Monitoring Servers Using Admin UI

This chapter describes how you can monitor the performance of the RDU and DPE servers in a Prime Cable Provisioning deployment. These servers are the central RDU server and the DPE servers.

You can check server statistics from the:

- Monitoring Servers Using Admin UI, on page 1

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You can check server statistics from the:

Using Admin UI

To view server statistics available on the Admin UI:

1. Click **Server**.

   You get the options: Device Provisioning Engine, Network Registrar DHCP, Provisioning Groups, and Regional Distribution Unit.

2. Click the:

   - Device Provisioning Engine to monitor all DPEs currently registered in the Prime Cable Provisioning.
   - Network Registrar DHCP to monitor all the Network Registrar extension points that have been registered with the RDU.
   - Provisioning Groups to monitor all current provisioning groups.
   - Regional Distribution Unit tab to display Regional Distribution Unit (RDU) status and statistics.

This section describes the Prime Cable Provisioning server pages:

- Monitoring RDU
- Monitoring Provisioning Groups
- Monitoring DPE

- Monitoring CPNR Extension Points

Monitoring RDU

The RDU option, from the Servers menu (**Servers > Regional Distribution Unit**), displays details of the RDU as described in the following table.

Table 1: View Regional Distribution Unit Details Page

Field or Button	Description
Regional Distribution Unit Details	
Host Name	Identifies the hostname of the system that is running the RDU.
Port	Identifies the RDU listening port number for connections from DPEs. The default port number is 49187, but you can select a different port number during RDU installation.
SSL Port	Identifies the port number used for Secure Socket Layer (SSL) communication.
Secure Communication	Identifies if the communication between the RDU and other servers uses any shared secret for encryption and decryption.
Unsecure Communication	Identifies if the communication between the RDU and other servers uses any shared secret for encryption and decryption.
IP Address	Identifies the IP address assigned to the RDU.
Properties	Identifies the properties configured for the RDU.
Version	Specifies the version of RDU software currently in use.
UpTime	Specifies the total time that the RDU has been operational since its last period of downtime.
State	Identifies whether the RDU is ready to respond to requests. The only state visible on the administrator user interface is Ready.
PACE Statistics	
Batches Processed	Identifies how many individual batches have been processed since the last RDU startup.
Batches Succeeded	Identifies how many individual batches have been successfully processed since the last RDU startup.

Field or Button	Description
Batches Dropped	Identifies how many batches have been dropped since the last RDU startup.
Batches Failed	Identifies how many batches have failed processing since the last RDU startup.
Average Processing Time	Identifies the average time, in milliseconds, that it takes to process the batch excluding the time it spends in the queue if the RDU is too busy.
Average Batch Processing Time	Identifies the average time, in milliseconds, that it takes to process the batch including the time it spends in the queue if the RDU is too busy.
Log Files	
RDU Log File	Features the View Details icon, that, if clicked, displays the View Log File Contents page, which provides details of the *rdu.log* file.
Audit Log File	Features the View Details icon, that, if clicked, displays the View Log File Contents page, which provides details of the *audit.log* file.
Device Statistics **Note** The Device Statistics section appears only when the appropriate devices are present.	
	Identifies the number of devices in the RDU database. The information presented in this area depends on the technologies licensed and configured. These devices may include: • DOCSIS Modems • Computers • PacketCable • CableHome WAN-Data/WAN-MAN devices • STBs • eRouter • RPD
Note If you have installed JAR files, information on the installed extension JAR files and the loaded extension class files appears after the Device Statistics section.	

Monitoring Provisioning Groups

The Manage Provisioning Groups page (**Servers > Provisioning Groups**) lets you monitor all current provisioning groups. Each provisioning group appearing in this list is a link to its own details page. Click this link to display the details page, which displays details as described in the following table.

