



# Introducing Prime Cable Provisioning

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Cisco Prime Cable Provisioning automates the tasks of provisioning and managing customer premises equipment (CPE) in a broadband service-provider network.

With the high-performance capabilities of Prime Cable Provisioning, you can scale the product to suit networks of virtually any size, even those with millions of devices. It also offers high availability, which is made possible by the product's distributed architecture and centralized management.

Prime Cable Provisioning is designed to handle the rapid growth of service providers. It targets broadband service providers (including multiple service operators), internet, and voice service providers who want to deploy IP data, voice, and video on hybrid fiber and coaxial cable networks.

Prime Cable Provisioning provides such critical features as redundancy and failover. It can be integrated into new or existing environments through a provisioning application programming interface (API) that lets you control how Prime Cable Provisioning operates. You can use the provisioning API to register devices in Prime Cable Provisioning, assign device configurations, and configure the entire Prime Cable Provisioning provisioning system.

## Technologies and Features

This section describes the technologies and features that Prime Cable Provisioning supports.

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## Supported Technologies and Standards

Prime Cable Provisioning facilitates support for many technologies to provide provisioning services for your network. These technologies include:

- [DOCSIS High-Speed Data, page 1-2](#)
- [PacketCable Voice Services, page 1-2,](#)
- [CableHome, page 1-3](#)

## Supported Devices

Prime Cable Provisioning supports provisioning and managing of:

- IPv4 and IPv6 devices, which include:
  - Cable modems and STBs compliant with DOCSIS 1.0, 1.1, 2.0 and 3.0. Only DOCSIS 3.0 supports IPv6 devices.
  - Embedded Multimedia Terminal Adapters (eMTAs) compliant with PacketCable 1.0, 1.5 and 2.0. Only PacketCable 2.0 supports IPv6 devices.
  - Devices compliant with CableHome 1.0
  - Computers
  - Set-top boxes (STBs)
- Any STB compliant with CableLabs OpenCable Application Platform.
- Variants of eSAFE (embedded Service/Application Functional Entities) devices, such as mixed-IP mode PacketCable Multimedia Terminal Adapters (MTAs). A mixed-IP mode MTA is an eSAFE device that consists of an IPv6 embedded cable modem and an IPv4 eMTA. This class of devices embeds additional functionality with cable modems, such as packet-telephony, home networking, and video.

## DOCSIS High-Speed Data

The Data Over Cable Service Interface Specification (DOCSIS) defines functionality in cable modems that are involved in high-speed data distribution over cable television system networks. Using this feature, Multiple Systems Operators (MSOs) can provide a variety of services through an “always-on” Internet connection. These services include broadband Internet connectivity, telephony, real-time interactive gaming, and video conferencing.

Prime Cable Provisioning, besides supporting DOCSIS 1.0, 1.1, and 2.0, provisions and manages CPE that is compliant with DOCSIS 3.0. The DOCSIS 3.0 specification defines the third generation of high-speed data-over-cable systems specification and provides for:

- Provisioning of IPv6 devices
- Expanded addressability of network elements
- Increased channel capacity via channel bonding
- Enhanced network security
- Enhanced multicast capabilities
- New service offerings

## PacketCable Voice Services

PacketCable voice technology enables the delivery of advanced, real-time multimedia services over a two-way cable network. PacketCable is built on top of the infrastructure supported by cable modems to enable a wide range of multimedia services such as IP telephony, multimedia conferencing, interactive gaming, and general multimedia applications.

Using PacketCable voice technology, you can provide additional services, such as basic and extended telephony services, in a broadband network. For this purpose, PacketCable is an efficient and cost-effective option.

Prime Cable Provisioning supports the Secure and Basic variants of PacketCable and both these modes are much the same, except for reduced security found in the Basic variant. Prime Cable Provisioning supports PacketCable 1.0, 1.5, and 2.0 specifications.

Euro-PacketCable services are the European equivalent of the North American PacketCable standard. The only significant difference between the two is that Euro-PacketCable uses different MIBs.

## CableHome

Non-secure CableHome 1.0 provisioning (hereafter referred to as home networking technology) is built on top of the existing DOCSIS standard and supports a ‘plug-and-play’ environment for residential broadband connectivity. This form of home networking technology encompasses a DOCSIS home access device with support for CableHome. This device is known as Portal Services and is considered to be the home’s entry point.

