



G L O S S A R Y

A

AAA	authentication, authorization, and accounting. A network security service that provides the primary framework to set up access control on a Cisco CRS router or access server. AAA is an architectural framework and modular means of configuring three independent but closely related security functions in a consistent manner.
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).
active	Denotes a card or process that performs a system task; in a redundant configuration, there is an inactive standby card or process available to become active. Active cards or processes are also sometimes denoted as primary.
active RP	The RP that is active in a redundant pair of RPs.
active software configuration	The software configuration marked as active for a node.
active software set	The set of Cisco IOS XR software packages activated in one or more nodes in a router.
algorithm	A well-defined rule or process for arriving at a solution to a problem. In networking, algorithms commonly are used to determine the best route for traffic from a particular source to a particular destination.
APS	automatic protection switching. A method that allows transmission equipment to recover automatically from failures, such as a cut cable.
ASIC	application-specific integrated circuit. A chip designed for use in a specific hardware device. An ASIC is a chip designed for a special application, such as a particular kind of transmission protocol.

B

bandwidth	The amount of data that can be sent in a fixed amount of time. For digital devices, the bandwidth is usually expressed in bits per second (Bps) or bytes per second.
BGP	Border Gateway Protocol. A routing protocol used between autonomous systems. It is the routing protocol that makes the internet work. BGP is a distance-vector routing protocol that carries connectivity information and an additional set of BGP attributes. These attributes allow for a rich set of policies for deciding the best route to use to reach a given destination.

C

card type	The type of the card inserted in a slot.
CDP	Cisco Discovery Protocol. CDP runs on all Cisco devices so that these devices can learn about neighboring devices and exchange information. CDP uses a well-known multicast MAC address. During system initialization, the application-specific integrated circuit (ASIC) is configured to forward these packets to the Cisco IOS XR software CPU, which processes the packets.
Cisco.com	The Cisco website
CLI	command-line interface. A text-based user interface to an operating system. A command-line interface is a user interface to a computer operating system or an application in which the user responds to a visual prompt by typing a command on a specified line, receives a response from the system, and then enters another command, and so forth. Typically, most of the UNIX-based systems today offer both a command-line interface and graphical user interface (GUI). See also <i>GUI</i> .
committed/saved software configuration	The configuration stored in the system for a particular node. The RP loads the committed configuration into memory at startup.
configuration register	In Cisco routers, a 16-bit, user-configurable value that determines how the router functions during initialization. The configuration register can be stored in hardware or software. In hardware, the bit position is set using a jumper. In software, the bit position is set by specifying a hexadecimal value using configuration commands. A hexadecimal or decimal value that represents the 16-bit configuration register value that you want to use the next time the router is restarted. The value range is from 0x0 to 0xFFFF (0 to 65535 in decimal).
control plane	The control plane oversees the operation of the data plane, allocating resources, providing information, and handling errors to allow data plane operations to be continuous and efficient.
CORBA	Common Object Request Broker Architecture. Specification that provides the standard interface definition between OMG-compliant objects. CORBA allows applications to communicate with one another no matter where they are located or who has designed them.
CoS	class of service. An indication of how an upper-layer protocol requires a lower-layer protocol to treat its messages. In SNA subarea routing, CoS definitions are used by subarea nodes to determine the optimal route to establish a given session. A CoS definition comprises a virtual route number and transmission priority field. Repetitive, regularly timed signals are used to control synchronous processes.

