Data Sheet

Cisco CNS Configuration Engine, Version 1.4

The Cisco® CNS Configuration Engine is a secure network product that supports the activation of customer-premises-equipment (CPE) based network services through centralized template-based configuration management. The Cisco CNS Configuration Engine runs on the Cisco CNS 2100 Series Intelligence hardware platform. The Cisco CNS Configuration Engine provides a scalable infrastructure for managing the large-scale deployment of Cisco Systems® devices. It takes full advantage of the Cisco CNS Intelligent Agent technology of Cisco IOS® Software and can manage as many as 5000 Cisco CPE products and Cisco switches. Using Secure Sockets Layer (SSL) to interface with Cisco IOS Software devices or Cisco PIX® firewalls or using Secure Shell Protocol (SSH) to access devices that are not enabled with Cisco CNS agents, the Cisco CNS Configuration Engine provides an end-to-end "zero-touch" deployment solution for the entire portfolio of Cisco IOS CPE products. The Cisco CNS Configuration Engine offers a programmatic interface to customers' operations support systems (OSSs) using Cisco CNS Software Development Kit.

The Cisco CNS Configuration Engine Version 1.4 (Figure 1) introduces a scalable, automated solution to distribute and activate software images to Cisco devices and offers Cisco Works Auto Update Server (AUS) functions to Cisco PIX Firewall devices. It also includes a Device Module Development toolkit and dynamic template selection.

Figure 1
Cisco CNS 2100 Series Intelligence Engine

The Cisco CNS Configuration Engine is designed to deliver immediate productivity. It is a self-contained, rack-mountable 1-rack-unit device that requires minimal configuration and can be installed within minutes of opening the box. Through its intuitive, task-oriented user interface, network engineers can immediately begin automating routing deployment and configuration tasks with minimal training. The appliance provides an open publish and subscribe Extensible Markup Language (XML) interface for easy integration into existing OSSs and business support systems (BSSs) or workflow systems. This enables customers to immediately begin creating new service offerings or enhancing existing service offerings with new functions such as ready-to-use deployment, meaning that the product will work as soon as it is active in the network.

Application

The Cisco CNS Configuration Engine automates the configuration of Cisco devices during initial deployments and in subsequent reconfigurations. This complete, automatic device deployment and configuration solution relieves service providers and large enterprise customers of the need to send technicians to customer sites, affording the customers fast activations for new services. Network administrators who manage large networks can also take advantage of the solution to distribute configurations, IP Security (IPSec) keys, passwords, etc., to a device or to groups of devices.

Version 1.4 extends Cisco CNS Configuration Engine functions to offer:

- Automating software image distribution and activation to many Cisco devices
- Providing Cisco Works AUS functions to deploy, configure, and distribute software to individual or groups of Cisco PIX Firewall devices
- Enabling customers to configure and manage devices not enabled for Cisco CNS technology using the Device Module Development toolkit
- Enabling Cisco devices embedded with Cisco CNS agents to retrieve service-specific configurations using the dynamic template feature

Meeting Business Challenges

The Cisco end-to-end deployment and configuration solution addresses the business and operational challenges of deploying CPE-based network services. Cisco ships CPE devices directly to subscriber sites, where the devices can provision themselves. This solution reduces the time to deployment by days or even weeks, thereby increasing customer satisfaction and decreasing the time from hardware investment to service billing. Direct shipment and ready-to-use automation also reduce costs by eliminating manual processes, including the need to send a truck and crew.

The Cisco solution also addresses the problem of “intellectual scarcity” not just by automating manual processes but also by enabling existing workers to be more productive without additional training. Automation allows customers to invest their human resources in the production of new revenue-generating services rather than the maintenance of old ones.

The Cisco solution is integrated from end to end, from order entry through service validation. In addition, the Cisco CNS Configuration Engine employs well-known OSS and BSS programming conventions such as publish-and-subscribe messaging and XML. This ensures both technical compatibility and the availability of programming talent needed to quickly and easily integrate into any customer’s existing OSSs and BSSs.

Version 1.4 extends the scope of the Cisco CNS Configuration Engine from deployment and configuration to automating repetitive tasks such as upgrading software images to Cisco devices.

Software Distribution Services

The introduction of managed service offerings targeting small and medium-size customers and the globalization of e-commerce have significantly increased the number of devices managed by service-provider and enterprise customers. One of the major challenges that customers face today is how to distribute and activate software images to many network devices. This task is labor-intensive, and the complexity increases tremendously with the size of networks.

Software distribution services provide an easily deployed solution that uses a GUI to automate the task of delivering and activating software images and configurations to several network devices. This feature provides a configurable option to control the scope of automation in alignment with customers' business processes and interacts with the embedded image agent.

