

Cisco ANA VNE Drivers

Overview

Cisco Active Network Abstraction (ANA) virtual network element (VNE) device driver technology is a key enabler for ANA to manage end-to-end IP next-generation networks (NGNs). ANA VNE drivers support Cisco devices ranging across access, aggregation, edge, and core domains. The ANA VNE drivers make use of the device management instrumentation to discover an accurate view of the physical configuration and logical services of the managed device and translate the information to the ANA network model. The VNE driver processes the device's Simple Network Management Protocol (SNMP) traps and syslogs into events monitored by the ANA GUI and northbound interface to operation support systems (OSSs).

For service providers to stay competitive, and for enterprises to expand and evolve their mission-critical IT infrastructures with the latest device upgrade, ANA VNE drivers are maintained for compatibility with Cisco IP NGN device releases. The corresponding VNE drivers can be upgraded independently, without requiring ANA software upgrades.

ANA VNE drivers are also user extensible to manage new hardware modules, device types, events, and device software versions that have compatible management instrumentation. Customers can perform private VNE extensions to gain competitiveness with the latest device software and hardware and, at the same time, reduce costs and dependency on professional services.

The same device driver technology is also applicable for mediating third-party devices, and VNE drivers can be developed for ANA to manage multivendor networks. Whether a customer's business strategy leads to an all Cisco network approach or a multivendor network approach, with the VNE technology, ANA provides a "single pane of glass" management view of the end-to-end network.

Benefits

ANA provides a single, authoritative view into a network consisting of heterogeneous devices. This reduces operating expenses (OpEx) by providing a unified user experience for real-time discovery of devices and network topology and centralized fault management. Additionally, organizations can further reduce OpEx and OSS integration costs by utilizing a single northbound interface regardless of the network equipment series. The network upgrade cost is minimized by the independent device driver updates or by extending the VNE drivers. The support of third-party devices in the end-to-end network further helps enable customers to evolve to the best network strategy of their choice.

Table 1 provides a list of Cisco device series managed by ANA using available device drivers.

Table 1. Cisco Device Series Managed by ANA¹

Group Number	Hardware Devices
Group 1	Cisco Catalyst® 3500 XL Series Switches Cisco Catalyst 3550 Series Switches Cisco Catalyst 3560 Series Switches Cisco 2500 Series Routers Cisco 3600 Series Multiservice Platform Routers Cisco 2600 Series Multiservice Platform Routers Cisco 2821 Integrated Services Routers (ISR) Cisco 2851 Integrated Services Routers Cisco 2900 Integrated Services Routers Cisco MWR 2900 Series Mobile Wireless Routers Cisco 3700 Series Multiservice Access Routers Cisco Catalyst 3750 Metro Series Switches
Group 2	Cisco ME 3600X Series of Ethernet Access Switches Cisco 3800 Series Integrated Services Routers Cisco 3900 Series Integrated Services Routers Cisco Catalyst 3750 Series Switches Cisco AS5300 Series Universal Gateways Cisco Adaptive Security Appliance (ASA) 5550 Series
Group 3	Cisco Nexus® 2000 Series Cisco ME 3800X Series Carrier Ethernet Switch Router Cisco Catalyst 4000 Series Switches Cisco Catalyst 4500 Series Switches Cisco Catalyst 4900 Series Switches Cisco ME 4900 Series Ethernet Switches Cisco Application Configuration Engine (ACE 4710) Cisco Catalyst 4948EF Cisco Catalyst 4507R+E Cisco Catalyst 4510R+E
Group 4	Cisco Catalyst 6500 (Catalyst OS/Cisco IOS® Software) Switches, Namely: <ul style="list-style-type: none"> • Cisco Catalyst 6503 • Cisco Catalyst 6504 • Cisco Catalyst 6506 Cisco ME 6500 Series Ethernet Switches (6524) Cisco SCE 2000 Series Service Control Engine Cisco 7200 Series Routers Cisco 7301 Series Routers Cisco 7304 Series Routers Cisco 7400 Series Routers Cisco 7600 Series Routers, Namely: <ul style="list-style-type: none"> • Cisco 7603 • Cisco 7603-S • Cisco 7604 Cisco ASR 1000 Series Routers, Namely: <ul style="list-style-type: none"> • Cisco ASR 1001 • Cisco ASR 1002 • Cisco ASR 1004

