



# Cisco Application Policy Infrastructure Controller Release Notes, Release 3.2(7)

The Cisco Application Centric Infrastructure (ACI) is an architecture that allows the application to define the networking requirements in a programmatic way. This architecture simplifies, optimizes, and accelerates the entire application deployment lifecycle. Cisco Application Policy Infrastructure Controller (APIC) is the software, or operating system, that acts as the controller.

The *Cisco Application Centric Infrastructure Fundamentals* guide provides complete details about the Cisco ACI, including a glossary of terms that are used in the Cisco ACI.

This document describes the features, bugs, and limitations for the Cisco APIC.

**Note:** Use this document with the *Cisco Nexus 9000 ACI-Mode Switches Release Notes, Release 13.2(7)*, which you can view at the following location:

<https://www.cisco.com/c/en/us/support/switches/nexus-9000-series-switches/products-release-notes-list.html>

Release notes are sometimes updated with new information about restrictions and bugs. See the following website for the most recent version of this document:

<https://www.cisco.com/c/en/us/support/cloud-systems-management/application-policy-infrastructure-controller-apic/tsd-products-support-series-home.html>

You can watch videos that demonstrate how to perform specific tasks in the Cisco APIC on the Cisco ACI YouTube channel:

<https://www.youtube.com/c/CiscoACIchannel>

For the verified scalability limits (except the CLI limits), see the *Verified Scalability Guide* for this release.

For the CLI verified scalability limits, see the *Cisco NX-OS Style Command-Line Interface Configuration Guide* for this release.

You can access these documents from the following website:

<https://www.cisco.com/c/en/us/support/cloud-systems-management/application-policy-infrastructure-controller-apic/tsd-products-support-series-home.html>

**Note:** The documentation set for this product strives to use bias-free language. For the purposes of this documentation set, bias-free is defined as language that does not imply discrimination based on age, disability, gender, racial identity, ethnic identity, sexual orientation, socioeconomic status, and intersectionality. Exceptions may be present in the documentation due to language that is hardcoded in the user interfaces of the product software, language used based on RFP documentation, or language that is used by a referenced third-party product.

**Table 1** shows the online change history for this document.

Table 1 Online History Change

Date	Description
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Date	Description
December 9, 2022	In the Open Bugs section, added bug CSCvw33061.
August 1, 2022	In the Miscellaneous Compatibility Information section, added: <ul style="list-style-type: none"> <li>■ 4.1(2k) CIMC HUU ISO (recommended) for UCS C220/C240 M4 (APIC-L2/M2)</li> </ul>
February 23, 2022	In the Miscellaneous Compatibility Information section, added: <ul style="list-style-type: none"> <li>■ 4.1(2g) CIMC HUU ISO (recommended) for UCS C220/C240 M4 (APIC-L2/M2)</li> </ul>
February 9, 2021	In the Open Bugs section, added bug CSCvt07565.
February 3, 2021	In the Miscellaneous Compatibility Information section, for CIMC HUU ISO, added: <ul style="list-style-type: none"> <li>■ 4.1(2b) CIMC HUU ISO (recommended) for UCS C220/C240 M4 (APIC-L2/M2)</li> </ul>
December 16, 2020	In the Miscellaneous Compatibility Information section, CIMC release 4.1(1g) is now recommended for UCS C220/C240 M4 (APIC-L2/M2).
October 8, 2019	In the Miscellaneous Compatibility Information section, updated the latest supported CIMC releases to: <ul style="list-style-type: none"> <li>— 4.0(2g) CIMC HUU ISO (recommended) for UCS C220/C240 M4 (APIC-L2/M2)</li> <li>— 3.0(4l) CIMC HUU ISO (recommended) for UCS C220/C240 M3 (APIC-L1/M1)</li> </ul>
October 4, 2019	In the Miscellaneous Guidelines section, added the following bullet: <ul style="list-style-type: none"> <li>■ When you create an access port selector in a leaf interface rofile, the feXid property is configured with a default value of 101 even though a FEX is not connected and the interface is not a FEX interface. The feXid property is only used when the port selector is associated with an infraFexBndlGrp managed object.</li> </ul>
October 3, 2019	In the Miscellaneous Guidelines section, added the bullet that begins as follows: <ul style="list-style-type: none"> <li>■ Fabric connectivity ports can operate at 10G or 25G speeds (depending on the model of the APIC server) when connected to leaf switch host interfaces.</li> </ul>
September 17, 2019	3.2(7f): In the Open Bugs section, added bug CSCuu17314, CSCve84297, and CSCvg70246.
September 10, 2019	In the Known Behaviors section, added the following bullet: <ul style="list-style-type: none"> <li>■ When there are silent hosts across sites, ARP glean messages might not be forwarded to remote sites if a 1st generation ToR switch (switch models without -EX or -FX in the name) happens to be in the transit path and the VRF is deployed on that ToR switch, the switch does not forward the ARP glean packet back into the fabric to reach the remote site. This issue is specific to 1st generation transit ToR switches and does not affect 2nd generation ToR switches (switch models with -EX or -FX in the name). This issue breaks the capability of discovering silent hosts.</li> </ul>
August 16, 2019	3.2(7k): Release 3.2(7k) became available. Added the resolved bugs for this release.

Contents

Date	Description
August 14, 2019	3.2(7f): In the Open Bugs section, added bugs CSCvp38627.
July 22, 2019	3.2(7f): In the Open Bugs section, added bug CSCvq39764.
July 17, 2019	3.2(7f): In the Open Bugs section, added bug CSCvq39922.
July 16, 2019	In the New Software Features section, added the Enhanced LACP feature.
July 10, 2019	3.2(7f): Release 3.2(7f) became available.

## Contents

This document includes the following sections:

- [New and Changed Information](#)
- [Upgrade and Downgrade Information](#)
- [Bugs](#)
- [Compatibility Information](#)
- [Usage Guidelines](#)
- [Related Documentation](#)

## New and Changed Information

This section lists the new and changed features in this release and includes the following topics:

- [New Software Features](#)
- [New Hardware](#)

## New Software Features

The following table lists the new software features in this release:

Table 2 New Software Features, Guidelines, and Restrictions

Feature	Description	Guidelines and Restrictions
eBGP Multipath Relax	<p>The 3.2(7) release adds VRF-scoped node level support for modifying the Border Gateway Protocol (BGP) best path policy. You can modify the policy by using the External Border Gateway Protocol (eBGP) multipath relax option.</p> <p>By default, BGP does not allow load balancing between multiple paths received from different autonomous system (AS) numbers. The multipath relax option changes this default behavior by relaxing the AS-PATH check and triggering multipathing across multiple eBGP peers. As a result, BGP will download multiple equal-cost multipath (ECMP) routing paths to the routing database.</p> <p>For more information, see the <i>Cisco APIC Layer 3 Networking Configuration Guide, Release 3.x and Earlier</i>.</p>	None.
Enhanced LACP	You can improve uplink load balancing by applying different Link Aggregation Control Protocol (LACP)	Enhanced LACP supports only active and passive LACP

## Upgrade and Downgrade Information

Feature	Description	Guidelines and Restrictions
	<p>policies to different distributed virtual switch (DVS) uplink port groups.</p> <p>Cisco APIC now supports VMware's enhanced LACP feature, which is available for DVS 5.5 and later. Enhanced LACP is supported for VMware vSphere Distributed Switch (VDS) and Cisco ACI Virtual Edge.</p> <p>For more information, see the <i>Cisco ACI Virtualization Guide, Release 3.2(7)</i> and the <i>Cisco ACI Virtual Edge Configuration Guide</i>.</p>	<p>modes.</p> <p>Enhanced LACP is not available for Cisco ACI Virtual Edge when Cisco ACI Virtual Edge is part of Cisco ACI Virtual Pod.</p> <p>If you want to use a Link Aggregation Control Protocol (LACP) port channel with VMware DVS 6.6 and later, you must create an enhanced LACP policy. See the "Enhanced LACP Support" section in the <i>Cisco ACI Virtual Edge Configuration Guide</i> and the <i>Cisco ACI Virtualization Guide</i>.</p>

## New Hardware Features

For new hardware features, see the *Cisco Nexus 9000 ACI-Mode Switches Release Notes, Release 13.2(7)* at the following location:

<https://www.cisco.com/c/en/us/support/switches/nexus-9000-series-switches/products-release-notes-list.html>

## Changes in Behavior

For the changes in behavior, see the [Cisco ACI Releases Changes in Behavior](#) document.

## Upgrade and Downgrade Information

For upgrade and downgrade considerations for the Cisco APIC, see the Cisco APIC documentation site at the following URL:

<https://www.cisco.com/c/en/us/support/cloud-systems-management/application-policy-infrastructure-controller-apic/tsd-products-support-series-home.html>

See the "Upgrading and Downgrading the APIC Controller and Switch Software" section of the *Cisco APIC Installation, Upgrade, and Downgrade Guide*.

