Supported Platforms for the Cisco Application Policy Infrastructure Controller Enterprise Module, Release 1.3.0.x

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Supported Platforms and Software Requirements

The following tables list the supported devices and modules, with their software requirements for the Cisco APIC-EM.

Note For information about supported platforms and software requirements for the Cisco IWAN and Cisco Network PnP applications, refer to the separate application release notes found at http://www.cisco.com/c/en/us/support/cloud-systems-management/one-enterprise-network-controller/products-release-notes-list.html.

Supported Cisco Switches

The following table lists the supported Cisco switches for this Cisco APIC-EM release.

Table 1: Supported Cisco Switches

Supported Switches	Minimum Software Version [1]	Recommended Software Version	Base Apps Support	Path Trace Support	EasyQoS Support	Path Stats Interface	Path Stats QoS
Catalyst 2960-S Series switches, including stacks	>=12.1	Cisco IOS 15.2(1)E1, 12.2(58)SE2	Yes	Yes	Yes	Yes	No
Catalyst 2960-X/XR Series switches	>=12.1	Cisco IOS 15.2(4)E, 15.0.2-EX5	Yes	Yes	Yes	Yes	No
Catalyst 3560CG Series switches	>=12.2	Cisco IOS 15.0(2)SE5	Yes	Yes	Yes	Yes	No
Catalyst 3560CX Series switches	15.2(3)E1	Cisco IOS 15.2(3)E1	Yes	Yes	Yes	Yes	No
Catalyst 3560-X Series switches	>=12.2	Cisco IOS 15.2(4)E, 12.2(58)SE2	Yes	Yes	Yes	Yes	No
Catalyst 3650 Series switches	All versions	Cisco IOS 3.6.2aE,16.X	Yes	Yes	Yes	Yes	No
Catalyst 3750-X Series switches, including stacks	>=12.2	Cisco IOS 15.2(4)E, 12.2(55)SE8	Yes	Yes	Yes	Yes	No

Supported Switches	Minimum Software Version [1]	Recommended Software Version	Base Apps Support	Path Trace Support	EasyQoS Support	Path Stats Interface	Path Stats QoS
Catalyst 3850 Series switches, including stacks [2]	All versions	Cisco IOS 3.6.2aE, 16.X	Yes	Yes	Yes	Yes	No
Catalyst 4500(Sup7E) Series switches	All versions	Cisco IOS 3.5(2)E, 3.2(8)SG	Yes	Yes	Yes	Yes	No
Catalyst 4500E (Sup8E) Series switches	All versions	Cisco 3.3.2XO, 3.6.1E	Yes	Yes	Yes	Yes	No
Catalyst 4500-X Series switches	All versions	Cisco 3.3.2SG, 3.6.5E	Yes	Yes	Yes	Yes	No
Catalyst 6500 (Supervisor Engine 720-3C/B) Series switches [3]	>=12.2	Cisco 15.1(2)SY2	Yes	Yes	Yes	Yes	No
Catalyst 6500(Sup-2T) Series switches	>=12.2	Cisco IOS 15.1(2)SY4a, 15.0(1)SY6	Yes	Yes	Yes	Yes	No
Catalyst 6800 Series switches	>=12.2	Cisco IOS 15.1(2)SY4a	Yes	Yes	Yes	Yes	No

Supported Switches	Minimum Software Version [1]	Recommended Software Version	Base Apps Support	Path Trace Support	EasyQoS Support	Path Stats Interface	Path Stats QoS
Cisco Catalyst 6807-XL Switch	>=12.2	Cisco IOS 15.2(1)SY1a	Yes	Yes	Yes	Yes	No
Cisco Catalyst 6840-X Switch	>=12.2	Cisco IOS 15.2.2-SY	Yes	Yes	Yes	Yes	No
Cisco Catalyst 6880-X Switch	>=12.2	Cisco IOS 15.1(2)SY4a	Yes	Yes	Yes	Yes	No
Cisco Nexus 5000 Series switches	All versions	NX-OS version 7.2(2) D1(1) and 7.3(0) N1(1)	Yes	Yes	No	Yes	No
Cisco Nexus 7000 Series switches [4]	All versions	NX-OS version 7.2(2) D1(1)	Yes	Yes	Yes	Yes	No

1 The minimum software version is applicable only for Discovery and Inventory. For Path Trace and EasyQoS, be sure to use the recommended software version.

2 EasyQoS requires IOS XE 3.6.2 and higher. In versions below IOS XE 3.6.2, class-maps with empty actions cannot be configured, and therefore EasyQoS will generate an error.

3 EasyQoS only supports the Catalyst 6500 Supervisor Engine 720-10GE-3C/3CXL. EasyQoS does not support the Supervisor Engine 720-3B/3BXL.

4 Current minimum version supported by EasyQoS is NX -OS version 6.2.2 and higher. EasyQoS uses ingress DSCP-to-queue mapping which is supported from NX-OS version 6.2.2 and higher.

Supported Cisco Routers

The following table lists the supported Cisco routers for this Cisco APIC-EM release.

Table 2: Supported Cisco Routers

Supported Routers	Minimum Software Version	Recommended Software Version	Base Apps Support	Path Trace Support	EasyQoS Support	Path Stats Interface	Path Stats QoS
Cisco Integrated Services Routers (ISR) G2	>=15.0(1)M	Cisco IOS 15.2(4)M9	Yes	Yes	Yes	Yes	Yes
Cisco Integrated Service Router (ISR) 800 Series	>=15.2(4)M	Cisco IOS 15.2(4)M9	Yes	Yes	Yes	Yes	Yes
Cisco Integrated Service Router (ISR) 4000 Series	>=3.8.0S	Cisco IOS XE 3.12.0S, 16.3.1	Yes	Yes	Yes	Yes	Yes
Cisco Cloud Services Router 1000v Series	Cisco 15.2(4)M9	Cisco 15.2(4)M9	Yes	Yes	Yes	Yes	Yes
Cisco ASR 1000 Series Aggregation Services Router	>=3.8.0S	Cisco IOS XE 3.12.0S, 16.3.1	Yes	Yes	Yes	Yes	No
Cisco ASR 9000 Series Aggregation Services Router [5]	>=3.9	Cisco IOS XR 5.1.3	Yes	Yes	No	Yes	No

[5] You must enable NETCONF for the Cisco ASR 9000 router or for any other Cisco device that requires NETCONF support in their device pack. See the *Cisco Application Policy Infrastructure Controller Enterprise Module Configuration Guide*, Appendix A, "Required Device Configuration" for information about this requirement.

Supported Cisco Wireless LAN Controllers

The following table lists the supported Cisco wireless LAN controllers for this Cisco APIC-EM release.

Table 3: Supported Cisco Wireless LAN Controllers

Supported Wireless LAN Controllers[6]	Minimum Software Version	Recommended Software Version [7]	Base Apps Support	Path Trace Support	EasyQoS Support	Path Stats Interface	Path Stats QoS
Cisco 2500 Series Wireless Controller	All versions	Cisco AireOS 8.1.131.0	Yes	Yes	Yes	Yes	No
Cisco 5500 Series Wireless Controller	All versions	Cisco AireOS 8.1.131.0	Yes	Yes	Yes	Yes	No
Cisco 5520 Series Wireless Controller	All versions	Cisco AireOS 8.1.131.0	Yes	Yes	Yes	Yes	No
Cisco 5760 Series Wireless LAN Controller	All versions	Cisco IOS XE 3.3.3SE	Yes	Yes	No	Yes	No
Cisco 8500 Series Wireless Controller	All versions	Cisco AireOS 8.1.131.0	Yes	Yes	Yes	Yes	No
Cisco 8540 Series Wireless Controller	All versions	Cisco AireOS 8.1.131.0	Yes	Yes	Yes	Yes	No

Supported Wireless LAN Controllers[6]	Minimum Software Version	Recommended Software Version [7]	Base Apps Support	Path Trace Support	EasyQoS Support	Path Stats Interface	Path Stats QoS
Cisco Wireless Services Module 2 (WiSM2)	8.1.131.0	Cisco AireOS 8.1.131.0	Yes	No	No	No	No

[6] **On certain WLCs, you need to configure SNMP traps. See the *Cisco Application Policy Infrastructure Controller Enterprise Module Configuration Guide,* Appendix A, "Required Device Configuration" for additional information about this configuration requirement.**

[7] **AireOS controllers (2500, 5500, 5520, 8500, 8540, and WiSM2) require AireOS 8.2.100 and higher for the DSCP-to-UP mapping used by EasyQoS.**

Supported Cisco Service Modules

The following table lists the supported Cisco service modules for this Cisco APIC-EM release.

