Aruba VAN SDN Controller and Applications Support Matrix

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This chapter describes the requirements, supported hardware and software, and configuration maximums for the Aruba 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 the requirements of the controller. See the recommendations for the applications you plan to install.

For information about switches, see **Supported network switches** on page 8.

Aruba VAN SDN Controller 2.8.8

In addition to 2.8.8, this section applies to all controller versions after 2.6.11.

Minimum hardware requirements for small production, development, or test deployments

These are the minimum hardware requirements for test deployments, development deployments, and small production deployments 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)
- 75 GB of available disk space

    See also **About the disk space requirements and recommendations** on page 5.
- One 1 Gbps Ethernet NIC

Hardware recommendations for medium production environments

These are the recommended hardware specifications for a 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** on page 5.
- 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** on page 5.
- One 10 Gbps Ethernet NIC

Hewlett Packard Enterprise recommends that controllers for large production deployments be installed on physical servers instead of virtual machines.

Hardware recommendations for the Aruba VAN SDN Controller Virtual Appliance

The Aruba VAN SDN Controller Virtual Appliance is intended for medium production deployments.

The host server for the Aruba VAN SDN Controller Virtual Appliance must have sufficient resources to support the hardware recommendations for medium production environments.

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.

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.

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/sdn/virgo/metrics` 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.

Software Requirements

Software requirements for Aruba VAN SDN Controller versions 2.8.8

In addition to 2.8.8, this section applies to 2.7 versions of the controller.

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

Aruba VAN SDN Controller Virtual Appliance installations

Ubuntu 14.04 LTS 64-bit Server for controllers not installed as part of the Aruba VAN SDN Controller Virtual Appliance

Other Aruba VAN SDN Controller installations

HPE Linux (based on Debian GNU/Linux 8) for controllers installed as part of the Aruba VAN SDN Controller Virtual Appliance

Supported hypervisors

VMware vSphere 5.5 or later

Prerequisites for installing the controller

Procedure

1. If you are installing the Aruba VAN SDN Controller Virtual Appliance, you must ensure that the following software is installed on the host machine:

   a. VMware vSphere ESXi 5.5.0 or later using VM hardware versions 8 through 11.

2. If you are not installing the controller as part of the Aruba VAN SDN Controller Virtual Appliance, you must ensure that the following software is installed on the physical or virtual machine:

   a. Operating system: Ubuntu 14.04 LTS 64-bit Server

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

- The most recent patch of OpenJDK version 8
- PostgreSQL 9.3
- Cassandra 1.2.19
- Keystone Identity API v3 from the OpenStack Juno release

Supported web browsers and versions

The following web browsers are supported for use with the Aruba VAN SDN Controller:

- Google Chrome
- Firefox

Hewlett Packard Enterprise makes every effort to support new versions of and updates to supported web browsers. However, new versions do not always work as expected. There might be issues with the web browsers that preclude support with the current release of the Aruba VAN SDN Controller or Aruba 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 Aruba VAN SDN Controller and Aruba SDN applications. In these cases, Hewlett Packard Enterprise will endeavor to support the new browser versions in the next maintenance release or full release of the Aruba VAN SDN Controller and Aruba SDN applications.

If you encounter a problem with a new, 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.

Upgrade and migration paths

For information about supported upgrade and migration paths from older controller versions to the newest controller version, see the installation guide for controller.

Multiple application support

The controller supports multiple SDN applications running on the same controller. As you increase the number of applications, you might need to increase controller hardware resources such as the number of processors, RAM, and available disk space.

You can run any combination of the following applications with Aruba VAN SDN Controller 2.8.8:

• Aruba Network Protector 1.5.4
• Aruba Network Optimizer 1.5.4
• Aruba Network Visualizer 1.2.7.164

IPv4 address requirements

The Aruba 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 *Aruba VAN SDN Controller Administrator Guide*.

Supported OpenFlow versions

The controller supports 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.

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 *Aruba VAN SDN Controller Administrator Guide*.

OpenFlow table support

With the exception of MAC group tables on select switches, the Aruba 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.

Other tables supported are the following:

- `openflow instance` *instance-name* `pipeline-model custom`

  For more information see the *Aruba VAN SDN Controller Custom Pipeline Support* document.

MAC group matching and MAC group table support

MAC group tables allow 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 enabling controllers to create MAC groups.

MAC groups and MAC group tables are supported as follows:

- The Aruba VAN SDN Controller must be version 2.6 or later.
- MAC tables are supported for the switches and software versions listed in the following table.
- 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 *Aruba VAN SDN Controller Programming Guide* or the *Aruba VAN SDN Controller REST API Reference*.