## Bugs

This section contains lists of open and resolved bugs and known behaviors.

## Bugs

- [Open Bugs](#)
- [Resolved Bugs](#)
- [Known Behaviors](#)

## Open Bugs

This section lists the open bugs. Click the bug ID to access the Bug Search tool and see additional information about the bug. The "Exists In" column of the table specifies the 3.2(7) releases in which the bug exists. A bug might also exist in releases other than the 3.2(7) releases.

Table 3 Open Bugs in This Release

Bug ID	Description	Exists in
<a href="#">CSCvr19693</a>	When configuring local SPAN in access mode using the GUI or CLI and then running the " show running-config monitor access session<session>" command, the output does not include all source span interfaces.	3.2(7k) and later
<a href="#">CSCvs31125</a>	When using QSFP-100G-PSM4-S transceivers in an N9K-X9736C-FX linecard that is running ACI code, link flaps may be seen intermittently.	3.2(7k) and later
<a href="#">CSCvs76244</a>	The tmpfs file system that is mounted on /data/log becomes 100% utilized.	3.2(7k) and later
<a href="#">CSCuu17314</a>	CDP is not enabled on the management interfaces for the leaf switches and spine switches.	3.2(7f) and later
<a href="#">CSCvd43548</a>	The stats for a given leaf switch rule cannot be viewed if a rule is double-clicked.	3.2(7f) and later
<a href="#">CSCvd66359</a>	The Port ID LLDP Neighbors panel displays the port ID when the interface does not have a description. Example: Ethernet 1/5, but if the interface has description, the Port ID property shows the Interface description instead of the port ID.	3.2(7f) and later
<a href="#">CSCve84297</a>	A service cannot be reached by using the APIC out-of-band management that exists within the 172.17.0.0/16 subnet.	3.2(7f) and later

## Bugs

Bug ID	Description	Exists in
<a href="#">CSCvf70362</a>	This enhancement is to change the name of "Limit IP Learning To Subnet" under the bridge domains to be more self-explanatory.  Original :  Limit IP Learning To Subnet: [check box]  Suggestion :  Limit Local IP Learning To BD/EPG Subnet(s): [check box]	3.2(7f) and later
<a href="#">CSCvf70411</a>	A route will be advertised, but will not contain the tag value that is set from the VRF route tag policy.	3.2(7f) and later
<a href="#">CSCvg00627</a>	A tenant's flows/packets information cannot be exported.	3.2(7f) and later
<a href="#">CSCvg35344</a>	Requesting an enhancement to allow exporting a contract by right clicking the contract itself and choosing "Export Contract" from the right click context menu. The current implementation of needing to right click the Contract folder hierarchy to export a contract is not intuitive.	3.2(7f) and later
<a href="#">CSCvg70246</a>	When configuring an L3Out under a user tenant that is associated with a VRF instance that is under the common tenant, a customized BGP timer policy that is attached to the VRF instance is not applied to the L3Out (BGP peer) in the user tenant.	3.2(7f) and later
<a href="#">CSCvg81020</a>	For strict security requirements, customers require custom certificates that have RSA key lengths of 3072 and 4096.	3.2(7f) and later
<a href="#">CSCvh52046</a>	This is an enhancement to allow for text-based banners for the Cisco APIC GUI login screen.	3.2(7f) and later
<a href="#">CSCvh54578</a>	For a client (browser or ssh client) that is using IPv6, the Cisco APIC aaaSessionLR audit log shows "0.0.0.0" or some bogus value.	3.2(7f) and later
<a href="#">CSCvh59843</a>	Enabling Multicast under the VRF on one or more bridge domains is difficult due to how the drop-down menu is designed. This is an enhancement request to make the drop-down menu searchable.	3.2(7f) and later
<a href="#">CSCvi20535</a>	When a VRF table is configured to receive leaked external routes from multiple VRF tables, the Shared Route Control scope to specify the external routes to leak will be applied to all VRF tables. This results in an unintended external route leaking. This is an enhancement to ensure the Shared Route Control scope in each VRF table should be used to leak external routes only from the given VRF table.	3.2(7f) and later
<a href="#">CSCvi41092</a>	The APIC log files are extremely large, which takes a considerable amount of time to upload, especially for users with slow internet connectivity.	3.2(7f) and later

## Bugs

Bug ID	Description	Exists in
<a href="#">CSCvi80543</a>	This is an enhancement that allows failover ordering, categorizing uplinks as active or standby, and categorizing unused uplinks for each EPG in VMware domains from the APIC.	3.2(7f) and later
<a href="#">CSCvi82903</a>	When authenticating with the Cisco APIC using ISE (TACACS), all logins over 31 characters fail.	3.2(7f) and later
<a href="#">CSCvi95657</a>	On modifying a service parameter, the Cisco APIC sends 2 posts to the backend. The first post deletes all of the folders and parameters. The second post adds all of the remaining modified folders and parameters to the backend. These 2 posts will disrupt the running traffic.	3.2(7f) and later
<a href="#">CSCvj04166</a>	The remote leaf TEP pool cannot be deleted after decommissioning the remote leaf and deleting the remote leaf vPC configuration.	3.2(7f) and later
<a href="#">CSCvj09453</a>	The actrIRule is has the wrong destination.	3.2(7f) and later
<a href="#">CSCvj56726</a>	The connectivity filter configuration of an access policy group is deprecated and should be removed from GUI.	3.2(7f) and later
<a href="#">CSCvk04072</a>	There is no record of who acknowledged a fault in the Cisco APIC, nor when the acknowledgement occurred.	3.2(7f) and later
<a href="#">CSCvk18014</a>	The action named 'Launch SSH' is disabled when a user with read-only access logs into the Cisco APIC.	3.2(7f) and later
<a href="#">CSCvm56946</a>	Support for local user (admin) maximum tries and login delay configuration.	3.2(7f) and later
<a href="#">CSCvm63668</a>	A single user can send queries to overload the API gateway.	3.2(7f) and later
<a href="#">CSCvm83669</a>	<p>There is a VLAN overlapping scenario. After configuring new static ports and a physical domain under an existing EPG, there is a Layer 2 loop. This issue is due to an FD VLAN encapsulation mismatch on two leaf switches.</p> <pre>leaf103# vsh_lc -c " show system internal eltmc info vlan brief" 29 11 FD_VLAN 802.1q 170 VXLAN 12692 28 Unknown 0 &gt;&gt;&gt;&gt; "12692" not changed to "18392"  leaf104# vsh_lc -c " show system internal eltmc info vlan brief" 12 11 FD_VLAN 802.1q 170 VXLAN 18392 11 Unknown 0 &gt;&gt;&gt;&gt; "12692" changed to "18392" as expected.</pre>	3.2(7f) and later

## Bugs

Bug ID	Description	Exists in
<a href="#">CSCvm89559</a>	The svc_ifc_policye process consumes 100% of the CPU cycles. The following messages are observed in svc_ifc_policymgr.bin.log:  8816  18-10-12 11:04:19.101  route_control  ERROR  co=doer:255:127:0xff00000000c42ad2:11  Route entry order exceeded max for st10960-2424833-any-2293761-33141-shared-svc-int Order:18846Max:17801    ../dme/svc/policyelem/src/gen/ifc/beh/imp/./rtctrl/RouteMapUtils.cc  239:q	3.2(7f) and later
<a href="#">CSCvn00576</a>	An SHA2 CSR for the ACI HTTPS certificate cannot be configured in the APIC GUI.	3.2(7f) and later
<a href="#">CSCvn07827</a>	Permanent License Reservation (PLR) fails after upgrading to a Cisco APIC 4.0 release.	3.2(7f) and later
<a href="#">CSCvn19116</a>	Standby provisioning has been initiated, but the standby has not joined as the new active after more than 15 minutes.  In acidiag avread command output, we see the information about old active APIC has not yet been cleared.	3.2(7f) and later
<a href="#">CSCvo24284</a>	Fault delegates are raised on the Cisco APIC, but the original fault instance is already gone because the affected node has been removed from the fabric.	3.2(7f) and later
<a href="#">CSCvp01778</a>	Access policy resolutions reveal unexpected results due to the existence of connectivity filters that are hidden from the UI. Depending on the VLANs tied to the AEPs/Domains, this can result in unexpected outages as VLANs are pulled and 'invalid path' faults are flagged.	3.2(7f) and later
<a href="#">CSCvp24142</a>	The Nginx process generates cores on the switches and the process will restart automatically. The core file from the switches gets collected and moved to the APIC, which drains the memory. You might need to remove the collected core files manually from the APIC to free up space.	3.2(7f) and later
<a href="#">CSCvp26694</a>	A leaf switch gets upgraded when a previously-configured maintenance policy is triggered.	3.2(7f) and later
<a href="#">CSCvp38627</a>	Some tenants stop having updates to their state pushed to the APIC. The aim-aid logs have messages similar to the following example:  An unexpected error has occurred while reconciling tenant tn-prj_...: long int too large to convert to float	3.2(7f) and later
<a href="#">CSCvp62048</a>	New port groups in VMware vCenter may be delayed when pushed from the Cisco APIC.	3.2(7f) and later

