Cisco Prime Network VNE Device Drivers

Overview

Today's networks have become increasingly complex with multivendor environments, multitechnology requirements, and multiservice domains. Constant introduction of new devices into the network, as well as updates to existing devices, present challenges to service providers who need to manage these devices quickly and easily. You need an innovative approach to device driver management that minimizes effects on network operations and service delivery.

The Cisco Prime™ Network virtual network element (VNE) device driver discovers the physical inventory and logical configuration of managed devices. It then translates this information into detailed software representations of the devices. This information forms the basis for all further device and network management functions. It helps separate device information from high-level applications.

Cisco Prime Network VNE device drivers support a wide range of Cisco® and third-party physical and virtual devices that may be deployed across access, aggregation, edge, and core network domains and data centers.

Key Features and Benefits

Benefits

Cisco Prime Network VNE offers the following benefits:

- Investment protection through timely updates that support device upgrades without the need to modify or upgrade the network management system, Cisco Prime Network
- Reduced costs through multivendor support that allows Cisco Prime Network to manage heterogeneous networks with minor customization
- Improved operational efficiency and reduced costs and dependency on professional services through rapid user extensibility

Features

Cisco Prime Network VNE provides the following features:

- Discovery of physical inventory and logical configuration of managed devices using Simple Network Management Protocol (SNMP), command-line interface (CLI), and Extensible Markup Language (XML)
- Device health and change monitoring through periodical polling and interpretation of autonomous event messages, such as SNMP notifications and syslog messages sent by the devices
- An innovative and scalable approach to manage third-party devices through third-party device drivers
- User extensibility through the Cisco Prime Network VNE Customization Builder (VCB) to manage hardware modules, device types, events, and device software versions separately from ongoing VNE driver updates
- Timely updates within 30 days of Cisco device availability

Detailed Features and Benefits

Table 1 provides details on the features and benefits of Cisco Prime Network VNE drivers.

Table 1.   Key Features and Benefits of Cisco Prime Network VNE Drivers

Feature	Description	Benefit
Autodiscovery	VNE drivers are instantiated at run time for each managed device so that synchronization with the network and device autodiscovery can be done in parallel.	Improved efficiency through automation
Distributed VNE driver instances for large-scale networks	The VNE driver instances can be distributed among multiple Cisco Prime Network unit servers to enable Cisco Prime Network to manage large-scale carrier-class networks. They can also be redistributed among multiple unit servers for load balancing to optimize memory usage.	Improved scalability through distributed architecture and optimization techniques
Synchronization	Automatic synchronizations of device status are based on configuration change notifications from the network. VNE drivers also support adjustable periodic and manual synchronization of device status, providing an up-to-date view of the network in Cisco Prime Network with minimal impact.	Improved efficiency through automation
Independent driver releases	Individual VNE drivers can be updated without the need to upgrade or change Cisco Prime Network software.	Investment protection through timely updates
Field extensibility	Cisco VNE drivers are extensible to manage additional device types, hardware plug-in modules, additional SNMP traps imported through Management Information Base (MIB) files, and syslogs. These extensions can be performed by customers or by the system integrator local to the Cisco Prime Network installation without affecting Cisco Prime Network.	Reduced costs through flexible extension options
A generic VNE	The generic VNE driver is the default driver for discovering any unrecognized device and monitoring standard SNMP traps using standard MIB II interfaces. The IP interfaces and routing and bridge information are also discovered.	Simplified operations through default representations for unknown devices
User-defined VNE drivers	User-defined VNE drivers can be created at run time to manage additional device series. In addition to the generic VNE capability of standard SNMP MIBs and traps, they are extensible using the Cisco Prime Network customization tool (VCB) to further discover and activate devices.	Reduced costs through flexible customization options
Developer community	[Cisco DevNet](#) and the Cisco DevNet Partner Program provide individual developers, partners, system integrators, and customers a virtual community forum to learn and share, including examples of using VCB to perform field extensions to device drivers.	Improved efficiency through collaborations in communities
Physical inventory and logical configuration	Cisco VNE drivers retrieve comprehensive information from devices about the chassis, shelf, common components (for example, fan and power supply), line cards, interfaces, and software image inventory. In addition, detailed and logical configuration information, such as Ethernet switching, VLAN, IP routing, IP/MPLS (Multiprotocol Label Switching), Pseudowire, MPLS Traffic Engineering, and many other device feature configurations can also be retrieved, including statically defined or dynamically established configurations.	Improved efficiency through effective representations of network information
Multiprotocol Label Switching Transport Profile (MPLS-TP) support	Cisco VNE drivers support MPLS-TP, which unifies both packet and transport technologies, giving service providers a strong foundation for the convergence of packet and transport networks.	Reduced costs through support for converged technologies