Table 1: *Switches that support MAC group tables*

Switch	Minimum software version	Notes
Aruba 2920	ArubaOS-Switch WB.16.02.yyyy	Destination MAC address and destination MAC group matching is not supported
Aruba 2930F	ArubaOS-Switch WC.16.03.yyyy	
Aruba 3810	ArubaOS-Switch KB.16.02.yyyy	
Aruba 5400R zl2 v2	ArubaOS-Switch KB.16.02.yyyy	
Aruba 5400R zl2 v3	ArubaOS-Switch KB.16.02.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 Aruba 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 an Aruba VAN SDN Controller (either as a standalone controller or as a member of a controller team). In a controller domain, including a switch that does not support OpenFlow or that is not controlled by either a standalone Aruba VAN SDN Controller a member of the same controller team creates separate clusters of OpenFlow networks.
- In most cases, use the default configurations for switch OpenFlow tables.

Switch support in OpenFlow-hybrid networks

⊘ • For HPE ArubaOS-Switch-based and ProVision-based switches used in an OpenFlow-hybrid network:

    ◦ You must configure OpenFlow 1.0 instances to use passive mode.

    ◦ You must configure OpenFlow 1.3 instances to use passive mode for switches running 15.18.yyyy or earlier versions of ProVision software.

• See also **Configuration requirements for switches used with the Aruba VAN SDN Controller** on page 9.

Table 2: *Aruba VAN SDN Controller support for switches running ArubaOS-Switch software in an OpenFlow-hybrid network*

Switch model	Aruba VAN SDN Controller 2.8.8, 2.7.18, and 2.7.16 support switches with ArubaOS-Switch software version:	Aruba VAN SDN Controller 2.7.10 support switches with ArubaOS-Switch software version:
Aruba 2920	WB.16.03.yyyy WB.16.02.yyyy OpenFlow 1.0, OpenFlow 1.3	WB.16.02.yyyy OpenFlow 1.0, OpenFlow 1.3
Aruba 2930F	WC.16.03.yyyy WC.16.02.yyyy OpenFlow 1.0, OpenFlow 1.3 Support includes VSF (front plane stacking).	Not supported
Aruba 3810	KB.16.03.yyyy KB.16.02.yyyy OpenFlow 1.0, OpenFlow 1.3	KB.16.02.yyyy OpenFlow 1.0, OpenFlow 1.3
Aruba 5400R zl2 v2 modules only	KB.16.03.yyyy KB.16.02.yyyy OpenFlow 1.0, OpenFlow 1.3	KB.16.02.yyyy OpenFlow 1.0, OpenFlow 1.3
Aruba 5400R zl2 v3 modules only Aruba 5400R zl2 v2/v3 module mix	KB.16.03.yyyy KB.16.02.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	KB.16.02.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

Table Continued

Aruba VAN SDN Controller and Applications Support Matrix

Switch model	Aruba VAN SDN Controller 2.8.8, 2.7.18, and 2.7.16 support switches with ArubaOS-Switch software version:	Aruba VAN SDN Controller 2.7.10 support switches with ArubaOS-Switch software version:
HPE 3500	K.16.02.yyyy K.16.01.yyyy OpenFlow 1.0, OpenFlow 1.3	K.16.02.yyyy OpenFlow 1.0, OpenFlow 1.3
HPE 3800	KA.16.03.yyyy KA.16.02.yyyy OpenFlow 1.0, OpenFlow 1.3	KA.16.02.yyyy OpenFlow 1.0, OpenFlow 1.3
HPE 5400 zl v1 modules HPE 5400 zl v1/v2 module mix	K.16.03.yyyy K.16.02.yyyy OpenFlow 1.0, OpenFlow 1.3 For v1 modules X.16.03 is not supported.	K.16.02.yyyy OpenFlow 1.0, OpenFlow 1.3
HPE 5400zl v2 modules only	K.16.03.yyyy K.16.02.yyyy OpenFlow 1.0, OpenFlow 1.3	K.16.02.yyyy OpenFlow 1.0, OpenFlow 1.3
HPE 5400R zl2 v2 modules only	X.16.03.yyyy X.16.02.yyyy OpenFlow 1.0, OpenFlow 1.3	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. X.16.03.yyyy X.16.02.yyyy OpenFlow 1.0, OpenFlow 1.3	For v3 modules, support is restricted to functions and features in v2. OpenFlow 1.0, OpenFlow 1.3
Legend: y = software build version X: K/KA/KB/WB/...		

Table 3: *Aruba VAN SDN Controller support for switches running ProVision K, KA, KB, or WB software in an OpenFlow-hybrid network*

Switch model	Aruba VAN SDN Controller 2.8.8, 2.7.18, 2.7.16, and 2.7.10 support switches with switch software version: • K/KA/KB/WB.15.18.yyyy	Aruba 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 6200	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
HPE 8200 zl v1 modules HPE 8200 zl v1/v2 module mix	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
Legend: y = software build version		

Table 4: *Aruba VAN SDN Controller support for switches running Comware Rxxxx software in an OpenFlow-hybrid network*

