



GLOSSARY

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4

4+1 Redundancy Mode

4+1 redundancy describes the protection scheme in which a total of four cable interface line cards are configured to have three as Working and one as Protect. This is the required N+1 protection scheme for the Cisco uBR7246VXR router; this protection scheme is optional for the Cisco uBR10012 router. Typically, the Cisco RF switch in the 4+1 mode is functioning as two 4+1 switches independently.

8

8+1 Redundancy Mode

8+1 redundancy describes the protection scheme in which a total of eight cable interface line cards are configured to have seven as Working and one as Protect. This is the default N+1 protection scheme for the Cisco uBR10012 router.

A

AAA

Authentication, authorization, and accounting.

Active RP

Active Route Processor (RP), also known as primary RP. The RP that controls the system, runs the routing protocols, and presents the system management interface.

Active service flow

An admitted service flow that is available for packet transmissions between the cable modem and the CMTS in either the upstream or the downstream direction.

ACL

Access Control List. A list kept by routers to control access to or from the router for a number of services (for example, to prevent packets with a certain IP address from leaving a particular interface on the router).

Admitted service flow

A provisioned or dynamically signaled service flow that is authorized, and for which resources have been reserved, but that is not active.

AM

Application manager.

Amplifier

Used on coaxial segments of a CATV plant to restore signal levels lost due to attenuation through distance.

ATM

Asynchronous Transfer Mode.

Availability

The long term ratio of the actual radio frequency (RF) channel operation time to the scheduled RF channel operation time (expressed as a percentage) based on a bit error rate (BER) assumption.

B

Bandwidth allocation map	The MAC management message that the CMTS uses to allocate transmission opportunities to cable modems.
BE	Best Effort (DOCSIS Scheduler Type)
Branch line	A coaxial cable that runs from a trunk line to a subscriber drop point. A branch line is also known as a feeder cable.
BRI	Basic Rate Interface. ISDN interface composed of two B channels and one D channel for circuit-switched communication of voice, video, and data. Compare with PRI.
Bucket	A service flow classification scheme supporting the Service Flow Admission Control feature, in which DOCSIS service flows and traffic types are categorized, processed, and supported in prioritized fashion on the Cisco CMTS. Buckets are service flow application categories, and enable greater optimization of DOCSIS QoS on the Cisco CMTS. Cisco IOS Release 12.3(21)BC supports eight buckets on the Cisco CMTS, numbered 1 to 8, with 1 being first in related processing.

C

CA	Call Agent.
Cable access router	A modular chassis-based router that is optimized for the data over CATV HFC application.
Cable interface line card	The modem front-end card of the cable router headend device, plugged into the midplane. Each cable line card provides a number of radio frequency (RF) channels as external interfaces.
CALEA	Communications Assistance for Law Enforcement Act. Support for this piece of U.S. legislature is required by PacketCable implementations and allows authorized law enforcement agencies to trace telephone calls through a cable network.
CATV	Cable Television. Refers to any cable-based system of television services (either coaxial or fiber cable).
CLI	Command Line Interface. An interface that allows the user to interact with the operating system by entering commands and optional arguments. The UNIX operating system and DOS provide CLIs.
CM	Cable Modem. A modulator/demodulator at subscriber locations that is used in conveying data communications on a cable television system.
CMS	Call Management Server.
CMTS	Cable Modem Termination System. A router or a bridge, typically located at the cable headend. Any DOCSIS-compliant headend cable router, such as the Cisco uBR7246VXR or Cisco uBR10012 universal broadband routers.
Codec	Coder-decoder. A device that typically uses pulse code modulation to transform analog signals into a digital bit stream and digital signals back into analog.

COPS	Common Open Policy Service. Protocol used in gate control and coordination of CMS and CMTS.
CPE	Customer Premises Equipment. Terminating equipment, such as terminals, telephones, and modems, supplied by the telephone company, installed at customer sites, and connected to the telephone company network. Can also refer to any telephone equipment residing on the customer site.
D	
DCS	Distributed Call Signaling (PacketCable). The multi-media signaling protocol used between an MTA, a CMS, and a destination MTA in the PacketCable architecture. DCS is based on the SIP protocol.
Distribution hub	A smaller or remote headend distribution point for a CATV system. Video signals are received here from another site (headend) and are redistributed. Sometimes a small number of locally originated signals are added. These signals might be city of information channels, HFC cable modem signals, and so on.
DOCSIS	Data-over-Cable Service Interface Specifications. Defines technical specifications for equipment at both subscriber locations and cable operators' headends. Adoption of DOCSIS can accelerate deployment of data-over-cable services and ensure interoperability of equipment throughout system operators' infrastructures.
DQoS	Dynamic quality of service.
Drop	A subscriber access point; the actual coaxial connection in a subscriber's home.
DS	Downstream. Frequency multiplexed band in a CATV channel that distributes signals from a headend facility (CMTS) to subscribers (cable modems).
E	
EHSA	Enhanced High System Availability. Processor redundancy scheme that reduces switchover time by requiring that the redundant processor be running in hot standby mode.
Element ID	Unique ID that is statically assigned to every PacketCable element within a PacketCable network or domain.
E-MTA	Embedded multimedia terminal adapter. An MTA device that is integrated with a cable modem.
Etherchannel	Developed and copyrighted by Cisco Systems. Logical aggregation of multiple Ethernet interfaces used to form a single higher bandwidth routing or bridging endpoint.
EuroDOCSIS	European Data-over-Cable Service Interface Specifications.

