Installation Requirements

This chapter contains the following sections:

System Requirements

Review the system requirements before installing the Cisco Prime Network Registrar 8.3.6 software:

- Java—You must have the Java Runtime Environment (JRE) 1.6 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 Prime Network Registrar machine run on the Windows, Solaris, or Linux operating systems as described in the "*Server Minimum Requirements*" table below. Cisco Prime Network Registrar is supported on 32-bit or 64-bit operating systems.

  Cisco Prime Network Registrar supports running in VMWARE ESXi 5.0 or later environment.

  Note　For Windows, Solaris, and the 32-bit Linux kit, Cisco Prime Network Registrar applications are 32-bit executable programs and the system should support 32-bit applications (Java JRE/JDK, OpenLDAP library (for RedHat)).

  For the 64-bit Linux kit, Cisco Prime Network Registrar applications are 64-bit executable programs and require the 64-bit operating system and applications (Java JRE/JDK, OpenLDAP library).

- User Interface—Cisco Prime Network Registrar currently includes two user interfaces: a web UI and a CLI:

  - The web UI has been tested on Microsoft Internet Explorer 9 and Mozilla Firefox 21 and later. Internet Explorer 8 is not supported.

  - The CLI runs in a Windows, Solaris, or Linux command window.

Tip Include a network time service in your configuration to avoid time differences between the local and regional clusters. This method ensures that the aggregated data at the regional server appears consistently. The maximum allowable time drift between the regional and local clusters is five minutes. If the time skew exceeds five minutes, then the installation process will not be able to correctly register the server with the regional. In this case, unset and set the password on the regional cluster, and sync again.

Table 1: Cisco Prime Network Registrar Server Minimum Requirements

Component	Operating System		
	Solaris[1]	Linux	Windows
OS version[2]	Solaris 10	RHEL/CentOS 6.5 or later 6.x or 7.x [3]	Windows Server 2008[4]
Disk space[5]	2 x 73/146 SAS drives[6]	With basic DHCP and optimal hardware configuration: • For expected peak load between 500 and 1000 DHCP leases per second, 7500 RPM SATA[7] drives are recommended. • For expected peak load above 1000 DHCP leases per second, 15000 RPM SAS drives are recommended. Recommended hard drive-146 GB	
Memory[8]	16 GB	Small networks-4 GB, Average networks-8 GB, or Large networks-16 GB **For 64-bit Install:** Small networks-8 GB, Average networks-16 GB, or Large networks-32 GB	

[1] Cisco Prime Network Registrar 8.3.6 supports Solaris Sparc only, 128-KB block sizes in the Solaris 10 ZFS and running in Solaris LDOM environments.

[2] Cisco Prime Network Registrar is supported on 32-bit and 64-bit operating systems. We highly recommend customers move to a 64-bit operating system.

[3] Cisco Prime Network Registrar 8.3.6 supports Red Hat Enterprise Linux ES 6.5, running standalone or on VMWare (ESX Server 5.5 or later) on Cisco Unified Computing System (CUCS) and other hardware supported by VMWare.

[4] Cisco Prime Network Registrar 8.3.6 supports Windows Server 2008, running standalone or on VMWare (ESX Server 5.5 or later) on Cisco Unified Computing System (CUCS) and other hardware supported by VMWare.

[5] Higher I/O bandwidth usually results in higher average leases per second.

[6] Serial Attached SCSI.

[7] Serial Advanced Technology Attachment (Serial ATA).

[8] Faster CPU and more memory typically result in higher peak leases per second.

Note   CPNR is a user mode application and it should run on any RHEL/CentOS systems where RHEL/CentOS indicates capability for applications built on RHEL/CentOS 6.5.

System Requirements for Linux OS (RH6.5 and CentOS 7.4 with 32-bit CPNR Kit)

The Linux OS has the following (32-bit) packages. To support External Authentication using AD feature ensure installation of the following:

- krb5-libs

- cyrus-sasl-gssapi

System Requirements for Red Hat Enterprise Linux ES 6.5 (64-bit with 32-bit CPNR Kit)

To run Cisco Prime Network Registrar (32-bit Kit) on Red Hat Enterprise Linux ES 6.5 (64-bit), ensure the following:

1. The Linux operating system has the following packages to support the Cisco Prime Network Registrar (32-bit) applications:

   - glibc.i686

   - libgcc.i686

   - glibc-common

   - libstdc++

   - compat-libstdc++

   - cyrus-sasl-lib

2. Java Runtime Environment (JRE) (32-bit) is installed along with the dependencies.

System Requirements for Red Hat Enterprise Linux ES 6.5 (64-bit with 64-bit CPNR Kit)

To run Cisco Prime Network Registrar (64-bit kit) on Red Hat Enterprise Linux ES 6.x (64-bit), ensure that the Java Runtime Environment (JRE) (64-bit) is installed along with the dependencies.

