D4 framing
See *SF*.

DAC
dual-attached concentrator. FDDI or CDDI concentrator capable of attaching to both rings of an FDDI or CDDI network. It can also be dual-homed from the master ports of other FDDI or CDDI concentrators.

DARPA
Defense Advanced Research Projects Agency. U.S. government agency that funded research for and experimentation with the Internet. Evolved from ARPA, and then, in 1994, back to ARPA. See also *ARPA*.

DARPA Internet
Obsolete term referring to the Internet. See *Internet*.

DAS
dual attachment station. Device attached to both the primary and the secondary FDDI rings. Dual attachment provides redundancy for the FDDI ring: if the primary ring fails, the station can wrap the primary ring to the secondary ring, isolating the failure and retaining ring integrity. Also known as a *Class A station*. Compare with *SAS*.

database object
1. In general, a piece of information that is stored in a database.
2. Chassis, card, or port defined in the configuration database of a LightStream 2020 ATM switch. Database objects have associated attributes that describe them.

data bus connector
See *DB connector*.

data channel
See *D channel*.

data circuit-terminating equipment
See *DCE*.

data communications equipment
See *DCE*.

Data Country Code
See *DCC*.

Data Encryption Standard
See *DES*.

Data Exchange Interface
See *DXI*.

data flow control layer
Layer 5 of the SNA architectural model. This layer determines and manages interactions between session partners, particularly data flow. Corresponds to the *session layer* of the OSI model. See also *data link control layer*, *path control layer*, *physical control layer*, *presentation services layer*, *transaction services layer*, and *transmission control layer*.

datagram
Logical grouping of information sent as a network layer unit over a transmission medium without prior establishment of a virtual circuit. IP datagrams are the primary information units in the Internet. The terms *frame*, *message*, *packet*, and *segment* are also used to describe logical information groupings at various layers of the OSI reference model and in various technology circles.

Datagram Delivery Protocol
See *DDP*.

data-link connection identifier
See *DLCI*.

data link control layer
Layer 2 in the SNA architectural model. Responsible for the transmission of data over a particular physical link. Corresponds roughly to the *data link layer* of the OSI model. See also *data flow control layer*, *path control layer*, *physical control layer*, *presentation services layer*, *transaction services layer*, and *transmission control layer*.

data link layer
Layer 2 of the OSI reference model. This layer provides reliable transit of data across a physical link. The data link layer is concerned with physical addressing, network topology, line discipline, error notification, ordered delivery of frames, and flow control. The IEEE has divided this layer into two sublayers: the MAC sublayer and the LLC sublayer. Sometimes simply called *link layer.* Roughly corresponds to the *data link control layer* of the SNA model. See also *application layer*, *LLC*, *MAC*, *network layer*, *physical layer*, *presentation layer*, *session layer*, and *transport layer*.

data-link switching
See *DLSw*.

Data Movement Processor
See *DMP*.

Data Network Identification Code
See *DNIC*.

data set ready
See *DSR*.

data service unit
See *DSU*.

data sink
Network equipment that accepts data transmissions.

data stream
All data transmitted through a communications line in a single read or write operation.

data terminal equipment
See *DTE*.

data terminal ready
See *DTR*.

dB
decibels.

DB connector
data bus connector. Type of connector used to connect serial and parallel cables to a data bus. DB connector names are of the format DB-*x*, where *x* represents the number of (wires) within the connector. Each line is connected to a pin on the connector, but in many cases, not all pins are assigned a function. DB connectors are defined by various EIA/TIA standards.

DCA
Defense Communications Agency. U.S. government organization responsible for DDN networks such as MILNET. Now called DISA. See *DISA*.

DCC
Data Country Code. One of two ATM address formats developed by the ATM Forum for use by private networks. Adapted from the subnetwork model of addressing in which the ATM layer is responsible for mapping network layer addresses to ATM addresses. See also *ICD*.

DCE
data communications equipment (EIA expansion) or data circuit-terminating equipment (ITU-T expansion). The devices and connections of a communications network that comprise the network end of the user-to-network interface. The DCE provides a physical connection to the network, forwards traffic, and provides a clocking signal used to synchronize data transmission between DCE and DTE devices. Modems and interface cards are examples of DCE. Compare with *DTE*.