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Group Number	Hardware Devices
Group 5	<p>Cisco Catalyst 6500 (Catalyst OS/Cisco IOS Software) Switches, Namely:</p> <ul style="list-style-type: none"> • Cisco Catalyst 6509 (Including NEB and NEB-A) • Cisco Catalyst 6513 <p>Cisco 7500 Series Routers</p> <p>Cisco 7600 Series Routers, Namely:</p> <ul style="list-style-type: none"> • Cisco 7606 • Cisco 7606-S <p>Cisco 10000 Series Routers, Namely:</p> <ul style="list-style-type: none"> • Cisco 10005 • Cisco 10008 <p>Cisco ASR 1000 Series Routers, Namely:</p> <ul style="list-style-type: none"> • Cisco ASR 1006 • Cisco ASR 1013 <p>Cisco ASR 9000 Series Aggregation Routers, Namely:</p> <ul style="list-style-type: none"> • Cisco ASR 9006 <p>Cisco uBR Series Aggregation Routers, Namely:</p> <ul style="list-style-type: none"> • Cisco uBR7246VXR
Group 6	<p>Cisco Nexus 5000 Series</p> <p>Cisco Nexus 7000 Series</p> <p>Cisco Nexus 5010</p> <p>Cisco Nexus 5020</p>

More supported Cisco devices and non-Cisco devices, software versions, and device contents can be found in the latest version of the [ANA Documentation Guide](#).

For customers using Cisco IP NGN systems and network devices, ANA maintains the compatibility with those key device series such as CRS, ASR 9000, XR 12000, 7600, ASR 1000, MWR 2941, and ME 3600X/3800X. Cisco provides VNE driver updates on a regular basis for these devices to help ensure that device hardware and software feature releases are discoverable by Cisco ANA. VNE driver updates can be separately installed on ANA starting in ANA release 3.7.2.

In the occasion where management of additional Cisco devices or software releases is needed, customers can contact their account team for their product enhancement requests.

Key Features of ANA VNE Driver

Table 2 lists the key features of the ANA VNE driver.

Table 2. Key Features of ANA VNE Driver

Feature	Description
Autodiscovery	VNE drivers are instantiated at run time for each managed device so that synchronization and autodiscovery with the network can be done in parallel.
Distributed for large-scale networks	The VNE drivers can be distributed in multiple ANA unit servers to help enable ANA to manage large-scale carrier-class networks. VNE instances can be redistributed among multiple ANA unit servers for load balancing to optimize memory usage.
Synchronization	VNE performs automatic synchronization based on configuration change notification from the network. In addition, VNE drivers support adjustable periodic and manual synchronization of device status to provide an up-to-date view of the network in ANA with the minimum impact to the managed devices.
Independent driver release	Individual VNE drivers may be updated without the need to upgrade or otherwise change the ANA platform software.
Field extensibility	Cisco VNE drivers are extensible to manage additional device types, device hardware plug-in modules, additional SNMP traps, and syslogs. SNMP traps can be imported through MIB files. These extensions can be done by customers or by the system integrator local to the ANA installation and do not affect the delivered ANA software.

Feature	Description
Generic VNE	The generic VNE device driver is used as the default for discovering any unrecognized device. The generic VNE device driver will monitor for standard SNMP traps using standard MIB II interfaces. The IP interfaces and routing and bridge information are also discovered.
User-defined VNE driver	ANA users can create user-defined VNE drivers at run time to manage additional device series. In addition to the generic VNE capability of making use of standard SNMP MIBs and traps, the user-defined VNE is extensible using available ANA customization tools to further discover and activate the device.
Developer community	The Cisco Developer Network website provides partners, system integrators, and customers a virtual community forum to learn and share examples of using ANA customization tools to perform field extension to device drivers.

Ordering Information

A Right-to-Manage license for each Cisco device managed by ANA is required and is available as an option within the ANA-37-SOFTWARE product. The device series and device type will determine the appropriate Right-to-Manage group.

To place an order contact your local Cisco account representative or visit the [Cisco Download Software page](#) and click ANA VNE Drivers for the latest release.

For More Information

For more information about Cisco ANA, visit <http://www.cisco.com/go/ana>, contact your local Cisco account representative, or send an email to ask_ana_pm@cisco.com.



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