

Cisco Active Network Abstraction 3.5.2

Cisco® Active Network Abstraction (ANA) is a flexible and powerful vendor-neutral device management system that doubles as an enabling platform for value-added network and service management applications in a multitechnology, multiservice network environment.

Product Overview

Cisco ANA creates a virtual network model to help service providers and carriers effectively manage multiple services and technologies in a multivendor network environment.

Through unique virtual network technology, Cisco ANA provides:

- **Multivendor device management:** Cisco ANA has a broad set of device management features, including device configuration and fault management.
- **Vendor-neutral management platform:** Designed for deployment in service provider networks, Cisco ANA is an enabling platform for value-added applications, integrating with applications such as IBM Tivoli NetCool, and Cramer6 OSS Suite.
- **Standards-based access to near real-time device and network information:** Through a near real-time virtual network model, Cisco ANA provides value-added applications from Cisco and its partners with open, standards-based mediation access to detailed multivendor device and network information through a single API set.

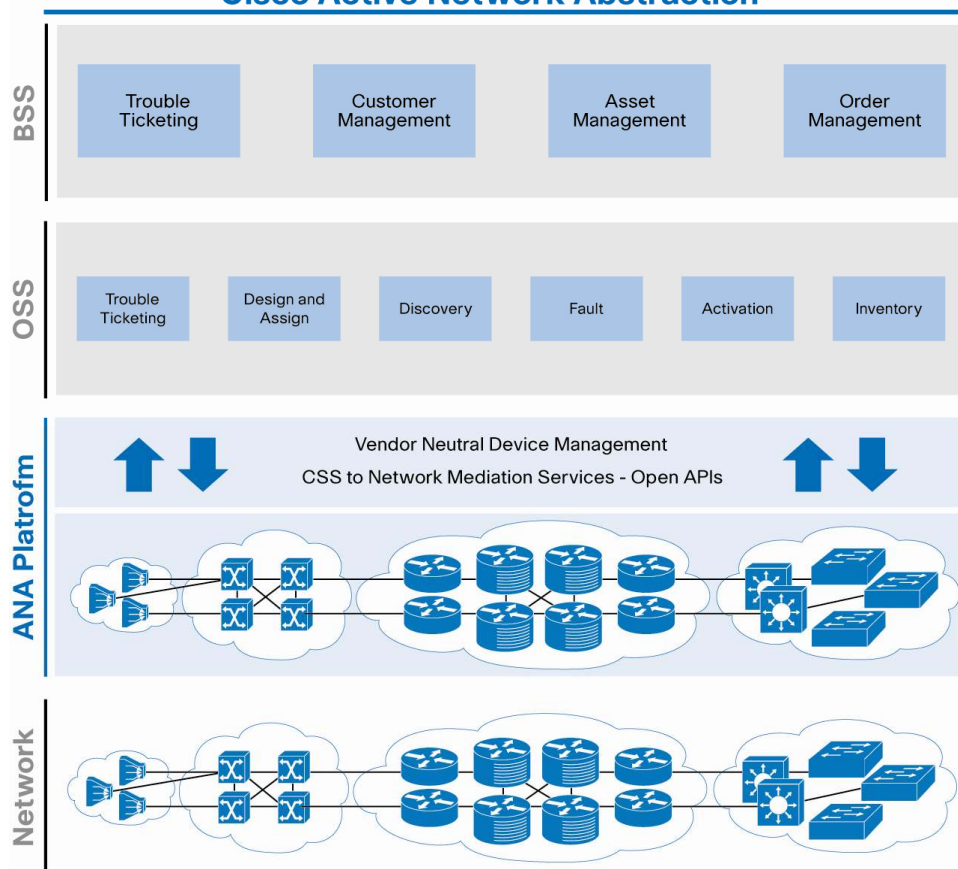
Cisco ANA operates between the network and OSS layer (Figure 1). Its virtual network element abstraction model is built, bottom-up, as an aggregation of independent virtual network elements (VNEs) creating a software-based virtual network much in the same way real network elements create the real-world network. Cisco ANA dynamically discovers and identifies device and network components and understands the near real-time status of network elements. This abstraction model facilitates a consistent set of embedded device management features in Cisco ANA, while providing a rich set of platform and network mediation services for both Cisco and partners' value-added network and service management applications.