D

DDTS	distributed defect tracking system. A method to track software errors and resolutions.
DHCP	Dynamic Host Configuration Protocol. Provides a mechanism for allocating IP addresses dynamically so that addresses can be reused when hosts no longer need them.
DIMM	dual in-line memory module. Small circuit boards carrying memory integrated circuits, with signal and power pins on both sides of the board, in contrast to single-in-line memory modules (SIMMs).
disk0	Name of the flash disk on which the Cisco IOS XR software is stored.

disk1	Name of the optional flash disk on which the Cisco IOS XR software can be stored in preparation for installation or upgrade.
DNS	Domain Name System. Mechanism used in the Internet and on private intranets for translating names of host computers into addresses. The DNS also allows host computers not directly on the Internet to have a registered name in the same style.
DPT	Dynamic Packet Transport. DPT rings are dual, counter-rotating fiber rings. Both fibers are used concurrently to transport both data and control traffic.
DSC	designated shelf controller. The RP that controls a standalone router or a multishelf system. The DSC is selected from among the route processors (RPs) installed in the router or multishelf system.

E

eBGP	external Border Gateway Protocol. BGP sessions are established between routers in different autonomous systems. eBGPs communicate among different network domains.
ECC	error correction code. ECC is used to correct errors within memories on the Cisco CRS router.
egress	Outgoing channel.
Ethernet	Baseband LAN specification invented by Xerox Corporation and developed jointly by Xerox, Intel, and Digital Equipment Corporation. Ethernet networks use CSMA/CD and run over a variety of cable types at 10 Mbps. Ethernet standards are defined by the IEEE 802.3 specification.

F

fabric	Connectivity between all line cards. Also referred to as switch fabric.
FC	fan controller. Two fan controller cards are installed in every line card chassis as a redundant pair to manage the fan assemblies; a BITS timing connector exists on the fan controller card.
FIB	Forwarding Information Base. Database that stores information about switching of data packets. A FIB is based on information in the Routing Information Base (RIB). It is the optimal set of selected routes that are installed in the line cards for forwarding. See also <i>RIB</i> .
flooding	Traffic-passing technique used by switches and bridges in which traffic received on an interface is sent out all the interfaces of that device except the interface on which the information was originally received.
forwarding	Process of sending a frame toward its ultimate destination by way of an internetworking device.
FRR	fast reroute. Automatically reroutes traffic on a label switched path (LSP) if a node or link in an LSP fails. FRR reduces the loss of packets traveling over an LSP.
FTP	File Transfer Protocol. Application protocol, part of the TCP/IP protocol stack, used for transferring files between network nodes. FTP is defined in RFC 959.

G

GE	Gigabit Ethernet. Standard for a high-speed Ethernet, approved by the IEEE 802.3z standards committee in 1996.
Gigabit Ethernet	Standard for a high-speed Ethernet, approved by the IEEE 802.3z standards committee in 1996.
GUI	graphical user interface. A user environment that uses pictorial and textual representations of the input and output of applications and the hierarchical or other data structure in which information is stored. Such conventions as buttons, icons, and windows are typical, and many actions are performed using a pointing device (such as a mouse). Microsoft Windows and the Apple Macintosh are prominent examples of platforms using a GUI. See also <i>CLI</i> .

H

HA	High availability is defined as the continuous operation of systems. For a system to be available, all components, including application and database servers, storage devices, and the end-to-end network, need to provide continuous service.
HDLC	high-level data link control. ISO communications protocol used in X.25 packet-switching networks. HDLC provides error correction at the data link layer and contains the following subsets: LAPB and SDLC.
hexadecimal	A number system having 16 as its base. This number representation uses the digits 0–9, with their usual meaning, plus the letters A–F (or a–f) to represent hexadecimal digits with values of (decimal) 10 to 15. The far right digit counts ones, the next counts multiples of 16, then $16^2 = 256$, and so on. Hexadecimal is more succinct than binary for representing bit masks, machine addresses, and other low-level constants but it is still reasonably easy to split a hex number into different bit positions. For example, the top 16 bits of a 32-bit word are the first four hex digits.
hop	Passage of a data packet between two network nodes (for example, between two routers). See also <i>hop count</i> .
hop count	Routing metric used to measure the distance between a source and a destination.
HTTP	Hypertext Transfer Protocol. Used by web browsers and web servers to transfer files, such as text and graphic files. HTTP is the set of rules for exchanging files (text, graphic images, sound, video, and other multimedia files) on the World Wide Web. Relative to the TCP/IP suite of protocols (which are the basis for information exchange on the Internet), HTTP is an application protocol.