D channel

1. data channel. Full-duplex, 16-kbps (BRI) or 64-kbps (PRI) ISDN channel. Compare to *B channel*, *E channel*, and *H channel*.
2. In SNA, a device that connects a processor and main storage with peripherals.

DDM

Distributed Data Management. Software in an IBM SNA environment that provides peer-to-peer communication and file sharing. One of three SNA transaction services. See also *DIA* and *SNADS*.

DDN

Defense Data Network. U.S. military network composed of an unclassified network (MILNET) and various secret and top-secret networks. DDN is operated and maintained by *DISA*. See also *DISA* and *MILNET*.

DDP

Datagram Delivery Protocol. Apple Computer network layer protocol that is responsible for the socket-to-socket delivery of datagrams over an AppleTalk internetwork.

DDR

dial-on-demand routing. Technique whereby a Cisco router can automatically initiate and close a circuit-switched session as transmitting stations demand. The router spoofs keepalives so that end stations treat the session as active. DDR permits routing over ISDN or telephone lines using an external ISDN terminal adaptor or modem.

DE

discard eligible. See *tagged traffic*.

deadlock

1. Unresolved contention for the use of a resource.
2. In APPN, when two elements of a process each wait for action by or a response from the other before they resume the process.

decibels

Abbreviated *dB*.

DECnet
Group of communications products (including a protocol suite) developed and supported by Digital Equipment Corporation. DECnet/OSI (also called DECnet Phase V) is the most recent iteration and supports both OSI protocols and proprietary Digital protocols. Phase IV Prime supports inherent MAC addresses that allow DECnet nodes to coexist with systems running other protocols that have MAC address restrictions. See also *DNA*.

DECnet routing
Proprietary routing scheme introduced by Digital Equipment Corporation in DECnet Phase III. In DECnet Phase V, DECnet completed its transition to OSI routing protocols (ES-IS and IS-IS).

decryption
The reverse application of an encryption algorithm to encrypted data, thereby restoring that data to its original, unencrypted state. See also *encryption*.

dedicated LAN
Network segment allocated to a single device. Used in LAN switched network topologies.

dedicated line
Communications line that is indefinitely reserved for transmissions, rather than switched as transmission is required. See also *leased line*.

de facto standard
Standard that exists by nature of its widespread use. Compare with *de jure standard*. See also *standard*.

default route
Routing table entry that is used to direct frames for which a next hop is not explicitly listed in the routing table.

Defense Advanced Research Projects Agency
See *DARPA*.

Defense Communications Agency
See *DCA*.

Defense Data Network
See *DDN*.

Defense Information Systems Agency
See *DISA*.

Defense Intelligence Agency
See *DIA*.

de jure standard
Standard that exists because of its approval by an official standards body. Compare with *de facto standard*. See also *standard*.

delay
The time between the initiation of a transaction by a sender and the first response received by the sender. Also, the time required to move a packet from source to destination over a given path.

demand priority
Media access method used in 100VG-AnyLAN that uses a hub that can handle multiple transmission requests and can process traffic according to priority, making it useful for servicing time-sensitive traffic such as multimedia and video. Demand priority eliminates the overhead of packet collisions, collision recovery, and broadcast traffic typical in Ethernet networks. See also *100VG-AnyLAN*.

demarc
Demarcation point between carrier equipment and CPE.

demodulation
Process of returning a modulated signal to its original form. Modems perform demodulation by taking an analog signal and returning it to its original (digital) form. See also *modulation*.

demultiplexing
The separating of multiple input streams that have been multiplexed into a common physical signal back into multiple output streams. See also *multiplexing*.

dense mode PIM
See *PIM dense mode*.

Department of Defense
See *DoD*.

Department of Defense Intelligence Information System Network Security for Information Exchange
See *DNSIX*.

Dependent LU
See *DLU*.

Dependent LU Requester
See *DLUR*.

Dependent LU Server
See *DLUS*.

