Cisco Network Plug and Play Solution Datasheet

Introduction

The Cisco® Network Plug and Play solution is a converged solution that extends across Cisco's enterprise portfolio. It provides a highly secure, scalable, seamless, and unified zero-touch deployment experience for customers across:

- Cisco routers, including the 4000 Series Integrated Services Routers and Integrated Services Routers Generation 2, Cisco ASR 1000 Series Aggregation Services Routers, and Cisco Cloud Services Router 1000V Series
- Cisco switches, including the Catalyst® 2000 Series, Catalyst 3000 Series, and Catalyst 4000 Series; and Cisco IE 2000, IE 3000, IE 4000 and IE 5000 Series Industrial Ethernet Switches
- Cisco Aironet Access Points, including 802.11ac Wave 1 and 802.11n Generation 2

Solution Overview

Enterprises incur major operating costs to install and deploy networking devices as part of campus and branch deployments. Typically, every device has to be pre-staged, which involves repetitively copying Cisco IOS® Software images and applying configurations manually through a console connection. Once pre-staged, these devices are then shipped to the final site for installation. The end-site installation may require a skilled installer for troubleshooting, bootstrapping, or any change in the configuration. The entire process can be costly, time-consuming, and prone to errors. At the same time, customers would like to increase the speed and reduce complexity of the deployment without compromising security.

Our Network Plug and Play solution provides enterprise customers with a simple, highly secure, and integrated offering to ease new branch or campus device rollouts or incremental updates to an existing network. The solution provides a unified approach to provision enterprise networks comprised of Cisco routers, switches, and wireless access points with a near-zero-touch deployment experience.

It reduces the burden on enterprises by greatly simplifying the process of deploying new devices. An installer at the site can deploy a new device without any command-line interface (CLI) knowledge, while a network administrator centrally manages device configuration.

The Cisco Network Plug and Play solution offers:

- One solution for configuration of Cisco enterprise switches, routers, and wireless access points.
- A simple, intuitive, and integrated user interface, agnostic of device platforms.
- Automated and centrally-managed remote device deployment from the Cisco Application Policy Infrastructure Controller Enterprise Module (APIC-EM).

- Devices that can automatically discover APIC-EM through Dynamic Host Configuration Protocol (DHCP), Domain Name System (DNS), or through a plug-and-play (PNP) mobile application. The built-in, pre-provisioned, and unplanned devices workflows in the Cisco Plug-and-Play solution more securely simplify the deployment of Cisco IOS Software images and device configurations.

- Mobile iOS or Android application to help an installer bootstrap devices and monitor installation from remote sites.

- Highly secure, bi-directional device authentication using Secure Unique Device Identification (SUDI) and highly secure communication. You use certificates stored in a Cisco managed trustpool bundle, which includes certificates signed by trusted authorities and published by Cisco Information Security.

Solution Components

The Cisco Network Plug and Play solution includes the following components:

- **Cisco Application Policy Infrastructure Controller Enterprise Module (APIC-EM):** Cisco APIC-EM is an enterprise controller for software-defined networks to discover, configure, and manage network elements. Our APIC-EM provides infrastructure services like topology and discovery, and various applications like a plug-and-play server and Cisco Intelligent WAN. The controller and the applications expose a northbound representational state transfer (RESTful) API that can be used to automate network tasks.

- **Cisco Network Plug and Play Server:** Plug and Play Server comes preinstalled with the Cisco APIC-EM application. It responds to plug-and-play protocol requests from devices. The server enforces device authentication and authorization using pre-provisioned device serial numbers to provision a Cisco IOS Software image and configuration.

- **Cisco Plug and Play IOS Agent:** Our agent is embedded into Cisco enterprise device platforms and communicates over HTTPS to the Plug and Play Server using an open plug-and-play protocol. The agent requires support from Cisco IOS Software images. (Refer to Table 1 for supported platforms and software requirements.)

- **Cisco Network Plug and Play Mobile App for iOS and Android devices:** An optional mobile application that runs on iOS or Android devices can be used to bootstrap Cisco devices, especially for branch router installations. This app can download custom bootstrap for devices over 3G, 4G, and Wi-Fi connections and apply that bootstrap configuration to the device console using a special serial cable or special Bluetooth adaptor.

- **Cisco Smart Install (SMI) Proxy:** This optional component can be used to deploy Cisco switches with Cisco IOS Software versions that are older than IOS-XE Release 3.6.3E and IOS Release 15.2(2) on switching platforms without the Plug and Play Agent. An SMI director switch can be configured as an SMI Proxy to convert smart-install messages from non-plug-and-play-capable switches into plug-and-play protocol messages to the Plug and Play Server. SMI proxy is not supported on routing platforms.