## Supported Standards

Prime Cable Provisioning complies with these applicable Requests for Comments (RFCs), protocols, standards, and Internet Engineering Task Force (IETF) drafts:

- DHCPv6—Complies with RFC 3315 (DHCPv6 specification), 3633 (IPv6 Prefix Options), 3736 (Stateless DHCP Service for IPv6), 4014 (Remote Authentication Dial-In User Service—RADIUS—Attributes Suboption for the Relay Agent Information Option), 4580 (Relay Agent Subscriber-ID Option), 4649 (Relay Agent Remote-ID Option), and 4704 (DHCPv6 Client Fully Qualified Domain Name (FQDN) Option).
- IPv6—Complies with RFC 2460 (IPv6 specification), 2461 (Neighbor Discovery Protocol), 2462 (Stateless Address Autoconfiguration), 2463 (Internet Control Message Protocol—ICMP), 3513 (Addressing Architecture).
- IPv4 and IPv6 interoperability—Complies with RFC 4038 (Application of IPv6 Transition) and 4472 (Operational Issues and Considerations with IPv6 DNS).
- TFTP and ToD servers—Complies with RFC 868 (Time Protocol), 2348 and 2349 (TFTP Blocksize Options), 1350 (TFTP Revision 2 protocol) and 2347 (TFTP Option Extension).

Additionally, Prime Cable Provisioning complies with these applicable CableLabs standards:

- Cross Project
  - CL-SP-CANN-I06-111117
  - CL-SP-CANN-DHCP-Reg-I08-111117
- DOCSIS
  - eDOCSIS
    - CM-SP-eDOCSIS-I23-120329

- DOCSIS 2.0
  - CM-SP-RFIPv2.0-C01-081104
  - CM-SP-DOCSIS2.0-IPv6-I05-111117
- DOCSIS 3.0
  - CM-SP-MULPIv3.0-I18-120329
  - CM-SP-SECv3.0-I13-100611
  - CM-SP-OSSIPv3.0-I18-120329
- Business Services over DOCSIS
  - CM-SP-L2VPN-I09-100611
- DOCSIS Set-top Gateway (DSG)
  - CM-SP-DSG-I20-120329
- DOCSIS Provisioning of EPON (DPoE)
  - DPoE-SP-MULPIv1.0-I03-120830
  - DPoE-SP-OSSIPv1.0-I03-120830
  - DPoE-SP-SECv1.0-I02-120607
- PacketCable
  - PacketCable 1.5
    - PKT-SP-PROV1.5-I04-090624
    - PKT-SP-SEC1.5-I03-090624
  - PacketCable 2.0
    - PKT-SP-EUE-PROV-I07-110825
    - PKT-SP-EUE-DATA-I08-121030
    - PKT-SP-UE-PROV-I02-100527
    - PKT-SP-UE-DATA-I02-100527
    - PKT-SP-RST-EUE-PROV-I08-121030
    - PKT-SP-RST-UE-PROV-I02-100527
    - PKT-SP-RST-E-DVA-I10-121030
- OpenCable
  - OC-SP-HOST2.1-CFR-I15-120112
- CableHome
  - CH-SP-CH1.0-C01-060728
  - CH-SP-CH1.1-C01-060728

## Key Features and Benefits

Table 1-1 outlines the important features and benefits of Prime Cable Provisioning.

**Table 1-1 Prime Cable Provisioning Features and Benefits**

Feature	Benefit
Easy integration with back-end systems	<ul style="list-style-type: none"> <li>• The Prime Cable Provisioning Java API, which can be used to perform all provisioning and management operations. It also provides easy integration to customer OSS, billing, or workflow and mediation software.</li> <li>• The Prime Cable Provisioning publishing extensions, which are useful in writing RDU data into another database.</li> <li>• The SNMP agent, which simplifies integration for monitoring Prime Cable Provisioning.</li> <li>• The DPE command-line interface (CLI), which allows you to configure the DPE to suit your requirements via a “services” interface, and which simplifies local configuration when you use the CLI to copy and paste commands.</li> </ul>
Improved management	<ul style="list-style-type: none"> <li>• Provisioning group capabilities—Allows you to control the device type support that must be enabled for the provisioning groups in your deployment.</li> <li>• Property hierarchy—For better flexibility, Prime Cable Provisioning property hierarchy allows you to define properties at different levels.</li> </ul>
Increased security	<ul style="list-style-type: none"> <li>• User-configurable IP addresses and ports to provide multipathing, multi-interface binding, and firewall compatibility.</li> <li>• DOCSIS 3.0 for the Extended CMTS MIC Configuration Setting, enabling Prime Cable Provisioning to use advanced hashing techniques to detect unauthorized modification or corruption of the cable modem configuration file.</li> <li>• A password policy to access the RDU from the Administrator user interface. The Radius authentication provides increased security by authenticating the users accessing the network services via the Radius server, using the Radius standard protocol.</li> <li>• Secure access, enhanced administrator user interface access over HTTPS.</li> </ul>