## Bugs

Bug ID	Description	Exists in
<a href="#">CSCvp64280</a>	<p>A vulnerability in the fabric infrastructure VLAN connection establishment of the Cisco Nexus 9000 Series Application Centric Infrastructure (ACI) Mode Switch Software could allow an unauthenticated, adjacent attacker to bypass security validations and connect an unauthorized server to the infrastructure VLAN.</p> <p>The vulnerability is due to insufficient security requirements during the Link Layer Discovery Protocol (LLDP) setup phase of the infrastructure VLAN. An attacker could exploit this vulnerability by sending a malicious LLDP packet on the adjacent subnet to the Cisco Nexus 9000 Series Switch in ACI mode. A successful exploit could allow the attacker to connect an unauthorized server to the infrastructure VLAN, which is highly privileged. With a connection to the infrastructure VLAN, the attacker can make unauthorized connections to Cisco Application Policy Infrastructure Controller (APIC) services or join other host endpoints.</p> <p>Cisco has released software updates that address this vulnerability. There are workarounds that address this vulnerability.</p> <p>This advisory is available at the following link:  <a href="https://tools.cisco.com/security/center/content/CiscoSecurityAdvisory/cisco-sa-20190703-n9kaci-bypass">https://tools.cisco.com/security/center/content/CiscoSecurityAdvisory/cisco-sa-20190703-n9kaci-bypass</a></p>	3.2(7f) and later
<a href="#">CSCvp72283</a>	<p>An APIC running the 3.0(1k) release sometimes enters the "Data Layer Partially Diverged" state. The aci diag rvread command shows the following output for the service 10 (observer):</p> <pre>Non optimal leader for shards :10:1,10:3,10:4,10:6,10:7,10:9,10:10,10:12,10:13,10:15,10:16,10:18,10:19,10:21,10:22,10:24,10:25, 10:27,10:28,10:30,10:31</pre>	3.2(7f) and later
<a href="#">CSCvp79454</a>	Syslog is not sent upon any changes in the fabric. Events are properly generated, but no Syslog is sent out of the oobmgmt ports of any of the APICs.	3.2(7f) and later
<a href="#">CSCvp94085</a>	The APIC Licensemgr generates a core file while parsing an XML response.	3.2(7f) and later
<a href="#">CSCvp95407</a>	Access-control headers are not present in invalid requests.	3.2(7f) and later
<a href="#">CSCvp96085</a>	The ISO is able to mount, but after selecting the vKVM DVD option, the install begins but then promptly fails after the Anaconda installer eventually displaying a message that reads "I can't recover from this."	3.2(7f) and later
<a href="#">CSCvp99430</a>	The troubleshooting wizard is unresponsive on the APIC.	3.2(7f) and later

## Bugs

Bug ID	Description	Exists in
<a href="#">CSCvp99508</a>	The GUI is slow when accessing access policies. This is an enhancement request to add pagination to resolve this issue.	3.2(7f) and later
<a href="#">CSCvq04110</a>	The APIC API and CLI allow for the configuration of multiple native VLANs on the same interface. When a leaf switch port has more than one native VLAN configured (which is a misconfiguration) in place, and a user tries to configure a native VLAN encap on another port on the same leaf switch, a validation error is thrown that indicates an issue with the misconfigured port. This error will occur even if the current target port has no misconfigurations in place.	3.2(7f) and later
<a href="#">CSCvq05143</a>	Using a PBR service graph with ASA in two-arm mode. After upgrade from release 2.3(1) > 3.1 > 3.2(6i), it is noticed that the service graph (in the common tenant) has a couple of faults. The service graph is working for old configured EPGs (verified by checking traffic redirected to FW), but new EPGs cannot be applied to the service graph. The service graph state is also "not applied".  One of the faults mentions that the service graph contract cannot be used as provider and consumer and that it is only supported in single-node PBR with 1-ARM.  The contract is not being applied in any vzAny consumer/provider.  The "Epp not found. Retry or abort task" error appears in the policymanager.  Adding an arp filter on the contract does not it triggers anything, although the modification is seen in the policy distributor.	3.2(7f) and later
<a href="#">CSCvq20055</a>	In the APIC, the "show external-l3 static-route tenant <tenant_name>" command does not output as expected.  Symptom 1: The APIC outputs static-routes for tenant A, but not B. The "show external-l3 static-route tenant <tenant_name> vrf <vrf_name> node <range>" command provides the missing output.  Symptom 2: For the same tenant and a different L3Out, the command does not output all static-routes.	3.2(7f) and later
<a href="#">CSCvq31358</a>	"show external-l3 interfaces node <id> detail" will display "missing" for both "Oper Interface" and "Oper IP", even though the L3Out is functioning as expected.	3.2(7f) and later
<a href="#">CSCvq39764</a>	When you click Restart for the Microsoft System Center Virtual Machine Manager (SCVMM) agent on a scaled-out setup, the service may stop. You can restart the agent by clicking Start.	3.2(7f) and later
<a href="#">CSCvq39922</a>	Specific operating system and browser version combinations cannot be used to log in to the APIC GUI.  Some browsers that are known to have this issue include (but might not be limited to) Google Chrome version 75.0.3770.90 and Apple Safari version 12.0.3 (13606.4.5.3.1).	3.2(7f) and later
<a href="#">CSCvq43101</a>	When opening an external subnet, a user cannot see Aggregate Export/Import check boxes set in GUI even though they were already configured.	3.2(7f) and later

## Bugs

Bug ID	Description	Exists in
<a href="#">CSCvq57942</a>	<p>In a RedHat OpenStack platform deployment running the Cisco ACI Unified Neutron ML2 Plugin and with the CompHosts running OVS in VLAN mode, when toggling the resolution immediacy on the EPG-&gt;VMM domain association (fvRsDomAtt.reslmedcy) from Pre-Provision to On-Demand, the encaps VLANs (vlanCktEp mo's) are NOT programmed on the leaf switches.</p> <p>This problem surfaces sporadically, meaning that it might take several reslmedcy toggles between PreProv and OnDemand to reproduce the issue.</p>	3.2(7f) and later
<a href="#">CSCvq58304</a>	VMM inventory-related faults are raised for VMware vCenter inventory, which is not managed by the VMM.	3.2(7f) and later
<a href="#">CSCvq63415</a>	Disabling dataplane learning is only required to support a policy-based redirect (PBR) use case on pre-"EX" leaf switches. There are few other reasons otherwise this feature should be disabled. There currently is no confirmation/warning of the potential impact that can be caused by disabling dataplane learning.	3.2(7f) and later
<a href="#">CSCvq63491</a>	When using Open vSwitch, which is used as part of ACI integration with Kubernetes or Red Hat Open Shift, there are some instances when memory consumption of the Open vSwitch grows over a time.	3.2(7f) and later
<a href="#">CSCvq74727</a>	When making a configuration change to an L3Out (such as contract removal or addition), the BGP peer flaps or the bgpPeerP object is deleted from the leaf switch. In the leaf switch policy-element traces, 'isClassic = 0, wasClassic = 1' is set post-update from the Cisco APIC.	3.2(7f) and later
<a href="#">CSCvq80820</a>	A previously-working traffic is policy dropped after the subject is modified to have the "no stats" directive.	3.2(7f) and later
<a href="#">CSCvq86573</a>	Under a corner case, the Cisco APIC cluster DB may become partially diverged after upgrading to a release that introduces new services. A new release that introduces a new DME service (such as the domainmgr in the 2.3 release) could fail to receive the full size shard vector update in first two-minute window, which causes the new service flag file to be removed before all local leader shards are able to boot into the green field mode. This results in the Cisco APIC cluster DB becoming partially diverged.	3.2(7f) and later
<a href="#">CSCvq88632</a>	This is an enhancement request for allowing DVS MTU to be configured from a VMM domain policy and be independent of fabricMTU.	3.2(7f) and later
<a href="#">CSCvq95817</a>	<p>The F3083 fault is thrown, notifying the user that an IP address is being used by multiple MAC addresses.</p> <p>When navigating to the Fabric -&gt; Inventory -&gt; Duplicate IP Usage section, AVS VTEP IP addresses are seen as being learned individually across multiple leaf switches, such as 1 entry for Leaf 101, and 1 entry for Leaf 102.</p> <p>Querying for the endpoint in the CLI of the leaf switch ("show endpoint ip &lt;IP&gt;") shows that the endpoint is learned behind a port channel/vPC, and not an individual link.</p>	3.2(7f) and later

