



# Mapping PacketCable DHCP Options to Prime Cable Provisioning Properties

---

This section identifies the mapping of Prime Cable Provisioning properties to the PacketCable DHCP options used for PacketCable provisioning and includes:

- [Option 122 and Prime Cable Provisioning Property Comparison](#)
- [Option 177 and Prime Cable Provisioning Property Comparison, on page 3](#)
- [Option 17.2171 or 125.123 and Prime Cable Provisioning Property Comparison, on page 4](#)

The minimum required set of these properties is configured, during installation, in the *BPR\_HOME/cnr\_ep/conf/cnr\_ep.properties* file. This file resides on the Prime Network Registrar host. The set of properties defined in *cnr\_ep.properties* is applied to all PacketCable voice technology devices in the provisioning group. Like other Prime Cable Provisioning properties, you can also set these properties on a device or a Class of Service. Setting them at the RDU, using either the administrator user interface or the application programming interface (API), overrides the corresponding values set in the *cnr\_ep.properties* file. See [Using KeyGen Tool](#), for information on changing these key configuration properties.

Prime Cable Provisioning supports both PacketCable DHCP Option 122 (as specified in RFC 3495 and 3594) and the deprecated PacketCable DHCP Option 177. Prime Cable Provisioning does not ignore DHCP requests when it cannot populate option 122 and/or 177 content. Whatever Option 122/177 content is available is populated and the decision to ignore the option is left to the eMTA.

When Prime Cable Provisioning receives a DHCP request asking for both options 122 and 177, Prime Cable Provisioning ignores the request for Option 177 and populates only Option 122 content.



---

**Caution**

There should be only one instance of each property in *BPR\_HOME/cnr\_ep/conf/cnr\_ep.properties*.

---

- [Mapping PacketCable DHCP Options to Prime Cable Provisioning Properties, on page 2](#)
- [Mapping eRouter DHCP Options to Prime Cable Provisioning Properties, on page 5](#)
- [Mapping RPD DHCP Options to Prime Cable Provisioning Properties, on page 6](#)
- [Mapping IPDevice DHCP Options to Prime Cable Provisioning Properties, on page 7](#)

# Mapping PacketCable DHCP Options to Prime Cable Provisioning Properties

This section identifies the mapping of Prime Cable Provisioning properties to the PacketCable DHCP options used for PacketCable provisioning and includes:

- [Option 122 and Prime Cable Provisioning Property Comparison](#)
- [Option 177 and Prime Cable Provisioning Property Comparison, on page 3](#)
- [Option 17.2171 or 125.123 and Prime Cable Provisioning Property Comparison, on page 4](#)

The minimum required set of these properties is configured, during installation, in the *BPR\_HOME/cnr\_ep/conf/cnr\_ep.properties* file. This file resides on the Prime Network Registrar host. The set of properties defined in *cnr\_ep.properties* is applied to all PacketCable voice technology devices in the provisioning group. Like other Prime Cable Provisioning properties, you can also set these properties on a device or a Class of Service. Setting them at the RDU, using either the administrator user interface or the application programming interface (API), overrides the corresponding values set in the *cnr\_ep.properties* file. See [Using KeyGen Tool](#), for information on changing these key configuration properties.

Prime Cable Provisioning supports both PacketCable DHCP Option 122 (as specified in RFC 3495 and 3594) and the deprecated PacketCable DHCP Option 177. Prime Cable Provisioning does not ignore DHCP requests when it cannot populate option 122 and/or 177 content. Whatever Option 122/177 content is available is populated and the decision to ignore the option is left to the eMTA.

When Prime Cable Provisioning receives a DHCP request asking for both options 122 and 177, Prime Cable Provisioning ignores the request for Option 177 and populates only Option 122 content.



## Caution

There should be only one instance of each property in *BPR\_HOME/cnr\_ep/conf/cnr\_ep.properties*.

## Option 122 and Prime Cable Provisioning Property Comparison

The following table identifies the Prime Cable Provisioning properties as they apply to the definition of Option 122 in RFC 3495 and RFC 3594.

**Table 1: DHCP Option 122 to Prime Cable Provisioning Property Comparison**

| DHCP Option | Type    | Prime Cable Provisioning Property Name |
|-------------|---------|----------------------------------------|
| 6           | IP addr | /ccc/dns/primary                       |
| 6           | IP addr | /ccc/dns/secondary                     |
| 122.1       | IP addr | /ccc/dhcp/primary                      |
| 122.2       | IP addr | /ccc/dhcp/secondary                    |

