7. Glossary of Terms

Automatic Call Distributor (ACD): a system that queues incoming calls and spreads them out fairly over a group of service agents.

B Channel: 64 kbps "bearer" channel used for voice, circuit or packet switched data.

Bearer Service: as defined by the ITU-TSS (formerly CCITT) standards, a type of telecommunication service that provides the capability for the transmission of information between user-to-network interfaces. Two kinds of Bearer Services are defined for ISDN: circuit mode and packet mode bearer services.

BRI (Basic Rate Interface): the BRI includes two 64 kbps B channels and one 16 kbps D channel; this is also known as Basic Rate Access (BRA).

Call Clearing: the process by which a call connection is released from use.

Call Establishment: the process by which a call connection is created.

Call Reference: information element that identifies to which call a Layer 3 message pertains.

Called Party Number: information element that identifies the number of the destination party.

Called Party Subaddress: information element that is passed transparently by the switching system (if certain conditions are met) and can be used to further identify the destination party.

Calling Party Number: information element that identifies the number of the originating party.

Calling Party Subaddress: information element that is passed transparently by the switching system (if certain conditions are met) and can be used to further identify the originating party.

CCITT: See ITU-TSS.

Channel Identification: information element that requests or identifies the channel to be used for a call.

Circuit-Data: A circuit-mode call for carrying data (as opposed to voice).

Circuit-mode: type of switching that causes a one-to-one correspondence between a call and a circuit. That is, a circuit or path is assigned for a call between each switching node, and the circuit or path is not shared with other calls.

Codec: a device, or system component, that converts a signal into a digital form for transmission. Codecs often compress the information in a signal for transmission.

CPE (Customer Premise Equipment): A generic term for communications terminal gear that resides on the customer's premise and is owned by the customer.

CUG (Closed User Group) a virtual grouping of terminals that can communicate only with other members of that group. CUGs may also be extended to permit only outgoing access or only incoming access.

D Channel: the ISDN channel that carries signaling information to control the call setup, teardown, or invocation of supplementary services. The D-Channel may also be used to provide Packet Mode Data Service .

DCE (Data Communications Equipment): the DCE is the portion of a data terminal that provides the interface to the network.

Directory Number: the number that permits a user to reach a subscriber in the same local network or numbering area.

DN: directory number or subscriber number or telephone number entries.

DSU/CSU (Data Service Unit/Channel Service Unit); a device on the customer's premises that drives the network side of the customer's digital connection to the network. It is responsible for powering, framing, synchronization, and isolating the customer's equipment from the network (e.g., power surges).

DTE (Data Terminal Equipment): the DTE is the portion of a data terminal that interfaces to the end-user's equipment.

ET (Exchange Termination): refers to the Central Office link with the ISDN user.

Fast Select: X.25 facility indicating an extended user data field is being used on some packet types (e.g., 128 octets in a call request packet). May also indicate restricted response. If requested and the called user subscribes to Unconditional Notification, it is mapped into the Packet Layer Binary Parameters information element.

Flow Control Parameter Negotiation Facility: X.25 facility that allows the negotiation of packet and window sizes in both directions of transmission.

Frame Relay: a high speed wide area networking technology.

G.728: an ITU-TSS recommendation for low bit rate audio.

Group 3: a widely used facsimile protocol, which operates over analog telephone calls and ISDN voice calls.

Group 3c: a facsimile protocol for sending Group 3 faxes on digital lines.

Group 4: a high-speed facsimile protocol, as defined in the ITU-TSS F.180 Series Recommendations.

H Series: the ITU-TSS recommendations for video.

Inband: refers to signaling over the conversation path on a call.

Information Element: the name for the data fields within an ISDN Layer 3 message.

Interface: a common boundary between two systems over which the inter-system communication occurs.

Interworking: communication between two types of networks or end equipment. This may or may not involve a difference in signaling or protocol elements supported.

Inverse multiplexing: splits a wideband data stream (128 kbps) onto two narrow band (64 kbps) channels when sending, and combines the channels back into the 128 kbps stream when receiving. If the calls cannot complete at 64 kbps, then 56 kbps calls are tried, for a total of 112 kbps. Inverse multiplexers typically operate at multiples of 64 Kbps (n x 64).

ISDN (Integrated Services Digital Network): an international standard defined by the ITU-TSS for an all-digital network providing end-to-end digital connectivity to support a wide range of voice and non-voice (data and video) services.

ISDN LAN Bridges: By their nature, each LAN segment has limited geographic scope, so larger networks are built from many segments connected by bridges or routers, which route traffic to the appropriate segment. Bridges interconnect two or more segments. ISDN LAN Bridges work like other bridges, but over a distance. They connect two segments that are separated geographically, carrying the traffic between segments over ISDN circuit-data connections.

ITU-TSS (formerly CCITT): International Telecommunications Union - Telecommunications Standardization Sector - an organization under the United Nations, that prepares Recommendations, or standards, to resolve technical telecommunications problems.

LAPB: the Link Access Procedure (Balanced), defined in the ITU-TSS X.25 packet switching Recommendations.

LAPD: the Link Access Procedure for the ISDN D channel defined by the ITU-TSS I.440 and I.441 Recommendations; see Q.921.

Logical Channel: X.25 concept referring to a virtual connection operated over a physical connection that can support one or more virtual connections simultaneously.