## Bugs

Bug ID	Description	Exists in
<a href="#">CSCvr30815</a>	vmmPLInf objects are created with epgKey's and DN's that have truncated EPG names ( truncated at ".").	3.2(7f) and later
<a href="#">CSCvr36851</a>	Descending option will not work for the Static Ports table. Even when the user clicks descending, the sort defaults to ascending.	3.2(7f) and later
<a href="#">CSCvr38278</a>	When using AVE with Cisco APIC, fault F0214 gets raised, but there is no noticeable impact on AVE operation:  descr: Fault delegate: Operational issues detected for OpFlex device: ..., error: [Inventory not available on the node at this time]	3.2(7f) and later
<a href="#">CSCvr41750</a>	Policies may take a long time (over 10 minutes) to get programmed on the leaf switches. In addition, the APIC pulls inventory from the VMware vCenter repeatedly, instead of following the usual 24 hour interval.	3.2(7f) and later
<a href="#">CSCvr65035</a>	The last APIC in the cluster gets rebooted when APIC-1 is decommissioned due to some issue seen on APIC-1 while upgrading. In addition, after decommissioning APIC-1, the other APICs still wait for APIC-1 to get upgraded.	3.2(7f) and later
<a href="#">CSCvr85515</a>	When trying to track an AVE endpoint IP address, running the "show endpoint ip x.x.x.x" command in the Cisco APIC CLI to see the IP address and checking the IP address on the EP endpoint in the GUI shows incorrect or multiple VPC names.	3.2(7f) and later
<a href="#">CSCvr94614</a>	There is a minor memory leak in svc_ifc_policydist when performing various tenant configuration removals and additions.	3.2(7f) and later
<a href="#">CSCvr96785</a>	Configuring a static endpoint through the Cisco APIC CLI fails with the following error:  Error: Unable to process the query, result dataset is too big  Command execution failed.	3.2(7f) and later
<a href="#">CSCvr98638</a>	When migrating an AVS VMM domain to Cisco ACI Virtual Edge, the Cisco ACI Virtual Edge that gets deployed is configured in VLAN mode rather than VXLAN Mode. Because of this, you will see faults for the EPGs with the following error message:  " No valid encapsulation identifier allocated for the epg"	3.2(7f) and later
<a href="#">CSCvs03055</a>	While configuring a logical node profile in any L3Out, the static routes do not have a description.	3.2(7f) and later
<a href="#">CSCvs10076</a>	An error is raised while building an ACI container image because of a conflict with the /opt/ciscoaci-tripleo-heat-templates/tools/build_openstack_aci_containers.py package.	3.2(7f) and later

## Bugs

Bug ID	Description	Exists in
<a href="#">CSCvs10395</a>	Leaf switch downlinks all go down at one time due to FabricTrack.	3.2(7f) and later
<a href="#">CSCvs16565</a>	An endpoint is unreachable from the leaf node because the static pervasive route (toward the remote bridge domain subnet) is missing.	3.2(7f) and later
<a href="#">CSCvs21834</a>	Randomly, the Cisco APIC GUI alert list shows an incorrect license expiry time. Sometimes it is correct, while at others times it is incorrect.	3.2(7f) and later
<a href="#">CSCvs29366</a>	For a DVS with a controller, if another controller is created in that DVS using the same host name, the following fault gets generated: " hostname or IP address conflicts same controller creating controller with same name DVS" .	3.2(7f) and later
<a href="#">CSCvs29556</a>	When logging into the Cisco APIC using " apic#fallback\user", the " Error: list index out of range" log message displays and the lastlogin command fails. There is no operational impact.	3.2(7f) and later
<a href="#">CSCvs47757</a>	The plnghandler process crashes on the Cisco APIC, which causes the cluster to enter a data layer partially diverged state.	3.2(7f) and later
<a href="#">CSCvs48552</a>	When physical domains and external routed domains are attached to a security domain, these domains are mapped as associated tenants instead of associated objects under Admin > AAA > security management > Security domains.	3.2(7f) and later
<a href="#">CSCvs55753</a>	A Cisco ACI leaf switch does not have MP-BGP route reflector peers in the output of " show bgp session vrf overlay-1" . As a result, the switch is not able to install dynamic routes that are normally advertised by MP-BGP route reflectors. However, the spine switch route reflectors are configured in the affected leaf switch's pod, and pod policies have been correctly defined to deploy the route reflectors to the leaf switch. Additionally, the bgpPeer managed objects are missing from the leaf switch's local MIT.	3.2(7f) and later
<a href="#">CSCvs57061</a>	In a GOLF configuration, when an L3Out is deleted, the bridge domains stop getting advertised to the GOLF router even though another L3Out is still active.	3.2(7f) and later
<a href="#">CSCvs66244</a>	The CLI command " show interface x/x switchport" shows VLANs configured and allowed through a port. However, when going to the GUI under Fabric > Inventory > node_name > Interfaces > Physical Interfaces > Interface x/x > VLANs, the VLANs do not show.	3.2(7f) and later
<a href="#">CSCvs78996</a>	The policy manager (PM) may crash when use testapi to delete MO from policymgr db.	3.2(7f) and later
<a href="#">CSCvs81907</a>	SNMP does not respond to GETs or sending traps on one or more Cisco APICs despite previously working properly.	3.2(7f) and later

## Bugs

Bug ID	Description	Exists in
<a href="#">CSCvs88359</a>	<p>This issue has the following symptoms:</p> <ol style="list-style-type: none"> <li>1. The SSD of a switch fails in less than two years and needs replacement</li> <li>2. The /mnt/pss/ssd_log_amp.log file shows daily P/E cycles that increase by 10+ each day.</li> </ol> <p>The following fault is raised on the switch: " F3525: High SSD usage observed. Please check switch activity and contact Cisco Technical Support about high SSD usage."</p>	3.2(7f) and later
<a href="#">CSCvt00796</a>	The policymgr DME process can crash because of an OOM issue, and there are many pcons.DelRef managed objects in the DB.	3.2(7f) and later
<a href="#">CSCvt07565</a>	<p>The eventmgr database size may grow to be very large (up to 7GB). With that size, the Cisco APIC upgrade will take 1 hour for the Cisco APIC node that contains the eventmgr database.</p> <p>In rare cases, this could lead to a failed upgrade process, as it times out while working on the large database file of the specified controller.</p>	3.2(7f) and later
<a href="#">CSCvt37066</a>	When migrating an EPG from one VRF table to a new VRF table, and the EPG keeps the contract relation with other EPGs in the original VRF table. Some bridge domain subnets in the original VRF table get leaked to the new VRF table due to the contract relation, even though the contract does not have the global scope and the bridge domain subnet is not configured as shared between VRF tables. The leaked static route is not deleted even if the contract relation is removed.	3.2(7f) and later
<a href="#">CSCvt40736</a>	The login history of local users is not updated in Admin > AAA > Users > (double click on local user) Operational > Session.	3.2(7f) and later
<a href="#">CSCvu01452</a>	The MD5 checksum for the downloaded Cisco APIC images is not verified before adding it to the image repository.	3.2(7f) and later
<a href="#">CSCvu21530</a>	Protocol information is not shown in the GUI when a VRF table from the common tenant is being used in any user tenant.	3.2(7f) and later
<a href="#">CSCvu39569</a>	<p>The following error is encountered when accessing the Infrastructure page in the ACI vCenter plugin after inputting vCenter credentials.</p> <p>" The Automation SDK is not authenticated"</p> <p>VMware vCenter plug-in is installed using powerCLI. The following log entry is also seen in vsphere_client_virgo.log on the VMware vCenter:</p> <pre>/var/log/vmware/vsphere-client/log/vsphere_client_virgo.log [ERROR] http-bio-9090-exec-3314    com.cisco.aciPluginServices.core.Operation sun.security.validator.ValidatorException: PKIX path validation failed: java.security.cert.CertPathValidatorException: signature check failed</pre>	3.2(7f) and later

## Bugs

Bug ID	Description	Exists in
<a href="#">CSCvu62465</a>	For an EPG containing a static leaf node configuration, the Cisco APIC GUI returns the following error when clicking the health of Fabric Location:  Invalid DN topology/pod-X/node-Y/local/svc-policyelem-id-0/ObservedEthlf, wrong rn prefix ObservedEthlf at position 63	3.2(7f) and later
<a href="#">CSCvv62861</a>	A leaf switch reloads due to an out-of-memory condition after changing the contract scope to global.	3.2(7f) and later
<a href="#">CSCvw33061</a>	Traffic loss is observed from multiple endpoints deployed on two different vPC leaf switches.	3.2(7f) and later
<a href="#">CSCvn64048</a>	The policymgr process in the APIC resets and results in a core file. Configurations can be missed if the core file is generated during a configuration import or during configuration steps.	3.2(7f)

## Resolved Bugs

This section lists the resolved bugs. Click the bug ID to access the Bug Search tool and see additional information about the bug. The "Fixed In" column of the table specifies whether the bug was resolved in the base release or a patch release.