I

ICMP	Internet Control Message Protocol. Network layer Internet (TCP/IP) protocol that reports errors and provides other information relevant to IP packet processing.
IEP	IP explicit path. List of IP addresses, each representing a node or link in the explicit path.
IETF	Internet Engineering Task Force. Task force consisting of over 80 working groups responsible for developing Internet standards. The IETF operates under the auspices of ISOC.

IGMP	Internet Group Management Protocol. Governs the management of multicast groups in a TCP/IP network. Used by IP hosts to report their multicast group memberships to an adjacent multicast router.
IGP	Interior Gateway Protocol. Internet protocol used to exchange routing information within an autonomous system. Examples of common Internet IGPs include IGRP, OSPF, and RIP. See also <i>OSPF</i> and <i>RIP</i> .
ingress	Incoming channel.
installed software set	The set of Cisco IOS XR software packages installed on a router.
IOS XR	The Cisco operating system used on the Cisco CRS router and Cisco XR 12000 Series Router.
IP	Internet Protocol. Network layer protocol in the TCP/IP stack offering a connectionless internetwork service. IP provides features for addressing, type-of-service specification, fragmentation and reassembly, and security.
IPv4	IP Version 4. Network layer for the TCP/IP protocol suite. A connectionless, best-effort packet switching protocol.
IPv6	IP Version 6. Replacement for IPv4. A next-generation IP protocol. IPv6 is backward compatible with and designed to fix the shortcomings of IPv4, such as data security and maximum number of user addresses. IPv6 increases the address space from 32 to 128 bits, providing for an unlimited number of networks and systems. It also supports quality of service (QoS) parameters for real-time audio and video.
IPX	Internetwork Packet Exchange. NetWare network layer (Layer 3) protocol used for transferring data from servers to workstations. IPX is similar to IP and XNS.
IS-IS	Intermediate System-to-Intermediate System. OSI link-state hierarchical routing protocol based on DECnet Phase V routing, whereby ISs (routers) exchange routing information based on a single metric to determine network topology.

K

keepalive interval	Period of time between each keepalive message sent by a network device.
keepalive message	Message sent by one network device to inform another network device that the virtual circuit between the two is still active.

L

Layer 2	Layer 2 refers to the data link layer of the commonly referenced multilayered communication model, Open Systems Interconnection (OSI). The data link layer contains the address inspected by a bridge or switch. Layer 2 processing is faster than layer 3 processing, because less analysis of the packet is required.
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Layer 3 Layer 3 refers to the network layer of the commonly referenced multilayered communication model, Open Systems Interconnection (OSI). The network layer is concerned with knowing the address of the neighboring nodes in the network, selecting routes and quality of service, and recognizing and forwarding to the transport layer incoming messages for local host domains.

A router is a Layer 3 device, although some newer switches also perform Layer 3 functions. The Internet Protocol (IP) address is a Layer 3 address.

LC line card.

LDP label distribution protocol. A standard protocol between MPLS-enabled routers to negotiate the labels (addresses) used to forward packets. The Cisco proprietary version of this protocol is the Tag Distribution Protocol (TDP).

LIB Label Information Base. The table that contains the labels in use on the node.

loopback Send the outgoing signals back to the receiving side for testing.

M

MAC address Standardized data link layer address that is required for every port or device that connects to a LAN. Other devices in the network use these addresses to locate specific ports in the network and to create and update routing tables and data structures. MAC addresses are 6 bytes long and are controlled by the IEEE. Also known as a hardware address, MAC layer address, and physical address.

mask Pattern of bits used to reject or accept bit patterns in another set of data.

