



# **Data Networking Products Terminology**

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# Data Networking Terminology

This publication includes terms used in customer documentation and marketing literature for BNS-2000 VCS and data networking products that are compatible with earlier versions, plus a small selection of terms related to the *StarKeeper*® II Network Management System (NMS), other networking products, and industry standards such as frame relay and Switched Multimegabit Data Services (SMDS). For terms specific to the GlobeView®–2000 Broadband System and asynchronous transfer mode (ATM), see the system’s customer document library.

Terms are listed in alphabetical order, in the following sections:

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Terms are defined and special labels are used as follows:

- A term is defined in its singular form, unless *only* a plural form is appropriate
- A brief *functional* description is added to some definitions
- An application for an acronym is listed after the definition in parentheses:  
**Inter-Carrier Interface (SMDS)**
- Labels for terms include:
  - *abbrev.* for a term’s short form, which differs from an acronym
  - *abbrev. sw.* for software messages, reports, and files
  - *abbrev. command* for software commands
  - *apparatus code* for a hardware component: **AWJ15**
  - *label* for a hardware component such as the switch position: **DIAG**
  - *protocol, ITU-T/CCITT Recommendation, and ITU-T* for recognized standards
- *See* and *see also* refer to other defined terms
- *Also* precedes a synonym or alternative term

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# Abbreviations and Acronyms

Definitions for many of these terms are given in the **Glossary** following this section. Some capitalized abbreviations and acronyms appear in lowercase letters on computer screens or in printed system messages and reports.

## A

**A** *also amp.* Ampere

**AAR** automatic alternate routing

**aaU** *command parameter.* alarm activator unit; *see* ARU

**AC** alternating current

**ACD** alternating current distribution (cabinet/system); automatic call distribution

**ACE** Automated Cable Expertise (OS); Access Control Encryption (LCS60E security)

**ACF** access control field (SMDS)

**ACP** Adjunct Communications Processor

**AC PS** AC Power Supply module

**ACX582** *apparatus code.* AC Power Supply unit

**ACX610** *apparatus code.* Battery Charger

**ADU** asynchronous data unit

**AF** aggregator to formatter/transmitter

**AGS** asynchronous gateway server

**AI** Access Interface (BNS-2000 SMDS)

**AID byte** Attention Identification byte

**AI-E1** Access Interface–E1 module (BNS-2000 SMDS)

**AI-E3** Access Interface–E3 module (BNS-2000 SMDS)

**AI-E3A** Access Interface–E3 module for asynchronous transfer mode (ATM)

**AIM** Asynchronous Interface Module (ISN)

**AIN** Advanced Intelligent Network (SS7 OS)

**AIS** alarm indication signal

**AISS** alarm indication signal seconds

**AI-T1** Access Interface–T1 module (BNS-2000 SMDS)

**AI-T3** Access Interface–T3 module (BNS-2000 SMDS)

**AI-T3A** Access Interface–T3 module for asynchronous transfer mode (ATM)

**AI-T3P** Access Interface–T3P module (BNS-2000 SMDS)

**AMA** Automated Message Accounting (billing format)

**AMADNS** AMA Data Network Service (TCP transfers across LAN/WAN for billing)

**AMATPS** AMA Teleprocessing System (BX.25 or X.25 modem links for billing)

**AMI** alternate mark inversion (code)

**amp** *also A.* Ampere

**ANI** automatic number identification

**ANS** Access Network System (OS)

**ANSI** American National Standards Institute

**API** application program interface

**APLS** Automatic Protection Logic Switch (Verilink)

**APS** automatic protection switching (Verilink)

**AR** Access Rate

**ARA** Apple Remote Access

**ARAP** AppleTalk Remote Access Protocol (routing)

**ARP** Address Resolution Protocol (TCP/IP)

## Abbreviations and Acronyms

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- ARPANET** Advanced Research Projects Agency Network; *see also* DARPA, DDN, NSFNET
- ARSB** Automated Repair Service Bureau (OS)
- ARU** Alarm Relay Unit; *see also* aau
- ASAI** Adjunct/Switch Application Interface
- ASCII** American Standard Code for Information Interchange
- ASN.1** Abstract Syntax Notation 1
- ASP2** *apparatus code.* fuse module
- ASP4B** *apparatus code.* SCSI unit I/O distribution board
- ASP7B** *apparatus code.* CTRM I/O distribution board
- ASP8** *apparatus code.* Tape Drive I/O distribution board (ECPU configuration)
- ASPEN** Automated System for Performance Evaluation of Networks (OSS)
- Async** *protocol abbrev.* asynchronous transmission
- AT** address translation; abatement threshold (SMDS)
- ATM** asynchronous transfer mode
- AWG** American Wire Gauge
- AWJ2** *apparatus code.* CPM-HS and TRK-HS I/O distribution board (fiber)
- AWJ3** *apparatus code.* SFT I/O distribution board
- AWJ4** *apparatus code.* TRK-T1 (V.35 or RS-449), MSM (RS-232-C), and TY12 (RS-232-C) I/O distribution board
- AWJ5** *apparatus code.* SDLC8, SYNC8, TSM8, and X.25 I/O distribution board (DCE RS-232-C or DTE V.35)
- AWJ6** *apparatus code.* SDLC8, SYNC8, TSM8, and X.25 I/O distribution board (DTE RS-232-C or DTE V.35)
- AWJ7** *apparatus code.* SDLC8, TSM8, and X.25 I/O distribution board (DTE RS-232-C, NRZI)
- AWJ8** *apparatus code.* SDLC8, TSM8, and X.25 I/O distribution board (DCE RS-232-C, NRZI)
- AWJ9** *apparatus code.* CPMML, SAMSL, and SWT I/O distribution board (DTE V.35, optional NRZI)
- AWJ10** *apparatus code.* SWT I/O distribution board (DTE RS-449/422, optional NRZI)
- AWJ11** *apparatus code.* SWT I/O distribution board (DTE RS-232-C, optional NRZI)
- AWJ12** *apparatus code.* Disk Drive I/O distribution board (ECPU configuration)
- AWJ15** *apparatus code.* ECPU I/O distribution board
- AWJ16B** *apparatus code.* MRCM I/O distribution board
- AWJ17** *apparatus code.* CPMML, SDLC8, SYNC8, TSM8, and X.25 I/O distribution board (DTE RS-232-C)
- AWJ18** *apparatus code.* SDLC8, SYNC8, TSM8, and X.25 I/O distribution board (DCE RS-232-C)
- AWJ24** *apparatus code.* CPMML-HS, FRM, TRK-PQ, TSM-T1, X.25P, and X.75 I/O distribution board (DTE V.35)
- AWJ32** *apparatus code.* SAMML I/O distribution board (DTE V.35)
- AWJ33** SWT I/O distribution board (G.703/G.704/G.706 DTE)
- B**
- B3ZS** Bipolar Three Zero Substitution
- B8ZS** Bipolar Eight Zero Substitution
- BA** balanced asynchronous
- BAC** bandwidth assurance counter (SMDS)
- BAF** Bellcore AMA Format (billing)
- BAS** Backplane Receiver and Address Screener
- BAsize** buffer allocation size
- BBE** background block error (SMDS physical layer)
- BBER** background block error ratio (SMDS physical layer); *see also* ESR, SESR
- BBUP** *label.* battery backup
- BBUS** broadcast bus
- Bc** committed burst (frame relay)
- bcc** block check character; *see also* CRC

<b>BCC</b>	blocked calls cleared	<b>C</b>	
<b>BCD</b>	binary coded decimal	<b>CAC</b>	call admission control; Customer Assistance Center (Lucent Technologies)
<b>BDFB</b>	battery distribution fuse board	<b>CAD/CAE/CAM</b>	computer-aided design/computer-aided engineering/computer-aided manufacturing
<b>BDT</b>	billing day table	<b>CALLPROC</b>	call processing (software subsystem)
<b>Be</b>	excess burst (frame relay)	<b>CAROT</b>	Centralized Automatic Reporting on Trunks (OSS)
<b>BECN</b>	backward explicit congestion notification (frame relay)	<b>CAS</b>	Craft Access System (OSS)
<b>BER</b>	bit error rate	<b>CBDS</b>	Connectionless Broadband Data Service (ETSI standard for SMDS in Europe)
<b>BEtag</b>	beginning-end tag	<b>CBM</b>	call back modem (software)
<b>BGP</b>	Border Gateway Protocol	<b>CBR</b>	constant bit rate (ATM)
<b>BIOS</b>	basic input/output system	<b>CBUS</b>	contention bus
<b>BIP</b>	bit interleaved parity	<b>CC0&gt;</b> or <b>CC1&gt;</b>	Control Computer prompts
<b>BIP-8</b>	PLCP code violation (CV)	<b>CC</b>	Control Computer; Country Code (E.164 addressing)
<b>B-ISDN</b>	Broadband-Integrated Services Digital Network	<b>CCC</b>	clear channel capability (SMDS)
<b>BISYNC</b>	<i>abbrev. protocol; also BSC.</i> Binary Synchronous Communications	<b>CCIO</b>	Control Computer input/output
<b>blks</b>	blocks	<b>CCITT</b>	Consultative Committee for International Telegraph and Telephone; <i>see</i> ITU-T
<b>BOM</b>	beginning of message (SMDS)	<b>COM</b>	continuation of message (SMDS)
<b>BPI</b>	billing period indicator	<b>CCOM</b>	Concentrator Common Module (ISN)
<b>bps</b>	bits per second	<b>CCM</b>	Control Computer Module
<b>BPV</b>	bipolar violation (SMDS)	<b>CCS</b>	Customer Control System ( <i>StarKeeper II</i> NMS)
<b>BRG</b>	band rate generator	<b>CD</b>	Carrier Detect (RS-232-C signal); <i>see also</i> DCD, RLSD
<b>BRI</b>	Basic Rate Interface (ISDN)	<b>cd</b>	<i>abbrev. command.</i> change directory
<b>BSC</b>	<i>protocol. See BISYNC</i>	<b>CDPD</b>	Cellular Digital Packet Data
<b>BSC3270</b>	<i>See SYNC8</i>	<b>CDM</b>	channel division multiplexer
<b>bss</b>	<i>abbrev. sw.</i> block static storage	<b>CDMA</b>	Code Division Multiple Access
<b>BSSSB</b>	Basic Special Services System Breakthrough (OSS)	<b>CEPT</b>	Conference of European Postal and Telecommunications Administrations
<b>BTAM</b>	Basic Telecommunications Access Method (IBM); <i>see also</i> VTAM	<b>CFA</b>	carrier failure alarm (SMDS)
<b>BTR</b>	bus terminating resistor		
<b>BWM</b>	broadcast warning message, also bandwidth management bus		
<b>BYT</b>	billing year table		

- CEY1** *apparatus code.* HS-TRK and TRK-HS I/O distribution board (fiber)
- CEY2** *apparatus code.* SAMSL I/O distribution board (V.35)
- CEY3** *apparatus code.* SAMSL I/O distribution board (DTE RS-232)
- CEY4** *apparatus code.* SAMDL I/O distribution board
- CGA** color graphics adapter
- ChE1** channelized E1 (frame relay)
- ChT1** channelized T1 (frame relay)
- CIB** CRC32 indication bit
- CIC** carrier identification code (SMDS); Customer Information Center (Lucent Technologies)
- CICS** Customer Information Control System (IBM)
- CIM** committed information rate (frame relay, ANSI T1.606a-1992, Annex A)
- CIU** Communications Interface Unit (Amdahl)
- CLEI** Common Language Equipment Identifier (Bellcore equipment code equipment code)
- CLNAP** Connectionless Network Access Protocol (ITU standard for the connectionless service layer)
- CLNP** Connectionless Network Protocol (OSI)
- CLNS** connectionless network service; *see also* CONS
- CLP** cell loss priority (ATM)
- CM** community
- CMA1** *apparatus code.* Switch module
- CMA2** *apparatus code.* CIM circuit pack
- CMA5** *apparatus code.* AI-E1 and AI-T1 circuit pack
- CMA9** *apparatus code.* TRK-T3 circuit pack
- CMA9B** *apparatus code.* TRK-E3 and TRK-T3 circuit pack
- CMA11B** *apparatus code.* AI-E3 and AI-T3 circuit pack
- CMA13** *apparatus code.* TRK-E3S and TRK-T3S circuit pack
- CMA14** *apparatus code.* TRK-T3I (egress) circuit pack
- CMA15** *apparatus code.* GAR circuit pack
- CMA16** *apparatus code.* TRK-T3I (ingress) circuit pack
- CMA17** *apparatus code.* AI-T3P (ingress and egress) circuit pack (3 meg)
- CMA18** *apparatus code.* TRK-E3A (ATM E3) and TRK-T3A circuit pack
- CMC2** *apparatus code.* CIM I/O distribution board
- CMC3** *apparatus code.* SSM4 I/O distribution board
- CMC5B** *apparatus code.* AI-T1 I/O distribution board
- CMC6** *apparatus code.* AI-T3, TRK-T3, and TRK-T3S I/O distribution board
- CMC6B** *apparatus code.* AI-T3, AI-T3P (egress), TRK-T3, TRK-T3I (egress), and TRK-T3S I/O distribution board
- CMC8** *apparatus code.* AI-E1 I/O distribution board
- CMC13** *apparatus code.* AI-E3, TRK-E3, and TRK-E3S I/O distribution board
- CMC13B** *apparatus code.* TRK-E3S I/O distribution board
- CMC14** *apparatus code.* AI-T3P (ingress), GAR, and TRK-T3I (ingress) I/O distribution board
- CMC15** *apparatus code.* TRK-T3A I/O distribution board
- CMC16** *apparatus code.* TRK-E3A I/O distribution board
- CMC18** *apparatus code.* FRM-M2 channelized E1 I/O distribution board (75 Ohms)
- CMC19** *apparatus code.* FRM-M2 channelized E1 I/O distribution board (120 Ohms)
- CMC20** *apparatus code.* FRM-M2 channelized T1 I/O distribution board
- cmd** *abbrev. sw.* command
- CMIP** Common Management Information Protocol (ISO/IEC 9596)
- CMIS** Common Management Information Service (ISO/IEC 9595)
- CMISE** Common Management Information Service Element (SMDS)

<b>CMOT</b> CMIP over TCP/IP	<b>CPU</b> central processing unit
<b>CMS-1C</b> Circuit Maintenance System–1C (OSS)	<b>CPW1</b> <i>apparatus code.</i> SAM16 circuit pack
<b>CNA1</b> <i>apparatus code.</i> Intershelf Cable/Clock I/O distribution board (ICCIOB) for Control Computer slot A in BNS-2000 Series M2 Switch Shelf	<b>CPW2</b> <i>apparatus code.</i> BNS-microSwitch Main Board
<b>CNA2</b> <i>apparatus code.</i> Extension Intershelf Cable/Clock I/O distribution board (ECCIOB) for slot A in a BNS-2000 Series M2 Extension Shelf	<b>CPY1</b> <i>apparatus code.</i> SAM16 I/O distribution board (DTE RS-232-C)
<b>CNA7</b> <i>apparatus code.</i> Extended Cable/Clock and RIB/Status two-slot I/O distribution board used in a BNS-2000 Series M2 Switch Shelf	<b>CRA1</b> <i>apparatus code.</i> SAM16 I/O distribution board (DTE V.35/V.11 trunk interface)
<b>CNA8</b> <i>apparatus code.</i> Extension Shelf I/O board required when upgrading existing nodes to the extended BNS-2000 configuration.	<b>CRA2</b> <i>apparatus code.</i> SAM16 I/O distribution board (DCE RS-232-C trunk interface)
<b>CNC</b> Customer Network Controller (OSS)	<b>CRAS</b> Cable Repair Administrative System (OSS)
<b>CNCC</b> Customer Network Control Center (OSS)	<b>CRC</b> cyclic redundancy check
<b>CNM</b> customer network management (SMDS)	<b>CRC4</b> cyclic redundancy check 4-bit
<b>CO</b> central office	<b>CRC32</b> cyclic redundancy check 32-bit
<b>CO-ACCESS</b> central office access	<b>CRI</b> CPE receive interval
<b>CO-LAN</b> central office local area network	<b>CRSAB</b> Centralized Repair Service Attendant Bureau (OSS)
<b>CO-MAN</b> central office metropolitan area network	<b>CRT1</b> <i>apparatus code.</i> BNS-microSwitch Trunk Board
<b>CO-OS</b> Central Office Operations Systems	<b>CRT2</b> <i>apparatus code.</i> BNS-microSwitch Customer Interface Board
<b>COM</b> continuation of message	<b>CRTC</b> Canadian Radio–Television and Telecommunications Commission
<b>config</b> <i>abbrev.</i> configuration	<b>CS</b> cabling specifications; channel set; convergence sublayer; current state (measurements)
<b>CONS</b> connection-oriented network service; <i>see also</i> CLNS	<b>CSACC</b> Customer Service Administrative Control Center (OSS)
<b>COSMOS</b> Computer System for Mainframe Operations (OSS)	<b>CSCANS</b> Customer Service Computer Access Network Standard
<b>CP</b> customer premises	<b>CSC</b> Common Signaling Channel (SMDS); Common Supervision Channel; Customer Support Center (Lucent Technologies)
<b>CPAC</b> Customer Planning and Consultation	<b>CSD1</b> <i>apparatus code.</i> FRM (ChT1) I/O distribution board
<b>CPC</b> circuit provisioning center (OTC)	<b>CSD2</b> <i>apparatus code.</i> FRM (ChE1) I/O distribution board (75 Ohms)
<b>CPE</b> customer premises equipment	<b>CSD3</b> <i>apparatus code.</i> FRM (ChE1) I/O distribution board (120 Ohms)
<b>CPM-HS</b> Computer Port Module–High Speed	
<b>CPMML</b> Computer Port Module Multiple Link	
<b>CPMML-HS</b> Computer Port Module Multiple Link–High Speed	
<b>CPS</b> calls per second	

## Abbreviations and Acronyms

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- CSD4** *apparatus code.* X.25P I/O distribution board (8 DCE/DTE RS-232-C ports)
- CSD6** *apparatus code.* LPM I/O distribution board
- CSD9** *apparatus code.* Tape Drive I/O distribution board (TN2233 [DDS] or TN2097)
- CSMA/CD** *protocol.* Carrier Sense Multiple Access with Collision Detect (Ethernet)
- CSS** controlled slip second (SMDS)
- CSU** channel service unit
- CTG5** *apparatus code.* FRM-M2
- CTG13** *apparatus code.* Extended Switch module circuit pack
- CTH1** *apparatus code.* FRM-M2 mezzanine board
- CTRM** Clock/Trunk/Repeater Module; terminal emulation software (Lucent Technologies)
- CTS** Clear To Send (RS-232-C signal)
- CTS1** *apparatus code.* MRC I/O (MRCIO) distribution board
- CTS2** *apparatus code.* CCM I/O distribution board (shelf-to-shelf connections without MRC functionality) *apparatus code.*
- CU** control unit
- CUG** closed user group (X.25 security)
- CUW1** *apparatus code.* Reference Input Board (RIB)
- CV** code violation(s)
- C-VDM** central (office) voice/data multiplexer
- CVG** convergence
- D**
- D4** framing mode on T1 facilities
- DA** destination address (SMDS)
- DACS** Digital Access Cross-Connect System
- DARPA** Department of Defense Advanced Research Projects Agency; *see also* ARPANET, DDN, NSFNET
- DAS** dual attached station (FDDI)
- db or DB** database
- dB** decibel
- DBG** debugger, Control Computer process and command mode
- D-bit** delivery confirmation bit (in X.25 data packet); *see also* M-bit, Q-bit
- DBM** Data Bus Monitor
- DBMS** database management system
- DC** direct current; device controller
- DCC** Data Communication Channel; Data Country Code (first 3 digits of a DNIC)
- DCD** Data Carrier Detect (RS-232-C signal); *see also* CD, RLSD
- DCE** data communications equipment (usually, a modem)
- DCN** data communications network (SMDS)
- DCOS** Data Collection Operation System (OSS)
- DC PS** DC Power Supply module
- DCX1836** *apparatus code.* DC Power Supply module
- DDCMP** Digital Data Communications Message Protocol (synchronous)
- DDD** Direct Distance Dialing
- DDM** Digital Data Multiplexer
- DDN** Defense Data Network, proprietary PDN for the Department of Defense; *see also* ARPANET, DARPA, NSFNET
- DDP** Datagram Delivery Protocol (AppleTalk routing)
- DDS** Digital Data System (56 Kbps); Digital Data Storage cartridge (for CCM configuration tape drive)
- DE** discard eligibility (frame relay congestion management bit)
- diag** *abbrev. command.* diagnostics
- DIAG** *label.* diagnostics (control or interface module switch position for a diagnostics subsystem of Control Computer software)
- DIP** dual in-line package (switch)
- DISAB** *label.* disable (control or interface module switch position)