Table 4: Supported Cisco Service Modules in Cisco ISR G2

Supported Service Modules in Cisco ISR G2	Minimum Software Version	Recommended Software Version	Base Apps Support	Path Trace Support	EasyQoS Support	Path Stats Interface	Path Stats QoS
Cisco 2900 (SM-ES2-16-P, SM-ES2-24-P, SM-D-ES2-48)	>=12.2	Cisco IOS 15.0(2)SE8, 12.2(55)SE10	Yes	Yes	Yes	Yes	No
Cisco 3900 (SM-ES3-16-P, SM-ES3-24-P, SM-D-ES3-48-P)	>=12.2	Cisco IOS 15.0(2)SE8, 12.2(55)SE10	Yes	Yes	No	Yes	No

Supported Cisco Adaptive Security Appliances (ASA)

The following tables list the supported Cisco Adaptive Security Appliances (ASA) for this Network Visibility release.

Note Cisco ASA support is at a basic service level for this release, including Discovery and Inventory. There is no support for Cisco ASA in Path Trace and Topology, since Cisco ASA does not support CDP and it is not currently possible to identify link and path through the Cisco ASA appliance.

Table 5: Cisco Adaptive Security Appliances (ASA)

Device Type	Software Version
Cisco Adaptive Security Virtual Appliance (ASAv)	All versions

The following table lists the supported Cisco ASA-5500 Series ASAs.

Table 6: Cisco ASA-5500 Series Adaptive Security Appliances

Device Type	Software Version
Cisco ASA-5505 Adaptive Security Appliance	All versions
Cisco ASA-5510 Adaptive Security Appliance	All versions
Cisco ASA-5510 Adaptive Security Appliance Security Context	All versions
Cisco ASA-5520 Adaptive Security Appliance	All versions
Cisco ASA-5520 Adaptive Security Appliance Security Context	All versions
Cisco ASA-5540 Adaptive Security Appliance	All versions
Cisco ASA-5540 Adaptive Security Appliance Security Context	All versions
Cisco ASA-5550 Adaptive Security Appliance	All versions
Cisco ASA-5550 Adaptive Security Appliance Security Context	All versions
Cisco ASA-5560 Adaptive Security Appliance	All versions
Cisco ASA-5580 Adaptive Security Appliance	All versions
Cisco ASA-5580 Adaptive Security Appliance Security Context	All versions
Cisco ASA-5585 Adaptive Security Appliance	All versions
Cisco ASA-5585 Adaptive Security Appliance Security Context	All versions

The following table lists the supported Cisco ASA 5500-X Series Next-Generation Firewalls.

Table 7: Cisco ASA 5500-X Series Next-Generation Firewalls

Device Type	Software Version
Cisco ASA 5512-X Adaptive Security Appliance	All versions
Cisco ASA 5512-X Adaptive Security Appliance with No Payload Encryption	All versions
Cisco ASA 5515-X Adaptive Security Appliance	All versions
Cisco ASA 5515-X Adaptive Security Appliance with No Payload Encryption	All versions
Cisco ASA 5525-X Adaptive Security Appliance	All versions
Cisco ASA 5525-X Adaptive Security Appliance with No Payload Encryption	All versions
Cisco ASA 5545-X Adaptive Security Appliance	All versions
Cisco ASA 5545-X Adaptive Security Appliance with No Payload Encryption	All versions
Cisco ASA 5555-X Adaptive Security Appliance	All versions
Cisco ASA 5555-X Adaptive Security Appliance with No Payload Encryption	All versions

Supported Cisco Industrial Ethernet Switches

The following tables lists the supported Cisco industrial Ethernet switches for this Cisco APIC-EM release.

Table 8: Supported Cisco Industrial Ethernet Switches

Supported Industrial Ethernet Switches	Minimum Software Version	Recommended Software Version	Base Apps	Path Trace	EasyQoS
Cisco Industrial Ethernet 2000 Series Switches	>=12.2	15.0.2-EA1	Yes	Yes	No
Cisco Industrial Ethernet 3000 Series Switches	>=12.2	15.0.2-EA1	Yes	Yes	No

Supported Industrial Ethernet Switches	Minimum Software Version	Recommended Software Version	Base Apps	Path Trace	EasyQoS
Cisco Industrial Ethernet 4000 Series Switches	>=12.2	15.2.5E	Yes	Yes	No

Performance Monitoring Support by Platform

The following tables describe Cisco APIC-EM performance monitoring (PerfMon) support by platform.

Note For additional information about supported images and versions, use the Cisco Feature Navigator tool by clicking: http://tools.cisco.com/ITDIT/CFN/jsp/by-feature-technology.jsp.

Performance Monitoring Support for Cisco Switches

The following table describes Cisco APIC-EM performance monitoring (PerfMon) support for Cisco switches.

Cisco Switch	Minimum Operating System
Cisco Catalyst 2960S	Not Supported
Cisco Catalyst 2960S-Stack	Not Supported
Cisco Catalyst 2960XR	Not Supported
Cisco Catalyst 2900 (SM-ES2-16-P, SM-ES2-24-P, SM-D-ES2-48)	Not Supported
Cisco Catalyst 3750	Cisco IOS 12.2(58)SE, 15.0(1)SE2
Cisco Catalyst 3750-Stack	Cisco IOS 12.2(58)SE, 15.0(1)SE2
Cisco Catalyst 3850	Cisco IOS 03.06.0 E
Cisco Catalyst 3850-Stack	Cisco IOS 03.06.0 E
Cisco Catalyst 3650	Cisco IOS 03.06.0 E
Cisco Catalyst 3650-Stack	Cisco IOS 03.06.0 E
Cisco Catalyst 3560CG	Cisco IOS 15.0(1)SE2

Cisco Switch	Minimum Operating System
Cisco Catalyst Cisco 3900 (SM-ES3-16-P, SM-ES3-24-P, SM-D-ES3-48-P)	Cisco IOS 12.2(58)SE, 15.0(1)SE
Cisco Catalyst 3560-X	Cisco IOS 12.2(58)SE, 15.0(1)SE2
Cisco Catalyst 4507R+E	Cisco IOS 03.06.0E
Cisco Catalyst 4500-X	Cisco IOS 03.06.0E
Cisco Catalyst 6880-X	Cisco IOS 15.1(2)SY1
Cisco Catalyst 6500 (Sup-2T)	Cisco IOS 15.0(1)SY1
Cisco Catalyst 6500 (Sup720)	Cisco IOS 15.1(2)SY
Cisco Nexus 5000	Not Supported
Cisco Nexus 7000 and 7700	Not Supported

Performance Monitoring Support for Cisco Routers

The following table describes Cisco APIC-EM performance monitoring (PerfMon) support for Cisco routers.