Table 4 Resolved Bugs in This Release

Bug ID	Description	Fixed in
<a href="#">CSCvj89771</a>	The Virtual Machine Manager (vmmmgr) process crashes and generates a core file.	3.2(7f)
<a href="#">CSCvj95652</a>	Users are unable to login with TACACS+ on Cisco APICs when a DNS hostname is defined. Fault F0023 is observed on the TACACS+ provider.	3.2(7f)
<a href="#">CSCvj96267</a>	Assigning any 169.x.x.x IP address to an ESX host VMkernel (VMK) that is tied to a VMM DVS/port group causes the following fault to be raised:  Fault delegate: [FSM:FAILED]: Get IP address of the interface: vmkX on host  Where "X" is the VMK #.	3.2(7f)
<a href="#">CSCvk23618</a>	When using the snmpwalk application for cpmCPUMemoryUsed, cpmCPUMemoryFree, cpmCPUMemoryHCUsed, or cpmCPUMemoryHCFree, the values displayed are invalid.	3.2(7f)
<a href="#">CSCvk24509</a>	After performing an HP Virtual Connect switch over, some stable objects remain with the previous switch. F0467 faults related to invalid path configuration can be observed. This issue has no impact on the traffic path.	3.2(7f)
<a href="#">CSCvk26672</a>	A deleted v3 user still exists when checked using the snmpwalk application.	3.2(7f)
<a href="#">CSCvk32591</a>	The POD-ID range during initial APIC setup is [1-9]. This needs to be increased to accommodate maximum number of supported PODs in a Multi-Pod Environment.	3.2(7f)

## Bugs

Bug ID	Description	Fixed in
<a href="#">CSCvk45865</a>	APIC raises Fault F1940 with the following description: Power supply unit on Node 2 is failed. CIMC shows that power supplies are in good state, this can be verified by:  1) SSH to CIMC 2) Scope sensor 3) Show PSU	3.2(7f)
<a href="#">CSCvk63147</a>	There have been isolated issues of corner cases where the cache has become stale.	3.2(7f)
<a href="#">CSCvm02121</a>	NTP is not synced when only two NTP servers are reachable. This issue is also seen in Leaf/Spine. admin@apic1:~> ntpq -p  remote refid st t when poll reach delay offset jitter ----- = x10.1.1.1 192.168.1.1 2 u 31 64 377 0.144 0.004 0.034 x10.2.2.2 LOCAL(0) 3 u 63 64 377 0.535 -23336. 0.346	3.2(7f)
<a href="#">CSCvn77241</a>	During identical-VC-cross-DC VM migrations, there is one task triggered per VM to verify its migration status. However, if too many VMs are migrated within a short period of time, the amount of tasks due to the bulk migration might exceed the size of the task queue, which leads to huge amount of faults.	3.2(7f)
<a href="#">CSCvn79909</a>	SNAPSHOT taken by remote user shows it has been created by ADMIN in audit logs, and no information about the actual remote user creator of the snapshot.	3.2(7f)
<a href="#">CSCvn94771</a>	There is a considerable amount of lag when entering the command "show endpoint ip <ip>".	3.2(7f)
<a href="#">CSCvo07468</a>	SPAN destination, whether this is at the tenant or access level, the destination group does not show the configuration details in the UI.	3.2(7f)
<a href="#">CSCvo31212</a>	When a spine switch is used as an L3Out device to IPN/ISN, in a multi-pod with Cisco ACI Multi-Site configuration, after switching over the sup in a 9508 chassis, a flapping event might be seen in the logs for a DHCP client interface operational state on the L3Out external interface.	3.2(7f)
<a href="#">CSCvo35552</a>	When using a specific out-of-band or in-band contract to only allow certain protocols, all ports are open.	3.2(7f)
<a href="#">CSCvo39336</a>	If many faults flap on the switch nodes, the GUI may run slowly and have poor response.	3.2(7f)
<a href="#">CSCvo49849</a>	There is a mismatch of the fabric IDs between the APICs in a cluster.	3.2(7f)
<a href="#">CSCvo51421</a>	Even though the remote users write privileges are set to admin or some other, the vCenter plugin only gets read permissions when fetching the privileges from the APIC whoAml API.	3.2(7f)
<a href="#">CSCvo59407</a>	When the FEX is removed the ACI leaf switch, the FEX status become offline and is completely removed after approximately 20 minutes. However, the license consumption on the APIC is not updated nor released.	3.2(7f)

## Bugs

Bug ID	Description	Fixed in
<a href="#">CSCvo66664</a>	XML special characters in the SNMP location and name are not properly escaped when exported into XML. This causes issues in being able to parse the XML output properly. In addition, Cisco ACI Multi-Site Orchestrator (MSO) queries the SNMP information and attempts to parse the XML export of the SNMP config. If the SNMP community policy or SNMP location have special characters (&, <, >), pushing policies onto these sites may fail, as MSO cannot parse the XML output.	3.2(7f)
<a href="#">CSCvo88639</a>	When querying the APIC API for MO's that include stats, you may experience delays in the response, or sometimes the API call may even timeout.	3.2(7f)
<a href="#">CSCvp27427</a>	When an EPG is associated with a domain, you cannot configure a no-VLAN-tag option so it uses the trunk native VLAN automatically. This is available in static deployments using 802.1q.	3.2(7f)
<a href="#">CSCvp28418</a>	When selecting a distributed port group for the management interface of Cisco ACI Virtual Edge on the Cisco AVS migration wizard, the Cisco ACI Virtual Edge deployment fails with the following error:  "Failed to perform vNIC mapping"	3.2(7f)
<a href="#">CSCvp37494</a>	Supports BGP bestpath as-path multipath-relax feature. Paths with different as-paths won't automatically be treated as multipath.	3.2(7f)
<a href="#">CSCvp41018</a>	New port groups in VMware vCenter may be delayed when pushed from the APIC.	3.2(7f)
<a href="#">CSCvp42686</a>	GUI is slow and becomes unresponsive once the Operational Tab is opened for the EPG.	3.2(7f)
<a href="#">CSCvp47759</a>	N9K-C9372PX running 13.1(1i), with Cisco ACI Virtual Edge configured, has constant increase of memory utilization, reaching close to 100%, with process svc_ifc_opflexelem consuming most of the memory.	3.2(7f)
<a href="#">CSCvp68528</a>	Sometimes apps aren't able to access the file system. File access can return disk I/O error. The fix for this bug improves file system reliability.	3.2(7f)
<a href="#">CSCvp68533</a>	The data stored by an app may be lost during an APIC upgrade. This can impact the functionality of the app.	3.2(7f)
<a href="#">CSCvp71082</a>	The same GIPo is allocated for different bridge domains when bridge domain scale is low (less than 7K bridge domains in total).	3.2(7f)
<a href="#">CSCvp97666</a>	When nested, VMM attributes are configured on a useg EPG, which is associated with at least one VMM domain. End points under that VMM domain use vMotion, therefore it is possible that vmmmgr may end up in a core file.	3.2(7f)
<a href="#">CSCvn64048</a>	The policymgr process in the APIC resets and results in a core file. Configurations can be missed if the core file is generated during a configuration import or during configuration steps.	3.2(7k)

## Known Behaviors

This section lists bugs that describe known behaviors. Click the Bug ID to access the Bug Search Tool and see additional information about the bug. The "Exists In" column of the table specifies the 3.2(7) releases in which the known behavior exists. A bug might also exist in releases other than the 3.2(7) releases.