<b>DISTR</b> distribution (software subsystem)	<b>DUART</b> dual universal asynchronous receiver/transmitter (integrated circuit)
<b>DIW</b> D-inside wire	<b>DUSART</b> dual universal synchronous/asynchronous receiver/transmitter (integrated circuit)
<b>DL</b> data link	<b>DXI</b> Data Exchange Interface, "Dixie" (SMDS)
<b>DLCI</b> data link connection identifier (frame relay)	<b>DXI/SNI</b> Data Exchange Interface/Subscriber Network Interface (SMDS)
<b>DLL</b> data link layer	
<b>DM</b> degraded minute	
<b>DMA</b> direct memory access	
<b>DMPDU</b> Derived Media Access Control Protocol Data Unit (SMDS)	<b>E</b>
<b>DN</b> distinguished name (SMDS)	<b>E.nnn</b> <i>CCITT/ITU-T symbol</i> . Series E Recommendations for the telephone network and ISDN
<b>DNCC</b> Data Network Control Center (OTC)	<b>E1</b> digital transmission link with 2.048 Mbps of bandwidth capacity; wire trunk (CEPT)
<b>DNI</b> dialed number identification	<b>E2A</b> <i>protocol</i> . asynchronous telemetry standard (CO); asynchronous telemetry module (4-port)
<b>DNIC</b> Data Network Identification Code	<b>E3</b> digital transmission link with 34 Mbps bandwidth capacity; wire trunk (CEPT)
<b>DNS</b> Domain Name Server	<b>E4</b> digital transmission link with 274.176 Mbps bandwidth capacity (CEPT)
<b>DOSS</b> Direct Order Service System	<b>EA</b> extended address (SMDS)
<b>DPC</b> Data Processing Center	<b>EADAS</b> Engineering and Administration Data Acquisition System (OSS)
<b>DPMS</b> Data Processing Management System	<b>EB</b> errored block (SMDS physical layer)
<b>DQDB</b> <i>CLNS Media Access Control (MAC) protocol</i> . Distributed Queue Dual Bus (IEEE 802.6)	<b>EBAS</b> Enhanced Backplane Address Screener
<b>DRAM</b> dynamic random access memory	<b>EBCDIC</b> <i>protocol</i> . Extended Binary-Coded Decimal Interchange Code
<b>DS</b> Digital Signal (ANSI/CCITT/ITU-T); digital service	<b>EBIM</b> Ethernet Bridge Interface Module (ISN)
<b>DS0</b> Digital Signal, Level 0 (ANSI/CCITT/ITU-T)	<b>EC</b> Entering Congestion (FRM buffer memory use)
<b>DS1</b> Digital Signal, Level 1 (ANSI/CCITT/ITU-T)	<b>ECC</b> error checking and correction
<b>DS3</b> Digital Signal, Level 3 (ANSI/CCITT/ITU-T)	<b>ECCIOB</b> Extension Shelf Cable/Clock I/O distribution board (BNS-2000)
<b>DSG</b> default slot generator (SMDS)	<b>ECCPU</b> enhanced central processing unit
<b>DSIS</b> Data Switching Information System	<b>ED2P465-30, G1</b> <i>apparatus code</i> . T1-TRK I/O distribution board (SAM504 only)
<b>DSL</b> Digital Subscriber Loop	<b>ED2P466-30, G1</b> <i>apparatus code</i> . TERM32 I/O distribution board (SAM504 only)
<b>DSR</b> Data Set Ready (RS-232-C signal)	
<b>DSU</b> data service unit	
<b>DSX-1</b> Digital Signal Cross-Connect, Level 1 (ANSI T1.403)	
<b>DTE</b> data terminal equipment	
<b>DTF</b> digital transmission facility (DS1/DS3)	
<b>DTR</b> Data Terminal Ready (RS-232-C signal)	

<b>ED2P471-30, G1</b> <i>apparatus code.</i> HS-TRK I/O distribution board (fiber)	<b>ESDI</b> Enhanced Small Device Interface
<b>ED2P472-30, G1</b> <i>apparatus code.</i> HS-TRK I/O distribution board (fiber)	<b>ESF</b> extended superframe (T1 format)
<b>ED5P066-30, G1</b> <i>apparatus code.</i> TY6 I/O distribution board	<b>ESIG</b> European SMDS Interest Group
<b>ED5P074-30, G1</b> <i>apparatus code.</i> E2A I/O distribution board	<b>ESR</b> errored second ratio (SMDS physical layer)
<b>ED5P077-30, G1</b> <i>apparatus code.</i> SLM I/O distribution board	<b>ESS</b> electronic switching system
<b>ED5P1000-30, G194</b> <i>apparatus code.</i> LPM I/O distribution board	<b>ESWCH</b> <i>label.</i> Eswitch module; BNS-2000 VCS only
<b>EDH</b> European Digital Hierarchy	<b>ETS</b> external timing source (SMDS)
<b>EDOS</b> event-driven operating system	<b>ETSI</b> European Telecommunications Standards Institute
<b>EEPROM</b> electrically erasable programmable read-only memory; <i>see also</i> EPROM, FEPRM, PROM, ROM	
<b>EF&amp;I</b> engineer, furnish, and install	<b>F</b>
<b>EGA</b> enhanced graphics adapter	<b>FA1/FA2</b> Frame Alignment signal (E3 frame overhead byte)
<b>EGP</b> External Gateway Protocol (routing)	<b>FBUS</b> from (the switch) bus
<b>EIA</b> Electronic Industries Association	<b>FBX</b> From-Backplane Transformer
<b>EISA</b> Extended Industry Standard Architecture	<b>FC</b> flow control
<b>ELIU</b> electrical line interface unit	<b>FCC</b> Federal Communications Commission
<b>EM</b> error monitoring BIP-8 (E3 frame overhead byte)	<b>FCS</b> frame check sequence
<b>EMC</b> electromagnetic compatibility	<b>FDDI</b> Fiber Distributed Data Interface (ANSI)
<b>EMI</b> electromagnetic interference	<b>FDM</b> frequency division multiplexing
<b>EMS</b> Element Management System	<b>FE</b> frame (synchronization) error; far end (SMDS)
<b>ENABL</b> <i>label.</i> enable (control or interface module switch position)	<b>FEBE</b> far-end block error
<b>EOM</b> end of message (SMDS)	<b>FECN</b> forward explicit congestion notification (frame relay)
<b>EP</b> endpoint	<b>FEP</b> front-end processor
<b>EPN</b> endpoint number (X.121)	<b>FERF</b> far-end receive failure
<b>EPROM</b> erasable programmable ROM	<b>FIFO</b> first in, first out
<b>EQL</b> (line) equalization	<b>FIM</b> Fiber Interface Module (ISN)
<b>ES</b> errored second	<b>FMAC</b> Facility Maintenance Administration Center (OTC)
<b>ESD</b> electrostatic discharge	<b>FP</b> framed path (SMDS)
	<b>FPM</b> frequency packet multiplexing
	<b>FEPRM</b> flash erasable programmable ROM

**FPS** framing pattern sequence

**FR** frame relay

**FRAD** frame relay assembler/disassembler; see also PAD

**FRM** Frame Relay Module (Series M1 shelf)

**FRM-M2** Frame Relay Module–M2 (BNS-2000 Series M2 shelf)

**frport** *software parameter*. LPM virtual frame relay port

**frs** *abbrev. command object*. full remote shelf (MPC15)

**fsck** *command*. file system check

**FSK** Frequency Shift Keying

**FT** fault tolerant

**FT1** fractional T1

**FT-2000** Fiber Terminal 2000 (transmission system)

**FTAM** File Transfer Access Management

**FTDM** Flow Through Data Manager (OSS)

**FTP** file transfer protocol

## G

**GA** generator to aggregator

**GAA** Group Address Agent (SMDS carrier)

**GAR** Group Address Resolver module (BNS-2000 SMDS)

**GB** gigabyte(s)

**Gbps** gigabits per second ( $1 \times 10^9$  bits per second)

**GID** group identification

**GND** or **GRND** *abbrev.* ground (electrical)

**GNE** Gateway Network Element

**GOS** grade of service

**GOSIP** (U.S.) Government OSI Protocol

**GSDN** Global Software Defined Network

**GUI** graphical user interface

**GW** gateway

## H

**HBPP** heart beat polling process (frame relay)

**HCS** header check sequence (SMDS)

**HDB3** high density bipolar of order 3 (FRM/ChE1 line coding)

**HDLC** *protocol*. High Level Data Link Control (ISO 4335/1984)

**HE** header extension (SMDS)

**HEC** header error control (SMDS)

**HEL** header extension length (SMDS)

**HLPI** higher layer protocol identifier (SMDS)

**HOB** head of bus

**HP** Hewlett-Packard

**HPAD** host packet assembler/disassembler

**HPQ** high-priority transmit queue; *see also* LPQ

**HSS8** High Speed Serial 8

**HSSI** high-speed serial interface

**HS-TRK** High Speed–Trunk (link) module (in SAM64/504)

## I

**I.nnn** *CCITT/ITU-T symbol*. Series I Recommendations for Integrated Services Digital Network (ISDN), or internetworking

**I-2000** *generic name*. DACS II Element Management System (EMS)

**IA5** international alphabet

**I&M** installation and maintenance

**IAC** Integrated Access Controller

**IARP** Inverse ARP (RFC 1490)

**IC** Interexchange Carrier (SMDS); *see also* IXC

**ICCI0B** Intershelf Cable/Clock I/O distribution board (BNS-2000)

**ICI** Inter-Carrier Interface (SMDS)

**ICI-LEC** Inter-Carrier Interface–Local Exchange Carrier (SMDS)

## Abbreviations and Acronyms

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- ICIP** Inter-Carrier Interface Protocol (SMDS)
- ICMP** Internet Control Message Protocol (TCP/IP)
- ICN** international CUG number (international interlock code, addressing)
- ID** identification; identifier; *see also* GID, PID, UID, XID
- IDLC** Integrated Digital Loop Carrier
- IEC** International Electrotechnical Council
- IEEE** Institute of Electrical and Electronics Engineers
- iep** internal endpoint
- IETF** Internet Engineering Task Force
- IHL** Internet Header Length (IP header)
- IIC** international interlock code
- IMPDU** Initial Media Access Control (MAC) Protocol Data Unit (IEEE 802.6)
- IMS** Information Management System (IBM)
- INIC** International Network Identification Code (addressing)
- init** *abbrev. command.* initialize
- INP** internet nodal processor
- INS** Information Networking Services (SMDS)
- I/O** input/output
- IP** Internet Protocol (a datagram protocol)
- IPC** interprocess communications
- IPX** *protocol.* Internet Packet Exchange (Novell)
- ISDN** *CCITT/ITU-T Recommendation.* Integrated Services Digital Network
- IS-IS** *protocol.* Intermediate System to Intermediate System (TCP/IP and OSI routing)
- ISN** Information Systems Network
- ISO** International Standards Organization
- ISP** Information Services Platform
- ISSI** Inter-Switching System Interface (SMDS)
- ITCO** Independent Telephone Company; *see also* OTC, RBOC
- ITI** Interactive Terminal Interface
- ITS** Integrated Test System (OSS)
- ITU-T** International Telecommunications Union-Telecommunications
- IVD** integrated voice and data
- IVR** interactive voice response
- IXC** Interexchange Carrier; *see also* IC
- J**
- J1P186N-1** *apparatus code.* SAM16 circuit pack
- K**
- KB** kilobyte(s)
- Kbps** kilobits per second
- Kft** kilofeet
- KHz** kilohertz
- km** kilometer(s)
- L**
- L2** Level 2
- L3** Level 3
- L2-PDU** Level 2 Protocol Data Unit (SIP/SMDS)
- L3-PDU** Level 3 Protocol Data Unit (SIP/SMDS)
- LAC** Line Assignment Center (OTC)
- LADC** *FCC standard.* Local Area Data Channel
- LAN** local area network
- lanport** *software parameter.* LPM physical local area network port
- LAPB** *CCITT/ITU-T Recommendation.* Link Access Procedure Balanced (X.25)
- LAPD** *CCITT/ITU-T Recommendation.* Link Access Procedure (on the) D-channel (ISDN)
- LAPF** *CCITT/ITU-T Recommendation.* Link Access Procedure for Frame Mode Bearer Services (frame relay)
- LAPM** *CCITT/ITU-T Recommendation.* Link Access Procedure for Modems (error control)

<b>LAPX</b> <i>CCITT/ITU-T Recommendation</i> . Link Access Procedure for half-duplex operations; half-duplex version of <b>LAPB</b>	<b>LSES</b> line severely errored seconds (SMDS physical layer)
<b>LATA</b> Local Access and Transport Area	<b>LSI</b> large-scale integration
<b>LBO</b> line build out	<b>LSN</b> logical session number
<b>LPBK</b> loopback	<b>LSS</b> link status signal (SMDS)
<b>LC</b> Leaving Congestion (FRM buffer memory utilization)	<b>LTDM</b> Lightwave Time Division Multiplexer
<b>LCG</b> logical calling group	<b>LU</b> logical unit
<b>LCH</b> logical channel (number)	
<b>lcl</b> local (group)	<b>M</b>
<b>LCN</b> logical channel number (X.25)	<b>M1</b> Series M1 shelf (BNS-2000)
<b>LCS</b> LAN Communication System(s)	<b>M2</b> Series M2 shelf (BNS-2000)
<b>LCS&gt;</b> <i>system prompt</i> . LAN Communication System	<b>M2CHIO</b> Series M2 channelized I/O distribution board (BNS-2000)
<b>LCV</b> line code violation (SMDS physical layer)	<b>MA</b> Maintenance and Adaptation (E3 frame overhead byte)
<b>LD</b> logical device	<b>MAC</b> <i>protocol</i> . Media Access Control (IEEE 802); Master Alarm Collector ( <i>StarKeeper II</i> NMS)
<b>LEC</b> Local Exchange Carrier	<b>Macstar</b> Memory Access Controller–Star (OS)
<b>LED</b> light-emitting diode	<b>MAN</b> Metropolitan Area Network
<b>LES</b> line errored seconds (SMDS physical layer)	<b>MAPDU</b> Management Application Protocol Data Unit (SMDS)
<b>LIM</b> Link Interface Module	<b>MAR</b> maximum arrival rate (SMDS threshold)
<b>LIS</b> Logical IP Subnetwork; loss of incoming signal	<b>MAU</b> Multistation Access Unit (IBM Token Ring)
<b>LIV</b> link integrity verification	<b>MB</b> megabyte(s)
<b>LKDS</b> link down seconds	<b>M-bit</b> more-data bit (in X.25 data packet)
<b>LLC</b> logical link control	<b>Mbps</b> megabits per second (1,000,000 bits per second)
<b>LMI</b> Local Management Interface (frame relay)	<b>MC</b> machine congestion
<b>LMOS/WM</b> Loop Management Operations System/Work Manager (OS)	<b>MC1, -2, -3</b> machine congestion, level 1, -2, or -3
<b>LOF</b> loss of frame	<b>MC1D085A-1</b> <i>apparatus code</i> . SFT circuit pack
<b>LOS</b> loss of signal	<b>MC1D088A-1</b> <i>apparatus code</i> . TSM8 circuit pack
<b>LPQ</b> low-priority transmit queue; <i>see also</i> HPQ	<b>MC1D089A-1</b> <i>apparatus code</i> . SYNC8 circuit pack
<b>LPM</b> LAN Protocol Module	<b>MC1D090A-1B</b> <i>apparatus code</i> . SAMSL circuit pack
<b>LRC</b> longitudinal redundancy check; <i>see also</i> CRC, VRC	<b>MC1D106A-1</b> <i>apparatus code</i> . SAMDL circuit pack
<b>ls</b> <i>abbrev. command</i> . list	
<b>LSB</b> least significant bit	

## Abbreviations and Acronyms

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<b>MC1D116A-1</b> <i>apparatus code.</i> SDLC8 circuit pack	<b>MOC</b> measure of congestion
<b>MC1D117A-1</b> <i>apparatus code.</i> CPMML circuit pack	<b>MoU</b> Memorandum of Understanding (CEPT)
<b>MC1D138A-1</b> <i>apparatus code.</i> ECPU circuit pack	<b>MRC</b> maintenance (remote) and redundancy control functions (CCM with MRCIO board)
<b>MC1D139A-1</b> <i>apparatus code.</i> CPMML-HS circuit pack	<b>MRC&gt;</b> <i>system prompt.</i> maintenance and redundancy control functions (CCM with MRCIO board)
<b>MC1D143A-1</b> <i>apparatus code.</i> FRM circuit pack	<b>MRCIO</b> CCM I/O board with MRC functions
<b>MC1D149A-1</b> <i>apparatus code.</i> TSM-T1 circuit pack	<b>MRCM</b> Maintenance and Redundancy Control Module
<b>MC1D151A-1</b> <i>apparatus code.</i> X.75 circuit pack	<b>MRCM&gt;</b> <i>system prompt.</i> Maintenance and Redundancy Control Module functions
<b>MC1D152A-1</b> <i>apparatus code.</i> TRK-PQ circuit pack	<b>MRI</b> message receive interval (SMDS)
<b>MC1D153A-1</b> <i>apparatus code.</i> X.25P circuit pack	<b>ms</b> <i>also</i> msec. millisecond
<b>MC5P025A-1</b> <i>apparatus code.</i> SLM circuit pack (processor)	<b>MSB</b> most significant bit
<b>MCDU</b> maximum (number of) concurrent data units (SMDS)	<b>MS-DOS</b> Microsoft Disk Operating System
<b>MCS</b> Module, Channel, Switch	<b>msec</b> <i>also</i> ms. millisecond
<b>MCUP</b> Mechanization and Cooperative User Program	<b>MSG</b> message
<b>MDF</b> main distribution frame	<b>MSI</b> message send interval (SMDS)
<b>MEAS</b> measurements (software subsystem)	<b>MSKERR</b> mask error
<b>MET</b> Metropolitan Area Network (MAN) Switching System Exchange Termination	<b>MSM</b> Multispeed Module
<b>MF-AIM</b> Multi-function Asynchronous Interface Module (ISN)	<b>MSS</b> Metropolitan Area Network (MAN) Switching System
<b>MFOS</b> Multifunction Operations System (OSS)	<b>MTBF</b> mean time between failure
<b>MHz</b> megahertz	<b>MTBSO</b> mean time between service outages
<b>MIB</b> Management Information Base (SNMP)	<b>MTTR</b> mean time to restore; mean time to repair
<b>MID</b> message identifier, -cation (SMDS)	<b>μP/CLK</b> microprocessor clock
<b>MINI-SH</b> <i>system command interpreter.</i> interactive shell	<b>MUX</b> <i>abbrev.</i> multiplexer
<b>MINI-SH&gt;</b> <i>system prompt.</i> interactive shell	<b>N</b>
<b>MLP</b> multilink protocol	<b>NA</b> network administrator
<b>MLT</b> Mechanized Loop Test System (OS)	<b>NAC</b> Network Access Controller (Network Access Control System)
<b>MMOC</b> Minicomputer Maintenance and Operations Center (OTC Data Center)	<b>NAI</b> Network Administration Interface (Control Computer software subsystem)
<b>MMU</b> Memory Management Unit	<b>NANP</b> <i>ITU-T/CCITT X.121 Recommendation.</i> North American Numbering Plan

