Cisco Network Registrar 7.1

Product Overview

Cisco® Network Registrar® is an IP address management application that delivers IP address management (IPAM) features to ease the task of administering Domain Name System (DNS) and Dynamic Host Configuration Protocol (DHCP) services. For enterprise customers, Cisco Network Registrar offers a user-friendly GUI coupled with a built-in, granular administrative role capability to help users focus on running their business rather than dedicating the time to managing their DNS and DHCP services. For cable providers, Cisco Network Registrar provides scalable DNS and DHCP services for millions of devices and forms the basis of a DOCSIS® cable modem provisioning system. For telecom service providers, Cisco Network Registrar is an integral part of service networks such as DSL and WiMAX as well as voice over IP (VoIP) and business services infrastructures.

Cisco Network Registrar includes a standards-compliant DNS server that offers an advanced feature set, with support for incremental zone transfers, dynamic updates, and notifications. To secure DNS services, Cisco Network Registrar supports transactional signature (TSIG) to authenticate DNS zone transfer and update requests. Cisco Network Registrar DHCP server offers DHCP safe failover with redundant DHCP servers, dynamic DNS updates, and DOCSIS cable modems and integration with directory services using Lightweight Directory Access Protocol Version 3 (LDAPv3).

The scalable deployment architecture of Cisco Network Registrar consists of several local clusters and one regional cluster. The local cluster is deployed in the network to handle DNS and DHCP services. The regional cluster is usually deployed at the data center or the network operations center (NOC) for central management of the local clusters.

The regional cluster implements many IPAM features to help users reduce operational cost. With IPAM, Cisco Network Registrar administrators can control and monitor DNS and DHCP servers from a centralized location. This capability eliminates many manual, repetitive, and error-prone tasks in configuring the local servers deployed in the network and allows for a single point of data aggregation and delegation.

Address space management simplifies the task of managing address blocks and can be exercised from the regional cluster. An address block can contain static or dynamic addresses and can have any number of child address blocks culminating in one or more subnets. An administrator can break an address block into small units and push the smaller blocks to a local cluster. Similarly, the administrator can also roll up address blocks in the local cluster under their parent to provide a unified view of the address space. Instead of traversing every single local cluster to gather subnet utilization and lease history information, Cisco Network Registrar administrators can achieve the same result from the regional cluster and thus make the task of collecting usage data simple and virtually effortless. Without an automated solution, the complexity of managing address blocks can be high, and the task can be tedious and time consuming.

The regional cluster manages and monitors the local clusters through its cluster management capability. Cluster management allows central management of address spaces and global protocol server configuration, such as policies, client classes, and scope templates. Using the web UI, the administrator at the regional cluster can add and manage a list of Cisco Network Registrar local clusters and their credentials. With this capability, Cisco Network Registrar administrators can create and manage a list of Cisco Network Registrar local clusters using the web UI on the regional cluster. To further ease the administration task, administrators can centrally manage the local clusters, such as creating, pulling, and pushing VPNs, DHCP client classes, scope templates, and policies; managing failover

pairs; and handling zone distribution. Through the web UI, Cisco Network Registrar administrators can also pull subnet utilization and IP lease history data from the local clusters.

The enhanced interface helps ease the task of name and address administration and provides task-oriented web pages for DNS and DHCP configuration. There are two configuration modes: basic and advanced. The basic mode targets initial Cisco Network Registrar setup and configuration. Instead of presenting a list of fields for the user to enter, the new user interface organizes data entry based on the tasks that are being carried out. Furthermore, to help users complete a configuration task, Cisco Network Registrar supports wizards that help users navigate through the configuration steps. Cisco Network Registrar also offers a dashboard that displays the real-time status of the DHCP and DNS servers. With the status dashboard, users can quickly glance at the Cisco Network Registrar console to see selective DHCP and DNS statistics, which can be represented in the graph of their choice. The data can act as alerts for situations that can become critical to the user's network operation and give users the opportunity to investigate and isolate the cause of the issue. To mitigate IP address scarcity and facilitate deployment of new revenue-generating services, Cisco Network Registrar offers support for DHCPv6 and DNSv6. This capability helps cable multiple service operators (MSOs) roll out services that support the DOCSIS 3.0 specification for which IPv6 is required.

Features and Benefits

Cisco Network Registrar 7.1 provides high performance and scalable DNS and DHCP services coupled with features that help customers quickly configure Cisco Network Registrar to enable IP-based services such as VoIP, wireless, LAN, and so on.