## Bugs

Table 5 Known Behaviors in This Release

Bug ID	Description	Exists in
<a href="#">CSCuo52668</a>	The Cisco APIC does not validate duplicate IP addresses that are assigned to two device clusters. The communication to devices or the configuration of service devices might be affected.	3.2(7f) and later
<a href="#">CSCuo79243</a>	In some of the 5-minute statistics data, the count of ten-second samples is 29 instead of 30.	3.2(7f) and later
<a href="#">CSCuo79250</a>	The node ID policy can be replicated from an old appliance that is decommissioned when it joins a cluster.	3.2(7f) and later
<a href="#">CSCup47703</a>	The DSCP value specified on an external endpoint group does not take effect on the filter rules on the leaf switch.	3.2(7f) and later
<a href="#">CSCup79002</a>	The hostname resolution of the syslog server fails on leaf and spine switches over in-band connectivity.	3.2(7f) and later
<a href="#">CSCuq21360</a>	Following a FEX or switch reload, configured interface tags are no longer configured correctly.	3.2(7f) and later
<a href="#">CSCur39124</a>	Switches can be downgraded to a 1.0(1) version if the imported configuration consists of a firmware policy with a desired version set to 1.0(1).	3.2(7f) and later
<a href="#">CSCur71082</a>	If the Cisco APIC is rebooted using the CIMC power reboot, the system enters into fsck due to a corrupted disk.	3.2(7f) and later
<a href="#">CSCus15627</a>	The Cisco APIC Service (ApicVMMSservice) shows as stopped in the Microsoft Service Manager (services.msc in control panel > admin tools > services). This happens when a domain account does not have the correct privilege in the domain to restart the service automatically.	3.2(7f) and later
<a href="#">CSCut51929</a>	The traffic destined to a shared service provider endpoint group picks an incorrect class ID (PcTag) and gets dropped.	3.2(7f) and later
<a href="#">CSCuu09236</a>	Traffic from an external Layer 3 network is allowed when configured as part of a vzAny (a collection of endpoint groups within a context) consumer.	3.2(7f) and later
<a href="#">CSCuu61998</a>	Newly added microsegment EPG configurations must be removed before downgrading to a software release that does not support it.	3.2(7f) and later
<a href="#">CSCuu64219</a>	Downgrading the fabric starting with the leaf switch will cause faults such as policy-deployment-failed with fault code F1371.	3.2(7f) and later

## Bugs

Bug ID	Description	Exists in
<a href="#">CSCva32534</a>	Creating or deleting a fabricSetupP policy results in an inconsistent state.	3.2(7f) and later
<a href="#">CSCva60439</a>	After a pod is created and nodes are added in the pod, deleting the pod results in stale entries from the pod that are active in the fabric. This occurs because the Cisco APIC uses open source DHCP, which creates some resources that the Cisco APIC cannot delete when a pod is deleted.	3.2(7f) and later
<a href="#">CSCva86794</a>	When a Cisco APIC cluster is upgrading, the Cisco APIC cluster might enter the minority status if there are any connectivity issues. In this case, user logins can fail until the majority of the Cisco APICs finish the upgrade and the cluster comes out of minority.	3.2(7f) and later
<a href="#">CSCva97082</a>	When downgrading to a 2.0(1) release, the spines and its interfaces must be moved from infra L3out2 to infra L3out1. After infra L3out1 comes up, delete L3out2 and its related configuration, and then downgrade to a 2.0(1) release.	3.2(7f) and later
<a href="#">CSCvb39702</a>	No fault gets raised upon using the same encapsulation VLAN in a copy device in tenant common, even though a fault should get raised.	3.2(7f) and later
<a href="#">CSCvg41711</a>	In the leaf mode, the command "template route group <group-name> tenant <tenant-name>" fails, declaring that the tenant passed is invalid.	3.2(7f) and later
<a href="#">CSCvg79127</a>	When First hop security is enabled on a bridge domain, traffic is disrupted.	3.2(7f) and later
<a href="#">CSCvg81856</a>	Cisco ACI Multi-Site Orchestrator BGP peers are down and a fault is raised for a conflicting rtrId on the fvRtdEpP managed object during L3extOut configuration.	3.2(7f) and later
<a href="#">CSCvh76076</a>	The PSU SPROM details might not be shown in the CLI upon removal and insertion from the switch.	3.2(7f) and later
<a href="#">CSCvh93612</a>	If two intra-EPG deny rules are programmed—one with the class-eq-deny priority and one with the class-eq-filter priority—changing the action of the second rule to "deny" causes the second rule to be redundant and have no effect. The traffic still gets denied, as expected.	3.2(7f) and later
<a href="#">CSCvj90385</a>	With a uniform distribution of EPs and traffic flows, a fabric module in slot 25 sometimes reports far less than 50% of the traffic compared to the traffic on fabric modules in non-FM25 slots.	3.2(7f) and later

- In a multipod configuration, before you make any changes to a spine switch, ensure that there is at least one operationally "up" external link that is participating in the multipod topology. Failure to do so could bring down the multipod connectivity. For more information about multipod, see the *Cisco Application Centric Infrastructure Fundamentals* document and the *Cisco APIC Getting Started Guide*.

## Compatibility Information

- With a non-english SCVMM 2012 R2 or SCVMM 2016 setup and where the virtual machine names are specified in non-english characters, if the host is removed and re-added to the host group, the GUID for all the virtual machines under that host changes. Therefore, if a user has created a micro segmentation endpoint group using "VM name" attribute specifying the GUID of respective virtual machine, then that micro segmentation endpoint group will not work if the host (hosting the virtual machines) is removed and re-added to the host group, as the GUID for all the virtual machines would have changed. This does not happen if the virtual name has name specified in all english characters.
- A query of a configurable policy that does not have a subscription goes to the policy distributor. However, a query of a configurable policy that has a subscription goes to the policy manager. As a result, if the policy propagation from the policy distributor to the policy manager takes a prolonged amount of time, then in such cases the query with the subscription might not return the policy simply because it has not reached policy manager yet.
- Cisco ACI vCenter Plug-in: Uninstall is not working: remains present in the GUI. After you uninstall the Cisco ACI vCenter Plug-in, it remains visible in the VMware vCenter UI. Restart the VMware vCenter Server to update the UI.
- When there are silent hosts across sites, ARP glean messages might not be forwarded to remote sites if a 1st generation ToR switch (switch models without -EX or -FX in the name) happens to be in the transit path and the VRF is deployed on that ToR switch, the switch does not forward the ARP glean packet back into the fabric to reach the remote site. This issue is specific to 1st generation transit ToR switches and does not affect 2nd generation ToR switches (switch models with -EX or -FX in the name). This issue breaks the capability of discovering silent hosts.

## Compatibility Information

The following sections list compatibility information for the Cisco APIC software.

### Virtualization Compatibility Information

This section lists virtualization compatibility information for the Cisco APIC software.

- For a table that shows the supported virtualization products, see the ACI Virtualization Compatibility Matrix at the following URL:  
<https://www.cisco.com/c/dam/en/us/td/docs/Website/datacenter/aci/virtualization/matrix/virtmatrix.html>
- This release supports VMM Integration and VMware Distributed Virtual Switch (DVS) 6.5 and 6.7. For more information about guidelines for upgrading VMware DVS from 5.x to 6.x and VMM integration, see the *Cisco ACI Virtualization Guide, Release 3.2(7)* at the following URL:  
<https://www.cisco.com/c/en/us/support/cloud-systems-management/application-policy-infrastructure-controller-apic/tsd-products-support-series-home.html>
- For information about Cisco APIC compatibility with Cisco UCS Director, see the appropriate *Cisco UCS Director Compatibility Matrix* document at the following URL:  
<https://www.cisco.com/c/en/us/support/servers-unified-computing/ucs-director/products-device-support-tables-list.html>
- If you use Microsoft vSwitch and want to downgrade to Cisco APIC Release 2.3(1) from a later release, you first must delete any microsegment EPGs configured with the Match All filter.

## Hardware Compatibility Information

This release supports the following Cisco APIC servers:

Product ID	Description
APIC-L1	Cisco APIC with large CPU, hard drive, and memory configurations (more than 1000 edge ports)
APIC-L2	Cisco APIC with large CPU, hard drive, and memory configurations (more than 1000 edge ports)
APIC-M1	Cisco APIC with medium-size CPU, hard drive, and memory configurations (up to 1000 edge ports)
APIC-M2	Cisco APIC with medium-size CPU, hard drive, and memory configurations (up to 1000 edge ports)

The following list includes additional hardware compatibility information:

- To connect the N2348UPQ to Cisco ACI leaf switches, the following options are available:
  - Directly connect the 40G FEX ports on the N2348UPQ to the 40G switch ports on the Cisco ACI leaf switches
  - Break out the 40G FEX ports on the N2348UPQ to 4x10G ports and connect to the 10G ports on all other Cisco ACI leaf switches.