F

Fiber node (node) An optical node (located in the outside plant distribution system) that terminates the fiber-based downstream signal as an electrical signal onto a coaxial RF cable. Each fiber node is defined to support a designated service area, defined either by the number of homes or by total amplifier cascade (the total number of active amplifiers in the longest line from the node to the end of the line).

G

Gate Virtual policy control entity that controls a service flow's access to QoS services.

GC Gate Controller (PacketCable). A network entity that implements QoS policy enforcement for a CMS. The GC is the interface between the CMS and CMTS.

H

HCCP Hot-standby Connection-to-Connection Protocol. The Cisco Hot Standby Connection-to-Connection Protocol (HCCP) maintains all necessary DOCSIS or EuroDOCSIS state information-including service identifier (SID), service flow, and Media Access Control (MAC) and IP information-that enables a Protect line card to completely replace a Working line card when needed.

HCCP group Hot-standby Connection-to-Connection Protocol group. An HCCP group is a logical bundling of Cisco RF Switch cable interfaces. After you complete the definition of all required HCCP groups, you then assign each HCCP group a status of Working or Protect, according to your network topology.

Headend The endpoint of a broadcast network and central distribution point for a CATV system. All stations transmit toward the headend; the headend then transmits toward the destination stations. Video signals are received from a satellite (either collocated or remote), and the frequency is converted to the appropriate channels where it is combined with locally originated signals and is rebroadcast onto the HFC plant. For a CATV data system, the headend is the typical place to link between the HFC system and any external data networks.

HFC Hybrid Fiber-Coaxial. Older CATV systems were provisioned using only coaxial cable. Modern systems use fiber transport from the headend to an optical node located in the neighborhood to reduce system noise. Coaxial runs from the node to the subscriber. The fiber plant is generally a star configuration with all optical node fibers terminating at a headend. The coaxial part of the system is generally a trunk and branch configuration.

I

ICMP Internet Control Message Protocol. Network layer Internet protocol that reports errors and provides other information relevant to IP packet processing. Documented in RFC 792.

IF Muting Cisco's proprietary feature that supports non-SNMP upconverters (internal, integrated or external) in N+1 protection schemes. When used with either of Cisco's RF Switches, IF Muting allows for full N+1 Redundancy on both the Cisco uBR10012 and the Cisco uBR7246VXR CMTS.

ISP Internet Service Provider.

L

L2F Layer 2 Forwarding. The L2F protocol is a Cisco-proprietary standard for a tunneling mechanism that transports link-layer frames, such as PPP, that are used by higher-layer protocols. These tunnels allow the provider to separate the initial dialup servers from the corporate gateways, without compromising network security.

L2TP Layer 2 Tunneling Protocol. An extension to the Point-to-point (PPP) protocol and a fundamental building block for virtual private networks (VPN). L2TP combines the best features of Cisco's Layer 2 Forwarding (L2F) protocol and Microsoft's Point-to-Point Tunneling (PPTP). L2TP is an Internet Engineering Task Force (IETF) standard.

LAC L2TP access concentrator. The LAC is one endpoint of the L2TP tunnel and is a peer to the LNS. The LAC forwards packets between the LNS and the remote systems (such as cable modems), using the L2TP tunnel protocol. Typically, the Cisco CMTS acts as the LAC.

LIS Lawful Intercept Server.

LNS L2TP network server. The LNS is the destination endpoint for the L2TP tunnel and is a peer to the LAC. The LNS terminates the PPP sessions from the remote systems (such as cable modems) that it receives through the L2TP tunnel initiated by the LAC.

M

MAC Media Access Control. Typically refers to the lower of the two sublayers of the data link layer that is defined by the IEEE. The MAC sublayer handles access to shared physical transmission media. In DOCSIS networks, MAC also refers to the management messages that are sent between the CMTS and CM to maintain connectivity over the cable network.

