Cisco Programmable Fabric with VXLAN BGP EVPN Release Notes

Date: October 12, 2016

Current Release: Cisco Programmable Fabric with VXLAN BGP EVPN 1.0

This document describes the features, caveats, and limitations for Cisco Programmable Fabric with virtual extensible LAN (VXLAN) Border Gateway Protocol Ethernet VPN (BGP EVPN). Use this document in combination with documents listed in the "Related Documentation" section on page 8.

> **Note** Release Notes are sometimes updated with new information about restrictions and caveats. Always check for the most recent version of the *Cisco Programmable Fabric with VXLAN BGP EVPN Release Notes*.

Table 1 shows the online change history for this document:

Table 1   Online Change History

Date	Description
March 14, 2016	Created the *Cisco Programmable Fabric with VXLAN BGP EVPN Release Notes.*
October 12, 2016	Created the Cisco Programmable Fabric with VXLAN BGP EVPN Release Notes for the 7.3(1)N1(1) release.

Contents

This document includes the following sections:

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Introduction

Cisco Programmable Fabric with VXLAN BGP EVPN simplifies fabric management, optimizes the fabric infrastructure, and automates provisioning across physical and virtual environments.

System Requirements

Hardware and Software Requirements

Cisco Programmable Fabric with VXLAN BGP EVPN has the following hardware and minimal software requirements:

Table 2   Cisco Programmable Fabric Hardware and Minimal Software Requirements

Function	Platform	I/O Module	Minimum Software Release
Fabric Management[1]	Cisco Prime DCNM	—	Cisco NX-OS 7.2(3)
Cisco Programmable Fabric Spine	Cisco Nexus 5600	—	Cisco NX-OS 7.3(0)N1(1)
	Cisco Nexus 7000/7700	F3 card	Cisco NX-OS 7.3(0)D1(1)
	Cisco Nexus 9300	—	Cisco NX-OS 7.0(3)I1(3)
	Cisco Nexus 9500	—	Cisco NX-OS 7.0(3)I1(3)
Cisco Programmable Fabric Leaf	Cisco Nexus 5600	—	Cisco NX-OS 7.3(0)N1(1)
	Cisco Nexus 7000/7700	F3 card	Cisco NX-OS 7.3(0)D1(1)
	Cisco Nexus 9300	—	Cisco NX-OS 7.0(3)I1(3)
	Cisco Nexus 9500	—	Cisco NX-OS 7.0(3)I1(3)
Cisco Programmable Fabric Border Leaf/Border Spine	Cisco Nexus 5600	—	Cisco NX-OS 7.3(0)N1(1)
	Cisco Nexus 7000/7700	F3 card[2]	Cisco NX-OS 7.3(0)D1(1)
	Cisco Nexus 9300	—	Cisco NX-OS 7.0(3)I1(3)
	Cisco Nexus 9500	—	Cisco NX-OS 7.0(3)I1(3)
Compute and Storage Orchestration	OpenStack	—	Release Juno[3] or later
	Cisco VTS	—	Cisco Virtual Topology System (VTS) 2.1

1. We recommend that you read the 'New and Changed Features in Cisco NX-OS Release 7.3(1)N1(1)' section for additional information.

2. Border PE is supported on Cisco Nexus 7000 Series Switches and Cisco Nexus 7700 Switches on (F3 line card) as a single box solution that performs VXLAN decapsulation and MPLS encapsulation on the same box or VDC.

3. Always check for the latest version from OpenStack and the relevant EOL information about OpenStack.

New and Changed Features in Cisco NX-OS Release 7.3(1)N1(1)

The following enhancements were made for the Cisco NX-OS Release 7.3(1)N1(1) release:

- eBGP is added as a VXLAN EVPN fabric underlay routing protocol option– This option is provided for users to implement the same protocol (BGP) in the underlay and overlay, in order to contain the number of protocols that need support in the users' network. For more details see IP Fabric Underlay chapter in Cisco Programmable Fabric with VXLAN BGP EVPN Configuration Guide.