Switch model	Aruba VAN SDN Controller 2.8.8, 2.7.18, 2.7.16, and 2.7.10 support switches with switch software version:	Aruba VAN SDN Controller 2.6.11 supports switches with switch software version:
HPE 5130EI	R3111P03 or later, OpenFlow 1.3 only	R3108P03 only, OpenFlow 1.3 only
HPE 5500EI	R5501P06 or later, OpenFlow 1.3 only	R5501P06 or later, OpenFlow 1.3 only
HPE 5500HI	R5501P05 or later, OpenFlow 1.3 only	R5501P05 or later, OpenFlow 1.3 only
HPE 5510HI [1]	R1118P02 or later, OpenFlow 1.3 only	Not supported
HPE 5700	R2418P06 or later, OpenFlow 1.3 only	R2418P06 or later, OpenFlow 1.3 only
HPE 5800	R7006P15 or later, OpenFlow 1.3 only	R7006P15 or later, OpenFlow 1.3 only
HPE 5900	R2416-B, OpenFlow 1.3 only	R2416-B, OpenFlow 1.3 only
HPE 5920	R2416-B, OpenFlow 1.3 only	R2416-B, OpenFlow 1.3 only
HPE 5930EI	R2416-B, OpenFlow 1.3 only	R2416-B, OpenFlow 1.3 only
HPE 7904	R2135 or later, OpenFlow 1.3 only [2]	Not supported
HPE 10504	R7150 or later, OpenFlow 1.3 only	R7150 or later, OpenFlow 1.3 only

Table Continued

Aruba VAN SDN Controller and Applications Support Matrix

Switch model	Aruba VAN SDN Controller 2.8.8, 2.7.18, 2.7.16, and 2.7.10 support switches with switch software version:	Aruba VAN SDN Controller 2.6.11 supports switches with switch software version:
HPE 12508	R7375 or later, OpenFlow 1.3 only	R7375 or later, OpenFlow 1.3 only
HPE 12908	R1032 or later, OpenFlow 1.3 only	R1032 or later, OpenFlow 1.3 only
HPE 12910 EA, EB, EC	R1032 only, OpenFlow 1.3 only	Not supported
HPE 12910 FC	R1130 or later, OpenFlow 1.3 only	Not supported

[1] If STP (Spanning Tree Protocol) is enabled in your network, link discovery through this switch might take longer than it would without STP enabled.

[2] For software versions earlier than R2150, **OpenFlow Monitor** screen does not display the serial number for this switch.

Table 5: *Aruba 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	2.8.8, 2.7.16, 2.7.10, 2.6.11, 2.5.20	OpenFlow 1.0, OpenFlow 1.3

Switch support in OpenFlow-only networks

- For information about issues that can occur when the controller `hybrid.mode` is set to `false`, see the *Aruba VAN SDN Controller Release Notes* for the controller version you are using.
- See also **Configuration requirements for switches used with the Aruba VAN SDN Controller** on page 9.

Table 6: *Aruba VAN SDN Controller support for switches running ArubaOS-Switch software in an OpenFlow-only network*

Switch model	Aruba VAN SDN Controller 2.8.8, 2.7.18, and 2.7.16 support switches with ArubaOS-Switch software version:	Aruba VAN SDN Controller 2.7.10 support switches with ArubaOS-Switch software version:
Aruba 2920	WB.16.03.yyyy WB.16.02.yyyy OpenFlow 1.0, OpenFlow 1.3	WB.16.02.yyyy OpenFlow 1.0, OpenFlow 1.3
Aruba 2930F	WC.16.03.yyyy OpenFlow 1.0, OpenFlow 1.3 Support includes VSF (front plane stacking).	Not supported

Table Continued

Switch model	Aruba VAN SDN Controller 2.8.8, 2.7.18, and 2.7.16 support switches with ArubaOS-Switch software version:	Aruba VAN SDN Controller 2.7.10 support switches with ArubaOS-Switch software version:
Aruba 3810	KB.16.03.yyyy KB.16.02.yyyy OpenFlow 1.0, OpenFlow 1.3	KB.16.02.yyyy OpenFlow 1.0, OpenFlow 1.3
Aruba 5400R zl2 v2 modules only	KB.16.03.yyyy KB.16.02.yyyy OpenFlow 1.0, OpenFlow 1.3	KB.16.02.yyyy OpenFlow 1.0, OpenFlow 1.3
Aruba 5400R zl2 v3 modules only Aruba 5400R zl2 v2/v3 module mix	KB.16.03.yyyy KB.16.02.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	KB.16.02.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.16.02.yyyy K.16.01.yyyy OpenFlow 1.0, OpenFlow 1.3	K.16.02.yyyy OpenFlow 1.0, OpenFlow 1.3
HPE 3800	KA.16.03.yyyy KA.16.02.yyyy OpenFlow 1.0, OpenFlow 1.3	KA.16.02.yyyy OpenFlow 1.0, OpenFlow 1.3
HPE 5400 zl v1 modules HPE 5400 zl v1/v2 module mix	K.16.01.yyyy K.15.18.yyyy OpenFlow 1.0, OpenFlow 1.3	K.16.02.yyyy OpenFlow 1.0, OpenFlow 1.3
HPE 5400zl v2 modules only	K.16.03.yyyy K.16.02.yyyy OpenFlow 1.0, OpenFlow 1.3	K.16.02.yyyy OpenFlow 1.0, OpenFlow 1.3
HPE 5400R zl2 v2 modules only	OpenFlow 1.0, OpenFlow 1.3	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	For v3 modules, support is restricted to functions and features in v2. OpenFlow 1.0, OpenFlow 1.3
Legend: y = software build version		

