HPE Network Protector 1.1.55 and later versions support the following:

- Stacking modules
- Connections to the controller using the OOBM port
- Service Insertion using the Ethernet ports (but not the OOBM port)

[2] For this switch, HPE Network Protector 1.3.55 and later versions support the following:

- Connections to the controller using the OOBM port
- Service Insertion using the Ethernet ports (but not the OOBM port)
- OOBM redirection

[3] Configuration must include “no allow-v1-modules”

Table 16 HPE Network Protector SDN Application support for switches running ProVision K, KA, KB, or WB software in an OpenFlow-hybrid network

Switch model	HPE Network Protector 1.3.55 with HPE VAN SDN Controller	HPE Network Protector 1.3.53 with HPE VAN SDN Controller	HPE Network Protector 1.3 with HPE VAN SDN Controller 2.5	HPE Network Protector 1.1 supports HPE VAN SDN	HPE Network Protector 1.1 with HPE VAN SDN Controller 2.3 supports switch software versions:

Table 16 HPE Network Protector SDN Application support for switches running ProVision K, KA, KB, or WB software in an OpenFlow-hybrid network *(continued)*

Switch model	HPE Network Protector 1.3.55 with HPE VAN SDN Controller 2.6.11 supports switches with switch software version: K/KA/KB/WB.15.18.yyyy KB.15.17.0007 or later KB.15.17.yyyy versions[1]	HPE Network Protector 1.3.53 with HPE VAN SDN Controller 2.6 or 2.5.20 supports switches with switch software version: K/KA/KB/WB.15.18.yyyy KB.15.17.0007 or later KB.15.17.yyyy versions[1] K/KA/WB.15.16.yyyy[2]	HPE Network Protector 1.3 with HPE VAN SDN Controller 2.5 supports switches with switch software version: KB.15.17.0007 or later KB.15.17.yyyy versions[1] K/KA/WB.15.16.yyyy[2] K/KA/KB/WB.15.15.yyyy	HPE Network Protector 1.1 supports HPE VAN SDN Controller 2.4 and switches with switch software version: K/KA/WB.15.16.yyyy[2] K/KA/KB/WB.15.15.yyyy	HPE Network Protector 1.1 with HPE VAN SDN Controller 2.3 supports switch software versions: K/KA/WB.15.14.yyyy K/KA/KB/WB.15.15.yyyy
	2.6.11 supports switches with switch software version: K/KA/KB/WB.15.18.yyyy KB.15.17.0007 or later KB.15.17.yyyy versions[1]	2.6 or 2.5.20 supports switches with switch software version: K/KA/KB/WB.15.18.yyyy KB.15.17.0007 or later KB.15.17.yyyy versions[1] K/KA/WB.15.16.yyyy[2]	supports switches with switch software version: KB.15.17.0007 or later KB.15.17.yyyy versions[1] K/KA/WB.15.16.yyyy[2] K/KA/KB/WB.15.15.yyyy	Controller 2.4 and switches with switch software version: K/KA/WB.15.16.yyyy[2] K/KA/KB/WB.15.15.yyyy	K/KA/WB.15.14.yyyy K/KA/KB/WB.15.15.yyyy
HPE 2920[3, 4]	OpenFlow 1.0, OpenFlow 1.3	OpenFlow 1.0, OpenFlow 1.3	OpenFlow 1.0, OpenFlow 1.3	OpenFlow 1.0, OpenFlow 1.3	OpenFlow 1.0, OpenFlow 1.3
HPE 3500	Not supported	OpenFlow 1.0, OpenFlow 1.3	OpenFlow 1.0, OpenFlow 1.3	OpenFlow 1.0, OpenFlow 1.3	OpenFlow 1.0, OpenFlow 1.3
HPE 3800[3, 4]	OpenFlow 1.0, OpenFlow 1.3	OpenFlow 1.0, OpenFlow 1.3	OpenFlow 1.0, OpenFlow 1.3	OpenFlow 1.0, OpenFlow 1.3	OpenFlow 1.0, OpenFlow 1.3
HPE 5400 zl v1 modules HPE 5400 zl v1/v2 module mix	v1 modules not supported	OpenFlow 1.0, OpenFlow 1.3	OpenFlow 1.0, OpenFlow 1.3	OpenFlow 1.0, OpenFlow 1.3	OpenFlow 1.0, OpenFlow 1.3
HPE 5400zl v2 modules only[5]	OpenFlow 1.0, OpenFlow 1.3	OpenFlow 1.0, OpenFlow 1.3	OpenFlow 1.0, OpenFlow 1.3	OpenFlow 1.0, OpenFlow 1.3	OpenFlow 1.0, OpenFlow 1.3
HPE 5400R zl2 v2 modules only [6]	OpenFlow 1.0, OpenFlow 1.3	OpenFlow 1.0, OpenFlow 1.3	OpenFlow 1.0, OpenFlow 1.3	OpenFlow 1.0, OpenFlow 1.3	KB.15.15.yyyy only, OpenFlow 1.0, OpenFlow 1.3
HPE 5400R zl2 v3 modules only[6] HPE 5400R zl2	For v3 modules, support is restricted to functions and features in v2. OpenFlow 1.0, OpenFlow 1.3	KB.15.18.yyyy or KB.15.17.0005 or later KB.15.17.yyyy only, v3 support restricted to functions and features in v2,	KB.15.17.0005 or later KB.15.17.yyyy only, v3 support restricted to functions and features in v2, OpenFlow 1.0, OpenFlow 1.3	Not supported	Not supported

