Release Notes for Cisco Network Registrar 7.2.0.1

Revised: September 15, 2011

This release notes describes the system requirements, new software features, and installation and upgrade notes for Cisco Network Registrar 7.2.0.1.

Contents

This release notes includes the following sections:

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Introduction

Cisco Network Registrar provides the tools to configure and control the servers necessary to manage your IP address space. This release of Cisco Network Registrar includes the following features and enhancements:

For more information about these features see the "Software Features Added in Release 7.2.0.1" section on page 9.

Before you Begin

Review the following sections before installing Cisco Network Registrar 7.2.0.1:

Note If you are migrating to Cisco Network Registrar 7.2.0.1 from an earlier version of Cisco Network Registrar, you must review the Release Notes for the releases that occurred in between, to fully understand all the changes.

Note If you are upgrading from an earlier version of Cisco Network Registrar to Cisco Network Registrar 7.2.0.1, ensure that you read the upgrade considerations (see "Upgrade Considerations" section on page 6 of this document and "Installation and Upgrade Procedure" section of *Installation Guide for Cisco Network Registrar 7.2*) thoroughly.

System Requirements

Review these system requirements before installing the Cisco Network Registrar 7.2.0.1 software:

- Java—You must have the Java Runtime Environment (JRE) 5.0 (1.5.0_06) or later, or the equivalent Java Development Kit (JDK), installed on your system. (The JRE is available from Oracle on its website.)
- Operating System—We recommend that your Cisco Network Registrar software runs on the Windows, Solaris, or Linux operating systems as described in Table 1. Cisco Network Registrar must run on 32-bit or 64-bit operating systems.

  Cisco Network Registrar now supports running in VMWARE (ESX 4.1 and 4.0) environment.

  Note Cisco Network Registrar applications are 32-bit applications and the system should support 32-bit applications (Java JRE/JDK, OpenLDAP library (for RH)).

- User Interfaces—Cisco Network Registrar currently includes two user interfaces: a Web UI and a command-line interface (CLI):
  - Web UI—Runs on Microsoft Internet Explorer 7.1, and 8.0, Mozilla Firefox 3.0 and 3.5 and requires JRE 5.0 [1.5].

    Note You can run the Web UI on Microsoft Internet Explorer 8.0 in compatibility mode alone.

  - CLI—Runs in a Windows, Solaris, or Linux command window.

    Note For the CLI, the number of concurrent active user sessions and processes on a cluster can be no more than 14.

Tip Include a network time service (such as NTP) in your configuration to avoid time differences between the local and regional clusters, so that aggregated data appears consistently at the regional server.

Table 1 Cisco Network Registrar System Recommendations

Component	Operating System		
	Solaris	Linux	Windows
OS version[1]	Solaris 10[2]	Red Hat Enterprise Linux 5.0[3]	Windows Server 2008 R2
Disk space[4]	2 x 73/146 SAS[5] drives	With basic DHCP and optimal hardware configuration: SATA[6] drives with 7500 RPM drive greater than 500 leases/second SAS drives with 15K RPM drive greater than 1000 leases/second (Recommended hard drive 146 GB)	
Memory[7]	16 GB	4 GB (small networks), 8 GB (average networks), or 16 GB (large networks)	

1. Cisco Network Registrar must run on 32-bit or 64-bit operating systems.
2. Cisco Network Registrar 7.2.0.1 supports 128-KB block sizes in the Solaris 10 ZFS.
3. Cisco Network Registrar now supports running in VMWARE (ESX 4.1 and 4.0) environment.
4. Higher I/O bandwidth usually results in higher average leases per second.
5. Serial Attached SCSI.
6. Serial Advanced Technology Attachment (Serial ATA).
7. Faster CPU and more memory typically result in higher peak leases per second.

Note Cisco Network Registrar no longer supports Windows Server 2003, Red Hat 4.0, and Solaris 8 and 9. If you are running any of these operating systems, you must upgrade to Windows Server 2008 R2, Red Hat 5.0, or Solaris 10, as appropriate, before you install or upgrade to Cisco Network Registrar 7.2.0.1. (See the "Upgrade Considerations" section on page 6.)