For service providers with multivendor network environments, Cisco Prime Network offers VNE device drivers to manage third-party devices. For third-party devices not supported by a Cisco Prime Network third-party VNE device driver, Cisco Prime Network offers two VNE alternatives:

- A "generic VNE" that uses a standard MIB system and interface data to create a baseline model of any network element that supports SNMP
- Extensible and user-defined VNE device drivers with generic templates created by customers for specific third-party device types

Cisco Advanced Services routinely provides expert support for both of these approaches and further customization.

A side-by-side comparison of the options for Cisco and third-party device management is provided in Table 2.

Table 2. Cisco Prime Network Cisco and Third-Party Device Management Options

Features and Functions	VNE for Cisco Devices	VNE for Third-Party Devices	User-Defined VNE with Generic Template (Note 2)	Generic VNE (Note 1)
Model for IP and Ethernet topology, logical attributes for routing table, Address Resolution Protocol (ARP), and bridge using standard SNMP MIB	✓	✓	✓	✓
Standard SNMP traps monitoring	✓	✓	✓	✓
Device identifications	✓	✓	✓	
User extensibility with Cisco Prime Network toolkit	✓	✓	✓	
Physical inventory discovery using device-specific MIB	✓	✓ Note 3		
Layer 2/Layer 3 logical inventory and topology discovery using device-specific MIB	✓	✓ Note 3, Note 6		
Support for device-specific SNMP traps and syslogs per customer specifications	✓	✓ Note 3		
Change and configuration management	✓			
Compatibility with Cisco Prime Network update releases	✓	✓		
Support for service requests of device OS and management interface changes that affect device inventory discovery and event monitoring	✓	✓		
Field extensions for additional physical inventory, events, and device maintenance upgrades	Note 4	Note 4	Note 4	
Activation script using Command Builder	Note 5	Note 5	Note 5	

Notes:
1. The generic VNE is not customizable. It is the default for any device not recognized by Cisco Prime Network.
2. The user-defined generic VNE is created using the Cisco Prime Network VCB generic template at run time.
3. The feature is contingent on device configuration and instrumentation available in customer's lab devices.
4. Field extensions can be performed by customers, a systems integrator (SI), or Cisco AS. For example, soft properties can be added using VCB and other extensions can be scripted using Command Builder.
5. Activation is typically handled by Command Builder and performed by customers, an SI, or Cisco AS.
6. Layer 2: Ethernet, VLAN, Dot1Q, QinQ, Cisco EtherChannel, Link Aggregation, PoS, ATM, IMA, FR, PPP, DSL, VPLS, Local Switching, LLDP; Layer 3: IP and Routing, MPLS, LDP, MPLS-TE, VRF, RSVP-TE, MP-BGP, OSPF, PW, GRE, BFD; not all Cisco Prime Network advanced features will be supported for Cisco Prime Network third-party VNEs. For example, the following are not included: image management, configuration archive restore, event correlation, impact analysis, and service activation.

Device Support

Cisco Prime Network, starting with Release 4.2, will no longer natively support third-party devices and their related services. If customers wish to manage third-party devices after transitioning to Version 4.2, customers will need to engage Cisco Advanced Services for support.

More information about supported Cisco devices and third-party devices, software versions, and device contents can be found in the Cisco Prime Network End-User Guides.

About Cisco Prime

The Cisco Prime portfolio of IT and service provider management offerings empowers organizations to more effectively manage your networks and the services you deliver. Built on a service-centered foundation, the Cisco Prime solution supports integrated lifecycle management through an intuitive workflow-oriented user experience - providing A-to-Z management for evolved programmable networks (EPNs), mobility, video, cloud, and managed services.

Ordering Information

A Right-to-Manage (RTM) license for each Cisco device managed by Cisco Prime Network is required. The device series and device type will determine the appropriate RTM license. For a complete list of devices available, please contact your sales representative.

To place an order, contact your local Cisco account representative or visit the Cisco Download Software page.

For More Information

For more information about Cisco Prime Network, visit http://www.cisco.com/go/primenetwork, contact your local Cisco account representative, or send an email message to prime-network@cisco.com.