MBI minimum boot image. Software image containing a kernel and minimum set of drivers and components to boot a node.

Mbps megabits per second. A bit rate expressed in millions of binary bits per second. 1 megabit = 2^{20} bits, or 1,048,576 bits.

MIB Management Information Base. Database of network management information that is used and maintained by a network management protocol like Simple Network Management Protocol (SNMP). The value of an MIB object can be changed or retrieved using SNMP commands, usually through a GUI network management system. MIB objects are organized in a tree structure that includes public (standard) and private (proprietary) branches.

MPLS Multiprotocol Label Switching. Switching method that forwards IP traffic using a label. This label instructs the routers and switches in the network where to forward the packets based on pre-established IP routing information

MPLS TE Multiprotocol Label Switching traffic engineering. A switching method that forwards IP traffic using a label. This label instructs the routers and switches in the network where to forward the packets based on pre-established IP routing information.

MSC modular services card. Module in which the ingress and egress packet processing and queueing functions are carried out in the Cisco CRS architecture. Up to 16 MSCs are installed in a line card chassis; each MSC must have an associated physical line interface module (PLIM) (of which there are several types to provide a variety of physical interfaces). The MSC and PLIM mate together on the line card chassis midplane. See also *PLIM*.

MSCs are also referred to as line cards.

MTU maximum transmission unit. Maximum packet size, in bytes, that a particular interface can handle.

multicast Multicast is a feature that refers to single packets copied by the network and sent to a specific subset of network addresses. These addresses are specified in the Destination Address Field. See also *unicast*.

N

netboot Loading software images from a network server, such as TFTP.

node A card installed and running on the router.

NSF nonstop forwarding. Packets keep flowing during events such as switchover, process restarts, and the upgrade or downgrade of software packages. Nonstop forwarding is the ability of a router to continue to forward traffic toward a router that may be recovering from a transient failure and the ability of a router recovering from a transient failure in the control plane to continue correctly forwarding traffic sent to it by a peer.

NTP Network Time Protocol. Protocol built on top of TCP that ensures accurate local time-keeping with reference to radio and atomic clocks located on the Internet. This protocol is capable of synchronizing distributed clocks within milliseconds over long time periods.

NVRAM nonvolatile RAM. Static random access memory that is made into nonvolatile storage by having a battery permanently connected.

O

OC-x Optical carrier, where x=3, 12, 48, or 192, relating to the various speeds within a SONET network.

OIR online insertion and removal. Feature that permits the addition, replacement, or removal of cards without interrupting the system power, entering console commands, or causing other software or interfaces to shut down. Sometimes called hot-swapping or power-on servicing.

OSI Open Systems Interconnection. International standardization program created by ISO and ITU-T to develop standards for data networking that facilitate multivendor equipment interoperability.

OSPF Open Shortest Path First. Link-state, hierarchical Interior Gateway Protocol (IGP) routing algorithm proposed as a successor to Routing Information Protocol (RIP) in the Internet community. OSPF features include least-cost routing, multipath routing, and load balancing. OSPF was derived from an early version of the Intermediate System-to-Intermediate System (IS-IS) protocol. See also *IGP* and *RIP*.