Cisco Routers	Minimum Operating System
Cisco ASR1000 Series	Cisco IOS XE 3.5.0S
Cisco ASR1002-X Router	Cisco IOS XE3.7.0S
Cisco ASR1001-X Router	Cisco IOS XE 3.13.0S
Cisco 43xx Series Integrated Services Routers	Cisco IOS XE 3.13.0S
Cisco 44xx Series Integrated Services Routers	Cisco IOS XE 3.8.0S
Cisco Integrated Services Routers G2 Series	Cisco IOS 15.1(4)M3
Cisco 800 Series Integrated Services Routers	Cisco IOS 15.2(4)M2
Cisco Cloud Services Router 1000V Series	3.13.0S

Performance Monitoring Support for Cisco Wireless LAN Controllers

The following table describes Cisco APIC-EM performance monitoring (PerfMon) support for Cisco wireless LAN controllers.

Cisco WLC	Minimum Operating System
Cisco 2500 Series Wireless LAN Controller	Not Supported
Cisco 5500 Series Wireless LAN Controller	Not Supported
Cisco 8500 Series Wireless LAN Controller	Not Supported

EasyQoS Support and Limitations

EasyQoS Feature Support by Platform

The Cisco APIC-EM EasyQoS features are supported on the following platforms.

Cisco Catalyst Switches

The following switches support the EasyQoS functionality listed directly below:

- Cisco Catalyst 2960-S Series
- Cisco Catalyst 2960-S Series (stack)
- Cisco Catalyst 2960-X Series
- Cisco Catalyst 2960-XR Series
- Cisco Catalyst 3560CG Series
- Cisco Catalyst 3560-CX Series
- Cisco Catalyst 3560-X Series
- Cisco Catalyst 3650 Series
- Cisco Catalyst 3750-X Series
- Cisco Catalyst 3750-X Series (stack)
- Cisco Catalyst 3850 Series
- Cisco Catalyst 3850 Series (stack)
- Cisco Catalyst 4500 Sup7E Series
- Cisco Catalyst 4500 Sup8E Series
- Cisco Catalyst 4500-X Series
- Cisco Catalyst 6500 (Sup-2T) Series
- Cisco Catalyst 6500-E (Sup-720) Series
- Cisco Catalyst 6807-XL (Sup-2T) Series
- Cisco Catalyst 6840 Series
- Cisco Catalyst 6880 Series

- Cisco Nexus 7000 Series
- Cisco Nexus 7700 Series

The following EasyQoS functionality is supported by the above switches:

- Marking (reading and writing to the device configuration)
- Queuing (reading and writing to the device configuration)
- Dynamic QoS

Note Whether queuing and marking or just queuing policies are written to a particular switch platform by the controller depends upon the following:

- The role the device plays in the network (access-layer, distribution-layer, or core-layer).
- Whether queuing and marking or just queuing policies is supported in the network.

Cisco Routers

The following routers support the EasyQoS functionality listed directly below:

- Cisco 2900 Series ISR
- Cisco 3900 Series ISR
- Cisco 800 Series ISR ([866VAE-K9, 867VAE with PP1.0], [881-K9, 881V-K9,897-VAW, 891-24X-K9 with PP14.0)
- Cisco 4000 Series ISR
- Cisco ASR 1000 Series

The following EasyQoS functionality is supported by the above routers:

- Marking (reading and writing to the device configuration)
- Queuing (reading and writing to the device configuration)
- Shaping (reading and writing to the device configuration)

Dynamic QoS is not supported.

Cisco Wireless LAN Controllers

The following wireless LAN controllers support the EasyQoS functionality listed directly below:

- Cisco 2500 Series Wireless LAN Controller
- Cisco 5500 Series Wireless LAN Controller
- Cisco 8500 Series Wireless LAN Controller

The following EasyQoS functionality is supported by the above wireless LAN controllers:

- Marking (reading and writing to the device configuration)
- WLAN

Dynamic QoS is not supported.

Cisco Enhanced Ethernet Modules

The following Cisco enhanced Ethernet modules support the EasyQoS functionality listed directly below:

- Cisco 2900(SM-ES2-16-P, SM-ES2-24-P, SM-D-ES2-48)

The following EasyQoS functionality is supported by the above enhance Ethernet modules:

- Marking (reading and writing to the device configuration)
- Queuing (reading and writing to the device configuration)
- Dynamic QoS

EasyQoS Supported Line Cards

The following table lists the Catalyst 6000 Series line cards that support EasyQoS.

Table 9: EasyQoS Supported Line Cards

Catalyst 6500 and 6807-XL Series Switch Line Cards	Catalyst 6880-X Series Switch Line Cards
VS-S2T-10G-XL and VS-S2T-10G with Gigabit Ethernet ports disabled	C6816-X-LE
WS-X6748-GE-TX with CFC	C6832-X-LE
WS-X6748-GE-TX with a DFC4 or DFC4XL upgrade (WS-F6k-DFC4-A, WS-F6k-DFC4-AXL)	C6824-X-LE-40G
WS-X6748-SFP with CFC	C6840-X-LE-40G
WS-X6724-SFP with CFC	C6880-X-LE-16P10G
WS-X6724-SFP with DFC4/DFC4XL upgrade (WS-F6k-DFC4-A, WS-F6k-DFC4-AXL)	C6880-X-16P10G
WS-X6908-10G-2T WS-X6908-10G-2TXL	
WS-X6704-10GE with CFC	
WS-X6704-10GE with a DFC4/DFC4XL upgrade (WS-F6k-DFC4-A, WS-F6k-DFC4-AXL)	

Catalyst 6500 and 6807-XL Series Switch Line Cards	Catalyst 6880-X Series Switch Line Cards
C6800-8P10G C6800-8P10G-XL C6800-16P10G C6800-16P10G-XL C6800-32P10G	
C6800-32P10G-XL C6800-48P-SFP C6800-48P-SFP-XL C6800-48P-TX C6800-48P-TX-XL	

EasyQoS Supported Queues and Line Cards

The following tables lists queues and line cards that are supported by the controller for queuing policies in the Catalyst 6500-E Series and Catalyst 6807-XL with the Catalyst Supervisor Engine 2T.

Table 10: EasyQoS Supported Queues and Line Cards (with Catalyst Supervisor Engine 2T)

Queues	Line Cards
1Q8T (One standard queue with eight configurable tail-drop thresholds)	• WS-X6724-SFP with CFC • WS-X6748-SFP with CFC • WS-X6748-GE-TX with CFC • WS-X6704-10GE with CFC
2Q4T (Two standard queues with four configurable tail-drop thresholds)	• VS-S2T-10G with Gigabit Ethernet ports enabled • VS-S2T-10G-XL with Gigabit Ethernet ports enabled

Queues	Line Cards
2Q8T ingress queuing (Two standard queues, each with eight configurable tail-drop thresholds)	• C6800-48P-SFP • C6800-48P-SFP-XL • C6800-48P-TX • C6800-48P-TX-XL • WS-X6724-SFP • WS-X6748-SFP • WS-X6748-GE-TX **Note** The WS-X6724-SFP, WS-X6848-SFP, and WS-X6748-GE-TX line cards are only supported with a DFC4 or DFC4XL upgrade (WS-F6k-DFC4-A or WS-F6k-DFC4-AXL).
8Q4T ingress queuing (Eight standard queues, each with four thresholds, each configurable as either WRED-drop or tail-drop)	• VS-S2T-10G, VS-S2T-10G-XL with Gigabit Ethernet ports disabled • WS-X6908-10G-2T, WS-X6908-10G-2TXL
8Q8T ingress queuing (Eight standard queues, each with eight thresholds, each configurable as either WRED-drop or tail-drop)	• WS-X6704-10GE **Note** The WS-X6704-10GE line cards are only supported with a DFC4 or DFC4XL upgrade (WS-F6k-DFC4-A, WS-F6k-DFC4-AXL).
1P3Q4T (One strict-priority queue, three standard queues, four thresholds, each configurable as either WRED-drop or tail-drop)	• VS-S2T-10G with Gigabit Ethernet ports enabled • VS-S2T-10G-XL with Gigabit Ethernet ports enabled