Software and Standards Compatibility

With the features introduced in this release, the software conforms to the following additional document:

- Support (or the option definitions) for RFC 5460.
- Support (or the option definitions) for RFC 5417
- Support for RFC 5678, RFC 5071, RFC 5969, RFC 6011, RFC 5986, and RFC 5970

Interoperability

Cisco Network Registrar 7.2.0.1 protocol servers interoperate with versions 7.1, 7.0, and 6.3.x. Cisco Network Registrar 7.2.0.1 will not support interoperability with the versions before 6.3.x.

- Cisco Network Registrar 7.2.0.1 DHCPv4 failover servers interoperate with Cisco Network Registrar 7.1.x, 7.0.x, and 6.3.x failover servers.
- By the nature of the EDNS0 protocol, Cisco Network Registrar 7.2.0.1 DNS servers interoperate with earlier versions of Cisco Network Registrar DNS (and 3rd party DNS vendors). EDNS0 defines the interoperability with DNS servers that do not support EDNS0; Cisco Network Registrar 7.2.0.1 DNS adhere to the RFC and consequently interoperate with earlier versions of Cisco Network Registrar.
- Cisco Network Registrar 7.2.0.1 HA DNS servers interoperate with Cisco Network Registrar 7.1.x, 7.0.x, and 6.3.x versions.
- Cisco Network Registrar 7.2.0.1 DDNSv6 interoperates only with Cisco Network Registrar 7.0 and Cisco Network Registrar 7.1 DNS servers because of the use of the DHCID RRs (in place of TXT RRs for DDNSv6).

Installation and Upgrade Notes

Review the following points before beginning a new installation or an upgrade. For full installation and upgrade procedures, see the *Installation Guide for Cisco Network Registrar 7.2*.

This section covers:

- General Installation, page 6
- Upgrade Considerations, page 6

For information about Network Registrar SDK, see the "About Cisco Network Registrar SDK" section on page 7.

General Installation

Refer the *Installation Guide for Cisco Network Registrar 7.2* for the detailed installation procedure. Points to remember while installing Cisco Network Registrar 7.2.0.1 are as follows:

Note Cisco Network Registrar 7.2.0.1 supports only Windows Server 2008 R2.

- The default Program files location for 32-bit OS and 64-bit OS are as follows:
  - Program files (32-bit OS)—C:\Program Files\Network Registrar\{Local | Regional}
  - Program files (64-bit OS)—C:\Program Files (x86)\Network Registrar\{Local | Regional}

  When installing Cisco Network Registrar on a 64-bit system, you must ensure that it is installed in the \Program Files (x86) area and that you specify the path to a 32-bit version of the Java Runtime Environment.
- Cisco Network Registrar includes a list of informational, activity, warning, and error messages that it logs during certain operating conditions. Obtain this list in HTML files for each component as links from a MessageIDIndex.html file, which, by default, is in:
  - Windows—C:\Program Files\Network Registrar\{Local | Regional}\docs\msgid\MessageIDIndex.html
  - Solaris and Linux—/opt/nwreg2/{local | regional}/docs/msgid/MessageIDIndex.html

Upgrade Considerations

Cisco Network Registrar no longer supports the Windows Server 2003, Red Hat 4.0, 3.0, and Solaris 8 and 9 operating systems. Backup your Cisco Network Registrar data and upgrade your operating system before installing this latest release. (See Table 1 for currently supported operating systems.)

Note When upgrading from a pre-7.2.0.1 cluster to Cisco Network Registrar 7.2.0.1, a platform-specific tool cnr_mcdexport is required. This tool can be downloaded from CCO as an archive file. The archive contains an extensive README file with specific instructions on the process to be followed.

The MCD DB database technology has been in use in Cisco Network Registrar for several earlier version. The mcdexport kit extracts the MCD DB data, which, during the upgrade procedure, is transferred to new locations.

When you install the software, the installation program automatically detects an existing version and upgrades the software to the latest release. The program first prompts you to archive existing Cisco Network Registrar data. If the program encounters errors during the upgrade, it restores the software to the earlier release.

