NORTEL NETWORKS

Passport 7400, 15000, 20000

List of Terms

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Passport 7400, 15000, 20000

List of Terms

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Publication history

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5.2S3 Standard
General availability. Contains information on Passport 7400, Passport 15000, and Passport 20000 for the PCR5.2 GA release

Contents

About this document

This document is a list of Passport terms and their definitions; it includes terms and acronyms that appear in documents in the Passport library.

The following topics are discussed in this section:

Who should read this document and why

Anyone needing a definition of terms and acronyms found in Passport documentation should use this guide.

What you need to know

This guide assumes that the user is

- an experienced user of data switching equipment
- familiar with Preside Multiservice Data Manager
- familiar with data networks

Familiarity with the DPN-100 family of switches is helpful, but not essential.

Using the List of Terms

Terms and acronyms in this book are listed in alphabetical order. Whenever possible, definitions are given with the term, not with its acronym.

This document is meant to be used as an aid to understanding the terminology and acronyms of the Passport documentation suite. It contains Passport-specific terminology as well as some general terms and acronyms.

In cases where general terms have a specific meaning for Passport, the Passport-specific definition is used. An example of a word with a Passport-specific meaning is the term *component*. In Passport documentation, *component* refers to a Passport hardware or software object that the network management user can look at, configure, or monitor.

Preside Multiservice Data Manager documentation often uses the term *component* to refer to a node on the network. Preside Multiservice Data Manager terms and acronyms are defined in NTP 241-6001-805 *Preside MDM List of Terms*.

DPN-100 family terminology can be found in NTP 241-0001-002 *DPN-100 List of Terms*.

What's new in this document

Terms that apply to the following features were added to this document:

- "16-port OC-3/STM-1 POS and ATM FP with PEC NTHW44" (page 12)
- "CAS usability enhancements" (page 12)
- "Frame link monitoring on the 1-port STM-1 channelized frame relay FP" (page 12)
- "IP multicast" (page 12)
- "Passport IP differentiated services for the gigabit Ethernet FP" (page 13)
- "Passport virtual router redundancy protocol" (page 13)
- "Point-to-multipoint SPVC" (page 13)

Other changes made to this document include the following:

- added or updated the following terms and definitions:
  - — “ASPEN” (page 25)
  - — “CoS” (page 51)
  - — “G.711” (page 76)
  - — “G.729” (page 76)
  - — “HEP” (page 79)
  - — “hot equipment protection (HEP)” (page 81)
  - — “hitless software migration (HSM)” (page 80)
  - — “HSM” (page 81)
  - — “PRI” (page 126)
  - — “primary rate interface (PRI)” (page 126)
  - — “V5.2” (page 164)
  - — “VBD” (page 165)
  - — “virtual router (VR)” (page 168)
  - — “virtual router access point (VRAP)” (page 168)
  - — “voice band data (VBD)” (page 169)
  - — “voice gateway control protocol (VGCP)” (page 170)
  - — “VR” (page 172)
  - — “VRAP” (page 172)
- updated this document to remove references to these MVP FPs which are support discontinued (SDed):
  - — 1-port DS1 MVP with cardtype 1pDS1MVP and PEC NTFN62
  - — 1-port DS1Voice with cardtype 1pDS1V and PEC NTFP41
  - — 1-port E1 MVP with cardtype 1pE1MVP and PEC NTFN20
  - — 1-port E1Voice with cardtype 1pE1V and PEC NTFP43
  - — 1-port J2MV with cardtype J2MV and PEC NTBP96

— 1-port TTC2M MVP with cardtype 1pTTC2mMVP and PEC NTFN64

16-port OC-3/STM-1 POS and ATM FP with PEC NTHW44

The function processor (FP) 16-port OC-3/STM-1 packet over SONET (POS) and asynchronous transfer mode (ATM) is added to the list of available Passport 15000 or 20000 FPs. These terms were added to this document (even though POS is not supported in PCR 5.2):

- "Packet over SONET" (page 116)
- "POS" (page 124)
- "SFP module" (page 142)
- "Small form-factor pluggable optical transceiver module" (page 145)

CAS usability enhancements

The following term was added for this feature: "wildcard pattern" (page 174).

The following term was updated for this feature: "wildcarding" (page 174).

Frame link monitoring on the 1-port STM-1 channelized frame relay FP

The following term was added for this feature: "frame link monitoring (FLM)" (page 73).

IP multicast

The following terms were added for this feature:

- "bootstrap router (BSR)" (page 35)
- "candidate bootstrap router (C-BSR)" (page 39)
- "candidate rendezvous point (C-RP)" (page 39)
- "designated router (DR)" (page 58)
- "Internet group management protocol (IGMP)" (page 86)
- "IP multicast forwarding" (page 88)
- "IP multicast forwarding table (FWD)" (page 88)
- "IP multicast routing database (RDB)" (page 88)

- “IP multicast routing table manager (MRTM)” (page 88)
- “multicast border router (MBR)” (page 103)
- “multicast domain” (page 103)
- “protocol independent multicast-sparse mode (PIM-SM)” (page 128)
- “rendezvous point (RP)” (page 134)
- “reverse path forwarding (RPF)” (page 136)
- “RP-Set” (page 137)
- “shared multicast distribution tree” (page 143)
- “shortest path tree (SPT)” (page 144)

Passport IP differentiated services for the gigabit Ethernet FP

The following term was added for this feature:

- “drop precedence (DP)” (page 61)

Passport virtual router redundancy protocol

The following terms were added for this feature:

- “critical IP address” (page 52)
- “IP address owner” (page 87)
- “primary IP address” (page 126)
- “virtual router redundancy protocol (VRRP)” (page 168)
- “virtual router redundancy protocol backup (VRRP backup)” (page 169)
- “virtual router redundancy protocol MAC address (VRRP MAC address)” (page 169)
- “virtual router redundancy protocol master (VRRP master)” (page 169)
- “virtual router redundancy protocol router (VRRP router)” (page 169)

Point-to-multipoint SPVC

The following terms were added for this feature:

- “ATM logical multicasting” (page 28)
- “ATM network multicasting” (page 28)

- “ATM spatial multicasting” (page 28)
- “last common node” (page 89)
- “leaf” (page 90)
- “local leaf” (page 94)
- “local root” (page 95)
- “party” (page 116)
- “root node” (page 137)
- “single party node” (page 145)

Text conventions

This document uses the following text conventions:

- `nonproportional spaced plain type`

  Nonproportional spaced plain type represents system generated text or text that appears on your screen.

- `nonproportional spaced bold type`

  Nonproportional spaced bold type represents words that you should type or that you should select on the screen.

- *italics*

  Statements that appear in italics in a procedure explain the results of a particular step and appear immediately following the step.

  Words that appear in italics in text are for naming.

- [`optional_parameter`]

  Words in square brackets represent optional parameters. The command can be entered with or without the words in the square brackets.

- <`general_term`>

  Words in angle brackets represent variables which are to be replaced with specific values.

- UPPERCASE, lowercase

  Passport commands are not case-sensitive and do not have to match commands and parameters exactly as shown in this document, with the exception of string options values (for example, file and directory names) and string attribute values.

- |

  This symbol separates items from which you may select one; for example, ON|OFF indicates that you may specify ON or OFF. If you do not make a choice, a default ON is assumed.

- ...

  Three dots in a command indicate that the parameter can be repeated more than once in succession.

The term absolute pathname refers to the full specification of a path starting from the root directory. Absolute pathnames always begin with the slash (/) symbol. A relative pathname takes the current directory as its starting point and starts with any alphanumeric character (other than /).

Related documents

The content of the following document suites can also help you to understand Passport 7400, 15000, 20000-related terms and acronyms:

- Passport 7400, 15000, 20000 documentation
- Preside Multiservice Data Manager documentation
- DPN-100 documentation

How to get more help

For information on training, problem reporting, and technical support, see the "Nortel Networks support services" section in the *product overview document.*

Chapter 1
List of Terms

This section contains an alphabetical listing of the terms with their definitions.

Symbols

mu-law

Normally written as m-law. A technique for translating pulse code modulated voice into 64 kbit/s digital voice channels. μ-law is used in North America, Japan, and other countries that use DS-1 function processors. See also “A-law” (page 22).

802.3

An IEEE standard defining Ethernet communications.

A

AAL

See “ATM adaptation layer (AAL)” (page 26).

AAL1

See “ATM adaptation layer type 1 (AAL1)” (page 26).

AAL2

See “ATM adaptation layer type 2 (AAL2)” (page 26).

AAList

See “active alarm list” (page 19).

AAL2 channel identifier (CID)

A numerical value associated with a virtual channel connection (VCC) narrowband timeslot. For non-switched trunks, the association is fixed when the VCC is established. For switched trunks, the association is made for each cell.

AAL-5

See “ATM adaptation layer type 5 (AAL-5)” (page 26).

A-bit signaling

See “availability-bit signaling” (page 30).

ABR

1 See “area border router (ABR)” (page 25).

2 See “available bit rate (ABR)” (page 30).

ABS

See “ATM bearer service (ABS)” (page 27).

abstract syntax notation 1 (ASN.1)

A complex data description language used for defining data in a machine-independent manner. ASN.1 is defined in ITU-T and ISO specifications.

ACC

See “access call control (ACC)” (page 18).

acceptable routing path

A path that satisfies the traffic requirements for an ATM PNNI call and for which the optimization metric is within the specified variance interval. Acceptable routing paths are used for ATM network load balancing.

access call control (ACC)

Passport protocol-independent software that controls the progress and state of a call.

access delay

The time it takes to clock a frame or cell into or out of an access port on a Passport node. In a Passport network, the calculated value for access delay includes the serialization delay only. Access devices are assumed to be located close enough to a Passport node so that propagation delay is ignored.

access module (AM)

A DPN-100 switch that provides user access, termination, and concentration, and local data switching. Access modules can use Passport as a backbone switch.

access protocol control (APC)

Software residing on a Passport node. APC software support OSI Layers 1, 2, and 3 CCS message handling and call processing functions for connections with PBXs. See also “common channel signaling (CCS)” (page 46).

accounting gateway

A software application that runs on a workstation and is used to convert accounting records into a format usable by an IBM or VAX billing host.

accounting meter

Collects data for the frame relay egress accounting and ATM accounting features based on the end-user traffic at the entry and exit points of the networks. The meter generates accounting records from the collected data.

acknowledgment

A message that the receiving end sends to the source to indicate that it has received a transmission in good order.

ACR

See “available cell rate (ACR)” (page 30).

active alarm list

A list of active alarms, residing on each running card, that have been raised but not yet cleared.

actual shaping rate (ASR)

The shaping rate that is applied to a given ATM virtual channel connection (VCC) or virtual path connection (VPC). This value is based on the traffic descriptor type parameters and the quality of service specified for the connection, and is determined through traffic shaping.

adaptive differential pulse code modulation (ADPCM)

A widely used voice compression technique standardized by the ITU-T.

address plan

Specifies the format of the addresses that identify the network elements to which Passport nodes can route packets. The address plan is known by every node capable of receiving such packets. The plan can be either internal or external to Passport. Passport uses the external DPN-100 address plan that combines ITU-T specifications X.121 and E.164 with DPN-100 RID/MID addressing.

address prefix

A string of bits that forms the lead portion of one or more ATM addresses. The length of the prefix is a maximum of 152 bits.

address resolution protocol (ARP)

A mechanism for mapping an IP network layer address to a data link layer address.

address scope

In ATM PNNI networking, a configured value for each node that participates in the network. Address scope is assigned to the node address and defines the highest level up to which the node advertises this address in the PNNI hierarchy.

address space manager (ASM)

A component in a LEN node that assigns and frees session addresses.

address summarization

In ATM PNNI networking, reduces the amount of addressing information that needs to be distributed throughout the network. Address summarization makes scaling in large networks possible. See “summary address” (page 152).

adjacency

A relationship formed between selected neighboring routers for the purpose of exchanging routing information. Not every pair of neighboring routers becomes adjacent.

adjacent network identifier (ANID)

A numeric identifier assigned to an adjacent network that is directly connected to this network through at least one X.25 or X.75 gateway.

ADPCM

See “adaptive differential pulse code modulation (ADPCM)” (page 20).

ADTF

See “allowed cell rate decrease time factor (ADTF)” (page 22).

advertisement scope

See “address scope” (page 20).

Advisor

A Preside Multiservice Data Manager toolset.

agent

Network management software components that are contained in managed entities such as routers, concentrators, and host computers. These components monitor the operation of the managed entity by maintaining a collection of objects in the management information base (MIB).

Agents communicate with corresponding managers.

aggregate policy

An internetworking policy through which the border gateway protocol (BGP) combines the characteristics of different routes and advertises this combination as a single route. Aggregation reduces the data that a BGP speaker stores and exchanges with another BGP speaker.

AINI

See “ATM inter-network interface (AINI)” (page 27).

AIR

See “allowed information rate (AIR)” (page 23).

AIS

See “alarm indication signal (AIS)” (page 22).

alarm

Notification of an unusual, important, or abnormal event. An event can be degradation of service or quality of service conditions, processing errors, out-of-service conditions, software errors, administrative conditions, or security violations.

alarm agent

An entity residing on every function processor (FP) and control processor (CP) that receives alarm events from a variety of services/applications.

alarm collector

An entity residing on the active control processor (CP) that receives alarms from its alarm agents.

alarm indication signal (AIS)

1 A signal transmitted in lieu of the normal signal to maintain transmission continuity and to indicate to the receiving equipment that there is a transmission interruption located either at the equipment originating the AIS signal or upstream of that equipment.

2 A signal transmitted in the downstream direction from a point of failure. The AIS signal is used at the physical and ATM layers.

A-law

A technique for translating pulse code modulated voice into 64 kbit/s digital voice channels. A-law is used in countries that use E1 function processors. See also “mu-law” (page 17).

allowed cell rate

In ATM ABR networking, the rate at which the ABR source is allowed to transmit cells into the network. The allowed cell rate for an ABR connection varies dynamically as resource availability changes along the connection.

allowed cell rate decrease time factor (ADTF)

In ATM ABR networking, the time interval permitted between sending forward resource management (FRM) cells before the allowed cell rate is decreased to the initial cell rate (ICR). If the source does not transmit an

FRM cell for a period of ADTF centiseconds (hundredths of a second), it reduces its allowed cell rate to the value of its ICR. If the allowed cell rate is already at or below ICR, further rate reductions are defined by the ABR FRM cell limit.

allowed information rate (AIR)

A pro-active congestion control mechanism used by the network that reduces allocated bandwidth when congestion occurs and by doing so discards frames in a controlled fashion.

alternate clock master

For Passport 7400 switches, the bus tap in slot 0 or slot 15, which is the alternate clock signal for a backplane bus. This term can also be applied to the processor card that contains the bus tap. See also “clock master” (page 44).

alternate mark inversion (AMI)

A digital line encoding technique in which a zero is transmitted by no pulse while a one is transmitted by a pulse opposite in polarity to the previous pulse.

alternate path

An optional pre-determined path for a specified path connection. The alternate path acts as a backup in case the primary path fails.

AM

See “access module (AM)” (page 19).

AM cluster

A set of DPN-100 access modules (AM) and routing identifiers (RID), where these AMs and RIDs have been grouped for routing purposes. Each AM cluster can have up to two RIDs. Each RID can be a member of more than one AM cluster.

American standard code for information interchange (ASCII)

A standards-based format for text files, in which each character is represented as a 7-digit binary string. There are 128 characters. There are variations, notably for Windows NT and derivative operating systems and IBM System 390 servers. There is also extended ASCII, which includes up to 256 characters.

AMI

See “alternate mark inversion (AMI)” (page 23).

American National Standards Institute (ANSI)

An organization that establishes voluntary industry standards.

ancestor node

An ancestor node is a node that has a parent relationship to a given node.

ANID

See “adjacent network identifier (ANID)” (page 21).

ANSI

See “American National Standards Institute (ANSI)” (page 24).

APC

See “access protocol control (APC)” (page 19).

APS

See “automatic protection switching (APS)” (page 29).

application

Passport software is partitioned into distinct software applications. Applications contain features that are loaded on cards to provide services. A Passport switch can run multiple software applications simultaneously. An example of an application is frame relay service. See also “application version (AV)” (page 24).

application journaling

Represents the journaling of operational data between active and standby applications.

application-specific integrated circuit (ASIC)

An integrated circuit that performs a set of specific processes more quickly and efficiently than a generic processor.

application version (AV)

A particular version (or release) of an application.

application version list (AVL)

Specifies the version level of all applications that are configured to run on a Passport switch.

AQM

See “ATM queue manager (AQM)” (page 28).

Architect for Passport

A Preside Multiservice Data Manager toolset.

area border router (ABR)

Connects one or more OSPF areas and the backbone in IP networking. ABRs condense or summarize the topological data of their attached areas for distribution on the backbone. The backbone in turn distributes the information to other areas.

ARP

See “address resolution protocol (ARP)” (page 20).

AS

See “autonomous system (AS)” (page 29).

ASBR

See “autonomous system boundary router (ASBR)” (page 29).

ASCII

See “American standard code for information interchange (ASCII)” (page 23).

ASIC

See “application-specific integrated circuit (ASIC)” (page 24).

ASM

See “address space manager (ASM)” (page 20).

ASN.1

See “abstract syntax notation 1 (ASN.1)” (page 18).

ASPEN

See “voice gateway control protocol (VGCP)” (page 170).

ASR

See “actual shaping rate (ASR)” (page 20).

AS weight policy

See “autonomous system weight policy” (page 29).

associated signaling

Uses one dedicated path between switches as the signaling link.

asynchronous transfer mode (ATM)

A technology that provides access to a network by multiplexing user information into fixed-length units called cells. ATM forms the basis for broadband networks.

ATM

See “asynchronous transfer mode (ATM)” (page 26).

ATM accounting

Collects usage information in the form of cell counts for ATM connections. The service provider can use this information to bill customers or for test purposes, statistics, network engineering, and planning.

ATM adaptation layer (AAL)

The standards layer that allows multiple applications to convert data to and from a set of ATM cells. AAL translates higher layer services into the size and format of an ATM cell.

ATM adaptation layer type 1 (AAL1)

An AAL protocol used to transfer constant bit rate traffic such as voice and video.

ATM adaptation layer type 2 (AAL2)

An AAL protocol used to transfer variable bit rate traffic.

ATM adaptation layer type 5 (AAL-5)

An AAL protocol used to transfer variable bit rate, delay-tolerant, connection-oriented traffic that requires minimal sequencing or error detection support.

ATM anycast capability

An ATM routing and signaling feature that allows a user to request a point-to-point connection to a single ATM end system that is part of an ATM group.

ATM bearer service (ABS)

Passport's ATM bearer service allows ATM users and external equipment (ATM hubs, routers, workstations, servers, and video-conferencing equipment) access to the Passport network. This service provides sequence-preserving connection-oriented cell transfer between source and destination with a defined quality of service and throughput.

ATM bus controller (ABC)

A bus controller on a Passport ATM function processor.

AtmIf-CAC

See "ATM interface CAC (AtmIf-CAC)" (page 27).

ATM interface CAC (AtmIf-CAC)

A connection admission control (CAC) technique that applies to independent virtual channel connections (VCC) and virtual path connections (VPC) under an ATM interface. Compare with "virtual path termination CAC (VPT-CAC)" (page 168).

ATM inter-network interface (AINI)

ATM Forum standard signaling protocol that provides interconnection between Passport switches as well as interconnection between Passport and non-Passport switches (Nortel Networks-family switches and switches from other vendors).

ATM IP function processor

A Passport ATM function processor that uses the Passport queue controller (PQC) and ATM queue manager (AQM) ASICs to provide enhanced cell processing and ATM traffic management capabilities.

ATM layer

A layer in the B-ISDN protocol stack that transfers ATM cells. It is positioned between the physical layer and the AAL.

ATM link

A standards-based ATM connection.

ATM logical multicasting

Logical multicasting creates additional VCCs on the same output port of a switch, thus allowing more than one replicated copy of the same cell to be delivered to the same switch output port. This in turn enables cell replication for transport over ATM networks that do not support multicasting.

ATM multiprotocol encapsulation service

A service that supports two encapsulation methods for carrying connectionless network interconnect traffic over AAL-5. The first method is logical link control (LLC) encapsulation, which permits multiple protocols over a single ATM virtual circuit (VC). The second method is VC encapsulation, which permits one protocol over each ATM VC.

ATM network multicasting

Network multicasting is performed at each node in the ATM network to determine where branch points for a PMP call are required. Once a branch point is identified, spatial multicasting techniques are utilized to replicate the cell stream.

ATM networking

Encompasses the standards-based UNI, IISP, AINI, and PNNI routing and signaling protocols.

ATM queue manager (AQM)

A hardware chip on ATM IP function processors. The AQM performs traffic management functions such as per-VC queuing, shaped fair queuing, and processing for available bit rate (ABR) traffic.

ATM spatial multicasting

Spatial multicasting delivers replicated cells to different output ports on the same switch, thus permitting the routing of cells from the same switch to different destinations.

attribute

Defines the behavior or information associated with a specific component. Attributes are either operational or provisionable. See also “operational attribute” (page 113) and “provisionable attribute” (page 128).

attribute type

Specifies the structure of the attribute's value (for example, decimal, hex, BCD, integer, or IP address).

attribute value

The current setting for an attribute. The structure of the value is dictated by the type of attribute.

automatic protection switching (APS)

APS detects faults in SONET or SDH lines that are connected to the active function processor. Under line APS, two SONET or SDH lines are defined: working and protection. Either line can be active. Line APS monitors the line that is active and when necessary causes the card to switch to the other line.

autonomous system (AS)

An autonomous system is one or more networks that are under the control of one enterprise. These networks are usually under the control of a single routing protocol.

autonomous system boundary router (ASBR)

An ASBR is a gateway between autonomous systems. ASBRs are the backbone of the Internet.

autonomous system weight policy

The autonomous system weight policy allows you to set a preference for some autonomous systems and discriminate against others. You can assign each autonomous system a weight, where the border gateway protocol (BGP) prefers the path with lowest weight.

AV

See "application version (AV)" (page 24).

AVL

See "application version list (AVL)" (page 25).

availability

The percentage of time during which a device or service is ready for use.

availability-bit signaling

The availability-bit (A-bit) signaling technique exchanges availability status between the two ends of a frame relay permanent virtual channel (PVC) connection. A-bit signaling permits each end of a PVC to determine if the remote end is ready to process data.

availability message packet (AMP)

An availability message packet (AMP) is a status message sent by a hunt group member to its hunt group server. A hunt group member sends an AMP each time its availability status changes significantly.

available bit rate (ABR)

An ATM service category. ABR permits dynamic allocation of bandwidth to applications that are highly tolerant of cell delay and delay variance, such as LAN interconnection. ABR traffic is characterized as very bursty.

available cell rate (ACR)

The available capacity of an ATM link. In general, ACR refers to links that are already in use by one or more ATM connections.

B

B-channel

See “bearer channel (B-channel)” (page 33).

B-ICI

See “broadband inter-carrier interface (B-ICI)” (page 36).

B3ZS

See “binary 3 zero substitution (B3ZS)” (page 34).