P

package	A group of software components installed on the router.
packet	Logical grouping of information that includes a header containing control information and (usually) user data. Packets most often are used to refer to network layer units of data.
Packet over SONET/SDH	POS. Packet over SONET/SDH enables core routers to send native IP packets directly over SONET or SDH frames.
PAP	Password Authentication Protocol. Authentication protocol that allows PPP peers to authenticate one another. The remote router attempting to connect to the local router is required to send an authentication request. Unlike Challenge Handshake Authentication Protocol (CHAP), PAP passes the password and the hostname or username in the clear (unencrypted). PAP does not itself prevent unauthorized access but merely identifies the remote end. The router or access server then determines whether that user is allowed access. PAP is supported only on PPP lines. See also <i>PPP</i> .
PCMCIA	Personal Computer Memory Card International Association. Standard for credit card-size memory or I/O device.
PIE	package installation envelope. An installable software file with the suffix <i>pie</i> . A PIE may be a package or a Software Maintenance Upgrade (SMU). A PIE is used to deliver Cisco IOS XR software. A PIE may contain a single component, group of components (called a package), or set of packages. When a PIE contains more than one component, it is called a “Composite PIE.”
PLIM	Physical layer interface module. Provides the physical interface for a line card. Also handles media-specific functions, such as framing, clock recovery, channelization, and optical signaling for line interfaces connecting to a Cisco CRS router.
PM	performance monitoring. Provides a variety of automatic functions to aid in the maintenance and operation of the network. PM is continuous, in-service monitoring of transmission quality that uses software-provisionable performance parameters. Performance parameters are measured for all four layers of the SONET signal: physical, section, line, and STS path.
POS	Packet over SONET/SDH. POS enables core routers to send native IP packets directly over Synchronous Optical Network (SONET) or Synchronous Digital Hierarchy (SDH) frames.
PPP	Point-to-Point Protocol. Successor to SLIP that provides router-to-router and host-to-network connections over synchronous and asynchronous circuits. Whereas SLIP was designed to work with IP, PPP was designed to work with several network layer protocols, such as IP, IPX, and ARA. PPP also has built-in security mechanisms, such as CHAP and PAP. PPP relies on two protocols: LCP and NCP.
primary RP	The first route processor configured for DSC or logical router operation. If a second RP is configured as a redundant RP, it becomes the secondary RP.

Q

QoS	quality of service. A set of parameters that describes a flow of data, such as guaranteed bandwidth, delay, and delivery guarantee.
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R

RCP	remote copy protocol. A protocol that allows users to copy files to and from a file system residing on a remote host or server on the network. The RCP protocol uses TCP to ensure the reliable delivery of data.
RIB	Routing Information Base. This is the set of all available routes from which to choose the FIB. The RIB essentially contains all routes available for selection. Essentially, it is the sum of all routes learned by dynamic routing protocols, all directly attached networks (that is, networks to which a given router has interfaces connected), and any additional configured routes, such as static routes.
RIP	Routing Information Protocol. A simple routing protocol that is part of the TCP/IP protocol suite and the most common IGP in the Internet. RIP determines a route based on the smallest hop count between source and destination. It is a distance vector protocol that broadcasts routing information to neighboring routers. It is known to use excessive bandwidth. See also <i>hop count</i> and <i>IGP</i> .
ROM Monitor	ROM Monitor is a bootstrap program that initializes the hardware and boots the system when a router is powered on or reset. ROM Monitor mode is also known as “ROMMON,” which reflects the CLI prompts for the mode. rommon B1> (Cisco CRS routers) or rommon1> (Cisco XR 12000 Series Routers)
ROMMON	See ROM Monitor.
router	Network layer device that uses one or more routing metrics to determine the optimal path along which network traffic should be forwarded. Routers forward packets from one network to another based on network layer information.
routing	Process of finding a path to a destination host. Routing is very complex in large networks because of the many potential intermediate destinations a packet might traverse before reaching its destination host.
routing metric	A routing algorithm determines that one route is better than another. This information is stored in routing tables. Metrics include bandwidth, communication cost, delay, hop count, load, MTU, path cost, and reliability. Sometimes referred to simply as a metric. See also <i>algorithm</i> .
routing protocol	Protocol that accomplishes routing through the implementation of a specific routing algorithm. Examples of routing protocols include BGP, OSPF, and IS-IS.
routing table	Table stored in a router or some other internetworking device that keeps track of routes to particular network destinations and, in some cases, metrics associated with those routes.
RP	route processor. Cards that contain run-control software on the router. Two RPs are installed as a redundant pair in dedicated slots in the front of each line card chassis.
RPF	Reverse Path Forwarding. Multicasting technique in which a multicast datagram is forwarded from all but the receiving interface if the receiving interface is the one used to forward unicast datagrams to the source of the multicast datagram.