- **Generic HTTP Proxy:** Since a plug-and-play protocol uses HTTPS, remote branch routers can communicate with the Plug and Play Server (APIC-EM) through a generic, off-the-shelf HTTP proxy. This eliminates the need for a special gateway for protocol conversion.

Figure 1 shows how the various components of the Cisco Plug and Play solution interact with each other.

Figure 1. Cisco Plug and Play Solution Components
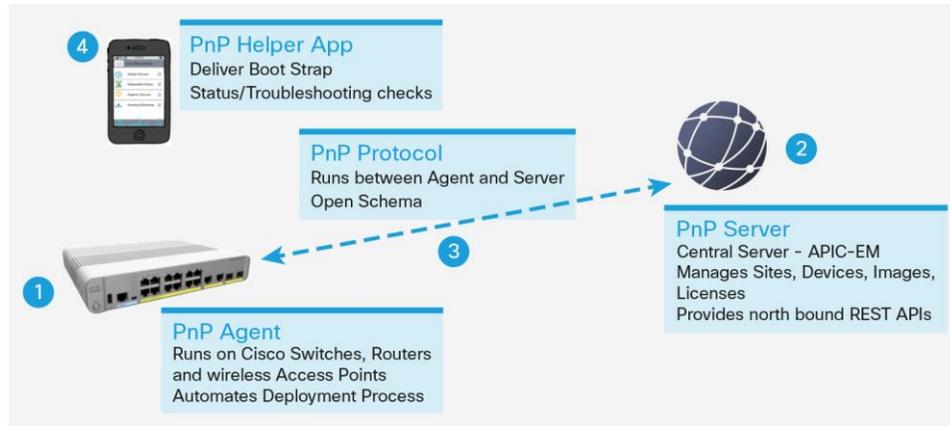
Supported Platforms and Software Requirements

Table 1 lists Cisco routers, switches, and software releases that support the Cisco Plug and Play IOS Agent and the Cisco Network Plug and Play solution.

Table 1. Supported Cisco Switches, Routers, and Access Points

Platform	Models	Cisco IOS Software Release
Cisco Catalyst 2960 Series Switches	2960-C 2960-Plus 2960-S 2960-SF 2960-X 2960-XR	15.2.2E3
	2960-CX[1]	15.2.3E2
Cisco Catalyst 3560 Series Switches	3560-C 3560-X	15.2.2E3
	3560-CX[1]	15.2.3E2
Cisco Catalyst 3650 Series Switches	3650	3.6.3E
Cisco Catalyst 3750-X Series Switches	3750X	15.2.2E3
Cisco Catalyst 3850 Series Switches	3850	3.6.3E
	3850-12X48U[1] 3850-12XS[1] 3850-16XS[1] 3850-24XS[1] 3850-32XS[1]	3.7.2E
Cisco Catalyst 4500 Series Switches	Supervisor 6-E and 6L-E Supervisor 7-E and 7L-E Supervisor 8-E	3.6.3E
Cisco Catalyst 4500-X Series Switches	4500X-16 and 4500X-32	3.6.3E
Cisco Catalyst 4900 Series Switches	4900M 4948E	15.2.2E3
Cisco Industrial Ethernet 2000 Series Switches	IE2000	15.2.2E3
Cisco Industrial Ethernet 3000 Series Switches	IE3000	15.2.2E3
Cisco Industrial Ethernet 4000 Series Switches	IE 4000	15.2(2)EA

Platform	Models	Cisco IOS Software Release
Cisco Industrial Ethernet 5000 Series Switches	IE 5000	15.2(2)EB1
Cisco 800 Series Routers	861 867 881 886 887 888 891 892 896 897 898	15.5.3M (ED)
Cisco 1900 Series Integrated Services Routers	1921 1941	15.5.3M (ED)
Cisco 2900 Series Integrated Services Routers	2901 2911 2921 2951	15.5.3M (ED)
Cisco 3900 Series Integrated Services Routers	3925 3925E 3945 3945E	15.5.3M (ED)
Cisco 4000 Series Integrated Services Routers	4321 4331 4351 4431 4451-X	3.16.S (ED)
Cisco ASR 1000 Series Aggregation Services Routers	ASR 1001 ASR 1001-X ASR 1002 ASR 1002-X ASR 1004 ASR 1006 ASR 1013	3.16.S (ED)
Cisco Cloud Services Router 1000V	CSR 1000V	3.16.S (ED)
Cisco Aironet Wireless Access Points	802.11n Generation 2 702I, 702W, 1600, 2600, 3600 802.11ac Wave 1 1700, 2700, 3700	AireOS 8.2[2]

[1] Limited feature support: Trustpool is supported only by using the DHCP options T and Z.

[2] Targeted first customer ship is November 2015. Access point plug and play will be supported on AireOS and Cisco IOS-XE wireless controllers.

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