

# HP VAN SDN Controller Release Notes

## Abstract

This document contains supplemental information for HP VAN SDN Controller Release 2.2.

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## Description

For the latest version of these release notes and HP VAN SDN Controller 2.2 user guides, see the HP Networking support search site.

1. Open your browser and go to: [www.hp.com/support/manuals](http://www.hp.com/support/manuals).
2. Use the tools provided to search by product name (for example, VAN SDN Controller) or product number.

Detailed information about the selected product displays, including a list of Support options in the left column.

## Issues and suggested actions

### HP VAN SDN Controller issues

Release 2.2:

#### Issues that occur when the HP VAN SDN Controller is configured with `hybrid.mode=false`:

- **ARP, ICMP request, and other communication to a switch data-plane IP fails** (CR147704)—Currently, the controller does not support direct communication with controlled switches. The only supported communication is through the controlled switches and not to the controlled switches. When a host on the network sends an ARP request, the controller assumes that the ARP request is intended for another host on the network (not a controlled switch). The controller instructs the controlled switch to forward the packet elsewhere in the network and does not instruct the controlled switch to directly respond to the packet.

To resolve this:

1. Change the **hybrid.mode** setting of the controller to **true**.
2. Read the user documentation to fully understand the implication of this change on the controlled network.

- **Data plane traffic to or from a host indirectly connected to a controlled switch is not forwarded at line-rate** (CR148324)—A host is indirectly connected to a controlled switch when there is an uncontrolled switch between the edge-most controlled switch and the host. When a host is connected to the controlled network in this manner, the controller does not learn where the host is located, because the controller assumes that no hosts will appear on infrastructure ports. Since the controller does not learn where the host is located, any traffic that flows to or from this host cannot be paved, and is therefore handled by the controller at each hop through the controlled network. If a single packet to or from such a host needs to cross a number of controlled switches, then the controller will be consulted those many times for the same packet. The actual throughput rate depends upon the load of other processing on the controller and the number of hops that such flows take through the controlled network.

To resolve this:

1. Change the **hybrid.mode** setting of the controller to **true**.
2. Read the user documentation to fully understand the implication of this change on the controlled network.
3. If step 1 cannot be implemented, then connect all hosts to ports of controlled switches that are not connected to other controlled switches.

Do not connect multiple controlled switches to ports on the same VLAN of a router, especially a gateway router.

- **Packets are not properly forwarded through a controlled router** (CR148326)—The controller is not aware of the data plane MAC addressing or IP addressing of a controlled L3 router. The controller is also unaware of whether a packet received by the data plane of a controlled switch should be switched, routed, or consumed. Additionally, the controller is not aware of

the data plane subnetting, static routes, or routing protocol information that provides information necessary to properly route traffic.

To resolve this:

1. Change the **hybrid.mode** setting of the controller to **true**.
  2. Read the user documentation to fully understand the implication of this change on the controlled network.
  3. If step 1 cannot be implemented, then change the configuration of the OpenFlow instance on the router so that it is no longer controlled by the controller.
- **Traffic between two hosts crossing a switch configured with a multi-VLAN and the aggregate OpenFlow instance in a controlled network is not forwarded at line-rate** (CR148389)—HP switches, including those from the 2920/3500/3800/5400/6200/6600/8200 series, support an aggregate OpenFlow instance. This instance contains all VLANs on the controlled switch. When the controller attempts to pave a path across such a switch configured with this aggregate instance, the controller does not send the VLAN ID to which the path paving flow-mod applies. Any switch configured with multiple VLANs in an aggregate instance will reject the flow-mod because the ingress VLAN was not specified. Since the flow-mod is never accepted by the switch, all future forwarding decisions for such packets are delegated to the controller by the controlled switch. The controller makes the forwarding decision for every packet which needs to cross a controlled switch with a multi-VLAN aggregate OpenFlow instance. If a single packet needs to cross a number of such switches, then the controller will be consulted those many times for the same packet. The actual throughput rate depends upon the load of other processing on the controller and the number of hops that such flows take through the controlled network.