B8ZS

See “binary 8 zero substitution (B8ZS)” (page 34).

backbone

A group of interconnected core switches that normally tandem traffic. A backbone node exchanges full topology information with all nodes in the same topology region that are not cluster nodes. The backbone exchanges limited routing and no topology information with clusters. The backbone does not exchange any information with nodes in other topology regions.

backbone border node

Passport nodes that reside on a backbone boundary, connected by backbone-cluster border links to cluster nodes.

backbone node

Passport nodes that reside within a backbone.

backbone router

A router that has an interface to the backbone, including area border routers (ABR). A backbone router that has connections only to other backbone routers also functions as an internal router.

backplane

The printed circuit board into which control and function processors on a shelf are seated. The backplane serves two functions: distributes power to all processor cards on the shelf, and supports the bus that transports data and signaling between processor cards.

backplane bus

A cell-based 800 Mbit/s bus. The backplane bus allows each processor card in a shelf to send data or signaling to any other processor card. There are two backplane buses for each shelf: X and Y.

backplane control system (BCS)

The software system that manages the operation of the Passport 15000 and 20000 fabrics. The BCS controls the fabrics on each processor card, allowing applications to send and receive frames over the backplane X and Y fabrics. The BCS also monitors the state of the fabrics to ensure that all cards can communicate. Lastly, the BCS allows the operator to monitor and test the fabrics.

backplane fabric

A cell-based 56.3 Gbit/s fabric. The backplane fabric allows each processor card in a shelf to send data or signaling to any other processor card. There are two backplane fabrics for each shelf: X and Y.

backplane file system (BFS)

The file system that enables a processor card to access files on either the active or standby control processor across the backplane.

backward congestion indication (BCI)

A bit in the Passport packet header that indicates that packets travelling in the opposite direction on the connection are encountering congestion.

backward explicit congestion notification (BECN)

The bit in a frame relay header that indicates congestion in the path for the direction opposite to the direction in which the frame is flowing.

backward resource management cell (BRM)

Forward resource management cells that the ABR destination device turns around for delivery to the available bit rate source. See “forward resource management cell (FRM)” (page 72).

bandwidth-elastic connection

See “elastic connection” (page 65).

bandwidth-non-elastic connection

See “non-elastic connection” (page 110).

bandwidth management

Allows both connectionless and path-oriented traffic to share the same Passport trunk while ensuring that trunk bandwidth is not oversubscribed to by circuits carrying voice and video traffic. Bandwidth is reserved for the duration of a logical connection and can be partitioned among services according to their priorities, minimizing the probability that voice and video traffic is discarded.

bandwidth on demand (BWOD)

Capability enabling users to acquire varying amounts of bandwidth on request.

bandwidth pools

In ATM traffic management, a method of reserving by service category a percentage of link bandwidth (known as a bandwidth pool) for connections.

basic rate interface (BRI)

The interface between an ISDN subscriber and the ISDN switch (that is, the local loop). The interface consists of two 64 kbit/s B-channels and one 16 kbit/s D-channel.

basic virtual path terminator

A type of virtual path terminator that provides traffic management at the VC level only.

Bc

See “committed burst (Bc)” (page 46).

BC

See “bus controller (BC)” (page 37).

BCD

See “binary-coded decimal (BCD)” (page 34).

BCI

See “backward congestion indication (BCI)” (page 32).

BCS

1 See “bus control system (BCS)” (page 37).

2 See “backplane control system (BCS)” (page 31).

Be

See “excess burst (Be)” (page 67).

bearer channel (B-channel)

In ISDN connections, a 64 kbit/s digital bidirectional channel for carrying voice and data traffic.

BECN

See “backward explicit congestion notification (BECN)” (page 32).

beginning of message (BOM)

The first cell in a series of cells that result from segmentation of higher-layer packets or frames. The BOM cell marks the first cell in the cell series that represents one packet or frame.

BFS

See “backplane file system (BFS)” (page 31).

BGP

See "border gateway protocol (BGP)" (page 35).

binary 3 zero substitution (B3ZS)

An encoding technique used to transfer bits over a DS3 line. B3ZS guarantees 1's density by substituting a pattern of bipolar violations if three or more zeros in a row are to be transported.

binary 8 zero substitution (B8ZS)

An encoding technique used to transfer bits over a DS1 line. B8ZS guarantees 1's density by substituting a pattern of bipolar violations if eight or more zeros in a row are to be transported.

binary-coded decimal (BCD)

1 A computer coding system that represents each decimal number with a group of four binary digits (1s and 0s).

2 A component model data type.

bipolar violation (BPV)

A failure to follow alternate mark inversion coding. BPVs are intentionally inserted in the bit stream using 1's density techniques.

bit 7 stuffing

When a T1 or E1 time slot has all 0s, bit 7 (the least significant bit) is forced to a 1.

BITS

See "building-integrated timing supply (BITS)" (page 36).

bit-transparent data service (BTDS)

A Passport application that transports continuous synchronous data (isochronous) that has already been subjected to some form of encoding across the network without interpretation. The continuous data stream is broken into fixed sized cells and sent through the network.

block

A a series of contiguous memory locations. User data is stored in a block. All blocks are assumed to be the same length, usually a binary (power of 2) number of words. Memory blocks are linked together to form buffers.

BNX

The Bay Networks switch running hyperstream software.

BNX-lwf

BNX interworking function. The set of capabilities that permits frame relay services over IP connections between virtual routers on a Passport 15000 or 20000 switch and a Bay Networks switch running hyperstream software (BNX).

BNX-lwf DLCI

BNX interworking function DLCI. A type of FrUni DLCI that is required for interworking between the Bay Networks switch running hyperstream software (BNX) and the Passport 15000 or 20000 supporting frame relay over IP.

BOM

See “beginning of message (BOM)” (page 33).

border gateway protocol (BGP)

Border gateway protocol (BGP) is an inter-autonomous systems routing protocol for the Internet.

border node

A logical node at the edge of some kind of networking boundary, such as a topology region, peer group, or cluster.

bootstrap router (BSR)

A dynamically elected router within a PIM domain that is responsible for constructing the RP-Set and originating bootstrap messages.

BPV

See “bipolar violation (BPV)” (page 34).

break-before-make rerouting

See “connection recovery” (page 49).

BRI

See “basic rate interface (BRI)” (page 32).

BRM

See “backward resource management cell (BRM)” (page 32).

broadband inter-carrier interface (B-ICI)

An interface between public ATM networks.

broadcast

To send one or more messages to multiple addresses on one or more networks.

BSR

See “bootstrap router (BSR)” (page 35).

BT

See “burst tolerance (BT)” (page 37).

BTDS

See “bit-transparent data service (BTDS)” (page 34).

buffer

A linked list of blocks. The blocks that make up a buffer are not necessarily contiguous. Buffers are composed of multiple blocks when the user data does not fit into a single block. The linkage of blocks to form a buffer is managed by the queue controller.

buffer memory

See “shared memory” (page 143).

building-integrated timing supply (BITS)

The most accurate and stable clock source within a physical structure. All digital equipment in the structure receives timing reference from the same master clock. BITS derives its signal from a stratum-3E or better reference signal. BITS provides network clock synchronization through external timing to the Passport 7400, Passport 15000 or 20000 switch.

bundle

Grouping of one or more physical links using the formats and procedures of the multilink frame relay (MLFR) standards. The bundle operates as a logical interface function that emulates a single physical interface to the Q.922 data link layer.

bundle link

A multilink frame relay (MLFR) sub-component that controls operation of one of the bundle's physical links.

burst tolerance (BT)

A characteristic of ATM usage parameter control applied to traffic defined through traffic descriptor types 6, 7, and 8, and is based primarily on the MBS value defined in parameter 3 for each of these types. BT is defined as MBS minus 1 multiplied by the difference between the PCR and SCR cell intervals. BT, together with SCR and the GCRA, determines the MBS that can be transmitted at the PCR.

bus

The Passport bus.

bus control system (BCS)

The software system that manages the operation of the Passport bus.

bus controller (BC)

A Passport ASIC that allows a processor card to send and receive data and to control information over a backplane bus. There are two bus controllers for each processor card, one for each 800 Mbit/s bus.

bus mode

A property of a Passport switch that indicates the number of backplane buses that are currently in service (for example, single-bus mode or dual-bus mode).

bus tap

The interface between a processor card and the backplane bus. The bus tap consists of a bus controller ASIC and some additional backplane interface logic. There are two bus taps for each processor card.

bus terminator card

A printed circuit board that terminates backplane traces, thereby reducing errors on the backplane buses by eliminating signal reflection. Each shelf contains two bus terminator cards, one at each end of the backplane.

BWOD

See "bandwidth on demand (BWOD)" (page 32).

C

cable management area

One of the four divisions of the shelf. It allows orderly management of cables and acts as an exhaust duct for hot air.

cache management system (CMS)

A feature that allows the user to configure the IP local cache table size.

CAC

See “connection admission control (CAC)” (page 48).

call

Communication between two subscribers who are connected to endpoints of the network.

call correlation tag (CCT)

An identifier, unique for each call, provided in the accounting record to facilitate off-switch correlation of several records issued at different interfaces in the network.

call establishment

Establishing a call between two access services across a network.

call management

The capability of the Passport accounting system to prevent the loss of accounting records by only accepting new SVC calls if the system has enough resources to process the accounting records associated with the SVC call. Call management is engineered for each logical processor.

call preservation

See “connection preservation” (page 50).

call redirection server (CRS)

Provides call redirection for DPRS services on Passport-only networks. A CRS improves an application’s availability by redirecting a call attempt that would otherwise fail because the destination cannot be reached. Call redirection servers are located on function processors that are spread throughout the routing identifier (RID) subnet in the DPRS network.

call router (CR)

Provides the translation of a DNA to a routable identity.

call server resource module (CSRM)

A DPN-100 resource module that is directly connected to and provides call server functions for a Passport network.

candidate bootstrap router (C-BSR)

A router configured to participate in a BSR election and acts as a BSR if elected.

candidate rendezvous point (C-RP)

A router configured as a potential rendezvous point for a specified range of multicast addresses.

CAR

See “connection address resolution (CAR)” (page 48).

card

An electronic circuit board. In Passport documentation, card usually refers to a processor card (either a function processor or a control processor).

card port

An interface between the fabric card and the processor cards of the Passport 15000 or 20000 switch.

CAS

1 See “component administration system (CAS)” (page 47).

2 See “channel-associated signaling (CAS)” (page 42).

CAW

See “cumulative administrative weight (CAW)” (page 53).

CBC

See “connection bandwidth control (CBC)” (page 49).

CBR

See “constant bit rate (CBR)” (page 50).

C-BSR

See “candidate bootstrap router (C-BSR)” (page 39).

CC

See “congestion control (CC)” (page 48).

CCITT

See “Comité Consultatif International Télégraphique et Téléphonique (CCITT)” (page 45).

CCR

See “current cell rate (CCR)” (page 54).

CCS

See “common channel signaling (CCS)” (page 46).

CCT

See “call correlation tag (CCT)” (page 38).

CDMA

See “code-division multiple access” (page 45)

CDV

See “cell delay variation (CDV)” (page 41).

CDVT

See “cell delay variation tolerance (CDVT)” (page 41).

C-RP

See “candidate rendezvous point (C-RP)” (page 39).

cell

A small, fixed-length data unit, with associated control header (cell header), that is transmitted across the network. Many cells can be required to carry a complete message for a customer. The ATM cell is 53 bytes long.

cell delay variation (CDV)

The allowable variation in time that a cell can take to travel over a virtual connection. Also, the measurable variation in the interval between ATM cells arriving at a network element. The accumulation of this variation results in cell clumping. Also known as cell delay variance.

cell delay variation tolerance (CDVT)

One of a set of ATM traffic characterization values. CDVT defines the tolerance to cell clumping that results from the accumulating amount of cell delay variation or "jitter" in the network or customer premises equipment (CPE). CDVT is Passport-specific and is not part of the ATM Forum specification.

cell header

Information wrapped within a cell that determines the destination of the cell and carries sequencing and error detection information.

cell loss priority (CLP)

A bit located in the ATM cell header that identifies the priority of the cell as eligible for discard at a point of congestion.

cell loss ratio (CLR)

The allowable percentage of cells that can be lost for a given traffic type. CLR is the ratio between ATM cells transmitted by the source over a link and the number of cells discarded by the destination due to congestion. CLR is a QOS class parameter that defines the loss ratio that the service provider agrees to over the lifetime of a connection.

cell queue controller (CQC)

The hardware chip that supports traffic shaping and usage parameter control on ATM interfaces and connections, and that permits per-VC queuing. The CQC ASIC defines the series of CQC ATM function processors as distinct from other series of ATM function processors.

cell queue memory (CQM)

The RAM memory used by the cell queue controller (CQC). This memory is used as buffer space for the link transmit queues, reserved space, and connection space.

cell switching

A hardware-based switching technology in which data entering the network is broken down into one or more fixed-length cells. The cells are transported independently through the network and reassembled at the destination.

cell transfer delay (CTD)

The time it takes a cell to travel from one end of a virtual connection to the other. CTD is also defined as the measurable elapsed time between an exit event at a measuring point (the source UNI) and an entry event at a measuring point (the destination UNI). This measurement is the sum of the total inter-node transmission delay and the total node processing delay between the two measuring points.

central processing unit (CPU)

The main processing unit of a device that performs program sequencing and arithmetic logic.

CES

See “circuit emulation service (CES)” (page 43).

channel

The smallest subdivision of a circuit that provides a single type of communication service.

channel-associated signaling (CAS)

Signaling used in voice or modem connections in which specific bits in the DS1 or E1 frame structure carry the ABCD signaling information for each channel.

channel service unit (CSU)

A type of interface used to connect a terminal or computer to a digital medium. A CSU also performs diagnostic and protective functions, such as providing a keep-alive signal to maintain line synchronization.

child node

In an ATM PNNI network, a node at the next lower level of the hierarchy where that node is contained in the peer group represented by the logical group node currently referenced. The child node can be a logical group node or a physical node.

child peer group

A child peer group of a peer group is any one group that contains a child node of a logical group node in that peer group.

CID

See “customer identifier (CID)” (page 54).

CIDR

See “classless inter-domain routing (CIDR)” (page 44).

CIR

See “committed information rate (CIR)” (page 46).

circuit emulation service (CES)

A service that converts and transports data from one circuit format to another. For example, a CES can convert DS1 circuit data to ATM cells at the ingress node for transport over an ATM network, and then reconvert the data to its original DS1 circuit format at the egress node.

Class A, B, and C (internetworking)

Address ranges for Internet addressing. These ranges are based on the first eight bits of the address. Each range allows less of the whole address for host addresses than the previous range.

- A Range from 1 to 126. This class is used for networks that have up to 2^{24} nodes, such as government agencies and major university systems. Default address mask of 255.0.0.0.
- B Range from 128 to 191. This class is used for networks that have up to 2^{16} nodes, such as large corporations. Default address mask of 255.255.0.0.
- C Range from 192 to 254. This class is used for smaller networks that have fewer than 255 nodes, such as smaller colleges and businesses. Default address mask of 255.255.255.0.

class of service (IP CoS)

A Passport IP differentiated service feature that provides limited IP traffic management.

classless inter-domain routing (CIDR)

An internetworking protocol that uses subnetwork masks other than the defaults used for IP address classes. Defined in RFC1517 and RFC1518.

clock master

The bus tap in slot 0 or 15 that supplies clock signals for a backplane bus. This term can also be used for the processor card that contains this bus tap.

closed user group (CUG)

A collection of users whose members are governed by certain rules of access with respect to communication with each other, with members of other closed user groups, and with the open part of the network. These rules maintain security, prohibit unauthorized access. and provide logical partitioning of the network for better access control.

CLP

See “cell loss priority (CLP)” (page 41).

CLR

See “cell loss ratio (CLR)” (page 41).

CLR alarm

An alarm that is issued subsequent to an associated SET alarm when the fault condition no longer applies. These alarms have an activeListStatus value of “CLR”.

cluster

See “Passport cluster” (page 117).

cluster border node

Passport nodes that reside on a cluster boundary, connected by backbone-cluster border links to the backbone.

cluster node

Passport nodes that reside within a cluster.

CMS

See “cache management system (CMS)” (page 38).

CNLS

See “connectionless routing (CNLS)” (page 49).

CNM

See “customer network management (CNM)” (page 54).

CO

See “connection-oriented routing (CO)” (page 50).

COI

See “community of interest (COI)” (page 47).

code-division multiple access

A method of allowing multiple users to access the same system by assigning them different digital codes which they can use to decode their desired narrowband information from the stream's wideband composite signal.

cold standby

Applications and features that operate with a standby instance that is not synchronized with the active instance of the software. During an equipment switchover, cold standby applications incur longer outages than hot standby and warm standby applications, and all connections must be re-established.

COM

Continuation of message. See “beginning of message (BOM)” (page 33).

Comité Consultatif International Télégraphique et Téléphonique (CCITT)

A European standards body now known as ITU-T.

command area

An adjustable segment of a window where you enter and review commands. The command area contains two fields: a command (input) field and a history field.

command file

A set of instructions stored as a macro. When the command file is executed, all instructions or commands in that file are performed automatically.

command line interface

An area on a terminal screen that allows you to enter instructions from the keyboard and then execute those instructions.

committed burst (Bc)

In frame relay, the maximum amount of data (in bits) that a network agrees to transfer under normal conditions over a measurement interval. The data can be one frame or many frames.

committed information rate (CIR)

In frame relay, the rate (in bit/s) at which the network agrees to transfer information over a connection. It is related to committed burst (Bc) and measurement interval (Tc) as CIR = Bc/Tc.

common header

A small Passport common frame header that is appended to the front of frames and cells that are routed between Passport nodes.

common channel signaling (CCS)

A signaling system in which signaling control data for all channels on a facility is carried on a single separate channel in the form of a data protocol. For example, the control signals for 30 voice channels are carried on an ISDN PBX trunk, and the data channel (D-channel) is carried in one of the remaining channels.

common part convergence sublayer (CPCS)

A sublayer of the AAL-5 layer.

common queuing

An ATM queuing structure in which traffic from two or more connections is placed on a single queue during node congestion. Traffic is processed in round-robin fashion within the common queue. Compare with “PHB” (page 123).

common transmit clock (CTC) mode

An IMA configuration in which the same transmit clock is used for all physical links in the IMA group. This configuration contrasts with independent transmit clock (ITC) mode.

community of interest (COI)

The source and destination of communications traffic. Two common COIs referred to are as follows:

1 A local COI refers to the traffic entering on access ports of a Passport node that is destined for another port on the same Passport.

2 A network COI refers to a matrix of inter-node traffic in the network. For each node in a network, the matrix has an entry for the volume of data originating from that node and terminating on the other nodes in the network.

component

Used by the network operator or administrator to control Passport software, hardware, capabilities, and access services. Each component represents some part of Passport—a service, a piece of software, or a physical hardware element. Standardized and organized in a highly structured fashion, components provide the model for operator interaction with Passport. All commands for provisioning, monitoring, and maintenance are addressed to components.

component administration system (CAS)

The command and control system that processes network management requests by passing them to the appropriate components for action and returns the results to the source of the request. CAS also provisions and creates components on the Passport node. In addition, when working with the network management interface system (NMIS), CAS provides the provisioning view for external network management systems.

component instance

When more than one of a component type exists, they are differentiated by an instance value. The instance value is information (such as a decimal or a string) appended to the component type.

component model

An OSI-like management model describing the Passport node in terms of a set of components arranged into hierarchies. Components contain attributes that are arranged in attribute groups. Components support verbs that take options. A verb applied to a component can produce responses. Components

can also produce asynchronous responses, such as alarms. The component model is supported over the local, Telnet, and FMIP NMIFs. It is indirectly supported within the Passport enterprise SNMP MIB.

component type

The part of the component name that identifies the component being referred to. For example, FrameRelayUni is the component type of the component name *FrameRelayUni/4*.

congestion control (CC)

ATM mechanisms that detect, prevent, and correct traffic congestion.

congestion state

An indication of the degree of congestion of a memory entity such as a queue or free list. On ATM FPs, there are four congestion states, where 0 is the most congested and 3 is the least congested. When a memory entity is in congestion state x, all data of discard priority greater than x is discarded.

conjugate-structure, algebraic-code-excited linear prediction (CS-ACELP)

An 8 kbit/s compression algorithm used to encode voice data, based on ITU-T recommendation G.729.

connection

A channel or path between two network entities. The channel or path can be either physical or virtual. A network entity is any system or subsystem that is attached to the network medium.

connection address resolution (CAR)

The protocol by which a data network address is resolved into a routable destination on the network for the purpose of establishing a call connection.

connection admission control (CAC)

A preventative ATM traffic management strategy through which Passport evaluates a connection request based on the traffic characteristics of both established connections and the requested connection. The request is accepted if the new connection does not jeopardize the QOS of established connections.

connection bandwidth control (CBC)

Connection bandwidth control guides the response of ATM connections to changes in bandwidth available over an ATM link.

connection recovery

A process of finding an alternate route for a failed connection that would have been cleared back to the end-user. In connection recovery, the incumbent connection segment is released before the establishment of an alternate connection segment. Connection recovery is also known as hard rerouting and break-before-make rerouting.

connection segment

A portion of an end-to-end connection or the entire end-to-end connection, spanning a series of intermediate nodes across a PNNI network.

connection scope

The PNNI routing level above which the network cannot route calls.

connection scope selection information element (CSS-IE)

A signaled information element that is used in ATM anycast call requests. CSS-IE in the call setup message permits the calling endstation to constrain a point-to-point connection request using the ATM anycast capability to group members within a specified level of routing hierarchy.

connection trace

A control plane mechanism that determines the physical nodes and physical links traversed by existing connections that have already been established.

connectionless routing (CNLS)

A point-to-point routing service where a message's path through the network is not specified during the call establishment phase. Instead, the path for each data unit (a frame or cell) of a message is calculated independently and dynamically. Each path is based on the destination address of the frame, current network topology, and available bandwidth. Connectionless routing features a high degree of robustness and reliability, since data can be easily steered away from failed or heavily congested facilities.

connection-oriented routing (CO)

A routing service in which the path used by the frames or cells is determined when the connection is set up and remains fixed for the duration of the connection (barring network problems). Each path is set up on the nodes of that path and each packet needs a minimum of routing information.

connection preservation

The process of maintaining a connection over a sequence of potentially disruptive events such that the connection does not need to be reestablished when that sequence of events is complete.

Also known as call preservation.

constant bit rate (CBR)

An ATM Forum UNI 4.0 quality of service (QOS) class. This QOS class defines a static bandwidth that is continuously available for the duration of a connection. Corresponds to UNI 3.0/3.1 QOS class 1 and to Passport constant bit rate QOS class.

Networks use CBR for voice, video, and telemetry services that need carefully metered transmission rates. In this sense, CBR emulates individual private line service. CBR avoids disagreeable “glitches” in service quality that result from data rate variance and data losses.

continuation of message cells (COM)

All cells in a stream between the beginning of message cell and the end of message cell, all of which belong to a series of cells that result from segmentation of higher-layer packets or frames.

control plane (C-plane)

Defines all aspects of the management and control of frame relay. The local management interface (LMI) is the interface to the C-plane. It uses procedures defined in

- *Frame Relay User-to-Network Interface With Extensions*, document number 001-208966 (available through Nortel Networks)
- ANSI T1.617 Annex D
- ITU-T Q.933 Annex A

For more information, see 241-5701-901 *Passport 7400, 15000, 20000 Frame Relay Fundamentals*.

control processor (CP)

A type of processor card optimized to support the software that performs complex, memory-intensive processes. Among other things, these processes parse operator commands, and modify and display provisioning data. The control processor also supports the administration interfaces for the Passport switch. Each shelf must have an active control processor and can also have (for redundancy) a standby control processor. Each control processor contains the disk, a DCE V.24 interface, and an Ethernet interface to manage the Passport switch.

control processor (CP) switchover

The process of the standby CP becoming active. This process can occur upon CP failure, restart of the active CP, a manual reset of the CP, or when a switchover is invoked manually using the "Switchover Lp" command.

convergence sublayer (CS)

A sublayer of an ATM adaptation layer.

Coordinated Universal Time (UTC)

A time standard that Passport software uses for establishing network time, that is equivalent to Greenwich Mean Time (GMT). GMT is the time at the Greenwich meridian (0 degrees longitude).

cooling unit

The cooling unit is a hardware component on a Passport switch. It contains a forced-air cooling system that ensures adequate cooling of the processor cards. For more information, see 241-7401-200 *Passport 7400 Hardware Description* or 241-1501-200 *Passport 15000, 20000 Hardware Description*.

core networking

Encompasses the three Passport networking systems: PORS, and DPRS.