Table 2: View Provisioning Groups Details Page

Field or Button	Description
Provisioning Group Details	
Name	Identifies the provisioning group name selected from the Manage Provisioning Groups page.
Primary Device Provisioning Engine	Identifies the hostnames of the DPEs that are primary for this provisioning group. This is an active link that, if clicked, displays the View Device Provisioning Engine Details page.
Secondary Device Provisioning Engine	Identifies the hostnames of the DPEs that are secondary for this provisioning group. This is an active link that, if clicked, displays the View Device Provisioning Engine Details page.
Network Registrar Extension Points	Identifies the hostname of the Network Registrar server assigned to this provisioning group. This is an active link that, if clicked, displays the View Network Registrar Extension Point Details page.
Number of Devices	Specifies the number of devices that belong to this provisioning group.
Lease Query Management	
LeaseQuery AutoConfig	Enables or disables autoconfiguration of lease query addresses. This feature is enabled by default. If you enable this feature, the RDU adjusts its lease query configuration to set both IPv4 and IPv6 address lists from the Network Registrar servers in the provisioning group. If you disable this feature, the RDU does not change its lease query configuration upon registering with the Network Registrar server. **Note** Only if this feature is disabled do subsequent fields in this section appear.
Configured IP Address List (IPv4)	Displays the list of IPv4 addresses on the Network Registrar extensions that the RDU is configured to use for sending DHCPv4 lease query requests.

Field or Button	Description
Configured IP Address List (IPv6)	Displays the list of IPv6 addresses on the Network Registrar extensions that the RDU is configured to use for sending DHCPv6 lease query requests.
Capabilities Management Using these fields, you manually enable or disable capabilities that the provisioning group can provide. If a field is disabled, it means that the provisioning group is not capable of supporting a given device type or feature. Device capabilities are registered with the RDU when the devices startup. See Provisioning Group Capabilities . The values for these fields include: • Enabled—The server is enabled and configured for use. • Disabled—The server supports the feature but is not configured for use. • Not Capable—The server does not support the feature. You must upgrade to Prime Cable Provisioning to enable support for the feature.	
IPv4 - DOCSIS 1.0/1.1	Enables or disables support for DOCSIS 1.0 and 1.1 modems and the computers behind them in the IPv4 mode. To support this feature, you must also enable TFTPv4 on the DPEs in the provisioning group and the Network Registrar DHCP server that supports DHCPv4.
IPv4 - DOCSIS 2.0	Enables or disables support for all DOCSIS 1.0 and 1.1 devices and DOCSIS 2.0 modems in the IPv4 mode.
IPv4 - DOCSIS 3.0/3.1	Enables or disables support for DOCSIS 3.0 and 3.1 modems in the IPv4 mode and the set-top boxes behind these modems. To support this feature, ensure that all DPEs in the provisioning group run Cisco BAC 4.2 or above.
IPv4 - DOCSIS 4.0	Enables or disables support for DOCSIS 4.0 modems in the IPv4 mode and the set-top boxes behind these modems.
IPv4 - PacketCable	Enables or disables support for PacketCable MTAs in the IPv4 mode. To support this feature, you must enable PacketCable on all your DPEs and Network Registrars in the provisioning group.
IPv4 - CableHome	Enables or disables support for home networking devices in the IPv4 mode.
IPv4 - ERouter 1.0	Enables or disables support for eRouter devices in the IPv4 mode. To support this feature, you must enable eRouter on all your DPEs and Network Registrars in the provisioning group.

Field or Button	Description
IPv4 - RPD	Enables or disables support for RPD devices in the IPv4 mode. To support this feature, you must enable RPD on all your DPEs and Network Registrars in the provisioning group.
IPv6 - DOCSIS 3.0/3.1	Enables or disables support for DOCSIS 3.0 and 3.1 modems in the IPv6 mode and the set-top boxes behind these modems. To support this feature, you must enable TFTPv6 on the DPEs in the provisioning group and the Network Registrar DHCP server that supports DHCPv6.
IPv6 - DOCSIS 4.0	Enables or disables support for DOCSIS 4.0 modems in the IPv6 mode and the set-top boxes behind these modems. To support this feature, you must enable TFTPv6 on the DPEs in the provisioning group and the Network Registrar DHCP server that supports DHCPv6.
IPv6 - PacketCable 2.0	Enables or disables support for PacketCable in the IPv6 mode. To support this feature, you must enable PacketCable on all your DPEs and Network Registrars in the provisioning group. PacketCable 2.0 provisioning can be enabled only if IPv6 - DOCSIS 3.0 field (IPv6 provisioning) is enabled.
IPv6 - ERouter 1.0	Enables or disables support for eRouter devices in the IPv6 mode. To support this feature, you must enable eRouter on all your DPEs and Network Registrars in the provisioning group. eRouter 1.0 provisioning can be enabled only if IPv6 - DOCSIS 3.0 field (IPv6 provisioning) is enabled.
IPv6 - RPD	Enables or disables support for RPD devices in the IPv6 mode. To support this feature, you must enable RPD on all your DPEs and Network Registrars in the provisioning group.
Dynamic TFTP Compression	Enables or disables dynamic TFTP compression for DPEs in this provisioning group. If you enable this feature, the dynamic TFTP files that a DPE caches are compressed, thus enhancing DPE performance. Enable dynamic TFTP compression if most of the devices in your network use large files. To use this feature, ensure that all DPEs in the provisioning group run at least Cisco BAC 4.1.