During an upgrade, Network Registrar displays any pre-existing HTTPS configuration defaults for the keystore filename and password to enable a secure connection for web UI logins. If you have enabled HTTPS, and are unaware of the keystore filename and password at the time of the upgrade, you can preserve HTTPS connectivity during the upgrade, and re-enter the defaults when prompted.

Note The default keystore filename and password appear only if you are upgrading from Cisco Network Registrar 6.3.1 or later versions, or reinstalling the Cisco Network Registrar 7.2.0.1.

For detailed install and upgrade procedures, see "Installation and Upgrade Procedure" section in *Installation Guide for Cisco Network Registrar 7.2*.

To revert to an earlier version of Cisco Network Registrar, see the "Reverting to Earlier Product Version" procedure in *Installation Guide for Cisco Network Registrar 7.2*.

To move Cisco Network Registrar to a new machine, see the "Moving an Installation to a New Machine" procedure in *Installation Guide for Cisco Network Registrar 7.2*.

About Cisco Network Registrar SDK

This section documents how to install the Cisco Network Registrar SDK and details the compatibility considerations. The following are the topics covered in this section:

- Installing Cisco Network Registrar SDK
- Compatibility Considerations

Installing Cisco Network Registrar SDK

This section documents how to install the Cisco Network Registrar SDK on the Linux, Solaris, and Windows platforms. Before installing the SDK, ensure that you have Java Runtime Environment (JRE) 5.0 (1.5.0_06) or later, or the equivalent Java Development Kit (JDK), installed on your system.

Installing on Linux or Solaris

To install the Cisco Network Registrar SDK on a Linux or Solaris platform:

Step 1 Extract the contents of the distribution .tar file.

a. Create the SDK directory:

```
% mkdir /cnr-sdk
```

b. Change to the directory that you just created and extract the .tar file contents:

```
% cd /cnr-sdk
% tar xvf sdk_tar_file_location/cnrsdk.tar
```

Step 2 Export your LD_LIBRARY_PATH and CLASSPATH environment variable:

```
% export LD_LIBRARY_PATH=/cnr-sdk/lib
% export CLASSPATH=/cnr-sdk/classes/cnrsdk.jar:.
```

Installing on Windows

To install the Cisco Network Registrar SDK on a Windows platform:

Step 1 Extract the contents of the distribution .tar file.

a. Create the SDK directory:

```
> md c:\cnr-sdk
```

b. Change to the directory that you just created and extract the .tar file contents:

```
> c:
> cd \cnr-sdk
> tar xvf sdk_tar_file_location\cnrsdk.tar
```

You may optionally use Winzip to extract cnrsdk.tar to the C:\cnr-sdk directory.

Step 2 Set your PATH and CLASSPATH variables:

```
> set PATH=%PATH%;c:\cnr-sdk\lib
> set CLASSPATH=c:\cnr-sdk\classes\cnrsdk.jar;.
```

Testing Your Installation

On Linux or Solaris, the following test program verifies that you have set your PATH or LD_LIBRARY_PATH correctly:

```
% java -jar /cnr-sdk/classes/cnrsdk.jar
```

On Windows, the following test program verifies that you have set your CLASSPATH correctly:

```
> java -jar c:\cnr-sdk\classes\cnrsdk.jar
```

Compatibility Considerations

For Java SDK client code developed with an earlier version of the SDK, you can simply recompile most code with the latest JAR file to connect to an upgraded server.

But in cases where the client code for versions before 7.1 directly manipulates reservation lists in scopes or prefixes, changes are required. These changes are required because the embedded reservation lists in both scopes and prefixes are no longer used. Beginning with version 7.1, individual reservations are stored separately and reference the parent scope or prefix by name.

The new design provides the following benefits:

- Reservation edits (add/modify/delete) do not require a scope or prefix edit.
- Reservations can be indexed directly to allow quick search and retrieval.
- Edits to scopes or prefixes with a large number of reservations no longer result in large scope or prefix change entry logs.

No changes are required for client code that adds or removes reservations using the addReservation or removeReservation methods. However, these methods are now deprecated because the edit functionality is replaced and extended by the general addObject, modifyObject, removeObject, addObjectList, modifyObjectList, and removeObjectList methods.