The unique approach and key innovations of Cisco ANA improve service providers' business through:

- Simplified integration of OSS applications with near real-time network information from one authoritative source
- A future-proof common device management infrastructure
- Consistent procedures and interfaces for all network elements

Figure 1. Cisco ANA Operates between the Network and the OSS and BSS Layers

Cisco Active Network Abstraction



Key Features and Benefits

Cisco ANA key capabilities are divided into three separate categories:

- Vendor-neutral device management
- Enabling platform for value-added network and service management applications
- Standards-based access to near real-time device and network information

Vendor-Neutral Device Management

Using its OSS-to-network mediation and distributed management platform features, Cisco ANA provides consistent, vendor-neutral device management functionality for more than 320 different devices from Cisco, Alcatel-Lucent, Juniper, Redback, and more. Cisco ANA allows customers and partners to implement a future-proof common device management infrastructure eliminating inconsistent and multiple device management applications, with features such as:

- Device and network discovery
 - Based on a device seed list, Cisco ANA will discover device details, down to the card and port level
 - Detailed device connectivity discovery of physical and logical relationships between devices
- Fault monitoring
 - Distributed device and alarm surveillance and processing
 - Device fault analysis

- Enabling features for network topology-based fault correlation by advanced applications
- Customizable device configuration
 - Customizable, template-based configuration framework to help enable network operators to automate frequently used operational tasks, reduce errors, and improve network operations
- Performance
 - Near real-time data collection with user-selected parameters
 - Open northbound API for advanced performance management applications
 - Real-time threshold-crossing performance analysis
- Security
 - Authentication, authorization, and accounting (AAA) capabilities for lifecycle management

Enabling Platform for Value-Added Network and Service Management Applications

Leveraging its OSS-to-network mediation and distributed management platform features, Cisco ANA facilitates a series of optional, value-added management applications from both Cisco and its partners. These applications include Cisco Service Fault Isolation, IBM Tivoli NetCool, and Cramer6 OSS Suite.

Standards-Based Access to Near Real-Time Device and Network Information

Cisco ANA provides value-added applications standards-based access to rich, real-time network, device, slot, and port information, supporting multiple networking technologies. These technologies include IP, Layer 2 and Layer 3 VPN, XDSL, ATM, Frame Relay, Gigabit Ethernet, Ethernet, 802.1Q, Inter-Switch Link (ISL), Layer 2 Tunneling Protocol (L2TP), and routing protocols (such as Border Gateway Protocol [BGP]).

The Cisco ANA standards-based access to a broad set of device and network information eases the integration burden associated with traditional network management systems through XML-based APIs that provide:

- Real-time mediation to the device/network inventory and discovery information providing key added value to offline inventory applications
- Real-time, distributed alarm surveillance and facilitation of domain-specific root-cause analysis within value-added fault management applications
- Real-time, work-flow-enabled service activation and network configuration engine for value-added provisioning applications and processes to push activation commands to network devices

Table 1 lists the features and benefits of Cisco Active Network Abstraction 3.5.2.

