



## Overview

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# About the Cisco Application Policy Infrastructure Controller Enterprise Module (APIC-EM)

The Cisco Application Policy Infrastructure Controller - Enterprise Module (APIC-EM) is Cisco's Software Defined Networking (SDN) Controller for Enterprise Networks (Access, Campus, WAN and Wireless).

The platform hosts multiple applications (SDN apps) that use open northbound REST APIs that drive core network automation solutions. The platform also supports a number of south-bound protocols that enable it to communicate with the breadth of network devices that customers already have in place, and extend SDN benefits to both greenfield and brownfield environments.

The Cisco APIC-EM platform supports both wired and wireless enterprise networks across the Campus, Branch and WAN infrastructures. It offers the following benefits:

- Creates an intelligent, open, programmable network with open APIs
- Saves time, resources, and costs through advanced automation
- Transforms business intent policies into a dynamic network configuration
- Provides a single point for network wide automation and control

The following table describes the features and benefits of the Cisco APIC-EM.

**Table 1: Cisco APIC Enterprise Module Features and Benefits**

Feature	Description
Network Information Database	The Cisco APIC-EM periodically scans the network to create a “single source of truth” for IT. This inventory includes all network devices, along with an abstraction for the entire enterprise network.
Network topology visualization	The Cisco APIC-EM automatically discovers and maps network devices to a physical topology with detailed device-level data. The topology of devices and links can also be presented on a geographical map. You can use this interactive feature to troubleshoot your network.
EasyQoS application	The EasyQoS application abstracts away the complexity of deploying Quality of Service across a heterogeneous network. It presents users with a workflow that allows them to think of QoS in terms of business intent policies that are then translated by Cisco APIC-EM into a device centric configuration.
Cisco Network Plug and Play (PnP) application	The Cisco Network PnP application is one of the components in the Cisco Network PnP solution. The Cisco Network PnP solution extends across Cisco's enterprise portfolio. It provides a highly secure, scalable, seamless, and unified zero-touch deployment experience for customers across Cisco routers, switches and wireless access points.
Cisco Intelligent WAN (IWAN) application	The separately licensed IWAN application for APIC-EM simplifies the provisioning of IWAN network profiles with simple business policies. The IWAN application defines business-level preferences by application or groups of applications in terms of the preferred path for hybrid WAN links. Doing so improves the application experience over any connection and saves telecom costs by leveraging cheaper WAN links.
Cisco Active Advisor	The Cisco Active Advisor application for APIC-EM offers personalized life cycle management for your network devices by keeping you up-to-date on: <ul style="list-style-type: none"> <li>• End-of-life milestones for hardware and software</li> <li>• Product advisories, including Product Security Incident Response Team (PSIRT) bulletins and field notices</li> <li>• Warranty and service contract status</li> </ul>
Cisco SD-Bonjour	The Cisco SD-Bonjour application provides controller functions in the network. It enables discovery and distribution of policy-based Cisco SD-Bonjour services, independent of network boundaries.

Feature	Description
Cisco Integrity Verification	The Cisco Integrity Verification (IV) application provides automated and continuous monitoring of network devices, noting any unexpected or invalid results that may indicate compromise. The objective of the Cisco IV application is early detection of the compromise, so as to reduce its impact. The Cisco IV application operates within the Cisco Application Policy Infrastructure Controller Enterprise Module (APIC-EM) as a beta version for this release.
Cisco Remote Troubleshooter	<p>The Cisco Remote Troubleshooter application uses the Cisco IronPort infrastructure to create a tunnel that enables a support engineer to connect to an APIC-EM cluster and troubleshoot issues with your system. The app uses outbound SSH to create a secure connection to the cluster through this tunnel.</p> <p>As an administrator, you can use the Remote Troubleshooter application to control when a support engineer has access to a particular cluster and for how long (since a support engineer cannot establish a secure tunnel on their own). You will receive indication that a support engineer establishes a remote access session, and you can end a session at any time by disabling the tunnel they are using.</p>
Public Key Infrastructure (PKI) server	The Cisco APIC-EM provides an integrated PKI service that acts as Certificate Authority (CA) or sub-CA to automate X.509 SSL certificate lifecycle management. Applications, such as IWAN and PnP, use the capabilities of the embedded PKI service for automatic SSL certificate management.
Path Trace application	The path trace application helps to solve network problems by automating the inspection and interrogation of the flow taken by a business application in the network.
High Availability (HA)	HA is provided in N+ 1 redundancy mode with full data persistence for HA and Scale. All the nodes work in Active-Active mode for optimal performance and load sharing.
Back Up and Restore	The Cisco APIC-EM supports complete back up and restore of the entire database from the controller GUI.
Audit Logs	The audit log captures user and network activity for the Cisco APIC-EM applications.