Queues	Line Cards
1P3Q8T egress queuing (One strict-priority queue, three standard queues, eight thresholds, each configurable as either WRED-drop or tail-drop)	• WS-X6724-SFP • WS-X6748-SFP • WS-X6748-GE-TX • C6800-48P-SFP • C6800-48P-SFP-XL • C6800-48P-TX • C6800-48P-TX-XL **Note** The above line cards are only supported under the following conditions: • Line card WS-X6724-SFP with CFC, or with a DFC4 or DFC4XL upgrade (WS-F6k-DFC4-A, WS-F6k-DFC4-AXL). • Line card WS-X6748-SFP with CFC, or with a DFC4 or DFC4XL upgrade (WS-F6k-DFC4-A, WS-F6k-DFC4-AXL). • Line card WS-X6748GE-TX with CFC, or with a DFC4 or DFC4XL upgrade (WS-F6k-DFC4-A, WS-F6k-DFC4-AXL).
1P7Q4T egress queuing (One strict-priority queue, seven standard queues, four thresholds, each configurable as either WRED-drop or tail-drop)	• VS-S2T-10G with Gigabit Ethernet ports disabled • VS-S2T-10G-XL with Gigabit Ethernet ports disabled
1P7Q4T egress queuing (One strict-priority queue, seven standard queues, four thresholds, each configurable as either WRED-drop or tail-drop)	• WS-X6816-10G-2T, WS-X6816-10G-2TXL in performance or oversubscription mode
1P7Q8T (One strict-priority queue, seven standard queues, eight thresholds, each configurable as either WRED-drop or tail-drop)	• WS-X6704-10GE **Note** Line card WS-X6704-10GE is only supported with CFC, or with a DFC4 or DFC4XL upgrade (WS-F6k-DFC4-A, WS-F6k-DFC4-AXL).

Queues	Line Cards
2P6Q4T ingress and egress queuing (Two strict-priority queues, six standard queues, four thresholds, each configurable as either WRED-drop or tail-drop)	• C6800-32P10G • C6800-32P10G-XL • C6800-16P10G • C6800-16P10G-XL • C6800-8P10G • C6800-8P10G-XL

The following tables lists queues and line cards that are supported by the controller for queuing policies in the Catalyst 6500-E Series and Catalyst 6807-XL with the Catalyst Supervisor Engine 720.

Table 11: EasyQoS Supported Queuing Structure and Line Cards (with Catalyst Supervisor Engine 720)

Queuing Structure	Line Cards
1Q8T Ingress queuing structure	• WS-X6724-SFP • WS-X6748-SFP • WS-X6748-GE-TX • WS-X6704-10GE With CFC forwarding card.
2Q4T Ingress queuing structure	• VS-S720-10G • VS-S720-10G-XL • VS-S720-10G-3C • VS-S720-10G-3CXL With Giga Ethernet ports is 'ENABLED'.
2Q8T Ingress queuing structure	• WS-X6724-SFP • WS-X6748-SFP • WS-X6748-GE-TX With WS-F6700-DFC3C or WS-F6700-DFC3CX.

Queuing Structure	Line Cards
8Q4T Ingress queuing structure	• WS-X6708-10G-3C • WS-X6708-10G-3CXL • WS-X6708-10G • WS-X6708-10GE With WS-F6700-DFC3C or WS-F6700-DFC3CX or CFC. • VS-S720-10G-3C • VS-S720-10G With Giga Ethernet ports is 'DISABLED'. • WS-X6716-10G • WS-X6716-10GE • WS-X6716-10T With WS-F6700-DFC3C or WS-F6700-DFC3CX or CFC and Oversubscription Mode is set as 'PERFORMANCE'.
8Q8T Ingress queuing structure	• WS-X6704-10GE With WS-F6700-DFC3C or WS-F6700-DFC3CX.
1P7Q2T Ingress queuing structure	• WS-X6716-10G • WS-X6716-10GE • WS-X6716-10T With WS-F6700-DFC3C or WS-F6700-DFC3CX or CFC and Oversubscription Mode is set as 'OVERSUBSCRIPTION' .
1P3Q8T egress queuing structure	• WS-X6724-SFP • WS-X6748-SFP • WS-X6748-GE-TX With WS-F6700-DFC3C or WS-F6700-DFC3CX or CFC.

Queuing Structure	Line Cards
1P3Q4T egress queuing structure	• VS-S720-10G-3C • VS-S720-10G-3CXL • VS-S720-10G • VS-S720-10G-XL With Giga Ethernet ports is 'ENABLED'.
1P7Q4T egress queuing structure	• WS-X6708-10G-3C • WS-X6708-10G-3CXL • WS-X6708-10G • WS-X6708-10GE With WS-F6700-DFC3C or WS-F6700-DFC3CX or CFC • WS-X6716-10G • WS-X6716-10GE • WS-X6716-10T • With WS-F6700-DFC3C or WS-F6700-DFC3CX or CFC and Oversubscription Mode is set as 'OVERSUBSCRIPTION OR PERFORMANCE'. • VS-S720-10G-3C • VS-S720-10G-3CXL • VS-S720-10G • VS-S720-10G-XL With Giga Ethernet ports is 'DISABLED'.
1P7Q8T egress queuing structure	• WS-X6704-10GE With WS-F6700-DFC3C or WS-F6700-DFC3CX or CFC

EasyQoS Limitations

The following table describes the EasyQoS limitations for this release.

Table 12: Cisco APIC-EM EasyQoS Release Limitations

Platform	Description	Affected Software Versions
Switches		
All Catalyst Switch platforms	EasyQoS for this release does not remove the AutoQoS command/configuration from switch platforms. EasyQoS does not make use of conditional trust, which is the basis of the current AutoQoS implementation. If AutoQOS is applied on a switch, it will fail and notify the customer of the reason for it's failure. It is recommended to manually remove all AutoQoS configurations from switches before implementing EasyQoS policy to switches, or to deploy EasyQoS in environments where AutoQoS is not deployed.	All supported software versions for these platforms.
Catalyst 2960-S Series Switches	Catalyst 2960S-24TS-S and 2960S-48TS-S switch models are not supported. These switches only support the LAN Lite feature set which does not support class and policy maps.	All IOS software versions for these models.
Catalyst 2960-SF Series Switches	Catalyst 2960S-F24TS-S and 2960S-F48TS-S switch models are not supported. These switches only support the LAN Lite feature set which does not support class and policy maps.	All IOS software versions for these models.
The following switches: • Catalyst 2960-S Series Switches • Catalyst 2960-X Series Switches • Catalyst 2960-XR Series Switches • Catalyst 3560-C Series Switches • Catalyst 3560-X Series Switches • Catalyst 3750-X Series Switches	Catalyst 2960-S Series, Catalyst 2960-X Series, Catalyst 2960-XR Series, Catalyst 3560-C Series Switches, Catalyst 3560-X Series, and Catalyst 3750-X Series switches are supported in the role of access switches. These switch platforms will not be supported in the role of distribution or core switches.	All IOS software versions for these models.

Platform	Description	Affected Software Versions
Catalyst 3650 and 3850 Series Switches	A policy-map which contains a class-map which consists of an empty action cannot be applied to an interface prior to IOS XE release 3.6.2.	Catalyst 3850 and 3650 IOS XE software releases prior to 3.6.2.