To resolve this:

1. Change the **hybrid.mode** setting of the controller to **true**.
  2. Read the user documentation to fully understand the implication of this change on the controlled network.
  3. If step 1 cannot be implemented, then change the switch configuration to use an OpenFlow instance per VLAN instead of a single aggregate instance for all VLANs.
- **Traffic between two hosts in a partially-controlled network is not forwarded at line-rate** (CR148385)—The controller is responsible for the forwarding decision of every packet that enters a switch it controls. When the controller observes a packet for any given flow, it attempts to pave the path through the network through the OpenFlow forwarding rules for that flow, so that all future packets of the same flow are handled by the switch according to the forwarding rule. In cases where two controlled switches are separated by a multi-hop link, the controller does not pave the path across that multi-hop link because it paves only a single path and the controller cannot be guaranteed that multiple paths do not exist if multiple multi-hop links exist.

As a result, the controller will not pave any paths across a multi-hop link. The controller makes the forwarding decision for every packet which needs to cross a multi-hop link. If a single packet needs to cross a number of multi-hop links, then the controller will be consulted those many times for the same packet. The actual throughput rate depends on the load of other processing on the controller and the number of hops that such flows take through the controlled network.

To resolve this:

1. Change the **hybrid.mode** setting of the controller to **true**.
2. Read the user documentation to fully understand the implication of this change on the controlled network.
3. If step 1 cannot be implemented, then connect switches in such a manner that there are no uncontrolled switches (multi-hop links) between controlled switches in the controlled network.

- **All IPv6 traffic is dropped** (CR148658)—The HP VAN SDN Controller does not recognize the devices that use only the IPv6 addresses on the control plane. The controller and the devices with which it communicates must use the IPv4 addresses on the control plane. IPv6 traffic running in the data plane of an OpenFlow-hybrid network is supported when the controller is operating with **hybrid.mode** set to **true** (the default). Under these conditions, the data plane forwarding decision for IPv6 packets is made without involvement by the default controller applications. However, if **hybrid.mode** is set to **false**, all packets are sent to the controller and the default controller applications drop all the IPv6 packets.

Similar to any protocol that is not supported by the default controller applications, if the IPv6 data plane traffic support is required, then write and install the application in the controller to provide switches with the desired flows to let the controller observe and direct the forwarding decision.

To resolve this:

1. Change the **hybrid.mode** setting of the controller to **true**.
  2. Read the user documentation to fully understand the implication of this change on the controlled network.
- **Host is unable to ping some other hosts on the network when multiple VLANs are used when the controller is configured with hybrid.mode=false (OpenFlow-only)** (CR148179)—When multiple VLANs are used with a controller that is configured for **hybrid.mode=false**, a host might not be able to ping some other hosts on the network.

To resolve this:

1. Change the **hybrid.mode** setting of the controller to **true**.
2. Read the user documentation to fully understand the implication of this change on the controlled network.

#### Other issues:

- **Controller loses knowledge of hosts on the network, but those hosts are actively communicating through or with the network infrastructure** (CR148453)—The default setting for the controller's ARP timeout is 5 minutes. The default setting of **ip arp-age** for ProVision switches is 20 minutes. If the controller setting does not match the setting on the controlled switches, then information learned by the controller from ARP traffic is aged out of the controller's knowledge base before it is aged out of the infrastructure. The controller needs to wait for up to 15 minutes to see ARP traffic again for a given host. If the controller is unaware of the host's location on the network, other problems may occur with traffic forwarded to or from that host depending upon the applications and forwarding decisions that the controller is responsible for.

To resolve this:

1. Change the controller's **arp.age** setting on the controller UI under **com.hp.sdnctl.nodemgr.impl.NodeManager** to be greater than or equal to the **ip arp-age** setting of the controlled switches.
  2. If step 1 cannot be implemented, then change the **ip arp-age** setting of the controlled switches to match the **arp.age** setting on the controller.
- **HP VAN SDN Controller becomes unresponsive when the HP Network Optimizer SDN Application session database has around 1M entries** (CR148578)—The HP VAN SDN Controller crashes in JVM and becomes unresponsive when the HP Network Optimizer SDN Application session database has about 1M entries in it. Read the *HP Network Optimizer Release Notes* to know more about the JVM memory size.
  - **When trying to access OpenFlow Topology using Firefox browser, error 500 occurs** (CR147973)—When trying to access the OpenFlow Topology using the Firefox browser, the "Server Error - 500: Internal Server Error" error message appears. The topology appears after that error is closed.