Field or Button	Description
Extended TFTP Config Filename	Enables or disables Extended TFTP Config filename for DPEs in this provisioning group. If you enable this feature, the dynamic TFTP file names can be labeled with dynamic content (for example, COS, vendor-make/model, CPE and so on). This gives flexibility to write your own scripts to define the file names. Enable this feature if you want to customize the Dynamic TFTP filenames. To use this feature, ensure that all DPEs in the provisioning group run at least Cisco BAC 4.2. For more information about Extended TFTP filename. refer to Dynamic TFTP File-Naming Convention .
Dynamic TFTP Config Filename Using Extensions	Enables or disables Dynamic TFTP Config Filename Using Extensions for DPEs in this provisioning group. If you enable this feature, the dynamic TFTP file names can be labeled with dynamic content set by the extensions. To use this feature, ensure that all DPEs in the provisioning group run at least Prime Cable Provisioning . For more information about Dynamic TFTP Config 7.1Filename Using Extensions. refer to Dynamic TFTP File-Naming via Extensions, on page 272 .
Remote SNMP Reset	Enables or disables support for device SNMP reset through DPE. To use this feature, ensure that all DPEs in the provisioning group runs minimum Prime Cable Provisioning 6.1.
Remote SNMP Reset Excluded DPE(s)	Identifies the DPEs that are excluded from device SNMP resets, in case Remote SNMP Reset is enabled.
Security Domain	Identifies the RBAC domain assigned to the provisioning group, in case Instance Level Access control is enabled.

Monitoring DPE

The Manage Device Provisioning Engines page (**Servers > Device Provisioning Engine**) lets you monitor the list of all DPEs currently registered with the Prime Cable Provisioning database. Each DPE name that appears on this page is a link to another page that displays the details for that DPE. Click the DPE link to display the details page, whose content is similar to the details described in the following table.

Note The RDU determines the names of the Network Registrar extensions and DPEs by performing a reverse DNS lookup on the DPE interfaces through which the DPE contacts the RDU.

Table 3: View Device Provisioning Engines Details Page

Field or Button	Description
Device Provisioning Engine Details	
Host Name	Identifies the DPE hostname.
Port	Identifies the DPE port number from which DPE established connection to the RDU.
IP Address	Identifies the IP address of the DPE.
Primary Provisioning Group(s)	Identifies the primary provisioning groups that the selected DPE belongs to. This is an active link that, if clicked, displays the Provisioning Group Details page for that provisioning group.
Secondary Provisioning Group(s)	Identifies the secondary provisioning group (provided that this DPE belongs to a secondary provisioning group) that the selected DPE belongs to. This is an active link that, if clicked, displays the Provisioning Group Details page for that provisioning group.
Properties	Identifies the properties configured for the DPE.
Version	Identifies the version of DPE software currently in use.
UpTime	Specifies the total duration that the DPE has been operational since its last startup.
State	Identifies whether the DPE is ready for operations. These states include: • Registering • Initializing • Synchronizing • Ready • Offline For details on each state, see DPE-RDU Synchronization. **Note** If this field reads Offline, details from the Uptime field onwards do not appear. The DPE is prepared to service client requests in any state except Offline.
Secure Communication with RDU	Identifies if secure communication with the RDU is enabled or disabled.

