



Plexxi HCN™
Release Notes
Switch and Control Software
Release 3.3.0

December 8, 2017



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Introduction

This document contains information about the Plexxi 3.3.0 release, which delivers new features as described within this document as well as software updates for Plexxi Switch and Plexxi Control.

Software Versions Included

The following versions of software updates are included:

- Plexxi Switch 3.3.0
- Plexxi Control 3.3.0

Supported Hardware

Plexxi release 3.3.0 is supported on the following Plexxi switches:

- Switch 1x (PX-S1X)
- Switch 2 (PX-S2)
- Switch 2s (PX-S2S)
- Switch 2p (PX-S2P)
- Switch 2sp (PX-S2SP)
- Switch 2e (PX-S2E)
- Switch 3eq (PX-S3EQ)

New in this Release

New features:

- Network Based Layer 2 Virtualization
- L2 VPN Configuration is Added to the Plexxi Control UI
- Supported standards for L2 VPN: MAC-in-MAC, XVLAN, BGP-EVPN, QinQ
- LightRail 3
- MLAG Attachment Topologies (Experimental)
- Plexxi Switch RADIUS Authentication (Experimental)
- Plexxi Control: Syslog User Login and Configuration Enhancements



Related Documentation

The following additional documentation supports this release:

- *Plexxi Compatibility Matrix, Version 9 or greater.* The *Plexxi Compatibility Matrix* contains version-specific software and hardware support information as well as cable and transceiver support information.
- *Plexxi Control Installation, Upgrade and Administration Guide, Releases 3.2.2 through 3.3.0*
- *Plexxi Switch Administrator Guide using Linux and Plexxi CLI, Release 3.3.0*
- *Plexxi Switch 3eq Hardware and Installation Guide, Document Version 2*
- *Plexxi Getting Started Guide, Small and Medium Deployments, Releases: Switch-Control 3.2.2 – 3.3.0 and Connect 2.4.x, Document Version 1*
- *Plexxi Control Online Help* which is available while logged into the Plexxi Control UI

Except for the online help, this documentation is available on the Resources > Technical Publications page of <http://www.plexxi.com>.

Contacting Plexxi Support

Plexxi Technical Support services are available to answer your questions and to make sure that your software and hardware continue to operate properly.

You can contact Plexxi Support at:

support@plexxi.com

1.888.415.9809 (US/Canada toll-free)

+1 603-782-0702 (US/International)

<http://support.plexxi.com>

Network Based Layer 2 Virtualization (L2 VPN)

For large data centers, the 4096 VLAN limitation is inadequate for providers to support independent VLANs for large numbers of tenants. In the Switch-Control 3.3.0 release, Plexxi resolves this limitation by supporting Network Based Layer 2 (L2) Virtualization which enables providers with large data centers to interconnect tenant sites for many tenants through the provider's network, while maintaining privacy of the communication and address space of each tenant.

Virtual networks are defined to keep each tenant network separate from all other tenant networks of this provider. For each tenant, the provider creates a network that abstracts and separates tenant L2 space, but allows a tenant running several applications in various parts of the cloud data center to communicate through L2 and L3.

L2 VPN uses encapsulation to separate tenant spaces using either the MAC-in-MAC or VXLAN standard.

For detailed information about L2 VPN in the Plexxi fabric, refer to the Plexxi Control Online Help:

- *Plexxi Control Online Help*, available from the Release 3.3.0 Plexxi Control UI

Supported Standards for L2 VPN

The following standards are supported for network-based layer 2 virtualization.

MAC-in-MAC

For configurations where the destination host(s) is directly connected to another Plexxi switch in the same Plexxi fabric, Plexxi switches use MAC-in-MAC standard (IEEE 802.1ah-2008) encapsulation to tunnel the tenant packet from the ingress switch to the egress switch through the Plexxi fabric.

VXLAN

For configurations where the destination host resides beyond a router or switch that is outside the Plexxi fabric, a Virtual eXtensible Local Area Network (VXLAN) RFC 7348 tunnel transports the packet from the source Plexxi switch to the external destination switch or router VXLAN Tunnel Endpoint (VTEP). The VTEP, which may be a virtual or physical switch, terminates the VXLAN tunnel. The VTEP strips the L2 VPN header from the packet and forwards the packet to the target device(s) as defined in the original packet header.