- Increase in the VTEP source interface hold down time – When a switch boots up, the **source-interface hold-down-time** command can be used to suppress the VTEP loopback address advertisement until the overlay has converged. It is recommended that, for a scaled setup, the default hold down time value is increased from 300 seconds to 420 seconds. For more details see Cisco Programmable Fabric with VXLAN BGP EVPN Command Reference.

- vPC convergence for traffic in the VXLAN EVPN fabric is enhanced during a vPC peering event.

- The vPC orphan port suspend function is extended to Layer-3 ports – The **vPC orphan port suspend** command is used to suspend a non vPC port when the peer link of a vPC secondary switch goes down, or when the secondary switch reloads. This option, which is supported on Layer-2 ports, is now supported on Layer-3 ports too. For more details see Cisco Nexus 5600 Series NX-OS Virtual Port Channel Command Reference.

- DVP and multi-MD support is provided for the VXLAN EVPN fabric - The VXLAN EVPN leaf switch template supports Dynamic Virtual Ports (DVP) and multi-mobility domain with DCNM version 10.1(1) or later. But the DVP remains disabled by default. For more details see Cisco Programmable Fabric with VXLAN BGP EVPN Configuration Guide.

- Enhanced reliability of DCI auto configuration profile download for border PE and border leaf switches, and improved reliability/availability of the Asset Database access.

  This enhancement increases the reliability of downloading VRF profiles from LDAP when a switch reloads. This is achieved by changing the mechanism to trigger the download from a one time fixed timer to a signal from a component that keeps track of LDAP reachability. Each time LDAP reachability changes from the *down* state to the *up* state, the switch synchronizes with LDAP for VRF tenant profiles. The issue of incomplete download of VRF tenants from LDAP due to temporary loss of connectivity to LDAP, or the switch taking a long time to boot in scale scenarios, is resolved.

New and Changed Features in Cisco NX-OS Release 7.3(0)N1(1) and Cisco NX-OS Release 7.3(0)D1(1)

This section describes the new features introduced in the Cisco Programmable Fabric with VXLAN BGP EVPN solution that supports the following solution elements:

- Cisco Prime DCNM 7.2(3) for Fabric Management

- Cisco NX-OS 7.3(0)N1(1) for the Cisco Nexus 5600 Switches

- Cisco NX-OS 7.3(0)D1(1) for the Cisco Nexus 7000 Series Switches and Cisco Nexus 7700 Switches

- Cisco NX-OS 7.0(3)I1(3) for the Cisco Nexus 9000 Series Switches

- Cisco Virtual Topology System 2.1 for Overlay Orchestration

The following are the new features introduced in Cisco Programmable Fabric with VXLAN BGP EVPN for programmability, simplification, optimality, and automation of the Data Center Fabric environment.

1. An IP fabric based on VXLAN data plane encapsulation and Open Standards-based, BGP EVPN control plane, with Cisco Nexus switches functioning in the role of fabric leaf, spine, border leaf, and border spine. This includes support for a Distributed Anycast Gateway that allows for optimal handling of Layer-3 traffic with top of rack (ToRs) serving as the default gateway for all the workloads under them.

   In each Layer-2 network configuration, knobs that allow early Address Resolution Protocol (ARP) termination (using the **suppress-arp** command) and disabling of flooding due to unknown unicast traffic (using the **suppress-unknown-unicast** command) have been added. In addition, with vPC leaf nodes, the **advertise-pip** command has been introduced to support advertisement of subnet prefix routes in EVPN with next hop as the primary IP address of the VTEP interface.