CoS

See "class of service (IP CoS)" (page 43).

CP

See “control processor (CP) switchover” (page 51)

CPCS

See “common part convergence sublayer (CPCS)” (page 46)

CPE

Customer premises equipment.

CPeD

A control processor with external (BITS) DS1 timing support.

C-plane

See “control plane (C-plane)” (page 50).

CQC

See “cell queue controller (CQC)” (page 41).

CQC function processor

A type of Passport ATM function processor that uses a cell queue controller (CQC) ASIC. This type of function processor was the original ATM FP on Passport.

CQM

See “cell queue memory (CQM)” (page 41).

crankback

A mechanism in ATM networking that partially releases a connection setup in progress when that setup request encounters a failure in the network. This mechanism allows ATM routing protocols to perform alternate routing.

CR

See “call router (CR)” (page 39).

critical IP address

An IP interface on the local router. If the VRRP virtual router configuration includes a critical IP interface address, a change in state to that IP interface causes a role switch in that VRRP virtual router.

CRC-4

A cyclic redundancy check pattern used on an E1 line.

CRC-6

A cyclic redundancy check pattern used in extended superframe (ESF) mode on a DS1 line.

cross-net polling

The process of periodically exchanging a status message across the subnet between the two end points of a PVC. This message indicates the status of the source to the destination.

CRS

See “call redirection server (CRS)” (page 38).

CS-ACELP

See “conjugate-structure, algebraic-code-excited linear prediction (CS-ACELP)” (page 48).

CSRM

See “call server resource module (CSRM)” (page 39).

CSS-IE

See “connection scope selection information element (CSS-IE)” (page 49).

CSU

See “channel service unit (CSU)” (page 42).

CTC mode

See “common transmit clock (CTC) mode” (page 46).

CTD

See “cell transfer delay (CTD)” (page 42).

CUG

See “closed user group (CUG)” (page 44).

cumulative administrative weight (CAW)

Sum of the connection segment costs across the rerouting domain.

current cell rate (CCR)

The cell rate at which ATM elastic connections are operating when they are not running at full capacity (in a reduced bandwidth state). When an elastic connection is operating at full capacity, its CCR is equal to its equivalent cell rate (ECR).

customer identifier (CID)

The customer identifier is used in customer network management (CNM) to limit the user's access to components that belong to the same customer identifier. A CNM operator can send commands only to components provisioned with the same CID as the operator. A CNM operator receives only data collection system (DCS) data, such as alarms, that is generated by components provisioned with the same CID as that of the operator. The special CID of 0 is reserved for the network owner, known as the network manager (Netman). A CID of zero is required to provision the overall network.

customer network management (CNM)

Allows virtual private network (VPN) user access to VPN-specific information, such as real-time alarms and the use and status of VPN network components and shared components.

D

D-channel

See "delta channel (D-channel)" (page 57).

D4

One of the framing patterns for DS1, in which there are 12 frames for each multiframe. See also "extended superframe (ESF)" (page 68).

data circuit-terminating equipment (DCE)

In data communications, the equipment at the network side of a subscriber link that provides both interface control and the means of digital transmission between user premises and the network switches.

data collection system (DCS)

A software system that collects various types of management data (such as alarms, accounting records, logs, state change notifications, and traps information) and distributes it as requested.

data encryption standard (DES)

A symmetric encryption algorithm standardized by the National Institute of Standards and Technology.

data flow preservation

The process of maintaining uninterrupted data flow over a sequence of potentially disruptive events. Connection preservation is implied whenever data flow is preserved. Data flow preservation does not guarantee that data is never discarded (for example, due to either congestion or error conditions).

See “connection preservation” (page 50).

data link connection identifier (DLCI)

Ten bits within the two address octets of a frame relay address header that carry information used to locally identify the virtual circuits or permanent virtual circuits. For more information, see 241-5701-901 *Passport 7400, 15000, 20000 Frame Relay Fundamentals*.

data link control (DLC)

An interface that provides logical link control connection services.

data link switching (DLSw)

A forwarding protocol for wide area network support of the NetBIOS protocol.

data manipulation engine (DME)

The data manipulation engine (DME) is the base service that provides capabilities for moving data frames to/from link interfaces and between function processors within a Passport node. It is designed to provide protocol-based applications with the capability of performing operations on data frames. Such operations are packet header manipulation, packet retransmission, timing events, and queuing.

data network address (DNA)

A DNA is an identifier given to applications in many data networks. This address is used as the fundamental identifier for setting up a virtual circuit between data networks.

data packet network

A standards-based data networking system for interconnecting diverse host, application, and end-user environments. The system gives organizations the ability to choose the best solutions for data networking. DPN-100 addresses the needs of organizations for reliable multi-protocol data services, such as frame relay, SNA, and X.25, at speeds up to T1/E1. It supports a wide range of physical interfaces including V.24, V.35, V.36, X.21, G.703, and token ring. The highest possible availability, 99.999%, is achieved through networking features, built-in redundancy, and a modular design.

data path object (DPO)

A data path object is a C++ object that processes frames at the interrupt level on a Passport card. A frame processes by passing through a chain of DPOs; each DPO returns the ID of the next DPO in the chain. You can configure a DPO to be addressable module-wide.

data path object environment

A data path object environment is one of the two programming environments that are extensions of the operating system. The data path object environment supports the functions of Passport services, that is, functions that associate with data path processing.

data service unit (DSU)

A type of interface used to connect a terminal to a digital medium. In most cases, it is used in conjunction with a CSU. Refer to “channel service unit (CSU)” (page 42) for details.

data terminal equipment (DTE)

The name used to designate the user equipment on a subscriber link.

data type

A division of information with common qualities that affect their representation and semantics (for example, numbers or strings). Data types are used to represent values in component instances, component attributes, verb options, response attributes. They are used as index values within replicated, vector, and array attribute types. The component model supports the following data types and variations: array, ASCII string, binary-coded decimal (BCD), component name, compound, dashed hex string, decimal,

enumeration, extended ASCII string, hex number, hex string, IP address, link, list, long, null, replicated, integer sequence, set of bits, signed, time, fixed-point decimal, vector, and wild-carded BCD.

For more information on each attribute type, see the appendix on attribute types in 241-5701-060 *Passport 7400, 15000, 20000 Components*.

DBNL

See “dial backup network link (DBNL)” (page 58).

DBR

See “domain-based rerouting (DBR)” (page 60).

DCE

See “data circuit-terminating equipment (DCE)” (page 54).

DCS

See “data collection system (DCS)” (page 54).

DE

See “discard eligibility (DE)” (page 59).

DES

See “data encryption standard (DES)” (page 55).

DR

See “designated router (DR)” (page 58).

default gateway

The gateway used to reach a destination if no other route is known or provided.

Defense Network Secure Information Exchange (DNSIX)

A protocol defined in RFC 1038 and RFC 1108 for passing confidential data securely over a network.

delta channel (D-channel)

A bidirectional channel, also known as the D-channel, used to carry call control messages and signaling information over ISDN links.

designated router (DR)

When a LAN has multiple multicast routers attached, one of the routers is elected as the router designated to forward the multicast traffic.

designated transit list (DTL)

A list of node and link identifiers that completely specify a path across a single PNNI peer group. Link identifiers are optional.

device alarm

An alarm that originated from a device (for example, a Passport).

DGCRA

See “dynamic generic cell rate algorithm (DGCRA)” (page 62).

dial backup network link (DBNL)

A type of dial-in DPN gateway providing connectivity when a dedicated connection breaks.

dial-in DPN gateway

A connection made by modem between a DPN module and a Passport node. The network link type is dial backup.

DiffServ

A Passport IP differentiated service feature that provides IP traffic management.

DiffServ domain

A group of virtual routers that are using the same “per-hop-behavior” (page 122) definitions to apply differentiated services to IP traffic.

differentiated services code point

A 6-bit field in an IP packet header that is used for specifying differentiated service parameters for the IP packet.

Digital Private Network Signaling System No 1 (DPNSS 1)

A common-channel signaling protocol intended for use between PBXs in private networks through time slot 16 of a 2.048 Mbit/s digital transmission system. Similarly, it can be used through time slot 23 of a 1.544 Mbit/s digital transmission system.

Dijkstra's algorithm

An algorithm that is sometimes used to calculate routes in an ATM network, given a link and nodal state topology database.

DIN

Deutsche Industrialische Norm. A set of standards for electronic and industrial products that originated in Germany.

direct memory access (DMA)

A method of transferring data to or from memory without having to use the CPU, thus improving the overall speed of the system.

discard eligibility (DE)

A bit in the frame relay header. A frame is marked with the DE bit to indicate that, in times of congestion, the frame is to be discarded before frames without the DE bit set. This bit is set either by the user or the network.

discard priority (DP)

Discard priority refers to the importance of a frame or cell. Passport has 4 discard levels, where 0 is the most important (last to be discarded) and 3 is the least important (first to be discarded). Discard priority 0 is reserved for Passport control traffic, leaving three discard priorities for user traffic.

DLCI

See "data link connection identifier (DLCI)" (page 55).

DLSw

See "data link switching (DLSw)" (page 55).

DMA

See "direct memory access (DMA)" (page 59).

DME

See "data manipulation engine (DME)" (page 55).

DNA

See "data network address (DNA)" (page 55).

DNSIX

See "Defense Network Secure Information Exchange (DNSIX)" (page 57).

domain

See “PNNI routing domain” (page 124).

domain-based rerouting (DBR)

An ATM Forum standard protocol that enables the PNNI network to employ a rerouting mechanism that protects a connection segment within one or more local rerouting domains.

double-ended accounting

Accounting records are generated at both the ingress and egress ends of the connection. This option is available for both frame relay and ATM accounting features. BothEnds is another term for a double-ended accounting record for frame relay accounting. Double-ended accounting is recommended for ATM accounting over single-ended accounting to ensure the records reflect the actual amount of data transported from end to end.

downspeeding

In bit-transparent data service (BTDS) software, the capability of decreasing the data rate by adjusting the physical clock speed of the line in response to congestion.

DPN

See “data packet network” (page 56).

DPN gateway

A Passport to DPN connection. Its provisioning is similar to that of a Passport trunk.

DPN routing

See “dynamic packet routing system (DPRS)” (page 63).

DPNSS 1

See “Digital Private Network Signaling System No 1 (DPNSS 1)” (page 58).

DP

See “discard priority (DP)” (page 59) and “drop precedence (DP)” (page 61).

DPO

See “data path object (DPO)” (page 56).

DPRS

See “dynamic packet routing system (DPRS)” (page 63).

DRAM

Dynamic random access memory.

drop precedence (DP)

Drop precedence refers to the importance of an IP packet. A drop precedence value is assigned to a packet to control its loss sensitivity relative to other packets when they are placed on the same queue. Generally, a drop precedence value of low indicates the packet is less likely to be discarded when the queue is congested. This traffic has a higher probability of being forwarded. Similarly, a drop precedence value of high indicates the packet is more likely to be discarded when the queue is congested. This traffic has a lower probability of being forwarded. The actual loss sensitivity of packets depends on the discarding mechanism at the queue.

DS0

The 64 kbit/s line standard format for North America as defined by the ITU-T.

DS1

The 1.544 Mbit/s interface defined in ITU-T G.703. Consists of a framed pattern of twenty-four 64 kbit/s time slots.

DS1c

A digital signal level having a transmission rate of 3.152 Mbit/s carrying 48 DS0s plus overhead bits.

DS3

The 44.736 Mbit/s line standard format in North America as defined by the ITU-T. This is the format used to carry information over the T3 trunk.

DSCP

See “differentiated services code point” (page 58).

DSU

See “data service unit (DSU)” (page 56).

DTE

See “data terminal equipment (DTE)” (page 56).

DTL

See “designated transit list (DTL)” (page 58).

DTL originator

The first lowest-level node within the entire PNNI routing domain to build the initial DTL stack for a given connection.

DTL terminator

The last lowest-level node within the entire PNNI routing domain to process the connection (and thus the DTL for the connection).

DTMF

See “dual tone multi-frequency (DTMF)” (page 62)

dual-bus mode

A configuration in which both backplane buses are available to carry cells between operational cards.

dual fabric mode

A configuration in which both backplane fabric cards are available to carry cells between operational cards.

dual-FP line APS

A type of implementation scheme that uses two optical interface cards to provide SONET or SDH line automatic protection switching. Dual-FP APS allows equipment sparing for optical interface cards.

See “automatic protection switching (APS)” (page 29).

dual leaky bucket

See “inverse-UPC shaping” (page 87).

dual tone multi-frequency (DTMF)

A signalling method that uses specific pairs of frequencies within the voice band for signals.

dynamic generic cell rate algorithm (DGCRA)

A version of the GCRA. DGCRA uses information supplied by ABR.

dynamic packet routing system (DPRS)

A connectionless routing system for delay-sensitive and high-throughput variable bit rate traffic. DPRS carries data traffic such as frame relay and all DPN-100 services such as X.25.

E

E1

The 2.048 Mbit/s interface defined in ITU-T G.703. Usually consists of a framed pattern of thirty-two 64 kbit/s time slots.

E3

The 34.368 Mbit/s interface defined in ITU-T G.703 and G.704.

E.164

The ITU-T recommended numbering plan for ISDN that includes the numbering plan for public switched telephone networks.

early packet discard (EPD)

EPD is a feature that applies a more stringent discard policy to the first cell of an AAL-5 frame than it does to subsequent cells. This reduces the number of incomplete frames in the network and thereby increases the throughput.

EAP

See “external address plan (EAP)” (page 69).

EBR

See “edge-based rerouting (EBR)” (page 64).

See “equivalent bit rate (EBR)” (page 66).

echo cancellation

A technique in voice networking that allows for the isolation and filtering of unwanted signal energy caused by echoes from the main transmitted signal.

ECR

See “equivalent cell rate (ECR)” (page 66).

edge-based rerouting (EBR)

Edge-based rerouting refers to procedures used in a PNNI network to recover and optimize active point-to-point SVC, SVP, soft PVC, and soft PVP connections.

EFCI

See “explicit forward congestion indication (EFCI)” (page 68).

EG

See “external gateway (EG)” (page 69).

EGP

See “exterior gateway protocol (EGP)” (page 69).

egress accounting

A method of collecting information based on customer use of network resources. The information is used by the service provider to develop billing policies and quality of service parameters. As the name implies, this information is collected at the exit (egress) points of the network for each frame relay data link connection (DLC).

egress node

The last Passport node that processes the packet as it traverses the Passport network; that is, the node from which the packet exits the Passport network.

See also “ingress node” (page 83) and “tandem node” (page 155).

egress protocol

The egress protocol synchronizes the accounting meters at the opposite ends of the connection and facilitates the exchange of data collected by the accounting meters.

egress traffic

Egress traffic refers to the traffic exiting from a Passport network through an access point.

EIR

See “excess information rate (EIR)” (page 67).

elastic connection

An ATM connection type that is able to respond to changes in bandwidth over an ATM link through a decrease or an increase in its contracted data rate.

EM

See “enterprise module (EM)” (page 66).

emission priority (EP)

Traffic management mechanism used to handle delay requirements of different types of traffic. Emission priority grading is implemented in three emission queues, interrupting, high, and normal, which are serviced in that order. The interrupting queue is typically used for CBR traffic, such as voice and BTDS. The high and normal priority queues are used for VBR traffic, such as frame relay. This queue arrangement allows delay-sensitive cells, such as voice and video, to interrupt the transmission of long data frames, such as frame relay. (In ATM FPs, there is no interrupting queue, since multiplexing is already occurring at the cell level. The queues are known as high, medium, and normal.)

A class scheduler uses emission priority to determine relative importance between service classes for the purpose of determining which service class data is forwarded to the next queue.

end of message (EOM) cell

The last cell in a series of cells that result from segmentation of higher-layer packets or frames. The EOM cell marks the last cell in the cell series that represents one packet or frame.

endpoint (EP)

The software managing the subscriber access point. The endpoint can include the software for the access service, the virtual channel or path, or the logical connection.

end system

A system on which connection termination points are located.

end-to-end connection

The entire connection within the PNNI network from the PNNI source node to the PNNI destination node.

enterprise module (EM)

The root-level component of Passport. Its instance value is the node name.

entry border node

The node that receives a call over an outside link. This node is the first within a peer group to see the call.

EOM

See "end of message (EOM) cell" (page 65).

EP

1 See "endpoint (EP)" (page 65).

2 See "emission priority (EP)" (page 65).

EPD

See "early packet discard (EPD)" (page 63).

equipment sparing

Switching service functionality from failed hardware to equivalent standby hardware. For CPs and FPs, one-for-one sparing enables a spare processor card to stand by for an equivalent single main processor card. One-for-*n* sparing enables a spare processor card to stand by for "n" main processor cards. One-for-*n* FP sparing requires a sparing panel and only applies to electrical FPs (copper-based as opposed to fiber optical). See also "spare card" (page 148).

equivalent bit rate (EBR)

The bandwidth (in bit/s) that the network reserves for a FR-ATM connection. The EBR or requested bandwidth computation for each connection request determines the CAC mechanism.

equivalent cell rate (ECR)

The bandwidth (in cell/s) that the network reserves for a particular ATM connection.

ER

See "explicit rate (ER)" (page 68).

ESD jack

A jack located on the Passport shelf for plugging in an antistatic wrist strap to protect Passport against electrostatic discharge.

ESF

See “extended superframe (ESF)” (page 68).

Ethernet

A physical and data link layer protocol that follows the IEEE 802.3 standard or the related Xerox, Digital, and Intel Ethernet standard.

Ethernet address

A 48-bit media access layer (MAC) address composed of an assigned six-octet manufacturer’s code and a unique number (such as a serial number) provided by the manufacturer.

ETSI

European Telecommunications Standards Institute. A telecommunications standards body.

ETSI QSIG

European Telecommunications Standards Institute Q interface signaling. A common channel signaling protocol supported by the Passport Voice Networking service.

European digital subscriber signaling system number one (EDSS1)

A common channel signaling protocol supported by the Passport Voice Networking service.

excess burst (Be)

The amount of data (in bits) that a network agrees to transfer over a measured interval if network bandwidth is available.

excess information rate (EIR)

The sustainable rate of data transfer in excess of CIR that the network delivers if there is available bandwidth. It is related to excess burst (Be) and measurement interval (Tc) as EIR = Be/Tc.

exit border node

The node that progresses a call over an outside link. This node is the last within a peer group to see the call.

explicit forward congestion indication (EFCI)

An indicator that an ATM network element can set in a cell header to indicate pending or current network congestion. End system applications can read this indicator and reduce transmission requirements, which in turn reduces network congestion over time. EFCI is a reactive traffic management strategy. Not all applications can read the EFCI and respond accordingly.

Also, a function of ABR through which switches indicate the presence of local congestion by setting a bit in traffic cells.

explicit rate (ER)

A function of ABR whereby switches deposit an explicit cell rate offer in a BRM cell based on the current rate and locally determined congestion.

export policy

A collection of rules that govern the distribution of route information. These policies are used by the BGP, EGP, OSPF, and RIP route management protocols.

extended superframe (ESF)

One of the framing patterns for a DS1 line consisting of 24 frames for each superframe. See also “D4” (page 54).

exterior

In PNNI networking, a term that indicates that an item (such as a link, node, or reachable address) is outside of a PNNI routing domain.

exterior link

A link that crosses the boundary of the PNNI routing domain. The PNNI protocol does not run over an exterior link.

exterior reachable address

An address that a node can reach through a PNNI routing domain but that is not located in that PNNI routing domain.

external address plan (EAP)

An address plan that is not the Passport internal address plan. Examples of EAPs are a DPN internal address plan and an IP address plan.

external gateway (EG)

A connection to a non-Passport external module (for example, a connection to a DPN-100 switch).

exterior gateway protocol (EGP)

An IP routing protocol that operates between autonomous systems on the Internet.

external routing protocol

A routing protocol from another network. Routing of external protocols is done either natively or using encapsulation. External protocols are routed natively when the packet is routed directly according to the address contained in its header. Encapsulation is used to completely envelop the external protocol within a Passport packet, using it for making routing decisions.

F

fabric card

The circuit pack that performs the cell-switching activities between the processor cards of a Passport 15000 or 20000 switch.

fabric port

An interface to the fabrics of a Passport 15000 or 20000 switch.

facsimile handling

The handling of in-band facsimile or modem data dynamically. On detection of a facsimile or data call, echo cancellation is disabled and the voice compression rate is adjusted to allow the facsimile or data information to be transported to its destination.

fair buffer allocation (FBA)

Guarantees that connections or classes receive a fair portion of the total available cell buffers in a function processor.

FAS

See “frame alignment signal (FAS)” (page 72).

fast management information protocol (FMIP)

The proprietary fast management information protocol (based on OSI/ASN.1 principles) that is used between a Passport switch and Preside Multiservice Data Manager to manage the Passport modules.

FAX handling

See “facsimile handling” (page 69).

fax idle suppression (FIS)

A function performed by Passport when processing facsimile transmissions that saves bandwidth by not transmitting the idle portions between data bursts. During a typical facsimile transmission, FIS can reduce bandwidth use by as much as 20 percent in the sending direction and 80 percent in the receiving direction.

fax relay

A modulation/demodulation technique used by the voice transport service for transmitting facsimile traffic across a Passport network. The types of modulation supported are based on ITU-T recommendations V.27 (up to 4.8 kbit/s) and V.29 (up to 9.6 kbit/s). Fax relay is only supported on MVP-E FPs.

FBA

See “fair buffer allocation (FBA)” (page 69).

FCI

See “forward congestion indication (FCI)” (page 72).

feature

Passport applications consist of features (for example, frame relay UNI is a feature of the frame relay application). Each processor card is provisioned to run a set of features.

feature list (FL)

The list of provisionable features that can be loaded onto a processor. The feature list is a provisionable attribute of a logical processor type.

FECN

See “forward explicit congestion notification (FECN)” (page 72).

file

A set of related records that are treated as a unit for the purposes of storage and retrieval.

file prober

Software residing on the Preside Multiservice Data Manager workstation that uses FTP to transfer accounting data from the Passport node to the host computer.

file transfer protocol (FTP)

A TCP/IP protocol used to transfer files across an internet. See also Internet protocol interface over virtual circuit (IPIVC).

filter

A subroutine for discriminating among packets. Filters are used to decrease traffic or improve security over network interfaces.

filtering

In the context of using commands such as list, display or find, filtering is an operation that decreases the number of components targeted by a command.

FIS

See “fax idle suppression (FIS)” (page 70).

FL

See “feature list (FL)” (page 70).

FLM

See “frame link monitoring (FLM)” (page 73).

FMI

See “frame mode information (FMI)” (page 73).

FMIP

See “fast management information protocol (FMIP)” (page 70).

FMIP enclosed

Format type associated with Passport accounting and statistics records. FMIP enclosed accounting and statistics records are raw data records that are enclosed in FMIP headers and trailers.

foreign address

An address or address prefix that does not match the summary addresses provisioned on any given node.

forward congestion indication (FCI)

A bit in the Passport common header set to indicate that congestion was experienced by packets travelling through the Passport network. Congestion in the subnet and at the access is indicated by BCI/FCI bits. The frame relay service at the Passport node evaluates frames from the subnet for BCI/FCI bit indications, and based on this, sets the appropriate BECN/FECN bit on the frame sent to the user.

forward explicit congestion notification (FECN)

The FECN bit is used in the frame relay header of a frame to warn the receiving-end device that the frames it is receiving (traveling in the same direction) have encountered congestion or congested resources.

forward resource management cell (FRM)

Resource management cells that an ABR source sends to its destination. See “resource management (RM) cell” (page 135).