<b>NB</b> Network Builder ( <i>StarKeeper II NMS</i> )	<b>NMU</b> Network Mediation Unit (OSS)
<b>NCC</b> National Country Code	<b>NNI</b> Network-to-Network Interface (frame relay/SMDS); Network Node Interface (ATM)
<b>NCI</b> Network Control Indicator (SMDS)	<b>NOET</b> Network Operations Education and Training
<b>NCS</b> National Communications Standards (Federal Telecommunications)	<b>NOS</b> network operating system
<b>NCSC</b> National Customer Service Center (Lucent Technologies)	<b>NPC</b> Network Parameter Control (ATM NNI)
<b>NDC</b> national destination code; Network Data Collection (SMDS)	<b>nping</b> network ping (frame relay delay diagnostic); <i>see</i> ping
<b>NDWB</b> Network Designer's Workbench	<b>NPSI</b> Network Packet Switching Interface (IBM)
<b>NE</b> network element	<b>Nr</b> number received
<b>NE2NE</b> Network Element to Network Element	<b>NRT</b> node reroute table (session maintenance)
<b>NEBS</b> Network Equipment Building Specification	<b>NRZ</b> non-return to zero (signaling)
<b>NEMA</b> National Electrical Manufacturers Association	<b>NRZI</b> non-return to zero inverted (signaling)
<b>NESD</b> Network Element Software Download (DKAP)	<b>N(S)N</b> National (Significant) Number (E.164 addressing)
<b>NESPA</b> Network Element Security Parameter Administration (SMDS)	<b>NTM</b> (NetMinder) Network Traffic Management (OSS)
<b>netaddr</b> <i>abbrev.</i> network address	<b>NTN</b> Network Terminal Number (X.121)
<b>NEU</b> network expansion unit	<b>NTSO</b> National Technical Support Organization (Lucent Technologies)
<b>NFS</b> Networked File System	<b>NWKFC</b> network flow control
<b>NFSNET</b> National Science Foundation Network; <i>see also</i> ARPANET, DARPA, DDN	<b>NWT</b> network technology
<b>NI</b> network interface; Network Identifier (last digit of DNIC)	<b>O</b>
<b>NIST</b> National Institute of Science and Technology (provides NAC time synchronization)	<b>OA&amp;M</b> Operations, Administration, and Maintenance
<b>NM</b> network management; network manager; Network Monitor ( <i>StarKeeper II NMS</i> )	<b>OAM&amp;P</b> Operations, Administration, Maintenance, and Provisioning
<b>NMA-F</b> Network Maintenance Administration-Facilities (OSS)	<b>O&amp;SIS</b> Operations and Service Integration System (OS)
<b>NMC</b> Network Management Center (SMDS)	<b>OC</b> Optical Carrier (SONET)
<b>NMI</b> non-maskable interrupt	<b>OC-1</b> Optical Carrier, Level 1 (SONET)
<b>NMOL</b> Network Management OPEN LOOK	<b>OC-3</b> Optical Carrier, Level 3 (SONET)
<b>NMP</b> Network Management Protocol	<b>OC-12</b> Optical Carrier, Level 12 (SONET)
<b>NMS</b> Network Management System	<b>OC-48</b> Optical Carrier, Level 48 (SONET)
<b>nmsiep</b> Network Management System internal endpoint ( <i>StarKeeper II NMS</i> )	<b>OCD</b> Out of Cell Delineation
	<b>ODL</b> Optical Data Link

## Abbreviations and Acronyms

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<b>ONA</b> Open Network Architecture (developed by the FCC)	<b>PI</b> protocol identifier; Programmer's Interface ( <i>StarKeeper II NMS</i> )
<b>ONI</b> Open Network Interface	<b>PID</b> pin identification; product identity code
<b>OOF</b> out of frame	<b>PL</b> PAD length
<b>OS</b> Operations System; operating system	<b>PLCP</b> Physical Layer Convergence Procedure (IEEE 802.6)
<b>OSI</b> Open Systems Interconnection	<b>PLOF</b> PLCP loss of frame
<b>OSN</b> Operations Systems Network	<b>PLP</b> packet layer protocol
<b>OSPF</b> <i>protocol</i> . open shortest path first (TCP/IP and OSI routing)	<b>PLPP</b> Physical Layer Protocol Processor
<b>OSS</b> Operations Support System(s)	<b>PM</b> performance monitoring (SMDS)
<b>OT</b> onset threshold	<b>POP</b> point-of-presence
<b>OTC</b> operating telephone company	<b>POS</b> Point-of-Sale
<b>P</b>	<b>ppm</b> parts per million
<b>PAD</b> packet assembler/disassembler	<b>PP</b> physical port
<b>PAP</b> permanently active port	<b>PPP</b> Point-to-Point Protocol
<b>PBD</b> power board distribution	<b>pps</b> packets per second
<b>PBX</b> private branch exchange	<b>PQ</b> priority queueing; <i>see</i> TRK-PQ
<b>PC</b> personal computer	<b>PR</b> page reservation; Performance Reporter ( <i>StarKeeper II NMS</i> )
<b>PCC</b> page counter control	<b>PRI</b> Primary Rate Interface (ISDN, equivalent to DS1 and T1)
<b>PCG</b> physical calling group	<b>PRM</b> performance report measurements (SMDS)
<b>PCM</b> pulse code modulation; page counter modulus	<b>PROM</b> programmable read-only memory
<b>PD</b> power distribution	<b>PROV</b> provisioning (software subsystem)
<b>PDD</b> predefined destination	<b>PRS</b> Primary Reference Source (reference clock)
<b>PDE</b> portable development environment	<b>PS</b> Packet Service
<b>PDH</b> Plesiochronous Digital Hierarchy (international asynchronous standard)	<b>PSC</b> protection switch counts (SMDS)
<b>PDN</b> public data network	<b>PSD</b> protection switch duration
<b>PDS</b> Premises Distribution System (Lucent Technologies Systemax)	<b>PSK</b> Phase Shift Keying (line code or format)
<b>PDSC</b> power distribution service cabinet	<b>PSP</b> Packet Stream Protocol
<b>PDU</b> Protocol Data Unit (SIP/SMDS)	<b>PSPDN</b> packet-switched public data network
<b>PE</b> parity error	<b>PSTN</b> public switched telephone network
<b>pF</b> picofarad(s); $1 \times 10^{-12}$ farads	<b>PT</b> payload type (SMDS); port (session maintenance)
<b>PFC</b> power factor correction	

**PTT** Post, Telegraph, and Telephone (European governmental carriers)

**PU** physical unit

**PVC** permanent virtual circuit

**PWR** *label.* power

## Q

**Q.nnn** *CCITT/ITU-T symbol.* Series Q Recommendations for telephone signaling and switching

**QAM** Quadrature Amplitude Modulation (line code or format)

**Q-bit** qualified data bit (in X.25 data packet)

**QoS** Quality of Service (ATM, classes of service in cell relay switching)

**qrs** quasi-random signal (frame relay, T1.403)

## R

**R.nnn** Series of Recommended EIA Standards

**RAI** Remote Alarm Indicator

**RAM** random access memory

**RAMERRS** random access memory (RAM) errors

**RAO** Revenue Accounting Office (OTC billing collection center)

**RAP** Routing Algorithm Process

**RBOC** Regional Bell Operating Company; *see also* ITCO

**RC** reverse charging

**RC** or **RCLK** Receive Clock (RS-232-C signal)

**RCCM** Remote Concentrator Common Module

**RCV** receive

**RD** Receive(d) Data (RS-232-C signal)

**RDN** relative distinguished name (SMDS); *see also* DN

**RF** radio frequency (noise)

**RFA** remote frame alarm

**RFS** Remote File Sharing (UNIX); ready for service

**RHC** Regional Holding Company

**RIB** Reference Input Board (*see* CUW1)

**RID** record identifier

**RIP** Routing Information Protocol (TCP/IP suite)

**RLSD** Received Line Signal Detector (RS-232-C signal); *see also* CD, DCD

**RMAS** Remote Memory Administration System (OSS)

**RMS-D1** Remote Maintenance System–Digital 1 (OSS)

**RMS-D2** Remote Maintenance System–Digital 2 (OSS)

**RMS-D3** Remote Maintenance System–Digital 3 (OSS)

**RMS-DS1** Remote Maintenance System–Digital Signal 1 (OSS)

**RMS-G1** Remote Maintenance System–Gateway 1 (OSS)

**RMS-M** Remote Maintenance System–Metallic (OSS)

**RNMS** Regional Network Management System (OSS)

**ROM** read-only memory

**ROSE** remote operation service element (OSI)

**RPC** remote procedure call

**RPOA** Recognized Private Operating Agency, a data transit network

**RPT** repeater

**RR** receive ready

**RRC** rerouted call

**rrs** *abbrev. command object.* reduced remote shelf

**RxSN** receive sequence number

**RS&R** Repair, Service and Return (Lucent Technologies customer support service)

**RTE** route table entry (session maintenance)

**RTIC** real time interface coprocessor

## Abbreviations and Acronyms

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<b>RTN</b> or <b>RET</b>	return; neutral side of a –48 VDC power connection	<b>SCAMIS</b>	Schedule Control and Maintenance Information System (OSS)
<b>RTNR</b>	Real Time Network Routing	<b>SCANS</b>	Software Change Administration and Notification System
<b>RTS</b>	Request To Send (RS-232-C signal)	<b>SCARLET</b>	international version of SCAMIS (OSS)
<b>RTT</b>	reroute tracking table (session maintenance)	<b>SCC</b>	Switching Control Center (CO)
<b>RTU</b>	Right-to-Use (software license)	<b>SCCS</b>	Switching Control Center System (OSS)
<b>R-VDM</b>	remote voice/data multiplexer	<b>SCSI</b>	Small Computer System Interface
<b>S</b>			
<b>S</b>	<i>abbrev.</i> short (cable)	<b>SCSI/DKI</b>	<i>label.</i> on Small Computer System Interface module
<b>SA</b>	source address (SMDS); Service Area (X.121)	<b>SDAS</b>	Switch Database Administrative System (OSS)
<b>SAC</b>	Service Access Code (SMDS)	<b>SDH</b>	<i>CCITT/ITU-T Recommendations, G.707/708/709.</i> Synchronous Digital Hierarchy; <i>see also</i> SONET
<b>SAM</b>	Synchronous/Asynchronous Multiplexer	<b>SDLC</b>	<i>protocol.</i> Synchronous Data Link Control
<b>SAM16</b>	Synchronous/Asynchronous Multiplexer 16-port	<b>SDLC8</b>	Synchronous Data Link Control 8-port interface module
<b>SAM64</b>	Synchronous/Asynchronous Multiplexer 64-port	<b>SDS</b>	software disk striping ( <i>StarKeeper</i> II NMS)
<b>SAM504</b>	Synchronous/Asynchronous Multiplexer 504-port	<b>SDU</b>	service data unit (SMDS/SIP); synchronous data unit
<b>SAMD</b>	Synchronous/Asynchronous Dual Link module	<b>SEF</b>	severely errored framing (SMDS)
<b>SAMML</b>	Synchronous/Asynchronous Multiple Link module	<b>SEFS</b>	severely errored framing seconds (SMDS physical layer)
<b>SAMSL</b>	Synchronous/Asynchronous Single Link module	<b>SES</b>	severely errored seconds (SMDS physical layer); Spares and Exchange Service (Lucent Technologies customer support service)
<b>SAP</b>	Service Access Point (OSI)	<b>SES II</b>	Service Evaluation System II (OSS)
<b>SAPI</b>	Service Access Point Identifier (SMDS)	<b>SESR</b>	severely errored second ratio (SMDS physical layer)
<b>SAR</b>	segmentation and reassembly (sublayer)	<b>SET</b>	Switching System Exchange Termination (SMDS)
<b>SARTS</b>	Switched Access Remote Testing System (OSS)	<b>SF</b>	superframe format; <i>see also</i> ESF
<b>SAS</b>	single attached station	<b>SFT</b>	Standard Fiber Trunk (interface module)
<b>SAT</b>	subscriber access termination (SMDS)	<b>SG</b>	signal ground
<b>SC0&gt;</b> or <b>SC1&gt;</b>	standby Control Computer prompts	<b>sh</b>	<i>abbrev. sw.</i> shell (program)
<b>SC</b>	standby Control Computer	<b>SI</b>	state indication
<b>SCAI</b>	Switch-to-Computer Applications Interface (ANSI)	<b>SID</b>	Security Identification (ID)
		<b>SIG</b>	SMDS Interest Group

<b>SIM</b> Synchronous Interface Module	<b>SRS</b> Secondary Reference Source (reference clock)
<b>SIP</b> SMDS Interface Protocol (SMDS); Subscriber Interface Protocol (IEEE 802.6)	<b>SRT</b> source routing transparent
<b>SIR</b> Sustained Information Rate (SMDS)	<b>srvc</b> <i>abbrev. sw.</i> service; service state
<b>SIRIUS</b> Service Information Reporter and Integrator for Users System (OSS)	<b>SS</b> Switching System (MAN)
<b>SLC</b> Subscriber Loop Carrier; SONET Loop Carrier	<b>SS7</b> <i>CCITT/ITU-T Recommendation.</i> Signaling System 7
<b>SLIM-B</b> StarLAN Bridge Interface Module (ISN)	<b>SSC</b> Special Service(s) Center (OTC); Service Support Centers (Lucent Technologies)
<b>SLIP</b> Serial Line Interface Protocol (TCP/IP)	<b>SSM</b> single segment message (SMDS)
<b>SLM</b> Synchronous Link Module	<b>SSM4</b> Stratum 4 Clock module
<b>SLP</b> Single Link Procedure	<b>SSS</b> SMDS Switching System
<b>SM</b> session maintenance	<b>ST</b> segment type (SMDS)
<b>SMDS</b> Switched Multimegabit Data Service	<b>STM</b> synchronous transfer mode
<b>SMDS CIC</b> Switched Multimegabit Data Service carrier identification code	<b>STP</b> Spanning Tree Protocol (IEEE 802.1); Signal Transfer Point
<b>SMTP</b> simple message transfer protocol (OSI)	<b>STS</b> Synchronous Transport Signal (SONET)
<b>SN</b> Subscriber Number	<b>SunOS</b> Sun (Microsystems) Operating System
<b>SNA</b> Systems Network Architecture (IBM)	<b>SVC</b> switched virtual circuit; service connection(s)
<b>SNAPS</b> Switch Network Analysis Performance System (OSS)	<b>SVID</b> System V Interface Definition (UNIX operating system)
<b>SNAS</b> Signal Network Analysis System (OSS)	<b>SWERR</b> switch error
<b>SNI</b> Subscriber Network Interface (IEEE 802.6/SMDS/ATM)	<b>STR4</b> Stratum 4 Clock module
<b>SNMP</b> Simple Network Management Protocol (Internet/TCP/IP standard)	<b>SWT</b> Standard Wire Trunk (interface module)
<b>SONET</b> <i>ANSI Standard.</i> Synchronous Optical Network; <i>see also</i> SDH	<b>SYN</b> synchronous idle
<b>SP</b> Session (layer) Protocol	<b>Sync</b> <i>Protocol abbrev.</i> synchronous transmission
<b>SPDU</b> Session Protocol Data Unit	<b>SYNC8</b> Synchronous 8-port module (BSC3270)
<b>SPM</b> statistical packet multiplexing	<b>syncp</b> synchronous call process
<b>SPP</b> Sequenced Packet Protocol (Banyan Vines)	<b>SYSERR</b> system error
<b>SPX</b> <i>protocol.</i> Sequenced Packet Exchange (Novell)	<b>SYSGEN</b> system generation; software subsystem file
<b>SQL</b> Structured Query Language	
<b>SR</b> special report (SMDS); Service Region (X.121)	<b>T</b>
<b>SRI</b> SIP Relay Interface (SMDS)	<b>10BASE-T</b> twisted pair Ethernet (IEEE 802.3)
	<b>T1</b> digital transmission link with 1.544 Mbps capacity; wire trunk
	<b>T1C</b> digital transmission link with 3.10 Mbps capacity; wire trunk

## Abbreviations and Acronyms

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- T3** digital transmission link with 45 Mbps capacity (28 T1 channels); wire trunk
- T3POST/VISA 90** *protocol*. Terminal link level standard for connections between subscribers and information providers, used in credit card verifications (DKAP)
- TA** terminal adapter (SMDS CPE interface module; ISDN); Technical Advisory (Bellcore)
- TACACS** Terminal Access Controller Access Control System (LCS60E security)
- TBC** Time Beginning Call
- TBUS** transmit (to) bus
- TBX** To-Backplane Transformer
- TC** or **TCLK** transmit clock; to clock
- TCA** threshold crossing alert (SMDS)
- TCC** Telephone Country Code (X.121 addressing)
- TCP** Transmission Control Protocol
- TCP/IP** Transmission Control Protocol/Internet Protocol
- TD** transmit data
- TDC** Telex Destination Code (X.121 addressing)
- TEC** Time End Call
- TDM** Time Division Multiplexing
- TDMS** Traffic Data Management System (OS)
- TDSI** Transit Delay Selection and Indication (X.25P port parameter)
- TEI** terminal endpoint identifier (SMDS)
- TERM32** module (in SAM64/504s)
- TIM** Trunk Interface Module (ISN)
- TM** Task Manager (*StarKeeper* II NMS)
- TMAS** Transport Maintenance and Administration System (OSS)
- TMN** telecommunications management network (ISDN)
- TN1001B** *apparatus code*. Clock circuit pack (in MPCs)
- TN1002B** *apparatus code*. Switch circuit pack (in MPCs)
- TN1006** *apparatus code*. TY6 circuit pack
- TN1009B** *apparatus code*. CPM-HS circuit pack
- TN1010** *apparatus code*. TRK-HS circuit pack
- TN1011D** *apparatus code*. TY12 circuit pack
- TN1012** *apparatus code*. E2A circuit pack
- TN1013** *apparatus code*. CPM-422 circuit pack
- TN1015** *apparatus code*. TRK-T1 circuit pack
- TN1016B** *apparatus code*. SYNC8 circuit pack
- TN1391** *apparatus code*. HS-TRK circuit pack (in SAMs)
- TN1392** *apparatus code*. T1-TRK circuit pack (in SAMs)
- TN1394B** *apparatus code*. TCONB circuit pack (in SAMs)
- TN2092B** *apparatus code*. SWT circuit pack
- TN2094** *apparatus code*. X.25 circuit pack
- TN2096** *apparatus code*. CTRM circuit pack
- TN2097** *apparatus code*. Tape Drive circuit pack (ECPU configuration)
- TN2098** *apparatus code*. Disk Drive circuit pack (ECPU configuration)
- TN2099** *apparatus code*. enhanced Switch module circuit pack (ESWTCH)
- TN2109C** *apparatus code*. MRCM circuit pack
- TN2111B** *apparatus code*. MSM circuit pack
- TN2157** *apparatus code*. TY12 circuit pack
- TN2175** *apparatus code*. Disk Drive circuit pack (ECPU configuration)
- TN2175B** *apparatus code*. Disk Drive circuit pack (ECPU configuration)
- TN2233** *apparatus code*. Tape Drive (CCM configuration)
- TN2229** *apparatus code*. LPM circuit pack
- TN2235** *apparatus code*. Control Computer Module (CCM)
- TNM** Total Network Management (OS)
- TNS** Total Network Surveillance (OSS); *see also* SCCS, TNM