Field or Button	Description
Security Domain	Identifies the RBAC domain assigned to the DPE, in case Instance Level Access control is enabled.
Protocol Services This section specifies the status of the TFTP and ToD protocols on the DPE.	
TFTPv4	Specifies if TFTPv4 is enabled or disabled on the DPE.
TFTPv6	Specifies if TFTPv6 is enabled or disabled on the DPE.
TODv4	Specifies if ToDv4 is enabled or disabled on the DPE.
TODv6	Specifies if ToDv6 is enabled or disabled on the DPE.
Registered Capabilities This section specifies the capabilities that all DPEs in this provisioning group registered with the RDU.	
IPv4 - DOCSIS 1.0/1.1	Identifies whether the DOCSIS 1.0 and 1.1 versions are enabled on this DPE in the IPv4 mode.
IPv4 - DOCSIS 2.0	Identifies whether the DOCSIS 2.0 version is enabled on this DPE in the IPv4 mode.
IPv4 - DOCSIS 3.0/3.1	Identifies whether the DOCSIS 3.0 and 3.1 versions are enabled on this DPE in the IPv4 mode.
IPv4 - PacketCable	Identifies whether the PacketCable voice technology is enabled on this DPE in IPv4 mode.
IPv4 - CableHome	Identifies whether the home networking technology is enabled on this DPE in IPv4 mode.
IPv4 - ERouter 1.0	Identifies whether the eRouter 1.0 is enabled on this DPE in IPv4 mode.
IPv4 - RPD	Identifies whether the RPD is enabled on this DPE in IPv4 mode.
IPv6 - DOCSIS 3.0/3.1	Identifies whether the DOCSIS 3.0 and 3.1 versions are enabled on this DPE in the IPv6 mode.
IPv6 - PacketCable 2.0	Identifies whether PacketCable voice technology is enabled on this DPE in IPv6 mode. PacketCable 2.0.
IPv6 - ERouter 1.0	Identifies whether the eRouter 1.0 is enabled on this DPE in IPv6 mode.
IPv6 - RPD	Identifies whether the RPD is enabled on this DPE in IPv6 mode.

Field or Button	Description
Dynamic TFTP Compression	Identifies whether dynamic TFTP compression is enabled on this DPE. By enabling this feature, you can compress the size of dynamic configurations that are stored at the DPE. When used with dynamic TFTP configuration, this feature dramatically reduces the size of the DPE cache. **Note** You can enable this feature from the **Servers** > **Provisioning Groups** page but only when all DPEs in the provisioning group support it. For details, see Provisioning Group Capabilities.
Extended TFTP Config Filename	Identifies whether Extended TFTP Config Filename is enabled on this DPE. If you enable this feature, the dynamic TFTP file names can be labeled with dynamic content (for example, COS, vendor-make/model, CPE and so on).
Dynamic TFTP Config Filename Using Extensions	Identifies whether Dynamic TFTP Config Filename Using Extensions is enabled on this DPE. If you enable this feature, the dynamic TFTP file names can be labeled with dynamic content set by the extensions.
Log File	
DPE Log File	Features the View Details icon that if clicked displays the View Log File Contents page, which provides details of *dpe.log*.
Cache Statistics	
Hits	Identifies the number of cache hits that occurred since the last time the DPE was started.
Misses	Identifies the number of cache misses that occurred since the last time the DPE was started.
Lease Updates	Identifies the number of IPv4 and IPv6 leases that were updated.
Files	Identifies the number of cache files that are currently stored in the DPE.
Configurations	Identifies how many device configuration files are saved in cache.
TFTP Statistics v4	
Packets Received	Identifies the number of TFTPv4 packets that were received by the selected DPE.