Recommendations

When Cisco Prime Network Registrar is deployed on virtual machines, review the following recommendations:

- Do NOT deploy HA DNS or DHCP failover partners on the same physical server (in separate VMs). This will not provide high availability when the server goes down. Ideally, the high available/failover partners should be sufficiently "separate" that when one fails (because of a hardware, power, networking failure), the other does not.
- When deploying multiple CPNR VMs on the same physical server (or servers served by a common set of disk resources), you should stagger the automatic nightly shadow backups (by default, they occur at 23:45 in the server's local time). To know how to alter this time, see the *"Setting Automatic Backup Time" section in Cisco Prime Network Registrar 8.3 Administrator Guide*.

> **Note** It may be acceptable to not follow the above recommendations for lab environments; but they must be followed for production.

Installation Modes

The modes of installation that exist for the local and regional clusters are new installations and upgrades from a previous version. These installations or upgrades are performed by using operating system-specific software installation mechanisms:

- Windows—**InstallShield** setup program
- Solaris—**pkgadd** command
- Linux—**install_cnr** script that uses Red Hat Package Manager

License Files

Cisco Prime Network Registrar license is a perpetual license. The license enables specific components which you have licensed.

Previously, Cisco Network Registrar was licensed as a single system with a single license type called ip-node. For Cisco Prime Network Registrar 8.3.6, the licensing is done according to the services that you require. The following are the types of licences available:

- base-system—Licenses the CCM services. This license is mandatory if you want to run Cisco Prime Network Registrar.
- base-dhcp—Licenses DHCP/TFTP services and, optionally, an initial count of leases
- base-dns—Licenses authoritative DNS services and, optionally, an initial count of RRs
- base-cdns—Licenses caching DNS services and, optionally, an initial count of servers
- count-dhcp—Licenses an incremental number of active leases
- count-dns—Licenses an incremental number of RRs
- count-cdns—Licenses an incremental number of caching server instances

The different services provided by Cisco Prime Network Registrar are associated with the different license types as follows:

- CCM services—base-system
- DHCP services—base-dhcp and count-dhcp
- Authoritative DNS services—base-dns and count-dns
- Caching DNS services—base-system and base-cdns

Note You should have at least one base license for a server to enable that service.

Note Cisco Prime Network Registrar IPAM uses a separate license and install process. For more information, see *Cisco Prime Network Registrar 8.3 IPAM Installation Guide.*

License management is done from the regional cluster when Cisco Prime Network Registrar is installed. You must install the regional server first, and load all licenses in the regional server. When you install the local cluster, it registers with regional to obtain its license.

When you install the regional, you are prompted to provide the license file. You can store the license file in any location provided the location and file are accessible during the installation.

The utilization of licenses are calculated by obtaining statistics from all the local clusters in the Cisco Prime Network Registrar system for all counted services (DHCP, DNS, and CDNS). The regional CCM server maintains the license utilization history for a predetermined time period.

Utilization is calculated for different services as:

- DHCP services—total number of active DHCP leases (including v4 and v6)

- Auth DNS services—the total number of DNS resource records (all RR types)

- Caching DNS services—total number of Caching DNS servers being run in the Cisco Prime Network Registrar system

The services on each local cluster will be restricted based on the services for which licenses are present.

When you configure DHCP failover, only simple failover is operational and supported (see Failover scenarios section in the Configuring DHCP Failover chapter of the *Cisco Prime Network Registrar 8.3 DHCP User Guide*).

To learn about obtaining the license files for Cisco Prime Network Registrar, see Obtaining Cisco Prime Network Registrar License Files.

Market Segment Specific Licensing

From release 8.1.2, Cisco Prime Network Registrar license types are offered specific to market segments. Market specific licensing generates license keys for use by market segments, that is, Service Provider, Smart Grid, and so on. Cisco Prime Network Registrar features are enabled based on the market segment specific license you choose. For example, the PNR license offers features designed for the Service Provider market segment whereas the PNR-SG license offers features designed for the Smart Grid market segment.

Cisco Prime Network Registrar offers the following market segment specific licenses:

- Prime Network Registrar—PNR

- Prime Network Registrar Connected Grid—PNR-SG

- Prime IP Express—PNR—ENT

Note If the licenses for all market segments are installed, then only the PNR license will be active.

The regional server which uses the PNR-SG license can be converted to PNR by installing the PNR license. Local cluster licenses will be converted automatically at the next compliance check, or can be manually updated by resynchronizing the local cluster.

For a given market segment license, only the counts from corresponding market segment license will apply. For example, if the PNR count license is applied when the PNR-SG base license is active, the Right to Use count will not be updated. If the PNR-SG count license is applied when the PNR base license is active, the Right to Use count will not be updated.

PNR Licenses

The PNR license provides all the features available for the Cisco Prime Network Registrar release you install. If your license set was issued for a release before 8.1.2, it is a PNR license.

PNR-SG Licenses

The PNR-SG license disables the following PNR features which have been identified as not necessary for Smart Grid implementations:

- Tenants

- External Authentication

The DHCP service PNR-SG license offers you the PNR features with the exception of:

- Extensions

- Lightweight Directory Access Protocol (LDAP)

- TCP Listeners (client notification)

- Trivial File Transfer Protocol (TFTP)

- Router Interface Configuration (RIC)

- Regional lease history and subnet utilization

- BYOD

Prime IP Express—NETREG-ENT license

To know the list of features supported by Prime IP Express—NETREG-ENT licenses see *Cisco Prime IP Express Installation Guide*.