RSVP	Resource Reservation Protocol. Protocol that supports the reservation of resources across an IP network. Applications running on IP end systems can use RSVP to indicate to other nodes the nature (bandwidth, jitter, maximum burst, and so on) of the packet streams they want to receive. RSVP depends on IPv6. Also known as Resource Reservation Setup Protocol. See also <i>IPv6</i> .
running configuration	The router configuration currently in effect. Although the user can save multiple versions of the router configuration for future reference, only one copy of the running configuration exists in the router at any given time.
Rx	The receiver end of a fabric link. All links are unidirectional. See also <i>Tx</i> .
S	
SCFC	shelf controller/fan controller. Combines shelf controller function and fan controller function on one card. Two are installed in each fabric chassis.
SCGE	shelf controller Gigabit Ethernet card. Gigabit Ethernet switch on a system controller card in the fabric chassis.
SDH	Synchronous Digital Hierarchy. European standard that defines a set of rate and format standards that are sent using optical signals over fiber. SDH is similar to SONET, with a basic SDH rate of 155.52 Mbps, designated at STM-1.
SDR	secure domain router. A collection of line cards and route processors that form a complete router. Each router contains its own instance of dynamic routing, IP stack, system database, interface manager, and event notification system.
SDRAM	synchronous dynamic random access memory. A form of dynamic RAM that adds a separate clock signal to the control signals.
shelf controller	The hardware component that manages the configuration and health of a fabric chassis within the Cisco CRS router.
shelf manager	The shelf manager process runs on a router or switch, doing platform-dependent functions, including handling OIR events. Shelf manager is formerly called platform manager.
SMU	Software Maintenance Upgrade. A “point fix” for a critical problem. SMUs are delivered as PIE files and are used to update software packages.
SNMP	Simple Network Management Protocol. SNMP is the protocol governing network management and the monitoring of network devices and their functions. It is not necessarily limited to TCP/IP networks.
SNMPv3	Simple Network Management Protocol Version 3. An interoperable standards-based protocol for network management. SNMPv3 provides secure access to devices by a combination of authenticating and encrypting packets over the network.
software configuration	A list of packages activated for a particular node. A software configuration consists of a boot package and additional feature packages.
SONET	Synchronous Optical Network. A standard format for transporting a wide range of digital telecommunications services over optical fiber. SONET is characterized by standard line rates, optical interfaces, and signal formats. See also <i>SDH</i> .

SP	service processor. An SP on each card maintains an internal management connection to the shelf controller for the rack. The SP is referred to in CLI commands to identify the nodeID for fabric, alarm and fan controller cards.
	Example: RP/0/RPO/CPU:router# admin show controllers fabric connectivity location 0/SM0/SP
SPE	Synchronous Payload Envelope. Portion of the SONET frame containing overhead information (POH and user data).
SPF	shortest path first. Routing algorithm that iterates on length of path to determine a shortest-path spanning tree. Commonly used in link-state routing algorithms. Sometimes called Dijkstra's algorithm.
SSH	Secure Shell. A protocol that provides a secure remote connection to a router through a Transmission Control Protocol (TCP) application.
SSL	secure socket layer. A secure socket between two entities with authentication.
standby	Denotes an inactive card or process that waits to become active; standby cards or processes are also sometimes denoted as backup.
startup configuration	The router configuration designated to be applied on the next router startup.
subinterface	Virtual interfaces created on a hardware interface. These software-defined interfaces allow for segregation of traffic into separate logical channels on a single hardware interface and better utilization of the available bandwidth on the physical interface.
switchover	A switch between the active and standby cards. The switchover can be initiated by command, or it can occur automatically when the active card fails.
system reload	Reload of a router node.
system restart	Soft reset of a router node. This involves restarting all processes running on that node.