<b>TOBUS</b>	to (the switch) bus; <i>see also</i> TBUS	<b>TTL</b>	transistor-to-transistor logic; Time to Live (IP header)
<b>TOPAS</b>	Testing, Operations, Provisioning, and Administrative System (OSS)	<b>TTY</b>	teletype terminal
<b>TOS</b>	Type of Service (IP header)	<b>TUI</b>	terminal user interface
<b>TP</b>	termination point	<b>TxSN</b>	transmit sequence number
<b>TPAD</b>	Terminal PAD	<b>TY</b>	Terminal Module (asynchronous interface); asynchronous terminal; terminal port
<b>TR</b>	Technical Reference (Bellcore); terminal ready; Token Ring; trouble report; tracking report; Trail Trace (E3 frame overhead byte)	<b>TY6</b>	Terminal Module 6-port (asynchronous interface)
<b>TRAC</b>	TCP/IP Remote Access Controller	<b>TY12</b>	Terminal Module 12-port (asynchronous interface)
<b>TRK</b>	<i>abbrev.</i> trunk		
<b>TRK-E3</b>	Trunk-E3 module (connection-oriented and connectionless interface)	<b>U</b>	
<b>TRK-E3A</b>	Trunk-E3 module for asynchronous transfer mode (E3 interconnection between BNS-2000 and ATM switches)	<b>UAI</b>	Uniform Alarm Interface ( <i>StarKeeper II</i> NMS)
<b>TRK-E3S</b>	Trunk-E3 Screening module (connection-oriented and connectionless SMDS ICI)	<b>UART</b>	universal asynchronous receiver/transmitter (integrated circuit)
<b>TRK-HS</b>	Trunk-High Speed module (fiber interface)	<b>UAS</b>	unavailable seconds (SMDS physical layer)
<b>TRK-PQ</b>	Trunk-Priority Queueing module (wire interface)	<b>UAT</b>	unavailable time (SMDS)
<b>TRK-T1</b>	Trunk-T1 module (wire interface)	<b>UDLC</b>	Universal Data Link Control
<b>TRK-T3</b>	Trunk-T3 module (connection-oriented and connectionless interface)	<b>UDP</b>	User Datagram Protocol (TCP/IP)
<b>TRK-T3A</b>	Trunk-T3 module for asynchronous transfer mode (T3 interconnection between BNS-2000 and ATM switches)	<b>UI</b>	unit interval (SMDS); unacknowledged information
<b>TRK-T3I</b>	Trunk-T3 ICI module (connectionless SMDS)	<b>UID</b>	user identification
<b>TRK-T3S</b>	Trunk-T3 Screening module (connection-oriented and connectionless SMDS ICI)	<b>UIS</b>	Universal Information Services
<b>TRLR</b>	trailer	<b>UL</b>	Underwriters Laboratories
<b>trm</b>	terminal emulation software ( <i>StarKeeper II</i> NMS)	<b>UMA</b>	usage measurement adjunct (SMDS)
<b>TSM8</b>	Transparent Synchronous Module-8 port	<b>UMA/T</b>	Usage Measurement Adjunct/Transmitter
<b>TSM-T1</b>	Transparent Synchronous Module-T1	<b>UMT</b>	usage measurement transmitter
<b>TSV</b>	technical services	<b>UN221</b>	<i>apparatus code.</i> SLM
<b>TSY</b>	technology systems	<b>UN315</b>	<i>apparatus code.</i> TERM32 module
<b>TTBUS</b>	total transmit bus	<b>UN635B</b>	<i>apparatus code.</i> SCSI/DKI module
		<b>UNI</b>	User Network Interface (ANSI/CCITT/ITU-T; ATM/SMDS)
		<b>UNIXP</b>	UNIX Operating System Protocol (CommKit Host Interface Software)
		<b>UNMA</b>	Unified Network Management Architecture (Lucent Technologies standard)

## Abbreviations and Acronyms

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**UPC** Usage Parameter Control (ATM UNI)

**UPS** uninterruptible power supply

**URP** Universal Receiver Protocol (Lucent Technologies)

**USART** universal synchronous/asynchronous receiver/transmitter (integrated circuit)

**USI** user system interface (SMDS)

**utilsh** *abbrev. sw.* utility shell

**UTS** UNIX (Universal) Time-sharing System (Amdahl)

### V

**V.nnn** *ITU-T/CCITT symbol.* Series V Recommendations for data communications over the telephone network

**VAC** volts alternating current

**VAX** minicomputer (DEC)

**VBR** variable bit rate

**VC** virtual circuit; virtual channel (ATM)

**VCI** virtual circuit identifier; virtual channel identifier (ATM)

**VCS** Virtual Circuit Switch

**VDC** volts direct current

**VDM** voice/data multiplexer

**VDT** video display terminal

**VGA** video graphics adapter

**VLP** Virtual Line Protocol

**VME** Versa Modula Europa

**VP** virtual path (ATM); virtual port

**VPI** virtual path identifier (ATM)

**VRC** vertical redundancy check; *see also* CRC, LRC

**VS** *abbrev. sw.* version (firmware/software)

**VT** Virtual Terminal (OSI service)

**VTAM** Virtual Telecommunications Access Method (IBM); *see also* BTAM

**VTOC** Volume Table of Contents (disk layout)

**VUE** Visual User Environment, Hewlett-Packard (*StarKeeper II* NMS)

### W

**WAN** wide area network

**WIC** wire center (OTC)

**W(O)C** work center (OTC Data Center)

**WS** workstation

### X

**X.nnn** *ITU-T/CCITT symbol.* Series X Recommendations for data communications networks

**XA-OM** Exchange Access Operations Management (SMDS)

**XA-SMDS** Exchange Access SMDS (inter-LATA SMDS)

**XDR** external data representation (TCP/IP)

**XID** exchange (station) identifier

**XLG** load generator

**XMIT** or **XMT** transmit

**XNS** Xerox Network Systems

**XON/XOFF** transmitter on/transmitter off (flow control for asynchronous transmission)

**XPC** X.25 Protocol Converter Chip

**XSWITCH** *label.* Extended switch module; BNS-2000 only

### Z

**ZBTSI** zero byte time slot interchange (SMDS)

**ZCS** zero code suppression

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# Glossary

In a definition, a term printed in **bold** type is a cross-reference to a main entry.

## A

**A/B switch** An electronic switch, installed between an MPC or SAM and a duplicated trunk to a node. The switch automatically monitors the status of both legs of the duplicated trunk, and switches over to the standby when a failure is detected in the active link. The node is unaware of the switch.

**Access Class** The maximum data rate at which a subscriber is allowed to input data into the SMDS network.

**access DQDB** The SMDS protocol layer (Distributed Queue Dual Bus [DQDB]) used on the Subscriber Network Interface (SNI).

**Access Interface (AI)** Node-resident modules that support T1/T3 and E1/E3 access from LANs or WANs to the node for SMDS.

**Access Interface–E1 (AI-E1)** A module that provides CEPT E1 access to the node for SMDS applications.

**Access Interface–E3 (AI-E3)** A module that provides CEPT E3 access to the node for SMDS applications.

**Access Interface–T1 (AI-T1)** A module that provides T1 (DS1) access to the node for SMDS.

**Access Interface–T3 (AI-T3)** A module that provides T3 (DS3) Class 1–5 access to the node for SMDS.

**Access Interface–T3P (AI-T3P)** A two-board, high-performance module that provides T3 (DS3) Class 1–5 access to the node for SMDS, with separate ingress and egress paths.

**access path** A path that connects equipment at the customer premises with the SMDS Switching System (SSS).

**ACCUNET DATAPHONE Data Service** Private-line digital service with data rates from 2.4 to 56 Kbps, using digital transmission.

**ACCUNET Packet Service** Lucent Technologies X.25 public packet-switched network.

**ACD cabinet** Alternating current distribution cabinet; *see* **Base Power Unit**.

**active channel set (CS)** For session maintenance, a set of channels that is configured to transport data.

**address** An identifying code for a physical component in a network (a physical address) or for a service that end users can access (service address).

**address balancing** *Also* load sharing. A method of distributing traffic to a remote node when equidistant paths (having the same trunk weight) to the node exist; *see also* **EPN hash value**.

**address resolution** A method for resolving discrepancies in computer addressing schemes.

**address screening** An SMDS feature that checks individual addresses and group addresses and allows or disallows access for data transmission based on address permissions.

**address screening table** A list of source and destination addresses (SAs/DAs) in the node database for permissible transmission paths.

**Adjunct/Switch Application Interface (ASAI)** An interface between a computer providing applications as an adjunct processor and a PBX of a CO switch; generically described as switch-to-computer networking.

**administration mode** *See* **operations mode**.

**Alarm Relay Unit (ARU)** *abbrev. sw.* aau for alarm activator unit. A peripheral device for a node shelf that provides audible and visible relay closures for major and minor alarms; it is driven by signals from the Control Computer ports.

**alarm threshold** A defined level, when an error has occurred more than a specified number of times, that activates certain alarms.

**alias** An alternative network-, area-, or exchange-level name for a node in the same **network**, **area**, or **exchange** as other nodes.

**alternate mark inversion (AMI)** A bipolar line code or format in which successive 1s are transmitted as alternating positive and negative signals of equal amplitude, and 0s are transmitted as zero amplitude.

**alternate routing** The association of multiple groups of network trunks with a single service **address**, allowing the network to select alternate communication paths on call setup (connection-oriented service); *see also* **session maintenance**.

**American Standard Code for Information Interchange (ASCII)** A standard established by ANSI that represents characters, numbers, punctuation marks, or signals and uses seven on/off bits plus a parity bit to achieve compatibility among data services; *see* Table 1.

**A port** *See* **port A**.

**area** Part of the **destination (code)** used in an address; similar to a telephone area code. The second level in an address hierarchy (network, area, exchange, local), correlating to an X.121 service region.

**assisting node** For session maintenance, a one-hop or two-hop neighbor node to a **primary node** that can be requested to participate in rerouting data.

**asynchronous transmission** *abbrev.* *async.* Transmission, usually in ASCII, in which the time between characters may be of unequal length, and that is controlled by start and stop bits at the beginning and end of each character; *also* a standard for this kind of transmission, which supports "dumb" terminals and often omits error correction.

**asynchronous data unit (ADU)** 1. A limited-distance **modem** used in pairs to extend the range of the asynchronous signaling distance. 2. A device that converts EIA digital signals into signals with lower voltages, compatible with LADC II requirements.

**asynchronous transfer mode (ATM)** *Also* cell relay. A packet switching and multiplexing technique defined by the ATM Forum for broadband access to ISDN that uses a packet of fixed length (53 bytes including 5 header bytes) and operates at higher speeds; asynchronous means the cells are received intermittently, not on a regular basis; *see also* **fast packet multiplexing**.

**ATM trunk** *See* Trunk-T3A/E3A (TRK-T3A/E3A).

**attention character** A defined, single element of a **network attention signal** that causes the Control Computer to respond with the action defined.

**autobaud detection** An automatic routine that allows an **asynchronous** terminal to set its network interface port at connection time without a prespecified port **baud rate**; *see also* **host autobaud**.

**autodialer** *See* **dialer**.

**Automated Cable Expertise (ACE) System** A microcomputer-based Operations System (OS) used by a telephone company to troubleshoot cable problems.

**automatic alternate routing (AAR)** *See* **alternate routing** and **session maintenance**.

**automatic protection switching (APS)** The transfer of live calls to another link when a trunk fails.

**automatic reboot** The automatic restarting of the Control Computer when power is restored after a failure or when the system experiences serious problems; *see also* **boot**.

**automatic recovery** In a node with a Maintenance and Redundancy Control Module (MRCM) or an MRCIO, automatic routines run to reboot a Control Computer or to switch to a standby Control Computer if a critical component fails.

**automatic switchover** In a node with a Maintenance and Redundancy Control Module (MRCM) and dual Control Computers, a change from the active to the standby Control Computer, which then becomes active.

**autoreboot** *See* **automatic reboot**.

**autoresize** A database utility that generates a new set of table sizes based on the current usage of each database table, rather than requiring the use of a predefined template.

**autorestore** The automatic restoration of a concentrator to service after a link failure is cleared.

## B

**babbling port** A malfunction of an interface module or attached equipment that generates a continuous sequence of 25 or more attention signals, which can overload the Control Computer and reduce the call connection rate.

**backbone network** A set of nodes and transmission facilities designed to interconnect lower speed distribution channels or clusters of dispersed user devices over a high-speed network.

**backhaul** To provide a user connected to a local central office (CO) with the services of a remote CO via normal transmission; the user is unaware of the connection beyond the local CO.

**backplane** A bus (common circuit board) in a **node** to which all control and interface modules connect.

**backplane module** *Also* resident module. An interface module located in a node shelf.

**backplane utilization** A measurement of the amount of data being transmitted across the backplane, relative to the total bandwidth available.

**backward explicit congestion notification (BECN) indicator** A bit in a frame relay frame that is set by the network to notify the user's equipment that congestion avoidance procedures should be started to limit the amount of traffic injected into the network or sent to the node processor. The field is set in a frame going in the opposite direction of the congestion.

**bandwidth** The amount of data that can be transmitted over a channel, measured in bits per second.

**bandwidth balancing** A procedure that allows effective sharing of bandwidth across several modules contending for bandwidth.

**bandwidth, expected** For session maintenance, a measure of the average traffic expected on a facility, over its combined, active channel sets, over time.

**Base Power Unit** A base cabinet that provides AC power distribution and optional **power factor correction**, battery backup, and a battery charger.

**battery backup** A power option that provides power if power to a shelf power fails.

**baud** A measure of signaling speed; the number of times per second that the state in a channel is switched (or reversed) during data transmission; each state change may represent two or three bits; hence, a baud rate of 300 may equal 900 bits per second.

**B-Channel** A circuit-switched bearer channel, a component of ISDN, that carries voice or data at 64 Kbps in either direction.

#### **Billdats Network Server for the BNS-2000**

**Switch** A data collection system that interfaces with network elements or services to generate Automated Message Accounting (AMA) billing records and teleprocess data to the Billdats II Collector.

**billing** *See call accounting.*

**bipolar signaling** A signaling method used for digital transmission services (DDS and T1), in which the signal carrying the binary value successively alternates between positive and negative polarities.

**bisynchronous** *abbrev. bisync; also BSC.* A link-layer protocol for synchronized transmission, usually in EBCDIC, of binary coded data, primarily for IBM 3270-type equipment; controls the establishment of a valid connection and the transfer of data; supports "intelligent" terminals and generally supports error correction.

**bit** 1. The smallest unit of information in a binary system, representing the choice between a mark (pulse) designated as 1, or a space (no pulse) designated as 0, condition. 2. The speed at which bits are transmitted, usually expressed in bits per second (bps).

**bit error rate (BER)** The ratio of the number of characters of a message incorrectly received to the number of characters of the message received.

**BNS-2000** A cell relay switch that offers connection-oriented service (300 bps to 1.54 Mbps) and connectionless, high-speed service (1.5 to 44.74 Mbps) using broadband technology.

**BNS-2000 MPC** A concentrator consisting of a shelf that connects to the node via optical fiber or wire trunk, and that has slots for interface modules.

**BNS-2000 VCS** A data switch with low delay that provides high-speed data communication between different networks and various computer equipment. The switch can connect LANs into wide area networks (WANs), and interworks with BNS-2000 and BNS-2000 MPCs.

**BNS-microSwitch** A switching product that provides low-speed SMDS access and local switching when bandwidth needs are in the 64 to 768 Kbps range.

**boot** To start a computer system; *see also automatic reboot, cold boot, warm reboot.*

**B port** *See port B.*

**bridge** A device that enables similar or dissimilar LANs to exchange data.

**bridge module** The Ethernet Bridge Interface Module (EBIM), which resides only in an ISN concentrator.

**bridging** *See virtual multipoint bridging.*

**bridging concentrator** A generic term for the ISN Concentrator.

**broadband** Describes a facility that allows transmission of more than one message at a time, each on a different frequency within the bandwidth, and that can handle more than one channel simultaneously; a communications channel that has a bandwidth of 1.54 to 155 Mbps, which is greater than a voice-grade channel; in contrast, narrowband can carry two-way voice and data communications at a range of frequencies between 300 bps and 9600 bps, a relatively slow speed.

**Broadband-Integrated Services Digital Network (B-ISDN)** A high-speed network architecture that allows the movement of information at 156 or 622 Mbps, along with the transmission of voice, full-motion video, and data signals.

**broadcast** The sending of information simultaneously to more than one receiving station; the stations must be on the same circuit and be accessed by a common calling procedure. For example, a host port broadcasts all transmission over all virtual circuits associated with the port; *see also fanout, 2.*

**broadcast bus** *See receive bus.*

**broadcast storm** In large, bridged networks, many network devices producing packets as fast as they can, pushing thousands of packets onto the network each second. Causes include inaccurate device setup by misconfiguring the broadcast address, bugs in software design, or network implementation.

**brouter** A coined term for a bridging device that is extended to copy some router functions such as path splitting, which takes partial advantage of redundant paths through the network between source and destination.

**buffer flushing** An optional feature that clears the memory buffers of synchronous ports in TSM-T1s, running on GOS5 lines and handling HDLC and SDLC protocols; this avoids ending sessions over full duplex endpoints when buffer overruns occur as a

result of synchronous devices transmitting continuous streams of data.

**BURST** *IEEE 802.1.* A spanning tree algorithm for routing and the recovery of connectionless network service (CLNS) traffic.

**bus** The wiring through which data travels to the Control Computer.

**byte** A measure of consecutive binary digits; a sequence of eight bits.

## C

**cabinet** The basic unit of a node, housing shelves containing control, interface, and trunk modules; *see also shelf.*

**cabinet alarm(s)** *See shelf alarm(s).*

**Cabinet Interface Module (CIM)** The module in a Series M2 Switch Shelf that converts an URP packet stream (from a Series M1 Control or Port Shelf) into cell segments for data transport.

**Cable Repair Administrative System (CRAS)** An Operations Support System (OSS) used by a telephone company to analyze outside plant troubles and performance characteristics.

**call accounting** A service for tracking the date and connection time of calls through the network on a per-port basis to assess charges.

**call hold** A node activity that establishes a **virtual circuit** across a network and allows a user to have more than one call, or connection, active at any time.

**call looping** A routing error that occurs when a call setup (connection-oriented service) request is rerouted endlessly without reaching its **destination**.

**calls barred** An X.25 feature that allows the node administrator to restrict incoming and outgoing **switched virtual circuit** calls at an X.25 endpoint.

**call screening** *See CPM call screening; trunk call screening.*

**call screening security pattern** A character string that defines permitted and prohibited destinations for calls entering a node from a trunk.

**call setup** A **node** activity that establishes a **virtual circuit** (for connection-oriented service) across the network.

**collapsed backbone** LAN interconnection using a single high-speed switch instead of a network of bridges and routers.

**cell** The type of packet format transmitted in ATM switching technology, consisting of 5 header octets and the *information payload* (48 octets) at the User Network Interface (UNI); *see* **asynchronous transfer mode (ATM)**, **cell relay**.

**cell relay** One of two types of **fast packet** switching technology; cell relay and **frame relay** are both hybrid forms of traditional packet switching and circuit switching.

**central office (CO)** A telephone company location where call switching is done.

**central office (CO) equipment** Apparatus used in a telephone company central office (CO) for communications services.

**central office (CO) frame** The mounting rack in a telephone company central office (CO) where node cabinets/shelves are installed; frame mounting meets central office environmental requirements.

**central office local area network (CO-LAN)** A data communications network, switched through a telephone company central office (CO), that covers an area with a radius up to 3 km by combining voice and data on the same subscriber loop. Through CO-to-CO connections, a CO-LAN can be extended to unlimited wide area networks (WANs).

**Central Office Operations Systems (CO-OS)** A network of support systems switched through a telephone company central office (CO).

**Central Office voice/data multiplexer (C-VDM)** A Lucent Technologies Voice Data Multiplexer that receives a signal through telephone lines at a central office (CO) and separates it into voice and data signals; it also combines these signals sent from a central office to communicate with a **remote voice/data multiplexer (R-VDM)** on the customer premises.

**central processing unit (CPU)** A component of the **Control Computer** that includes the circuits controlling the interpretation and execution of instructions. This unit is labeled ECPU.

**certifier** *See* **Hard Disk Certifier**.

**channel** A transmission path or link; a logical transmission path in a trunk or other module.

**channelized E1 (ChE1)** An input/output (I/O) option for the Frame Relay Module (FRM) with an integrated DSU that provides 31 x DS0 in N x 64 allotments and that supports CEPT and CRC4-CEPT framing and HDB3 line coding.

**channelized T1 (ChT1)** An input/output (I/O) option for the Frame Relay Module (FRM) with an integrated DSU that provides 24 x DS0 in N x 56/64 allotments and that supports ESF and D4 framing and AMI and B8ZS line encoding.