Table 1. Cisco Active Network Abstraction Features and Benefits

Features	Benefits
Vendor-neutral device management	<ul style="list-style-type: none"> • Complete device inventory views covering both physical and logical inventory for supported devices • Automatic discovery of device relationships (topology) using Cisco Discovery Protocol and Border Gateway Protocol (BGP) • Captures and forwards device-level alarms to OSS/BSS systems for monitoring at network operations center (NOC) or data center • Integration with Cisco Information Center, and IBM Tivoli NetCool • Command Builder tool helps enable network operators to automate frequently used operational tasks, reduce errors, and improve network operations. • Soft Properties tool helps enable network operators to customize device event and alarms to proactively monitor device health. • Work Flow Client tool helps enable network operators to customize service activation flow and network operations management. • Cisco ANA provides a generic view of multivendor devices and allows network operators to perform automated operational tasks using a GUI that reduces network operator training time.
Platform for value-added network and service management applications	<ul style="list-style-type: none"> • Using its OSS-to-network mediation and distributed management platform features, Cisco ANA facilitates a series of optional, value-added management applications from both Cisco and its partners. These applications include Cisco Service Fault Isolation, IBM Tivoli NetCool, and Cramer6 OSS Suite.
Standards-based access to real-time device and network information	<ul style="list-style-type: none"> • Provides real-time mediation to device/network inventory and discovery data providing key added value to offline inventory applications • Provides real-time, distributed alarm surveillance and enabling technology for domain-specific root-cause analysis within optional value-added fault management applications • Provides real-time, work-flow-enabled service activation and network configuration engine for value-added provisioning applications and processes to push activation commands to network devices • Standard northbound interface (XML) provides a single device mediation platform for all supported devices. • Standard northbound Interface reduces OSS/BSS integration complexity.
Distributed and scalable architecture	<ul style="list-style-type: none"> • Cisco ANA architecture eliminates use of a single point for computation in managing multivendor networks. • Cisco ANA architecture allows network operators to expand core networks, and manage them effectively, with low incremental cost. • Cisco ANA Hot Standby system facilitates 24-hour-a-day, 7-day-a-week network operations, services management, and business continuity.

Scalable and Distributed Management Platform Architecture

The core technology of Cisco ANA provides end-to-end visibility of network resources, connections, and dependencies through scalable and distributed management platform architecture, consisting of virtual network elements, VNE server units, and Cisco ANA gateways (Figure 2)

Virtual Network Elements

Virtual network elements are the building blocks of the Cisco ANA virtual network model. They are software-based network devices, each one cloning the characteristics and properties of its real-world counterpart. These software entities run autonomously within Cisco VNE server units. Each VNE is assigned to manage a single network element instance using whatever southbound management interface the network element implements (such as Simple Network Management Protocol [SNMP] or Telnet). Messaging between VNEs is used for running different end-to-end algorithmic flows, providing information for root cause and impact analysis, service path tracing, and other uses in value-added applications.