DES
Data Encryption Standard. Standard cryptographic algorithm developed by the U.S. NBS.

designated bridge
The bridge that incurs the lowest path cost when forwarding a frame from a segment to the route bridge.

designated router
OSPF router that generates LSAs for a multiaccess network and has other special responsibilities in running OSPF. Each multiaccess OSPF network that has at least two attached routers has a designated router that is elected by the OSPF Hello protocol. The designated router enables a reduction in the number of adjacencies required on a multiaccess network, which in turn reduces the amount of routing protocol traffic and the size of the topological database.

destination address
Address of a network device that is receiving data. See also *source address*.

destination MAC
See *DMAC*.

destination service access point
See *DSAP*.

deterministic load distribution
Technique for distributing traffic between two bridges across a circuit group. Guarantees packet ordering between source-destination pairs and always forwards traffic for a source-destination pair on the same segment in a circuit group for a given circuit-group configuration.

Deutsche Industrie Norm
See *DIN*.

Deutsche Industrie Norm connector
See *DIN connector*.

device
See *node*.

DIA
Document Interchange Architecture. Defines the protocols and data formats needed for the transparent interchange of documents in an SNA network. One of three SNA transaction services. See also *DDM* and *SNADS*.

dial backup
Feature supported by Cisco routers that provides protection against WAN downtime by allowing the network administrator to configure a backup serial line through a circuit-switched connection.

dial-on-demand routing
See *DDR*.

dial-up line
Communications circuit that is established by a switched-circuit connection using the telephone company network.

differential encoding
Digital encoding technique whereby a binary value is denoted by a signal change rather than a particular signal level.

differential Manchester encoding
Digital coding scheme where a mid-bit-time transition is used for clocking, and a transition at the beginning of each bit time denotes a zero. The coding scheme used by IEEE 802.5 and Token Ring networks.

Diffusing Update Algorithm
See *DUAL*.

Digital Network Architecture
See *DNA*.

digital signal level 0
See *DS-0*.

digital signal level 1
See *DS-1*.

digital signal level 3
See *DS-3*.

Dijkstra's algorithm
See *SPF*.

DIN
Deutsche Industrie Norm. German national standards organization.

DIN connector
Deutsche Industrie Norm connector. Multipin connector used in some Macintosh and IBM PC-compatible computers, and on some network processor panels.

directed search
Search request sent to a specific node known to contain a resource. A directed search is used to determine the continued existence of the resource and to obtain routing information specific to the node. See also *broadcast search*.

direct memory access
See *DMA*.

directory services
Services that help network devices locate service providers.

DISA
Defense Information Systems Agency. U.S. military organization responsible for implementing and operating military information systems, including the DDN. See also *DDN*.

discard eligible
See *DE*.

discovery architecture
APPN software that enables a machine configured as an APPN EN to automatically find primary and backup NNs when the machine is brought onto an APPN network.

discovery mode
Method by which an AppleTalk interface acquires information about an attached network from an operational node and then uses this information to configure itself. Also called *dynamic configuration*.

disk assembly
The combination of a hard disk drive, a floppy disk drive, and a disk power supply on a LightStream 2020 ATM switch. Each NP card in a LightStream 2020 chassis has its own disk assembly.

Distance Vector Multicast Routing Protocol
See *DVMRP*.

distance vector routing algorithm
Class of routing algorithms that iterate on the number of hops in a route to find a shortest-path spanning tree. Distance vector routing algorithms call for each router to send its entire routing table in each update, but only to its neighbors. Distance vector routing algorithms can be prone to routing loops, but are computationally simpler than link state routing algorithms. Also called *Bellman-Ford routing algorithm*. See also *link state routing algorithm* and *SPF*.

distortion delay
Problem with a communication signal resulting from nonuniform transmission speeds of the components of a signal through a transmission medium. Also called *group delay.*

distributed computing (processing)
See *client-server computing*.

Distributed Data Management
See *DDM*.

Distributed Queue Dual Bus
See *DQDB.*

DLCI
data-link connection identifier. Value that specifies a PVC or SVC in a Frame Relay network. In the basic Frame Relay specification, DLCIs are locally significant (connected devices might use different values to specify the same connection). In the LMI extended specification, DLCIs are globally significant (DLCIs specify individual end devices). See also *LMI*.

DLSw
data-link switching. Interoperability standard, described in RFC 1434, that provides a method for forwarding SNA and NetBIOS traffic over TCP/IP networks using data link layer switching and encapsulation. DLSw uses SSP (Switch-to-Switch Protocol) instead of SRB, eliminating the major limitations of SRB, including hop-count limits, broadcast and unnecessary traffic, timeouts, lack of flow control, and lack of prioritization schemes. See also *DLSw+*, *SRB,* and *SSP (Switch-to-Switch Protocol)*.