**channel service unit/data service unit (CSU/DSU)** External multiplexing devices.

**channel set (CS)** A group of **channels**, or links on the node backplane; each set is designated for incoming, outgoing, or two-way communication; on a session maintenance trunk, a set of up to 126 contiguous channels, including 125 user channels; a channel set can be configured as active or standby; *see also* **active channel set (CS)**, **standby channel set (CS)**.

**CIM-CTRM link** A fiber connection between a Series M2 Switch Shelf and a Series M1 Control Shelf and/or Port Shelf.

**circuit board** *Also* circuit pack.

**Circuit Maintenance System-1C (CMS-1C)** An Operations Support System (OSS) system used by telephone companies to support and administer 4ESS switch and Toll Terminal equipment associated with a central office (CO).

**Clear To Send (CTS)** A signal sent from the DCE to the DTE indicating the line is clear to receive data; a response to RTS from the terminal.

**client** Any executing program that makes a request of a **server**.

**Clock/Trunk/Repeater Module (CTRM)** A module that provides connection for a Series M1 Control or Port Shelf to a Series M2 Switch Shelf; it also provides the clocking function for M1 shelves.

**closed user group (CUG)** A set of network devices that can communicate only with other members sharing the same administered profile, used in X.121 addressing; *see also* **closed user group profile**.

- closed user group (CUG) profile** An administered set of shared characteristics that defines security for a group of endpoints; *see also* **profile**.
- closed user group (CUG) security** A security scheme in which access to or from defined groups of endpoints is restricted.
- Code Division Multiple Access (CDMA)** A digital system that allows more simultaneous telephone calls onto the same radio frequency than TDMA, an older digital technology.
- cold boot** To start the Control Computer(s), including the Switch module(s) that control call processing.
- cold reboot** To restart the Control Computer and the Switch module from an out-of-service state; to reinitialize the operating system and *StarKeeper* II NMS; *see also* **warm reboot**.
- cold standby trunk** A spare trunk interface module, or link, ready for service if the primary trunk fails; it must be started manually.
- Comcode** Lucent Technologies ordering code for cables and other equipment.
- command mode** A level of interaction with the network in which an end user can access help and option screens, and use **call hold**.
- committed information rate (CIR)** A frame relay protocol for the rate (expressed in bits per second) at which the network agrees to transfer information under normal conditions, established during administration of permanent virtual circuits (PVCs). A network can be configured to provide a minimum CIR even under times of congestion. When using CIR, a PVC may burst up to the full access rate.
- CommKit Host Interface Software** Connects computers running UNIX System V with the node, and provides file transfer and remote execution service; multiplexed host software that enables the host connection to a Computer Port Module (CPM).
- CommKit FR** An abbreviation for CommKit-attached hosts that interface with the Frame Relay Module (FRM) and the LAN Protocol Module (LPM).
- common equipment** In BNS-2000 VCS, this equipment includes the Series M1 Control Shelf with its Control Computer modules. In BNS-2000, this equipment includes the Series M2 Switch Shelf and the Series M1 Control Shelf with its Control Computer modules.
- common modules** In BNS-2000, these modules include the CTRM, CIM, and dual Switch modules.
- community (CM)** A database entity that includes a collection of device controllers sharing an interconnection to a higher level (closer to the backplane) unit. Examples of communities are all backplane shelves, concentrators, and session maintenance trunks.
- CompuLert** Computer Administration and Maintenance System. An Operations Support System (OSS) used by telephone companies to log operations system activity and alarms and to isolate trouble.
- Computer Port Module—High Speed (CPM-HS)** A multiplexed optical fiber interface module for connection to a host computer.
- Computer System for Mainframe Operations (COSMOS)** An Operations Support System (OSS) used by telephone companies to keep inventory control, to assign exchange facilities, and to control mainframe administration for telephone subscribers.
- concentrator** A communication device that combines multiple channels over a single transmission path or link to the node; the aggregated rate (transmission speed) of the channels can be greater than the link rate; *see also* **bridging concentrator**, **BNS-2000 MPC**, **terminal adapter (TA)**.
- concentrator links** The following modules are used to link concentrators to the node: SFT, SWT, TRK-T1, TRK-HS, SAMML.
- connectionless network service (CLNS)** *Also* datagram. Interconnected communication that takes place without requiring separate, defined stages of connection, as in BNS-2000; *see also* **connection-oriented service (CONS)**, **Switched Multimegabit Data Service (SMDS)**.
- connection-oriented service (CONS)** Communication that proceeds through three defined phases: (1) establishment of a connection, (2) transfer of data, and (3) taking down the connection (for example: frame relay, X.25, TCP, ordinary telephone calls).

**ConnectVU** An Operations Support System (OSS) that provisions and maintains trunks for the 4ESS and other network switches.

**console** *Also* administration console; system console. A video display terminal (VDT) used as an administrative interface to the node.

**console security** A password optionally required for administrative access to a node.

**Consultative Committee for International Telegraph and Telephone (CCITT)** A group appointed by the United Nations to set international communication standards for user interfaces and network to network interfaces, now part of the ITU-T.

**contention** A method of data transmission line control in which stations vie for control of a common bus or communication line.

**contention bus** *See* transmit bus.

**control byte** An 8-bit value that operates in end-to-end signaling over a virtual circuit or that acts as a supervisory byte for end-to-common control use.

**Control Shelf** In BNS-2000 VCS, a modular Series M1 Shelf that contains the Control Computer. In BNS-2000, a Series M1 shelf that connects to Series M2 shelves.

**Control Computer (CC)** The modules and units (including the ECPU with memory, Eswitch, disk/tape controller(s), and SCSI unit) that control call processing and switching activities in the node.

**Control Computer Module (CCM)** This single board module replaces the modules in the Control Computer (CC) plus the MRCM; a separate tape module can be located internally in a shelf or externally.

**Control Computer administration mode** *See* operations mode.

**control modules** *See* Control Computer Module (CCM); Control Computer (CC).

**controller** *See* Control Computer Module (CCM); Control Computer (CC).

**controller mode switch** The switch on the faceplate of the Control Computer Module (CCM).

**CPM call screening** A security feature that allows the network administrator to set limits on the calls that can be made from host computers connected to the node via a Computer Port Module (CPM).

**Craft Access System (CAS)** An Operations System (OS) used by telephone companies to allow service technicians to access operations systems such as the Loop Maintenance Operations System/Work Manager (LMOS/WM).

**crankback** An extended routing function that drops a call-setup request (for connection-oriented service) back to the originating node to try an alternate route if it cannot complete the current route to its destination because of a trunk failure; *see* route advance; *see also* hop count.

**CSCANS/SCANS** Applications used by U.S. RBOCs to download software changes and updates via dial-up modem to their Lucent Technologies network elements such as the 4ESS and 5ESS switches.

**Customer Network Controller (CNC)** A microprocessor-based Operations Support System (OSS) used by telephone companies to allow customers to control the digital cross-connect capability of the Digital Access Cross-Connect System (DACS) from a terminal at their own offices.

**customer premises equipment (CPE)** Equipment owned and managed by the customer of a telephone company.

**cyclic redundancy check (CRC)** A method of error detection using cyclic redundancy code. A CRC value is generated at the transmitting terminal, based on the contents of the message transmitted. An identical CRC generation is performed at the receiving terminal and if it does not match, the message was received incorrectly; *see also* longitudinal redundancy check (LRC) and vertical redundancy check (VRC).

## D

**DACSlink transmission shelf** A small equipment shelf that translates IP commands on a StarLAN to X.25, linking a node to a DACS IV-2000.

**DACSmate software** Remote maintenance terminal software.

**DACScan-2000** A system that provisions and manages networks controlled by Lucent Technologies Digital Cross-connect Access Systems (DACs) from a central location.

**database resizing** A restructuring of the size of system resource tables in the database.

**Data Carrier Detect (DCD)** *Also* Carrier Detect (CD) or Received Line Signal Detector (RLSD). A signal sent from the DCE to the DTE that the call has been established through the data facility.

**data circuit equipment (DCE)** *Also* data communications equipment. The functional equipment that establishes, maintains, and ends: a connection, the signal conversion, and the coding required for communications with a data circuit. DCE may or may not be a part of a computer (a modem, for example, is DCE). For synchronous interfaces, DCE refers to the device that provides clocking.

**datagram** A packet switching service named after information packet, called datagrams, that are self-contained and carry a complete address and are transferred between end users. Datagrams are routed independently and may arrive out of order; confirmation of delivery is provided by higher level protocols; *see* **data unit**.

**data link connection identifier (DLCI)** In frame relay transmission, a number that identifies a pre-established circuit (path through the network to a desired destination); the number also identifies the end device owning that particular frame of information.

**Data Network Control Center (DNCC)** A central location in a telephone company where personnel perform network management and surveillance for Operations Support Systems (OSS) covering one or more central offices (COs).

**Data Network Identification Code (DNIC)** An X.121 address level, a four-digit number from 0000 to 9999 that identifies a network, equivalent to the mnemonic network level address. A DNIC is used to route calls to other public data networks. The first 3 digits of a DNIC are the Data Country Code (DCC) and the last digit is the Network Identifier (NI).

**data network interface** A device that translates one network's protocol to the protocol used by another device or network.

**Data Processing Center (DPC)** A site where mainframe-based computer systems are operated and maintained.

**data service unit (DSU)** A device that provides an interface between **data terminal equipment (DTE)** and a digital transmission service, such as DDS or T1.

**data set** A term synonymous with **modem**.

**Data Set Ready (DSR)** A signal that the DCE is operational.

**Data Switching Information System (DSIS)** A software system that assists personnel involved in node design in configuring nodes. The system determines modules needed to support various communication services, monitors node resources, assigns order numbers, and maintains price files, among other activities.

**data terminal equipment (DTE)** 1. Equipment that usually includes the control logic, buffer store, and one or more input/output devices (terminals, printers, or computers). 2. For synchronous interfaces, devices that receive clocking. DTE can also provide error control, clock synchronization, and station identification.

**data transport facility** The media (wire, carrier, fiber, or radio) through which data signals travel from one device to another; *see also* **facility**.

**data unit** Packetized information called a datagram that is transferred between end users.

**data window** *See* **window size**.

**DDS Trunk** *See* **ACCUNET DATAPHONE Data Service**.

**debugger (DBG) mode** A low-level processing state built into the firmware on the **Control Computer** where software errors or bugs can be isolated.

**default** An operation, function, or value that is supplied by the operating system, set by the system administrator, or customized by the end user; *factory default* means an operation, function, or value set during the manufacture of a discrete component.

**default routing** A feature of automatic **alternate routing** that centralizes address knowledge in a small set of **hub nodes**; a hierarchical scheme consisting of a hub node with attached subsidiary nodes that can route calls with unknown address information to the hub node, which has knowledge of all addresses, for rerouting.

**destination (code)** The call address for an endpoint or terminal on the network made up of network, area, exchange, and local service address, or DNIC, service region, service area, and endpoint number, or any subset or combination of these addresses.

**device controller** A physical entity within a **community (CM)** that controls physical or logical devices, directly or indirectly, or trunks to another node.

**dialer** An automatic dialing mechanism that accepts a code which is part of a dial string, or **destination (code)**, and uses it to set up a call; also accepts a telephone number on a switched or leased telephone network as part of a destination request.

**dial string** A service address; *see* **destination (code)**.

**Digital Access Cross-Connect System (DACS)** A multipurpose operations system controlled by a microprocessor and used by telephone companies to administer cross-connects and to test access for digital signals.

**Digital Data Service (DDS) II** A digital transmission carrier service; *see* ACCUNET **DATAPHONE Data Service**.

**Digital Signal (DS)** *Also* Digital Service; A series of signals (service levels) defined by ANSI and accepted by the ITU-T/CCITT:

- **DS0** Digital Signal, Level 0, one of twenty-four 64 Kbps channels, a substrate of T1 service (FT1).
- **DS1** Digital Signal, Level 1, 1.544 Mbps, equivalent to T1.
- **DS3** Digital Signal, Level 3, is 44.736 Mbps, equivalent to 28 T1 channels, or T3.

**directory assistance** An on-line list of calling addresses and network services.

**disk/tape subsystem** The SCSI disk and tape drive system in the node Control Computer.

**Distributed Queue Dual Bus (DQDB)** *IEEE 802.6/D12*. A cell relay standard for Metropolitan Area Networks (connectionless Media Access Control [MAC]).

**downloadable module** A module that requires software to be downloaded from the node Control Computer or an external host.

**DS1 Internodal Trunk** *See* **Standard Wire Trunk (SWT)**, **Trunk-T1 (TRK-T1)**.

**DS3 Internodal Trunk** *See* **Trunk-T3 (TRK-T3)**, **Trunk-T3A (TRK-T3A)**, **Trunk-T3I (TRK-T3I)**, and **Trunk-T3S (TRK-T3S)**.

## E

**E1** A digital transmission facility providing 2.048 Mbps of bandwidth.

**E3** A digital transmission facility providing 34 Mbps of bandwidth.

**E.164** *ITU-T/CCITT Recommendation*. Numbering Plan for the ISDN Era, Geneva, 1991. An international PDN address numbering plan; a subsidiary standard for an international address format under X.25.

**echoplex** An asynchronous terminal-to-host communication mode in which the host echoes each character entered at the terminal.

**EPCU** The central processing unit of the node; *see* **Control Computer**.

**electromagnetic interference (EMI)** Disruption of signal transmission caused by radiation of unwanted electrical and magnetic frequencies that are "picked up" by electronic devices.

**egress** The direction of data traffic transmitted from the switch via the SMDS Subscriber Network Interface (SNI) to the subscriber device; *see also* **ingress**.

**egress SNI** The Subscriber Network Interface (SNI) between the destination subscriber's equipment and the SMDS Switching System (SS) that serves the subscriber.

**egress SS** The SMDS Switching System (SS) that serves as the destination address (DA) for traffic.

**electrostatic discharge (ESD)** Release of a built-up electrical charge from an electronic component such as a printed circuit board.

**embodied SAC** An embodied Service Access Code (SAC) in which a switching system (SS) must process the three digits of the address following the SAC to determine the network serving the address. In voice telephony, an example of an embodied SAC is the 900 SAC.

**encapsulation** The process of encasing one protocol in another protocol's format.

**endpoint** One end of a potential virtual circuit; any device connected to a terminus of the network such as a terminal, host port, or printer.

**endpoint number (EPN)** An X.121 numeric address level, equivalent of the mnemonic local **service address**.

**end user** A PC, terminal, or workstation user in the network.

**enterprise network platform** Hardware and communications facilities to interconnect private LANs and WANs.

**envelope** In layered communications protocols, the data presented by a higher level to a lower level is enclosed within control information and the whole is called an envelope; *see also* **packet**.

**EPN hash value** A number derived from a destination endpoint number (EPN) that is used in **address balancing** to route traffic across equidistant paths; EPN hash values fall into eight categories.

**EPN range** 1. In E.164 addressing: a block of 1,000 endpoint numbers (EPNs); for example, EPN range 0 is 0000–0999 in a Service Area (SA); a node can have up to ten SAs and all ten blocks can be assigned to one SA. 2. In X.121, for BNS-2000 or BNS-2000 VCS, an EPN can be a block of 1 to 10,000 EPNs assigned to an X.25 endpoint.

**equipment categories** The major categories of BNS-2000, BNS-2000 VCS, and BNS-2000 MPC equipment are the following:

- **node equipment** is the backbone of a network. It oversees network communications, performs administrative and diagnostic functions for modules and devices connected to the node, and provides services to users.
- **LAN interconnect equipment**, including bridges, routers, and gateways; *see* **LCS-** terms.
- **concentrators** link a group of users to the node over a fiber or wire line. They provide an alternative to direct connections that saves node capacity for other equipment, reduces cabling costs, and provides a variety of access speeds.
- **interface modules** are circuit boards located in nodes and in concentrators that supply services to connected devices. These modules support asynchronous and synchronous communications,

frame relay, Switched Multimegabit Data Service (SMDS), networking, host interfaces, LAN connections, and X.25/X.75 services.

- **input/output (I/O) distribution boards** are used with interface modules to provide signal interfaces, such as EIA RS-232, EIA RS-422/499, and ITU-T/CCITT V.35, etc.
- **integrated applications processor module, abbrev. DKAP**, provides context switching, protocol conversion, security protection, X.25 passthrough, SVC-to-PVC splicing, broadcast, software download, and other services.
- **peripheral equipment** includes various autodialers and voice/data multiplexers (VDMs) that are used to expand node and networking services.
- **external transmission equipment** extends the range of EIA RS-232-C signals for synchronous and asynchronous communications.

**Erasable Programmable Read-only Memory (EPROM)** Computer memory that can be totally erased and reused.

**error threshold** The number of errors (designated as a level) at which an alarm is generated or other action is generated.

**Ethernet** A baseband LAN specification invented by Xerox Corp. and developed by Xerox, Intel, and DEC. Ethernet networks operate at 10 Mbps, using CSMA/CD running over thick or thin coaxial cable or twisted pair cable; IEEE 802.3 defines this specification.

**Ethernet Bridge Interface Module (EBIM)** An interface module that supports **LAN bridging** for Ethernet environments.

**EtherTalk** The AppleTalk protocol stack over Ethernet/IEEE 802.3.

**event-driven operating system (EDOS)** An operating system that runs on any downloadable Synchronous Interface Module (SIM) and that implements data communication protocols and provides interprocess communication through event and stream interfaces.

**exchange** Part of a **destination (code)** used in an address.

**expanded Service Region (SR)** When routing messages from the source to their intended destination, if a node makes decisions based on Service Region + Service Area (SR+SA), the SR added to an SA is called an *expanded SR*.

**Extended Binary-Coded Decimal Interchange Code (EBCDIC)** An eight-bit character code. *See* table following this glossary.

**extended routing** A feature enabling a call-setup request, for connection-oriented service (CONS), on encountering a problem in its path, to drop back to its originating node and then try a new path; *see* **crankback**, **hop count**, **route advance**.

**Extension Shelf, Series M2** A BNS-2000 cabinet designed to hold high-speed interface modules, for connection to the Series M2 Switch Shelf.

**Extension Cable/Clock I/O Board (ECCIOB)** An I/O distribution board placed in a Series M2 Extension Shelf that connects via multicoax cable to an Intershelf Cable/Clock I/O Board (ICCIOB) in a Series M2 Switch Shelf.

## F

**facility** 1. A data link. 2. All the equipment and transmission media between two nodes, or between a node and a concentrator. 3. When configuring an Access Interface (AI)-T1 module, the timing for the AI-T1 comes from the Stratum 4 Clock (SSM4) or a router; if a router supplies timing, the AI is said to get its timing or clocking from the *facility*.

**fanout** 1. A feature that provides multipoint bridge emulation of synchronous protocols within the TSM-T1. 2. The connection of different control units on a single multipoint host line to physically different lines on any node in the network. Fanout dynamically determines the channel to route data for each station address by broadcasting the first occurrence of an address to all channels associated with a port; *see also* **broadcast**.

**fast packet multiplexing** A generic term for a remote networking technique that can provide: 1. transport for a dynamically varying combination of asynchronous data, synchronous data, fax, video, voice, and LAN traffic; 2. high (90% or better) network efficiency; 3. low network delay; and 4. predictable delivery of time-sensitive information.

**fiber host interface module** *See* **Computer Port Module-High Speed (CPM-HS)**.

**Fiber Interface Module (FIM)** A trunk module in an ISN node; the counterpart of the **Standard Fiber Trunk (SFT)**.

**first in, first out (FIFO)** A queue structure, for memory or a buffer, in which data that enters the queue first is the first to exit from the queue.

**first listed** A search algorithm specifying access to **group** elements in their listed order; *see also* **round robin**.

**flow control** The process of controlling data communication by allowing the receiver to regulate transmission from the sender to avoid buffer overflow; *see* **buffer flushing**.

**fractional T1 (FT1) service** Transmission that uses one, or several, of the twenty-four 64 Kbps channels in T1; used for trunks, links, and frame relay service.

