


Cisco IOS Software: IP Services



Today's networks must provide a flexible, scalable, and reliable network base from which new services and solutions can be deployed across the network with ease. Some of the issues that network managers face include cost containment, interoperability, rapid deployment, and quick return on investment.

The Solution—Cisco IOS Software IP Services

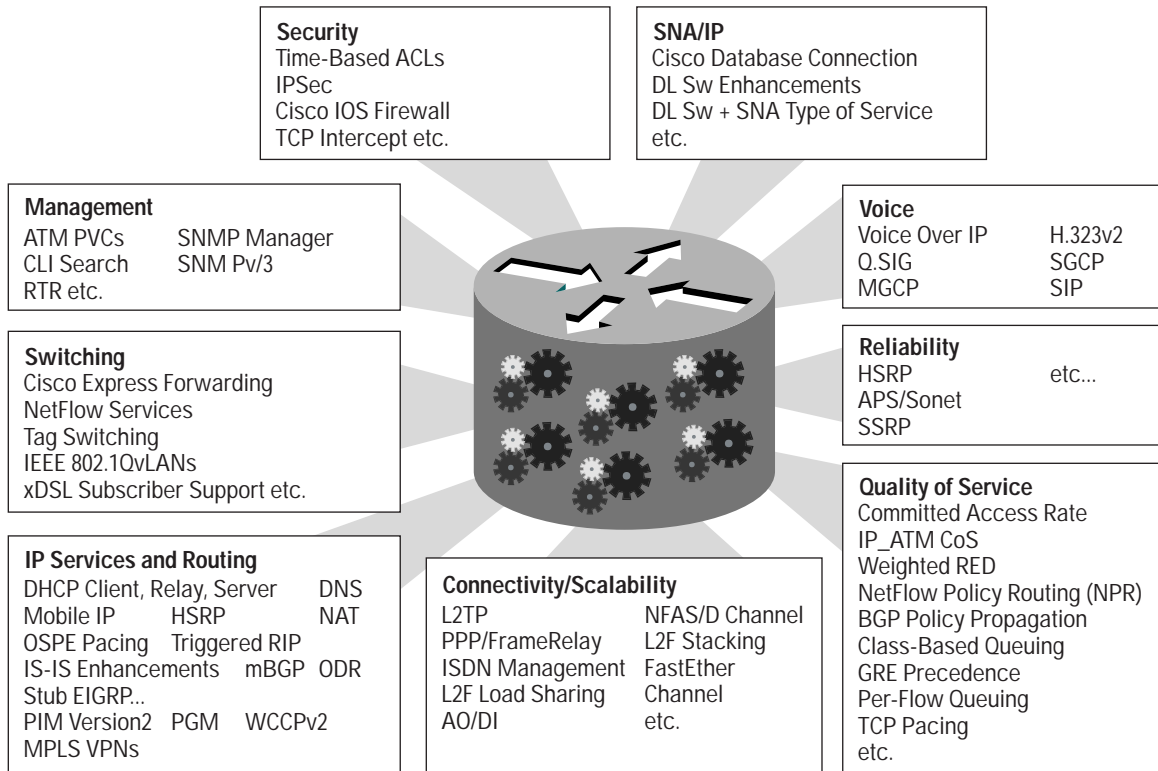
The migration to IP as the mechanism for interconnecting computers, networks, and solutions requires a strong foundation that delivers a breadth of features and provides the flexibility to enable the foundation to be adapted to today's network requirements and evolve as the network grows to meet future demands.

Cisco IOS[®] software contains a wide array of critical network services designed for flexibility, scalability, and reliability to help solve the most difficult problems facing enterprises and service providers. Customers can select the appropriate Cisco IOS software feature sets to meet their evolving network requirements. Features such as Network Address Translation (NAT), Dynamic Host Configuration Protocol (DHCP), and Hot Standby Router Protocol (HSRP) can be easily deployed individually or in combination with each other across a wide range of Cisco platforms (from the low-end Cisco 800 series to a Cisco 7500 or Layer 3 switch).

Cisco IP Services comprises many basic and advanced building blocks that enable customers to:

- Deploy an IP network with basic end-to-end IP connectivity
- Manage their IP addressing requirements from a central location
- Control the IP addressing scheme used throughout their network
- Provide redundancy at major network connection points

Figure 1 Cisco IOS Software



Cisco IOS Software IP Services:

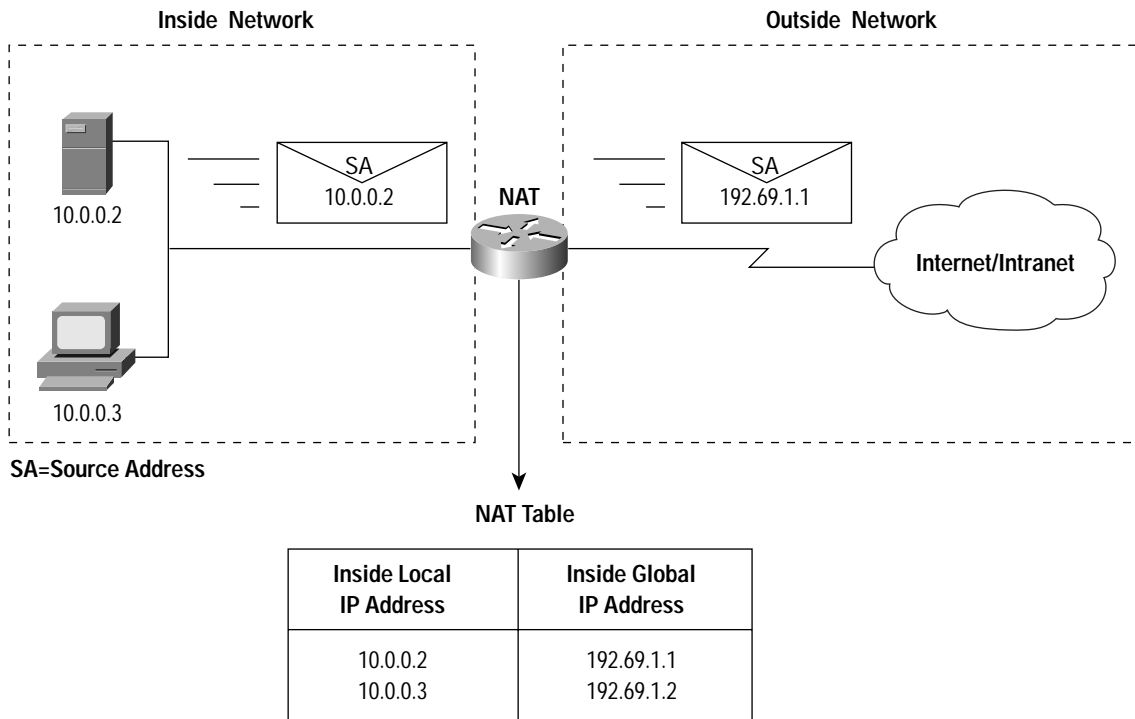
DHCP for Greater Network Serviceability

DHCP is a set of Internet standards (RFC 2131, 2132, 1534) that enable workstations and devices to request an IP address for connection to an IP network. DHCP defines three components: client, relay agent, and server. Cisco IOS software implements all three components, and customers use these components to simplify and manage the deployment of their network to both new and existing locations.

NAT for Increased Scalability

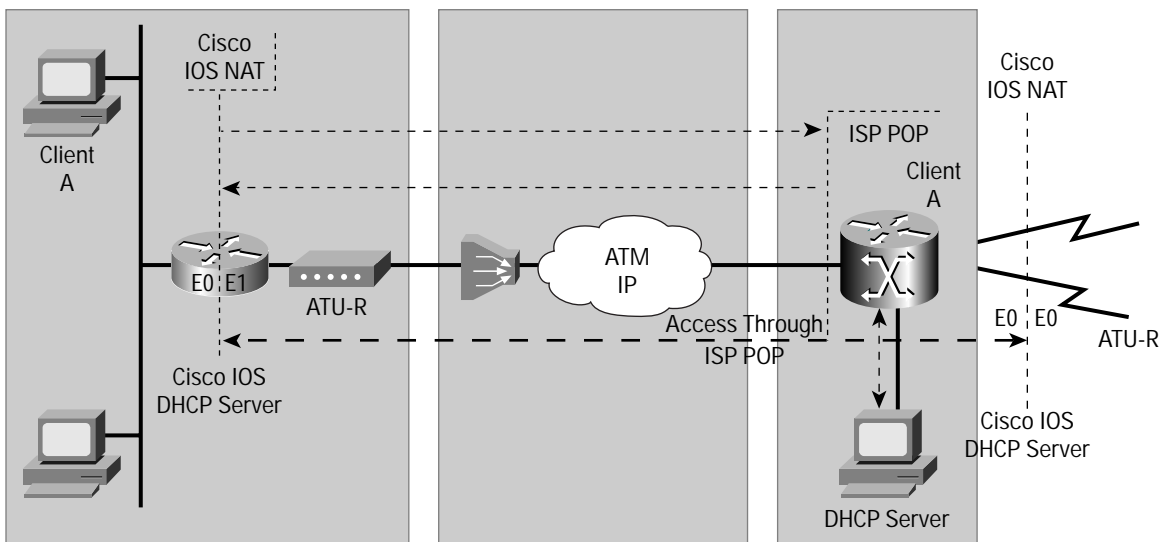
NAT is an Internet standard (RFC 1631) for translating or changing IP addressing information as it passes through an IP network. Cisco has an implementation of a super-set of the standard, and provides customers the ability to dynamically translate or statically change an IP address, as well as multiplex many users to one or a few IP addresses.

Figure 2 Network Address Translation



¥ Source Address 10.0.0.2 is Translated to 192.69.1.1
 ¥ Users in the Outside Network See User at 10.0.0.2 as 192.69.1.1

Figure 3 DHCP and NAT Working Together



NAT

- Enables a privately addressed network to access registered networks, such as the Internet, without requiring registered IP addresses on end hosts
- Enables connectivity between networks with overlapping (duplicate) private addresses
- Eliminates the need for host renumbering when changing Internet service providers (ISPs) or addressing schemes
- Enables many-to-one IP address mapping

DHCP

- Automates client and device IP address configuration, removing the requirement for manual configuration
- Enables centralized network management

HSRP

- Eliminates single point of failure at the first hop
- Provides transparent fail-over without requiring hosts to run special routing software
- Increases network availability

HSRP for High Availability

Mission-critical applications are vital to business. Network downtime can cost millions of dollars per hour in lost revenue. A reliable network starts with a good design that includes redundant systems and links. Cisco IOS software reliability services include HSRP, which provides network redundancy for IP networks in a way that ensures that user traffic will immediately and transparently recover from first-hop failures in network edge devices or access circuits. HSRP is particularly useful when users on one subnet require continuous access to resources in the network. Cisco End-to-End Solutions

Cisco internetworking devices interconnect more media types than any other networking vendor. Cisco IOS software provides an end-to-end foundation that centralizes management and configuration, enables fault-tolerant reliability, and allows networks to scale to meet the demands of network growth and emerging services and solutions.

For Additional Information

Additional information about Cisco IOS IP Services can be found at www.cisco.com or by contacting your local Cisco representative.



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