| DHCP Option | Type    | Prime Cable Provisioning Property Name                                                                                                           |
|-------------|---------|--------------------------------------------------------------------------------------------------------------------------------------------------|
| 122.3       | FQDN    | /ccc/prov/fqdn<br><b>Note</b> Option 122.3 is automatically filled by Prime Cable Provisioning; consequently, do not set this property manually. |
| 122.4       | Integer | /ccc/kerb/auth/backoff/nomTimeout<br>/ccc/kerb/auth/backoff/maxTimeout<br>/ccc/kerb/auth/backoff/maxRetries                                      |
| 122.5       | Integer | /ccc/kerb/app/backoff/nomTimeout<br>/ccc/kerb/app/backoff/maxTimeout<br>/ccc/kerb/app/backoff/maxRetries                                         |
| 122.6       | String  | /ccc/kerb/realm                                                                                                                                  |
| 122.7       | Boolean | /ccc/tgt                                                                                                                                         |
| 122.8       | Integer | /ccc/prov/timer                                                                                                                                  |
| 122.9       | Integer | /ccc/security/ticket/invalidation                                                                                                                |

**Caution**

If any of /ccc/kerb/auth/backoff/nomTimeout, /ccc/kerb/auth/backoff/maxTimeout, or /ccc/kerb/auth/backoff/maxRetries are defined, they must all be defined. Similarly, if any of /ccc/kerb/app/backoff/nomTimeout, /ccc/kerb/app/backoff/maxTimeout, or /ccc/kerb/app/backoff/maxRetries are defined, they must all be defined.

## Option 177 and Prime Cable Provisioning Property Comparison

In accordance with PacketCable compliance wave 26, Option 177 is deprecated, and Option 122 is now the preferred MTA provisioning option. For legacy devices that still support Option 177, the following table identifies the Prime Cable Provisioning properties as they apply to the definition of Option 177.

**Table 2: DHCP Option 177 to Prime Cable Provisioning Property Comparison**

| Option 177 | Type    | Prime Cable Provisioning Property Names |
|------------|---------|-----------------------------------------|
| 177.1      | ip addr | /pktcbl/dhcp/primary                    |
| 177.2      | ip addr | /pktcbl/dhcp/secondary                  |
| 177.3      | fqdn    | /pktcbl/snmp/entity/fqdn                |

| Option 177 | Type    | Prime Cable Provisioning Property Names                                                                                                                                             |
|------------|---------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 177.4      | ip addr | <i>/pktcbl/dns/primary</i>                                                                                                                                                          |
| 177.5      | ip addr | <i>/pktcbl/dns/secondary</i>                                                                                                                                                        |
| 177.6      | string  | <i>/pktcbl/snmp/realm</i>                                                                                                                                                           |
| 177.7      | boolean | <i>/pktcbl/snmp/tgt</i>                                                                                                                                                             |
| 177.8      | integer | <i>/pktcbl/provisioning/timer</i>                                                                                                                                                   |
| 177.10     | integer | <i>/pktcbl/kerberos/authentication/backoff/nomTimeout</i><br><i>/pktcbl/kerberos/authentication/backoff/maxTimeout</i><br><i>/pktcbl/kerberos/authentication/backoff/maxRetries</i> |
| 177.11     | integer | <i>/pktcbl/kerberos/application/backoff/nomTimeout</i><br><i>/pktcbl/kerberos/application/backoff/maxTimeout</i><br><i>/pktcbl/kerberos/application/backoff/maxRetries</i>          |
| 177.12     | integer | <i>/pktcbl/snmp/kerberos/ticket/invalidation</i>                                                                                                                                    |

## Option 17.2171 or 125.123 and Prime Cable Provisioning Property Comparison

The following table identifies the Prime Cable Provisioning properties as they apply to the definition of Option 17.2171 in RFC 3315 and Option 125.123 in RFC 3925.

**Table 3: DHCPv6 Option 17.2171 and DHCPv4 Option 125.123 to Prime Cable Provisioning Property Comparison**

| DHCP sub-Option | Type    | Prime Cable Provisioning Property Names |
|-----------------|---------|-----------------------------------------|
| 1               | string  | <i>/cccv6/dssid/primary</i>             |
| 2               | string  | <i>/cccv6/dssid/secondary</i>           |
| 3               | fqdn    | <i>/ccc/prov/fqdn</i>                   |
| 6               | string  | <i>/ccc/kerb/realm</i>                  |
| 125.3           | Byte[]  | <i>/eRouter/v4/container</i>            |
| 82              | Integer | <i>/eRouter/solMaxRt</i>                |
| 17.1.1027       | Byte[]  | <i>/eRouter/v6/container</i>            |

# Mapping eRouter DHCP Options to Prime Cable Provisioning Properties

This section identifies the mapping of Prime Cable Provisioning properties to the eRouter DHCP options used for eRouter provisioning and includes:

## IPv4 Options

- DNS\_SERVER address – Option 6 (mandatory option)
- V4EROUTER\_CONTAINER - Option 125.3

## IPv6 Options

- SOL\_MAX\_RT - Option 82
- EROUTER\_CONTAINER - Option 17.1027

The minimum required property is configured, during installation, in the *BPR\_HOME/cnr\_ep/conf/cnr\_ep.properties* file.