Table 16 HPE Network Protector SDN Application support for switches running ProVision K, KA, KB, or WB software in an OpenFlow-hybrid network *(continued)*

Switch model	HPE Network Protector 1.3.55 with HPE VAN SDN Controller 2.6.11 supports switches with switch software version: K/KA/KB/WB.15.18.yyyy KB.15.17.0007 or later KB.15.17.yyyy versions[1]	HPE Network Protector 1.3.53 with HPE VAN SDN Controller 2.6 or 2.5.20 supports switches with switch software version: K/KA/KB/WB.15.18.yyyy KB.15.17.0007 or later KB.15.17.yyyy versions[1] K/KA/WB.15.16.yyyy[2]	HPE Network Protector 1.3 with HPE VAN SDN Controller 2.5 supports switches with switch software version: KB.15.17.0007 or later KB.15.17.yyyy versions[1] K/KA/WB.15.16.yyyy[2] K/KA/KB/WB.15.15.yyyy	HPE Network Protector 1.1 supports HPE VAN SDN Controller 2.4 and switches with switch software version: K/KA/WB.15.16.yyyy[2] K/KA/KB/WB.15.15.yyyy	HPE Network Protector 1.1 with HPE VAN SDN Controller 2.3 supports switch software versions: K/KA/WB.15.14.yyyy K/KA/KB/WB.15.15.yyyy
v2/v3 module mix[6]		OpenFlow 1.0, OpenFlow 1.3			
HPE 6200	Not supported	OpenFlow 1.0, OpenFlow 1.3	OpenFlow 1.0, OpenFlow 1.3	OpenFlow 1.0, OpenFlow 1.3	OpenFlow 1.0, OpenFlow 1.3
HPE 6600	Not supported	OpenFlow 1.0, OpenFlow 1.3	OpenFlow 1.0, OpenFlow 1.3	OpenFlow 1.0, OpenFlow 1.3	OpenFlow 1.0, OpenFlow 1.3
HPE 8200 zl v1 modules 8200 zl v1/v2 module mix	v1 modules not supported	OpenFlow 1.0, OpenFlow 1.3	OpenFlow 1.0, OpenFlow 1.3	OpenFlow 1.0, OpenFlow 1.3	OpenFlow 1.0, OpenFlow 1.3
HPE 8200 zl v2 modules only[5]	OpenFlow 1.0, OpenFlow 1.3	OpenFlow 1.0, OpenFlow 1.3	OpenFlow 1.0, OpenFlow 1.3	OpenFlow 1.0, OpenFlow 1.3	OpenFlow 1.0, OpenFlow 1.3
Legend: y = software build version					

[1] Multi-VLAN per OF instance in aggregator mode is not supported

[2] Requires HPE VAN SDN Controller 2.4 or later versions. If your system is running earlier versions of the controller, upgrade your controller software before you upgrade your switch software.