Platform	Description	Affected Software Versions
Catalyst 6000 Series Switches with Sup-720 or Sup-2T Supervisors		All supported software versions for these platforms.

Platform	Description	Affected Software Versions
	Catalyst 6000 Series switches with the Sup-720 or the Sup-2T support two Ten Gigabit Ethernet and three Gigabit Ethernet interfaces on the supervisor line card. The three Gigabit Ethernet interfaces can be disabled / enabled via the “mls qos 10g-only / no mls qos 10g-only” (Sup-720) or "platform qos 10g-only / no platform qos 10g-only" (Sup-2T) global configuration commands. The default is for the Gigabit Ethernet interfaces to be active. EasyQoS does not configure this command currently, since the decision as to whether the Gigabit Ethernet interfaces are active or inactive is generally based on the need for these interfaces, and outside the scope of QoS configuration. The network administrator should ensure this command is configured appropriately for the requirements of the network before deploying an EasyQoS policy to Catalyst 6000 switches with Sup-720 or Sup-2T supervisors. The ingress and egress queuing model supported by the Supervisor interfaces is dependent upon whether the Gigabit Ethernet interfaces are active or inactive. When the Gigabit Ethernet interfaces are active, all interfaces on the Supervisor support a 2Q4T ingress queuing model and a 1P3Q4T egress queuing model, both with CoS-to-queue mapping and CoS-based tail-drop for congestion avoidance. When the Gigabit Ethernet interfaces are inactive, all interfaces on the Supervisor support an 8Q4T ingress queuing model and a 1P7Q4T egress queuing model, both with DSCP-to-queue mapping and DSCP-based WRED for congestion avoidance If the network administrator changes the setting of the “mls qos 10g-only” (Sup-720) or "platform qos 10g-only" (Sup-2T)command on a Catalyst 6000 switch after deploying an EasyQoS	

Platform	Description	Affected Software Versions
	policy, the network administrator should re-deploy the policy to the switch after Cisco APIC-EM has re-inventoried the switch and updated its internal database regarding the manual change.	
Catalyst 6500 Series Switches with Sup2T	CSCup61257 - Error message not printing if unsupported QoS is applied via SSH/Telnet. The Cisco APIC-EM may have trouble identifying when a QoS policy it has applied has failed due to this bug.	• 15.1(02)SY03, s2t54-adventerprisek9-mz.SPA • 151-2.SY3.bin, s2t54-adventerprisek9-mz.SPA • 150-1.SY6.bin, s2t54-adventerprisek9-mz.SPA • 150-1.SY6.bin listed in the DDTS **Note** This issue may affect other software versions.
Catalyst 6500 Series Switches with Sup2T	Ingress queuing of all ports on the Sup2T differs when the Gigabit Ethernet interfaces are enabled or disabled. Hence, when Cisco APIC-EM pushes ingress marking policies to ports on the Sup2T, the policy may fail.	All Catalyst 6500 software versions which support the Sup2T - 12.2(50)SY and higher.
The following switches: • Catalyst 6500 Series with Sup2T • Catalyst 6880 Series • Catalyst 4000 Series • Catalyst 3850 Series • Catalyst 3650 Series	The Catalyst 6500 Series with Sup2T, Catalyst 6880 Series, Catalyst 4000 Series, Catalyst 3850 Series, and Catalyst 3650 Series switches will only be supported as an access-layer switch or as a distribution-layer switch. Support of a single switch as both a distribution-layer switch and an access-layer switch simultaneously is not supported. Multiple switch platforms of the same model can of course individually be either distribution layer switches or access-layer switches within a single deployment.	All supported software versions of the Catalyst 6500 Series with Sup2T, Catalyst 6880 Series, Catalyst 4000 Series, Catalyst 3850 Series, and Catalyst 3650 Series switches.
Routers		

Platform	Description	Affected Software Versions
Cisco ASR 1000 Router Platforms	EasyQoS supports ASR 1000 platforms with IOS XE 3.8.0(S) / IOS 15.3(1)S and higher. However, the ingress marking policy pushed by EasyQoS varies based upon the IOS XE version as well as the NBAR2 protocol pack version. EasyQoS will push an ingress marking policy to ASR 1000 platforms based on the following criteria: **1** If the device is running IOS XE 03.16.04/ IOS 15.3(1)S or later and has Advanced Protocol Pack 22 or later, EasyQoS will push a policy-map which includes the business-relevance attribute for marking. This is because the business-relevant attribute requires a minimum version of IOS XE 03.16.04 and Advanced Protocol Pack 22. ASR 1000 platforms require an Advanced Enterprise Services (AES) or Advanced IP Services (AIS) license for NBAR2 Advanced Protocol Pack. **2** Otherwise, if the device is running IOS XE3.16, 3.15 and 3.14, or has a Standard Protocol Pack installed, or runs a older protocol pack which does not support metadata information, EasyQoS will not push any ingress marking policy. **3** Otherwise, EasyQoS will push a policy-map which includes “match protocol” commands, with the subset of the protocols that exist on the protocol pack on that device. EasyQoS will always push a queuing policy to the device.	Software versions noted within the Description.

Platform	Description	Affected Software Versions
Cisco ISR 4000 Series Router Platforms	EasyQoS supports the ISR 4321, 4331, 4351, and 4431 platforms with IOS XE 3.13.2(S) / IOS 15.4(3)S and higher (minimum releases supported by the platforms). EasyQoS supports the ISR 4451-X platforms with IOS XE 3.10.0(S) / IOS 15.3(3)S and higher (minimum releases supported by the platforms). However, the ingress marking policy pushed by EasyQoS varies based upon the IOS XE version as well as the NBAR2 protocol pack version. EasyQoS will push an ingress marking policy to ISR 4000 Series platforms based on the following criteria: **1** If the device is running IOS XE 3.16.1S or later and has Advanced Protocol Pack 14.0.0 or later, EasyQoS will push a policy-map which includes the business-relevance attribute for marking. This is because the business-relevant attribute requires a minimum version of IOS XE 3.16.1S and Advanced Protocol Pack 14.0.0. ISR 4000 Series platforms require an Application Experience (AppX) license for NBAR2 Advanced Protocol Pack. **2** Otherwise, if the device is running IOS XE3.16, 3.15 and 3.14, or has a Standard Protocol Pack installed, or runs a older protocol pack which does not support metadata information, EasyQoS will not push any ingress marking policy. **3** Otherwise, EasyQoS will push a policy-map which includes “match protocol” commands, with the subset of the protocols that exist on the protocol pack on that device. EasyQoS will always push a queuing policy to the device.	Software versions noted within the Description .