μ-law, A-law: two different systems used to encode voice or audio signals; they involve compression of the sampled signal according to fixed formulas.

Message: the Layer 3 information that is passed between the CPE and switching system for signaling.

Multiline Hunt Group (MLHG): A Multiline Hunt Group turns a set of incoming telephone lines into a single server queue. With a hunt group, users all dial in with the same number (the Hunt DN), greatly simplifying administration and spreading access uniformly over all lines.

Non-ISDN Line: any connection from a CPE to a switching system that is not served by D-channel signaling.

Non-ISDN Trunk: any trunk not served by either SS7 or D channel signaling.

NT-1 (Network Termination 1): a unit that provides physical and electromagnetic termination of the U-interface two-wire transmission line, converts between layer 1 formats used at the U and T reference points, and performs some maintenance functions.

NT-2 (Network Termination 2): a unit that provides switching and concentration of subscribers' lines at the S-interface . This unit performs the functions of a customer-premises switch or multiplexer to multiplex B channel(s) and D channel onto one physical path and to route calls to the appropriate B or D channel.

OSI (Open Systems Interconnection): an international 7-layer protocol standard for the open exchange of data between unlike equipment.

Packet-Data: refers to packet-mode calls.

Packet-mode: refers to switching of packets of information for different users by statistically multiplexing them over the same transmission facilities. ISDN packet mode capabilities are based on ITU-TSS Recommendation X.25 procedures.

PAD Stands for Packet Assembler-Disassembler. PADs are used to interface personal computers with X.25 networks. When sending, a PAD takes a string of characters and groups them into blocks for transmission in X.25 packets. When receiving, it unblocks the incoming packets and outputs the characters one at a time.

PRI (Primary Rate Interface): connects high-capacity CPE, such as PBXs, to the network. In the US, this is composed of 23 64 kbps channels and one 64 kbps D channel; this is also known as Primary Rate Access (PRA).

PVC (Permanent Virtual Circuit): a virtual connection that is maintained between two endpoints. Such circuits are established by network administration and held for as long as the user subscribes to the service.

Q.921: the ISDN Layer 2 protocol used in the D channel: this is synonymous with LAPD.

Q.931: the ISDN Layer 3 protocol used on the D channel for signaling.

R-reference point: non-ISDN (TE2) terminal equipment connects to ISDN at the R-reference point through a terminal adapter.

RJ-11: a 4-wire telecommunications physical connector.

RJ-45: an 8-wire telecommunications physical connector.

Router: A router provides connectivity between enterprise networks (e.g., LANs and WANs), by forwarding information between the networks using global addresses. Routers use special protocols to determine connectivity, and maintain addressing information.

RS-232, RS-449: common data communications physical connectors.

S-interface (more properly: S-reference point): the interface that connects an ISDN terminal (TE-1) or a terminal adapter (TA) to the NT-2 reference point as defined in the I.411 Recommendation.

SAPI (Service Access Point Identifier): the SAPI identifies a logical point at which data link layer services are provided by a data link layer entity to a Layer 3 entity.

SS7 (Signaling System #7): a standard for digital out-of-band signaling between central offices; also called CCS7 (Common Channel Signaling #7).

Supplementary Service: a service that provides the network user with additional capabilities over elementary call control.

SVC (Switched Virtual Circuit): a virtual connection that is maintained between two endpoints for a period of time, based on a request for the connection by the calling user, an acceptance of the connection by the called user, and a clearing of the connection by either of these users.

T-interface (more properly: T-reference point): performs the same function as the S-interface but uses an NT-1 rather than an NT-2.

TA (Terminal Adapter): A DCE that connects to the ISDN S-interface and enables non ISDN terminal equipment to communicate over the ISDN.

TCP/IP: a commonly used protocol (supported by routers and end systems) for communicating across enterprise networks.

TE1 (Terminal Equipment type 1): ISDN-compatible terminals.

TE2 (Terminal Equipment type 2): non-ISDN terminal equipment linked at the RS-232, RS-449, or V.35 interfaces.

TEI (Terminal Endpoint Identifier): the TEI is used to identify a specific connection endpoint within a service access point.

U-Interface: a twisted pair subscriber loop that connects the NT-1 reference point to the ISDN network, as defined in the I.411 Recommendation. This interface provides Basic Rate Access with an operating frequency of 160 kbps and an information rate of 144 kbps. Under US regulations, this also marks the line of demarcation between customer-owned equipment and the public network.

Unrestricted Digital Information: an information sequence of bits is transferred at its specified bit rate without alteration.

User Data: X.25 call control field used to transfer information concerning layers above X.25 between the originating and terminating DTEs.

V.110 and V.120: terminal rate adaptation protocols for the B channel.

V.35: a data communications physical connector, suitable for use at higher speeds.

Virtual Circuit: refers to a logical connection between two points. Many virtual circuits may be present over a physical connection between two points. The destination of each virtual circuit may bear no relationship to the physical connection traversed on a segment of the call.

Window Size: refers to the number of unconfirmed frames or packets that are allowed to be transmitted across a connection interface before more frames or packets can be sent. Windows appear on both the user and network sides of the connection interface.

X.25: a packet data transfer protocol for the B and D channels; defines the interface between Data Terminal Equipment (DTE) and Data Circuit-Terminating Equipment (DCE) for terminals operating in the packet mode and connected to public data networks by dedicated circuits.