MGCP Media Gateway Control Protocol. Controls PSTN gateway.

MPLS Multiprotocol Label Switching.

MTA Multimedia Terminal Adaptor. Packetcable client that can either be attached to or embedded into cable modem to support POTS.

MTU Maximum Transmission Unit. Maximum packet size, in bytes, that a particular interface can handle.

N

N+1 redundancy	Redundancy scheme in which one cable interface line card in Protect state provides support for N cable interface line cards in Working state. Common N+1 topologies are as follows: • 8+1 Redundancy—Protection scheme in which eight cable interface line cards are configured as seven Working and one Protect line card). This protection scheme is also referred to as 7+1 Redundancy, which is more physically accurate than is 8+1. • 4+1 Redundancy—Protection scheme in which four Working line cards are supported by one Protect line card.
NAS	Network Access Server. This device provides temporary, on-demand network access to users. In Cisco's PPPoE implementation, the NAS functions are provided by the LAC.
NCS	Network Call Signalling. Packetcable extension to MGCP used in controlling calls.
NMS	Network Management System. System responsible for managing at least part of a network. An NMS is generally a reasonably powerful and well-equipped computer, such as an engineering workstation. NMSs communicate with agents to help keep track of network statistics and resources.
NPE	Network Processing Engine.
nrtPS	Non real time Polling Service (DOCSIS Scheduler Type).
NRU	N+1 Redundancy Unit. The NRU provides an Ethernet interface that allows the Cisco CMTS to be controlled remotely via SNMP. NRU also provides a management console port that allows configuration, software downloading, and additional functions.

O

OIR	Online Insertion and Removal. Feature that permits the addition, the replacement, or the removal of cards without interrupting the system power, entering console commands, or causing other software or interfaces to shutdown.
Optical node	A device used to convert broadband RF to and from a fiber-optic signal. An optical node is usually located in the outside field.

P

Packetcable	PacketCable is a CableLabs-led initiative aimed at developing interoperable interface specifications for delivering advanced, real-time multimedia services over two-way cable plant. Built on top of the industry's highly successful cable modem infrastructure, PacketCable networks will use Internet protocol (IP) technology to enable a wide range of multimedia services, such as IP telephony, multimedia conferencing, interactive gaming, and general multimedia applications.
PCMM	PacketCable Multimedia service.
Peer	Router or device that participates as an endpoint in IPSec and IKE.

POTS	Plain Old Telephone Service.
PPP	Point-to-Point Protocol. A protocol developed for dial-up users to extend the IP network over serial interfaces and dial-up lines, allowing for automatic configuration of the user's IP address and other network information.
PPPoE	Point-to-Point Protocol over Ethernet. This protocol encapsulates PPP packets within Ethernet MAC frames, so that network users can be authenticated and configured using the same PPP systems that are used for point-to-point users (such as dial-up or DSL users).
Provisioning	The programming of allocatable resources, such as operating parameters, upstream and downstream frequencies, slot assignments, and logical identifiers, in headend and subscriber modems.
PS	Policy Server.
PSTN	Public Switched Telephone Network.
Q	
QoS	Quality of Service for network data delivery.
R	
RADIUS	Remote Authentication Dial-In User Service.
Ranging	The adjustment of the subscriber modem upstream timing offset to ensure that an upstream packet inserted into a TDMA slot aligns correctly with the headend modem upstream frame.
RD	Route Distinguisher.
Redundancy	In internetworking, redundancy refers to the hardware and software duplication of Working devices, services or connections so that the redundant (Protect) devices, services, or connections can immediately take over in the event of a Working failure (switchover). Redundancy applies whether that switchover from Working to Protect is unexpected or manually initiated. See also N+1 redundancy .
Registration	The process of a subscriber modem signing on to the cable network by identifying itself to the headend.
RF	Radio Frequency. Generic term referring to frequencies that correspond to radio transmissions, that is wireless communications with frequencies below 300 GHz. Cable TV and broadband networks use RF technology.
RF Switch Module	The Cisco RF switch module is a switching matrix that allows flexibility in the routing of RF signals between "N" Working RF cable interface line cards and one Protect RF cable interface line card. The RF Switch header has 14 ports labeled with letters. Each header screws into a slot in the Cisco RF Switch. A Cisco RF Switch module contains all the active relays for a particular port for all slots. Each RF switch module supports the full frequency range specified by DOCSIS and EuroDOCSIS standards..