Platform	Description	Affected Software Versions
Cisco ISR G2 Series Router Platforms	EasyQoS supports the ISR G2 platforms with IOS 15.2(4)M and NBAR2 Protocol Pack 2.1.0 and higher. However the ingress marking policy pushed by EasyQoS varies based upon the IOS version as well as the NBAR2 protocol pack version. EasyQoS will push an ingress marking policy to ISR G2 Series platforms based on the following criteria: **1** If the device is running IOS 15.5(3)M1 or later and has Advanced Protocol Pack 14.0.0 or later, EasyQoS will push a policy-map which includes the business-relevance attribute for marking. This is because the business-relevant attribute requires a minimum version of IOS 15.5(3)M1 and Advanced Protocol Pack 14.0.0. ISR G2 Series platforms require a Data license for NBAR2 Advanced Protocol Pack. **2** Otherwise, if the device has a Standard Protocol Pack installed, or runs a older protocol pack which does not support metadata information, EasyQoS will not push any ingress marking policy. **3** Otherwise, EasyQoS will push a policy-map which includes “match protocol” commands, with the subset of the protocols that exist on the protocol pack on that device. EasyQoS will always push a queuing policy to the device.	Software versions noted within the Description.
Cisco ISR 800 Series Routers	EasyQos for this release pushes AVC/NBAR-based ingress classification and marking policies to all Ethernet interfaces on Cisco ISR 800 Series routers - including Layer 2 switch ports built into the platform. Although the policy is applied to the switch-port interfaces, the policy has no function.	All supported software versions for these platforms.
Nexus Platforms		

Platform	Description	Affected Software Versions
Cisco Nexus 7000 Series Platforms	EasyQoS for this Cisco APIC-EM 1.3.x release supports the Nexus 7000 Series switches in the role of a campus core switch. Nexus 7000 Series switches with F2 and F2e modules, or Nexus 7000 Series switches with M2 modules are supported. For the APIC-EM 1.2 release EasyQoS will push a 8Q2T ingress queuing policy and a 1P7Q4T egress queuing policy to M2 modules. Cisco best-practice recommendations for these modules have changed to a 4 ingress and 4 egress queue model. In some scenarios, undeterministic queuing behavior may result from the 8 ingress and 8 egress model, due to the internal switch fabric supporting 4 queues, resulting in bandwidth allocations not being accurately reflected in actual traffic output. The new queuing best practices are designed to provide more deterministic queuing behavior. The new queuing best practices are targeted to be implemented in the APIC-EM 1.3 release. Customers who implement EasyQoS with the APIC-EM 1.2 release should be aware that the queuing structures deployed to these modules will change, and will need to be re-deployed with the next release. For the APIC-EM 1.2 release, EasyQoS will push a 4Q1T ingress queuing policy and a 1P3Q1T egress queuing policy to F2 and F2e modules. Since this policy is already a 4 ingress and 4 egress queuing policy, in alignment with the new best practice recommendations, no changes to the queuing policy will occur for these modules with the APIC-EM 1.3 release.	All supported software versions for these modules.

Platform	Description	Affected Software Versions
Cisco Nexus 7700 Series Platforms	EasyQoS for this Cisco APIC-EM 1.3.x release will support the Nexus 7700 Series switches in the role of a campus core switch. Nexus 7700 Series switches with F2e and F3 modules, or Nexus 7700 Series switches with M3 modules are supported. For the APIC-EM 1.2 release, EasyQoS will push a 4Q1T ingress queuing policy and a 1P7Q1T egress queuing policy to F2e, F3, and M3 modules. Cisco best-practice recommendations for these modules have changed to a 4 ingress and 4 egress queue model. In some scenarios, undeterministic queuing behavior may result from transitioning from 4 ingress queues to 8 egress queues, resulting in bandwidth allocations not being accurately reflected in actual traffic output. The new queuing best practices are designed to provide more deterministic queuing behavior. The new queuing best practices are targeted to be implemented in the APIC-EM 1.3 release. Customers who implement EasyQoS with the APIC-EM 1.2 release should be aware that the queuing structures deployed to these modules will change, and will need to be re-deployed with the next release	All supported software versions for these modules.

Platform	Description	Affected Software Versions
Cisco Nexus 7000 and 7700 Series Platforms	EasyQoS for this Cisco APIC-EM 1.3.x release only supports Nexus 7000 and 7700 Series platforms with a single default VDC, and with no admin VDC. The names of the class-maps for ingress and egress queues are system defined and cannot be modified. Changing the mapping of CoS and/or DSCP values per class-map (queue) are system wide, meaning the mapping applies to all VDCs. Modification of these values requires Cisco APIC-EM to be logged into the default VDC. Policy-map definitions, however, are VDC specific. APIC-EM 1.2 only logs into a single default VDC to modify CoS and/or DSCP mappings within the system-defined class-maps, and to create and apply policy-map definitions.	All supported software versions for these platforms.

Unsupported EasyQoS Applications—Cisco Wireless LAN Controllers

The following EasyQoS applications are not supported when applying a policy for the Cisco Wireless Controllers:

- t-mobile-web-services
- 4chan
- nate-com
- the-atlantic
- ted
- xbox-web-portal
- swagbucks
- tagged-com
- foursquare
- blaze-news
- cnbc
- the-daily-beast
- monster-com
- cbs
- sky-news

- liveperson
- asus
- yellowpages-us
- european-union-web-portal
- tinyurl
- major-league-baseball-com
- unite-airlines
- dangdang
- usbank
- hollywood-reporter
- entertainment-weekly
- foodnetwork
- indiegogo
- investopedia
- mint-com
- whitepages
- patch-com
- disney-web-portal
- buffer-com
- playstation-web-portal
- livestrong-com
- letv-com
- pbs-web-portal
- pocket
- publishers-clearing-house
- usaa
- worldstarhiphop
- backpage
- sfgate

Path Trace Support and Limitations

The following tables describe the Cisco APIC-EM Path Trace support and limitations.

Protocol Support by Platform

The following table describes protocol support by platform (switch, router, or wireless LAN controller) for a path trace.

Platform	HSRP[8]	Physical Interface	Sub-Interface	SVI[9]	PVST[10]	Ether Channel (L2)	ECMP[11]	Ether Channel (L3)	Routing Protocols (L3)[12]	Net Flow[13]	Perf Mon[14]	Trace Route
Catalyst 2960-S	Yes	N/A	N/A	N/A	Yes	Yes	No	No	Yes	N/A	Yes	N/A
Catalyst 2960-S (stack)	Yes	N/A	N/A	N/A	N/A	Yes	No	No	Yes	N/A	Yes	N/A
Catalyst 2960-X/XR with stack option	Yes	N/A	N/A	N/A	N/A	Yes	No	No	Yes	N/A	Yes	N/A
Catalyst 3560-X	Yes	Yes	N/A	Yes	Yes	Yes	Yes	No	Yes	N/A	Yes	Yes
Catalyst 3560CG	Yes	Yes	N/A	Yes	Yes	Yes	Yes	No	Yes	N/A	Yes	N/A
Catalyst 3560CX	Yes	Yes	N/A	Yes	Yes	Yes	Yes	No	Yes	N/A	Yes	N/A
Catalyst 3650	Yes	Yes	N/A	Yes	Yes	Yes	Yes	No	Yes	N/A	Yes	Yes
Catalyst 3750-X	Yes	Yes	N/A	Yes	Yes	Yes	Yes	No	Yes	N/A	Yes	Yes
Catalyst 3750-X (stack)	Yes	Yes	N/A	Yes	Yes	Yes	Yes	No	Yes	N/A	Yes	Yes
Catalyst 3850	Yes	Yes	N/A	Yes	Yes	Yes	No	No	Yes	N/A	Yes	Yes

Platform	HSRP[8]	Physical Interface	Sub-Interface	SVI[9]	PVST[10]	Ether Channel (L2)	ECMP[11]	Ether Channel (L3)	Routing Protocols (L3)[12]	Net Flow[13]	Perf Mon[14]	Trace Route
Catalyst 3850 (stack)	Yes	Yes	N/A	Yes	Yes	Yes	Yes	No	Yes	N/A	Yes	Yes
Catalyst 4500E (Sup7E)	Yes	Yes	N/A	Yes	Yes	Yes	No	No	Yes	N/A	Yes	Yes
Catalyst 4500E (Sup8E)	Yes	Yes	N/A	Yes	Yes	Yes	No	No	Yes	N/A	Yes	Yes
Catalyst 4500-X	Yes	Yes	N/A	Yes	Yes	Yes	No	No	Yes	N/A	Yes	Yes
Catalyst 6500 (Sup720-3C/B)	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	Yes	N/A	Yes	Yes
Catalyst 6500(2T)	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	Yes	N/A	Yes	Yes
Catalyst 6800	Yes	Yes	N/A	Yes	Yes	Yes	Yes	No	Yes	N/A	Yes	Yes
Cisco WLC 2504	N/A	N/A	N/A	N/A	N/A	Yes	N/A	N/A	N/A	N/A	N/A	N/A
Cisco WLC 5500	N/A	N/A	N/A	N/A	N/A	Yes	N/A	N/A	Yes	N/A	N/A	N/A
Cisco WLC 5760	N/A	N/A	N/A	N/A	N/A	Yes	N/A	N/A	N/A	N/A	N/A	N/A
Cisco WLC 8500	N/A	N/A	N/A	N/A	N/A	Yes	N/A	N/A	N/A	N/A	N/A	N/A

