

# Application Hosting on Cisco Catalyst 9000 Switches

- Q** **What is application hosting?**
- A** Application hosting gives network administrators a platform for leveraging their own tools and utilities. Many of the services have traditionally been tightly coupled with the underlying infrastructure. With Application Hosting, you can now run off the shelf Docker™ apps or even run your custom built apps.
- Q** **What is the licensing for application hosting?**
- A** Application hosting requires Cisco DNA Advantage or Premier software licensing.
- Q** **Which container technologies are supported on Cisco® Catalyst® 9000 Series Storage Switches?**
- A** Starting with Cisco IOS® XE 16.12.1, native Docker support will be offered.
- Q** **What type of containers are supported?**
- A** Only docker containers are supported.
- Q** **How can one connect to the containers?**
- A** The container guest interface is a native non-VLAN main interface that transmits and receives native non-tagged traffic. All VLAN switch configurations are done through the Cisco IOS application hosting app-vnic and AppGigabitEthernet ports.
- Q** **What is CAF? What is IOx?**
- A** CAF is the Cisco Application Framework, built by Cisco to manage containerized applications running on any network device. CAF is also known as IOx. Starting with Cisco IOS XE 16.12.1, IOx packaging is no longer mandatory. Docker apps can be installed as is.
- Q** **Can Docker containers run inside the Catalyst 9000 family of switches?**
- A** Native Docker containers will be supported in Cisco IOS XE 16.12.1 release and later. The docker apps can be installed on Cisco supported SSD storage.
- Q** **Can virtual machines run on Catalyst 9000 switches?**
- A** KVM (Kernel based Virtual Machine) can be run on Catalyst 9000 switches only for select Cisco curated apps that would be made available in Cisco DNA Center in future releases. KVM is not supported for any off the shelf app.
- Q** **Will applications run on Catalyst 9000 switches affect performance?**
- A** No, they will not. There are dedicated resources like CPU and memory for application hosting.

**Q Can a container be installed in the bootflash?**

A Only Cisco Signed app (i.e ThousandEyes) can be able to host in the bootflash. 3<sup>rd</sup> party containers must reside in one of the external Solid State Disk storage options, provided by the Catalyst 9000 switches. SSD storage is supported on Catalyst 9300 Series switches. SATA storage is supported on Catalyst 9400 Series and Catalyst 9500 Series High Performance models and Catalyst 9600 Series Switches.

**Q Can a third-party USB drive be used to install applications?**

A No. The recommendation is to go with Cisco certified SSD storage or SATA storage. 3<sup>rd</sup> party USB drives cannot be used in production. SSD storage or SATA storage cannot be used in the front panel USB port of the switch.

**Q Are Catalyst 9000 switch hardware resources shared between Cisco IOS XE processes and application hosting?**

A Hardware resources are shared between Cisco IOS XE process and application hosting. However, we do control resources for application hosting infrastructure to make sure that application hosting does not end up starving network traffic.

**Q How safe is Application Hosting on Catalyst 9000 switches?**

- A
- Disk usage is isolated using separate storage.
  - User namespace enables isolation of process and file access for apps.
  - Memory and CPU for apps are bounded.

**Q Is there any documentation on DevNet?**

A Details on solution as well as the configuration can be found on DevNet at <https://developer.cisco.com/docs/app-hosting/>.

**Q Are there any applications that have been verified on Catalyst 9000 switches?**

A Detail of supported ecosystem is available on DevNet <https://developer.cisco.com/app-hosting/>.

**Q Does Cisco support or provide any applications?**

A Cisco will support for applications that are Cisco signed. For 3<sup>rd</sup> party application, user has to contact with application providers.

**Q Does application hosting support jumbo frames?**

A Yes, With the introduction of the new front-panel AppGigabitEthernet port in Cisco IOS XE 16.12.1, application hosting will support jumbo frames. Note: C9300 and C9400 platforms only.

**Q Does application hosting support diverting or mirroring traffic?**

A Not yet. Traffic-mirroring support is on the roadmap for future releases.

**Q Can you configure application hosting using APIs and YANG models?**

A Catalyst 9000 switching YANG and application orchestration are supported using NETCONF/RESTCONF.

**Q Can you configure application hosting using Cisco DNA Center?**

A Using Cisco DNA Center, customers can upload, install, configure, monitor, update and uninstall applications in many switches at the same time. Complete lifecycle management of apps can be handled using Cisco DNA Center.

**Q Can a customer CLI to configure and host apps?**

A Yes, CLI can be used to host apps.

**Q Can you configure application hosting on Catalyst 9000 switches using Ansible? (That is, are there modules or playbooks available today for Catalyst 9000 switches with Cisco IOS XE?)**

A Yes, you can use the Ansible IOS core modules to manage Cisco IOS XE Command-Line Interface (CLI) commands.

**Q Can I install all applications across all Catalyst 9000 switches?**

A Native docker support on Catalyst 9000 Series switches as below:

Catalyst 9300 – IOS-XE 16.12.1

Catalyst 9400 – IOS-XE 17.1.1

Catalyst 9500 High Performance – IOS-XE 17.5.1

Catalyst 9600 – IOS-XE 17.5.1

**Q Can Catalyst 9200 and 9500 Non High Performance Series switches host containers?**

A No. Application-hosting capabilities doesn't support hosting containers on these switches.

**Q How are front-panel data ports connected to applications?**

A The Catalyst 9000 switch interface AppGigabitEthernet, which is listed in "show ip interface brief," is an internal hardware data port that is hardware-switched to the front-panel data ports. All standard Catalyst 9000 switch data-port configurations apply to the AppGigabitEthernet interface. Note: Catalyst 9500

High Performance, and 9600 series switches do not support AppGigabitEthernet interface. The connectivity for applications hosted on these models is achieved through management interface via loopback from any front panel ports.

**Q Will Cisco share any packages for open source applications?**

A No. Cisco will not provide any pre-packaged open source apps. Starting Cisco IOS XE 16.12.1, native docker support would be available on Catalyst 9000 switches. Customers can use CLI, WebUI or Cisco DNA Center orchestration to install the apps.

**Q Will Cisco share any packages for third-party unsupported applications?**

A No. Cisco will not provide any pre-packaged 3<sup>rd</sup> party unsupported apps. Customers will have to package it themselves. Certain 3<sup>rd</sup> party vendors with whom Cisco has collaborated with might share a link specific to Cisco installation.

**Q Will Cisco application hosting infra support high availability?**

A Yes. Catalyst 9000 switches support application auto-restart feature from IOS-XE 17.2.1 release which can retain the last configured operational state of app in the event of system switchover or restart. This feature is enabled by default and same storage type required on both Active and Standby switches.