Features and Benefits

- GUI-based solution to automate software distribution and activation
- Option to group devices and assign one or multiple software images to groups of devices
- Configurable option to create jobs with devices from one or many groups and control execution of a job by batch size
- Option to schedule a job starting time
- Ability to provide status of jobs in progress and details of job completion
- Ability for users, using Cisco CNS agents in Cisco IOS Software, to contact devices through Network Address Translation (NAT), firewalls, or devices with Dynamic Host Configuration Protocol (DHCP) to distribute and activate images
- Ability to query device inventory such as device platform name, running image, hardware information, memory size, and file system

Support for Cisco PIX Firewall

The Cisco CNS Configuration Engine v1.4 supports the Cisco Works AUS function that allows users to implement a "pull" model for a Cisco PIX Firewall to retrieve configuration and operation system images. The Cisco CNS Configuration Engine provides a secure transport through SSL between the Cisco CNS Configuration Engine and Cisco PIX firewalls and allows customers to automate deployment and retrieve configurations and software image upgrades. The Cisco CNS Configuration Engine GUI provides a template-based management tool to configure individual firewalls or groups of firewalls. The template tool provides a method to set parameters for configurations that could change from site to site. Parameter values per site are stored in the Cisco CNS Configuration Engine repository. The engine can also provide a tool to migrate a customer's data from its existing system to its Cisco CNS Configuration Engine.

A remote Cisco PIX Firewall can be configured to contact the Cisco CNS Configuration Engine at boot time or to reach the engine periodically for configuration updates and operating system image upgrades.

Features and Benefits

- Easy-to-use Web GUI with centralized template-based configuration management tool
- Automated scalable deployment solution
- Automated Cisco PIX Firewall operating system distribution to groups of Cisco PIX firewalls
- Automated Cisco PIX Device Manager upgrades to remote firewalls
- Automated configuration updates at periodic intervals to remote firewalls
- Zero-touch deployment solution for new firewall deployment
- Support for as many as 500 simultaneous requests

Device Module Development Toolkit

In today's complex heterogeneous networks, customers bring many new services to market to meet their businesses objectives. Provisioning these new services may require configuring multiple devices. Manual configuration for delivering new services is labor-intensive and slow, and leads to higher operating expenses. Having an automated, scalable solution is critical to delivering new services. Therefore, service providers have to depend on hardware or software vendors to help them automate this task.

The Device Module Development toolkit allows customers to develop their own device modules in various programming languages and to plug those modules into the Cisco CNS Configuration Engine. When the device modules are activated, customers can use the Cisco CNS Configuration Engine to automate the provisioning of new services. The Device Module Development toolkit allows customers to unify their network management infrastructures and build their networks without depending on network device vendors to automate their provisioning flow.

Features and Benefits

- Simplifies network management by provisioning Cisco devices using the Cisco CNS Configuration Engine
- Allows customers to quickly adapt the management of new types of devices added to their networks for new services
- Enables customers to use programming languages such as C++, Java, Perl, Tool Command Language, and Expect to develop device modules
- Enables customers to provision new services using device-supported management protocols (Telnet, HTTP/HTTPS, SNMP, TL1, X25)
- Enhances ease of use with well-defined API

Dynamic Templates

With the Cisco zero-touch deployment solution, service providers don't need to send highly skilled people to manually deploy new services. This feature significantly reduces operational costs and the time needed for deployment. After new services are activated, subscribers often demand additional services. These new-service requests from subscribers can come in high volumes, and service providers have to deliver the services promptly.

The dynamic template feature allows service providers not only to benefit zero-touch deployment solution to minimize deployment costs, but also provides a means to integrate zero-touch deployment solution with their own OSS applications. Service providers can define templates for different services such as activating voice applications, firewalls, VPNs, and distributing IPSec keys. Then their applications can send one event that specifies which template

should be used and where the attribute values are located. The Cisco CNS Configuration Engine dynamically builds device configurations based on that template, substitutes attribute values, and downloads service configurations to the devices.

Features and Benefits

- Provides a programmatic interface to integrate provisioning applications with the Cisco CNS Configuration Engine
- Allows users' applications to select specific templates and automate their provisioning flow to improve productivity
- Provides a scalable solution to activate value-added services

Table 1 outlines the features and benefits and the Cisco CNS Configuration Engine, and Table 2 indicates which platforms are supported.