Software Features Added in Release 7.2.0.1

This section describes the most important changes made in the Cisco Network Registrar 7.2.0.1.

Key Defects fixed in this release

The following key defects are resolved in this release:

CSCsj27431 - CNR-SDK JNI should use Java's memory allocation.

Problem

The CNR-SDK JNI layer, which calls native C/C++ library routines, does not make use of Java's memory allocation functions but instead uses the C RTL malloc/free routines. The Java objects that hold references to the native CNR C/C++ library objects are extremely small and references huge amounts of memory.

This has implications for users of the CNR-SDK as Java is not aware of this usage and it does not run garbage collection.

Hence, Java applications use up a lot of memory, but relatively little Java memory.

Solution

Changes have been made to the CNR SDK which cause CNR SDK functions, by default, to exclusively allocate memory from the Java heap.

Earlier, the SDK dynamically allocated memory using both the C run time library (RTL) and Java heap management. In some cases, small Java objects allocated by the CNR SDK would maintain handles to larger memory blocks allocated through the C RTL memory management interface.

The Java VM would be aware of the smaller blocks allocated from the Java heap, but would not be aware of the larger blocks allocated through the C RTL, and so would not consider the larger blocks when performing garbage collection. A long-running application could thus grow to consume large amounts of memory before Java VM garbage collection was triggered.

Note SDK allocation of memory from the Java heap is now enabled by default.

To revert to previous behavior and have the SDK allocate memory using the C RTL, specify the SCPLIB_NO_JAVA_HEAP flag to the init method of the ScpLib object during SDK initialization:

ScpLib.init(ScpLib.SCPLIB_NO_JAVA_HEAP);

This method must be invoked before any other CNR SDK methods are invoked.

Note Use of Java heap memory management in place of C RTL memory management will likely affect the performance, maximum memory consumption, and memory consumption behavior of CNR SDK applications in ways which are difficult to predict in advance. Furthermore, behavior will vary among different Java VM implementations and even between different versions of one Java VM. SDK application developers should monitor the performance and memory consumption of their application when using the default (Java heap-based) memory management method in the CNR SDK.

Other techniques to reduce SDK application memory consumption are:

- Application variables which are no longer needed should be unreferenced.
- Java garbage collection should be explicitly invoked periodically by the application, through invocation of *System.gc()*.
- Cursoring methods may be used in place of lists to reduce the number of objects actively processed.

SDK applications which periodically invoke *System.gc()* to control memory use may potentially be modified to eliminate or reduce the frequency of those invocations. However, if the SDK library is initialized to use C RTL allocation (*ScpLib.init(ScpLib.SCPLIB_NO_JAVA_HEAP) invoked*), then invocations of *System.gc()* used to control memory use should be retained.

CSCts09966 - Failover sync fails to match all scopes to failover pair

Problem

Scopes are skipped if there is a secondary scope with a lower subnet address and a higher primary-subnet address than the scope subnet address.

Solution

Use the '*SyncFailoverScopes*' SDK command-line utility program to sync the scopes, before running CCM failover synchronization.

CSCts22441 - CNR SNMP Agent does not support the .0 instance identifier

Problem

The CNRSNMP agent will report that the OID.0 (OID.<zero>) instance of an object does not exist whereas RFC 1157 indicates that it should be possible to ask for OID and OID.0 interchangeably.

Solution

Behaviour of snmp server is changed to handle an instance identifier of "0" when appropriate.

Note For the complete list of defects resolved in this release, see the cnr_7_2_0_1-buglist.pdf file included with the release.

Client Reservations

Client reservations feature enables you to supply addresses and delegate prefixes through client entries (either stored directly by Cisco Network Registrar or in LDAP) or through extensions. Also, a client can be located on more than a single scope or prefix and the server will select the address appropriate to the location of the client.

For more details, see "Using Client Reservations" in the Managing Leases chapter of the *User Guide for Cisco Network Registrar 7.2*.

Support Bulk Leasequery in v6

Bulk Leasequery for DHCPv6 is now implemented based on IETF RFC 5460.

For more details, see the "Leasequery for DHCPv6" section in the Managing Leases chapter of the *User Guide for Cisco Network Registrar 7.2*.