   The following combinations are supported for the fabric:
   – Cisco Nexus 7000 Series Switches and Cisco Nexus 7700 Switches with Cisco Nexus 5600 Switches (using Bidirectional Protocol Independent Multicast [Bidir-PIM])
   – Cisco Nexus 7000 Series Switches and Cisco Nexus 7700 Switches with Cisco Nexus 9000 Series Switches (using PIM Any Source Multicast [ASM] or PIM Single Source Multicast [SSM])
   – Cisco Nexus 9000 Series Switches (using PIM ASM/PIM SSM)
   – Cisco Nexus 7000 Series Switches and Cisco Nexus 7700 Switches (using Bidir PIM, PIM ASM, or PIM SSM)
   – Cisco Nexus 5600 Switches (using Bidir PIM)

2. MPLS Layer-3 VPN, LISP, and Classical Ethernet Layer-2 or Layer-3 DCI handoffs (includes DCI auto configuration for MPLS Layer-3 VPN, LISP, and Classical Ethernet Layer-3 handoffs).

3. VXLAN OAM support (includes standard OAM functionalities such as ping, traceroute, and error verification).

4. VXLAN EVPN POAP templates for leaf, spine, border leaf, and border spine. Cisco Prime DCNM ships with Cisco-validated templates with best practice configurations for Cisco Nexus 5600 Switches, Cisco Nexus 7000 Series Switches, Cisco Nexus 7700 Switches, and Cisco Nexus 9000 Series Switches that allows for a simple out-of-box deployment of a VXLAN EVPN fabric.

5. Extensive Bare-Metal or Virtual-Machine Automation. In addition to Virtual Station Interface (VSI) Discovery Protocol (VDP), data packet (data frame snooping), and CLI-based auto configuration triggers, VM Tracker, and LLDP-based triggers have been added to provide a rich workload automation suite. This suite provides automated Day 1 tenant configuration, with DCNM serving as a network database repository (with LDAP). DCNM ships with a set of validated VXLAN EVPN-based configuration profiles that can be further customized to fit the needs of a particular data center fabric.

   Note Auto configuration triggers should not be used when VTS is used for overlay orchestration.

6. Bidir PIM support for VXLAN underlay with vPC (Cisco Nexus 7000 Series Switches and Cisco Nexus 7700 Switches) - Cisco Nexus 7000 Series Switches and Cisco Nexus 7700 Switches and Cisco Nexus 5600 Switches can be a part of the same VXLAN EVPN fabric with Bidir PIM support in the underlay for handling overlay multidestination traffic, that is, for Broadcast, Unknown Unicast, Multicast (BUM) traffic.

7. LDAP pre-emptive option for leaf and border leaf. When Cisco Prime DCNM is deployed in a high availability (HA) setup, a feature is added, where the DCNM LDAP servers can be configured as primary and backup or secondary servers. When a failure occurs, the leaf nodes automatically switch to the backup server for network auto configuration queries. Now, with the pre-emptive option, the leaf nodes intelligently switch back to the primary server as soon as the server is restored. This allows the semantics of the primary LDAP server to be enforced so that it will be used as long as it is up.

8. Support for per-port auto configuration trigger. Auto configuration can be enabled or disabled at the port level per trigger type.

9. Supports VM Mobility.

10. IP fabric allows seamless integration with OpenStack.

Limitations

The limitations of Cisco Programmable Fabric with VXLAN BGP EVPN are as follows:

- Currently **advertise-pip** command is supported only on the Cisco Nexus 5600 Switches and Cisco Nexus 7000 Series Switches and Cisco Nexus 7700 Switches.

- DHCP snooping on bridge domain is not supported on Cisco Nexus 7000 Series Switches and Cisco Nexus 7700 Switches.

- The latest version, Cisco Prime DCNM 7.2(3), does not support DHCP IPv6.

- Tenant or Overlay Layer-3 Multicast is not supported in a VXLAN EVPN fabric.

- Host-based auto configuration is not supported on the border leaf nodes. We do not recommend hosts connected to the border leaf nodes.)

- With Cisco Prime DCNM, currently, only out-of-band POAP (Day 0 device automation) is supported via the management VRF or mgmt0 interfaces associated with the switches.