*Note:* A fabric uplink port cannot be used as a FEX fabric port.
- Connecting the Cisco APIC (the controller cluster) to the Cisco ACI fabric requires a 10G interface on the Cisco ACI leaf switch. You cannot connect the Cisco APIC directly to the Cisco N9332PQ ACI leaf switch, unless you use a 40G to 10G converter (part number CVR-QSFP-SFP10G), in which case the port on the Cisco N9332PQ switch auto-negotiate to 10G without requiring any manual configuration.
- The Cisco N9K-X9736C-FX (ports 29 to 36) and Cisco N9K-C9364C-FX (ports 49-64) switches do not support 1G SFPs with QSA.
- Cisco N9K-C9508-FM-E2 fabric modules must be physically removed before downgrading to releases earlier than Cisco APIC 3.0(1).
- The Cisco N9K-C9508-FM-E2 and N9K-X9736C-FX locator LED enable/disable feature is supported in the GUI and not supported in the Cisco ACI NX-OS Switch CLI.
- Contracts using matchDscp filters are only supported on switches with "EX" on the end of the switch name. For example, N9K-93108TC-EX.
- N9K-C9508-FM-E2 and N9K-C9508-FM-E fabric modules in the mixed mode configuration are not supported on the same spine switch.
- The N9K-C9348GC-FXP switch does not read SPROM information if the PSU is in a shut state. You might see an empty string in the Cisco APIC output.
- When the fabric node switch (spine or leaf) is out-of-fabric, the environmental sensor values, such as Current Temperature, Power Draw, and Power Consumption, might be reported as "N/A." A status might be reported as "Normal" even when the Current Temperature is "N/A."

## Adaptive Security Appliance (ASA) Compatibility Information

This section lists ASA compatibility information for the Cisco APIC software.

- This release supports Adaptive Security Appliance (ASA) device package version 1.2.5.5 or later.
- If you are running a Cisco Adaptive Security Virtual Appliance (ASA) version that is prior to version 9.3(2), you must configure SSL encryption as follows:

```
(config)# ssl encryption aes128-sha1
```

## Miscellaneous Compatibility Information

This section lists miscellaneous compatibility information for the Cisco APIC software.

- This release supports the following software:
  - Cisco NX-OS Release 13.2(7)
  - Cisco AVS, Release 5.2(1)SV3(3.11)

For more information about the supported AVS releases, see the AVS software compatibility information in the *Cisco Application Virtual Switch Release Notes* at the following URL:

<https://www.cisco.com/c/en/us/support/switches/application-virtual-switch/products-release-notes-list.html>

  - Cisco UCS Manager software release 2.2(1c) or later is required for the Cisco UCS Fabric Interconnect and other components, including the BIOS, CIMC, and the adapter.
- The latest recommended CIMC releases are as follows:
  - 4.1(2m) CIMC HUU ISO (recommended) for UCS C220/C240 M4 (APIC-L2/M2)
  - 4.1(2k) CIMC HUU ISO for UCS C220/C240 M4 (APIC-L2/M2)
  - 4.1(2g) CIMC HUU ISO for UCS C220/C240 M4 (APIC-L2/M2)
  - 4.1(2b) CIMC HUU ISO for UCS C220/C240 M4 (APIC-L2/M2)
  - 4.1(1g) CIMC HUU ISO for UCS C220/C240 M4 (APIC-L2/M2) and M5 (APIC-L3/M3)
  - 4.1(1f) CIMC HUU ISO for UCS C220 M4 (APIC-L2/M2) (deferred release)
  - 4.1(1d) CIMC HUU ISO for UCS C220 M5 (APIC-L3/M3)
  - 4.1(1c) CIMC HUU ISO for UCS C220 M4 (APIC-L2/M2)
  - 4.0(4e) CIMC HUU ISO for UCS C220 M5 (APIC-L3/M3)
  - 4.0(2g) CIMC HUU ISO for UCS C220/C240 M4 and M5 (APIC-L2/M2 and APIC-L3/M3)
  - 4.0(1a) CIMC HUU ISO for UCS C220 M5 (APIC-L3/M3)
  - 3.0(4l) CIMC HUU ISO (recommended) for UCS C220/C240 M3 (APIC-L1/M1)
  - 3.0(4d) CIMC HUU ISO for UCS C220/C240 M3 and M4 (APIC-L1/M1 and APIC-L2/M2)

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- 3.0(3f) CIMC HUU ISO for UCS C220/C240 M4 (APIC-L2/M2)
- 3.0(3e) CIMC HUU ISO for UCS C220/C240 M3 (APIC-L1/M1)
- 2.0(13i) CIMC HUU ISO
- 2.0(9c) CIMC HUU ISO
- 2.0(3i) CIMC HUU ISO
- This release supports the partner packages specified in the *L4-L7 Compatibility List Solution Overview* document at the following URL:  
<https://www.cisco.com/c/en/us/solutions/data-center-virtualization/application-centric-infrastructure/solution-overview-listing.html>
- A known issue exists with the Safari browser and unsigned certificates, which applies when connecting to the Cisco APIC GUI. For more information, see the *Cisco APIC Getting Started Guide*.
- For compatibility with OpenStack and Kubernetes distributions, see the *Cisco Application Policy Infrastructure Controller OpenStack and Container Plugins, Release 3.2(7), Release Notes*.

## Usage Guidelines

The following sections list usage guidelines for the Cisco APIC software.

### Virtualization Compatibility Guidelines

This section lists virtualization-related usage guidelines for the Cisco APIC software.

- Do not separate virtual port channel (vPC) member nodes into different configuration zones. If the nodes are in different configuration zones, then the vPCs' **modes become mismatched** if the interface policies are modified and deployed to only one of the vPC member nodes.
- If you are upgrading VMware vCenter 6.0 to vCenter 6.7, you should first delete the following folder on the VMware vCenter: C:\ProgramData\cisco\_aci\_plugin.

If you do not delete the folder and you try to register a fabric again after the upgrade, you will see the following error message:

```
Error while saving setting in C:\ProgramData\cisco_aci_plugin\<user>_<domain>.properties.
```

The *user* is the user that is currently logged in to the vSphere Web Client, and *domain* is the domain to which the user belongs. Although you can still register a fabric, you do not have permissions to override settings that were created in the old VMware vCenter. Enter any changes in the Cisco APIC configuration again after restarting VMware vCenter.

- If the communication between the Cisco APIC and VMware vCenter is impaired, some functionality is adversely affected. The Cisco APIC relies on the pulling of inventory information, updating VDS configuration, and receiving event notifications from the VMware vCenter for performing certain operations.
- After you migrate VMs using a cross-data center VMware vMotion in the same VMware vCenter, you might find a stale VM entry under the source DVS. This stale entry can cause problems, such as host removal failure. The workaround for this problem is to enable "Start monitoring port state" on the vNetwork DVS. See the KB topic

## Usage Guidelines

"Refreshing port state information for a vNetwork Distributed Virtual Switch" on the VMware Web site for instructions.

- When creating a vPC domain between two leaf switches, both switches must be in the same switch generation. Switches not in the same generation are not compatible vPC peers. The generations are as follows:
  - Generation 1—Cisco Nexus 9200 and 9300 platform switches without "EX" on the end of the switch name; for example, Cisco Nexus 93120TX.
  - Generation 2—Cisco Nexus 9300-EX and FX platform switches; for example, Cisco Nexus 93108TC-EX.
- The following Red Hat Virtualization (RHV) guidelines apply:
  - We recommend that you use release 4.1.6 or later.
  - Only one controller (compCtrlr) can be associated with a Red Hat Virtualization Manager (RHVM) data center.
  - Deployment immediacy is supported only as pre-provision.
  - IntraEPG isolation, micro EPGs, and IntraEPG contracts are not supported.
  - Using service nodes inside a RHV domain have not been validated.

## GUI Guidelines

This section lists GUI-related usage guidelines for the Cisco APIC software.

- The Cisco APIC GUI includes an online version of the Quick Start Guide that includes video demonstrations.
- To reach the Cisco APIC CLI from the GUI: choose System > Controllers, highlight a controller, right-click, and choose "launch SSH". To get the list of commands, press the escape key twice.
- The Basic GUI mode is deprecated. We do not recommend using Cisco APIC Basic mode for configuration. However, if you want to use Cisco APIC Basic mode, use the following URL:

`APIC_URL/indexSimple.html`

## CLI Guidelines

This section lists CLI-related usage guidelines for the Cisco APIC software.

- The output from show commands issued in the NX-OS-style CLI are subject to change in future software releases. We do not recommend using the output from the show commands for automation.
- The CLI is supported only for users with administrative login privileges.
- If FIPS is enabled in the Cisco ACI setups, then SHA256 support is mandatory on the SSH Client. Additionally, to have the SHA256 support, the openssh-client must be running version 6.6.1 or higher.

## Layer 2 and Layer 3 Configuration Guidelines

This section lists Layer 2 and Layer 3-related usage guidelines for the Cisco APIC software.