FP

See “function processor (FP)” (page 76).

frame

A variable length data unit, with an associated control header, that is transmitted across the network. The frame header determines the destination of the frame and carries sequencing and error detection information. Many frames are required to carry a complete document or message.

frame alignment signal (FAS)

A sequence of signal bits used for synchronizing E3 frames.

frame-cell trunk

The transport mechanism used by Passport trunks to carry both frame and cell traffic on a frame-based interface.

HDLC mode is a provisionable mode in which a frame-cell trunk can operate and use HDLC framing.

Interrupting mode is a provisionable mode in which a frame-cell trunk can operate and use a modified HDLC-based framing. Interrupting mode allows highest priority data to interrupt traffic less sensitive to delay or traffic with a lower emission priority.

frame link monitoring (FLM)

Provides the ability to distinguish between physical line failure and customer premises equipment failure in the case of a system failure at the access to a Passport frame relay switch.

framed protocol

A set of formal rules describing how to transmit frames. HDLC framing uses a standard protocol for the sequential transmission of individual frames. Interrupting framing uses a modified-HDLC format that allows voice cells to interrupt the transmission of data frames, transmit the voice cell, and continue transmitting the data frame.

Framer

The Framer component controls link layer framing for application components sending and receiving data on a link interface. For frame relay applications, it is also through Framer that an application component is associated with a specific hardware link interface.

frame mode information (FMI)

The system responsible for maintaining the Passport intermodule (or switch-to-switch) connections. For example, FMI supports the following connections: Passport-to-Passport, Passport-to-DPN-100 access module, Passport-to-DPN-100 resource module.

frame relay IP server

A logical representation that allows multiple IP-enabled FrUnis on the same function processor to share a single protocol port on the virtual router.

frame relay multiplexor/demultiplexor

A Passport component that can distinguish traffic from multiple frame relay peers for distribution to multiple applications in a Passport switch.

frame relay managed cut-through switching (MCS)

A feature that provides bidirectional, point-to-point virtual connections between Passport nodes at a specific quality of service (QOS). The MCS connection is a switched path that provides many-to-one multiplexing of connections for a data service.

frame relay service (FRS)

A streamlined ISO data link layer protocol. A frame relay network supports only core communications functions (such as transparency, multiplexing, and orderly delivery). This simplified processing (as opposed to traditional packet data protocols) permits higher speeds and lower delays for a given processing capability. Simplification is made possible by the assumed use of improved transmission facilities (high-quality digital facilities), which are affected by far fewer transmission errors. Furthermore, many functions such as sequencing flow control and retransmission are performed by end user equipment.

Frame relay-to-ATM interworking function (FR-ATM IWF)

A Passport frame relay service that provides interworking functions between frame relay PVCs and ATM PVCs using AAL-5.

See also, “FR-ATM interworking service” (page 75).

FR-ATM accounting

An accounting service that collects usage information (byte and frame counts) on FR-ATM connections. Service providers can use this information to bill their customers, or for test, statistics, network engineering, and planning purposes.

FR-ATM gateway

An application of the FR-ATM interworking service that converts frame/cell traffic to and from ATM cell traffic. The FR-ATM gateway provides a frame relay interface (either UNI or NNI) that converts frame relay traffic coming in from its link into cells leaving the switch at an ATM interface. In the other direction, the gateway converts cell traffic coming into the switch at the ATM interface to frame relay traffic going out on the frame relay UNI or NNI. The FR-ATM services frame relay traffic originating across the frame/cell subnet.

FR-ATM interworking service

The FR-ATM interworking service allows the carriage of frame relay traffic over an ATM networking and transport infrastructure. It maps frame relay permanent virtual circuits (PVCs) to and from ATM PVCs to provide connectivity between frame relay CPE and ATM-capable CPE. The FR-ATM interworking service comprises a core frame relay UNI/NNI service and an interworking function.

The FR-ATM interworking supports the application of the FRF.8 standard for service interworking (SIWF) and the FRF.5 standard for network interworking (NIWF).

free list

The part of the shared memory that is currently unused and available for data arriving into the FP card.

free list size

The number of blocks that currently make up the free list.

free list threshold

A free list threshold is a specific number of blocks used in the determination of the congestion state of the free list. A free list can define several thresholds. As the free list size crosses each threshold, the free list enters a more severe congestion state. For example, ATM FPs define three free list thresholds. The free list at its maximum size starts off in congestion state 3; and as it is depleted and falls below the first threshold, it enters congestion state 2.

FRIP

See “frame relay IP server” (page 73).

FRM

See “forward resource management cell (FRM)” (page 72).

FRS

See “frame relay service (FRS)” (page 74).

FTM

The Passport traffic management system. It detects congestion and reports it to the service (frame relay, for example).

FTP

See “file transfer protocol (FTP)” (page 71).

full FMIP

Format type associated with Passport accounting and statistics records. For full FMIP accounting and statistics records, each field is completely encoded in FMIP format.

function processor (FP)

A type of processor card that supports physical interface connections to subscriber lines and network trunks. It is optimized to support the software that performs the real-time functions associated with the forwarding and routing of frames. Different types of FPs support different types of physical interfaces, such as DS1, E1, V.35, and V.11 access and trunks. See also “control processor (CP) switchover” (page 51).

G

G.711

ITU-T standard related to pulse code modulation (PCM) of voice frequencies.

G.729

ITU-T standard related to coding of speech at 8 kbit/s using conjugate-structure algebraic-code-excited linear-prediction (CS-ACELP).

gateway

1 See “accounting gateway” (page 19).

2 See “DPN gateway” (page 60).

3 See “external gateway (EG)” (page 69).

4 See “FR-ATM gateway” (page 74).

5 See “gateway identifier (GID)” (page 77).

6 See “internal gateway” (page 85).

7 See “X.25 gateway” (page 174).

8 See “X.75 gateway” (page 175).

gateway identifier (GID)

An integer that uniquely identifies an X.25 gateway or an X.75 gateway in a network.

GCRA

See “generic cell rate algorithm (GCRA)” (page 77).

general packet radio service

A packet-linked technology that enables high-speed, 115-kbit/s, wireless Internet, and other data communications.

general virtual circuit interface (GvcIf)

GvcIf is a networking feature providing circuit establishment between LAN/WAN services.

generic cell rate algorithm (GCRA)

An algorithm used in a Passport ATM network to monitor and police network traffic. In Passport traffic management, GCRA is used by usage parameter control (UPC) to enforce conformance at the source ATM terminal.

generic flow control (GFC)

A four-bit field in the ATM cell header at a user-to-network interface intended for traffic flow control between the user and network equipment.

global rerouting domain

In the context of the global rerouting protocol, the entire set of nodes in the PNNI network including all nodes belonging to all local rerouting domains.

Global System for Mobile Communications

A standard digital cellular phone service used in Europe and Japan, to ensure interoperability between countries.

good-put

In an ATM network, the measurable amount of traffic that is transmitted from source to destination that can be successfully segmented and reassembled by the end systems. A high good-put means that few or no cells were transmitted that could not be reassembled into frames.

GPRS

See “general packet radio service” (page 77)

group address

In ATM networking, identifies a group of endstations. The ATM group address is characterized by the group address AFI. The ATM groups and AFIs are defined in the ATM Forum User-to-Network Interface Signaling Specification Version 4.0 (af-sig-0061.000), Annex 5.

GSM

See “Global System for Mobile Communications” (page 77)

GvcIf

See “general virtual circuit interface (GvcIf)” (page 77).

H

H.248

The ITU-T gateway control protocol. H.248 is one control interface used between the media gateway controller and the PVG.

half session (HS)

A session-layer component consisting of the combination of data flow control and transmission control components comprising one end of a session.

hard rerouting

See “connection recovery” (page 49).

HDB3

See “high-density binary 3 zero maximum encoding (HDB3)” (page 79).

HDLC

See “high-level data link control (HDLC)” (page 79)

HDLC mode

See “frame-cell trunk” (page 72).

HDLC-transparent data service (HTDS)

A service that transports HDLC-framed data across the network without interpretation, except that interframe flags are not transmitted. The efficiency of the transmission is increased by not transmitting flags.

header error control (HEC)

A CRC code found in the last byte of the ATM cell header that is used for verifying cell integrity.

hello packet

A type of PNNI routing packet that neighboring logical nodes exchange.

Hello protocol

The Hello protocol is a neighbor discovery protocol run over private network-to-network interface (PNNI) links between lowest level nodes and logical group nodes (LGNs).

HEP

See “hot equipment protection (HEP)” (page 81).

HG

See “hunt group (HG)” (page 81).

hierarchically complete source route

A stack of DTLs that represent a route across a PNNI routing domain. A DTL is included for each hierarchical level between and including the current level and the lowest visible level in which the source and destination nodes are reachable.

high-density binary 3 zero maximum encoding (HDB3)

An encoding technique used to transfer bits over E1 and E3 lines. To ensure 1’s density, HDB3 substitutes a bipolar violation where four or more 0s are to be sent in a row.

high-level data link control (HDLC)

An ITU-TSS link layer protocol standard for point-to-point and multipoint communications.

high-speed serial interface (HSSI)

An EIA/TIA-613 physical layer standard. Similar to V.35 and V.11, HSSI is an interchange circuit that transfers serial data between DTE and DCE at speeds ranging from 1 Mbit/s to 52 Mbit/s.

hitless CP switchover

The switch of activity from the active CP to a standby CP without restarting the FPs on the shelf. FPs that support hitless CP switchover continue, uninterrupted, to provide service. FPs that do not support hitless CP switchover must restart and do not provide uninterrupted service.

hitless services

A service is hitless when the software that provides the service can run uninterrupted, even when the hardware providing the service changes. With hitless services, traffic incurs minimal interruption and established connections stay up. Passport software applications and features are categorized based on their ability to provide hitless services.

See “cold standby” (page 45).

See “hot standby” (page 81).

See “warm standby” (page 173).

hitless software migration (HSM)

Hitless software migration allows a shelf (CPs and FPs) to migrate from one version of software to another without interrupting the services being provided by that shelf.

holding priority (HP)

In an ATM network, a priority scheme that is assigned to all bandwidth non-elastic ATM connections to indicate the relative importance of each connection. When a loss of bandwidth occurs, connections with lower holding priority are released first.

In a PORS network, a parameter that indicates the tolerance of a connection for path bumping. A connection with a lower holding priority can be bumped to an alternative path or terminated by a connection with a higher priority.

hop by hop route

A routing approach in which each node along the path uses its own routing knowledge to determine the next hop of the route. The expectation is that all nodes choose consistent hops so that the call reaches the requested destination.

horizontal link

A link between two logical nodes that belong to the same peer group.

host computer

The central controlling computer in a network of computers. It allows lower-level terminals to work through it to obtain access to other computers and their stores of information.

hot equipment protection (HEP)

A carrier grade feature that provides a customer with the capability of setting up a sparing configuration that allows for hitless switch over capabilities.

hot standby

Hot standby applications and features offer hitless services during an FP or CP switchover. During an equipment switchover, hot standby applications incur minimal traffic interruption and established connections stay up.

hot swapping

Hot swapping of a data path refers to a service switchover while the switch is in service.

HP

See “holding priority (HP)” (page 80).

HS

See “half session (HS)” (page 78).

HSM

See “hitless software migration (HSM)” (page 80).

HSSI

See “high-speed serial interface (HSSI)” (page 79).

HTDS

See “HDLC-transparent data service (HTDS)” (page 78).

hunt group (HG)

Hunt groups are a group of network addresses (DNAs) reachable from a unique DNA and configured so that an incoming call automatically searches for an available address in the group.

I

I80960

A 32-bit Intel embedded processor that is one of the processing engines of control processors and function processors. It coordinates all activity on these processor cards.

IAD

See “Integrated Alarm Display (IAD)” (page 84).

ICMP

See “Internet control message protocol (ICMP)” (page 86).

ICR

See “initial cell rate (ICR)” (page 83).

IGMP

See “Internet group management protocol (IGMP)” (page 86).

IISP

See “interim interswitch signaling protocol (IISP)” (page 85).

IMA

See “inverse multiplexing for ATM (IMA)” (page 87).

IME

See “interface management entity (IME)” (page 85).

IMA link group

See “link group (LG)” (page 92).

IMUX

See “inverse multiplexing for frame relay (IMUX)” (page 87)

import policy

A collection of rules that govern the reception of route information. These policies are used by the BGP, EGP, and RIP route management protocols.

in-band synchronization

The process through which the accounting system takes a simultaneous snapshot of the accounting data at each end of the virtual circuit. This snapshot is used to generate an accounting record.

incumbent segment

An active connection segment that is in the process of being replaced by an alternate connection segment.

independent link

A single physical link used directly by the ATM layer. It is not part of an IMA group.

independent transmit clock (ITC) mode

An IMA configuration in which the transmit clock on one or more physical links in the IMA group is derived from different sources. This is contrasted with common transmit clock (CTC) mode.

independent VCC

A VCC that is not associated with a virtual path terminator.

induced uplink

An induced uplink is an uplink that is created by a logical group node (LGN) by aggregating uplinks advertised by its corresponding lower level peer group leader (PGL).

ingress node

The first Passport node that decides to which egress node the data packet is sent.

See also “egress node” (page 64) and “tandem node” (page 155).

ingress traffic

Ingress traffic refers to the traffic entering a Passport network through an access point.

initial cell rate (ICR)

In ATM ABR networking, the rate at which the ABR source transmits cells, both initially and after an idle period.

inside link

Synonymous with horizontal link. See “horizontal link” (page 81).

instance

Information (such as a decimal or a string) appended to the component type. When more than one of a component type exists, they are differentiated by an instance value.

instance type

The data type for a component instance. The null data type is used for non-replicated components, and the compound data type is used for multi-indexed components.

instance value

The actual component instance value as permitted by its type.

instantiating

In PORS, the process of laying down the path on the selected route. Once the route is selected by the route selector and returned to the source endpoint, the source endpoint starts the procedure of setting up the path.

inter-domain link

A PNNI link that connects two nodes that are in different local rerouting domains or a link using a non-PNNI signaling interface such as UNI, IISP, and AINI.

Integrated Alarm Display (IAD)

A Preside Multiservice Data Manager Advisor tool used to display alarms.

integrated local management interface (ILMI)

A management interface at an ATM interface that consists of a management information base (MIB) on each side of the UNI and an SNMP-based protocol for exchanging information in the MIBs across the UNI.

integrated services digital network (ISDN)

A digital technology that provides combined voice and data services. BRI access to an ISDN switch provides 2B+D (two 64 kbit/s B-channels and one 16 kbit/s D-channel) over an existing copper telephone line.

Out-of-band signaling is sent over the D-channel to request the setup of one of the B-channels (for high-speed data or voice applications) or of the D-channel for low-speed data (which can be multiplexed with the signaling and other low-speed data applications from other terminals on the same loop).

interface management entity (IME)

The ATM interface over which ILMI is operating.

interface protocol

1 See “FMIP” (page 71).

2 See “Telnet” (page 156).

3 See “local management interface (LMI)” (page 94).

4 See “SNMP” (page 146).

interim interswitch signaling protocol (IISP)

IISP provides interconnection between Passport switches as well as interconnection between Passport and non-Passport switches (Nortel Networks-family switches and switches from other vendors).

internal gateway

A DPN logical connection that runs over a Passport trunk interconnecting two Passport switches in different RID subnets. A Passport trunk supporting internal gateways continues to operate as a normal Passport trunk in supporting non-DPN type of traffic.

internal reachable address

In PNNI networking, an address of a destination point that is directly attached to the logical node that advertises the address.

internal router

A router with all directly connected networks belonging to the same area. There can be internal routers in the backbone area if all of their interfaces are in the backbone.

International Telecommunication Union - Telecommunication Standardization Bureau (ITU-T)

A European standards body formerly called Comité Consultatif International Télégraphique et Téléphonique (CCITT).

Internet

A network of two or more networks. Usually these networks use different governing protocols or are administratively or physically separated.

Internet addressing

A system of addressing using a 32-bit address, usually divided into four octets.

Internet control message protocol (ICMP)

A collection of error conditions and control messages exchanged by IP modules in both hosts and gateways. Examples consist of echo requests and replies and notification of discarded datagrams.

Internet group management protocol (IGMP)

A protocol that is used between routers and locally attached hosts to communicate multicast group membership information.

Internet protocol (IP)

A protocol suite that operates within the Internet as defined by the requests for comment (RFC). This term can also refer to the network-layer (level 3) of this protocol stack–the layer concerned with routing datagrams from network to network.

Internet protocol interface over frame relay (IPIFR)

Allows a Preside Multiservice Data Manager workstation to communicate with Passport over frame relay. Once the connection between Preside Multiservice Data Manager and a Passport switch has been established, Preside Multiservice Data Manager can connect to Passport over frame relay and exchange IP datagrams.

Internet protocol interface over virtual circuit (IPIVC)

In Passport's initial releases, FTP, Telnet, and FMIP protocols are implemented over TCP/IP protocols using the IPIVC system. This system allows Preside Multiservice Data Manager to communicate with Passport by way of X.25 on DPN-100. Once the connection between Preside Multiservice Data Manager and a DPN-100 module has been established, Preside Multiservice Data Manager can connect to Passport over the X.25 virtual circuit and exchange IP datagrams. The ftp connections can be either secure or non-secure as described in the Preside MDM Security User Guide.

inter-region Passport trunk

A Passport trunk that is a link between two border nodes in different topology regions.

interrupting mode

See “frame-cell trunk” (page 72).

intra-domain link

A PNNI link that connects two nodes that are in the same local rerouting domain.

inverse multiplexing for ATM (IMA)

A feature available on Passport that supports the transparent transmission of ATM cell data over a link group. IMA transparently distributes a single stream of ATM layer cell traffic onto multiple physical links for transmission across the links, and then combines the traffic back into the original ATM layer cell sequence at the remote end.

inverse multiplexing for frame relay (IMUX)

A frame-based inverse multiplexing function provided by the multilink frame relay (MLFR) service.

inverse-UPC shaping

This form of shaping uses dynamic rate changes so that the resulting cell stream exactly conforms to the requirements of a dual leaky bucket UPC enforcer. Also known as dual-leaky-bucket or VBR shaping.

IP

See “Internet protocol (IP)” (page 86).

IP address owner

The VRRP router that has the virtual router’s IP address(es) as real interface address(es).

IP class of service (COS)

Provides four different classes of service for different types of IP traffic. With IP COS, you can define a set of policies that identify different types of IP traffic and specify the class of service to pass the IP traffic through the network.

IP COS

See “IP class of service (COS)” (page 87).

IP multicast forwarding

A packet forwarding mode that delivers IP multicast packets to a group of nodes interested in receiving those packets in an IP network.

IP multicast forwarding table (FWD)

A forwarding table that performs exact match and best match for IP multicast traffic.

IP multicast routing database (RDB)

A routing database for IP multicast traffic.

IP multicast routing table manager (MRTM)

A routing table manager for IP multicast traffic.

IPSec

A security feature that defines a suite of cryptographic protocols and an architecture used to protect packets at the network layer.

IP tunneling

A feature available on Passport that allows you to connect physically separate IP networks that share the same address space through an IP network on a different address space.

IPIFR

See “Internet protocol interface over frame relay (IPIFR)” (page 86).

IPIVC

See “Internet protocol interface over virtual circuit (IPIVC)” (page 86).

ISDN

See “integrated services digital network (ISDN)” (page 84).

ISO

International Organization for Standardization.

isochronous

A data bit stream that has equal time between bits.

ITC mode

See “independent transmit clock (ITC) mode” (page 83).

ITU-T

See “International Telecommunication Union - Telecommunication Standardization Bureau (ITU-T)” (page 85).

J

JT2

A 6312 kbit/s interface defined in TTC JT-G.703. Consists of a framing structure of 789 bits made up of 98 time slots (8-bit) followed by 5 framing bits as defined in TTC JT-G704.

junctor virtual circuit (JVC)

A virtual circuit used to extend the subnet to the legacy data module in a Passport 4400 access unit. The JVC permits the establishment of a general virtual circuit (GVC) connection over a Passport access network link (MPANL) service.

JVC

See “junctor virtual circuit (JVC)” (page 89).

L

LAN

See “local area network (LAN)” (page 94).

LAPD

See “link access procedure on the D-channel (LAPD)” (page 92).

LAPF

See “link access procedure on frame relay (LAPF)” (page 92).

LATA

See “local access transport area (LATA)” (page 94).

last common node

Network node where the information flow uses an established call/connection to a party at the ingress, and an unused interface at the egress.

late packet discard (LPD)

A packet discard mechanism that works in conjunction with PPD. LPD preserves the end-of-packet cell of a packet that is subject to PPD, which permits identification of the beginning of the subsequent packet.

layer

In the OSI reference model, a collection of related network processing functions that comprise one level of a hierarchy of functions.

LC

1 See "link controller (LC)" (page 92).

2 See "logical channel (LC)" (page 95).

LCN

See logical channel number.

LCo

See "logical connection (LCo)" (page 95).

LD-CELP

See "Low-delay code excited linear prediction (LD-CELP)" (page 97).

LDS

See "link delay synchronization (LDS)" (page 92).

leaf

Is sometimes used interchangeably with party. However, a leaf more accurately denotes any single destination point of a point-to-multipoint call.

LEN

See "low-entry networking (LEN) node" (page 97).

level

In ATM networking, a level is the position in the PNNI hierarchy at which a particular node or peer group exists. A level that has a smaller numerical value implies greater topology aggregation. Conversely, a level that has a larger numerical value implies less topology aggregation. Smaller numerical values indicate high levels while larger numerical values indicate lower levels.

LG

See “link group (LG)” (page 92).

LGN

See “logical group node (LGN)” (page 95).

LGN Horizontal Link Hello protocol

The LGN (logical group node) Horizontal Link Hello protocol is a protocol run over an SVCC RCC channel to discover and monitor logical links between neighboring logical group nodes.

LIF

See “loss of IMA frame (LIF)” (page 97).

line

1 A dedicated private or leased facility that connects user equipment to the Passport network. A line can be a link.

2 In SONET, a part of a connection between STS-n multiplexers.

3 In SDH, a part of a connection between STM-n multiplexers.

line automatic protection switching (APS)

Automatic protection switching applied to SONET and SDH lines. Sometimes called linear APS in some specifications, such as Telcordia GR-253.

See “automatic protection switching (APS)” (page 29)

line sparing

See “automatic protection switching (APS)” (page 29).

link

1 A channel or path between network entities that includes the connection and the interface devices.

2 A component model data type used to relate non-hierarchical components. It is represented using an attribute on either component with a value being the other component name. If one side of the link is changed, the other is automatically updated.

link access procedure on frame relay (LAPF)

The data link layer protocol that has been defined for ITU-T Q.921. LAPF is an ISDN access protocol used with links that are established on frame relay.

link access procedure on the D-channel (LAPD)

The data link layer protocol that has been defined for ITU-T Q.921. LAPD is an ISDN access protocol used with links established on a D-channel.

link controller (LC)

The integrated circuit (ASIC) that provides a serial data interface into the Passport node.

link delay synchronization (LDS)

A circumstance in which the receiving end of an IMA link group has measured and compensated for the differential delay over a physical link. If this is the case, then the link is considered to be in link delay synchronization (LDS).

link group (LG)

1 A group of links (Passport trunks or DPN gateways) between two nodes that can share traffic between the nodes. This allows the available bandwidth between the two nodes to be greater than that of a single link. A maximum of four links in a link group can be supported.

2 An IMA link group refers to the combination of multiple physical links that use the inverse multiplexing process to transmit traffic across these links. A link group is presented as a single link to the ATM layer. A link group originates on one FP running the IMA feature and terminates on another FP running the IMA feature (typically these FPs are on two different Passport nodes). Any link group can be composed of up to eight DS1/E1 physical links on an FP running IMA.

link-level protocol (LLP)

A protocol that permits encapsulation of multiple protocols over a single ATM virtual circuit.

link state advertisement (LSA)

A packet of information that determines the shortest path to a destination.

link-state algorithm

A routing technology in which each switch broadcasts to all other switches its view of the links. When every switch in the network does this, all switches can derive the complete topology and perform operations on that topology.

link state parameter

Information that captures an aspect or property of a link.

live alarm

An alarm that is issued by a fault or other significant event, rather than in response to a replay command.