Table 7: *Aruba VAN SDN Controller support for switches running ProVision K, KA, KB, or WB software in an OpenFlow-only network*

Switch model	Aruba VAN SDN Controller 2.8.8, 2.7.18, 2.7.16, and 2.7.10 support switches with switch software version: • K/KA/KB/WB.15.18.yyyy	Aruba 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 6200	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
HPE 8200 zl v1 modules HPE 8200 zl v1/v2 module mix	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
Legend: y = software build version		

Table 8: *Aruba VAN SDN Controller support for switches running Comware Rxxxx software in an OpenFlow-only network*

Switch model	Aruba VAN SDN Controller 2.8.8, 2.7.18, 2.7.16, and 2.7.10 support switches with switch software version:	Aruba VAN SDN Controller 2.6.11 supports switches with switch software version:
HPE 5130EI	R3111P03 or later, OpenFlow 1.3 only	R3108P03 only, OpenFlow 1.3 only
HPE 5500EI	R2221P08 or later, OpenFlow 1.3 only	R2221P08 or later, OpenFlow 1.3 only
HPE 5500HI	R5501P06 or later, OpenFlow 1.3 only	R5501P06 or later, OpenFlow 1.3 only
HPE 5510HI [1]	R1118P02 or later, OpenFlow 1.3 only	Not supported
HPE 5700	R2418P06 or later, OpenFlow 1.3 only	R2418P06 or later, OpenFlow 1.3 only
HPE 5800	R7006P15 or later, OpenFlow 1.3 only	R7006P15 or later, OpenFlow 1.3 only
HPE 5900	R2416-B or later, OpenFlow 1.3 only	R2416-B or later, OpenFlow 1.3 only
HPE 5920	R2416-B or later, OpenFlow 1.3 only	R2416-B or later, OpenFlow 1.3 only
HPE 5930EI	R2416-B or later, OpenFlow 1.3 only	R2416-B or later, OpenFlow 1.3 only
HPE 7904	R2135 or later, OpenFlow 1.3 only [2]	R2135 or later, OpenFlow 1.3 only
HPE 10504	R2111P06 or later, OpenFlow 1.3 only	R2111P06 or later, OpenFlow 1.3 only

Table Continued

Switch model	Aruba VAN SDN Controller 2.8.8, 2.7.18, 2.7.16, and 2.7.10 support switches with switch software version:	Aruba VAN SDN Controller 2.6.11 supports switches with switch software version:
HPE 12508	R7328P04 or later, OpenFlow 1.3 only	R7328P04 or later, OpenFlow 1.3 only
HPE 12908	R1032 or later, OpenFlow 1.3 only	R1032 or later, OpenFlow 1.3 only
HPE 12910 EA, EB, EC	R1005P16 or later, OpenFlow 1.3 only	R1005P16 or later, OpenFlow 1.3 only
HPE 12910 FC	R1130 or later, OpenFlow 1.3 only	R1130 or later, OpenFlow 1.3 only

[1] If STP (Spanning Tree Protocol) is enabled in your network, link discovery through this switch might take longer than it would without STP enabled.

[2] For software versions earlier than R2150, **OpenFlow Monitor** screen does not display the serial number for this switch.

Table 9: *Aruba 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	2.8.8, 2.7.16, 2.7.10, 2.6.11	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	Aruba VAN SDN Controller
Controller team size	3 controllers
Maximum connected OpenFlow devices (single controller)	4,000
Maximum connected OpenFlow devices (controller team)	4,000
Maximum number of connected hosts	20,000
Maximum connected OpenFlow ports (single controller)	50,000

Table Continued

Resource	Aruba VAN SDN Controller
Maximum connected OpenFlow ports (controller team)	50,000
Flows (packets) per second (single controller)	2.3M
Flows (packets) per second (controller team)	6.5M

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 **Aruba VAN SDN Controller**.
- For information about running this application with other SDN applications on the same controller, see **Multiple application support** on page 7.

Controller version support

Application name and version	Supported controller versions	Notes
Aruba Network Optimizer SDN Application 1.5.4	2.8.8	• Not supported with earlier or later controller versions. • For supported upgrade and migration paths, see the installation guide for the application.
Aruba Network Optimizer SDN Application 1.4.9	2.7.16	• Not supported with earlier or later controller versions. • For supported upgrade and migration paths, see the installation guide for the application.
Aruba Network Optimizer SDN Application 1.4.6	2.7.10, 2.7.16	• Recommended controller version is 2.7.10 • Not supported with earlier or later controller versions.
Aruba Network Optimizer SDN Application 1.3.41	2.6.11	• Not supported with earlier or later 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.