RF upconverter	An upconverter device is used to convert the 44 MHz intermediate frequency (IF) output to the assigned slot. In North America, carrier frequencies in the forward plant are assigned between 54-860 MHz. After upconversion, the signal is combined with other analog TV or digital TV signals and sent to the transmit input of a fiber transceiver. Data passing through the cable interface line card is converted to an IF signal and then run through an upconverter to transform the signal to RF. This RF signal is then sent down the line to the user's cable modem. Downstream cable interface commands configure the frequency, symbol rate, compression, and modulation of the downstream signal. An RF upconverter is also used for downstream RF frequency shifting. The upconverter in the Cisco CMTS has an Ethernet interface that allows the CMTS to be controlled remotely via SNMP. Two types of upconverters are commonly used with the Cisco CMTS: • Vecima HD4040 chassis (one) with 16 modules • GI C6U upconverter units (two) with two modules each
RKS	Record Keeping Server.
RP	Route Processor.
RPF	Reverse Path Forwarding. Multicasting technique in which a multicast datagram is forwarded out of all but the receiving interface if the receiving interface is the one used to forward unicast datagrams to the source of the multicast datagram.
RPR+	Route Processor Redundancy Plus. When two route processors (RPs) are installed in a Cisco uBR10012 router chassis, one RP acts as the active (primary) RP, and the other acts as a standby (backup) RP. If the active RP fails, or is removed from the system, the standby RP detects the failure and initiates a switchover. During a switchover, the standby RP assumes control of the router, connects with the network interfaces, and activates the local network management interface and system console.
RtPS	Real time Polling Service (DOCSIS Scheduler Type).
S	
SAID	Security Association Identifier. A Baseline Privacy security identifier between a CMTS and a cable modem.
Service flow	A MAC-layer transport service that provides unidirectional transport of packets from the upper service layer entity to the RF device.
SFID	Service Flow Identifier.
SGCP	Simple Gateway Control Protocol. Controls Voice-over-IP (VoIP) gateways by an external call control element (called a call agent).
SID	Service Identifier. A service flow identifier (14 bits) assigned by the CMTS to an active or admitted upstream service flow.
SIP	Session Initiation Protocol. A standardized protocol for establishing IP telephony sessions between two network entities.

SNMP	Simple Network Management Protocol. Network management protocol used almost exclusively in TCP/IP networks. SNMP provides a means to monitor and control network devices, and to manage configurations, statistics collection, performance, and security.
SPM	Subscriber Policy Manager. This is a component co-resident with the GC that allows the GC to look up QoS-related parameters about a telephony subscriber.
Standby RP	Standby route processor (RP), also known as the secondary RP. The route processor (RP) that waits in protective support of the active or primary RP in the case of failure.
Status request	The periodic querying of subscriber cable modems by the headend for alarm and service requests.

T

Tap	A passive device that divides a signal between the trunk or feeder lines and splits the signal into ports for subscriber drop access.
TDM	Time-Division Multiplexing. A technique in which information from multiple channels can be allocated bandwidth on a single wire, based on preassigned time slots. Bandwidth is allocated to each channel regardless of whether the station has data to transmit.
TDMA	Time-Division Multiple Access.
TLV	Type, Length, Value.
Trunk line	A CATV backbone coaxial cable. This cable runs from an optical node through a specific neighborhood or service area.

U

UBR	Universal Broadband Router. Refers to the family line of DOCSIS Cisco CMTS routers.
UGS	Unsolicited Grant Service (DOCSIS Scheduler Type). An Upstream Flow Scheduling Service Type that provides constant bit rate (CBR) traffic onto service flows. UGS service flows support applications that require real-time traffic, such as Voice over IP and Video-on-Demand (VoD).
UGS/AD	Unsolicited Grant Service with Activity Detection (DOCSIS Scheduler Type).
Upconverter	See RF Upconverter.
US	Upstream. Set of frequencies used to send data from a subscriber (CM) to the headend (CMTS).

V

VLAN	virtual local area network (LAN). Group of devices on one or more LANs that are configured (using management software) so that they can communicate as if they were attached to the same wire, when in fact they are located on a number of different LAN segments. Because VLANs are based on logical instead of physical connections, they are extremely flexible.
VoIP	Voice over IP. The ability to carry normal telephone-style voice over an IP-based Internet with POTS-like functionality, reliability, and voice quality. VoIP is a blanket term that generally refers to the Cisco standards-based (for example, H.323 or SGCP) approach to IP voice traffic.
VPN	Virtual Private Network. Enables IP traffic to travel securely over a public TCP/IP network by encrypting all traffic from one network to another. A VPN uses "tunneling" to encrypt all information at the IP level.