- **HA teaming—After fail over or fail back all the links learnt are not shared across all the team members all the time** (CR146171)—In an HA teaming configuration, after fail over or fail back, all the links learnt are not shared across all the team members all the time. This behavior can occur when there is a very large number of links between switches (over 12,000) and a large number of switches (over 500) in the controller domain.
- **Pin All option does not pin all data paths and nodes** (CR146165)—On the HP VAN SDN Controller UI, in Topology viewer, the **Pin All** option under **View** does not pin all data paths and nodes.
- **Cassandra fails to free disk space occupied by removed records** (CR146155)—The Cassandra database fails to free disk space occupied by removed records.
- **Topology viewer displays moving switch** (CR146636)—When connecting a single physical switch to the controller and bringing it up in the Topology viewer on the GUI, it occasionally shows the switch moving around the screen before any end hosts have been discovered on the switch.
- **When performing the backup and restore operations, the restore operation is not logged** (CR148809)—When you perform the backup and restore operations and check the audit logs for these operations, the restore operation is not logged.
- **Schema disagreement exception for Cassandra observed in log files** (CR148457)—The schema disagreement exception for Cassandra occurs when a keyspace is created on all nodes of the controller. This happens when a schema configuration is in progress on one node of the cluster and the same schema is configured on another node of the same cluster. This issue is intermittent and has no impact on the functioning of the controller.
- **The OpenFlow Topology view of any single controller does not display the entire team-wide topology** (CR148644)—The OpenFlow Topology view shows the switches and the respective end-nodes that are connected to the controller. In a controller team environment, the entire team-wide topology is not shown in the OpenFlow Topology view of any single controller.
- **NIO direct buffers will not be garbage collected before running out of space** (CR148470)—There is a possibility that the NIO direct buffers will not be garbage collected before running out of space because of the way the JVM garbage collection is implemented with respect to NIO direct buffers. The NIO buffer garbage collection is triggered to run only when the normal Java heap garbage collection runs. If the normal Java heap remains steady and never invokes the garbage collection, the NIO directly allocated buffers will never be freed.

Release 2.1

- **Never released.**

Release 2.0:

- **REST call to get all the ports takes 5 seconds when the number of ports is 40k** (CR141008)—The REST call to get all ports takes more time as the number of ports increases.
- **Auxiliary connections established by the device to the controller are not visible via REST or the UI** (CR140089)—Manage the device auxiliary connections to the controller from the switch by telneting to the switch.
- **When using Internet Explorer 9 or Internet Explorer 10, the controller console is blank** (CR138915)—Currently, IE 9 is not supported, and IE 10 has limited support. In IE 10, OpenFlow Topology is unavailable.

- **When restarting the sdncservice database, exceptions are reported in logs (CR141589)**—The following errors are expected only during the initialization phase, and don't describe any unexpected behavior:
  - [2013-10-03 11:31:39.890] INFO t Resolve Thread (Bundle 81) System.outInternal Exception: org.postgresql.util.PSQLException: ERROR: relation "X" already exists...
  - [2013-10-03 11:31:39.899] INFO t Resolve Thread (Bundle 81) System.out[EL Warning]: ServerSession(2136794997)--Exception [EclipseLink-4002] (Eclipse Persistence Services - 2.4.2.v20130514-5956486): org.eclipse.persistence.exceptions.DatabaseException
- **Topology Map fails to display network-wide computed trees (CR137780)**—The topology viewer in HP VAN SDN Controller 2.0 topology UI shows only the devices discovered by the controller pointed to by the browser, not the entire topology discovered by a team of controllers.
- **OpenFlow topology GUI is not optimal when a large number of hosts or devices are connected (CR140798)**—The HP VAN SDN Controller 2.0 topology UI is not intended to represent large topologies consisting of hundreds of elements.
- **On team reboot, suppressed ports are lost (CR137854)**—Suppressed ports information (specifying the ports on which want to stop LLDP traffic) is not stored in persistence, and is lost whenever the controller reboots. HP recommends that you maintain a backup of your suppressed ports configuration.
- **Comware switch OpenFlow behavior (CR138462)**—When a flow is pushed to a extensibility table with `apply_actions` as the instruction type, and the retrieved Flow Statistics using Multipart Request `apply_actions` is correct, the CLI always shows `Write actions`.
- **Tagged link between two devices is not discovered (CR138547)**—If a link exists between a pair of ports tagged to two different VLAN instances in Aggregate mode in OpenFlow, links are discovered correctly in the HP VAN SDN Controller between only one of the VLAN instances. The link between the other VLAN instances is not discovered. This issue does not occur in Virtualized mode.
- **Link Discovery displays link across two OpenFlow instances (CR139375)**—The Link Discovery application in the HP VAN SDN Controller shows links between two OpenFlow instances when the same port is tagged to two different VLANs associated with the two OpenFlow instances in Comware (5900) devices.
- **Group/meter create/update/delete require optional and redundant command attribute (CR141930)**—When using the REST API for creating/updating/deleting a group/meter, including the JSON request in the command field is required.
- **During installation through the Ubuntu software center, the HP VAN SDN Controller Debian package displays a "Package is of bad quality" error message (CR141745)**—HP VAN SDN Controller installation through the Ubuntu software center is not supported.
- **Output of REST API to fetch application with name parameter is inconsistent (CR141736)**—The HP VAN SDN Controller Application Manager REST API for fetching applications currently fetches all applications. There is no support for a filter based on query parameters.
- **Jconsole utility is not available in openjdk-7-jre-headless, which is a dependency before installing the HP VAN SDN Controller**—If you create metrics in the HP VAN SDN Controller, and then try to open the Jconsole to see the metrics, a message displays saying that Jconsole cannot be found.
- **HP VAN SDN Controller failed to delete clean start memento /tmp/HPN Van Controller.clean, error message in the log.log file (CR142605)** —This is a temporary file that is only created