DLSw+
Data Link Switching Plus. Cisco implementation of the DLSw standard for SNA and NetBIOS traffic forwarding. DLSw+ goes beyond the standard to include the advanced features of the current Cisco RSRB implementation, and provides additional functionality to increase the overall scalability of data-link switching. See also *DLSw*.

DLU

Dependent LU. An LU that depends on the SSCP to provide services for establishing sessions with other LUs. See also *LU* and *SSCP*.

DLUR

Dependent LU Requester. The client half of the Dependent LU Requestor/Server enhancement to APPN. The DLUR component resides in APPN ENs and NNs that support adjacent DLUs by securing services from the DLUS. See also *APPN*, *DLU*, and *DLUS*.

DLUR node

In APPN networks, an EN or NN that implements the DLUR component. See also *DLUR*.

DLUS

Dependent LU Server. The server half of the Dependent LU Requestor/Server enhancement to APPN. The DLUS component provides SSCP services to DLUR nodes over an APPN network. See also *APPN*, *DLU*, and *DLUR*.

DLUS node

In APPN networks, a NN that implements the DLUS component. See also *DLUS*.

DMA

direct memory access. The transfer of data from a peripheral device, such as a hard disk drive, into memory without that data passing through the microprocessor. DMA transfers data into memory at high speeds with no processor overhead.

DMAC

destination MAC. The MAC address specified in the Destination Address field of a packet. Compare with *SMAC*. See also *MAC address*.

DMP

Data Movement Processor. Processor on the Catalyst 5000 that, along with the multiport packet buffer memory interface, performs the frame-switching function for the switch. The DMP also handles

translational bridging between the Ethernet and FDDI interfaces, IP segmentation, and intelligent bridging with protocol-based filtering. See also *Catalyst 5000*.

DNA

Digital Network Architecture. Network architecture developed by Digital Equipment Corporation. The products that embody DNA (including communications protocols) are collectively referred to as DECnet. See also *DECnet*.

DNIC

Data Network Identification Code. Part of an X.121 address. DNICs are divided into two parts: the first specifying the country in which the addressed PSN is located and the second specifying the PSN itself. See also *X.121*.

DNS

Domain Naming System. System used in the Internet for translating names of network nodes into addresses. See also *authority zone*.

DNSIX

Department of Defense Intelligence Information System Network Security for Information Exchange. Collection of security requirements for networking defined by the U.S. Defense Intelligence Agency.

Document Interchange Architecture

See *DIA*.

DoD

Department of Defense. U.S. government organization that is responsible for national defense. The DoD has frequently funded communication protocol development.

domain

1. In the Internet, a portion of the naming hierarchy tree that refers to general groupings of networks based on organization-type or geography.
2. In SNA, an SSCP and the resources it controls.
3. In IS-IS, a logical set of networks.

Domain
Networking system developed by Apollo Computer (now part of Hewlett-Packard) for use in its engineering workstations.

Domain Naming System
See *DNS*.

domain specific part
See *DSP*.

dot address
Refers to the common notation for IP addresses in the form <*n.n.n.n*> where each number *n* represents, in decimal, 1 byte of the 4-byte IP address. Also called *dotted notation* or *four-part dotted notation*.

dotted notation
See *dot address*.

downlink station
See *ground station*.

downstream physical unit
See *DSPU*.

DQDB
Distributed Queue Dual Bus. Data link layer communication protocol, specified in the IEEE 802.6 standard, designed for use in MANs. DQDB, which permits multiple systems to interconnect using two unidirectional logical buses, is an open standard that is designed for compatibility with carrier transmission standards, and is aligned with emerging standards for BISDN. SIP (SMDS Interface Protocol) is based on DQDB. See also *MAN*.

DRAM
dynamic random-access memory. RAM that stores information in capacitors that must be periodically refreshed. Delays can occur because DRAMs are inaccessible to the processor when refreshing their contents. However, DRAMs are less complex and have greater capacity than SRAMs. See also *SRAM*.

drop
Point on a multipoint channel where a connection to a networked device is made.

drop cable
Generally, a cable that connects a network device (such as a computer) to a physical medium. A type of AUI. See also *AUI*.