LLP

See “link-level protocol (LLP)” (page 92).

LMI

See “local management interface (LMI)” (page 94).

LN

1 See “logical network (LN)” (page 96).

2 See “logical node (LN)” (page 96).

LNID

See “logical node identifier (LNID)” (page 96).

LNN

See “logical network number (LNN)” (page 96).

load sharing

Load sharing is the process by which traffic is divided over links in a link group on a packet by packet basis.

load spreading

If there is more than one equal path to a destination, Passport will pick two of them. Load spreading is the process by which Passport divides traffic, on a VC basis, over the two link groups on those paths and the links in the link group. The algorithm used ensures (under normal conditions) that all the traffic for a given VC follows the same path and uses the same links along that path.

local access transport area (LATA)

Also referred to as a service area by some Bell Operating Companies (BOC), a LATA serves two basic purposes: to provide a method for delineating the area within which the BOCs may offer services and, to provide a basis for determining how the assets of the former Bell System were to be divided between the BOCs and AT&T at divestiture.

The United States has been divided into 200 LATAs by the AT&T Modified Final Judgment. Each BOC may service more than one LATA, but BOCs are generally constrained from providing long distance service between LATAs. Long distance service within a LATA is provided by the LEC. Service between LATAs is provided by an IEC.

local address resolver

A component of connection address resolution (CAR) that performs the resolution of a destination address at the local level.

local area network (LAN)

A network that connects microcomputers, workstations, printers, and other devices together, limited to local distances.

local bus

A 32-bit bus on a processor module joining local memory (SRAM and DRAM), boot ROM, SBIC, and the microprocessor.

local domain edge node

A node that has at least one inter-domain link.

local domain link type

In the context of the local rerouting protocol, a PNNI link can be described as an intra-domain link or an inter-domain link.

local leaf

Relevant to a single node in a PMP call. A local leaf is on a branch with a local root, across the Passport back plane, forming a new link to the remote leaf.

local management interface (LMI)

In frame relay, the part of the C-plane that manages the PVCs.

local memory

A RAM that stores code and program data for the microprocessor.

local node name

The name of a Passport node. It forms the initial part of all component names, but is usually suppressed. For example, *em/ottawa lp/0* appears as *lp/0*.

local rerouting domain

In the context of the local rerouting protocol, a group of nodes linked by intra-domain links.

local root

Relevant to a single node in a PMP call. A local root is on a branch with a local leaf across the Passport backplane. A local root multicasts copies of incoming cells to each local leaf.

LODS

See “loss of delay synchronization (LODS)” (page 97).

LOF

See “loss of frame (LOF)” (page 97).

logical channel (LC)

A logical division of a Passport trunk that constitutes part of a path. A logical channel is used in a single direction and is locally identified by a logical channel number.

logical connection (LCo)

A logical connection is an association between two endpoints in the Passport network for the purpose of exchanging data.

logical group node (LGN)

An abstract representation of a lower level peer group as a single point for purposes of operating at one level of the PNNI routing hierarchy.

logical link

The combination of logical node identifier and logical port identifier.

logical network (LN)

A logical network is a set of Passport nodes and transport facilities (links) that support a particular address plan and packet format. Logical networks allow different customers to set up logically distinct networks using the same physical resources—even the same address scheme, routing protocol, packet formats, and packet forwarding algorithms.

logical network number (LNN)

An identifier for a logical network.

logical node (LN)

A lowest level node or a logical group node.

logical node identifier (LNID)

A string of bits that unambiguously identifies a logical node within a routing domain.

logical port identifier (ID)

Identifies a logical port on the logical node that the connection is to traverse or has traversed.

logical processor (LP)

A body of software that can be mapped to a processor card to deliver one or more Passport services or capabilities. Logical processor-to-card mapping can vary depending on sparing configuration and hardware availability.

logical processor type (LPT)

Defines the characteristics of an LP. The LPT specifies which software needs to be loaded and provides some processor engineering parameters.

long loop

The ABR VS/VD scenario where FRM cells transit the switch to the egress FP before the node turns them around to become BRM cells.

LOS

See “loss of signal (LOS)” (page 97).

loss of delay synchronization (LODS)

When the delay on a physical link changes such that it exceeds the maximum differential delay specified for the IMA link group, the link is considered to have lost its delay synchronization. That is, the link has experienced a loss of delay synchronization (LODS), and is deactivated from the link group.

loss of frame (LOF)

This failure condition is declared after severely errored frame (SEF) defects have been detected for at least two seconds for a DS1, DS3, E1, or E3.

loss of IMA frame (LIF)

A failure condition in which IMA framing is lost on a link that is part of an IMA link group.

loss of signal (LOS)

For DS1, DS3, E1, and E3, this event is detected at a line interface when 175+/-75 contiguous pulse positions with no pulses of either positive or negative polarity are detected. An LOS failure condition is declared after LOS defects have been observed for at least 2 s.

Low-delay code excited linear prediction (LD-CELP)

A 16 kbit/s compression algorithm used to encode voice data, based on ITU-T recommendation G.728.

low-entry networking (LEN) node

In Systems Network Architecture (SNA), a physical unit type 2.1 with a control processor does not communicate with other nodes. LEN nodes support logical unit protocols.

lowest level node

A leaf in the PNNI routing hierarchy. A lowest level node is an abstraction that represents a single instance of the PNNI routing protocol. Lowest level nodes are created in a switching system through provisioning and are not created dynamically.

LP

See “logical processor (LP)” (page 96).

LP instance

One defined instance of a logical processor. In addition, when a spare card is available, an LP instance can be used to implement equipment sparing.

LPD

See “late packet discard (LPD)” (page 90).

LPT

See “logical processor type (LPT)” (page 96).

LSA

See “link state advertisement (LSA)” (page 92).

M

MAC

See “media access control (MAC)” (page 100).

make-before-break rerouting

See “path optimization” (page 119).

main card

The primary processor card on which an LP is provisioned to run. In a sparing configuration, a main card carries traffic unless a failure causes traffic to switch to a spare card.

MAN

See “metropolitan area network (MAN)” (page 101).

Management Data Provider (MDP)

The Management Data Provider (MDP) host stores and converts accounting data from DPN-100 and management data (accounting, statistics, alarms, SCNs, and logs) from Passport prior to transferring the data to either a Billing host or a Network Engineering host. The Management Data Provider replaces the Accounting Data Server.

management data router (MDR)

Collects surveillance data from a number of Passport nodes and distributes it to a number of Preside Multiservice Data Manager operation centers.

management information base (MIB)

A database containing configuration and status information relating to a specific managed object or objects. Provides a description of all the components and variables within a component that a network management system can access. It provides the way of naming each of these components and variables. MIB is a concept defined in network management standards such as SNMP.

manual CLR alarm

A CLR alarm issued in response to manual intervention, rather than in response to the system detecting that the associated fault condition no longer exists.

manual path

In path-oriented routing, specifying the series of Passport trunks that form the path instead of letting the system create the path automatically.

maximum burst size (MBS)

One of a set of traffic characterization values used to define traffic characteristics through the traffic descriptor types. MBS defines the length in cells of a traffic burst relative to the peak cell rate (PCR), which it cannot exceed, and the sustainable cell rate (SCR), which it can exceed but only for the time period defined by BT.

maximum transmission unit (MTU)

1 The size (in bytes) of the largest datagram that a router or interface can transmit.

2 The size of the largest frame that a link can transmit.

MBR

See “multicast border router (MBR)” (page 103).

MBS

See “maximum burst size (MBS)” (page 99).

MCDN

See “Meridian 1 ISDN Primary Rate Interface (MCDN)” (page 101).

MCR

See “minimum cell rate (MCR)” (page 102).

MCS

See “frame relay managed cut-through switching (MCS)” (page 74).

MDCR

See “minimum desired cell rate (MDCR)” (page 102).

MDP

See “Management Data Provider (MDP)” (page 98).

MDR

See “management data router (MDR)” (page 98).

measurement interval

The time interval over which rates and burst sizes are measured. In general, its duration is proportional to the burstiness of the traffic.

media access control (MAC)

A 48-bit address unique to each local area network interface. This address is usually derived from the manufacturer’s ID number and the serial number of the interface chip set.

media gateway (MG)

A device, such as PVG, that provides media transformation from TDM to VoIP or ATM under the control of a media gateway controller via a device control interface such as VGCP. The MG handles all the bearer traffic functionality.

media gateway controller (MGC)

A device that acts on user- or peer-device signaling to create or delete a narrowband connection on a media gateway via a device control interface such as VGCP. The MGC handles all the signaling and call control functionality.

membership scope

In PNNI networking, the level of the routing hierarchy within which advertisement of a given address is constrained.

Meridian 1 ISDN Primary Rate Interface (MCDN)

A common-channel signaling protocol intended for use between members of the Nortel Networks Meridian family of Private Telecommunication Network Exchanges. The signaling information is carried through time slot 16 of a 2.048 Mbit/s digital transmission system. Similarly, it is carried through time slot 23 of a 1.544 Mbit/s digital transmission system.

metric

A metric is a number that is used to represent the attractiveness (a smaller metric is more attractive) of a link or LinkGroup to a routing protocol. Some of the metrics used by Passport are

- cost: a user-definable value
- delay: measured by the system (a lower metric represents a lower delay)
- throughput: measured by the system (higher speed links have lower metrics)

metropolitan area network (MAN)

A network that spans a city. It is bigger than a local area network (LAN) but smaller than a wide area network (WAN).

MG

See “media gateway (MG)” (page 100).

MGC

See “media gateway controller (MGC)” (page 100).

MIB

See “management information base (MIB)” (page 99).

MIB view

A specific set of components in the MIB hierarchy that is created from subsets of included and excluded subtrees.

MID

See “module identifier (MID)” (page 102).

minimum cell rate (MCR)

A measure of the minimum useful data rate for the given ATM UBR service category. This term is used interchangeably with MDCR.

minimum desired cell rate (MDCR)

A measure of the minimum useful data rate for the given ATM UBR service category. This term is used interchangeably with MCR.

mixed-mode (MX)

A type of function processor that incorporates ports supporting different types of optical fiber (Meridian Passport only). A mixed-mode FP contains at least one port that operates in single mode and one port that operates in multimode.

MLFR

See “multilink frame relay (MLFR)” (page 103).

MM

See “multimode (MM)” (page 104).

MMTC

See “multimedia traffic classes (MMTC)” (page 104).

model

A way of describing the Passport node for management purposes. The two supported models are the component model and the SNMP model.

module identifier (MID)

MIDs identify individual Passport nodes or DPN-100 access modules.

MPANL

See “Multiservice Passport Access network link (MPANL)” (page 105).

MPLS

See “multiprotocol label switching (MPLS)” (page 104).

MPS

See “multiple priority system (MPS)” (page 104).

MSA

See “multiservice access function processor (MSA32 FP)” (page 104).

MSP

See “Multiservice Passport Access network link signaling protocol (MSP)” (page 105).

MTU

See “maximum transmission unit (MTU)” (page 99).

multicast border router (MBR)

A router that participates in more than one multicast domain.

multicast domain

A set of one or more contiguous links with optional routers that implement the same multicast protocol configured to operate within a common boundary.

multicast forwarding

A packet forwarding mode that delivers the packet to all nodes in the logical network.

multiframe

A group of frames seen as a single entity and located by a multiframe signal. Multiframing is a concept used in E1 and DS1 protocols.

multihomed address

In ATM PNNI networking, an address that is advertised by multiple PNNI nodes.

multilink frame relay (MLFR)

A service for FrUni and FrNni connections. MLFR provides physical interface emulation for frame relay devices. The emulated physical interface consists of one or more DS1 links, called bundle links, that are aggregated into a single bundle that offers greatly expanded bandwidth. This service also provides a frame-based inverse multiplexing function, sometimes referred to as a inverse multiplexing for frame relay (IMUX). This definition is in accordance with the Frame Relay Forum Implementation Agreement FRF.16.

multimedia traffic classes (MMTC)

Subscriber options that enable you to select the traffic handling preferences from the network to meet the application requirements. MMTC handle delay-sensitive multimedia traffic and minimize the delay transfer time and delay variance through the Passport network.

multimode (MM)

Optical fiber that is capable of propagating light signals of two or more wavelengths (modes).

multiple priority system (MPS)

The Passport proprietary priority system which defines traffic importance in terms of three emission priorities and four discard priorities.

multiport aggregate device

A multiport aggregate device breaks out the ports of the 32-port E1 AAL function processor (FP). Each multiport aggregate device provides connections for 16 E1 ports. You must use two multiport aggregate devices to break out all the ports of the FP.

multiprotocol label switching (MPLS)

MPLS is a label-swapping, networking technology that forwards packet traffic over multiple, underlying layer-2 media. This technology integrates layer-2 switching and layer-3 routing by linking the layer-2 infrastructure with layer-3 routing characteristics. Layer-3 routing occurs at the edge of the network, and layer-2 switching takes over in the MPLS network core.

multipurpose voice platform enhanced echo cancellation (MVP-E)

An MVP function processor with an on-board daughter card that provides echo cancellation capabilities according to ITU-T G.164, G.165 and G.168. The five types of Passport MVP-E function processor are 1-port DS1 MVP-E, 1-port E1 MVP-E, 4-port DS1 MVP-E, 4-port E1 MVP-E and 1-port TTC2M MVP-E.

multiservice access function processor (MSA32 FP)

A function processor possessing 32 DS1 or E1 ports. The MSA FP is capable of running multiple services on Passport.

Multiservice Passport Access network link (MPANL)

A Passport link support service designed to communicate with Passport 4400 access units. MPANL includes proprietary protocol elements derived from ITU-T X.36 (frame relay) and signaling protocols (Q.922 and Q.933). These protocol elements enhance the treatment of voice traffic over links shared with application data and enable secure signaling as a frame relay application. MPANL includes

- components for interfacing to Passport 4400 access units using frame relay, FrMux, and ISDN
- components for traffic shaping
- components for participating in Passport voice and various VC services

Multiservice Passport Access network link signaling protocol (MSP)

This protocol allows end devices connected to a Passport 4400 unit to interwork with end devices of a similar type in the Passport network. The same protocol can also allow a Passport 4400 unit to connect to another Passport 4400 unit in a hierarchical manner.

MVP-E

See “multipurpose voice platform enhanced echo cancellation (MVP-E)” (page 104).

MX

See “mixed-mode (MX)” (page 102).

N

nailed-up endpoint (NEP)

An endpoint in a permanent connection. Nailed-up endpoints link the ATM connection to Passport trunking over ATM.

nailed-up relay point (NRP)

An intermediate or relay point in a permanent connection. Nailed-up relay points are linked together in a Passport node to form an “ATM bearer service (ABS)” (page 27).

NAMS ID

See “NAMS identifier (NAMS ID)” (page 106).

NAMS identifier (NAMS ID)

In Passport, an attribute allowing the definition of a NAMS identifier. See 241-5701-060 *Passport 7400, 15000, 20000 Components* for NAMS ID attribute description.

In DPN, the identifier for a subsection of a functional grouping of administrative subsystems. See NAMS in 241-0001-002 *DPN-100 List of Terms*.

native address

An address or address prefix that matches one of the summary addresses for a given node.

NCS

See “Network Clock Synchronization (NCS) System” (page 106).

NEBS

See “Network Equipment Building System (NEBS)” (page 106).

NEP

See “nailed-up endpoint (NEP)” (page 105).

Network Clock Synchronization (NCS) System

A system used to synchronize the clocking of multiple ports and nodes in the Passport network. NCS can be synchronized to the signal originating from a single internal source or to a source external to the Passport network. NCS ensures the accurate transmission and reproduction of synchronous data (for example, BTDS uses NCS).

Network Engineering host

The Network Engineering host receives Passport statistics data in bulk data format from the Management Data Provider. The data is used by this host for planning and analysis of network operations.

Network Equipment Building System (NEBS)

The Telcordia standards for power cabling, grounding, and environmental safety, power, and operation interfaces for telecommunications equipment. The NEBS frame is used to house telecommunications switch equipment.

Network Equipment Building System (NEBS) 2000 frame

A Nortel Networks universal frame used to house the Passport switch. The switch installation consists of two half NEBS frames bolted together back to back. The NEBS frame measures 600 mm in width by 600 mm in depth by 2125 mm in height.

Network File System (NFS)

A seamless file system that can operate over a whole network. It is based on Sun's NFS protocol and operates on IP networks using IP and UDP or TCP.

networking

Networking allows for the transfer of packets from source to destination through Passport routing, trunking, and traffic management systems.

network interface specification A211-1 (NIS A211-1)

A North American variant of an ISDN CCS signaling protocol supported by the Passport voice networking service. See also common channel signaling.

network interworking function (NIWF)

The FR-ATM network interworking function (NIWF) enables frame relay CPE connectivity across frame relay networks interconnected over a backbone ATM network. The NIWF encapsulates frame relay traffic over ATM and multiplexes many frame relay DLCIs to one ATM VCC. The FR-ATM network interworking function is based on the FRF.5 standard.

See also, "FR-ATM interworking service" (page 75).

network management interface (NMIF)

An interface between a Passport node and an external entity for management purposes, using a specific protocol. The supported interface and protocol types are: local, Telnet, FMIP, and FTP (both non-secure and secure).

network management interface system (NMIS)

Manages interfaces between the Passport software and external network management systems. Through NMIS, commands can be issued to Passport from network managers, and results returned. This allows Passport to be controlled and monitored.

network mask

A 32-bit value that masks (or causes a router to ignore) portions of a packet's address. This technique allows the administrator to subdivide the logical network from the IP address.

network protocol

A protocol that consists of an address plan, a frame format, and a state machine for the protocol's behavior.

network service access point address

An address used in ATM-based services (for example, PORS and Circuit Emulation) to identify objects in a network. It is defined in RFC 1629 and in *ATM USER-Network Interface (UNI) Signalling Specification (Version 4.0)*, released by the ATM Forum Technical Committee, July 1996.

network time protocol (NTP)

A public network time synchronization protocol that Passport XNTP software can use to synchronize the time between different nodes in a network. RFC 1305, *Network Time Protocol (Version 3)*, defines the standards for this protocol.

Network Time Synchronization (NTS) System

A system that maintains time-of-day synchronization for all modules in the Passport network. NTS resides in the control processor software and synchronizes the local real-time clock interface module from an IP-reachable network management system time server connection. NTS also accepts local operator commands for setting the local time.

When NTS for Passport, NTS for Preside Multiservice Data Manager, and NTS for DPN-100 are used together, they provide one network time-of-day reference used by all
DPN-100 switches, Preside Multiservice Data Manager workstations, and Passport switches in the network.

network-to-network interface (NNI)

Frame relay service can be provided through a standard interface between two frame relay networks of different manufacture. The interface is called the network-to-network interface. For more information, see 241-5701-901 *Passport 7400, 15000, 20000 Frame Relay Fundamentals*.

NFAS

See “non-facility associated signaling (NFAS)” (page 110).

NFS

See “Network File System (NFS)” (page 107).

NIWF

See “network interworking function (NIWF)” (page 107).

NMIF

See “network management interface (NMIF)” (page 107).

NMIS

See “network management interface system (NMIS)” (page 107).

NNI

See “network-to-network interface (NNI)” (page 108).

NNID

See “non-adjacent network identifier (NNID)” (page 110).

nodal state parameter

Information that captures an aspect or property of a node.

node ID

A unique number used to identify a Passport node within a network. See 241-5701-060 *Passport 7400, 15000, 20000 Components* for more information.

Node Management System

A system that supports maintenance, monitoring, and testing of Passport hardware and software, as well as the facilities for connecting Passport to other network elements.

node name

A unique name used to identify a Passport node within a network. The name is an ASCII string that contains a maximum of 12 characters. See 241-5701-060 *Passport 7400, 15000, 20000 Components* for more information.

node NSAP address

The attributes nodePrefix and alternatePorsPrefix, provisioned under the Mod component, that are broadcast and stored in the Base Routing Topology Database. They are also referred to as node addresses. See 241-5701-435 *Passport 7400, 15000, 20000 Path-Oriented Routing System Guide* for more information.

non-adjacent network identifier (NNID)

A numeric identifier assigned to a network that is indirectly connected to this network through one or more adjacent networks.

non-associated signaling

Uses separate logical paths and multiple nodes as signaling links.

non-branching node

A node that cannot currently support additional branching points for point-to-multipoint calls.

non-elastic connection

An ATM connection type that cannot respond to changes in bandwidth over an ATM link by decreasing or increasing its data rate. If there is insufficient bandwidth, the connection is released. Compare with “elastic connection” (page 65).

non-facility associated signaling (NFAS)

A type of signaling used by PBXs whereby a single D-channel spans multiple DS1 or E1 links.

non-real time variable bit rate (NRT-VBR)

A QOS class that defines the throughput connection history as bursty with an expected low cell loss ratio (CLR) for transmitted cells. NRT-VBR supports statistical multiplexing for connections, with no associated delay bounds. NRT-VBR is designed to support non-real time applications.

non-operational card

A processor card that cannot provide service. The card can be absent, unprovisioned, locked, or has not yet finished loading its software.

non-switched voice

A Passport 7400 feature in which narrowband traffic between TDM switches is transported transparently over an ATM network.

See also “switched voice” (page 154).

NPI

See “numbering-plan indicator (NPI)” (page 111).

NRP

See “nailed-up relay point (NRP)” (page 105).

nrtVBR

See “non-real time variable bit rate (NRT-VBR)” (page 110).

NSAP address

See “network service access point address” (page 108).

NscNull

A Network Systems Corporation (NSC) proprietary encapsulation method that supports IP traffic over permanent virtual circuits (PVC).

NTP

See “network time protocol (NTP)” (page 108).

NTS

See “Network Time Synchronization (NTS) System” (page 108).

numbering-plan indicator (NPI)

The part of a given data network address that defines the numbering plan to which it belongs. Examples of numbering plans defined by ITU-T are X.121 and E.164.

O

OAM

See “operations, administration, and maintenance (OAM)” (page 112).

OC-3

Optical carrier level 3. In SONET networks, OC-3 is the optical form of the first SONET multiplexing level when it is transmitted through an optical fiber. The 155.52 Mbit/s OC-3 signal is made up of three multiplexed OC-1 basic channels.

OC-12

An optical carrier signal in the SONET optical format that is 12 times the OC-1 rate.

OC-48

A high-speed optical carrier signal in the SONET optical format providing a line rate of 2.488 Gbits/s, ATM services, and traffic management.

OC-N

Optical Carrier level N. The optical signal that results from an optical conversion of an STS-N signal.

off-network call

A call destined to another network. An off-network call crosses one or more gateways.

on-network call

A call that is routed internally through the SCR and DCR systems to a destination within the network.

open shortest path first (OSPF)

An IP routing model defined in RFC 1583, whereby the shortest route to a destination is calculated from a database of link states.

Open Systems Interconnection (OSI)

A suite of communication protocols, network architectures, and network management standards produced by the International Standards Organization (ISO). The aim of OSI is to provide information transfer in a nonproprietary environment. The protocols are open in nature, that is, defined in an agreed forum by vendors and government committees.

operations, administration, and maintenance (OAM)

A segment boundary associated with an ATM interface or a specific connection passing through that interface.