Database Changes

Raima DB is removed from Cisco Network Registrar software. Some of the data (DHCP Client entry and DHCP state data) will be relocated to the new Oracle Berkeley DBs, and the remaining MCD DB data will be relocated to the existing Oracle Berkeley DB.

For more details, see the "Backup and Recovery" chapter of the *User Guide for Cisco Network Registrar 7.2*.

External Authentication and Authorization

Cisco Network Registrar includes a RADIUS client component, which is integrated with the authentication and authorization module of the Central Configuration Management (CCM) server. You can configure a list of external RADIUS servers to be used for external authorization at local and regional clusters.

For more details, see the "Configuring External Authentication Servers" section in the Configuring Administrators chapter of the *User Guide for Cisco Network Registrar 7.2*.

Lease History Enhancements

Using Cisco Network Registrar 7.2.0.1, you can search for leases, server-wide. Following are the lease history enhancements introduced in Cisco Network Registrar 7.2.0.1:

- DHCPv6 lease history support
  - You can enable DHCPv6 lease history by configuring the ip-history attribute of DHCP server to both (for DHCPv4 and DHCPv6 lease history) or v6-only (for only DHCPv6 history).

Note Cisco Network Registrar 7.2.0.1 do not offer detailed lease history for DHCP v6. ip-history-detail of dhcp server applies only to DHCP v4.

- Lease history search function now made available at both local and regional cluster whereas the active lease search function is available only at the local cluster. The search function is provided separately for DHCPv4 and DHCPv6 leases.

For more details, see the "Managing Leases" chapter of the *User Guide for Cisco Network Registrar 7.2*.

Virtual Appliance

The Cisco Network Registrar application can run on virtual machines. The purpose of this is to package Cisco Network Registrar to run as a virtual appliance. The Cisco Network Registrar Virtual Appliance consists of a virtual machine which contains a guest operating system and a version of Cisco Network Registrar installed on top of that guest operating system.

For more details, see the "Virtual Appliance" section of the *User Guide for Cisco Network Registrar 7.2*. For details regarding installing and upgrading Virtual Appliance, see *Installation Guide for Cisco Network Registrar 7.2*.

Multi-Tenancy

The multi-tenant architecture of Cisco Network Registrar provides the ability to segment the data created on regional and local clusters by tenant. When tenants are defined, data is partitioned by tenant in the embedded databases of each cluster. This provides data security and privacy for each tenant, while allowing cloud or managed service providers the flexibility to consolidate many smaller customer configurations on a set of infrastructure servers, or distribute a larger customer configuration across several dedicated servers.

Note Only newly created data can be assigned to a tenant. To migrate an existing local Cisco Network Registrar to a tenant, first upgrade to the 7.2.0.1 release, and use the cnr_exim tool to move the data from core to the tenant.

For more details, see the "Configuring Administrators" chapter of *User Guide for Cisco Network Registrar 7.2*.

DB_CONFIG files in the CNRDB database

CNR now creates a DB_CONFIG file in the CNRDB database directories. The DB_CONFIG files provide the linkage to the log subdirectory that contains the database log files. These DB_CONFIG files must not be deleted. In addition, you must not copy the log files to the database directory before performing database operations (as described in the "Backup and Recovery" chapter of the *User Guide for Cisco Network Registrar* for versions before 7.2.0.1).

New Platform Support

Cisco Network Registrar 7.2.0.1 supports Windows Server 2008 R2. Cisco Network Registrar 7.2.0.1 does not support Windows Server 2003, Red Hat Enterprise Linux 4.0, and Solaris 8 and 9 operating systems.

Initial Administration User

Cisco Network Registrar no longer creates a default username (admin) and password (changeme). You have to create a new superuser after adding the license during the time of installation of Cisco Network Registrar or when you login to Cisco Network Registrar for the first time after installation (if you did not provide the license at the time of installation but still went ahead with installation). For details, see the *Installation Guide* and *User Guide for Cisco Network Registrar 7.2*.

Privacy Protection

Two attributes lease-retention-max-age and lease-retention-min-age are added to specify the lease date restrictions. When these attributes are enabled, the times in leases will be restricted between the lease-retention-min-age and lease-retention-max-age. This can be used to meet data retention restrictions for privacy protection. For details, see the *User Guide for Cisco Network Registrar 7.2*.