[3] HPE Network Protector 1.0 supports this switch in standalone mode only

[4] For this switch, HPE Network Protector 1.1 and later versions support the following:

- Stacking modules
- Connections to the controller using the OOBM port
- Service Insertion using the Ethernet ports (but not the OOBM port)

[5] Configuration must include “no allow-v1-modules”

[6] For this switch, HPE Network Protector 1.1 and later versions support the following:

- Connections to the controller using the OOBM port
- Service Insertion using the Ethernet ports (but not the OOBM port)
- OOBM redirection

Table 17 HPE Network Protector SDN Application support for switches in an OpenFlow-hybrid network, other switch software versions

Switch model or type	HPE Network Protector 1.3.53 and later versions, teamed environment	HPE Network Protector 1.3.53 and later versions, standalone environment	HPE Network Protector 1.3.0 and earlier versions
Open Virtual Switch (OVS) 2.3.2	OpenFlow 1.3 only	OpenFlow 1.0, OpenFlow 1.3	OpenFlow 1.0 only

Required SNMP settings for ProVision-based switches running K/KA/WB.15.14.yyyy software versions

This application requires the following SNMP settings for ProVision-based switches running K/KA/WB.15.14.yyyy software versions:

- Read-only access to the device
- Enabled SNMP v1/v2 support

To enable these settings, enter the following commands on the switch:

```
(config)#  snmp-server community "public" operator
(config)#  no snmpv3 only
```

For more information about these settings, see the switch documentation and the *HPE Network Protector SDN Application Administrator Guide*.

4 HPE Network Visualizer SDN Application

Except where noted, applications have the same host hardware and software requirements as the supported version of the controller. For detailed information about these requirements, see “HPE VAN SDN Controller” (page 5).

Controller version support

Application name and version	Supported controller version	Notes
HPE Network Visualizer SDN Application 1.0	2.6.11, 2.6, 2.5.20, and 2.5	• Does not support controller teaming. • Not supported with earlier or later controller versions. • To run HPE Network Visualizer on a controller with HPE Network Protector enabled, the version of HPE Network Protector must be 1.3.53 or later.

Hardware requirements

This application has the same hardware requirements as the controller and the following additional requirements:

- A local Destination PCAP repository on the controller. The system hosting the controller must have the following characteristics:
  - A minimum of 8 processor cores
  - A minimum of 16 GB RAM
  - A minimum of 128 GB disk space
  - A minimum of one 1 GB NIC that is dedicated to communication between the switches and the local destination PCAP repository

  The performance of the application is best when the system that hosts the controller and local destination PCAP repository is a physical machine instead of a virtual machine.
- One or more Remote Destinations. These destinations are used for PCAP repositories. The system hosting the Remote Destination must use the recommended hardware configuration for controllers in small to medium production environments.

  The performance of the application is best when the system is a physical machine instead of a virtual machine.

More information

“HPE VAN SDN Controller” (page 5)

Software requirements

This application has the same software requirements as the controller and the following additional requirements:

- A Microsoft Active Directory.

  The server on which Microsoft Active Directory is installed must have the following software installed:

  - Windows Server 2012, Windows Server 2012 R2, or Windows Server 2008 R2 with Windows Management Framework (WMF) 4.0
  - An SSH server.

- Ubuntu servers that host Destinations must have `curl` and `tshark` (which is part of the Wireshark distribution) installed.

More information

“HPE VAN SDN Controller” (page 5)

IPv4 address requirements

This application has the same requirements and support options for IP addresses as the controller. See “IPv4 address requirements” (page 9).

Supported network switches

The capabilities and functions of switches vary and are optimized for different network environments. For information about choosing the most appropriate switches for your network environment, contact your Hewlett Packard Enterprise representative.

Switch support in OpenFlow-only networks

This application requires OpenFlow-hybrid networks. See “Switch support in OpenFlow-hybrid networks” (page 33).