Table 1.   Features and Benefits

Feature	Benefit
Usability	
Configuration wizard	A configuration wizard helps users navigate through different Cisco Network Registrar configuration steps. With the wizard, users can easily perform DHCP and DNS configuration by entering the parameters that are essential for the configuration. This is the basic configuration mode. The advanced configuration mode is still available for users with more in-depth experience of DNS and DHCP configuration.
Real-time server status dashboard	The dashboard provides an at-a-glance, real-time indicator of the server health, system metrics, alarms and alerts, and inventories of the Cisco Network Registrar server. The dashboard displays graphs for monitoring DHCP and DNS general information, throughput, and error data that can affect network operations. To measure address usage over time, the dashboard can collect DHCP utilization information for a time period and present graphs showing trends that are useful for capacity planning.
Improved search capability	Users can search for an IP address and retrieve the relevant information associated with the address. Users can find out the current state of the address, the scope to which it belongs, and the date and time the lease was granted. Users can start the search by entering the IP address or a MAC address that is associated with the IP address.
Carrier-class lease reservation performance	For users with needs for static IP address assignment, Cisco Network Registrar can handle up to 500,000 lease reservations. Because Cisco Network Registrar supports failover deployment, the enhanced lease reservation synchronizes the lease reservation between the main and the backup server to make sure that any update to the configuration will be populated between these servers. Modification to the reserved lease configuration can be done through the web UI, a command-line interface (CLI), and the Java Software Development Kit (SDK).
Dynamic Lease Notification	With Dynamic Lease Notification, customers can have external systems notified whenever Cisco Network Registrar issues a lease. This feature is used in lawful intercept solutions and long-term storage of customer data for regulatory compliance and operational efficiency.
Licensing	
FlexLM	Cisco Network Registrar 7.1 utilizes FlexLM as the standard licensing mechanism. With the new licensing mechanism, users retrieve license entitlements from a Cisco managed repository, thus freeing customers from having to store the Cisco Network Registrar license key. The FlexLM mechanism now alerts users immediately if the number of deployed nodes in the network is about to hit the limit in their right-to-use (RTU) licenses.
Installation	
Installation wizards	To help users through the installation procedure, the wizards provide assistance on each data point or wherever a decision is required. Default configuration is available to allow users to quickly install Cisco Network Registrar. The wizards summarize and present all the entered input to users, thus effectively giving users a chance to review the configuration values before proceeding with the installation.

Installation sanity check	Cisco Network Registrar helps ensure that the server has the required minimum memory and disk capacity before allowing the installation process to move forward. The checklist includes the appropriate operating system version, hardware dependencies, and required software components like Java. If the server does not meet all the items on the checklist, the installation will not proceed, thus avoiding potential problems that might arise due to inadequate system resources.
Installation auditing	Cisco Network Registrar creates a log file that captures all the user input, responses, and error information generated during the installation. If users encounter any problem during the installation, they can diagnose the problem by reviewing the input and output information, which plays back the full installation activities.
Standard Compliance	
DHCP lease query	Cisco Network Registrar conforms to DHCP lease query per RFC 4388. This allows external devices and processes to query Cisco Network Registrar for information about a lease.
EDNS0 support	Release 7.1 Added support in the DNS implementation for Extension Mechanisms for DNS (EDNS0) as defined in RFC 2671 (not including request forwarding).
Error Handling	
Better error reporting	Cisco Network Registrar provides a consistent error reporting mechanism to help users better understand and correct any DHCP and DNS problems encountered in the network. Moreover, Cisco Network Registrar simplifies the reporting schemes by eliminating intermediate translations and highlighting the information that is essential for problem identification and correction.
IPv6	
DHCPv6 extensions	Cisco Network Registrar expands the DHCP extension capability to include support for DHCPv6. The newly added extension features assist users in classifying client types in IPv6 networks.
DHCPv6 dynamic DNS update	Dynamic DNS update per RFC 3315 is now available to allow the Cisco Network Registrar DHCPv6 server to update the DNSv6 zone and records. Users can configure dynamic DNS update through the web UI, CLI, or the Java SDK. This support simplifies the integration of DNSv6 and DHCPv6 by allowing DNS information to be updated automatically when the client receives or returns a DHCPv6 lease.
Full client-class support	Users can allow client-class processing to handle DHCPv6 clients just as they have been doing. The client-class support gives users the option to configure Cisco Network Registrar to differentiate clients and treat the clients accordingly.
DOCSIS 3.0 Support	
CableLabs® DHCPv6 options	The DOCSIS 3.0 support primarily consists of new options that users can configure from the CLI and web UI that allow Cisco Network Registrar to decode, display, and return the configured values to clients. The DOCSIS 3.0 DHCPv6 options are: • CableLabs vendor-specific information options: ○ CL_OPTION_ORO (option request) ○ CL_OPTION_TFTP_SERVERS (TFTP server addresses) ○ CL_OPTION_CONFIG_FILE_NAME (configuration file name) ○ CL_OPTION_SYSLOG_SERVERS (syslog server addresses) ○ CL_OPTION_TLV5 ○ CL_OPTION_DEVICE_ID (DOCSIS device identifier) ○ CL_OPTION_CCC (client configuration) – placeholder for PacketCable™/CableHome™ ○ Relay agent cable modem termination system (CMTS) capabilities and its suboptions (1 = DOCSIS version number) • DHCPv6 relay agent remote ID option (RFC 4649) • DHCPv6 relay agent subscriber ID option (RFC 4580) • DHCPv6 relay agent assignment notification option (draft-ietf-dhc-dhcpv6-agentopt-delegate) • DHCPv6 relay agent RADIUS attribute option (draft-ietf-dhc-v6-relay-radius) • DHCPv6 vendor-specific information PacketCable/CableHome for device class • DHCPv6 time protocol servers and time offset options (draft-ietf-dhc-dhcpv6-rfc868-servers) With support for DOCSIS 3.0, Cisco Network Registrar provides Cable MSOs the capability to roll out new revenue-generating services.

System Requirements

Table 2 lists the system requirements for Cisco Network Registrar.

Table 2.   System Requirements

Component	Recommendation
Disk	18 GB minimum, fast I/O recommended (15K RPM, SATA2/SCSI)
Operating systems	Windows 2003 Server, Solaris 10, Red Hat Enterprise Server 4 or 5
Hardware	Intel CoreDuo or equivalent for Windows and Linux, Sun T5220 for Solaris
Memory	4 GB

Ordering Information

To place an order, visit the Cisco Ordering Homepage. To download software, visit the Cisco Software Center.

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 Network Registrar, visit http://www.cisco.com/en/US/products/sw/netmgtsw/ps1982/index.html, contact your local account representative, or send an email to ask-cnr@external.cisco.com.