If the interface is on an OAM segment boundary, all connections passing through the interface terminate OAM segment loopback cells. If the interface is not on a segment boundary, OAM segment loopback cells pass through transparently. The setting for the segment boundary at the interface level can be overridden at the connection level for nailed-up relay points in an ATM bearer service connection.

operational attribute

Provides information or data used for monitoring the operation of Passport and its services. The values of operational attributes are not retained across system restarts. These values cannot be provisioned, but some of them can be set. Operational attributes include information such as component OSI management state and statistical data.

operational card

A processor card that is capable of providing service. The card can operate as either an active instance or a standby instance.

operational component

A component that is created automatically by Passport to represent some modeled entity that is dynamic in nature. An operational component can contain only operational attributes and subcomponents. It can also be created using operator commands. Operational information is not retained in the event of a power outage.

optimization

A PORS feature that allows operational paths to be evaluated based on their current path characteristics against new paths that are determined by Route Selector. If the new path can minimize the original paths provisioned metric (cost or delay), then the current path will be moved to the more optimal path.

optimization metric

An optimization metric refers to the route computation criteria that is minimized when finding the best path for a call.

option

An option modifies the behavior or provides more information about a verb being applied to a component. For example, the display -p option shows provisioned data and the display -o option shows operational data.

option type

The data type of an option.

option value

The entered value for an option, as permitted by its type.

OSI

See “Open Systems Interconnection (OSI)” (page 112).

OSI state

Passport uses component state definitions according to the OSI standards. A component has three high-level state variables: operational, usage, and administrative. These states are the primary factors affecting the management state of the component. For more information, see 241-5701-520 *Passport 7400, 15000, 20000 Troubleshooting and Testing*.

OSI status

In addition to the three state attributes, six status attributes exist within OSI. The primary function of these attributes is to provide additional information about a component’s operability and usage. The attributes are: alarm status, procedural status, availability status, control status, standby status, and unknown status. For more information, see 241-5701-520 *Passport 7400, 15000, 20000 Troubleshooting and Testing*.

OSPF

See “open shortest path first (OSPF)” (page 112).

outside link

A link to a lowest-level outside node. In contrast to an inside link (that is, a horizontal link) or an uplink, an outside link does not form part of the PNNI topology. As a result, nodes do not include outside links in route selection.

overflow routing

Overflow routing is the process by which Passport switches traffic from a chosen link to an alternate link, when the chosen link becomes congested. Normal reliability traffic will overflow only to links in the same link group. High reliability traffic can also overflow onto links in a different link group, under certain conditions.

P

PA

See “path administrator (PA)” (page 119).

PABX

See “private branch exchange (PBX)” (page 127).

packet

Packet is a term that can be used interchangeably with frame to mean a variable-length data unit.

The term frame means a generic variable-length data unit. Packets are generally used in layer 3 and frames in layer 2.

packet delay variation (PDV)

The measurable variation in the interval between AAL2 packets arriving at a network element. The accumulation of this variation results in packet clumping.

packet delay variation tolerance (PDVT)

PDVT defines the tolerance to AAL2 packet clumping that results from the accumulating amount of packet delay variation or “jitter” in the network or customer premises equipment (CPE).

packet forwarding

A term used to describe the process of moving packets from node to node on the network. See also “unicast forwarding” (page 162) and “multicast forwarding” (page 103).

packet forwarding table

Information relating to network topology that is used to route packets to paths that are appropriate to their requirements. For example, packet headers specify the destination and the priority of the packet. This is checked against the packet forwarding tables, which contain information about the network. The packet is then sent along the path that best fits its requirements.

Packet over SONET

When POS is supported, the multi-service (MS3) function processor (FP) cards of a Passport 7400, Passport 15000 or 20000 transmit or receive packets over SONET (POS), or over SDH. POS handles whatever the packet-based data is because it is a layer 3 protocol over a layer 1 transmission with no layer 2.

packet voice gateway (PVG)

A gateway between an ATM network and service provider networks that allows voice and voice band data traffic to be delivered over an ATM broadband network instead of the narrowband switches of the PSTN.

panic

An abnormal halt to operations caused by an internal error. When an internal error occurs and the router is unable to recover gracefully, the router generates a text string, saves logout areas, and halts operations. A panic can lead to a restart if the nucleus is configured to restart on error.

parent node

The logical group node that represents the containing peer group of a specific node at the next higher level of the hierarchy.

parent peer group

The parent peer group of a peer group contains the logical group node that represents that peer group.

partial packet discard (PPD)

A Passport ATM traffic management strategy through which cells are discarded if they belong to a frame that has had one or more cells previously discarded. This strategy ensures that cells that will eventually be discarded at the endpoints are not transmitted across the network, thereby increasing network good-put.

party

Is sometimes used interchangeably with leaf. However, a party should more accurately be considered as a component of a PMP call with its primary attribute being the destination that it defines. For example, in a PMP SPVC context, a provisioned party on the SPVC will result in a leaf when that

portion of the PMP connection terminates. Branches for the PMP call in transit nodes can be servicing single or multiple parties, each of which will terminate at a leaf.

Passport 4400

A low-cost Passport access unit capable of multiplexing voice, fax, video, and LAN traffic onto a frame relay interface.

Passport bus

Two synchronous 32-bit 25-MHz cell buses, operating in a load-sharing capacity, that can communicate with up to 16 function and control processors. Each bus operates at 800 Mbit/s for a combined speed of 1.6 Gbits/s.

Passport Carrier Release (PCR)

The Passport Carrier Release (PCR) is the software load that runs on these members of the Passport family:

- the Passport 7000 series
- Passport 15000
- Passport 15000-VSS
- Passport 20000

One load supports all of these switches. Each PCR is given an incremental version number, 4.1 for example. The software version directly supports specific hardware and software functionality and services that are added or changed for a release.

Passport cluster

A group of one or more interconnected access switches connected to the backbone in the same RID subnet. A cluster may consist of a single node or multiple nodes. A single-node cluster is a single cluster border node providing access and not connected to any other access switches. A multi-node cluster is a group of one or more access switches interconnected to one or more cluster border nodes. A cluster exchanges limited routing information and no topology information with the backbone.

Passport queue controller (PQC)

A hardware chip on some Passport ATM function processors that performs base layer functions, such as ATM cell forwarding and frame forwarding for frame relay and IP traffic.

Passport subnet

A number of Passport nodes directly connected to one another.

Passport to Passport interface (PPI)

A proprietary ATM interface between Passport nodes. The PPI is Passport's interim NNI (network-to-network interface) product while NNI standards develop.

Passport trunk

Passport-to-Passport connection supporting Passport core networking. Trunks support the dynamic packet routing system (DPRS) and path-oriented routing system (PORS).

Passport trunk over ATM

The transport mechanism used by Passport trunks to carry cell traffic on an ATM-based interface.

Passport trunking system

The software system that implements Passport trunking functions, such as managing links with other Passport nodes or DPN-100 modules.

patch

A patch is a temporary enhancement or correction to the functionality of an application version. Patches allow for a number of small changes to be made to an application until the next version of the application is available. In general, a new application version will incorporate all the changes in functionality made in the preceding patches.

path

The instance of a route for a logical connection in the network that has a flow in each direction. It is the sequence of Passport trunks that is used to form the connection.

path administrator (PA)

A Passport component, a subcomponent of *Trunk* component, that is used to describe bandwidth-sharing characteristics and path activities.

path bumping

Path bumping is the forced rerouting of an existing path by a new higher priority path of another logical connection. Bumping happens when there is not enough bandwidth in the selected Passport trunk to establish a new path. The rerouting can in turn cause bumping of other paths. A bumped path can be rerouted on another Passport trunk if the route selection criteria of the path are satisfied.

path endpoint

Defines each end of a path through a Passport network.

path optimization

A process of finding and moving active connections to more optimal routes to provide better utilization of network resources and traffic resources. In path optimization, the incumbent connection segment is released after the establishment of an alternate connection segment. Path optimization is also known as soft rerouting and make-before-break rerouting.

path-oriented routing system (PORS)

A routing system used by Passport in which the path is determined when the connection is set up and is fixed for the duration of the connection. In the event of Passport trunk failure, the path can be rerouted. The path then remains fixed in its new configuration. An advantage of path-oriented techniques is that the delay variance between two endpoints can be minimized by specifying the path in advance. This characteristic is important for some traffic types, for example, a video signal carried over a transparent data service (TDS).

path scope

The highest level reached in the private network-to-network interface (PNNI) hierarchy when calculating the path.

path trace

A control plane mechanism that determines the physical nodes and physical links traversed by new connections in the process of being established.

payload

A term used when discussing layered protocols for data communications. The payload for one layer is the information delivered to it by the layer above it. The header information added by that higher layer is considered to be part of the payload.

payload type identifier (PTI)

A field in the ATM cell header that identifies the type of data carried by the cell.

P-SPVC

See “permanent switched permanent virtual circuit (P-SPVC)” (page 122).

P-switched permanent virtual circuit (P-SPVC)

See “permanent switched permanent virtual circuit (P-SPVC)” (page 122).

PBX

See “private branch exchange (PBX)” (page 127).

PCM

See “pulse code modulation (PCM)” (page 130).

PCR

See “peak cell rate (PCR)” (page 121) or “Passport Carrier Release (PCR)” (page 117).

PCS

See “processor control system (PCS)” (page 127).

PDU

See “protocol data unit (PDU)” (page 128).

PDV

See “packet delay variation (PDV)” (page 115).

PDVT

See “packet delay variation tolerance (PDVT)” (page 115).

PDH

Plesiochronous Digital Hierarchy. An electrical transmission format. The precursor to SDH.

PEC

See “product engineering code (PEC)” (page 128).

peak cell rate (PCR)

The maximum transfer rate into a network, defined as upper bound on the inverse of the time interval between two consecutive ATM cell emissions.

peer database exchange protocol

A protocol between two neighboring ATM nodes to synchronize their topology databases over an RCC channel.

peer group

A set of logical nodes that the network engineer groups together for the purposes of creating a routing hierarchy. All members of the group exchange PTSEs.

peer group identifier

A string of bits that unambiguously identifies a peer group.

peer group leader (PGL)

A node in a peer group that performs the extra work of collecting, aggregating, and building data that represents the entire peer group as a single node. The PGL makes this representation available to the network through the parent node.

peer group leader election (PGLE)

The peer group leader election is the process by which a single node in a peer group is elected to be the peer group leader.

performance measurements

Real-time statistics that are collected by the data collection system (DCS) from various applications. These real-time statistics are used for day-to-day troubleshooting activities.

permanent logical connection (PLC)

A connection that is an association between two points in the network for the purpose of exchanging data. The connection is called permanent because it is set up by PORS when the service is provisioned.

permanent switched permanent virtual circuit (P-SPVC)

In frame relay networking, a configured connection between two SPVC endpoints in different frame relay networks. The P-SPVC uses a switched connection (S-SPVC) across frame relay network-to-network interfaces (NNIs) to establish end-to-end connectivity.

See also “switched permanent virtual circuit (SPVC)” (page 153).

permanent virtual channel (PVC)

The ATM name for permanent virtual circuit. See “permanent virtual circuit (PVC)” (page 122).

permanent virtual circuit (PVC)

In a frame relay network, a type of virtual circuit (VC) whose endpoints must be configured by the network operator. It is a logical connection that, once established, remains in place even when it is not being used. In ATM networking, PVC is known as a permanent virtual channel.

See also “virtual circuit (VC), frame relay networking” (page 166).

permanent virtual path (PVP)

A PVP is a type of virtual path (VP), the endpoints of which must be configured by the network operator. It is a logical connection that, once established, remains in place even when it is not being used.

See also “virtual path (VP)” (page 167).

per-hop-behavior

Used in IP differentiated services to set the relative scheduling and discard behaviors for IP packets.

per-VC queuing

A method used on ATM FPs whereby traffic from each VCC or VPC is enqueued onto an individual queue (the VCC or VPC per-VC queue).

PG

See “peer group” (page 121).

PGID

See “peer group identifier” (page 121).

PGL

See “peer group leader (PGL)” (page 121).

PGLE

See “peer group leader election (PGLE)” (page 121).

PGQ

See “priority guaranteed queuing (PGQ)” (page 126).

PHB

See “per-hop-behavior” (page 122).

physical link

Single physical interface that interconnects two devices in a network.

PID

See “process identifier (PID)” (page 127).

PIM

See “protocol independent multicast-sparse mode (PIM-SM)” (page 128).

ping

The ping command is a debugging method used to determine the reachability of another node, the path(s) to another node, and the round trip delay to another node. The command is used

1 in a network supporting the RID/MID address plan for RID/MID destinations or frame relay VCs (see “VC ping” (page 165)).

2 by Internet control message protocol (ICMP) to test connections to other IP nodes

PINX

Private Integrated Services Network Exchange.

PLC

See “permanent logical connection (PLC)” (page 122).

PLCP

Physical layer convergence procedure is a technique for mapping ATM cells into DS3 or E3 frames over PDH networks.

PM

See “processor module (PM)” (page 128).

PNNI

See “private network-to-network interface (PNNI)” (page 127).

PNNI routing control channel

VCC that nodes use to exchange PNNI routing protocol messages.

PNNI routing domain

A group of topologically contiguous systems that are running one instance of PNNI routing.

PNNI topology state element

A collection of PNNI information that is flooded among all logical nodes within a peer group.

PNNI topology state packet

A type of PNNI routing packet that is used for flooding PTSEs among logical nodes within a peer group.

PMS

See “port management system (PMS)” (page 125).

pools

See “bandwidth pools” (page 32).

PORS

See “path-oriented routing system (PORS)” (page 119).

POS

See “Packet over SONET” (page 116).

POSIX

An industry standard for Portable Operating Systems used in computer environments.

port

1 In data communication, the part of a data processor that is dedicated to a single data channel for the purpose of receiving data from, or transmitting data to, one or more external remote devices.

2 A functional unit of a node through which data can enter or leave a data network.

3 An access point (for example, a logical unit) for data entry or exit.

port ID

Identifies the egress port used by a connection. The value of the zero is considered a wildcard.

port management system (PMS)

A software system that controls and monitors the physical interfaces that are supported on function processors.

power converter

Converts primary power inputs into secondary operating voltages. Power converters are available in ac and dc versions, which are not interchangeable between ac and dc Passport configurations. Synonymous with power supply.

power converter section

The part of the shelf assembly, located directly below the processor card section, that contains the power distribution facilities for both primary and secondary power.

power input panel

An area at the rear of the power section used to connect the power source.

PPD

See “partial packet discard (PPD)” (page 116).

PPI

See “Passport to Passport interface (PPI)” (page 118).

PQC

See "Passport queue controller (PQC)" (page 118).

Preside Multiservice Data Manager

In general, a system that helps to control, provision, and monitor the Passport node. In Nortel Networks documents, this term most often refers to Preside Multiservice Data Manager, Nortel Networks's proprietary network management system.

Preside Multiservice Data Manager software

A network management software system for controlling, provisioning, and monitoring DPN and Passport networks. It consists of a set of applications supported by a common user interface running on a UNIX operating system. Preside Multiservice Data Manager uses a commercially available hardware platform, such as a Sun SPARC station.

PRI

See "primary rate interface (PRI)" (page 126).

primary IP address

An IP address selected from the set of real interface addresses. One possible selection algorithm is to always select the first address.

primary path

The preferred specified path for a given specified path connection.

primary rate interface (PRI)

An integrated services digital network (ISDN) interface standard that is designated in North America as having a 23B+D channels. All circuit-switched B channels and D channels operate at 64 kb/s.

priority guaranteed queuing (PGQ)

A queuing mechanism that ensures that cells belonging to different priority classes sharing a link receive proper attention. The scheme enforces an absolute priority discipline unless the service to certain lower classes is excessively denied (that is, starved). PGQ raises the respective priority of lower class services until they are accorded at least minimal attention.

private branch exchange (PBX)

Telephone switching equipment used by a company or organization to provide in-house telephone switching and access to the public telephone network.

private network-to-network interface (PNNI)

An ATM routing and signaling protocol that permits dynamic routing and networking. Passport networks support PNNI 1.0.

process identifier (PID)

PIDs identify a specific process associated with a specific data network address.

processor

The term processor is used in Passport documentation to refer to a I80960 or PowerPC chip. A processor is a 32-bit embedded microprocessor that coordinates the activities on a processor card.

processor card

A printed circuit board that provides the computation resources on Passport. These cards usually support and manage external connections to communications facilities or networks. A processor card slides in as one unit into one of the slots of the shelf. There are two types of processor cards: the function processor (FP) card and the control processor (CP) card. A processor card is often referred to as a card when it is acting as the hardware platform of a logical processor.

processor card section

The section of the shelf assembly that contains processor cards and the backplane that allows the processor cards to communicate with each other.

processor control system (PCS)

The Passport subsystem responsible for managing the processor cards. PCS detects when a processor becomes available for service, maps the appropriate LP to execute on it, loads its software, and monitors its execution to detect any outage that occurs. If an outage occurs, PCS invokes the appropriate recovery procedures (such as restarting the software or switching over to a spare processor card).

processor module (PM)

The part of some processor cards that handles the processing requirements for a control processor (CP) and a function processor (FP).

product engineering code (PEC)

The product engineering code (PEC) of Nortel Networks hardware identifies the part number of equipment or a set of components that combine to make an assembly or a unit. The PEC is used by hardware installers to verify the correct installation, replacement, or upgrade of equipment.

propagation delay

Is the time it takes one bit of information to travel along a transmission medium from one device (Passport node) to its neighbor device (Passport node). Propagation delay is a function of the speed of an electrical (optical) signal and the distance to be travelled.

protocol data unit (PDU)

A unit or a packet of information exchanged between peer entities in a particular protocol stack. The PDU is typically submitted to the next lower (server) layer for transfer to its peer and can contain an embedded PDU of the next higher (client) layer.

protocol independent multicast-sparse mode (PIM-SM)

A protocol for routing multicast traffic to sparsely populated receivers that supports scalable multicast routing, independent of any unicast routing protocol.

provisionable attribute

A component attribute that causes a Passport subsystem or service to perform or behave in a certain manner. All components that are provisioned are saved to be used again when the system restarts. Provisionable attribute values can be configured by the network operator or administrator. Some components with provisionable attributes are mandatory and are created automatically. Components with provisionable attributes can also have operational attributes.

provisioned component

A component that is configured using operator commands. It usually contains provisioned attributes and subcomponents. The provisioned information is usually permanent, that is, retained in the event of a power outage.

provisioning

The act of setting the values of the data required to operate the system. Provisioning involves adding, deleting, or changing components and setting the values of their attributes.

provisioning data

The data that is entered to configure the Passport module. In other systems, it has been known as service data, configuration data, or tables.

provisioning journaling

Represents the journaling of configuration changes on the disk. The journal log files that result from provisioning journaling represent the configuration changes between the current and committed views and can be used by MDM to backup the current view off-switch.

proxy alarm

An alarm that the Preside Multiservice Data Manager generates on behalf of a device (for example, a Passport) to report an event or condition that, while detected by the Preside MDM, could either not be indicated by the device itself (for example, a loss of module access), or was reported through another non-alarm means (for example, OSI State Change, SNMP polling, or a trap). Since the proxy alarm is generated by a Preside MDM machine, two Preside MDMs managing the same devices may generate similar but not identical proxy alarms for the same situation (that is, the *notificationId* value and time-stamps, if not available in the triggering notification, may not match between the two proxies). A redundantly configured Preside MDM is built to correctly handle this situation.

proxy ARP

A system by which a router responds to an ARP request in place of the actual destination.

PTSE

See “PNNI topology state element” (page 124).

PSTN

See “public switched telephone network (PSTN)” (page 130).

PTSP

See “PNNI topology state packet” (page 124).

public switched telephone network (PSTN)

The worldwide voice telephone network accessible to all those with telephone and access privileges. The PSTN is composed of all transmission and switching facilities and signal processors supplied and operated by all telecommunications common carriers for use by the public. Every station on the PSTN is capable of being accessed from every other station on the PSTN via the use of NANP E.164 numbers. PSTN is an abbreviation defined by the ITU-T.

pulse code modulation (PCM)

A standardized method of producing digital speech. Defined in ITU-T G.711.

PVC

See “permanent virtual channel (PVC)” (page 122).

See “permanent virtual circuit (PVC)” (page 122).

PVG

See “packet voice gateway (PVG)” (page 116).

PVP

See “permanent virtual path (PVP)” (page 122).

Q

Q interface signaling (QSIG)

An internationally defined inter-PBX signaling standard. Defined in European Telecommunications Standards Institute (ETSI) specifications.

QC

See “queue controller (QC)” (page 131).

QOS, QoS, Qos

See “quality of service (QOS, QoS, Qos)” (page 131).

QSIG

See “Q interface signaling (QSIG)” (page 130).

QRD

See “queue relay device (QRD)” (page 131).

quality of service (QOS, QoS, Qos)

A series of service classes that reflect the traffic importance and urgency over a connection.

For ATM networks and services, QOS classes are defined by the ATM Forum for UNI 3.0/3.1 and UNI 4.0. Passport also defines a set of corresponding ATM QOS classes (UBR, CBR, VBR, CO, CNLS).

queue

A linked list of buffers that stores user or control data that is incoming or outgoing from a processor card. The data can be in the form of frames or cells.

queue length

The number of blocks that currently make up the queue.

queue limit

The maximum number of blocks that can be attained by the queue length.

queue threshold

A specific number of blocks used in the determination of the congestion state of the queue. A queue can define several thresholds. As the queue length crosses each threshold, the queue enters a more severe congestion state. On ATM FPs, each queue has three thresholds in addition to the queue limit. SBIC FPs have up to four thresholds defined.

queue controller (QC)

The part of the shared bus interface controller that maintains the linked list pointers, blocks, buffers, and queues of the shared memory. The queue controller manages up to 256 queues.

queue relay device (QRD)

A cell-only hardware chip on certain Passport ATM IP function processors that provides traffic management functions such as per-VC queuing and congestion control.

R

RAI

See “remote alarm indication (RAI)” (page 133).

RAIG

See “resource availability information group” (page 135).

random early detection (RED)

A discard mechanism that inhibits the packet synchronization tendencies of IP traffic.

RCOS

See “routing class of service (RCOS)” (page 138).

RCC

See “PNNI routing control channel” (page 124).

RCL

See “reduced cell loss mechanism (RCL)” (page 133).

reachability spanning tree

A collection of PNNI nodes that are reachable from the local PNNI node.

reachable NSAP address

The subcomponents address (provisioned under the Trk component) and summaryAddress (provisioned under the Rtg component) that are broadcast and stored in the Base Routing Topology Database. They are also referred to as reachable addresses. See 241-5701-435 *Passport 7400, 15000, 20000 Path-Oriented Routing System Guide* for more information.

real-time clock (RTC)

The clock that maintains the current time of day.

real-time statistics

Performance measurements that are collected by the data collection system (DCS) from various applications. These real-time statistics are used for day-to-day troubleshooting activities.

real-time statistics collection interval

The 5-minute collection interval during which real-time statistics (performance measurements) are collected. This interval is based on network time and occurs across the network beginning on the hour.

real time variable bit rate (rt-VBR)

A QOS class that defines a connection's throughput as tightly constrained for delay and delay variation. Sources are expected to transmit at a rate that varies over time. This QOS supports statistical multiplexing or real-time sources. It is intended to support real-time applications such as voice and video.

RED

See "random early detection (RED)" (page 132).

reduced cell loss mechanism (RCL)

The reduced cell loss mechanism is a proprietary Passport feature that acts to reduce cell loss while hot swapping the data path during path optimization.

region ID

The attribute that identifies the topology region to which a Passport node belongs. See 241-5701-060 *Passport 7400, 15000, 20000 Components* for more information.

reload

The action of loading software from disk.

remote alarm indication (RAI)

On DS1, DS3, E1, and E3 interfaces, a signal transmitted in the outgoing direction when the interface determines that specific defects have persisted long enough to declare a received signal failure.

remote defect indication (RDI)

A signal transmitted in the upstream direction when a downstream fault is detected. The RDI signal is used at the physical and the ATM layer.

remote group

The *remoteGroup* component allows the X.25 DTE LLP (for example) to be shared among a number of protocol ports. This allows separate virtual routers to share the same physical X.25 connection into a WAN. Note that at least one *remoteGroup* component is required for each *X25Dte* component.

remote group address

The unique address that identifies the remote group.