T

TAC	Cisco Technical Assistance Center.
TACACS	Terminal Access Controller Access Control System. Authentication protocol, developed by the DDN community, that provides remote access authentication and related services, such as event logging. User passwords are administered in a central database rather than in individual routers, providing an easily scalable network security solution.
tar	A tar file is a file produced by the UNIX tar program, which packages multiple files in a single file for distribution as a single unit. Each tar file has a <i>tar</i> filename extension.
target configuration	A “two-stage” configuration of the Cisco IOS XR software running configuration. This allows users to make changes to the running configuration and accept these changes by entering the commit command.
task ID	An identifier that determines user access to a given command or series of commands. A user must be a member of a group with the appropriate task IDs assigned to it to execute the related commands.

Tbps	Terabits per second. The amount of data that can be sent in a fixed amount of time. 1 terabit = 2^{40} bits, or 1,099,511,627,776 bits.
TCP	Transmission Control Protocol. Connection-oriented transport layer protocol that provides reliable full-duplex data transmission. TCP is part of the TCP/IP protocol stack.
Telnet	Standard terminal emulation protocol in the TCP/IP protocol stack. Telnet is used for remote terminal connection, enabling users to log in to remote systems and use resources as if they were connected to a local system. Telnet is defined in RFC 854.
terabyte	A unit of computer memory or data storage capacity equal to 1024 gigabytes (2^{40} bytes). Approximately 1 trillion bytes.
TFTP	Trivial File Transfer Protocol. A simplified version of FTP that allows files to be transferred from one computer to another over a network, usually without the use of client authentication (for example, username and password).
	Note: some TFTP servers (such as Sun Solaris) may not support file sizes larger than 32 MB.
trap	Message sent by an SNMP agent to an NMS, a console, or a terminal to indicate the occurrence of a significant event, such as a specifically defined condition or a threshold that was reached.
tunnel	Secure communication path between two peers, such as two routers.
Tx	The transmitter end of a fabric link. All links are unidirectional. See also Rx.

U

UDP	User Datagram Protocol. Connectionless transport layer protocol in the TCP/IP protocol stack. UDP is a simple protocol that exchanges datagrams without acknowledgments or guaranteed delivery, requiring that error processing and retransmission be handled by other protocols. UDP is defined in RFC 768.
unicast	Message sent to a single network destination.
unicast transmission	A unicast transmission sends one copy of each packet to each member of the group. This method is inefficient because the same information must be carried multiple times, requiring extra bandwidth.

V

VCSEL	vertical cavity surface emitting laser.
vm	A vm file is a Cisco IOS XR software file that can be installed from ROM Monitor mode. A vm file is typically used to install the Cisco IOS XR software when the software has not yet been installed or has been corrupted.
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.

W

WRED	Weighted Random Early Detection. Queueing method that ensures that high-precedence traffic has lower loss rates than other traffic during times of congestion.
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X

XML	Extensible Markup Language. A standard maintained by the World Wide Web Consortium (W3C) that defines a syntax that lets you create markup languages to specify information structures. Information structures define the type of information, for example, subscriber name or address, not how the information looks (bold, italic, and so on). External processes can manipulate these information structures and publish them in a variety of formats. XML allows you to define your own customized markup language.
XML agent	A process on the router that is sent XML requests by XML clients and is responsible for carrying out the actions contained in the request and returning an XML response back to the client.
XML client	An external application that sends an XML request to the router and receives XML responses to those requests.
XML operation	A portion of an XML request that specifies an operation that the XML client would like the XML agent to perform.
XML operation provider	The router code that carries out a particular XML operation including parsing the operation XML, performing the operation, and assembling the operation XML response
XML request	An XML document sent to the router containing a number of requested operations to be carried out.
XML response	The response to an XML request.
XML schema	An XML document specifying the structure and possible contents of XML elements that can be contained in an XML document.