Platform	HSRP[8]	Physical Interface	Sub-Interface	SVI[9]	PVST[10]	Ether Channel (L2)	ECMP[11]	Ether Channel (L3)	Routing Protocols (L3)[12]	Net Flow[13]	Perf Mon[14]	Trace Route
Cisco ASR 1000	Yes	Yes	Yes	Yes	N/A	No	Yes	No	Yes	Yes	Yes	Yes
Cisco ASR 9000	Yes	Yes	Yes	Yes	N/A	No	Yes	No	Yes	Yes	No	Yes
Cisco ISR-G2	Yes	Yes	Yes	Yes	N/A	No	Yes	No	Yes	Yes	Yes	Yes
Cisco ISR-4451 -X	Yes	Yes	Yes	Yes	N/A	No	Yes	No	Yes	Yes	Yes	Yes
Cisco Nexus 5000	Yes	Yes	N/A	Yes	Yes	Yes	Yes	No	Yes	N/A	No	Yes
Cisco Nexus 7000	Yes	Yes	No	Yes	Yes	Yes	Yes	No	Yes	N/A	No	Yes

8 Hot Standby Router Protocol (HSRP).
9 Switch Virtual Interface (SVI)
10 Per VLAN Spanning Tree Protocol (PVST)
11 Equal Cost Multipath (ECMP)
12 Supported Layer 3 routing protocols include: static, OSPF, EIGRP, IS-IS, and BGP. The following Layer 3 protocol is not supported: PBR.
13 NetFlow needs to be enabled on the supported device. The controller pulls cached NetFlow records from the device.
14 Automatic Configuration

Path Trace VRF Support

The following table describes VRF support by platform for a path trace.

Table 13: Path Trace VRF (VRf Lite) Support

Platform	SVI	Physical	Port Channel
Cisco Catalyst 2960-S Series Switches	Yes	Yes	No

Platform	SVI	Physical	Port Channel
Cisco Catalyst 2960-S Series Switches (stack)	Yes	Yes	No
Cisco Catalyst 2960-X/XR (with stack option)	Yes	Yes	No
Cisco Catalyst 3560-X Series Switches	Yes	Yes	No
Cisco Catalyst 3560CG Series Switches	Yes	Yes	No
Cisco Catalyst 3560-CX Series Switches	Yes	Yes	No
Cisco Catalyst 3650 Series Switches	Yes	Yes	No
Cisco Catalyst 3750-X Series Switches	Yes	Yes	No
Cisco Catalyst 3750-X Series Switches (stack)	Yes	Yes	No
Cisco Catalyst 3850 Series Switches	Yes	Yes	No
Cisco Catalyst 3850 Series Switches (stack)	Yes	Yes	No
Cisco Catalyst 4500 Sup7E Series	Yes	Yes	No
Cisco Catalyst 4500 Sup8E Series	Yes	Yes	No
Cisco Catalyst 4500-X	Yes	Yes	No
Cisco Catalyst 6500 (Sup720- 3C/B) Series Switches	Yes	Yes	No
Cisco Catalyst 6500 (Sup-2T) Series Switches	Yes	Yes	No
Cisco Catalyst 6800 Series Switches	Yes	Yes	No

Platform	SVI	Physical	Port Channel
Cisco 2504 Series Wireless LAN Controller	Not Applicable	Not Applicable	Not Applicable
Cisco 5500 Series Wireless LAN Controller	Not Applicable	Not Applicable	Not Applicable
Cisco 5760 Series Wireless LAN Controller	Not Applicable	Not Applicable	Not Applicable
Cisco 8500 Series Wireless LAN Controller	Not Applicable	Not Applicable	Not Applicable
Cisco ASR 1000 Series Aggregation Services Routers	Yes	Yes	No
Cisco ASR 9000 Series Aggregation Services Routers	Yes	Yes	No
Cisco ISR-G2 Series Routers	Yes	Yes	No
Cisco ISR-4451 -X Series Routers	Yes	Yes	No
Cisco Nexus 5000 Series Switches	Yes	Yes	No
Cisco Nexus 7000 Series Switches	Yes	Yes	No

Path Trace ACL Support

The following table describes ACL trace support by platform for a path trace.

Table 14: Path Trace ACL Support

Platform	Standard ACLs	Extended ACLs	IP Name ACLs
Cisco Catalyst 2960-S Series Switches	Yes	Yes	Yes
Cisco Catalyst 2960-S Series Switches (stack)	Yes	Yes	Yes

Platform	Standard ACLs	Extended ACLs	IP Name ACLs
Cisco Catalyst 2960-X/XR (with stack option)	Yes	Yes	Yes
Cisco Catalyst 3560-X Series Switches	Yes	Yes	Yes
Cisco Catalyst 3560CG Series Switches	Yes	Yes	Yes
Cisco Catalyst 3560-CX Series Switches	Yes	Yes	Yes
Cisco Catalyst 3650 Series Switches	Yes	Yes	Yes
Cisco Catalyst 3750-X Series Switches	Yes	Yes	Yes
Cisco Catalyst 3750-X Series Switches (stack)	Yes	Yes	Yes
Cisco Catalyst 3850 Series Switches	Yes	Yes	Yes
Cisco Catalyst 3850 Series Switches(stack)	Yes	Yes	Yes
Cisco Catalyst 4500 Sup7E Series	Yes	Yes	Yes
Cisco Catalyst 4500 Sup8E Series	Yes	Yes	Yes
Cisco Catalyst 4500-X Series	Yes	Yes	Yes
Cisco Catalyst 6500 (Sup720- 3C/B) Series Switches	Yes	Yes	Yes
Cisco Catalyst 6500 (Sup-2T) Series Switches	Yes	Yes	Yes
Cisco Catalyst 6800 Series Switches	Yes	Yes	Yes
Cisco 2504 Series Wireless LAN Controller	Not Applicable	Not Applicable	

Platform	Standard ACLs	Extended ACLs	IP Name ACLs
Cisco 5500 Series Wireless LAN Controller	Not Applicable	Not Applicable	Yes
Cisco 5760 Series Wireless LAN Controller	Not Applicable	Not Applicable	Yes
Cisco 8500 Series Wireless LAN Controller	Not Applicable	Not Applicable	Yes
Cisco ASR 1000 Series Aggregation Services Routers	Yes	Yes	Yes
Cisco ASR 9000 Series Aggregation Services Routers	No	No	Yes
Cisco ISR-G2 Series Routers	Yes	Yes	Yes
Cisco ISR-4451 -X Series Routers	Yes	Yes	Yes
Cisco Nexus 5000 Series Switches	Yes	Yes	Yes
Cisco Nexus 7000 Series Switches	Yes	Yes	Yes

Wireless AP Support by Platform

The following table describes wireless application point (AP) support by platform for a path trace.