**frame** The data unit of transmission at the link layer of the Open Systems Interconnection (OSI) Reference Model.

**frame relay** *ITU-T/CCITT Recommendation (I.122)*.

A statistically multiplexed interface standard for high-speed data transmission in which user data is packaged into variable length frames, each containing a frame header that identifies the virtual circuit with which the frame is associated. Frame relay incorporates the function of error detection, but correction is performed by an intelligent endpoint such as a router. By streamlining network processing, frame relay makes data transmission faster and more efficient.

An application of frame relay is **LAN interconnect**, the carrying of LAN traffic from a router over a wide area network (WAN).

**Frame Relay Module (FRM)** An interface module that provides 4 physical ports for frame relay service and that resides in a Series M1 shelf or a Multipurpose Concentrator (MPC).

**frequency division multiplexing (FDM)**

1. Dividing the available transmission frequency range into narrower bands, each used for a separate channel. 2. One of four standard multiplexing technologies. *See also* **FPM**, **SPM**, **TDM**.

**from bus** *See* **receive bus**.

**full-duplex transmission** Simultaneous two-way communication.

**fully connected** A network configuration in which every node has a direct trunk connection to every other node.

**fuse and alarm panel** The panel in the top of a CO frame that provides circuit protection for cabinet shelves and audible alarm signals.

## G

**G.700–G.795** *ITU-T/CCITT Recommendations.* General Aspects of Digital Transmission Systems; Terminal Equipments.

**G.703** *ITU-T/CCITT Recommendation.* Physical/electrical characteristics of hierarchical digital interfaces.

**G.704** *ITU-T/CCITT Recommendation.* Synchronous frame structures used at primary and secondary hierarchical levels.

**G.707** *ITU-T/CCITT Recommendation.* Synchronous digital hierarchy bit rates.

**G.708** *ITU-T/CCITT Recommendation.* Network node interface for the synchronous digital hierarchy.

**G.709** *ITU-T/CCITT Recommendation.* Synchronous multiplexing structure.

**gateway** A server module or unit that transforms the address and protocol conventions of one network into the conventions of another.

**Global Software Defined Network (GSDN)** A Lucent Technologies service that interconnects with a variety of switching systems used by international telecommunications companies to provide fast call setup times (for connection-oriented service) and high-quality transmission.

**grade of service (GOS)** Various levels of support for certain protocol features such as **flow control**, error detection, and error correction: GOS1—no flow control, no error control; GOS2—flow control, no error control; GOS3—no flow control, no retransmission, error detection; GOS4—flow control, error detection, no retransmission of blocks with errors or missing blocks; GOS5—flow control, error detection, retransmission.

**Graphics System** *See StarKeeper II NMS Graphics System.*

**Graphics Workstation** *See StarKeeper II NMS Graphics System.*

**group** A database component identifying a set of ports that are considered a unit. There are two kinds of groups: *local* (can include any module except a trunk) and *trunk* (includes only trunk modules).

**group address** A collection of E.164 addresses to which Protocol Data Units (PDUs) can be sent simultaneously.

**Group Address Agent (GAA) network** A network that serves a particular Group Address. The agent for this group address, or community of interest, is a carrier. For a LEC, the agent network chosen is a LATA. Although there may be multiple LECs in a LATA, only one LEC is the agent for the group address.

**Group Address Resolver (GAR)** A module located in a BNS-2000 Series M2 shelf that provides the capabilities of a Group Address Agent (GAA). The GAR is used only in an SMDS network that serves as a GAA for group addresses. GAR modules can reside only in Series M2 Shelf numbers 1, 2, or 3.

**group name** An identifying label for a database element consisting of a set of ports.

## H

**Hard Disk Certifier** A program that checks the existing format of a hard disk for the node operating system and that can repartition the disk for faster access to data.

**hello message** A PAD identification service signal such as X.28 signaling; see **message of the day**.

**help** An interface between the operating system and the end user that provides on-screen instruction.

**high availability** The level of service readiness of a node equipped with redundant Control Computers, dual Switch modules, redundant power supplies, and remote maintenance capabilities.

**High Level Data Link Control (HDLC)** A data link, bit-oriented synchronous data communications protocol, included in the X.25 packet-switching protocol.

**hop** The logical distance between two adjacent nodes; each node in a call's path counts as one hop.

**hop count** The maximum number of nodes traveled by a call-setup request for connection-oriented service (CONS). A hop count prevents the looping that results from routing errors; *see also* **hop**.

**host** A computer that provides services for another network entity.

**host autobaud** A feature that sets a remote network port to match the speed of the host port, allowing use of **autobaud detection** on the destination host.

**host interface** An interface (module) between the node and a host computer.

**host port** The port on a node or concentrator to which a host computer is connected.

**hub node** In **default routing**, a high-level node that can resolve network routing in a network hierarchy.

**hunt group** A set of **endpoints** on carrier facilities that can be addressed as a unit for routing purposes; the association of a list of receiving devices with a single local service **address**.

## I

**I.121** *ITU-T/CCITT Recommendation*. The standard for asynchronous transfer mode (ATM) transmission.

**I.122** *ITU-T/CCITT Recommendation*. The standard for frame relay transmission; framework for providing additional packet mode bearer services.

**I.364** *ITU-T/CCITT Recommendation*. The standard for Connectionless Service.

**I.555** *ITU-T/CCITT Recommendation*. The standard for Frame Relay Interworking.

**ICI modules** Inter-Carrier Interface (ICI) modules include the Access Interface (AI) modules, Group Address Resolver (GAR) module, and TRK-T3I module.

**IEEE 802.1** A standard for the spanning tree algorithm; *see* **BURST**.

**IEEE 802.3** A standard for Ethernet.

**IEEE 802.5** A standard for token ring networking.

**IEEE 802.6** A standard for Distributed Queue Dual Bus Metropolitan Area Network (MAN) technology with two protocol layers, the Media Access Control (MAC) layer and the physical layer (subdivided into PLCP and TSD).

**IEEE 802.6i** A standard for intercompany communications remote bridging.

**IEEE 802.9** A standard for integrated voice and data (IVD) transmission.

**individual address** An E.164 address that identifies a single Subscriber Network Interface (SNI).

**ingress** The direction of data traffic transmitted from the subscriber device to the switch via the SMDS Subscriber Network Interface (SNI); *see also* **egress**.

**ingress SNI** The SMDS Subscriber Network Interface (SNI) between the originating subscriber's equipment and the Switching System (SS) that serves the subscriber.

**ingress Switching System (SS)** The SMDS Switching System (SS) that serves the source address (SA) for traffic.

**input/output (I/O) distribution board** A small circuit board that plugs into the backplane from the side opposite an interface module and that physically connects via cables from an external device to a node or Multipurpose Concentrator (MPC).

**Inter-Carrier Interface (ICI)** The interface that provides SMDS among carrier networks.

**interface** A shared, or common, boundary between associated devices, systems, or modules, usually in the same node.

**interface module** A printed circuit board providing network access for a specific type of end device.

**intermediate node** In session maintenance, a node that relays calls between originations and destinations, some of which are on other nodes. Unlike a **tandem node**, an intermediate node has local endpoints that can originate and receive calls.

**internal endpoint (iep)** A logical terminus of a virtual circuit for internal communication between a node and *StarKeeper II* NMS.

**international CUG number (ICN)** The international interlock code (IIC) for network routing.

**International Telecommunications Union—Telecommunications (ITU-T)** International standards-setting organization that supersedes CCITT.

**Internet** A collection of packet-switched networks that are connected via gateways.

**internetwork SMDS** Switched Multimegabit Data Service (SMDS) that originates within one SMDS client company's network and that terminates in a different SMDS network (usually involving an Interexchange Carrier).

**interworking** The capacity to establish trunk connections between different network switching products over which compatible end devices can interact and share a common set of network services and features.

**I/O board** *See* **input/output (I/O) distribution board**.

**ISN Concentrator** A bridging concentrator connected to a node via optical fiber (local) or wire trunk (remote) with interface slots for the Ethernet Bridge Interface Module (EBIM).

**isochronous** Uniform in time; a characteristic of an event or signal that recurs at regular intervals, required to support voice or video transmissions.

## K

**keep-alive test** Messages sent by a node to detect a trunk or link failure. The test keeps track of the number of messages lost in a sliding window of time, called the *threshold*. If too many messages are lost within a threshold, a trunk failure is declared.

**Kermit** *protocol*. A file transfer standard with a wild card feature that allows multiple file transfers with one command; in the public domain, but supported by Columbia University.

## L

**LAN bridging** A service that extends a local area network (LAN) environment by joining geographically separated LANs in a single logical network.

**LAN Communications System (LCS)** Lucent Technologies' name for a family of products for LAN inter-connections; *see also* **LCS-** terms.

**LAN interconnect** Local area network (LAN) interconnection via a device or module that allows connection of a LAN running under a particular protocol to the transport backplane of the node. LAN interconnect is characterized by high-speed, bursty data transmission.

**LAN interconnect interfaces** Interface modules such as the AI-T1, AI-T3, AI-T3P, FRM (ChE1, ChT1, V.35), and LPM for LAN interconnections.

**LAN Interconnect Services** Services available with the LCS60 Network Interface and LCS200 Network Routers; *see also* **frame relay**.

**LAN Protocol Module (LPM)** A module that combines the elements of a Frame Relay Module (FRM) and an IP router with static routing support. The module has two physical twisted pair Ethernet ports and 27 frame relay logical ports. The LPM is designed for use with central office (CO) networks that use TCP/IP networking.

**LAN-WAN convergence** Use of the same protocols in local and wide area networks to simplify operations and interworking.

**LCS60 Network Interface for Ethernet** A VME-based hardware platform (terminal/gateway/server) with an Ethernet interface board and CommKit Host Interface Software that provides high-speed telnet gateway connections between TCP/IP LANs to Lucent Technologies data switches or a Multipurpose Concentrator 15-slot (MPC15). For remote networking, the LCS60 supports Serial Line IP (SLIP) and Point-to-Point (PPP) protocols.

**LCS200 Network Routers** A family of routers connecting LANs to WANs; WAN connections include X.25, SMDS, ATM, and frame relay; LAN connections include FDDI, Ethernet, and Token Ring.

**leaf node** In **default routing**, a node connected to a **hub** node.

**leaky bucket** The policing algorithm used with frame relay and ATM to arbitrate usage of network resources.

**legacy network** The existing network and equipment that must interwork with or be replaced by new technology.

**Level 2 Protocol Data Unit (L2-PDU)** *Also* segment. A unit of information processed by the second level of the SIP; also a unit of service counted for data generation.

**Level 3 Protocol Data Unit (L3-PDU)** *Also* packet; SMDS data unit. A unit of information processed by the third layer of the SIP; also a unit of service counted for data generation.

**light-emitting diode (LED)** A small solid-state light that shows hardware or firmware status.

**line** A connection at the physical layer of the network between two points, characterized by a rate and a means of modulating a signal onto the physical transmission equipment.

**link** A data transport facility connecting a node to a concentrator; *see also* **CIM-CTRM link**.

**Link Access Procedure Balanced (LAPB) protocol.** A data link-layer standard under X.25 responsible for providing an error-free line for the higher layers.

**Link Access Procedure D-channel (LAPD) protocol.** A data link-layer standard under X.25 for ISDN connections. The D-channel is a 16 Kbps signaling channel within ISDN primary-rate access.

**link interface** A trunk-like connection between the node backplane and a concentrator device housing multiple modules.

**Link Interface Module (LIM)** A module that connects an ISN concentrator to the node.

**loader mode** A transition state in the system software preceding **monitor mode**.

**Local Area Data Channel (LADC)** *FCC standard.* LADC I and LADC II are standards for signals sent over LADC wiring. LADC I applies to signals sent over systems that include cables outside a building. LADC II applies to signals sent over systems using cables entirely within a building, which permit transmission of signals with higher frequencies (because bandwidth is greater) than LADC I.

**local area network (LAN)** A data network with communicating devices and connection media running at a rate of 1 megabit or greater that occupies a single geographic location, usually with a radius of 3 kilometers or less.

**local service address** Part of the addressing scheme that refers to an endpoint or a host on a network that receives calls; part of a **service address**; *see also* **area, destination (code), exchange, network, service address**.

**logical channels** In session maintenance, transmission paths on a physical trunk module that are logically grouped to form a **channel set (CS)**.

**logical device (LD)** A collection of transport endpoints addressed as a unit for routing; an external entity or a set of internal functions within a **device controller**. A **port** is always associated with one or more **logical devices**. Logical devices include terminals, hosts, and maintenance and signaling channels for a device controller.

**logical drive** *See* **partition**.

**logical network** Groups of devices linked by **address** through an intermediary device rather than through a direct physical connection.

**longitudinal redundancy check (LRC)** *Also* longitudinal parity check. A technique for checking errors in which an LRC character (called a block check character [bcc]) is accumulated at both the sending and receiving stations during the transmission of a block; the transmitted bcc is compared with the receiving end bcc for an equal condition, which indicates a good transmission of the previous block; *see also* **CRC** and **VRC**.

**loop around** *See* **loopback**.

**loopback** A test pattern sent and returned from the Control Computer to a module or port, to diagnose problems.

**loopback connector** A connector for loopback diagnostics.

## M

**Macstar Software System** An Operations System (OS) that allows Centrex customers to prepare and use telephone line feature changes and configurations.

**magic** A property that allows a module to control access to the node backplane.

**main distribution frame (MDF)** A distribution frame on which outside plant cables terminate on vertical protector strips, and from which they cross connect to central office (CO) line equipment on horizontal blocks.

**Maintenance and Redundancy Control Module (MRCM)** A multipoint administrative interface module that adds maintenance and automatic recovery capabilities to a node.

### **Management Information Base (MIB)**

A collection of information on an SNMP agent, including configuration and status values, that can be accessed via SNMP. MIBs are organized into modules: the foundation module is a MIB-II conforming to Internet standards; extension modules defined by hardware vendors are called *enterprise-specific* MIBs.

**M-bit** A more-data bit, used in an X.25 data packet, for block mode devices.

**M-bus** A communication path between the processor and SCSI unit.

**Mechanized Loop Test (MLT) System** An Operations System (OS) used by telephone companies to test and qualify local transmission loops.

**message** The data sent from a transmitter to a receiver over a common medium.

**message of the day** Optional text lines that can be sent to terminal users when they connect to the network.

**message packet** For connection-oriented network service (CONS), coded information of 180 bits or 18 **envelopes** (10-bit envelopes with one 8-bit data byte); for connectionless network service (CLNS) traffic, five to 14 words with 32 bits per word.

**metacharacter** Special keyboard characters used for searches (pattern matching) and character substitution.

**mezzanine board** A small circuit board with application-specific hardware that plugs onto a main board. The main board with a mezzanine board uses only a single slot in a BNS-2000 node; for example, the FRM-M2 mezzanine board.

**Minicomputer Maintenance Operations Center (MMOC)** A telephone company work center that contains minicomputer-based maintenance programs for Operations Support Systems (OSS); equivalent to a data center for OS hosts.

**mini-node** A two or three-shelf node in a Central Office (CO) with less than five attached concentrators, provisioned with multiple trunks, each connected to a different node in a utility network.

**mini-shell (MINI-SH)** A UNIX-like interactive command interpreter used to gain access to utility programs for upgrading a database and other tasks.

**mode** The different levels at which an administrator can enter commands to the system.

**modem (modulator-demodulator)** *Also* data set. A device that converts digital signals from a form that is compatible with data processing equipment to a form that is compatible with analog transmission equipment.

**modem pool** The association of modems by **group** or **service address**.

**module** A hardware unit of one or two boards (circuit packs) that plugs into the node **backplane**, has a bus interface, and a slot address in a cabinet or a shelf.

**monitor mode** A low-level processing state built into the firmware on the **Control Computer** that allows administrators to boot the system, copy and format a disk, display diagnostics, and test the Control Computer hardware.

**multicast** A form of **broadcast** in which one original copy of a message is replicated and delivered to multiple destinations.

**Multifunction Operations System (MFOS)** A system that collects and reports on traffic measurements from network elements.

**multimedia** A description usually applied to a device that can use more than one medium to display or transmit information across a network, such as different types of data (text and graphics) or a combination of voice, data, video components.

**multiplexed host interface** An **interface module** providing a single high-bandwidth link to the network for an asynchronous host computer; *see* **Computer Port Module–High Speed (CPM-HS)**.

**multiplexer** A device that transmits data from multiple circuits over a single physical circuit.

**multipoint bridging, virtual** *See* **virtual multipoint bridging**.

**multipoint line** A single communications channel (typically, a leased telephone circuit) to which more than one station or other device is attached. On selection, one or more devices on such a line may send or receive transmissions to or from the control station.

**multipoint link** *See* **multipoint line**.

**multistation access unit (MAU)** A device that provides access to a Token Ring/IEEE 802.5 LAN by up to eight individual workstations. In a star configuration, MAUs are connected to each other in a dual ring configuration.

**Multispeed Module (MSM)** An interface module that supplies high-speed asynchronous services such as dial-in remote access to a local area network (LAN); for example, the MSM connects work-at-home users who need higher access speeds to support PC graphics. This module supports asynchronous protocols at speeds from 75 bps up to 115 Kbps.

## N

**NetMinder** NetMinder Operations Systems manage, monitor and troubleshoot the performance and status of voice and data network traffic for medium to large PTTs, RBOCs, independent and international networks.

**NetPartner** A management system for public networks that allows a telephone company's customers to monitor surveillance messages and enter trouble reports to ensure that their network is operating at peak performance.

**NETSTAR** A management system that allows users to create services for international intelligent networks, including the creation, customizing, validation, and administration of a subscriber's call routing plans.

**network** *ISO TC97.* An interconnected group of nodes; a series of points, nodes, or stations connected by communications channels; the assembly of equipment through which connections are made between data stations. *Also,* part of the **destination (code)** used in an address; similar to an international telephone code. Each network can include multiple **areas**, each area can include multiple **exchanges**, and each exchange can include multiple **local service addresses**. The first level in the structure (network, area, exchange, local) of a service address, equivalent to an X.121 Data Network Identification Code (DNIC).

**Network Access Control System** A security server software package that controls access to resources and devices in a network.

**network access password** An identifying code assigned to a group of **originating groups** to prevent unauthorized access to a network; *see also* **password**.

**network address** *abbrev.* netaddr. Representation of a specified **network element** in *StarKeeper II* NMS; the element's network address is a unique identifier.

**network attention signal** A defined character(s) used to set up a call, to enter **command mode**, and to disconnect a call from a network.

**Network Builder** *See StarKeeper II NMS Network Builder.*

**network element (NE)** A piece of equipment or a service that is part of a communications network.

**Network Management System (NMS)** *See StarKeeper II Network Management System (NMS).*

**Network Monitor** *See StarKeeper II NMS Network Monitor.*

**N-hop neighbors** In session maintenance, adjacent nodes whose shortest connecting path contains a specified number (N) of physical trunks; a 2-hop neighbor to a given node, is one in which the shortest path to that node crosses two trunks.

**node** One or more cabinets or shelves that switch data traffic under the supervision of a Control Computer.

**Node Reroute Table (NRT)** A table in the database of a node supporting session maintenance that is used to determine where to send reroute requests. The node uses the table to decide the reroute trunks and assisting nodes that can aid in backing up a failed session maintenance trunk.

**nonfiber** A term describing wire, satellite, and microwave media.

**Non-Return to Zero/Non-Return to Zero Inverted (NRZ/NRZI)** Methods of encoding signals for transmission in data communications.

**North American Numbering Plan (NANP)** *ITU-T/CCITT X.121 Recommendation.* The standard that defines the structure of the Network Terminal Number (NTN) into the DNIC plus three fixed length subparts: 4-digit DNIC, 3-digit Service Region (SR), 3-digit Service Area (SA), and 4-digit endpoint number (EPN).

**null packet** An empty packet transmitted across the backplane bus when none of the modules has any data packets to transmit.

### O

**octet** Eight (8) bits.

**one-way logical channel** An X.25 service that allows channels in a **two-way group** to be dedicated to incoming or outgoing **switched virtual circuit (SVC)**s.

**Open Systems Interconnection (OSI) model** *International Standards Organization (ISO)*. A seven-layer mode of the logical functions performed in communications between user applications.