## Usage Guidelines

- For Layer 3 external networks created through the API or GUI and updated through the CLI, protocols need to be enabled globally on the external network through the API or GUI, and the node profile for all the participating nodes needs to be added through the API or GUI before doing any further updates through the CLI.
- When configuring two Layer 3 external networks on the same node, the loopbacks need to be configured separately for both Layer 3 networks.
- All endpoint groups (EPGs), including application EPGs and Layer 3 external EPGs, require a domain. Interface policy groups must also be associated with an Attach Entity Profile (AEP), and the AEP must be associated with domains. Based on the association of EPGs to domains and of the interface policy groups to domains, the ports VLANs that the EPG uses are validated. This applies to all EPGs including bridged Layer 2 outside and routed Layer 3 outside EPGs. For more information, see the *Cisco APIC Layer 2 Networking Configuration Guide*.

**Note:** When creating static paths for application EPGs or Layer 2/Layer 3 outside EPGs, the physical domain is not required. Upgrading without the physical domain raises a fault on the EPG stating "invalid path configuration."

- In a multipod fabric, if a spine switch in POD1 uses the infra tenant L3extOut-1, the TORs of the other pods (POD2, POD3) cannot use the same infra L3extOut (L3extOut-1) for Layer 3 EVPN control plane connectivity. Each POD must use its own spine switch and infra L3extOut.
- You do not need to create a customized monitoring policy for each tenant. By default, a tenant shares the common policy under tenant common. The Cisco APIC automatically creates a default monitoring policy and enables common observable. You can modify the default policy under tenant common based on the requirements of your fabric.
- The Cisco APIC does not provide IPAM services for tenant workloads.
- Do not mis-configure Control Plane Policing (CoPP) pre-filter entries. CoPP pre-filter entries might impact connectivity to multi-pod configurations, remote leaf switches, and Cisco ACI Multi-Site deployments.
- You cannot use remote leaf switches with Cisco ACI Multi-Site.

## IP Address Guidelines

This section lists IP address-related usage guidelines for the Cisco APIC software.

- For the following services, use a DNS-based hostname with out-of-band management connectivity. IP addresses can be used with both in-band and out-of-band management connectivity.
  - Syslog server
  - Call Home SMTP server
  - Tech support export server
  - Configuration export server
  - Statistics export server
- The infrastructure IP address range must not overlap with other IP addresses used in the fabric for in-band and Out-of-band networks.
- If an IP address is learned on one of two endpoints for which you are configuring an atomic counter policy, you should use an IP-based policy and not a client endpoint-based policy.

## Usage Guidelines

- A multipod deployment requires the 239.255.255.240 system Global IP Outside (GIPO) to be configured on the inter-pod network (IPN) as a PIM BIDIR range. This 239.255.255.240 PIM BIDIR range configuration on the IPN devices can be avoided by using the Infra GIPO as System GIPO feature. The Infra GIPO as System GIPO feature must be enabled only after upgrading all of the switches in the Cisco ACI fabric, including the leaf switches and spine switches, to the latest Cisco APIC release.
- Cisco ACI does not support a class E address as a VTEP address.

## Miscellaneous Guidelines

This section lists miscellaneous usage guidelines for the Cisco APIC software.

- User passwords must meet the following criteria:
  - Minimum length is 8 characters
  - Maximum length is 64 characters
  - Fewer than three consecutive repeated characters
  - At least three of the following character types: lowercase, uppercase, digit, symbol
  - Cannot be easily guessed
  - Cannot be the username or the reverse of the username
  - Cannot be any variation of " cisco" , " isco" , or any permutation of these characters or variants obtained by changing the capitalization of letters therein
- In some of the 5-minute statistics data, the count of ten-second samples is 29 instead of 30.
- The power consumption statistics are not shown on leaf node slot 1.
- If you defined multiple login domains, you can choose the login domain that you want to use when logging in to a Cisco APIC. By default, the domain drop-down list is empty, and if you do not choose a domain, the DefaultAuth domain is used for authentication. This can result in login failure if the username is not in the DefaultAuth login domain. As such, you must enter the credentials based on the chosen login domain.
- A firmware maintenance group should contain a maximum of 80 nodes.
- When contracts are not associated with an endpoint group, DSCP marking is not supported for a VRF with a vzAny contract. DSCP is sent to a leaf switch along with the actrl rule, but a vzAny contract does not have an actrl rule. Therefore, the DSCP value cannot be sent.
- The Cisco APICs must have 1 SSD and 2 HDDs, and both RAID volumes must be healthy before upgrading to this release. The Cisco APIC will not boot if the SSD is not installed.
- In a multipod fabric setup, if a new spine switch is added to a pod, it must first be connected to at least one leaf switch in the pod. Then the spine switch is able to discover and join the fabric.

Caution: If you install 1-Gigabit Ethernet (GE) or 10GE links between the leaf and spine switches in the fabric, there is risk of packets being dropped instead of forwarded, because of inadequate bandwidth. To avoid the risk, use 40GE or 100GE links between the leaf and spine switches.

- For a Cisco APIC REST API query of event records, the Cisco APIC system limits the response to a maximum of 500,000 event records. If the response is more than 500,000 events, it returns an error. Use filters to refine your queries. For more information, see *Cisco APIC REST API Configuration Guide*.

- Subject Alternative Names (SANs) contain one or more alternate names and uses any variety of name forms for the entity that is bound by the Certificate Authority (CA) to the certified public key. These alternate names are called "Subject Alternative Names" (SANs). Possible names include:
  - DNS name
  - IP address
- If a node has port profiles deployed on it, some port configurations are not removed if you decommission the node. You must manually delete the configurations after decommissioning the node to cause the ports to return to the default state. To do this, log into the switch, run the `setup-clean-config.sh` script, wait for the script to complete, then enter the `reload` command.
- When using the SNMP trap aggregation feature, if you decommission Cisco APICs, the trap forward server will receive redundant traps.
- If you upgraded from a release prior to the 3.2(1) release and you had any apps installed prior to the upgrade, the apps will no longer work. To use the apps again, you must uninstall and reinstall them.
- Connectivity filters were deprecated in the 3.2(4) release. Feature deprecation implies no further testing has been performed and that Cisco recommends removing any and all configurations that use this feature. The usage of connectivity filters can result in unexpected access policy resolution, which in some cases will lead to VLANs being removed/reprogrammed on leaf interfaces. You can search for these VLANs using the `moquery` command on the APIC:

```
> moquery -c infraConnPortBlk
> moquery -c infraConnNodeBlk
> moquery -c infraConnNodeS
> moquery -c infraConnFexBlk
> moquery -c infraConnFexS
```
- Fabric connectivity ports can operate at 10G or 25G speeds (depending on the model of the APIC server) when connected to leaf switch host interfaces. We recommend connecting two fabric uplinks, each to a separate leaf switch or vPC leaf switch pair.

For APIC-M3/L3, virtual interface card (VIC) 1445 has four ports (port-1, port-2, port-3, and port-4 from left to right). Port-1 and port-2 make a single pair corresponding to eth2-1 on the APIC server; port-3 and port-4 make another pair corresponding to eth2-2 on the APIC server. Only a single connection is allowed for each pair. For example, you can connect one cable to either port-1 or port-2 and another cable to either port-3 or port-4, but not 2 cables to both ports on the same pair. Connecting 2 cables to both ports on the same pair creates instability in the APIC server. All ports must be configured for the same speed: either 10G or 25G.
- When you create an access port selector in a leaf interface profile, the `fexId` property is configured with a default value of 101 even though a FEX is not connected and the interface is not a FEX interface. The `fexId` property is only used when the port selector is associated with an `infraFexBndIGrp` managed object.

## Related Documentation

The Cisco Application Policy Infrastructure Controller (APIC) documentation can be accessed from the following website:

<https://www.cisco.com/c/en/us/support/cloud-systems-management/application-policy-infrastructure-controller-apic/tsd-products-support-series-home.html>

## Related Documentation

The documentation includes installation, upgrade, configuration, programming, and troubleshooting guides, technical references, release notes, and knowledge base (KB) articles, as well as other documentation. KB articles provide information about a specific use case or a specific topic.

By using the "Choose a topic" and "Choose a document type" fields of the APIC documentation website, you can narrow down the displayed documentation list to make it easier to find the desired document.

The following list provides links to the release notes and verified scalability documentation:

- [Verified Scalability](#)
- [Cisco ACI Simulator Release Notes](#)
- [Cisco NX-OS Release Notes for Cisco Nexus 9000 Series ACI-Mode Switches](#)
- [Cisco Application Policy Infrastructure Controller OpenStack and Container Plugins Release Notes](#)
- [Cisco Application Virtual Switch Release Notes](#)

## New Documentation

This section lists the new Cisco ACI product documents for this release.

- *Cisco ACI Virtual Edge Configuration Guide, Release 1.2(7)*
- *Cisco ACI Virtual Edge Release Notes, Release 1.2(7)*
- *Cisco Application Virtual Switch Release Notes, 5.2(1)SV3(3.31)*

## Related Documentation

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