**Table 1-1 Prime Cable Provisioning Features and Benefits (continued)**

Enhanced troubleshooting and diagnostics	<ul style="list-style-type: none"> <li>• Device troubleshooting to provide detailed records of device interactions with Prime Cable Provisioning servers using the IDs of the devices designated for troubleshooting. Using this feature, you can focus on a single device, identified by its MAC address or its DHCP Unique Identifier (DUID), and use that diagnostic information for further analysis.</li> <li>• Server troubleshooting using diagnostics scripts to collect performance statistics—down to a specific type of statistic—for the servers. Prime Cable Provisioning provides many scripts to collect server and system configuration data that may be required for support escalations. You can use the bundleState script to collect the diagnostics data.</li> </ul>
DOCSIS 3.0 and IPv6 support	DOCSIS 3.0 channel bonding allows increased data speed for subscribers. Support for IPv4 and IPv6 cable modems and IPv4/IPv6 mixed device environment.
Distributed architecture with high availability and disaster recovery	Offers true scalability, failover, and high reliability to manage a growing subscriber base while helping to ensure minimum subscriber service disruption. Allows a simple way to extend provisioning to additional subscribers and new markets, and dramatically simplifies capacity upgrade and lowers maintenance costs. Distributed provisioning engines allow you to put them in different data centers for disaster recovery.
Integrated Kerberos Protocol server (KDC) for PacketCable voice service provisioning	Provides a single platform with all the necessary security components for PacketCable provisioning.
Templates and MACRO for better flexibility	You can include an existing template and use MACRO for better flexibility in managing template parameters and in automating the template deployment.
Technology extensions	Provides an easy means to extend this single platform to provision new devices and technologies to meet changing network and subscriber requirements.
PacketCable compliant	Supports PacketCable 1.0, 1.1, 1.5 and 2.0 specifications for complete end-to-end IP voice service provisioning and meets all PacketCable security specifications.
Dynamic file generation	Offers a means to build unique files for individual subscriber devices to meet needs of tiered service provisioning and true IP voice requirements.
Safe failover	High uptime and service reliability through DPE and DHCP failover as well as TFTP redundancy.

## What's New in This Release

- New Web UI:
  - Cisco Broadband Access Center has been re-branded as Prime Cable Provisioning and offers a new Prime Admin UI that is similar to other Cisco Prime products and ensures ease of use.
- 64-bit support:
  - In earlier versions of Prime Cable Provisioning, the RDU and DPE servers were shipped with 32-bit processing capabilities with reliability and scalability limitations. A 32-bit application could address only a 4-GB address process space. To mitigate this performance issue, Prime Cable Provisioning is now enhanced to 64-bit processing capabilities, which also includes 64-bit JVM migration. With RDU and DPE servers supporting 64-bit mode, JRE can have expanded heap sizes that allows better leverage of existing resources. Prime Cable Provisioning supports migration of 32-bit RDU and DPE to 64-bit. Also, 64-bit RDU is backward compatible with 32-bit DPE and other components. The CNR-EP continues to be in 32-bit.
- RDU Redundancy:
  - The RDU redundancy feature involves setting up the RDU in High Availability (HA) mode where a two node failover pair is configured for the RDU.
- CableLab enhancements:
  - Supports PacketCable 2.0 on IPv4 mode on both Basic and Secure mode.
  - Supports DPoE 1.0 standard.
- Role Based Access Control:
  - Provides better user management and security with the help of finer grain privileges.
  - Provides an admin role as well as a set of roles that partition the responsibility of managing Prime Cable Provisioning, such as COS Admin Role, File Admin Role, Provisioning Group Admin Role, Device Admin Role.
- Secure connection through SSL:
  - Secures all inbound communication within Prime Cable Provisioning components through the use of Secure Socket Layer (SSL) 3.0 or and TLS 1.0 protocols.
  - Supports encryption of default and custom properties.
  - Supports both signed and unsigned certificates.
- Provisioning Web Services Interface:
  - Provides a SOAP based web service interface that facilitates device provisioning functions.
  - Operates in both secure and non-secure mode.