**operating telephone company (OTC)** A telephone company providing local or long-distance exchange carrier service.

**operations mode** The typical state of the **Control Computer** for monitoring and managing the network. *See also loader mode; monitor mode; utility mode.*

**Operations Systems Network (OSN)** A data network used by telephone companies to run Operations Support Systems (OSS).

**Optical Carrier (OC)** *SONET*. A series of transmission speed transport levels from OC-1 up to OC-96.

**optical fiber range extender** A device, used in pairs, that increases the optical A fiber signaling distance.

**originating group** The type of **group** assigned to devices, such as data terminals, that can call other devices.

**originating group security pattern** A pattern of numeric, alphabetic, and special characters specifying the originating groups that are allowed or forbidden to access a given trunk group, receiving group, or two-way group.

### P

**packet** *Also* Level 3 Protocol Data Unit (L3-PDU). A group of bits that is transmitted as a unit through a network, usually including data and control information such as addressing, identification, and error control fields. *See also Level 3 Protocol Data Unit (L3-PDU); cell.*

### **packet assembler/disassembler (PAD)**

An interface between a device and an X.25 packet-switched network; the PAD converts the protocol used by the device and the X.25 protocol used by the network, allowing terminals to exchange data with other packet mode terminals and hosts.

**Packet Stream Protocol (PSP)** A connection-oriented service convergence standard to translate URP in IEEE 802.6

**paddleboard** Technical slang for an **input/output (I/O) distribution board**. A small component board used to install circuit elements (for example, bus terminators and shelf option cards) on the node **backplane**.

**PAD ID** *See* **x28sig**.

**PAD service** An X.5 service that allows asynchronous to X.25-type connections; *see* **packet assembler/disassembler (PAD)**.

**parity** A common technique for detecting bit errors.

**partition** A section of a hard disk that functions as a logical drive.

**pass-through** A system capability that allows access to node operations, administration, and maintenance (OA&M) commands through *StarKeeper II* NMS.

**pass-through service** Synchronous X.25 to X.25-type connections.

**password** An identifier required for administrative access to the node; *see also* **network access password, select group password**.

**path format** A framed structure of digital information carried across a physical layer connection between two points at a particular rate and enabling error detection; examples are D4, Super Frame Format (SF), ESF, and SONET.

**Performance Reporter** *See* *StarKeeper II* NMS **Performance Reporter**.

**permanently active port** A feature that allows a TSM-T1 synchronous port to be considered active as soon as it is put into service.

**permanent virtual circuit (PVC)** A full duplex end-to-end connection between two communicating devices that depends on logical associations rather than a dedicated physical pathway; it is provisioned by a network administrator to connect one compatible endpoint to another.

**physical address** *See* address.

**ping** *abbrev.* Packet Internet Groper. A utility program, originally used in the Internet, to test whether a destination can be reached by sending it an ICMP echo request and waiting for a reply. The term is now in general use as a noun and also as a verb, for example: "please ping host A to see if it is alive."

**pipe** A connection that routes a data stream from one destination to another (for example, from one router to another); multiplexed connections can be sent over one such connection.

**pipelining** The transmission of synchronous data as it arrives at the network interface, without waiting until a frame is filled; *internal* pipelining refers to the network.

**polling** *See* status polling.

**port** 1. A physical access point on an interface module. 2. In session maintenance, a physically independent I/O interface unit of a **device controller**; the port represents both the interface and the physical line it supports. A session maintenance trunk has two ports per device controller.

**port A** A Control Computer or MRCM port typically connected to a local administration console.

**port B** A Control Computer or MRCM port typically connected to a system printer or *StarKeeper* II NMS.

**Port Shelf** In BNS-2000 VCS, an 8 Mbps shelf that contains interface modules. In BNS-2000, a Series M1 shelf that connects to the Series M2 Switch Shelf.

**port M** An administrative port on the Maintenance and Redundancy Control Module (MRCM) that can override ports A and B.

**power factor correction (PFC)** A rectifier with a power phase adjustment circuit that aligns the phase between the alternating current and voltage to maximize power transfer and minimize source power requirements; Power Unit, 562A.

**power supply** A unit that converts source power to nominal 5 VDC and 12 VDC for control and data circuits in a node shelf.

**predefined destination (PDD)** An association of a fixed network destination with an originating end device, administered by the network manager, that results in an automatic call setup request (for connection-oriented service) as soon as the originator comes on line.

**PREDICTOR** An Operations Support System (OSS) used by telephone companies to locate potential cable failures before they affect service.

**primary node** The **reroute node** that is in charge of detecting a failed **session maintenance trunk** and initiating a reroute.

**Primary Reference Source (PRS)** A Stratum 1 timing source, or reference clock, that is a 1.544 MHz B8ZS coded signal carried on a T1 circuit; a Secondary Reference Source (SRS) has identical characteristics.

**profile** An administered set of characteristics associated with specified endpoints; *see also* **closed user group (CUG) profile**, **trunk call screening profile**, **X.3 profile**.

**protocol(s)** A set of rules, procedures, or recommendations governing control transmission and reception between data communications devices. There are three main protocol categories, based on message framing techniques: character oriented; byte count oriented; and bit oriented.

**Protocol Data Unit (PDU)** The data entity transferred between two instances of a single layer of a protocol at two separate locations.

**public data network (PDN)** A generic term for a packet switching data communications network that is available for public use.

## Q

**Q.920** *ITU-T/CCITT Recommendation. See* **Link Access Procedure D-Channel (LAPD)**.

**Q.921** *ITU-T/CCITT Recommendation.* ISDN User-Network Interface—Data Link Layer Specification. A standard that specifies the frame structure, elements of procedure, format of fields, and procedures for the operation of the Link Access Procedure on the D-channel (LAPD).

**Q.931** *ITU-T/CCITT Recommendation.* ISDN User-Network Interface Specification. A standard that specifies a network layer protocol, and procedures for establishing, maintaining, and clearing connections at the interface.

**quasi-random signal (QRS)** *T1.403, Frame Relay standards.* A signal consisting of a bit sequence that approximates a random signal.

**query** A request from the system for information, which is displayed on a terminal screen and requires a response from the end user at the keyboard.

**queue** A line or list formed by items waiting for service in a computer system.

## R

**random access memory (RAM)** Read and write capabilities without permanent storage of information.

**read-only memory (ROM)** A special factory-programmed memory that can be read but not written after installation. When a device is turned on, it uses the information stored in the ROM.

**real time network routing (RTNR)** Priority routing during a network interruption.

**receive bus** *Also* broadcast bus, from bus, or FBUS. The portion of the node **backplane** that carries **packets** outbound from the switch.

**receive(d) data (RD)** Data received by the DTE from the DCE.

**Receive Clock (RC)** *Also* RCLK. A timing signal from a modem to a terminal receiver interface that provides signal element timing.

**receiving group** The type of **group** assigned to devices, such as host computers, that can receive calls from other devices connected to the node.

**rectifier** The power circuit that converts the alternating supply current and voltage to direct current and voltage; an entire application package inside the Base Power Unit for a node.

**reference clock** A highly stable and accurate clock (timing signal), which may be autonomous, with a frequency that serves as a basis of comparison for the frequency of other clocks; *see* **Primary Reference Source (PRS)**.

**Reference Input Board (RIB)** Hardware that plugs into the CNA7 I/O board. Two RIBs provide termination for the Stratum 4 clock timing references.

**remote console** An administration console connected through an asynchronous module.

**remote voice/data multiplexer (R-VDM)** A multiplexer located at customer premises that is used to send and receive voice and data.

**Request To Send (RTS)** A signal from the DTE to the DCE that data is ready to be transmitted.

**rerouted trunk** In session maintenance, a trunk that has been rerouted because of trunk failure (failed-rerouted) or the "route trunk alternate" command (healthy-rerouted).

**reroute node** A node at the end of a session maintenance trunk: one node is the **primary node**; the other node is the **secondary node**.

**reroute path** In session maintenance, the series of standby channel sets (CSs) that carry the traffic of a single active **channel set (CS)** from a failed trunk.

**reroute request** In session maintenance, a message sent by the **primary node** on detection of a trunk failure; requests pass from Control Computer to Control Computer to create reroute paths that support the active **channel set (CS)** from the failed trunk.

**reroute tracking table (RTT)** The table that shows the reroute status of each **session maintenance** trunk and channel set (CS).

**ring network** A network configuration in which every node is connected to exactly two other nodes.

**round robin** A **local service address** search sequence specifying access to group elements beginning with the element listed next after the last to receive a call. *See also* **first listed**.

**route advance** In call routing, an algorithm for finding an alternative path when a call-setup request (for connection-oriented service) enters a node via the trunk group that the node would use as the primary path to the call's destination; *see* **crankback**; *see also* **hop count**.

**Routing Algorithm Process (RAP)** A Lucent Technologies proprietary process that runs in the BNS-2000 Control Computer to implement **BURST**.

**routing, alternate** *See* **alternate routing: default routing**.

**Routing Information Protocol (RIP)** A subprotocol of the TCP/IP suite; used for building, maintaining, and using internetwork routing tables.

**RS-232-C** An EIA interface standard for data communications, describing the electrical, mechanical, and functional characteristics of the connections between devices exchanging data in serial binary form; the interface between DCE and DTE. Specifies an *unbalanced* interface through a 25-pin D-shell connector or an 8-pin modular connector.

**RS-422/RS-449** An EIA interface standard describing the electrical (RS-422), mechanical, and functional (RS-449) characteristics of the connections between devices exchanging data in serial binary form. Specifies a *balanced* interface, with voltages measured as the difference between two signaling leads, and 37-pin and 9-pin connectors.

## S

**save area** A partition or section of a disk.

**scalability** A characteristic of computer products and networking technology that allows incremental growth from small to large, slow to fast, or local to wide area.

**Schedule Control and Maintenance Information System (SCAMIS)** A set of systems used by telephone companies for the special services environment.

**SCSI board** Small Computer System Interface (SCSI) module.

**search sequence** *See* **first listed; hunt group; round robin**.

**secondary node** In session maintenance, the node at the far end of a trunk from a **primary node** that responds to a reroute request from the primary node; the secondary node determines the channel sets (CSs) that need to have sessions moved and the **reroute paths** to be used.

**Secondary Reference Source (SRS)** *See* **Primary Reference Source (PRS)**.

**security server** A standalone host computer that checks a call setup request to determine whether the call should be connected to its destination.

**security set** *See* **trunk call screening**.

**segment** A **Level 2 Protocol Data Unit (L2-PDU)**; the data unit of 53 octets in the Distributed Queue Dual Bus (DQDB) protocol transferred between peer layer entities as the information payload.

**select group** A feature that allows users to choose the **originating group** whose access permissions they wish to assume.

**select group password** The restricted code that allows use of the **select group** feature for requesting connection to the network.

**Series M1** Cabinets housing 8 Mbps shelves: the Series M1 Control Cabinet (Shelf) houses control modules and user interface modules; the Series M1 Port Cabinet (Shelf) houses interface modules.

**Series M2** Cabinets housing 216 Mbps shelves: the Series M2 Switch Cabinet (Shelf) houses Switch modules and interface modules; the Series M2 Extension Cabinet (Shelf) houses additional high-speed interface modules. GAR and M2 trunk modules can only reside in Series M2 Shelf numbers 0, 1, 2, or 3.

**server** Any program offering a service that can be reached over the network; applies also to specialized machines, such as a file server.

**service address** An administered identification code for a destination in the network. An address code can be represented as mnemonic, as X.121 numeric, or as both. There are four levels of a service address: network (or an X.121 Data Network Identification Code), area (or an X.121 service region), exchange (or an X.121 service area), local (or an X.121 endpoint number); *see also* **destination (code)**.

**service area (SA)** An X.121 numeric address level, equivalent to the mnemonic **exchange** level; *see* **destination (code)**.

**service location** The site where the SMDS Subscriber Network Interface (SNI) enters the BNS-2000 network.

**session maintenance (SM)** A feature that enables all calls on a failed facility to be automatically rerouted before the applications using the facility sense the failed state and drop their calls; *see also* **alternate routing**.

**session maintenance (SM) trunk** A physical **trunk**, partitioned into channel sets (CSs), and identified as participating in session maintenance.

**shelf** A carrier inside a cabinet containing a **backplane** and other hardware that supports the insertion of modules into the backplane; *see* **Series M1, Series M2**.

**shelf alarm(s)** Warning signals of power, temperature, or voltage problems in a specific shelf on the backplane that appear on the system console screen or that are sent to a dedicated printer.

**shell (sh)** A computer interface that allows the running of program tools, or batch programming scripts for node or network administration, maintenance, and other tasks; the system supports running the shell alone (*see* **mini-shell [MINI-SH]**, **standalone utility shell**), or concurrently with the system processes; *see also* **utility shell (utilsh)**.

**signal ground (SG)** A signal that establishes a common ground reference for all other signals on the interface except the protective ground.

**Signaling System 7 (SS7)** The international ISDN standard for controlling network operations.

### **Simple Network Management Protocol**

**(SNMP)** *Internet.* A protocol that communicates network management information between a manager and an agent. SNMP allows a manager to retrieve management information from an agent on request and an agent to send information to the manager without an explicit request (this operation is called a *trap*); *see also* **SNMP agent**, **SNMP Manager**, **SNMP Proxy Agent**.

**SIP, Level 1** *SMDS access protocol.* A level of the SMDS Interface Protocol (SIP) that describes physical and electrical connections to SMDS service, the lowest level of the protocol. Level 1 services are usually handled by CSUs/DSUs.

**SIP, Levels 2 and 3** *SMDS access protocol.* Levels of the SMDS Interface Protocol (SIP) that describe addressing, framing, and other protocol processing for SMDS service; Level 2 includes the part of the access protocol that specifies the L2-PDU and Level 3 includes the L3-PDU.

**slot** A physical space for placing a module in a cabinet/shelf. In BNS-2000 the physical slots are labeled 0–15 in Series M1 shelves and 0A/0B–13 in the Series M2 shelves.

**SMDS Data Unit** *See* Level 3 Protocol Data Unit (L3-PDU).

**SMDS Interface Protocol (SIP)** The protocol defined at the interface, or boundary, between the network and the customer; a Media Access Control (MAC)-level interface that is a subset of the Distributed Queue Dual Bus (DQDB) connectionless MAC protocol.

**SMDS Switching System (SS)** An SMDS switching configuration of one or more BNS-2000 nodes.

**SNMP agent** A software system that implements Simple Network Management Protocol (SNMP) in the exchange of network management information with an SNMP manager/station. In a device such as a host or gateway, the agent has a process responsible for performing the network management operations requested by the SNMP Manager.

**SNMP Manager** A software system that implements network management operations by controlling requests for information, setting of variables, and asynchronously receiving *traps*; *see* **Simple Network Management Protocol (SNMP)**. This manager system also executes operations that monitor and control SNMP agent systems.

**SNMP Proxy Agent** A software system that enables one machine, the proxy, to translate Simple Network Management Protocol (SNMP) requests from the SNMP Manager into transactions needed by machines that do not support SNMP agent software.

**software disk striping** A feature of *StarKeeper II* NMS that allows partitioning of the hard drive.

**software download** A feature in which updated software is directly downloaded from *StarKeeper II* NMS to a node.

**software feature card** A card that identifies a software feature package by name and by unique numerical code.

**software registration key** A code, provided by the Lucent Technologies Customer Assistance Center (CAC), that enables installation of the system software.

**source address (SA)** An SMDS address assigned to the SMDS subscriber who originates the SMDS data transfer.

**spanning tree algorithm** *See* **BURST**.

**speedcall** A shortened name, or short code, for a network destination address, set up by the network administrator; *see also* **alias**.

**speed matching** A feature that allows two endpoints on the network, running at different speeds, to communicate without changing speeds; flow control must be enabled.

**splice** A service that enables the **node** to connect two **virtual circuits** involving two end devices (both connected to one host) and to remove the intermediate host.

- Stand-alone DDS Drive** A portable, AC-powered tape drive with a SCSI Interface to the Control Computer complex for a CCM configuration.
- standalone utility shell** A computer interface program used to execute disk commands and some database manipulation commands, running as the only system process; *see also* **utility shell (utilsh)**.
- Standard Fiber Trunk (SFT)** An interface module for an optical fiber connection that provides up to 8 Mbps between two nodes, a node and a Multipurpose Concentrator (MPC), or a node and an ISN concentrator.
- Standard Wire Trunk (SWT)** A wire interface module that supports 9.6 Kbps to 2.048 Mbps to a T1/E1 facility, used for long-distance connections between a node and a Multipurpose Concentrator (MPC), or a node and an ISN concentrator, or two nodes.
- standby bandwidth** The bandwidth expected to be available to support rerouted traffic on a facility. Initial standby bandwidth is calculated by subtracting the expected bandwidth from the line speed. For any point in time, the standby bandwidth is calculated by subtracting bandwidth currently being used for session maintenance reroutes from the initial standby bandwidth.
- standby channel set (CS)** In session maintenance, a **channel set (CS)** that is configured to be ready to take over the traffic from an active channel set (CS) on a failed trunk, when using session maintenance.
- StarKeeper II NMS Core System** A processor equipped with the *StarKeeper II NMS* central, or core, system functions and processes; this processor contains no graphics application packages.
- StarKeeper II NMS Co-resident System** A processor equipped with the *StarKeeper II NMS* core processes and one or more of the graphics application packages.
- StarKeeper II NMS Graphics System.** A processor, separate from the *StarKeeper II NMS* Core System, with capabilities for running optional graphics application packages. Specifically, this processor supports Task Manager, OPEN LOOK graphical user interface (GUI), cut-through administration, *StarKeeper II NMS* administration connections, graphics administration software, and the optional graphics applications.
- StarKeeper II NMS Network Builder** A high resolution bit-mapped, graphics-based application that includes network configuration and administration tools to provision, maintain, and analyze networks.
- StarKeeper II Network Management System (NMS)** A central system used to view an entire network and to configure, monitor, control, and diagnose any node in the network.
- StarKeeper II NMS Network Monitor** A high resolution bit-mapped, graphics-based application for network fault monitoring and diagnostics that provides multiple, separate displays of the network and network status lists.
- StarKeeper II NMS Performance Reporter** A high resolution bit-mapped, graphics-based application that provides menu-based access to performance reports and physical and logical network resources.
- StarKeeper II NMS Task Manager** A software application that provides a platform for the *StarKeeper II NMS* application packages.
- StarRep Customer Service Systems** Advanced Operations Systems (OSs) that allow telephone company service representatives to resolve customer calls quickly and efficiently; via menus, provides details on a company's present and upcoming services, correlated data from other systems that pinpoint trouble and recommend corrective actions, and trouble tracking and reporting.
- StarServer** FT computer StarServer Fault Tolerant computer.
- StarWAN Brouter** A LAN device that combines bridging and routing functions.
- star topology** A network configuration with a central switching node and devices connected to it as "points on a star."
- station** The network access point (endpoint) to which a user device is connected.
- station ID** The local node name, module address, and originating port number to which a user terminal is connected.
- status packet** A packet generated by a module that identifies the module type and the state (whether it is enabled or disabled); *Status Packet* is the name of a quarterly newsletter for Lucent Technologies' data networking customers.

**status polling** A regular check by the Switch module of all slots in the network to detect module faults and hardware states, such as in or out of service; this information is sent to the **Control Computer**.

**Stratum 4 Clock (SSM4/STR4)** A timing device that accepts a clock signal from a central source (or generates it internally) and uses it to synchronize the transmission of data with a given level of accuracy.

**subscriber access termination (SAT)** The termination of an SMDS access path, located at the customer's site.

**Subscriber Network Interface (SNI)** The boundary between customer premises equipment (CPE) and the network supporting Switched Multimegabit Data Service (SMDS). At this SNI boundary, or interface, the CPE attaches to an access facility linking it to a Metropolitan Area Network (MAN) Switching System (MSS); only data belonging to a particular subscriber is transported across an individual SNI.

**superblock** The memory segment on the operating system disk that describes the disk contents.

**switch** Mode setting device on an interface module or I/O board; *see also* **Switch module**.

**Switch Cabinet (Shelf), Series M2** A BNS-2000 modular cabinet that holds switch and interface modules; *see* **Series M2**.