Table 15: Wireless AP Support by Platform

Platform	AP Manager	
	LAG[15]	**Physical**
Cisco 2504 Series Wireless LAN Controller	Yes	Yes
Cisco 5500 Series Wireless LAN Controller	Yes	Yes
Cisco 5540 Series Wireless LAN Controller	Yes	Yes

Platform	AP Manager	
Cisco 5760 Series Wireless LAN Controller	Yes	Yes
Cisco 8500 Series Wireless LAN Controller	Yes	Yes
Cisco 8540 Series Wireless LAN Controller	Yes	Yes

15 Link Aggregation Group (LAG)

Wireless Mode Support by Platform

The following table describes wireless mode support (deployment and mobility) by platform for a path trace.

Platform[16]	Wireless Deployment Mode			Wireless Mobility Mode		
	Centralized[17]	Flex	Converged	Centralized	Converged	Hybrid[18]
Cisco 2504 Series Wireless LAN Controller	Yes	No	No	Yes	No	No
Cisco 5500 Series Wireless LAN Controller	Yes	No	No	Yes	No	No
Cisco 5760 Series Wireless LAN Controller	Yes	No	No	Yes	No	No
Cisco 8500 Series Wireless LAN Controller	Yes	No	No	Yes	No	No

16 WLC redundancy and high availability is not supported.
17 Catalyst 3850 switch and stack do not support converged wireless deployment mode for a path trace.
18 Catalyst 3850 switch and stack do not support hybrid wireless mobility mode for a path trace.

Path Trace Supported Scenarios

The following table describes the supported scenarios for a path trace.

Scenario	Protocol	Feature List	Configuration	Supported
Gateway Load Balancing	HSRP	Interface and Media Support	Physical Interface	Yes
			SVI	Yes
			BVI	No
			Sub Interface	No
		Load sharing on same link	Same interface part of more than one HSRP group	No
		Load sharing across links	—	Yes

Scenario	Protocol	Feature List	Configuration	Supported
Wireless Deployment Modes	Centralized	Interface support	Management Interface	Yes
			AP Mgr Interface	Yes
			Dynamic Interface	No
		AP Load Balancing	AP load balance across single port channel	Yes
			Single AP Manager Interface Configuration	Yes
			Multiple AP Manager Interface Configuration and load balance it on different physical interface	Yes
			Interface Group	Yes
		WLAN	Dynamic Interfaces per WLAN mapped to physical interface	Yes
			Dynamic Interfaces per WLAN Over LAG	Yes
		Management Interface configuration	Untagged	No
			Tagged with a VLAN	Yes
Wireless Mobility Modes	Centralized	Auto-Anchor Mobility	—	Yes
		Symmetric Mobility Tunneling	—	Yes
		Asymmetric Mobility Tunneling	—	No
		Layer 2 and Layer 3 Roaming	Roaming across L2 and L3 networks	Yes

Scenario	Protocol	Feature List	Configuration	Supported
Layer 2 Load Balancing	STP	PVST	—	Yes
	EtherChannel	Port channel	Spanning Tree on PO	Yes
			Display Member Link derived after load balancing	No
		Static port channels	Mode On	Yes
		Dynamic port channels	LACP	Yes
		Multi Chassis redundancy	M-LACP	No
Layer 3 Load Balancing	ECMP	Only Layer 3 data forwarding interfaces.	—	Yes
		ECMP over Physical interface	—	Yes
		ECMP over SVI	Load balance within SVIs or SVI + port channel	No
		OSPF / BGP / EIGRP / ISIS / Static Route	—	Yes
	EtherChannel	Port channel	IPV4 address	No
			Display Member Link derived after load balancing	No
		Static port channels	Mode on	No
		Dynamic port channels	LACP / PAGP	No
		Multi Chassis redundancy	M-LACP	No

Service and Support

Troubleshooting

See the *Cisco Application Policy Infrastructure Controller Enterprise Module Troubleshooting Guide*, for troubleshooting procedures.

Related Documentation

The following publications are available for the Cisco APIC-EM:

Cisco APIC-EM Documentation

For this type of information...	See this document...
• Learning about the latest features. • Learning about the controller system requirements. • Reviewing open and resolved caveats about the controller.	*Cisco Application Policy Infrastructure Controller Enterprise Module Release Notes*
• Learning about supported platforms. • Learning about required configurations on certain specific platforms. • Learning about application-specific limitations on certain specific platforms.	*Supported Platforms for the Cisco Application Policy Infrastructure Controller Enterprise Module*.
• Installing and deploying the controller. • Configuring credentials for device discovery. • Importing a certificate or trustpool. • Using service logs. • Configuring authentication timeout and password policies. • Monitoring and managing Cisco APIC-EM services. • Backing up and restoring the controller.	*Cisco Application Policy Infrastructure Controller Enterprise Module Deployment Guide*

For this type of information...	See this document...
• Navigating the Cisco APIC-EM GUI. • Getting familiar with the Cisco APIC-EM features.	*Cisco Application Policy Infrastructure Controller Enterprise Module Quick Start Guide*
• Creating user accounts. • Discovering devices in your network and populating your inventory. • Displaying discovered devices in various topological views. • Configuring quality of service on the devices in your network. • Performing path traces. • Using the topology map. • Accessing the Cisco APIC-EM APIs.	*Cisco Application Policy Infrastructure Controller Enterprise Module Configuration Guide*
• Troubleshooting the controller. • Troubleshooting services. • Troubleshooting passwords. • Working with the developer console. • Contacting the Cisco Technical Assistance Center (TAC).	*Cisco Application Infrastructure Controller Enterprise Module Troubleshooting Guide*
• Tasks to perform before beginning an update. • Updating the controller to the latest version. • Tasks to perform after an update.	*Cisco Application Infrastructure Controller Enterprise Module Upgrade Guide*

Cisco IWAN Documentation

For this type of information...	See this document...
Configuring the Cisco IWAN network.	*Cisco IWAN on Cisco APIC-EM Configuration Guide*[19] *Software Configuration Guide for Cisco IWAN on APIC-EM*

For this type of information...	See this document...
Reviewing open and resolved caveats about the Cisco IWAN application.	*Release Notes for Cisco Intelligent Wide Area Network Application (Cisco IWAN App)*

19 This is an updated and renamed version of the previous document, *Software Configuration Guide for Cisco IWAN on APIC-EM*.

Cisco Network Plug and Play Documentation

For this type of information...	See this document...
• Reviewing open and resolved caveats about Cisco Network Plug and Play. • Viewing the list of supported Cisco devices for Cisco Network Plug and Play.	*Release Notes for Cisco Network Plug and Play*
• Configuring Cisco Network Plug and Play.	*Configuration Guide for Cisco Network Plug and Play on Cisco APIC-EM* *Cisco Open Plug-n-Play Agent Configuration Guide*
• Learning about the Cisco Network Plug and Play solution. • Understanding the main workflows used with the Cisco Network Plug and Play solution. • Deploying the Cisco Network Plug and Play solution. • Using proxies with the Cisco Network Plug and Play solution. • Configuring a DHCP server for APIC-EM controller auto-discovery. • Troubleshooting the Cisco Network Plug and Play solution.	*Solution Guide for Cisco Network Plug and Play*
Using the Cisco Plug and Play Mobile App	*Mobile Application User Guide for Cisco Network Plug and Play* (also accessible in the app through Help)

APIC-EM Developer Documentation

The Cisco APIC-EM developer website is located on the Cisco DevNet website.

For this type of information...	See this document...
API functions, parameters, and responses.	APIC-EM API Reference Guide
Tutorial introduction to controller GUI, DevNet sandboxes and APIC-EM NB REST API.	Getting Started with Cisco Application Policy Infrastructure Controller Enterprise Module (APIC-EM)
Hands-on coding experience calling APIC-EM NB REST API from Python.	APIC-EM Learning Labs

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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