- Per-port VLAN translation with multiple mobility domains on a leaf is not supported on the Cisco Nexus 5600 Switches with the VXLAN EVPN fabric.

- The Dynamic Virtual Port (DVP) feature is not supported on the Cisco Nexus 5600 Switches with the VXLAN EVPN fabric.

- Bidir PIM is the only option that can be employed for multi-destination traffic with Cisco Nexus 5600 Switches and Cisco Nexus 7000 Series Switches or Cisco Nexus 7700 Switches, when they are a part of the same VXLAN EVPN fabric.

- Cisco Nexus 9000 Series Switches (supports ASM, SSM, or Ingress Replication for VXLAN VTEP support) and Cisco Nexus 5600 Switches (supporting only Bidir PIM for VXLAN VTEP support) can be a part of the same VXLAN EVPN fabric, but not share the same Layer-2 VNI.

- Cisco Nexus 9000 Series Switches currently support only VM Tracker and CLI-based host-based auto configuration triggers.

Caveats

This section includes the following topics:

Cisco Bug Search Tool

The Cisco Bug Search Tool enables you to filter the bugs so that you only see those in which you are interested. In addition to being able to search for a specific bug ID, or for all bugs in a product and release, you can filter the open and/or resolved bugs by one or more of the following criteria:

- Last modified date
- Status, such as fixed (resolved) or open
- Severity
- Support cases

For more information about how to use the Cisco Bug Search Tool, including how to set email alerts for bugs and to save bugs and searches, see Bug Search Tool Help and FAQ.

> **Note**   You must have a Cisco.com account to log in and access the Cisco Bug Search Tool. if you do not have one, you can register for an account.

To use the Cisco Bug Search Tool:

1. In your browser, navigate to the Cisco Bug Search Tool.
2. If you are redirected to a Log In page, enter your registered Cisco.com username and password and then, click Log In.
3. To search for a specific bug, enter the bug ID in the Search For field and press Enter.
4. To search for bugs related to a specific software release, do the following:
    a. In the product field, choose Series/Model from the drop-down list and then enter the product name in the text field. If you begin to type the product name, the Cisco Bug Search Tool provides you with a drop-down list of the top ten matches. If you do not see this product listed, continue typing to narrow the search results.
    b. In the Releases field, enter the release for which you want to see bugs. The Cisco Bug Search Tool displays a preview of the results of your search below your search criteria. You can mouse over bugs to see more content about a specific bug.
5. To see more content about a specific bug, you can do the following:
    a. Mouse over a bug in the preview to display a pop-up with more information about that bug.
    b. Click the hyperlinked bug headline to open a page with the detailed bug information.
6. To restrict the results of a search, choose from one or more of the following filters:

Filter	Description
Modified Date	A predefined date range, such as last week or last six months.
Status	A specific type of bug, such as open or fixed.
Severity	The bug severity level as defined by Cisco. For definitions of the bug severity levels, see Bug Search Tool Help & FAQ.
Rating	The rating assigned to the bug by users of the Cisco Bug Search Tool.
Support Cases	Whether a support case has been opened or not.

Caveats

This section includes the open and resolved caveat record numbers for this release. Links are provided to the Bug Toolkit where you can find details about each caveat.

This section includes the following topic:

Open Caveats in Cisco Programmable Fabric

The record ID links to the Cisco Bug Toolkit where you can find details about the caveat.