Table 1 Cisco CNS Configuration Engine Features and Benefits

Features	Benefits
Cisco CNS Configuration Engine can support 5000 CPE devices using SSL transport	This scalable solution enables large-scale secure deployment of Cisco CPE over SSL and allows users to reduce deployment costs and time
Zero-touch deployment covers all Cisco IOS CPE	• Eliminates the need to send deployment crews and reduces new-service activation time from several weeks to a few days • Supports deployment of Cisco SOHO, 800, 1700, 2400, 2600, 2950, 3550, 3600, 3700, 7200, 7300, and 7400 series platforms across multiple access technologies (leased line, Frame Relay, ATM, cable, DSL, Ethernet, and modem)
Distribution and activation of software images to a wide variety of devices	• Improves productivity without cumbersome scripting • Devices initiate a connection to the Cisco CNS Configuration Engine, which allows configuration and image management to operate effectively through firewalls, NAT, or dynamic IP addressing environments
Device Module Development toolkit	• Uses same infrastructure for all device types • Enhances network manageability • Is protocol-independent (SNMP, HTTP, SSH, Perl, etc.)
Support for Cisco PIX devices' zero-touch deployment, incremental configuration updates, and image distribution	• Reduces deployment cost and time • Improves productivity • Provides scalable software image upgrade • Simplifies network management
Dynamic template	• Provides architecture to merge zero-touch deployment with users' OSS applications by causing the Cisco CNS Configuration Engine to access customized data (subscribers' data may change daily)

Table 2 Platforms Supported

Cisco IOS Software Platform	Minimum Cisco IOS Software Required
• Cisco SOHO Series • Cisco 800 Series Router • Cisco uBR900 Series Universal Broadband Router • Cisco 1700 Series Internet Router • Cisco IAD2400 Series Integrated Access Device • Cisco 2600 Series Router • Cisco 3600 Series Multiservice Platform • Cisco 3700 Series Multiservice Access Router • Cisco AS5300 and AS5800 series access servers • Cisco 7200 Series Router • Cisco 7300 Series Internet Router • Cisco 7400 Series Internet Router • Cisco 7500 Series Router	Cisco IOS Software releases 12.3T and 12.3M
• Cisco Catalyst® 2950 Series Intelligent Ethernet Switches • Cisco 3550 Series switches	Release 12.1(11)EA1
• Cisco 4500 Series switches, Cisco 7600 Series routers	Release 12.1(13)E
• Cisco 10000 Series routers • Cisco 10720 routers • Cisco 12000 Series routers	Release 12.0(27)S
• Cisco PIX Firewall	OS later than 6.2.1

The Cisco CNS Configuration Engine supports the following platforms through Cisco intelligent modular gateway that embedded in the Cisco CNS Configuration Engine:

- Cisco IOS Software devices
- Cisco Catalyst operating system
- Cisco CSS 11000 Series Content Services Switch
- Cisco VPN 3000 Concentrator
- Cisco Access Point
- Cisco PIX Firewall

Technical Specifications

Intel Xeon processor: 2.8 GHz

Number of processors: 1

Level 2 cache (per processor): 1 GB full-speed

SDRAM (standard/max): 512 MB/8 GB

I/O slots: 2 PCI (64-bit/33 MHz) (1 full length, 1 half length)

PCI disk controller: Integrated Ultra 320 SCSI

Internal storage (standard/max): 36.4/72.8 GB (hot-swappable disks)

Network: Dual 10/100/1000-Mbps Ethernet integrated

I/O ports: 1 serial, 3 USB, 1 RS485, keyboard, mouse, video

Remote supervisor adapter: Dialup/Ethernet function

C2T interconnect cable chaining: Simplifies installation and setup

Management: IBM Tivoli, IBM Director

Power Supply

One 200-watt power supply (115–230 VAC)

Size

Height: 1.72 in. (43.69 mm)

Depth: 25.72 in. (653.29 mm)

Width: 17.32 in. (439.93 mm)

Weight: 27.9 lb (12.7 kg) fully configured

Integrated Functions

Advanced System Management (ASM) processor with support for IBM Remote Supervisor adapter

1 Ultra 160 Small Computer Systems Interface (SCSI) controller

2 universal serial buses (USBs)

2 EIA/TIA-485 ASM processor ports

1 serial port

2 cable chaining technology (C2T) ports

Acoustical Noise Emissions

Sound power, idling: 6.1 bel maximum

Sound power, operating: 6.1 bel maximum

Sound pressure, idling: 47 decibels

Sound pressure, operating: 47 decibels

Environment

- Air temperature

Server on: 50 to 95 F (10 to 35 C); altitude 0 to 2998.7 ft (914 m)

Server on: 50 to 89.6 F (10 to 32 C); altitude 2998.7 to 6500 ft (914 to 2000 m)

Server off: 50 to 109.4 F (10 to 43 C); maximum altitude 6998.0 ft (2133 m)

- Humidity:

Server on: 8 to 80%

Server off: 8 to 80%

Heat Output

Approximate heat output in British thermal units (Btus) per hour

Minimum configuration: 273 Btus (80W)

Maximum configuration: 751 Btus (220W)

Electrical Input

Sine-wave input (50–60 Hz) required

Input voltage low range:

Minimum: 100 VAC

Maximum: 127 VAC

Input voltage high range:

Minimum: 200 VAC

Maximum: 240 VAC

Input kilovolt-amperes (kvA), approximately:

Minimum: 0.08 kvA

Maximum: 0.22 kvA

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