BGP-EVPN

Within a Plexxi fabric, L2 VPN and MAC attachment information is exchanged using the Plexxi control plane. For VXLAN environments where VXLAN tunnels extend beyond the Plexxi fabric, Plexxi supports BGP – MPLS Based Ethernet VPN (EVPN) (see the 'EVPN Overlay' draft standard at: <https://tools.ietf.org/html/>) which enables Plexxi switches to exchange MAC attachment information with devices outside a Plexxi fabric or with another Plexxi fabric.

QinQ

Plexxi supports QinQ, which in L2 VPN enables tenant VPNs to be separated from provider VPNs. Each tenant of a provider can use its own VLAN space while eliminating VLAN clashes with other tenant VLANs. The tenant VLAN is carried "on top" of a provider VLAN that is assigned to that tenant. Inside the transport network, packets are switched based on the outer VLAN (the transport VLAN) and the original tenant destination MACs. MAC learning happens as normal in the transport network based on the outer VLAN; all switches in the transport network will see all tenant MAC addresses.



L2 VPN Configuration is Added to the Plexxi Control UI

In the 3.3.0 version of the Plexxi Control UI, you configure Layer 2 (L2) VPN using the Plexxi Control UI.

L2 VPN and related components such as VTEPs are configured using the Plexxi Control UI. The high-level procedure is:

1. Run a Fit with L2 VPN enabled.
2. Create an L2 VPN.
3. If needed, for VPNs that extends beyond the Plexxi fabric, configure external VTEPs.
4. If needed, for any L2 VPNs that extend beyond the Plexxi fabric, add VTEP(s) to the L2 VPN.
5. Repeat 2-4 to create each L2 VPN.

For detailed instructions to configure an L2 VPN, refer to the Plexxi Control Online Help:

- *Plexxi Control Online Help*, available in the Release 3.3.0 Plexxi Control UI

LightRail 3

In the Switch-Control 3.3.0 release, Plexxi supports the new 100 Gb/s LightRail 3 on Plexxi Switch 3eq switches. This LightRail is installed during either initial switch and network installation and configuration or during a network expansion. LightRail 3, like LightRail 1 and 2, is configured using the Plexxi CLI.

For further information on installing and configuring LightRail 3, refer to the following documents:

- *Plexxi Switch 3eq Hardware and Installation Guide*
- *Plexxi Switch Administrator Guide using Linux and Plexxi CLI, Release 3.3.0*

Plexxi Switch RADIUS Authentication (Experimental)

In the Switch-Control 3.3.0 release, Plexxi provides experimental support for RADIUS Authentication. This feature is configured using the Plexxi CLI as described in the following document:

- *Plexxi Switch Administrator Guide using Linux and Plexxi CLI, Release 3.3.0*

MLAG Attachment Topologies (Experimental)

In the Switch-Control 3.3.0 release, Plexxi provides limited experimental support for MLAG Attachment Topologies.

To allow diverse paths from Plexxi switches in a Plexxi fabric to external devices connected to the fabric through an MLAG, MLAG Attachment Topologies creates topologies from ingress switches to switches in MLAGs. These topologies allow different sources in the fabric to select different MLAG destination switches, even for the same MAC attachment.

An MLAG Topology creates an incast topology from any switch in a Plexxi fabric to a root node attached to the MLAG. As input, it takes a set of MLAGs and a set of switches from which to create the topology. Initially, the VLAN for the attachment cannot be used to narrow down to only a specific MLAG attachment for a specific VLAN. However, topology attributes (HC, ISO, OS, bandwidth, Forwarding Priority) can be specified, and an action can be specified if the Topology is invalidated.

The Fitting engine calculates topologies for each switch toward the MLAG attached switches based on the attributes provided.

This feature is supported through the Plexxi API; there is no user interface (UI) support.

Plexxi Control: Syslog User Login and Configuration Enhancements

In the Switch-Control 3.3.0 release, enhancements made to Syslog user login and configuration enable providers to keep track of changes to their infrastructure, including fitting changes. All switch configuration changes are noted. These changes are reported through Syslog messages. These messages can be viewed using the new Plexxi Clarity 1.0 feature.