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 Aruba 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 Aruba Network Optimizer SDN Application you are running (see **Software requirements**). The API must be running on a server that is not running Lync Server or a virtualized instance of a Lync Server.

NOTE: The Microsoft 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 for testing purposes.

Table 10: *Microsoft Lync SDN API version support*

Aruba Network Optimizer version	Microsoft Lync SDN API version
1.5.4, 1.4.9, 1.4.6 and 1.3.41	2.2 [1] or 2.1.1

[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 Aruba Network Optimizer.

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.

This application requires OpenFlow-hybrid networks.

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 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
        enable
        exit
    enable
    exit
```

- For ArubaOS-Switch-based and ProVision-based switches running 15.18.yyyy or earlier versions of ProVision software, You must configure OpenFlow 1.3 instances to use passive mode.

See also **Configuration requirements for switches used with the Aruba VAN SDN Controller**.

Table 11: *Aruba Network Optimizer SDN Application support for switches running ArubaOS-Switch software in an OpenFlow-hybrid network*

Switch model	The following application and controller combinations support switches running the ArubaOS-Switch software versions listed in this column: • Aruba Network Optimizer 1.5.4 with Aruba VAN SDN Controller 2.8.8 and 2.7.16	The following application and controller combinations support switches running the ArubaOS-Switch software versions listed in this column: • Aruba Network Optimizer 1.4.6 with Aruba VAN SDN Controller 2.7.10 • Aruba Network Optimizer 1.3.41 with Aruba VAN SDN Controller 2.6.11
Aruba 2920	WB.16.03.yyyy WB.16.02.yyyy OpenFlow 1.3 only	WB.16.02.yyyy OpenFlow 1.3 only
Aruba 2930F	WC.16.03.yyyy OpenFlow 1.3 only Support includes VSF (front plane stacking).	Not supported
Aruba 3810	KB.16.03.yyyy KB.16.02.yyyy OpenFlow 1.3 only	KB.16.02.yyyy OpenFlow 1.3 only

Table Continued

Switch model	The following application and controller combinations support switches running the ArubaOS-Switch software versions listed in this column: • **Aruba Network Optimizer 1.5.4 with Aruba VAN SDN Controller 2.8.8 and 2.7.16**	The following application and controller combinations support switches running the ArubaOS-Switch software versions listed in this column: • **Aruba Network Optimizer 1.4.6 with Aruba VAN SDN Controller 2.7.10** • **Aruba Network Optimizer 1.3.41 with Aruba VAN SDN Controller 2.6.11**
Aruba 5400R zl2 v2 modules only	KB.16.03.yyyy KB.16.02.yyyy OpenFlow 1.3 only	KB.16.02.yyyy OpenFlow 1.3 only
Aruba 5400R zl2 v3 modules only Aruba 5400R zl2 v2/v3 module mix	KB.16.03.yyyy KB.16.02.yyyy For v3 modules, support is restricted to functions and features in v2. OpenFlow 1.3 only	KB.16.02.yyyy For v3 modules, support is restricted to functions and features in v2. OpenFlow 1.3 only
HPE 3500	K.16.02.yyyy K.16.01.yyyy OpenFlow 1.3 only	K.16.02.yyyy OpenFlow 1.3 only
HPE 3800	KA.16.03.yyyy KA.16.02.yyyy OpenFlow 1.3 only	KA.16.02.yyyy OpenFlow 1.3 only
HPE 5400 zl v1 modules HPE 5400 zl v1/v2 module mix	K.16.01.yyyy K.15.18.yyyy OpenFlow 1.3 only	K.16.02.yyyy OpenFlow 1.3 only
HPE 5400zl v2 modules only	K.16.03.yyyy K.16.02.yyyy OpenFlow 1.3 only	K.16.02.yyyy OpenFlow 1.3 only
HPE 5400R zl2 v2 modules only	OpenFlow 1.3 only	K.16.02.yyyy 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 1.3 only	K.16.02.yyyy OpenFlow 1.3 only
Legend: y = software build version		

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

Switch model	Aruba Network Optimizer 1.5.4 with Aruba VAN SDN Controller 2.8.8 and 2.7.16 and Aruba Network Optimizer 1.4.6 with Aruba VAN SDN Controller 2.7.10 supports switches with switch software version: K/KA/KB/WB.15.18.yyyy
HPE 8200 zl v1 modules HPE 8200 zl v1/v2 module mix	OpenFlow 1.3 only
HPE 8200 zl v2 modules only	OpenFlow 1.3 only
Legend: y = software build version	

Table 13: *Aruba Network Optimizer SDN Application support for switches running Comware Rxxxx software in an OpenFlow-hybrid network*

Switch model	Aruba Network Optimizer 1.5.4 with Aruba VAN SDN Controller 2.8.8 and 2.7.16 and Aruba Network Optimizer 1.4.6 with Aruba VAN SDN Controller 2.7.10 supports switches with switch software version:	Aruba Network Optimizer 1.3.41 with Aruba VAN SDN Controller 2.6.11 supports switches with switch software version:
HPE 5130EI	R3111P03 or later, OpenFlow 1.3 only	R3108P03 only for other controller versions, OpenFlow 1.3 only
HPE 5500EI	R5501P06 or later, OpenFlow 1.3 only	R5501P06 or later, OpenFlow 1.3 only
HPE 5500HI	R5501P05 or later, OpenFlow 1.3 only	R5501P05 or later, OpenFlow 1.3 only
HPE 5510HI [1]	R1118P02 or later, OpenFlow 1.3 only	Not supported
HPE 5900	R2416-B, OpenFlow 1.3 only	R2416-B, OpenFlow 1.3 only
HPE 5920	R2416-B, OpenFlow 1.3 only	R2416-B, OpenFlow 1.3 only
HPE 5930EI	R2416-B, OpenFlow 1.3 only	R2416-B, OpenFlow 1.3 only

[1] If STP (Spanning Tree Protocol) is enabled in your network, link discovery through this switch might take longer than it would without STP enabled.

Table 14: *Aruba 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

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 **Aruba VAN SDN Controller** on page 4
• For information about running this application with other SDN applications on the same controller, see **Aruba VAN SDN Controller**.

Controller version support

Application name and version	Supported controller Version	Notes
Aruba Network Protector SDN Application 1.5.4	2.8.8	• Not supported with earlier controller versions. • Some older versions supported during the controller upgrade or migration process only. For supported upgrade and migration paths, see the installation guide for the application.
Aruba Network Protector SDN Application 1.3.105	2.7.16	• Not supported with earlier controller versions. • Some older versions supported during the controller upgrade or migration process only. For supported upgrade and migration paths, see the installation guide for the application.
Aruba Network Protector SDN Application 1.3.55	2.7.10, 2.6.11	• Not supported with earlier controller versions.

Hardware requirements

The Aruba Network Protector SDN Application has the same hardware requirements as the controller and the following additional requirements:

• Ethernet NICs as follows:

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.

- For Aruba Network Protector SDN Application deployments of up to 2000 end users and no other SDN applications running on the same controller, ensure that the controller has a minimum of the following:

  - 8 processor cores
  - 16 GB RAM
  - 128 GB of available disk space

- For Aruba Network Protector SDN Application deployments of more than 2000 end users or when there are multiple SDN applications running on the same controller, ensure that the controller has a minimum of the following:

  - 8 processor cores
  - 32 GB RAM
  - 200 GB of available disk space

Software requirements and optional software

Software requirements

This application has the same software requirements as the controller.

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	The Aruba Network Protector SDN Application supports ArcSight CEF syslog output so events can be sent directly to ArcSight Logger for enterprise visibility. ArcSight CEF is compatible with many generic syslog servers and supports all standard syslog servers.
HPE IMC User Access Management (UAM) Software	7.0	End-user correlation. Supports the logging of configuration changes and fault events to HPE IMC.

Aruba Network Protector RepDV subscription license

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

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.

This application requires OpenFlow-hybrid networks.

Switch support in OpenFlow-hybrid networks

(!) See the following:

- For HPE ArubaOS-Switch-based and ProVision-based switches used in an OpenFlow-hybrid network:
  - You must configure OpenFlow 1.0 instances to use passive mode.
  - You must configure OpenFlow 1.3 instances to use passive mode for switches running 15.18.yyyy or earlier versions of ProVision software.
- **Configuration requirements for switches used with the Aruba VAN SDN Controller**.

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

Switch model	The following application and controller combinations support switches running the ArubaOS-Switch software versions listed in this column: • **Aruba Network Protector 1.5.4 with Aruba VAN SDN Controller 2.8.8 and 2.7.16**	The following application and controller combinations support switches running the ArubaOS-Switch software versions listed in this column: • **Aruba Network Protector 1.3.55 with Aruba VAN SDN Controller 2.7.10 or 2.6.11**
Aruba 2920[1]	WB.16.03.yyyy WB.16.02.yyyy OpenFlow 1.0, OpenFlow 1.3	WB.16.02.yyyy OpenFlow 1.0, OpenFlow 1.3
Aruba 2930F	WC.16.03.yyyy OpenFlow 1.0, OpenFlow 1.3 Support includes VSF (front plane stacking).	Not supported
Aruba 3810	KB.16.03.yyyy KB.16.02.yyyy OpenFlow 1.0, OpenFlow 1.3	KB.16.02.yyyy OpenFlow 1.0, OpenFlow 1.3
Aruba 5400R zl2 v2 modules only[2]	KB.16.03.yyyy KB.16.02.yyyy OpenFlow 1.0, OpenFlow 1.3	KB.16.02.yyyy OpenFlow 1.0, OpenFlow 1.3
Aruba 5400R zl2 v3 modules only Aruba 5400R zl2 v2/v3 module mix	KB.16.03.yyyy KB.16.02.yyyy For v3 modules, support is restricted to functions and features in v2. OpenFlow 1.0, OpenFlow 1.3	KB.16.02.yyyy For v3 modules, support is restricted to functions and features in v2. OpenFlow 1.0, OpenFlow 1.3
HPE 3800	KA.16.03.yyyy KA.16.02.yyyy OpenFlow 1.0, OpenFlow 1.3	KA.16.02.yyyy OpenFlow 1.0, OpenFlow 1.3
HPE 5400zl v2 modules only[3]	K.16.03.yyyy K.16.02.yyyy OpenFlow 1.0, OpenFlow 1.3	K.16.02.yyyy OpenFlow 1.0, OpenFlow 1.3
Legend: y = software build version		

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

Switch model	The following application and controller combinations support switches running the ArubaOS-Switch software versions listed in this column: • **Aruba Network Protector 1.5.4 with Aruba VAN SDN Controller 2.8.8 and 2.7.16**	The following application and controller combinations support switches running the ArubaOS-Switch software versions listed in this column: • **Aruba Network Protector 1.3.55 with Aruba VAN SDN Controller 2.7.10 or 2.6.11**

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

[2] For this switch, Aruba 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 Continued

Table 16: *Aruba Network Protector SDN Application support for switches in an OpenFlow-hybrid network, other switch software versions*

Switch model or type	Aruba Network Protector 1.3.55 and later versions, teamed environment	Aruba Network Protector 1.3.55 and later versions, standalone environment
Open Virtual Switch (OVS) 2.3.2	OpenFlow 1.3 only	OpenFlow 1.0, OpenFlow 1.3

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 **Aruba VAN SDN Controller**.
- For information about running this application with other SDN applications on the same controller, see **Multiple application support** on page 7.

Controller version support

Application name and version	Supported controller versions	Notes
Aruba Network Visualizer SDN Application 1.2.7.164	2.8.8	• Does not support controller teaming. • Not supported with earlier or later controller versions. • Some older versions supported during the controller upgrade or migration process only. For supported upgrade and migration paths, see the installation guide for the application.
Aruba Network Visualizer SDN Application 1.1.23	2.7.16	• Does not support controller teaming. • Not supported with earlier or later controller versions. • Some older versions supported during the controller upgrade or migration process only. For supported upgrade and migration paths, see the installation guide for the application.
Aruba Network Visualizer SDN Application 1.1	2.7.10	• Does not support controller teaming. • Not supported with earlier or later controller versions.
Aruba Network Visualizer SDN Application 1.0	2.6.11	• Does not support controller teaming. • Not supported with earlier or later controller versions.

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 use the recommended hardware configuration for controllers in medium production environments. In addition, you must include either an additional 1 Gbps Ethernet NIC that is dedicated to the communications between the switches and the local destination PCAP or use a 10 Gbps Ethernet NIC instead of the 1 Gbps Ethernet NIC required for the controller.

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 medium production environments.

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

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
  ◦ Microsoft Powershell 4.0 or later
  ◦ An SSH server.

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

IPv4 address requirements

This application has the same requirements and support options for IP addresses as the controller. See **IPv4 address requirements** on page 7.

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.

This application requires OpenFlow-hybrid networks.

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
      enable
      exit
   enable
   exit
```