Remote Server Agent

An entry point for applications requiring access to Passport servers.

Remote Server Interface

A Passport 4400-based process that communicates with the RSA to access the Passport servers.

rendezvous node

The node terminating the reroute request for an alternate connection segment.

rendezvous point (RP)

A router configured as a meeting point for multicast senders and receivers. The RP acts as the root for a shared multicast distribution tree.

replicated attribute

An attribute with the replicated data type.

replicated component

A component that can have more than one instance value of a given type, for example *lp/3*. Non-replicated components have the null data type, for example, *shelf*.

replay alarm

A characteristic of an alarm indicating that it has previously been issued as a live alarm, and is now being reissued in response to a replay command.

requested shaping rate (RSR)

One of a set of ATM traffic characterization values used to define traffic characteristics through the traffic descriptor types.

RSR defines the traffic shaping rate that is requested for a connection. This parameter is optional. If defined, the requested rate is used as a basis for determining the actual shaping rate; if not defined, traffic shaping is determined by the PCR and SCR rates defined for the connection through the traffic descriptor type.

RSR is Passport-specific and is not part of the ATM Forum specification.

The five values used in the traffic descriptor parameters are peak cell rate (PCR), sustainable cell rate (SCR), maximum burst size (MBS), cell delay variation tolerance (CDVT), and requested shaping rate (RSR).

rerouting

Re-establishing a logical connection using different Passport trunks or ATM links than the last connection.

rerouting node

The node that is responsible for establishing an alternate connection segment (rerouting segment) to a predetermined rendezvous node.

rerouting segment

A connection segment that is used to replace an incumbent connection segment.

reset

An action taken on an entity (either a shelf or a processor card) that causes all software on that entity to first reload and then restart. A reset can be initiated either by an operator or by the system.

resource availability information group

The resource availability information group contains information that the PNNI network nodes use to assign values of topology state parameters against nodes, links, and reachable addresses.

resource management (RM) cell

In ATM networking over ABR connections, a cell that carries congestion information. ABR sources (see “source/destination” (page 147)) send RM cells into the network. ABR destinations then turn these cell around. During the return trip, ABR switches deposit congestion information in the RM cells. The source uses the congestion information to influence bandwidth allocation to ABR VCs and call admission control.

resource module (RM)

A DPN-100 network backbone switch. Resource modules can also serve as call server resource modules (CSRM).

response

Information generated by a component either as a result of some verb being applied to it or asynchronously to signal some event such as an alarm. A response can contain several response attributes. For example, the *list fs* command is used to list files. It produces many responses, each containing an attribute to represent the file name, file size, and file modification time.

response attribute

Additional information produced within a response.

response attribute type

The data type of a response attribute.

response attribute value

The value produced as permitted by its type.

restart

The action of reinitializing the software on either a shelf or a card without reloading that software.

restricted transit node

A node that a call uses for transit, but only in restricted circumstances. A restricted transit node is free from such restriction when it is used to originate or terminate a call.

reverse path forwarding (RPF)

Used to select the appropriate incoming interface for a multicast route entry.

RFC 1490

A multiprotocol frame encapsulation method used for carrying data over a frame relay virtual circuit.

RID

See “routing identifier (RID)” (page 138).

RID/MID routing system

See “dynamic packet routing system (DPRS)” (page 63).

RID subnet

A group of interconnected Passport nodes that share a routing identifier (RID).

RIP

See “routing information protocol (RIP)” (page 138).

RM

1 See “resource module (RM)” (page 135).

2 See “resource management (RM) cell” (page 135).

root node

The root node of an ATM PMP call represents the first point of entry into the network for the PMP call. As a result, this node contains the root of the multicast tree. For PMP SPVCs, the root node would be the node where the PMP SPVC is provisioned.

RP

See “rendezvous point (RP)” (page 134).

RP-Set

A set of RP addresses constructed by the BSR based on the list of candidate RP advertisement messages received by the BSR.

RPF

See “reverse path forwarding (RPF)” (page 136).

round trip delay (RTD)

The time delay in a round trip from one end of the connection to the other.

route

A list of individual Passport trunks over which a logical connection exchanges data between two endpoints.

route caching

Route caching is a method of storing and maintaining routing paths for future use.

route selector (RS)

A Passport server (routing subcomponent) used for selecting newly requested or rerouted path oriented routing system routes.

routing class of service (RCOS)

A set of parameters that describes how a frame is treated while it is being routed. Examples of these parameters are: priority, reliability, delay, and throughput.

routing computation

The process of applying a mathematical algorithm to a topology database to compute routes. Many types of routing computations can be used. The Dijkstra algorithm is one particular example of a possible routing computation.

routing control channel

See “PNNI routing control channel” (page 124).

routing identifier (RID)

RIDs identify individual Passport RID subnets or DPN-100 resource modules.

routing information protocol (RIP)

This is a routing protocol for finding IP routes between subnets on an internet. It is intended for use within autonomous systems of limited size.

routing protocol

A protocol used to exchange routing information between peer routing control processors. The routing information is used to set up routing tables for a particular address scheme in a network. These tables are used by a packet forwarding function to forward packets from a network protocol.

routing protocol interface (RPI)

A process that implements a routing protocol. An RPI is part of an external address plan maintenance system and is used to exchange routing information with an external network.

routing scope

The routing scope is the highest level in the private network-to-network interface (PNNI) hierarchy that a path is allowed to reach.

RPI

See “routing protocol interface (RPI)” (page 138).

RS

See “route selector (RS)” (page 138).

RSA

See “Remote Server Agent” (page 134).

RSI

See “Remote Server Interface” (page 134).

RSR

See “requested shaping rate (RSR)” (page 134).

RTD

See “round trip delay (RTD)” (page 137).

rtVBR

See “real time variable bit rate (rt-VBR)” (page 133).

S

S/D

See “source/destination” (page 147).

SA

See “security association (SA)” (page 140).

SAD

See “speech activity detection (SAD)” (page 149).

See also “security association database (SAD)” (page 140).

SAP

See “service access point (SAP)” (page 141).

SAR

See “segmentation and reassembly (SAR) sublayer” (page 141).

SBIC

See “shared bus interface controller (SBIC)” (page 143).

SCB

See “secondary control bus (SCB)” (page 140).

SCN

See “state change notification (SCN)” (page 150).

scope

Scope defines the level of advertisement for an address in a PNNI network. The level of advertisement is a level of a peer group in the PNNI routing hierarchy.

SCR

See “sustainable cell rate (SCR)” (page 152).

SCS

See “software control system (SCS)” (page 147).

SDS

See “software distribution site (SDS)” (page 147).

SDH

See “synchronous digital hierarchy (SDH)” (page 155).

SDU

See “service data unit (SDU)” (page 141).

secondary control bus (SCB)

The secondary control buses enable the processor cards to communicate with the software embedded on any fabric card. The SCBs also enable any two processor cards to exchange information, bypassing the fabric cards.

security association (SA)

A dedicated secure virtual connection between two peers.

security association database (SAD)

A database containing the set of all active SAs within a peer.

security parameter index (SPI)

An index established when the security association (SA) is negotiated between two peers. This index will be used along with peer address and protocol type to index the right SA in the security association database (SAD) for inbound traffic.

security policy (SP)

A policy that defines the security services to be applied to a specific IP traffic flow.

security policy database (SPD)

A database containing all of the policies that define the security protocols for all IP traffic flows in and out of a peer.

segmentation and reassembly (SAR) sublayer

A sublayer of an AAL that performs segmentation of the higher-layer PDUs into ATM cell payloads and receives ATM cell payloads to be reassembled into higher-layer PDUs.

serialization delay

Serialization delay is the time to clock a frame or cell into or out of a device (Passport node).

service

A software application. Examples of a Passport service: frame relay and ATM bearer service.

service access point (SAP)

The service access point of a protocol layer is the point at which an upper (client) layer requests service from the layer.

service data unit (SDU)

The entire packet of data received from the immediate upper (client) layer to be serviced by a protocol layer. The PDU of the client layer is the SDU of the next lower layer.

service interworking function (SIWF)

The FR-ATM SIWF enables frame relay customer-provided equipment (CPE) to communicate with ATM-capable CPE. The SIWF maintains standard interworking between frame relay and ATM equipment, and maps frame relay DLCIs to ATM VCCs on a one-to-one basis. The FR-ATM service interworking function is based on the FRF.8 standard.

See also, “FR-ATM interworking service” (page 75).

service request (SR)

A request for Nortel Networks to fix a problem.

service-specific convergence sublayer (SSCS)

A sublayer of an AAL that adapts the specific requirements of the service utilizing the AAL to the lower common AAL sublayers.

serving capacity

One of the traffic parameters used by the CAC algorithm to determine if the link of the particular node can accommodate a VCC or a VPC connection point.

SET alarm

An alarm that is issued when a fault condition is detected. These alarms have an activeListStatus value of “SET”.

setup priority

In PORS networks, setup priority indicates the relative importance of a connection, and its tolerance of path bumping. A connection with a lower setup priority can be bumped to an alternative path or terminated by a connection with a higher priority.

SFQ

See “shaped fair queuing (SFQ)” (page 143).

SFP module

See “Small form-factor pluggable optical transceiver module” (page 145).

SFS

See “shadowed file system (SFS)” (page 143).

shadowed file system (SFS)

A mass storage file system that retains data on the control processor hard disks. Data retained by the file system includes software, provisioning data, and spooled data from the data collection system. The shadowed file system allows up to two Passport disks to operate in synchronization for redundancy.

shaped fair queuing (SFQ)

A method for smoothing out traffic bursts. SFQ is useful for ensuring that transmitted egress traffic conforms to subscribed traffic parameters. SFQ regulates the emission interval of cells in the egress direction.

shared buffer memory

See “shared memory” (page 143).

shared bus

A 32-bit bus on a processor card that ties all peripheral devices together. The shared buffer memory, shared bus interface controller, link controller, and bus controller are some of the devices that use the shared bus.

shared bus interface controller (SBIC)

An ASIC used to manage and manipulate queues and blocks within the shared memory and to coordinate all direct memory access (DMA) into the shared memory. The queue controller (QC) is part of the SBIC.

shared memory

A common memory pool on a processor card in which all blocks, buffers, and queues are stored. Frames enter Passport from a network link to the interfacing function processor where they are stored in memory. Passport software then determines each frame’s destination. Once destinations are determined, the hardware moves the frames through the processor card without further software intervention. Direct memory access into the shared memory is controlled by the shared bus interface controller.

shared multicast distribution tree

A multicast distribution tree rooted at a well-known point such as an RP through which receivers hear of new sources and new receivers hear of all sources.

shelf

Refers to the processor card section, the power converter section, the cooling unit, and the cable management assembly. The shelf provides power and communication between processor cards through the backplane.

shelf management system (SMS)

The software system responsible for managing the software and hardware of the shelf. It consists of three major subsystems: the software control system (SCS), the bus/backplane control system (BCS) and the processor control system (PCS).

shortest path first (SPF)

A class of routing protocols that use Djikstra's algorithm to compute the shortest path through a network, according to specified metrics, for efficient transmission of packet data.

shortest path tree (SPT)

A multicast distribution tree created by the merger of all the shortest paths that connect receivers to the source of the multicast data packets.

short loop

A configuration where there is no AQM on the egress FP.

signaling

The exchange of electrical information specifically concerned with the establishment and control of connections in a communication network.

signal processing module (SPM)

A hardware module on the voice services function processor that processes signaling information.

simple network management protocol (SNMP)

A multivendor standard network management protocol that polls components in the network, typically over an IP-based network. The protocol data units are encoded in ASN.1. SNMP concentrates primarily on the observation and control of the network. It is defined by RFC 1157 and RFC 1213.

single bus mode

A configuration in which only one backplane bus is available to carry cells between operational cards. The other bus has been taken out of service.

single-ended accounting

Accounting records are generated at only one end of the connection with no feedback from the other end. This option is available for frame relay and ATM accounting features. SingleEnd is another term for a single-ended accounting record for ATM accounting. Due to the lossy nature of ATM networks, double-ended accounting is recommended for ATM accounting.

single fabric mode

A configuration in which only one backplane fabric card is available to carry cells between operational cards. The other fabric card has been taken out of service.

single-FP line APS

A type of implementation scheme that uses a single optical interface card to provide SONET or SDH line automatic protection switching.

See “automatic protection switching (APS)” (page 29).

single-mode (SM)

Optical fiber that is capable of propagating light signals of only one wavelength.

single party node

A network node where the connection is only used for the information flow to/from a single party of a call.

SIWF

See “service interworking function (SIWF)” (page 142).

SM

See “single-mode (SM)” (page 145).

Small form-factor pluggable optical transceiver module

The small form-factor pluggable (SFP) optical transceiver module is a fiber optical unit that interfaces between each optical module socket (port) on the faceplate of a function processor (FP) card and the fiber optical cables with LC small form connectors. When FPs have SFP modules, each port can have a different version of the module such that various multimode (MM) and

single-mode (SM) fiber cables and reaches can be appropriately connected to the same faceplate. SFP modules provide flexible use of an FP's interfaces for each port on the card.

SMDS

See "switched multimegabit data service (SMDS)" (page 153).

SMS

See "shelf management system (SMS)" (page 144).

SNA

See "System Network Architecture (SNA)" (page 155).

SNMP

See "simple network management protocol (SNMP)" (page 144).

SNMP information model

The information model defined for the SNMP protocol. This model represents management information in terms of scalar and tabular variables. The definitions of these variables are contained in MIB modules.

SNMPD

Simple network management protocol daemon.

soft rerouting

See "path optimization" (page 119).

soft permanent virtual circuit (SPVC, soft PVC)

Soft PVCs support the same functionality as permanent virtual connections but eliminate the need to manually provision each node along the connection. The endpoint is provisioned but the connection route is selected automatically.

soft permanent virtual path (SPVP, soft PVP)

Soft PVPs support the same functionality as a permanent virtual path but eliminate the need to manually provision each node along the connection. The endpoint is provisioned but the connection route is selected automatically.

software control system (SCS)

The software system that manages the software installed in a shelf. It controls the downloading of software, cleans up unused software on the Passport's disk, and determines which software modules need to be loaded on each processor card.

software distribution site (SDS)

A workstation designated to manage, store, and provide access to Passport software.

SONET

See "synchronous optical network (SONET) standard" (page 155).

SONET payload envelope (SPE)

The user data of a SONET signal.

source/destination

The name of the endpoints of an ABR loop when considered in a given single direction. ABR requires that a network is divided into ABR loops with a source and destination at either end of the loop. The direction from source to destination is the direction of traffic flow. For traffic in the reverse direction, the source and destination roles are reversed. See "resource management (RM) cell" (page 135).

source node

The node that originates the connection.

source route

In ATM PNNI networking, a route that has been determined by the source node to the destination node. As a result of this calculation, a source route includes a complete designated transit list (DTL), which is based on the distributed topology information that is available at the time the calculation is made.

source routing

A routing approach in which the source node determines the route to the requested destination before setting up the call.

SP

See "security policy (SP)" (page 141).

SPT

See “shortest path tree (SPT)” (page 144).

spare card

A spare processor card is either

- an installed back-up card that has been configured (provisioned) in software to take over the traffic and services of a compatible or equivalent card when that card is removed from service manually or by the system; in the Passport suite of NTPs, occurrences of “spare card” almost always refer to this definition
- an unused card that is stored as a replacement card in the event of a failure, upgrade, or redeployment of a compatible or equivalent card

See also “sparing” (page 148) and “sparing panel” (page 148).

sparing

Using a spare card to enable redundant back-up of another card’s active traffic, services, and capabilities. The effectiveness of the sparing depends on choosing a compatible or equivalent card. A compatible card usually has the same root product engineering code (PEC) and provides the same services and capabilities but with different rates of performance. An equivalent card can have a different PEC but provides the same or very similar services and capabilities.

sparing panel

A termination panel that enables the sparing of one or more function processors (FPs) by a single FP of the same type and compatible or equivalent vintage. See also “sparing timer” (page 148), “sparing” (page 148), and “equipment sparing” (page 66).

sparing timer

This timer is used to cause a switchover if a failed main function processor (FP) in a one-for-n sparing configuration has not recovered by the time it expires. This timer is five minutes. See also “stability timer” (page 150).

SPD

See “security policy database (SPD)” (page 141).

SPE

See “SONET payload envelope (SPE)” (page 147).

specified path

A manually pre-determined path that consists of a series of transit nodes.

specified path connection

A connection that is created using a specified path.

speech activity detection (SAD)

A function performed by Passport when processing voice calls that saves bandwidth by not transmitting the silent portions of a conversation. Typical telephone conversations consist of 40 to 60 percent silence.

SPF

See “shortest path first (SPF)” (page 144).

SPI

See “security parameter index (SPI)” (page 141).

SPM

See “signal processing module (SPM)” (page 144).

spooled statistics

Statistics that are collected by the data collection system (DCS) from various applications. These statistics are used for network planning and engineering purposes.

SPVC

See “soft permanent virtual circuit (SPVC, soft PVC)” (page 146).

See “switched permanent virtual circuit (SPVC)” (page 153).

SPVP

See “soft permanent virtual path (SPVP, soft PVP)” (page 146).

See “switched permanent virtual path (SPVP)” (page 153).

SR

See “service request (SR)” (page 142).

S-switched permanent virtual circuit (S-SPVC)

A switched SPVC (S-SPVC) is a switched connection at a frame relay network-to-network interface (NNI) that enables connectivity across networks between configured SPVC endpoints (P-SPVCs).

See also “switched permanent virtual circuit (SPVC)” (page 153).

stability timer

This timer allows the detection of repetitive main FP card failures and is used to cause a switchover if a main function processor in a one-for-n sparing configuration fails within one hour after it starts running as the active FP. See also “sparing timer” (page 148)

standard virtual path terminator

A type of virtual path terminator that allows simultaneous traffic management at both the VP and VC level. Standard virtual path terminators also allow VPs and VCs on the same interface to dynamically share bandwidth.

standby

Applies to equipment and instances of software that protect the ability to provide services through redundancy. Standby equipment and software can run in a variety of modes. See “cold standby” (page 45), “hot standby” (page 81), and “warm standby” (page 173).

state

An operational value indicating the high-level condition of a component. Its range of values is usually small. For example, the usage state can be idle, active, or busy, while the amount-used status could vary from 0 percent to 100 percent. State changes can generate alarms or service change notifications. Status changes can generate alarms when certain thresholds are passed.

state change notification (SCN)

In OSI, a notification of a change of OSI state and status values. In Passport, the notification is generated only by a change in operational state changes in a preselected set of components. Preside Multiservice Data Manager uses SCNs to update the state of components that are being displayed.

state walk

An activity performed by the Preside Multiservice Data Manager surveillance infrastructure to obtain or synchronize fault information from a device (for example, a Passport).

static_local

A network directly connected to the router in question.

static_remote

A host or route statically defined to the router in question but not directly connected to the router.

statistic

Passport has three categories of statistics, which consist of counters and gauges (for example, byte counts and processor and link utilization):

- statistics for network engineering and long-term planning activities (these are gathered at regular intervals and are usually processed offline)
- real-time statistics for day-to-day troubleshooting activities (these are required in when problems arise)
- statistics for billing and customer reporting activities for each call

statistics collection interval

The 15-minute interval during which spooled statistics are collected. This interval is based on network time and occurs across the network on the hour and 15, 30, and 45 minutes past the hour.

status

An operational value giving different information than the state value.

STM-1

Synchronous transport module level 1. Equivalent of STS-3/STS-3c.

stratum-3 clock

Timing sources for networks are often described in terms of stratum levels. The different stratum clock sources define different levels of accuracy. A Stratum-3 clock has an accuracy of ±1.6 bits in 10^9.

STS-1

Synchronous Transport Signal level 1. The basic logical building block signal with a rate of 51.840 Mbit/s.

STS-N

Synchronous Transport Signal level N. The signal is obtained by byte interleaving N STS-1 signals together. The rate of the STS-N is N times 51.840 Mbit/s.

stub network

An OSPF network with only one OSPF router.

subcomponent

A component hierarchically named within another (for example, *lp/0 v35/0* is a subcomponent of *lp/0*).

subnet mask

A method for identifying the subnet field from the host field of an address. This divides a network into smaller administrative units called subnetworks or subnets.

successive SET alarm

A SET alarm received while there is an outstanding SET alarm against the same NTP index and component name.

summary address

In PNNI networking, an address prefix that tells a node how to summarize reachability information. See “address summarization” (page 20).

sustainable cell rate (SCR)

One of a set of traffic characterization values used to define traffic characteristics through the traffic descriptor types.

SCR defines the upper bound of the cell rate that can be sustained for a connection over an indefinite time period. It is used by the network operator to configure the connection to ensure the QOS defined in the traffic contract.

The five values used in the traffic descriptor parameters are peak cell rate (PCR), sustainable cell rate (SCR), maximum burst size (MBS), cell delay variation tolerance (CDVT), and requested shaping rate (RSR).

SVC

See “switched virtual channel (SVC), ATM networking” (page 154).

See “switched virtual circuit (SVC)” (page 154).

switched multimegabit data service (SMDS)

A set of standards developed by Telcordia for communication over telephone lines.

switched permanent virtual circuit (SPVC)

A type of virtual circuit (VC) that allows configured SPVC endpoints in two different frame relay or ATM networks to establish a switched connection across network-to-network interfaces (NNIs). It is a logical connection for which endpoints are configured by the network operator but for which the route is selected automatically.

A configured SPVC that uses the switched connection between networks is a permanent SPVC (P-SPVC). The switched connection at the NNI that enables connectivity between networks is a switched SPVC (S-SPVC).

See also:

1 “P-switched permanent virtual circuit (P-SPVC)” (page 120)

2 “S-switched permanent virtual circuit (S-SPVC)” (page 150)

3 “virtual circuit (VC), frame relay networking” (page 166)

switched permanent virtual path (SPVP)

A a type of virtual path (VP) that allows configured SPVP endpoints in two different frame relay or ATM networks to establish a switched connection across network-to-network interfaces (NNIs). It is a logical connection, the endpoints of which are configured by the network operator, but with a route is selected automatically at call setup.

A configured SPVP that uses the switched connection between networks is a permanent SPVP (P-SPVP). The switched connection at the NNI that enables connectivity between networks is a switched SPVP (S-SPVP).

See also:

- "permanent switched permanent virtual circuit (P-SPVC)" (page 122)
- "S-switched permanent virtual circuit (S-SPVC)" (page 150)
- "virtual circuit (VC), frame relay networking" (page 166)

switched virtual channel (SVC), ATM networking

A virtual channel connection that is dynamically established and ended through control signaling. The user defines the endpoints when the call is initiated.

See also "virtual channel (VC), ATM networking" (page 166).

switched virtual circuit (SVC)

A type of virtual circuit (VC) that is established and torn down by subscriber applications on an as-needed basis. It is a logical connection that remains in place only for the duration of data transfer. User equipment signals the desired destination, and the connection route is selected automatically through SVC signaling.

See also "virtual circuit (VC), frame relay networking" (page 166).

switched virtual path (SVP)

A type of virtual path (VP) that is established and torn down by subscriber applications on an as-needed basis. It is a logical connection that remains in place only for the duration of data transfer. User equipment signals the desired destination, and the connection route is selected automatically through SVP signaling.

See also "virtual path (VP)" (page 167).

switched voice

A Passport 7400 feature in which TDM traffic from a narrowband network is terminated at a Passport 7400 switch and dynamically routed over the ATM network.

See also "non-switched voice" (page 111).

switchover

See "hitless CP switchover" (page 80).

symmetric encryption

A key is symmetric when both peers use the same private key, ensuring security.

synchronous digital hierarchy (SDH)

The international version of the Telcordia SONET standard, based on STM-1 frame. The basic line rate is 155.52 Mbit/s. SDH is defined by ITU-T.

synchronous optical network (SONET) standard

A ultra-high-speed fiber-optic transmission standard developed by Telcordia for fiber-based digital transmission networks. SONETV is the North American version of SDH and is based on STS-1.