Table 3   Cisco Programmable Fabric Open Caveats

Record Number	Open Caveat Headline
CSCuz84751	Auto Configuration feature does not save provisioned CLIs to startup automatically.
CSCuo44480	"sh fabric connectivity neighbors" and subcmds are not xmlized correctly
CSCux19460	POAP:peer-keep using L3:Ports are down due to Miscabled, port: error
CSCuy08558	"feature VTP" incompatibility issue on fabric
CSCux60138	PPM core during auto-configure
CSCuy28005	Rollback removes nve1 interface
CSCux87094	FP:Unable to ping between routable loopback with L3 conv learning
CSCuw93085	After shutting down an i/f, it takes long time to get to shut state
CSCuv90136	FP: No MAC on BD not seen with unknown unicast packets from remote leaf
CSCux44930	Fwm process crash while cleaning up the vlan through VTS
CSCux94230	Fwm core after mct link flap
CSCur11793	Host entries for member-links not cleaned up once portchannel is up
CSCuw67909	OSFP ADJ over peer-link-SVI stucks in INIT
CSCuw74228	Peer-link inconsistency and peer keep alive fail when instantiating net
CSCuu61774	Stale SSH sessions not terminating consume all login sessions
CSCuq57462	POAP scripts(7.x images) to be backward compatible with NXOS 6.x images
CSCuw46514	POAP: Inband POAP support for IP Fabric
CSCuv72180	Auto-config profile stuck in PPM Del Wait
CSCux41326	Evaluation of n7k-infra for OpenSSL December 2015 vulnerabilities
CSCul00657	HW entry not programmed for remote host prefix due to some steps
CSCuy10186	Autoconfig fails after changing from dot1q to vmt trigger
CSCuy06092	VMT crash on feature config and un-config
CSCux86074	VMTracker: "default interface" issue when auto-config fails
CSCuw69419	VIP used as src IP in data path causing traffic to drop at the destination leaf
CSCuy22769	VXLAN-EVPN with suppress-arp, ARP for silent destination is flooded back.

Table 3   Cisco Programmable Fabric Open Caveats (continued)

Record Number	Open Caveat Headline
CSCuy20698	Alternate ftag register mis-program in case feature vpc after nv overlay.
CSCuy21994	ADBM crash signal 6 - secure LDAP primary server cfg without LDAP cfg on DCNM.
CSCuw52180	Profile go to delete hold down on trigger change
CSCuy28615	Some IPv6 prefixes not advertised to VRF-lite edge peer

Resolved Caveats in Cisco Programmable Fabric—Cisco NX-OS Release 7.3(1)N1(1)

The record ID links to the Cisco Bug Toolkit where you can find details about the caveat.

Table 4   Cisco Programmable Fabric Resolved Caveats for Cisco NX-OS Release 7.3(1)N1(1)

Record Number	Open Caveat Headline
CSCva61424	Port-profile crashing with core and system going for reset
CSCvb72189	Port Profile crash in csm_get_locked_ssn_ctxt
CSCux23210	Support loopback ID for refresh and backbone IP for VXLAN EVPN fabric.
CSCuv97473	EVPN: Need routable loopback support for network and VRF profiles in DCNM.
CSCuw69419	VIP used as source IP address in data path causing traffic to drop at the destination leaf switch.

Related Documentation

Software Downloads, Release, and General Information

Cisco DCNM Release Notes, Release 7.2.x:

http://www.cisco.com/c/en/us/support/cloud-systems-management/prime-data-center-network-manager/products-release-notes-list.html

Install and Upgrade Guides

Cisco DCNM 7.x OVA Installation Guide:

http://cisco.com/en/US/docs/switches/datacenter/sw/7_x/dcnm/installation/master_files/OVA_Installation_Guide.html

Configuration Guides

Cisco DCNM 7.2.x Fundamentals Guide:

http://www.cisco.com/c/en/us/td/docs/switches/datacenter/sw/7_2_x/fundamentals/DCNM_Fundamentals_7_2.html

Cisco Nexus 1000V VDP Configuration Guide, Release 5.x:

http://www.cisco.com/c/en/us/support/switches/nexus-1000v-switch-vmware-vsphere/products-installation-and-configuration-guides-list.html

Obtaining Documentation and Submitting a Service Request

For information on obtaining documentation, using the Cisco Bug Search Tool (BST), submitting a service request, and gathering additional information, see *What's New in Cisco Product Documentation* at: http://www.cisco.com/c/en/us/td/docs/general/whatsnew/whatsnew.html.

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