Field or Button	Description
Packets Dropped	Identifies the number of TFTPv4 packets that were dropped because of an overloaded DPE.
Packets Successful	Identifies the number of TFTPv4 packets that were transmitted successfully.
Packets Failed	Identifies the number of TFTPv4 packets that failed during transmission.
TFTP Statistics v6	
Packets Received	Identifies the number of TFTPv6 packets that were received by the selected DPE.
Packets Dropped	Identifies the number of TFTPv6 packets that were dropped because of an overloaded DPE.
Packets Successful	Identifies the number of TFTPv6 packets that were transmitted successfully.
Packets Failed	Identifies the number of TFTPv6 packets that failed during transmission.
Time of Day Statistics v4	
Packets Received	Identifies the number of Time of Day v4 packets that were received by the selected DPE.
Packets Dropped	Identifies the number of Time of Day v4 packets that were dropped because of an overloaded DPE.
Packets Successful	Identifies the number of Time of Day v4 packets that were transmitted successfully.
Packets Failed	Identifies the number of Time of Day v4 packets that failed during transmission.
Time of Day Statistics v6	
Packets Received	Identifies the number of Time of Day v6 packets that were received by the selected DPE.
Packets Dropped	Identifies the number of Time of Day v6 packets that were dropped because of an overloaded DPE.
Packets Successful	Identifies the number of Time of Day v6 packets that were transmitted successfully.
Packets Failed	Identifies the number of Time of Day v6 packets that failed during transmission.
PacketCable SNMP Statistics	

Field or Button	Description
SNMP Informs Successful	Identifies the number of inform requests that were successfully sent.
SNMP Sets Successful	Identifies the number of successful SNMP sets.
SNMP Configuration Informs Successful	Identifies the number of SNMP informs received from PacketCable MTAs indicating that they were successfully provisioned.
SNMP Configuration Informs Failed	Identifies the number of SNMP informs received from PacketCable MTAs indicating that they failed to be provisioned.
PacketCable MTA Statistics	
MTA AP Requests Received	Specifies the number of AP-REQ messages received by the DPE from the MTA.
MTA AP Responses Sent	Specifies the number of AP-REP messages sent by the DPE to the MTA.
PacketCable KDC Statistics	
KDC FQDN Requests Received	Specifies the number of FQDN-REQ messages sent by the KDC to the DPE.
KDC FQDN Responses Sent	Specifies the number of FQDN-REP messages sent by the DPE to the KDC.
Configured Network Interfaces	
Provisioning Group Communication	Specifies details related to the provisioning group to which the DPE belongs.
IPv4 Provisioning	Specifies details of the DPE interface that is configured for IPv4 provisioning. These details are: • IPv4 address • Port number • FQDN **Note** This section appears only if the DPE interface is configured for IPv4 provisioning.

Field or Button	Description
IPv6 Provisioning	Specifies details of the DPE interface that is configured for IPv6 provisioning. These details are: • IPv6 address • Port number • FQDN **Note** This section appears only if the DPE interface is configured for IPv6 provisioning.

Monitoring CPNR Extension Points

The Manage Network Registrar Extension Points page (**Servers > Network Registrar DHCP**) lists the extension points for all Network Registrar servers that have been registered with the RDU, and are configured for use with Prime Cable Provisioning. Network Registrar servers automatically register with the RDU when those servers are started.

Each Network Registrar extension point that appears on this page is a link to a secondary page that displays details of that extension point. Click the Network Registrar extension point link to display the details page, which displays details as described in the following table.

Table 4: View Network Registrar Extension Point Details Page

Field or Button	Description
Network Registrar Extension Point Details	
Host Name	Displays the hostname of the system running Network Registrar.
IP Address	Identifies the IP address of the Network Registrar server.
Provisioning Group	Identifies the provisioning group for the Network Registrar server. This is an active link that, if clicked, displays the Provisioning Group Details page for that provisioning group.
Properties	Identifies the properties that are applied to the Network Registrar server.
Version	Identifies the extension point software currently in use.
UpTime	Specifies the total time that the Network Registrar extension point has been operational since its last startup. This time is indicated in hours, minutes, and seconds.

Field or Button	Description
State	Identifies whether the DPE is ready for operations. These states include: • Registering • Initializing • Synchronizing • Ready • Offline For details on each state, see DPE-RDU Synchronization. **Note** If this field reads Offline, the options from the Uptime field onwards do not appear. The DPE is prepared to service client requests in any state except Offline.
Secure Communication with RDU	Identifies if secure communication with the RDU is enabled or disabled.
Security Domain	Identifies the RBAC domain assigned to the Network Registrar, in case Instance Level Access control is enabled.
Protocol Services	
DHCPv4	Identifies if DHCPv4 is enabled or disabled.
DHCPv6	Identifies if DHCPv6 is enabled or disabled.
Registered Capabilities	
IPv4 - DOCSIS 1.0/1.1	Identifies whether the DOCSIS 1.0 and 1.1 versions are enabled in the IPv4 mode on the DPE that connects to the Network Registrar server.
IPv4 - DOCSIS 2.0	Identifies whether the DOCSIS 2.0 version is enabled in the IPv4 mode on the DPE that connects to the Network Registrar server.
IPv4 - DOCSIS 3.0/3.1	Identifies whether the DOCSIS 3.0 and 3.1 versions are enabled in the IPv4 mode on the DPE that connects to the Network Registrar server.
IPv4 - PacketCable	Identifies whether the PacketCable voice technology is enabled in the IPv4 mode on the DPE that connects to the Network Registrar server.