during a restore or upgrade during normal operation when the OSGi Virgo container is restarted with the `—clean` option.

- **Zookeeper warning logged during initialization** (CR138057)—The HP VAN SDN Controller 2.0 includes ZooKeeper connection logs. Failed connection attempts are normal during Controller initialization and configuration changes and can be ignored.
- **Delete failed error exception is noticed from teaming module in the log.log file** (CR142603)—The HP VAN SDN Controller 2.0 tries to cleanup internal data structures during Controller initialization and configuration changes and logs error message if data is not found. This is normal during Controller initialization and configuration changes and can be ignored.
- **Backup/Restore fails when manual upload/download of backup files when file owner changes to anyone other than sdn user** (CR138689)—Any manual operation on the VAN SDN Controller, other than using the REST APIs through curl can change the file attributes from sdn username to Operator username. The backup/restore fails if you perform a manual upload/download of files. To avoid this, always perform any manual operation via curl using the REST APIs.
- **Keystone-related SDN user password changes are not restored properly** (CR141586)—If the default sdn password is changed from `skystone` using keystone and the backup operation is done, you cannot login with the new password after restore operation. You must still use the default password (`skystone`) for login.
- **Installation guide calls for AMD64 processor but processors from other manufacturers can be used**—The hardware requirements listed in the *HP VAN SDN Controller Installation Guide* incorrectly specify that an AMD64 server or desktop machine is required. No specific processor manufacturer is required. You can use x86-64 processors from other manufacturers.

## Switch software issues affecting HP VAN SDN Controller operations

The following are known issues with switch software affecting HP VAN Controller Release 2.0 operations:

- **Flow is not added or retrieved correctly** (CR138494)—The `VLAN_VID: PRESENT` bit is not set for VLAN ID, which indicates an incorrectly formed `VLAN_VID` match field from a Match structure in a `MultipartReply / FlowStats` element.
- **Unable to modify vlan\_vid in table 101** (CR140524)—A switch error occurs if you push Flow Mod with the `vlan_vid` value as part of `set-fields`.
- **Connected Links disappear between the OpenFlow switches when spanning tree is enabled** (CR140755)—When enabling spanning tree in OpenFlow switches, controller-sent LLDP packets are not being forwarded from `STP_BLOCKED` ports, causing the discovered links to be deleted and link rediscovery to not occur on the ports.
- **Openflow 1.3 badly formed MultipartReply/FLOW stats message** (CR142663)  
—`java.lang.IllegalStateException: "Timed-out waiting for response"` might appear when the REST API is invoked to list all flows on a datapath from the SDN Controller. This occurs due to the information sent from the switch firmware.
- **When RESTAPI /stats/ports/ is executed with dpid & portid filter, an exception is thrown with response code 500** (CR142114) —HTTP/1.1 500 Internal Server Error might appear when the REST API is invoked to get stats for a port (`GET /stats/ports`) in a datapath from the SDN Controller. This appears due to the incorrect information from the Openflow devices (Switch CR 131910: `dpctl stats-port <port>` command displays empty stats.)
- **The RESTAPI /datapaths/{dpid}/ports/{port\_id}/action fails to change the state of the port** (CR140753)—The port state does not get changed when the REST API is invoked to change the state of a port in a datapath from the SDN Controller due to the design in the Provision switches.

## Documentation feedback

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