DS-0
digital signal level 0. Framing specification used in transmitting digital signals over a single channel at 64-kbps on a T1 facility. Compare with *DS-1* and *DS-3*.

DS-1
digital signal level 1. Framing specification used in transmitting digital signals at 1.544-Mbps on a T1 facility (in the United States) or at 2.108-Mbps on an E1 facility (in Europe). Compare with *DS-0* and *DS-3*. See also *E1* and *T1*.

DS-1 domestic trunk interface
See *DS-1/DTI*.

DS-1/DTI
DS-1 domestic trunk interface. Interface circuit used for DS-1 applications with 24 trunks.

DS-3
digital signal level 3. Framing specification used for transmitting digital signals at 44.736-Mbps on a T3 facility. Compare with *DS-0* and *DS-1*. See also *E3* and *T3*.

DSAP
destination service access point. The SAP of the network node designated in the Destination field of a packet. Compare to *SSAP*. See also *SAP (service access point)*.

DSP
domain specific part. The part of a CLNS address that contains an area identifier, a station identifier, and a selector byte.

DSPU

1. downstream physical unit. In SNA, a PU that is located downstream from the host.
2. Cisco IOS software feature that enables a router to function as a PU concentrator for SNA PU 2 nodes. PU concentration at the router simplifies the task of PU definition at the upstream host while providing additional flexibility and mobility for downstream PU devices. This feature is sometimes referred to as *DSPU concentration*. See also *PU* and *SNA*.

DSPU concentration

See *DSPU* and *PU*.

DSR

data set ready. EIA/TIA-232 interface circuit that is activated when DCE is powered up and ready for use.

DSU

data service unit. Device used in digital transmission that adapts the physical interface on a DTE device to a transmission facility such as T1 or E1. The DSU is also responsible for such functions as signal timing. Often referred to together with CSU, as *CSU/DSU*. See also *CSU*.

DSX-1

Cross-connection point for DS-1 signals.

DTE

data terminal equipment. Device at the user end of a user-network interface that serves as a data source, destination, or both. DTE connects to a data network through a DCE device (for example, a modem) and typically uses clocking signals generated by the DCE. DTE includes such devices as computers, protocol translators, and multiplexers. Compare with *DCE*.

DTMF

dual tone multifrequency. Use of two simultaneous voice-band tones for dialing (such as touch tone).

DTR
data terminal ready. EIA/TIA-232 circuit that is activated to let the DCE know when the DTE is ready to send and receive data.

DUAL
Diffusing Update Algorithm. Convergence algorithm used in Enhanced IGRP that provides loop-free operation at every instant throughout a route computation. Allows routers involved in a topology change to synchronize at the same time, while not involving routers that are unaffected by the change. See also *Enhanced IGRP*.

dual-attached concentrator
See *DAC*.

dual attachment station
See *DAS*.

dual counter-rotating rings
Network topology in which two signal paths, whose directions are opposite one another, exist in a token-passing network. FDDI and CDDI are based on this concept.

dual-homed station
Device attached to multiple FDDI rings to provide redundancy.

dual homing
Network topology in which a device is connected to the network by way of two independent access points (points of attachment). One access point is the primary connection, and the other is a standby connection that is activated in the event of a failure of the primary connection.

Dual IS-IS
See *Integrated IS-IS*.

dual tone multifrequency
See *DTMF*.

DVMRP
Distance Vector Multicast Routing Protocol. Internetwork gateway protocol, largely based on RIP, that implements a typical dense mode IP multicast scheme. DVMRP uses IGMP to exchange routing datagrams with its neighbors. See also *IGMP*.

DXI
Data Exchange Interface. ATM Forum specification, described in RFC 1483, that defines how a network device such as a bridge, router, or hub can effectively act as an FEP to an ATM network by interfacing with a special DSU that performs packet segmentation and reassembly.

dynamic address resolution
Use of an address resolution protocol to determine and store address information on demand.

dynamic configuration
See *discovery mode*.

dynamic random-access memory
See *DRAM*.

dynamic routing
Routing that adjusts automatically to network topology or traffic changes. Also called *adaptive routing*.