Field or Button	Description
IPv4 - CableHome	Identifies whether the home networking technology is enabled in IPv4 mode on the DPE that connects to the Network Registrar server.
IPv4 - ERouter 1.0	Identifies whether the eRouter 1.0 is enabled in the IPv4 mode on the DPE that connects to the Network Registrar server.
IPv4 - RPD	Identifies whether the RPD is enabled in the IPv4 mode on the DPE that connects to the Network Registrar server.
IPv6 - DOCSIS 3.0/3.1	Identifies whether the DOCSIS 3.0 and 3.1 versions are enabled in the IPv6 mode on the DPE that connects to the Network Registrar server.
IPv6 - PacketCable 2.0	Identifies whether PacketCable voice technology is enabled in the IPv6 mode on the DPE that connects to the Network Registrar server.
IPv6 - ERouter 1.0	Identifies whether the eRouter 1.0 is enabled in the IPv6 mode on the DPE that connects to the Network Registrar server.
IPv6 - RPD	Identifies whether the RPD is enabled in the IPv6 mode on the DPE that connects to the Network Registrar server.
Network Registrar Extension Point Statistics	
DHCPv4 Packets Received	Identifies the number of DHCPv4 packets that were received.
DHCPv4 Packets Ignored	Identifies the number of DHCPv4 packets that were ignored.
DHCPv4 Packets Dropped	Identifies the number of DHCPv4 packets that were dropped.
DHCPv4 Packets Successful	Identifies the number of DHCPv4 packets that transferred successfully.
DHCPv4 Packets Failed	Identifies the number of DHCPv4 packets that failed to be transferred.
DHCPv6 Packets Received	Identifies the number of DHCPv6 packets that were received.
DHCPv6 Packets Ignored	Identifies the number of DHCPv6 packets that were ignored.

Field or Button	Description
DHCPv6 Packets Dropped	Identifies the number of DHCPv6 packets that were dropped.
DHCPv6 Packets Successful	Identifies the number of DHCPv6 packets that transferred successfully.
DHCPv6 Packets Failed	Identifies the number of DHCPv6 packets that failed to be transferred.
Device Provisioning Engine Details **Note** The following fields appear for each DPE that connects with the Network Registrar server.	
DPE	Identifies the IP address of the DPE.
Port	Identifies the port number from which the DPE established a connection to the RDU.
Type	Identifies whether this DPE is a primary or secondary DPE.
Status	Identifies whether the DPE is operational.

Using DPE CLI

To monitor the status of the DPE server, run the **show dpe** command to check if the DPE is running and displays the state of the process and, if running, its operational statistics.

Note This command does not indicate if the DPE is running successfully, only that the process itself is currently executing. However, when the DPE is running, you can use statistics that this command prints to determine if the DPE is successfully servicing requests.

show dpe Output

This result occurs when the DPE is running.

```
dpe# show dpe
BAC Agent is running
Process dpe is running
Version BAC 4.2 (SOL_CBAC4_0_L_000000000000).
Caching 1 device configs and 1 external files.
0 sessions succeed and 0 sessions failed.
0 file requests succeed and 0 file requests failed.
0 immediate proxy operations received: 0 succeed, and 0 failed.
Connection status is Ready.
Running for 4 hours 30 mins 16 secs.
```

This result occurs when the DPE is not running.

```
dpe_host# show dpe
```

```
BAC Agent is running
Process dpe is not running
```

Note For more information, see the Cisco Prime Cable Provisioning 7.1 DPE CLI Reference Guide.