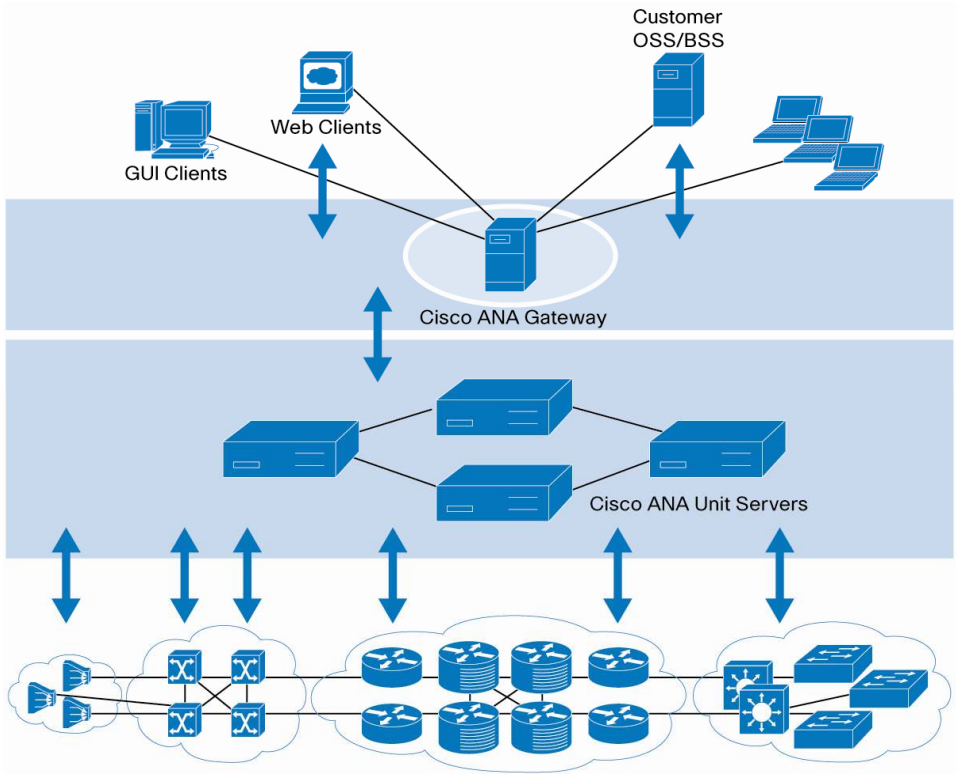
VNE Server Units

The VNE server units can host up to thousands of individual VNEs and are interconnected to form a fabric that can intercommunicate with other VNEs regardless of which unit they are running on. VNE server units also allow for optimal VNE distribution, helping ensure geographic proximity between VNEs and their managed network elements.

Cisco ANA Gateways

Cisco ANA gateways are server units through which all clients, including any OSS/BSS applications as well as Cisco ANA applications and clients, access the system. They enforce access control and security for all connections and manage client sessions. In addition they function as a repository for storing configuration, network, and system events and alarms. They are also used to map network resources to the business context, allowing Cisco ANA to contain information that is not directly contained in the network (such as VPNs and subscribers) and display it to northbound applications.

Figure 2. Cisco Active Network Abstraction Architecture



System Requirements

Table 2 lists the preferred system requirements for the gateway and unit servers.

Table 2. Preferred Systems Requirements for Cisco ANA Gateway and Unit Servers

Cisco ANA Gateway	
Disk space	Recommended: 2 x 73-GB HDD
Hardware	<ul style="list-style-type: none"> • Sun V490 • 1 x DVD drive • 2 10/100M Ethernet ports • Solaris 10 compatible

Processor	4 at least 1.35-GHz Ultra SPARC IV processors
Memory	<ul style="list-style-type: none"> • 16 GB • 8 GB of Solaris SWAP per CPU
Software	<ul style="list-style-type: none"> • Solaris 10* • Customer-supplied Oracle 9i
Cisco ANA Unit	
Disk space	Recommended: 2 x 73-GB HDD
Hardware	<ul style="list-style-type: none"> • Sun V490 • 1 x DVD drive • 2 10/100M Ethernet ports • Solaris 10 compatible
Memory	16 GB**
Processor	4 at least 1.35-GHz Ultra SPARC IV processors
Software	Solaris 10*
Cisco ANA Client	
Disk space	2 GB of free disk space
Hardware	<ul style="list-style-type: none"> • Pentium IV, 2.66-GHz processor or better • 1 x DVD drive • Minimum screen resolution of 1024x768 pixels • TrueColor (32 bit) setting
Memory	<ul style="list-style-type: none"> • 1 GB • 512 MB of free nonvirtual memory
Software	Windows 2000 or Windows XP

*The Solaris 10 patch and J2SE Solaris 10 patch are required. For the exact patch list, see the Cisco ANA Release Notes Version 3.5.2.

**For further directions for memory allocation, please refer to the Cisco ANA Servers Installation Guide Version 3.5.2.

Ordering Information

For more information on Cisco ANA, please contact your local Cisco account representative.

Service and Support

Using the Cisco Lifecycle Services approach, Cisco and its partners provide a broad portfolio of end-to-end services and support that can help increase your network's business value and return on investment. This approach defines the minimum set of activities needed, by technology and by network complexity, to help you successfully deploy and operate Cisco technologies and optimize their performance throughout the lifecycle of your network.

For More Information

For more information about Cisco ANA, visit <http://www.cisco.com/go/ana>, contact your local account representative, or send an e-mail to the Cisco ANA product management team at ask-ana@cisco.com.



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