Limitations and Restrictions

This section describes limitations and restrictions you might encounter using Cisco Network Registrar 7.2.0.1.

- The Regional Pull Replica Address Space fails when reservations are being pulled for new failover-pair objects. This problem occurs only if there is a new failover-pair and one or more reservations associated with that failover-pair.

  To workaround this issue, repeat the operation twice—first checking Omit Reservations and then without checking Omit Reservations. After the failover-pairs have been pulled, subsequent pull replica address space operations will work correctly.

- In situations where a DHCPv6 server supports clients with multiple leases, the demand on server memory increases. DHCPv4 supports only one lease per client, while DHCPv6 supports multiple leases. Therefore, a server running DHCPv6 cannot support as many leases (clients) as the same server running DHCPv4. For example, one DHCPv6 client might require 2,500 bytes of space compared to 1,000 bytes per DHCPv4 client. This means that a machine that would support one million DHCPv4 clients supports only 400,000 DHCPv6 clients. We recommend that you allow three times the memory for DHCPv6 clients as you would for DHCPv4.

  You must:

  - Be aware of how many prefixes per link are configured. If the configuration has two prefixes on a link, then with default configuration parameters, you have to cut in half the number of clients.
  - Use care if you enable inhibit-all-renews. When enabled, each client would use at least two leases, and perhaps three, depending on the grace and affinity times per prefix.

Important Notes

This section contains important information related to this software release that was unavailable when the user documentation was completed. This section describes:

- Displaying Cisco Network Registrar Processes that are Running
- Turning off Cisco Network Registrar Processes, page 16
- Changes to client_mac_addr Attribute, page 16

Displaying Cisco Network Registrar Processes that are Running

To display the Cisco Network Registrar processes that are running in Linux or Solaris platform, do the following:

Step 1 Run the cnr_status script to determine the process IDs (pid) of the running Cisco Network Registrar processes, in your install path.

```
# install-path/[local|regional]/usrbin/cnr_status
```

Step 2 Run the following command to display the ports that are open for IPv4 ports. The ports and the associated processes are listed based on pid.

```
# lsof -i4
```

Run the following command to display the ports that are open for IPv6 ports. The ports and the associated processes are listed based on pid.

```
# lsof -i6
```

Step 3 Compare the pids in Step 1 and the pids in Step 2, to determine all the open ports from any Cisco Network Registrar process.

To display the Cisco Network Registrar processes that are running in Windows platform, do the following:

Step 1 Run the following command:

```
> wmic process get name,processid,parentprocessid
```

Step 2 Find the process cnrservagt, and determine its process ID from the processid column.

Step 3 Find all the processes which have the process ID of cnrservagt in the ParentProcessId column. These are the processes that are specific to Cisco Network Registrar (including the process cnrservagt).

The cnrservagt process is the process which is the parent of all of the other processes in Cisco Network Registrar.

Step 4 Enter the following command:

```
> netstat -ao
```

This lists the open ports based on the process ID. Use the process IDs determined from Step 3 to access the information that results from running the above command netstat -ao, to determine all the open ports from any process that is a part of the Cisco Network Registrar.

You can also get some information about the running Cisco Network Registrar processes on all platforms using the Web UI Dashboard. The Dashboard element **System Metrics** displays some information about the Cisco Network Registrar processes that are running.

Turning off Cisco Network Registrar Processes

In earlier versions of Cisco Network Registrar, the **nrcmd** program had the *server* **disable start-on-reboot** and *server* **enable start-on-reboot** commands to control whether the DHCP, DNS, SNMP, and TFTP servers are started automatically or not.

With Cisco Network Registrar 7.2.0.1, **nrcmd** has the (expert mode, visibility 3) **server-agent** command which can be used to control the various processes that Cisco Network Registrar runs. For example:

```
nrcmd> session set visibility=3
100 OK
nrcmd> server-agent dhcp get enabled
100 Ok
enabled=true
nrcmd> server-agent dhcp disable enabled
100 Ok
nrcmd> dhcp get start-on-reboot
100 Ok
start-on-reboot=disabled
nrcmd> server-agent dhcp enable enabled
100 Ok
nrcmd> dhcp get start-on-reboot
100 Ok
start-on-reboot=enabled
```

The available servers here are dhcp, dns, ric, snmp, tftp, and tomcat. The Cisco Network Registrar cnrservagt and ccmsrv processes are not optional and should always be run.