System Network Architecture (SNA)

A proprietary network architecture developed by IBM. SNA shares some characteristics with the OSI reference model.

T

T1

See “DS1” (page 61).

tandem node

A node between the ingress and egress nodes that decides independently the best packet forwarding route to the egress node identified in the packet. See also “egress node” (page 64) and “ingress node” (page 83).

tandem pass through (TPT)

A software process that allows MVP-E FPs on tandem Passport nodes to dynamically detect each other and pass, without modification, compressed voice data through an intermediate voice switch. Voice transport supports TPT.

TC

See “trunk conditioning (TC)” (page 161).

TCP

See “transmission control protocol (TCP)” (page 160).

TDM

See “time-division multiplexing (TDM)” (page 157).

TDMA

See “time-division multiple access” (page 156).

TDP

See “traffic descriptor parameter (TDP)” (page 159).

TDS

See “transparent data service (TDS)” (page 160).

TDT

See “traffic descriptor type (TDT)” (page 159).

Telnet

A terminal access protocol for accessing remote devices over an IP-based network. The protocol provides support for various types of terminals and is typically found in IP- or UNIX-based environments.

To establish a Telnet connection, you need both a Telnet client and a Telnet server. The Telnet client resides on the local device and connects to the Telnet server on the remote device. Passport acts as both a Telnet server (for incoming Telnet connections) and a Telnet client (for outgoing Telnet connections).

termination panel

A panel used for cable distribution.

TFTP

See “trivial file transfer protocol (TFTP)” (page 161).

time-division multiple access

A technique originated in satellite communications to interweave multiple conversations into one transponder so as to appear to get simultaneous conversations. TDMA is a variation on TASI (time assignment speech interpolation). TDMA is now used in cellular and other wireless communications.

time-division multiplexing (TDM)

A method of transmitting digital signals from multiple sources in series on the same line.

Time Management System (TMS)

The Passport system responsible for maintaining

- the calendar time on the network
- the processor time during rebooting of the FP or CP
- the module time (maintaining synchronization between, for example, an FP and a CP)

time-of-day accounting (TODA)

Time-of-day accounting allows for accounting records to be generated up to 24 times for each day. TODA entries must be a minimum of one hour apart and a maximum of 12 hours apart. The DCS-managed table holding 24 entries manages this accounting feature. When TODA is enabled the system is in TODA mode. A TODA changeover occurs whenever the actual time of day changes from one interval to another. See “timer-mode accounting” (page 157).

timer-mode accounting

When TODA is disabled, an accounting record is generated every 12 hours for each connection.

TM

See “traffic management (TM)” (page 159).

TMS

See “Time Management System (TMS)” (page 157).

TODA

See “time-of-day accounting (TODA)” (page 157).

topology maintenance

A software system that performs network topology discovery and maintenance for the Passport node.

topology region

A group of interconnected Passport nodes that share topological routing information.

topology database

The database that describes the topology of the entire PNNI routing domain as seen by a node. Each node that participates in a PNNI network maintains a topology database.

topology metric

A generic term that refers to either a link metric or a nodal metric.

tos

See “type of service” (page 161).

TPT

See “tandem pass through (TPT)” (page 155).

trace connection

A new signaling message used by the trace source node to initiate the connection trace feature.

trace connection acknowledge

A new signalling message used by the trace destination node to acknowledge the trace connection message.

trace destination interface

The interface on which a path or connection trace terminates when it completes normally.

trace destination node

The node that terminates the path or connection trace for a given connection and has an outgoing trace destination interface.

trace source interface

The interface at the trace source node that is designated as the starting point for the path or connection trace of a given connection.

trace source node

The node that initiates the path or connection trace for a given connection.

trace transit list (TTL) information element

An identifier added to the signaling messages to collect trace information.

traffic contract

The agreement that specifies the required transfer characteristics for an ATM connection.

traffic descriptor parameter (TDP)

There are five parameters that are used to define a traffic descriptor type (TDT). Taken together with the QOS, these parameters specify the traffic characteristics of an ATM connection.

The five values used in the traffic descriptor parameters are peak cell rate (PCR), sustainable cell rate (SCR), maximum burst size (MBS), cell delay variation tolerance (CDVT), and requested shaping rate (RSR).

traffic descriptor type (TDT)

Traffic descriptor types define which traffic descriptor parameters are applied to a connection. Types are defined in the ATM Forum 3.0/3.1 and 4.0 standards. Passport also incorporate proprietary parameters that are used in traffic shaping, CAC, and UPC.

traffic management (TM)

A set of mechanisms in hardware and software that enhance the availability of bandwidth to connections that absolutely require it and prevent the overloading of networks to prevent data losses.

traffic shaping

A method used to smooth out traffic bursts by regulating the emission interval of cells or frames in the transmit direction. This is useful for ensuring conformance of transmitted traffic to subscribed traffic parameters.

transit network

An OSPF network with more than one router.

transit node

A logical representation of a node, which is also known as a hop node. It is composed of an address called node ID and an egress port called port ID.

translation mode

One of two modes of the FR-ATM interworking service. When translation mode is chosen for a PVC, the FR-ATM interworking function performs the mapping of upper layer protocol encapsulations between the two incompatible encapsulation methods. Translation mode allows the carriage of multiple upper layer user protocols over the same PVC and the interworking of routed protocols between a frame relay CPE and a B-ISDN CPE.

transmission control protocol (TCP)

A connection-oriented transport-layer protocol that provides reliable, robust, and adaptable data transfer between end system upper-layer protocols (ULP). TCP assumes that simple, potentially unreliable, datagram services are available from lower-level protocols. TCP is defined in RFC 793.

trap

An unsolicited message from an agent to a manager containing information about an exceptional event in that agent.

TRM

See “transport resource manager (TRM)” (page 160).

transparent data service (TDS)

A service offered on the Passport that allows the user to send bit or HDLC data across the network without interpretation. See also “bit-transparent data service (BTDS)” (page 34) and “HDLC-transparent data service (HTDS)” (page 78).

transport resource manager (TRM)

A base routing system that acts as an intermediary between links and routing systems. All Passport trunks and DPN gateways on the Passport module are grouped into link groups by TRM and are presented to the address plan managers (for example, topology and DPN EAP) that use them. TRM is also involved in the multiplexing of logical network numbers on the links. A third function of TRM is to maintain the link and link group packet forwarding tables on all processors in a Passport shelf. TRM also directs some of the maintenance of forwarding tables for various address plans on the FPs of the module.

trivial file transfer protocol (TFTP)

A protocol that governs transferring files between nodes without protection against packet loss.

trunk

The generic term for a physical connection, not a Passport-specific term.

trunk conditioning (TC)

A technique whereby a constant bit pattern is applied to specific time slots to indicate downstream that the system has detected a fault in the upstream data path.

trunking (acknowledged)

The receiving node confirms the quality of the received packets and requests retransmission of corrupted packets.

trunking (unacknowledged)

The receiving node does not acknowledge the receipt of packets.

TTC2M

Japanese Telecommunication Technology Committee 2 Mbit/s PBX-TDM interface, referencing TTC JJ-20.10, JJ-20.11, JJ-20.12.

tunneling

A protocol encapsulation process that embeds propriety protocols, such as MPANL, into a carrier protocol, such as frame relay.

Type 2.1 (T2.1) node

A local exchange node (LEN) node.

type of service

The 8-bit field in an IP packet header used for specifying differentiated service parameters for the IP packet. The 6 most significant bits of this field are also known as the “differentiated services code point” (page 58) (DSCP).

U

U-plane

In frame relay, the data transfer protocol or U-plane is the protocol used for the transfer of the actual user data. The protocol is based on T1.618, which is based on a subset of ANSI T1.602 (LAPD). For more information, see 241-5701-901 *Passport 7400, 15000, 20000 Frame Relay Fundamentals*.

UBR

See “unspecified bit rate (UBR)” (page 163).

UBR with MDCR

See “unspecified bit rate (UBR) with minimum desired cell rate (MDCR)” (page 163).

UDP

See “user datagram protocol (UDP)” (page 163).

UMTS

See “Universal Mobile Telecommunications System” (page 162).

UNI

See “user-to-network interface (UNI)” (page 164).

UNI scope

The membership scope associated with group addresses.

unicast forwarding

A packet forwarding mode that delivers the packet to a single destination (egress node).

Universal Mobile Telecommunications System

A third-generation, CDMA-based, wireless system designed for interoperability with existing TDMA-based GSM/GPRS networks. UMTS standardizes low-power, short-distance radio transmissions, such as cellular, cordless, low-end wireless, local area network, private mobile radio and paging systems.

universal trunk protocol (UTP)

The specific protocol between Passport and DPN through an acknowledged trunking system.

unspecified bit rate (UBR)

A service category that defines connection throughput as best-effort, in which cells are either forwarded if link bandwidth is available or discarded if bandwidth is not available. UBR traffic has low emission and high discard eligibility. This QOS is used for non real-time applications.

unspecified bit rate (UBR) with minimum desired cell rate (MDCR)

A standards-based type of UBR service category in which a preference for minimum bandwidth objective is indicated to the network, without defining any quality of service (QOS) commitment.

UPC

See "usage parameter control (UPC)" (page 163).

uplink

An uplink is a logical link representing the connectivity from a border node to an upnode. Uplinks are the basis for horizontal links between nodes.

upnode

An upnode is the node that represents a border nodes's outside neighbor in the common peer group. It must be a neighboring peer of one of the border node's ancestors.

usage parameter control (UPC)

A traffic management strategy that enforces traffic characteristics at network access points. UPC evaluates a connection's traffic characteristics based on the traffic descriptor parameters for that connection, and discards or tags non-conforming cells.

user datagram protocol (UDP)

A simple datagram protocol. UDP is layered directly above the Internet protocol (IP). This protocol does not provide for acknowledging packets or error checking. It has a high data rate but is unreliable for accurately delivering packets.

user-to-network interface (UNI)

1 The frame relay service is provided through a standard interface between the user device and the network, called the user-to-network interface. For more information, see the document 241-5701-901 *Passport 7400, 15000, 20000 Frame Relay Fundamentals*.

2 An interface between ATM user equipment and ATM network equipment.

UTC

See "Coordinated Universal Time (UTC)" (page 51).

UTP

See "universal trunk protocol (UTP)" (page 163).

UTP

Unshielded twisted pair (a type of cable).

V

V.11

A ITU-T standard that specifies electrical signal levels for data interfaces. V.11 is used by many physical interfaces such as V.36, V.37, RS-449, and X.21. The Passport V.11 FP provides an X.21 physical interface.

V.35

A standard ITU-T DCE-DTE physical interface for data communication.

V5.2

An interface specification defined in the ETSI EN 300 324-1 and ETSI EN 300 347-1 standards. A V5.2 interface connects a local exchange in a PSTN network to a number of remote end users.

variable

The field in a component name that can be used to store an attribute. The attribute denotes the external representation of a variable. A variable is the internal representation of an attribute.

variable bit rate (VBR)

See "non-real time variable bit rate (NRT-VBR)" (page 110) and "real time variable bit rate (rt-VBR)" (page 133).

VBD

See “voice band data (VBD)” (page 169).

VBR

See “variable bit rate (VBR)” (page 164).

VBR shaping

See “inverse-UPC shaping” (page 87).

VC

See “virtual channel (VC), ATM networking” (page 166).

See “virtual circuit (VC), frame relay networking” (page 166).

VCC

See “virtual channel connection (VCC)” (page 166).

VCI

See “virtual channel identifier (VCI)” (page 166).

VCL

See “virtual channel link (VCL)” (page 166).

VC ping

A command used to determine the path of a frame relay VC or the round trip delay of the frame relay VC. See “ping” (page 123).

VCS

See “Virtual Circuit System (VCS)” (page 166).

VGCP

See “voice gateway control protocol (VGCP)” (page 170).

verb

The command or action to be applied to a component. Verbs take options and produce responses. For example, the delete verb removes a component from the edit view.

view

A database used to store provisioning data. The current view contains the current data. The edit view contains data used to edit the current view. The committed view contains information used in case of a restart or reset.

Vintage 4

Version of accounting records that are generated by DPN modules.

Vintage 4 Enhanced

Vintage 4 accounting records that are used for frame relay. These accounting records contain different fields for frame relay.

virtual channel (VC), ATM networking

In ATM networking, a concept that describes unidirectional transport of ATM cells associated by a common unique identifier value called VCI.

virtual channel connection (VCC)

In ATM networking, a concatenation of virtual channel links that extends between two points where the adaptation layer is accessed.

virtual channel identifier (VCI)

In ATM networking, a field in the ATM cell header that identifies the virtual channel with which the cell is associated.

virtual channel link (VCL)

A segment of virtual channel between two contiguous ATM layer entities that process the cells of a virtual channel. A VCL is identified only by the VCI value in the cell header if it is part of a VPC, or by both the VPI and VCI values if it is not part of a VPC.

virtual circuit (VC), frame relay networking

In frame relay networking, the equivalent of a physical connection to a destination address using shared facilities. Virtual circuits can be permanent (PVC) or switched (SVC). The virtual circuit is anchored in the function processors that are connected to the end user devices.

Virtual Circuit System (VCS)

The software system that allows Passport to offer virtual circuits.

virtual interface

In ATM networking, an interface that is configured under a virtual path terminator, permitting multiple virtual interfaces under a single port. This configuration contrasts with actual or real interfaces that have a one-to-one correspondence with a physical port. Virtual interfaces, like their actual interface counterparts, can be any of UNI, IISP, AINI, or PNNI interfaces. Also known as virtual UNI or VUNI, virtual IISP or VIISP, virtual AINI or VAINI, and virtual PNNI or VPNNI.

virtual link (VL)

An IMA virtual link refers to the combination of multiple physical links that use the inverse multiplexing process to transmit traffic across these links. A virtual link is presented as a single link to the ATM layer. A VL originates on one FP running the IMA feature and terminates on another FP running the IMA feature. Typically, these two FPs are on two different Passport switches. Any virtual link can consist of a maximum of eight DS1/E1 physical links on an FP running IMA.

Virtual Media (VM)

Virtual Media (VM) is a Nortel Networks proprietary, hardware independent broadcast medium. VM is not associated with a physical port but rather a logical interface.

virtual path (VP)

In frame relay, the equivalent of a physical connection to a destination address using shared facilities. Virtual paths can be permanent (PVP) or switched (SVP). The virtual path is anchored in the function processors that are connected to the end user devices.

In ATM networking, a unidirectional transport of ATM cells belonging to virtual channels that are associated by a common identifier value called VPI.

virtual path connection (VPC)

A logical association among, or a group of, virtual channels that have the same traffic characteristics and follow the same path in a network.

In ATM networking, a concatenation of virtual path links that extends between the point where the virtual channel identifier values are assigned and the point where those values are translated or removed.

virtual path connection identifier (VPCI)

In ATM networking, a connection identifier that the nodes at the ends of a connection over virtual interfaces can use to establish a common identifier from end to end. In non-associated and VP-associated signaling, the VPI has the same value as the VPCI.

virtual path identifier (VPI)

A field in the ATM cell header that identifies the virtual path the cell is associated with. Also, a VPI can form part of the identity of the virtual channel.

virtual path link (VPL)

A segment of a virtual path between two contiguous ATM layer entities that process the cells of a virtual path, without unbundling the individual virtual channels that comprise the virtual path. A virtual path link is identified by a unique VPI value in the cell header.

virtual path termination CAC (VPT-CAC)

A connection admission control (CAC) technique that applies to VCCs under a virtual path terminator. Compare with ATM interface CAC (AtmIf-CAC).

virtual path terminator (VPT)

An ATM network entity that unbundles a VPC into its VCC elements for processing. There are two types of VPTs: basic and standard.

virtual private network (VPN)

See “customer network management (CNM)” (page 54).

virtual router (VR)

A common set of interfaces and support mechanisms for the IP protocol.

virtual router access point (VRAP)

A point of access to a *VirtualRouter* component that defines the IP logical interface. This logical interface defines the subnet to which the *IpMConn* or *Control* subcomponent is connected.

virtual router redundancy protocol (VRRP)

A protocol that specifies an election protocol that dynamically assigns responsibility for a virtual router to one of the VRRP routers on a LAN.

virtual router redundancy protocol backup (VRRP backup)

The set of VRRP routers available to assume forwarding responsibilities for a virtual router should the current master router fail.

virtual router redundancy protocol MAC address (VRRP MAC address)

A unicast MAC address associated with each VRRP virtual router that is used as a source MAC address for the VRRP advertisements. The VRRP master uses this address instead of its physical MAC address in all communications, for example: ARP response.

virtual router redundancy protocol master (VRRP master)

The VRRP router that assumes the responsibility of forwarding packets sent to the IP address(es) associated with the virtual route and answers ARP requests for these IP addresses.

virtual router redundancy protocol router (VRRP router)

A virtual router that runs the virtual router redundancy protocol. This virtual router may have more than one instance of VRRP provisioned.

virtual source/virtual destination (VS/VD)

The endpoints of the shortened loops. ABR relies on circuit loops with source and destination nodes to originate and turnaround resource management cells. Service providers can subdivide an ABR circuit into short loops as a way to reduce loop length or to avoid non-ABR switches. The endpoints of the shortened loops are known as virtual sources and destinations.

virtual UNI

See “virtual interface” (page 167).

VL

See “virtual link (VL)” (page 167).

VM

See “Virtual Media (VM)” (page 167).

voice band data (VBD)

Modulated data calls, typically fax and modem calls, carried on a voice connection.

voice compression

The process of electronically modifying a 64-kbit/s voice channel to obtain a channel of 32 kbit/s or less for the purpose of increased efficiency in transmission.

voice gateway control protocol (VGCP)

A Nortel Networks proprietary version of the simple gateway control protocol (SGCP). VGCP is one possible control interface between the media gateway controller and the PVG. (VGCP is also known as ASPEN).

voice networking

A service that allows the user to dynamically interconnect voice switches, such as PBXs, through SVCs.

voice networking call server (VNCS)

The voice networking call server is a database which provides routing and voice profile information, based on the dialed number, to PORS during voice networking SVC establishment.

VoIP

See “voice over Internet Protocol (VoIP)” (page 170).

voice over frame relay

A Passport encapsulation protocol that manages prioritized egress queues and repackages payload frames to assure the dominance of multimedia (dominantly voice) traffic over application data traffic. Large data frames are fragmented to avoid multimedia delays and link frames are packed with data fragments to assure optimal link bandwidth usage.

voice over Internet Protocol (VoIP)

Voice traffic over an IP network using ATM or Ethernet transport capabilities.

voice processing module (VPM)

A hardware module on the voice services function processor that processes voice and voice band data.

voice profile (VP)

A collection of parameters used in voice networking SVC establishment to define the quality of service for a particular call, depending on the dialed number.

voice service

Voice service allows you to interconnect voice switches, such as PBXs. It offers integral voice compression, echo cancellation, FAX handling, and speech activity detection (SAD).

voice services processor (VSP)

A two-slot FP that provides voice and voice band data processing functionality between an ATM and a TDM data path. It supports switched or non-switched voice gateway services.

voice transport

A service that allows the user to interconnect voice switches, such as PBXs, through PVCs. It offers integral voice compression, echo cancellation, FAX handling, and speech activity detection (SAD).

VP

See “virtual path (VP)” (page 167).

VPC

See “virtual path connection (VPC)” (page 167).

VPCI

See “virtual path connection identifier (VPCI)” (page 168).

VPI

See “virtual path identifier (VPI)” (page 168).

VPL

See “virtual path link (VPL)” (page 168).

VPM

See “voice processing module (VPM)” (page 170).

VPN

See “virtual private network (VPN)” (page 168).

VPN extender (VpnXc)

A special server card that increases the scalability of IP VPN services. It has its own dedicated processor and memory and acts as the IP VPN control plane, hosting all IP VPN virtual routers.

VpnXc

See “VPN extender (VpnXc)” (page 171).

VPT

See “virtual path terminator (VPT)” (page 168).

VPT-CAC

See “virtual path termination CAC (VPT-CAC)” (page 168).

VR

See “virtual router (VR)” (page 168).

VRAP

See “virtual router access point (VRAP)” (page 168).

VRRP

See “virtual router redundancy protocol (VRRP)” (page 168).

VRRP backup

See “virtual router redundancy protocol backup (VRRP backup)” (page 169).

VRRP MAC address

See “virtual router redundancy protocol MAC address (VRRP MAC address)” (page 169).

VRRP master

See “virtual router redundancy protocol master (VRRP master)” (page 169).

VRRP router

See “virtual router redundancy protocol router (VRRP router)” (page 169).

VS/VD

See “virtual source/virtual destination (VS/VD)” (page 169).

VSP

See “voice services processor (VSP)” (page 171).

VTDS

Voice transparent data service. See “transparent data service (TDS)” (page 160).

VUNI

See “virtual interface” (page 167).

W

waiting delay

The time a frame or cell waits in a transmission queue before it gets transmitted.

WAN

See “wide area network (WAN)” (page 174).

warm standby

Warm standby applications reduce service outages during an FP or CP switchover. During an equipment switchover, warm standby applications incur a longer outage of service than hot standby applications, but not as long as cold standby applications. As well, all connections must be reestablished.

WFQ

Weighted fair queuing. See “weight limited FIFO algorithm (WLFA)” (page 173).

weight limited FIFO algorithm (WLFA)

A Passport proprietary implementation of weighted fair queuing (WFQ), a non-shaping intra-class scheduler. WLFA is a mechanism for deciding which cells arriving at a Passport switch over individual circuits are delivered next to the common FIFO (first-in-first-out) trunk queue. WLF works by giving more common queue space to circuits that have a higher priority. The allocation of queue space effectively assures higher priority cells a greater share of trunk bandwidth.

weighted random early detection (WRED)

A mechanism for discarding packets based on a weighted random decision only after the node exceeds a minimum VC queue-length threshold. The node determines weights according to the extent to which the queue-length threshold is exceeded with respect to a defined maximum threshold. WRED is a method for early congestion detection, useful to window-based protocols (for example, TCP).

wide area network (WAN)

A network used for data communications among widely distributed geographic sites (bigger than a MAN). Technologies used include leased lines, connecting routers, multiplexers, packet switches, voice switches, and products such as Passport.

wild-carded binary-coded decimal (BCD)

The binary-coded decimal data type with the addition of the ? character to represent any possible value.

wildcard pattern

A wildcard pattern consists of a character string, with one or more wildcard (*) characters, where * matches zero or more characters.

wildcarding

Using the asterisk (*) wildcard character or a wildcard pattern to match more than one component. Type wildcarding replaces the component type with an asterisk to give all subcomponents of a component. Instance wildcarding replaces the instance value with an asterisk or wildcard pattern to return selected instances of a component type.

Wildcarding is available on the display, list, and find commands.

WLFA

See “weight limited FIFO algorithm (WLFA)” (page 173).

WRED

See “weighted random early detection (WRED)” (page 173).

X

X.25

The ITU-T and ISO-recommended multipoint connection-oriented service that uses either permanent virtual circuits (PVC) or switched virtual circuits (SVC) over a physical link. It uses HDLC framing to separate frames.

X.25 gateway

An X.25 access service, consisting of one or more links, connected to another network.

X.75 gateway

An X.75 access service, consisting of one or more links, connected to another network.

X.121

The ITU-T recommended numbering plan that includes the numbering plan for public switched data networks.

XID

XID is an Unnumbered Exchange Identification command/response frame used to convey the types of LLC services supported by peer link stations during connection establishment phase.

XNTP

A Passport feature that controls the setting of network time.

xPD

A generic term for any of a number of packet discard algorithms (for example, EPD, PPD, WRED).

Passport 7400, 15000, 20000

List of Terms

Release 5.2

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