Issue: Upgrading Switch Software to Switch 3.3.0

IMPORTANT: Before upgrading to Switch 3.3.0, if you have Link Aggregation Groups with member ports on different switches (MLAG), and you are running STP/Loopguard in your environment connected to Plexxi, please contact Plexxi Support for a pre-upgrade script to be applied. You can obtain the script file, `pre-upgrade-3.3-MLAG.sh` from the `Switch > releases > 3.3.0` directory of software.plexxi.com.



Issues Fixed in this Release

| Issue ID | Description |
|------------|--|
| PXCTL-3137 | Job cleanup task would fail because some related objects were not marked for cleanup. |
| PXCTL-3269 | Change message level to ALERT when control losses connectivity with a switch. |
| PXCTL-3277 | Database maintenance job would fail if Plexxi Connect was in use due to new tables. |
| PXSW-2855 | SFLOW configuration would fail if invalid name server configuration was present on switch causing the configured collector to timeout. |
| PXSW-3083 | On a received route, the Route Distinguisher was over written using the VPN context of the local switch resulting in a bgpd crash. |
| PXSW-3196 | Adding a second member and switch to an existing LAG making it an MLAGg when the new ports are disabled would result in P2 being out of sync for a prolonged period. |
| PXUI-3360 | Unable to enable IGMP snooping on any VLAN. |
| PXSI-491 | px-setup comma delimited IP lists now tolerate extraneous spaces. |

Known Issues in this Release

| Issue ID | Description |
|------------|--|
| | Issue when upgrading switch software on any Plexxi switch to Switch 3.3.0: Before upgrading to Switch 3.3.0, if you have Link Aggregation Groups with member ports on different switches (MLAG), and you are running STP/Loopguard in your environment connected to Plexxi, please contact Plexxi Support for a pre-upgrade script to be applied. You can obtain the script file, <code>pre-upgrade-3.3-MLAG.sh</code> from the Switch > releases > 3.3.0 directory of software.plexxi.com . |
| | Multicast traffic over an MLAG is not supported. |
| PXCTL-3617 | After completing the upgrade to 3.3.0, it is highly recommended that a new full fit is executed. |
| PXCTL-3448 | L2VPN configuration tasks should not be executed at a rate higher than 1 each 30 seconds. |

| Issue ID | Description |
|-----------|--|
| PXSW-3545 | Changing the confluent ring size from the default 2 interfaces to 3 or 4 does not require a ring reboot. However, after expansion, reducing the number of ports in the confluent ring does require a reboot for correct operation. |
| PXSW-2501 | The following issue exists: When a switch that is on the In-Band Management LAG is rebooted, the LACP configuration is not restored on the In-Band Management LAG. |
| PXSW-2443 | The following MC traffic issue exists: When an MC receiver host moves, MC traffic still gets delivered to the port it was attached to previously until the IGMP JOIN on that port times out. |
| PXSW-2440 | The following MC traffic issue exists when increasing the confluent ring size: An access port that was part of an MC group prior to increasing the confluent ring size is removed from the group after the confluent ring size is increased. |
| PXSW-2165 | An issue exists where: If the following User Defined Path conditions exist: <ul style="list-style-type: none"> • the path uses confluent ring ports • the last switch in the path (egress switch) is the Ubervisor switch And if a Flow Entry has the following characteristics: <ul style="list-style-type: none"> • Path action is selected • The user defined path stated above is selected • The egress ports on the Ubervisor egress switch (last switch in path) are not selected Broadcast, unknown unicast, and unknown multicast traffic will not be forwarded. Known unicast and known multicast traffic is forwarded as expected. To solve this issue, if the Ubervisor switch is egress switch for a User Defined Path that uses the confluent ring, in Plexxi Control when configuring the Flow Entry, explicitly select the egress ports on the egress (Ubervisor) switch. If the last switch in the path is not an Ubervisor switch, traffic flows as expected. |
| PXSW-2162 | In a Flow Entry created in Plexxi Control that uses the Path action, the Flow Entry might match a flow that does not originate on the source switch defined in the user-defined path. |
| PXSW-1216 | Before increasing the size of the confluent ring using the Plexxi Switch CLI, you must remove any configuration from the ports to be added to the confluent ring LAG. This configuration includes L1 Replication, Fabric Link Encapsulation and User Defined Paths. |