Note You should use the approach appropriate for your operating system to turn off the other unneeded services that are not required.

Changes to client_mac_addr Attribute

In earlier releases of Cisco Network Registrar, the Dynamic Lease Notification Client used to throw an exception when adding lease data if the MAC address length was more than six bytes. This was because the database field for the *client_mac_addr* attribute could accommodate only six-byte MAC addresses.

From Cisco Network Registrar 7.2.0.1, the Dynamic Lease Notification Client allows adding lease data for the full range of the possible chaddr field lengths (up to 16 bytes).

Note You should not use pre-existing databases with the 7.2.0.1 version of the Dynamic Lease Notification Client because a different exception, 'Data too long for column *client_mac_addr'*, may occur if an attempt is made to store a longer than six byte *client_mac_addr* value.

Defects

You can find the complete list of resolved and known bugs in the cnr_7_2_0_1-buglist.pdf file included with the release. Refer to this list especially for information about fixes to customer-reported issues.

Product Documentation

Note We sometimes update the electronic documentation after original publication. Therefore, you should also review the documentation on Cisco.com for any updates.

Table 2 describes the product documentation that is available. You can view the marketing and user documents for Network Registrar at: http://www.cisco.com/en/US/products/sw/netmgtsw/ps1982/index.html.

Table 2 Product Documentation

Document Title	Available Formats
Documentation Guide for Cisco Network Registrar 7.2	• PDF on the product CD-ROM • On Cisco.com: http://www.cisco.com/en/US/products/sw/netmgtsw/ps1982/products_documentation_roadmaps_list.html
User Guide for Cisco Network Registrar 7.2	• PDF on the product CD-ROM • On Cisco.com: http://www.cisco.com/en/US/products/sw/netmgtsw/ps1982/products_user_guide_list.html
Installation Guide for Cisco Network Registrar 7.2	• PDF on the product CD-ROM • On Cisco.com: http://www.cisco.com/en/US/products/sw/netmgtsw/ps1982/prod_installation_guides_list.html
Quick Start Guide for Cisco Network Registrar 7.2	• PDF on the product CD-ROM • On Cisco.com: http://www.cisco.com/en/US/products/sw/netmgtsw/ps1982/prod_installation_guides_list.html
CLI Reference Guide for Cisco Network Registrar 7.2	• As an HTML document that you can view in your web browser when you install the software. The document is available at **All Programs > Network Registrar 7.2.0.1 >Network Registrar 7.2.0.1 CLI Reference Guide**. • On Cisco.com: http://www.cisco.com/en/US/products/sw/netmgtsw/ps1982/prod_command_reference_list.html
Release Notes for Cisco Network Registrar 7.2.0.1 (This document)	• It is available on Cisco.com: http://www.cisco.com/en/US/products/sw/netmgtsw/ps1982/prod_release_notes_list.html
Cisco Network Registrar 7.2 Third Party and Open Source Licenses and Notices	• PDF on the product CD-ROM • On Cisco.com: http://www.cisco.com/en/US/products/sw/netmgtsw/ps1982/prod_release_notes_list.html
Online Help	• Choose **Help > Help Contents** in the main menu to view the entire help contents

Obtaining Documentation and Submitting a Service Request

For information on obtaining documentation, submitting a service request, and gathering additional information, see the monthly *What's New in Cisco Product Documentation*, which also lists all new and revised Cisco technical documentation, at:

http://www.cisco.com/en/US/docs/general/whatsnew/whatsnew.html

Subscribe to the *What's New in Cisco Product Documentation* as a Really Simple Syndication (RSS) feed and set content to be delivered directly to your desktop using a reader application. The RSS feeds are a free service and Cisco currently supports RSS version 2.0.

This document is to be used in conjunction with the documents listed in the "Product Documentation" section.