## Cisco APIC-EM Installation Methods

You can install Cisco APIC-EM using any one of the following methods:

- **Appliance Installation**—As a dedicated Cisco APIC-EM physical appliance purchased from Cisco with an ISO image pre-installed. For information about this type of installation, see [About the Appliance Installation](#).

- **Bare-Metal Hardware Installation**—As a downloadable ISO image that you can burn to a dual-layer DVD or a bootable USB flash drive, and then use either the DVD or flash drive to install the ISO image onto a server. For information about this type of installation, see [About the Bare-Metal Hardware Installation](#).

Note that this platform (bare-metal hardware) is recommended over the following virtual machine option

- **Virtual Machine Installation**—As a downloadable ISO image that you can install into a virtual machine within a VMware vSphere environment. For information about this type of installation, see [About the Virtual Machine Installation](#).

## Primary Components

The following are the primary components required for a Cisco APIC-EM installation:

- The Cisco APIC-EM software either pre-installed on a Cisco appliance or provided as an ISO image downloaded from the Cisco website.
- Supported Cisco routing and switching platforms

The Cisco APIC-EM ISO image (either preinstalled on the appliance or downloaded from the Cisco website) consists of the following components:

- Ubuntu 14.04 LTS 64-bit
- Open-VM-Tools
- Cisco APIC-EM services
- Grapevine Elastic Services Platform, consisting of a Grapevine root and client template



### Note

Open-VM-Tools is only installed if the ISO image is installed within a virtual machine running on vSphere. The tools will not be installed if the ISO image is installed on a bare-metal or on a hypervisor from another vendor.

The Cisco APIC-EM makes use of the Ubuntu operating system environment and Linux containers (LXC). The Grapevine root runs within the host's operating system. The Grapevine clients run in LXCs within the host. The Cisco APIC-EM services that run on the Grapevine Elastic Services Platform provide the controller with its core functionality. For information about the services, see *Cisco Application Policy Infrastructure Controller Enterprise Module Administrator Guide*.

## IP Connectivity

The Cisco APIC-EM communicates with its supported platforms using the following protocols:

- SNMPv2c or SNMPv3
- Telnet or SSH

**Note**

Currently, the Cisco APIC-EM supports IPv4 only. IPv6 support is planned for a future release.

## Supported Cisco Platforms and Software Releases

For information about the supported Cisco platforms and software releases, see the following documentation:

- Cisco APIC-EM Controller
  - *Cisco APIC-EM Controller, Release Notes*
- Cisco Network Visibility Application for the Cisco APIC-EM
  - *Cisco Network Visibility for APIC-EM Release Notes*
  - *Supported Platforms for Cisco Network Visibility*
  - *Cisco Network Visibility Application on APIC-EM User Guide*
- Cisco Path Trace Application for Cisco APIC-EM
  - *Cisco Path Trace for APIC-EM Release Notes*
  - *Supported Platforms for Cisco Path Trace*
  - *Cisco Path Trace Solutions Guide*
- Cisco EasyQoS Application for Cisco APIC-EM
  - *Cisco EasyQoS for APIC-EM Release Notes*
  - *Supported Platforms for Cisco EasyQoS*
  - *Cisco EasyQoS Application on APIC-EM Users Guide*
- See the *Release Notes for Cisco IWAN on APIC-EM* for the list of supported platforms and software releases for the IWAN application.
- See the *Release Notes for Cisco Network Plug and Play* for the list of supported platforms and software releases for the Cisco Network Plug and Play application.

## Supported Northbound REST APIs

The Cisco APIC-EM provides northbound REST APIs that you can use to that you can use to issue requests to the controller and exchange data with the controller in a platform-agnostic way. For detailed information about supported northbound REST APIs, see the internal, interactive documentation located within the GUI itself. Click the **API** button at the top right of the GUI to view this documentation.