- For ArubaOS-Switch-based and ProVision-based switches running 15.18.yyyy or earlier versions of ProVision software, You must configure OpenFlow 1.3 instances to use passive mode.
- For Aruba or Hewlett Packard Enterprise switches 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 Aruba VAN SDN Controller**.

Table 17: *Aruba Network Visualizer SDN Application support for switches running ArubaOS-Switch software in an OpenFlow-hybrid network*

Switch model	The following application and controller combinations support switches running the ArubaOS-Switch software versions listed in this column: • **Aruba Network Visualizer 1.2.7.164 with Aruba VAN SDN Controller 2.8.8 and 2.7.16**	The following application and controller combinations support switches running the ArubaOS-Switch software versions listed in this column: • **Aruba Network Visualizer 1.1 with Aruba VAN SDN Controller 2.7.10** • **Aruba Network Visualizer 1.0 with Aruba VAN SDN Controller 2.6.11**
Aruba 2920 [1]	WB.16.03.yyyy WB.16.02.yyyy OpenFlow 1.3 only	WB.16.02.yyyy OpenFlow 1.3 only
Aruba 2930F	WC.16.03.yyyy OpenFlow 1.3 only Support includes VSF (front plane stacking).	Not supported
Aruba 3810	KB.16.03.yyyy KB.16.02.yyyy OpenFlow 1.3 only	KB.16.02.yyyy OpenFlow 1.3 only
Aruba 5400R zl2 v2 modules only	KB.16.03.yyyy KB.16.02.yyyy OpenFlow 1.3 only	KB.16.02.yyyy OpenFlow 1.3 only