**Switched Multimegabit Data Service (SMDS)** A high-speed, connectionless, public, packet switching service that extends local area network (LAN)-like performance beyond the subscriber's premises, across a metropolitan or wide area.

**switched virtual circuit (SVC)** A virtual circuit that is established dynamically when an endpoint responds to a **DESTINATION:** prompt with the address of another endpoint in the network.

**Switch module** *Also* Eswitch. A control module that performs packet switching for the node, connects the transmit and receive buses, and handles all data and control packets.

**switchover** *See* **automatic switchover**.

**Synchronous Data Link Control (SDLC)** A link-layer, bit-oriented **protocol**, similar to HDLC, for the transfer of data between stations in a point-to-point, multipoint, or loop arrangement, using synchronous data transmission techniques.

### **Synchronous/Asynchronous Multiplexer**

**(SAM)** A concentrator located remotely from the main switching node that provides switched asynchronous and transparent synchronous services as configurable options for independently administered ports, available in three versions: SAM16 (16 ports), SAM64 (64 ports), SAM504 (504 ports).

**synchronous data unit (SDU)** A device used in pairs that extends **synchronous** signaling distance.

**synchronous transmission** A form of communication in which the data characters and bits are transmitted at a fixed rate with the transmitting and receiving device synchronized, eliminating the need for a stop and a start bit.

**system hang** An expression describing a system that is locked up.

## T

**T1** A digital transmission facility providing 1.544 Mbps of bandwidth; *see also* **DS1, fractional T1 (FT1) service**.

**T1.6ca** *ANSI standard for frame relay. Core Aspects of Frame Protocol For Use With Frame Relay Bearer Service.*

**T1.6FR, Annex D** *ANSI standard for frame relay. Additional Procedures for PVCs Using UI Frames.*

**T3** A digital transmission facility providing a total bandwidth of 44.736 Mbps; *see also* **DS3**.

**talk battery** A -48 VDC filtered battery power source.

**tandem node** A node typically housing trunk modules that relays calls between endpoints attached to other nodes.

**Task Manager** *See* **StarKeeper II NMS Task Manager**.

**terminal adapter (TA)** A multiport commercial bridge, router, workstation, or host that supports T1/E1 and T3/E3 interfaces; it is also an ISDN interface. A TA is viewed as a concentrator.

**10BASE-T** An IEEE 802.3 medium specification that defines the parameters for CSMA/CD access over twisted pair using a star topology. The "10" refers to 10 Mbps and the "T" refers to the twisted pair medium (with a maximum segment length of 100 meters). Because CSMA/CD networks, defined in IEEE 802.3, commonly called Ethernet, this medium is sometimes referred to as twisted pair Ethernet.

- terminal autobaud** A feature that automatically determines the speed of the end user's hardware device.
- threshold** A sliding window of time (defined as a level), set at 2 to 120 seconds, in which lost keep-alive messages are counted to detect excessive errors on a trunk; *see also* **error threshold**.
- time-division multiplexing (TDM)** Time sharing of a channel by preallocating short time slots to each transmitter on a regular basis; variations include statistical and asynchronous TDM, which allocate slots more flexibly.
- timing source** *See* **facility; Primary Reference Source (PRS)**.
- to-bus** or **TBUS** *See* **transmit bus**.
- traffic loading** A measure of the amount of data (bandwidth) that a Subscriber Network Interface (SNI) injects into or receives from the network.
- transmission** *See* **transmit bus**.
- transmit bus** *Also* TBUS or to-bus. The portion of the **backplane** that carries packets inbound from sending modules to the switch.
- transmission facility** *See* **data transport facility, facility**.
- Transmit(ted) Data (TD)** Data transmitted from a DTE to a DCE.
- Transmitter Clock (TC)** A timing signal from a modem to a terminal transmitter interface that provides signal element timing.
- Transparent Synchronous Module-T1 (TSM-T1)** An interface module that provides non-switched synchronous or asynchronous connection at speeds from 56 Kbps to 1.544 (T1) up to 2.048 Mbps; up to 4 ports may be simultaneously configured at 384 Kbps. The TSM-T1 can transport, for example, point-to-point SMDS circuits or high-speed host-to-host traffic.
- TransVU-2000** A network surveillance and control system, customized for operating telephone companies (OTCs), that provides trouble identification for the evolving digital network; it passes alarm and trouble information through to other support systems and supports an embedded base of remote telemetry devices.
- trap** *See* **Simple Network Management Protocol (SNMP)**.
- trunk** A **facility** connecting two nodes; *see also* **session maintenance trunk**.
- trunk call screening** A security feature that checks incoming calls from other nodes; *see also* **trunk call screening profile**.
- trunk call screening profile** An administered set of security patterns applicable to one or more trunks; *see also* **profile**.
- trunk, failed** A session maintenance trunk that has missed receiving a threshold count of loopback packets and whose circuits should be moved to reroute paths; *see also* **trunk, healthy**.
- trunk, healthy** A session maintenance trunk that has not missed receiving a threshold number of loopback packets. A healthy trunk that has the "route trunk alternate" command issued is still considered healthy; *see also* **trunk, failed**.
- Trunk Interface Module (TIM)** In a remote ISN concentrator, the counterpart wire interface module to the **Standard Wire Trunk (SWT)**, in a node; formal name for module in ISN nodes and concentrators.
- trunk latency** The interval of time in which a single segment message is received from the backplane and transmitted onto a facility, under normal conditions.
- trunk module** An interface module to an optical fiber or wire link between two **nodes** or between a node and a **concentrator**.
- trunk module, failed** A trunk module that has been removed from service, either manually by an administrative command or automatically by the system because of a system fault.
- trunk, normally routed** A **session maintenance trunk** that is not rerouted.
- trunk, rerouted** *See* **rerouted trunk**.
- Trunk-E3 (TRK-E3)** A trunk interface module to an E3 transmission facility that provides connectionless and connection-oriented data transport.
- Trunk-E3A (TRK-E3A)** A trunk interface module that provides E3 interconnection between BNS-2000 and ATM switches.
- Trunk-E3S (TRK-E3S)** A trunk interface module to an E3 transmission facility that provides connectionless and connection-oriented data transport for SMDS.

**Trunk-High Speed (TRK-HS)** A trunk interface module that supports fiber connections between nodes and between nodes and SAM504 and SAM64 modules.

**Trunk-Priority Queueing (TRK-PQ)** A trunk interface module that supports wire connections for multi-protocol traffic with fair queueing, enhanced buffering, and enforcement of committed information rate (CIR) for frame relay traffic at up to T1/E1 rates.

**Trunk-T3 (TRK-T3)** A trunk interface module that supports connectionless and connection-oriented traffic between nodes at transmission speeds up to T3 (DS3).

**Trunk-T3A (TRK-T3A)** A trunk interface module that provides T3 interconnection between BNS-2000 and ATM switches, and supports connectionless and connection-oriented data transport for both IntraLATA and private InterLATA traffic at T3 (DS3) rates.

**Trunk-T3I (TRK-T3I)** A two-board trunk interface module that supports connectionless Interexchange Carrier (IXC) data transport at T3 (DS3) rates.

**Trunk-T3S (TRK-T3S)** A trunk interface module that supports connectionless and connection-oriented data transport for both IntraLATA and private InterLATA traffic at T3 (DS3) rates.

**trunk weight** A value assigned to each trunk used to determine the best route between nodes. The routing algorithm favors a trunk with the lowest value, or the *least weighted path*, because that is the shortest, and most efficient, transmission path. Trunk weight allows a network administrator to control traffic distribution.

**two-way (2-way) group** The transmission directions of a **group** assigned to devices that can originate or receive calls to and from network endpoints.

**TY12** A terminal interface module that supports up to 12 asynchronous user ports.

## U

**UART** universal asynchronous receiver/transmitter. An integrated circuit that converts the serial data of a communication line to the parallel data used internally in a system, and vice versa.

**UB specification** An SMDS interface specification developed by Ungermann-Bass, et al. and open to all vendors; uses HDLC encapsulation to transfer data from the router to the DSU. The physical interface

can be V.35, RS-449, or HSSI. Defines four logical links between the two devices; hardware reset, data transfer and flow control, link performance monitoring, and element management.

**un-expanded Service Region (SR)** When routing messages from the source to their intended destination, if a node makes decisions based on Service Regions (SRs) only, these SRs are described as un-expanded.

**Unified Network Management Architecture (UNMA)** Lucent Technologies' comprehensive end-to-end integration of management for a wide variety of multidomain, multivendor, voice/data networks and sub-networks. UNMA is based on an OSI network management protocol.

**Uniform Alarm Interface (UAI)** A standard for sending/receiving alarms to/from *StarKeeper* II NMS.

**uninterruptible power supply (UPS)** A device that provides power for network systems if a power outage occurs or if the power is uneven.

**user channel** A channel on a trunk that is specified by the network administrator for the normal transport of user data; user channels are distributed across active channel sets (CSs).

**utility backbone network** A BNS-2000 network that is used as a higher tier network to an existing BNS-2000 VCS network.

**utility commands** Commands used for checking and correcting the Control Computer file system; for formatting, copying, and verifying disk cartridges; and for creating historical records.

**utility mode** A software state during which commands can be used for checking and correcting the Control Computer file system; for formatting, copying, and verifying disk cartridges; for creating historical records; and to install software.

**utility networking** Describes switching of frame relay and other traffic.

**utility shell (utilsh)** A computer interface program used to execute disk commands and some of the database manipulation commands concurrently with the system processes; *see also* **standalone utility shell**.

## V

**V.11** *ITU-T/CCITT Recommendation.* A standard for data communication: Electrical Characteristics for Balanced Double-current Interchange Circuits for General Use With Integrated Circuit Equipment in the Field of Data Communications.

**V.24** *ITU-T/CCITT Recommendation.* A standard for data communication, comparable to RS-232-C: List of Definitions for Interchange Circuits between Data Terminal Equipment (DTE) and Data Circuit Terminating Equipment (DCE).

**V.29** *ITU-T/CCITT Recommendation.* A standard format for half-duplex 4800- and 9600-baud serial data transmission over telephone lines.

**V.32bis** *ITU-T/CCITT Recommendation.* A standard format for data transmission at up to 19.6 Kbps over telephone lines ("bis" means an extension of the original standard).

**V.34** *ITU-T/CCITT Recommendation.* A standard format for data transmission at up to 28.8 Kbps over telephone lines; *see also* V.fast.

**V.35** *ITU-T/CCITT Recommendation.* A standard for the physical layer of the X.25 protocol, describing the electrical, mechanical, and functional characteristics of the connections between devices exchanging data in serial binary form.

**V.fast** A preliminary protocol that does not conform precisely to the V.34 standard.

**vertical redundancy check (VRC)** An error checking technique in which a check, or parity, bit is added to each character in a message so that the number of bits in each character, including the parity bit, is odd (for odd parity) or even (for even parity); *see also* **cyclic redundancy check (CRC)**, **longitudinal redundancy check (LRC)**.

**vertical services** Context switching, protocol conversion, security protection, and similar services implemented via an applications processor module.

**virtual call** *Also* **switched virtual circuit (SVC)**. A term for a data call; a temporary association between two X.25 DTEs.

**virtual circuit** Network facilities that provide an end user with service that is equivalent to a physical circuit. Data in a virtual circuit can be routed dynamically through a variety of physical paths between endpoints, allowing many virtual circuits to share the same transmission facilities concurrently.

**virtual multipoint bridging** The multiplexing of physically different access lines onto a single multidrop host line, by which the node allows the host to see the connection as a single **multipoint line**; *see also* **fanout**.

**voice/data multiplexer (VDM)** A device that allows the sending and receiving of simultaneous voice and data transmissions through existing telephone lines.

**voltage range selector switch** *Also* HIGH-LOW switch; located on the off-line power supply switch.

**VT** A Digital Equipment Corporation code for a series of computer terminals; most asynchronous computer terminals are VT-compatible and most PCs can emulate the VT- series.

## W

**warm reboot** To reinitialize the system from a powered state (only the Control Computer is rebooted); *see also* **cold reboot**.

**warm spare controller** A backup **Control Computer** with its power switched on.

**wide area network (WAN)** A communications network that can cover an unlimited distance.

**window** A flow and error control method for virtual circuits that limits the number of packets one endpoint can send before waiting for acknowledgment from the receiver.

**window size** The number of outstanding packets that can be sent before an acknowledgment is required; *see also* **window**.

## X

**X.3** *ITU-T/CCITT Recommendation.* A standard for a packet assembly/disassembly (PAD) facility in a public data network.

**X.3 profile** An administered set of values defining access to a PAD by an asynchronous terminal; *see also* **profile**.

**X.25** *ITU-T/CCITT Recommendation.* Recommendations for standard communications protocols for access to packet-switched networks, defining the interface between a host and network, including: 1. A standard describing HDLC protocol for the interface between a synchronous host and a

packet-switched public data network (PDN); includes **Link Access Procedure Balanced (LAPB)**. 2. A standard for the DTE to DCE interface between a synchronous host and a packet-switched data network.

**X.25 module** This interface module supplies X.25 services, allowing X.25 hosts and asynchronous terminals to connect to a public data network (PDN) or other X.25 hosts. The module provides 4 RS-232-C ports that can be configured individually at speeds from 1200 to 19.2 Kbps, or 1 port that can be configured at up to 64 Kbps with the remaining 3 configured at up to 9.6 Kbps. The module supports X.121 address translation via gateway tables.

**X.25P module** This interface module supplies X.25 services, allowing X.25 hosts and asynchronous terminals to connect primarily to other X.25 hosts and network elements. The module capabilities include: extended I-frame numbering, larger packet and window sizes and better performance than the X.25 module (configurable on a port-by-port basis) and packet segmentation. The module can provide 4 V.35 ports configured at speeds up to 64 Kbps; or 8 ports individually configured at up to 19.2 Kbps.

**X.28** *ITU-T/CCITT Recommendation.* A standard for commands sent by terminals to a **packet assembler/disassembler (PAD)** and for service signals (messages) sent by the PAD to terminals; this defines the interface between an asynchronous terminal and an X.25 network.

**x28sig** X.28 packet assembler/disassembler identification (PAD ID) service signal for the PAD user.

**X.29** *ITU-T/CCITT Recommendation.* A standard for the communication procedures between an X.25 DTE or **packet assembler/disassembler (PAD)** and another PAD.

**X.75** *ITU-T/CCITT Recommendation.* A standard that specifies the interface between X.25 networks; the standard for international gateway services between packet-switched networks.

**X.75 module** An interface module that functions as a national or international gateway to route switched virtual circuit (SVC) or permanent virtual circuit (PVC) calls among X.25 networks. Address translation of X.121 addresses from one numbering scheme to the BNS-2000 numbering scheme is accomplished via gateway address tables.

**X.121** *ITU-T/CCITT Recommendation.* A standard that defines an international numbering scheme for packet-switched public data network (PDN) addresses (internetworking of DTEs worldwide), consisting of a data network identification code (DNIC) and a network terminal number (NTN).

**X.213** *ITU-T/CCITT Recommendation.* A standard that defines a network for Open Systems Interconnection (OSI).

**X.225** *ITU-T/CCITT Recommendation.* Connection-oriented (CONS) session protocol, equivalent to ISO 8327 (for OSI Session Layer 5).

**X.400** *ITU-T/CCITT Recommendation.* A standard for electronic message handling (email).

**X.500** *ITU-T/CCITT Recommendation.* A standard for directory services.

**XON/XOFF** Control characters used for software flow control in a data connection, usually the ASCII DC1 and DC3 characters. In-band flow control protocol uses XOFF   to suspend data flow and XON   to resume data flow.

**X-Splicer** A software application that allows an asynchronous endpoint to call a DKAP module, via a switched virtual circuit (SVC), which then sets up a PVC call to an X.25 endpoint, splices the calls, and drops out of the virtual circuit.

# ASCII and EBCDIC Character Codes

For quick reference, this table gives the meanings of abbreviations.

**TABLE 1. ASCII and EBCDIC Codes**

ASCII		Mnemonic		EBCDIC	
Hex	Octal	Characters	Meaning	Hex	Prints as
00	00	NUL	Null	00	
01	01	SOH	Start of Header	01	
02	02	STX	Start of Text	02	
03	03	ETX	End of Text	03	
04	04	EOT	End of Transmission	04	
05	05	WRU/ENQ	Enquire	09	
06	06	RU/ACK	Acknowledge	06	
07	07	BELL/BEL	Bell	07	bell
08	10	BS	Backspace	08	
09	11	TAB/HT	Horizontal Tab	05	
0A	12	LF	Line Feed	25	line feed
0B	13	VT	Vertical Tab	0B	
0C	14	FORM/FF	Form Feed	0C	
0D	15	CR	[Carriage] Return	15	CR
0E	16	SO	Start of Header	0E	
0F	17	SI	Shift In	0F	
10	20	DLE	Delete	10	
11	21	X-ON/DC1	Device Control 1	11	
12	22	TAPE/DC2	Device Control 2	12	
13	23	X-OFF/DC3	Device Control 3	13	
14	24	DC4	Device Control 4	14	
15	25	NAK	Negative Acknowledgment	0A	
16	26	SYN	Synchronize	16	
17	27	ETB	End of Transmission Block	17	
18	30	CAN	Cancel	18	


TABLE 1. ASCII and EBCDIC Codes (continued)

ASCII		Mnemonic		EBCDIC	
Hex	Octal	Characters	Meaning	Hex	Prints as
19	31	EM	End of Medium	19	
1A	32	SS	Start of Special Sequence	1A	
1B	33	ESC	Escape	1B	
1C	34	FS	File Separator	1C	
1D	35	GS	Group Separator	1D	
1E	36	RS	Record Separator	1E	
1F	37	US	Unit Separator	1F	
20	40	blank	Space Bar	40	blank
21	41	!		5A	!
22	42	"		7F	"
23	43	#		7B	#
24	44	\$		5B	\$
25	45	%		6C	%
26	46	&		50	&
27	47	'		7D	'
28	50	(		4D	(
29	51	)		5D	)
2A	52	*		5C	*
2B	53	+		4E	+
2C	54	,		6B	,
2D	55	-		60	-
2E	56	.		4B	.
2F	57	/		61	/
30	60	0		F0	0
31	61	1		F1	1
32	62	2		F2	2
33	63	3		F3	3
34	64	4		F4	4
35	65	5		F5	5
36	66	6		F6	6
37	67	7		F7	7
38	70	8		F8	8
39	71	9		F9	9

TABLE 1. ASCII and EBCDIC Codes (continued)

ASCII		Mnemonic		EBCDIC	
Hex	Octal	Characters	Meaning	Hex	Prints as
3A	72	:		7A	:
3B	73	;		5E	;
3C	34	<		4C	<
3D	75	=		7E	=
3E	76	>		6E	>
3F	77	?		6F	?
40	100	@		7C	@
41	101	A		C1	A
42	102	B		C2	B
43	103	C		C3	C
44	104	D		C4	D
45	105	E		C5	E
46	106	F		C6	F
47	107	G		C7	G
48	110	H		C8	H
49	111	I		C9	I
4A	112	J		D1	J
4B	113	K		D2	K
4C	114	L		D3	L
4D	115	M		D4	M
4E	116	N		D5	N
4F	117	O		D6	O
50	120	P		D7	P
51	121	Q		D8	Q
52	122	R		D9	R
53	123	S		E2	S
54	124	T		E3	T
55	125	U		E4	U
56	126	V		E5	V
57	127	W		E6	W
58	130	X		E7	X
59	131	Y		E8	Y

**TABLE 1. ASCII and EBCDIC Codes** (continued)

ASCII		Mnemonic		EBCDIC	
Hex	Octal	Characters	Meaning	Hex	Prints as
5A	132	Z		E9	Z
5B	133	[ or l		4F	
5C	134	\		4A	¢
5D	135	]		5F	
5E	136	↑ or 		6A	
5F	137	← or -		6D	-
.					0
.					0
.					0
7E	176	ESC	Escape	1B	
7F	177	DEL	Delete	FF	