Switch support in OpenFlow-hybrid networks

In addition to the switch configuration requirements for the controller, this application has the following requirements:

- OpenFlow-hybrid switches that are used with this application must support Service Insertion Copy in OpenFlow.
- For ArubaOS-Switch-based and ProVision-based switches, you must configure the switches to use OpenFlow 1.3—and no other versions—when negotiating with the controller. To configure switch OpenFlow instances to use OpenFlow 1.3 only, set the OpenFlow instances to protocol version `1.3 only` (instead of `1.3` or `1.0`). For example:

```
openflow
   controller-id 1 ip 192.0.2.11 controller-interface vlan 20
   instance aggregate
      controller-id 1
      version 1.3 only
      mode passive
      enable
      exit
```

```
enable
exit
```

- For Aruba or Hewlett Packard Enterprise switches running running K/KA/KB/WB.15.17.0007 or later software versions, you must configure the switch to enable either SNMPv2 or SNMPv3:
  - To enable SNMPv2, enter the following commands on the switch:

    ```
    (config)# snmp-server community "magna" unrestricted
    ```

  - To enable SNMPv3, enter the following commands on the switch:

    ```
    (config)# snmpv3 enable
    (config)# snmpv3 user magna auth md5 magna123 priv des magna123
    (config)# snmpv3 group managerpriv user "magna" sec-model ver3
    ```

For more information about these settings, see the switch documentation.

See also “Configuration requirements for switches used with the HPE VAN SDN Controller” (page 11).

Table 18 HPE Network Visualizer SDN Application support for switches running ArubaOS-Switch software in an OpenFlow-hybrid network

Switch model	HPE Network Visualizer 1.0 with HPE VAN SDN Controller 2.6.11 supports switches with switch software version:
Aruba 2920[1]	WB.16.01.yyyy, OpenFlow 1.3 only
Aruba 3810	KB.16.01.yyyy, OpenFlow 1.3 only
Aruba 5400R zl2 v2 modules only[1]	KB.16.01.yyyy, OpenFlow 1.3 only
Aruba 5400R zl2 v3 modules only[1] Aruba 5400R zl2 v2/v3 module mix[1]	KB.16.01.yyyy, For v3 modules, support is restricted to functions and features in v2. OpenFlow 1.3 only
HPE 3800[1, 2]	KA.16.01.yyyy, OpenFlow 1.3 only
HPE 5400 zl v2 modules only[1]	K.16.01.yyyy, OpenFlow 1.3 only
Legend: y = software build version	

[1] For this switch, HPE Network Visualizer supports the following:

- Connections to the controller using the OOBM port
- Service Insertion using the Ethernet ports (but not the OOBM port)

[2] Also supports stacking modules

Table 19 HPE Network Visualizer SDN Application support for switches running ProVision K, KA, KB, or WB software in an OpenFlow-hybrid network

Switch model	HPE Network Visualizer 1.0 with HPE VAN SDN Controller 2.6.11 supports switches with switch software version: K/KA/KB/WB.15.18.yyyy KB.15.17.0007 or later KB.15.17.yyyy versions	HPE Network Visualizer 1.0 with HPE VAN SDN Controller 2.6, 2.5.20, or 2.5 supports switches with switch software version: KB.15.17.0007 or later KB.15.17.yyyy versions
HPE 2920[1]	OpenFlow 1.3 only	OpenFlow 1.3 only
HPE 3800[1, 2]	OpenFlow 1.3 only	OpenFlow 1.3 only
HPE 5400 zl v2 modules only[1]	OpenFlow 1.3 only	OpenFlow 1.3 only

Table 19 HPE Network Visualizer SDN Application support for switches running ProVision K, KA, KB, or WB software in an OpenFlow-hybrid network *(continued)*

Switch model	HPE Network Visualizer 1.0 with HPE VAN SDN Controller 2.6.11 supports switches with switch software version: K/KA/KB/WB.15.18.yyyy KB.15.17.0007 or later KB.15.17.yyyy versions	HPE Network Visualizer 1.0 with HPE VAN SDN Controller 2.6, 2.5.20, or 2.5 supports switches with switch software version: KB.15.17.0007 or later KB.15.17.yyyy versions
HPE 5400R zl2 v2 modules only[1]	OpenFlow 1.3 only	OpenFlow 1.3 only
HPE 5400R zl2 v3 modules only[1] HPE 5400R zl2 v2/v3 module mix[1]	For v3 modules, support is restricted to functions and features in v2, and KB.15.17.0005 is also supported. OpenFlow 1.3 only	For v3 modules, support is restricted to functions and features in v2, and KB.15.17.0005 is also supported. OpenFlow 1.3 only
HPE 8200 zl v2 modules only	OpenFlow 1.3 only	OpenFlow 1.3 only

[1] For this switch, HPE Network Visualizer supports the following:

- Connections to the controller using the OOBM port
- Service Insertion using the Ethernet ports (but not the OOBM port)

[2] Also supports stacking modules

Table 20 HPE Network Visualizer SDN Application support for OVS in an OpenFlow-hybrid network

Switch model or type	OpenFlow version
Open Virtual Switch (OVS) 2.3.2 or later	OpenFlow 1.3 only

5 Support and other resources

Accessing Hewlett Packard Enterprise Support

- For live assistance, go to the Contact Hewlett Packard Enterprise Worldwide website:
  www.hpe.com/assistance
- To access documentation and support services, go to the Hewlett Packard Enterprise Support Center website:
  www.hpe.com/support/hpesc

Information to collect

- Technical support registration number (if applicable)
- Product name, model or version, and serial number
- Operating system name and version
- Firmware version
- Error messages
- Product-specific reports and logs
- Add-on products or components
- Third-party products or components

Accessing updates

- Some software products provide a mechanism for accessing software updates through the product interface. Review your product documentation to identify the recommended software update method.
- To download product updates, go to either of the following:
  - Hewlett Packard Enterprise Support Center **Get connected with updates** page:
    www.hpe.com/support/e-updates
  - Software Depot website:
    www.hpe.com/support/softwaredepot
- To view and update your entitlements, and to link your contracts and warranties with your profile, go to the Hewlett Packard Enterprise Support Center **More Information on Access to Support Materials** page:
  www.hpe.com/support/AccessToSupportMaterials

IMPORTANT: Access to some updates might require product entitlement when accessed through the Hewlett Packard Enterprise Support Center. You must have an HP Passport set up with relevant entitlements.

Websites

Website	Link
SDN websites	
Hewlett Packard Enterprise Information Library for SDN	www.hpe.com/info/sdn/infolib

Website	Link
Hewlett Packard Enterprise Software-Defined Networking website	www.hpe.com/info/sdn
Hewlett Packard Enterprise SDN community discussion forum	www.hpe.com/networking/sdnforum
Hewlett Packard Enterprise SDN App Store	www.hpe.com/networking/sdnappstore
Hewlett Packard Enterprise SDN Dev Center website	http://sdndevcenter.hp.com
Hewlett Packard Enterprise Open Source download website	www.hpe.com/software/opensource
Networking websites	
Hewlett Packard Enterprise Information Library for Networking	www.hpe.com/networking/resourcefinder
Hewlett Packard Enterprise Networking website	www.hpe.com/info/networking
Hewlett Packard Enterprise My Networking website	www.hpe.com/networking/support
Hewlett Packard Enterprise My Networking Portal	www.hpe.com/networking/mynetworking
Hewlett Packard Enterprise Networking Warranty	www.hpe.com/networking/warranty
General websites	
Hewlett Packard Enterprise Information Library	www.hpe.com/info/enterprise/docs
Hewlett Packard Enterprise Support Center	www.hpe.com/support/hpesc
Hewlett Packard Enterprise Support Services Central	ssc.hpe.com/portal/site/ssc/
Contact Hewlett Packard Enterprise Worldwide	www.hpe.com/assistance
Subscription Service/Support Alerts	www.hpe.com/support/e-updates
Software Depot	www.hpe.com/support/softwaredepot
Customer Self Repair (not applicable to all devices)	www.hpe.com/support/selfrepair
Insight Remote Support (not applicable to all devices)	www.hpe.com/info/insightremotesupport/docs

Customer self repair

Hewlett Packard Enterprise customer self repair (CSR) programs allow you to repair your product. If a CSR part needs to be replaced, it will be shipped directly to you so that you can install it at your convenience. Some parts do not qualify for CSR. Your Hewlett Packard Enterprise authorized service provider will determine whether a repair can be accomplished by CSR.

For more information about CSR, contact your local service provider or go to the CSR website:

www.hpe.com/support/selfrepair

Remote support

Remote support is available with supported devices as part of your warranty or contractual support agreement. It provides intelligent event diagnosis, and automatic, secure submission of hardware event notifications to Hewlett Packard Enterprise, which will initiate a fast and accurate resolution based on your product's service level. Hewlett Packard Enterprise strongly recommends that you register your device for remote support.

For more information and device support details, go to the following website:

www.hpe.com/info/insightremotesupport/docs

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