Table Continued

Switch model	The following application and controller combinations support switches running the ArubaOS-Switch software versions listed in this column: • **Aruba Network Visualizer 1.2.7.164 with Aruba VAN SDN Controller 2.8.8 and 2.7.16**	The following application and controller combinations support switches running the ArubaOS-Switch software versions listed in this column: • **Aruba Network Visualizer 1.1 with Aruba VAN SDN Controller 2.7.10** • **Aruba Network Visualizer 1.0 with Aruba VAN SDN Controller 2.6.11**
Aruba 5400R zl2 v3 modules only Aruba 5400R zl2 v2/v3 module mix	KB.16.03.yyyy KB.16.02.yyyy For v3 modules, support is restricted to functions and features in v2. OpenFlow 1.3 only	KB.16.02.yyyy For v3 modules, support is restricted to functions and features in v2. OpenFlow 1.3 only
HPE 3800	KA.16.03.yyyy KA.16.02.yyyy OpenFlow 1.3 only	KA.16.02.yyyy OpenFlow 1.3 only
HPE 5400 zl v2 modules only	K.16.03.yyyy K.16.02.yyyy OpenFlow 1.3 only	K.16.02.yyyy OpenFlow 1.3 only
Legend: y = software build version		

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

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

Table 18: *Aruba 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

Aruba VAN SDN Controller and Applications Support Matrix

SDN websites

Hewlett Packard Enterprise Networking Information Library for SDN

    www.hpe.com/info/sdn/infolib

Hewlett Packard Enterprise Software-Defined Networking website

    www.hpe.com/info/sdn

Hewlett Packard Enterprise SDN community discussion forum

    community.arubanetworks.com/t5/Software-Defined-Networking-SDN/bd-p/SDN

Hewlett Packard Enterprise SDN App Store

    www.hpe.com/networking/sdnappstore

Hewlett Packard Enterprise Open Source download website

    www.hpe.com/software/opensource

Networking Websites

Hewlett Packard Enterprise Networking Information Library

    www.hpe.com/networking/resourcefinder

Hewlett Packard Enterprise Networking Software

    www.hpe.com/networking/software

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/EIL

For additional websites, see **Support and other resources**.

Accessing Hewlett Packard Enterprise Support

- For live assistance, go to the Contact Hewlett Packard Enterprise Worldwide website:

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

  http://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:

  Hewlett Packard Enterprise Support Center
  > **www.hpe.com/support/hpesc**

  Hewlett Packard Enterprise Support Center: Software downloads
  > **www.hpe.com/support/downloads**

  Software Depot
  > **www.hpe.com/support/softwaredepot**
- To subscribe to eNewsletters and alerts:

  www.hpe.com/support/e-updates
- 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

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

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:

http://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.

If your product includes additional remote support details, use search to locate that information.

Remote support and Proactive Care information
HPE Get Connected
    www.hpe.com/services/getconnected
HPE Proactive Care services
    www.hpe.com/services/proactivecare
HPE Proactive Care service: Supported products list
    www.hpe.com/services/proactivecaresupportedproducts
HPE Proactive Care advanced service: Supported products list
    www.hpe.com/services/proactivecareadvancedsupportedproducts

Proactive Care customer information
Proactive Care central
    www.hpe.com/services/proactivecarecentral
Proactive Care service activation
    www.hpe.com/services/proactivecarecentralgetstarted

Warranty information

To view the warranty for your product, see the *Safety and Compliance Information for Server, Storage, Power, Networking, and Rack Products* document, available at the Hewlett Packard Enterprise Support Center:

www.hpe.com/support/Safety-Compliance-EnterpriseProducts

Additional warranty information
HPE ProLiant and x86 Servers and Options
    www.hpe.com/support/ProLiantServers-Warranties
HPE Enterprise Servers
    www.hpe.com/support/EnterpriseServers-Warranties
HPE Storage Products
    www.hpe.com/support/Storage-Warranties
HPE Networking Products
    www.hpe.com/support/Networking-Warranties

Regulatory information

To view the regulatory information for your product, view the *Safety and Compliance Information for Server, Storage, Power, Networking, and Rack Products*, available at the Hewlett Packard Enterprise Support Center:

www.hpe.com/support/Safety-Compliance-EnterpriseProducts

Additional regulatory information

Hewlett Packard Enterprise is committed to providing our customers with information about the chemical substances in our products as needed to comply with legal requirements such as REACH (Regulation EC No 1907/2006 of the European Parliament and the Council). A chemical information report for this product can be found at:

www.hpe.com/info/reach

For Hewlett Packard Enterprise product environmental and safety information and compliance data, including RoHS and REACH, see:

www.hpe.com/info/ecodata

For Hewlett Packard Enterprise environmental information, including company programs, product recycling, and energy efficiency, see:

www.hpe.com/info/environment

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