Add the below property to *cnr\_ep.properties* file if not present

```
/eRouter/dns/server=<PNR IP Address>
```

This file resides on the Prime Network Registrar host. The property defined in *cnr\_ep.properties* is applied to all eRouter devices in the provisioning group. Like other Prime Cable Provisioning properties, you can also set these properties on a device or a Class of Service or DHCP criteria. Setting them at the RDU, using either the administrator user interface or the application programming interface (API), overrides the corresponding values set in the *cnr\_ep.properties* file.

Prime Cable Provisioning supports both eRouter IPv4 and IPv6 DHCP Options. Prime Cable Provisioning does not ignore DHCP requests when it cannot populate these options (excluding/eRouter/dns/server which is a mandatory option for IPv4).

| DHCP IPv4 Option | Type      | PCP Property Name     |
|------------------|-----------|-----------------------|
| 6                | IpAddress | /eRouter/dns/server   |
| 125.3            | Byte[]    | /eRouter/v4/container |

| DHCP IPv6 Option | Type    | PCP Property Name     |
|------------------|---------|-----------------------|
| 82               | Integer | /eRouter/solMaxRt     |
| 17.1027          | Byte[]  | /eRouter/v6/container |

The SOL\_MAX\_RT is the Solicit maximum retransmit time and value ranges from 60-86400.

The EROUTER\_CONTAINER option is a set of one or more TLV encoded options. The utility classes ERouterV4Container and ERouterV6Container can be used to add DHCPv4 and DHCPv6 options to the EROUTER\_CONTAINER option.

A sample code snippet below illustrates the setting of ERouterV4Container in device properties:

```

Map changeProp = new HashMap<String, Object>();
ERouterV4Container erouter_v4_cont = new ERouterV4Container();
try
{
    // here we give the encoding type, option number and value.
    // below is DHCPv4 Option 1 - Subnet Mask. Since it is a mask, the encoding type is
IPAddress
    erouter_v4_cont.addSubOption("IPAddress", 1, new String[]{"255.255.255.0"});
    // DHCPv4 option 5 - Name Server
    erouter_v4_cont.addSubOption("IPAddressN", 5, new String[]{"192.168.2.3"});
    changeProp.put(ERouterKeys.EROUTER_V4_CONTAINER, erouter_v4_cont.toByteArray());
} catch (Exception ee)
{
    ee.printStackTrace();
}
myBatch.changeProperties(modemMACAddress, changeProp, null);

```

## Mapping RPD DHCP Options to Prime Cable Provisioning Properties

This section identifies the mapping of Prime Cable Provisioning properties to the RPD DHCP options used for RPD provisioning. The RPD receives a list of CCAP core addresses from the DHCP server and the RDU can populate the newly added DHCP options in the DHCP response configuration. The following DHCP options are added in RPD specification to configure the CCAP core addresses:

- IPv4 Option: DHCP vendor specific sub-option - 43.61
- IPv6 Option: OPTION\_VENDOR\_OPTS sub-option - 17.61

The following device properties can be configured at any property hierarchy level for a RPD device. These properties specify the list of CCAP core addresses as comma separated String. The interface, `com.cisco.provisioning.cpe.constants.RPDKeys`, contains the property constants.

| DHCP IPv4 Option | Type                         | PCP Property Name                                                       |
|------------------|------------------------------|-------------------------------------------------------------------------|
| 43.61            | Comma Separated IP Addresses | /rpd/ccap/core/addresses/csv/ipv4<br>or<br>/rpd/ccap/core/addresses/csv |
| DHCP IPv6 Option | Type                         | PCP Property Name                                                       |
| 17.61            | Comma separated IP Addresses | /rpd/ccap/core/addresses/csv/ipv6<br>or<br>/rpd/ccap/core/addresses/csv |

# Mapping IPDevice DHCP Options to Prime Cable Provisioning Properties

This section identifies the mapping of Prime Cable Provisioning properties (*/IPDevice/dns/servers*) to the IPDevice DHCP options used for IPDevice provisioning and includes:

- IPv4 Option: DNS\_SERVER address – Option 6

This dns property can be used for all the types of devices. Like other Prime Cable Provisioning properties, you can also set this property on any property hierarchy level using either the administrator user interface or the application programming interface (API).

The dns property value is a comma-separated value (CSV) consisting of one or more IP addresses that needs to be assigned to the device.

| DHCP IPv4 Option | Type         | PCP Property Name     |
|------------------|--------------|-----------------------|
| 6                | IP Addresses | /IPDevice/dns/servers |



**Note** For eRouter and packetCable devices DNS server address can be added using */eRouter/dns/server*, */pktcbl/dns/primary* and */pktcbl/dns/secondary* properties. However, */IPDevice/dns/servers* will take higher precedence if it is added with these properties.

