

Telecommunications Acronym List and Glossary

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Common Industry Acronyms

AAL	ATM Adaptation Layer
AARP	AppleTalk Address Resolution Protocol
ABM	Asynchronous Balanced Mode
ABR	Available Bit Rate
AC	Alternating Current
ACD	Automatic Call Distribution
ACELP	Algebraic Code-Excited Linear Prediction
ACF	Advanced Communication Function
ACK	Acknowledgment
ACM	Address Complete Message
ACSE	Association Control Service Element
ACTLU	Activate Logical Unit
ACTPU	Activate Physical Unit
ADCCP	Advanced Data Communications Control Procedures
ADM	Add/Drop Multiplexer
ADPCM	Adaptive Differential Pulse Code Modulation
ADSL	Asymmetric Digital Subscriber Line
AFI	Authority and Format Identifier
AIN	Advanced Intelligent Network
AIS	Alarm Indication Signal
ALU	Arithmetic Logic Unit
AM	Administrative Module (Lucent 5ESS)
AM	Amplitude Modulation
AMI	Alternate Mark Inversion
AMP	Administrative Module Processor
AMPS	Advanced Mobile Phone System
ANI	Automatic Number Identification (SS7)
ANSI	American National Standards Institute
APD	Avalanche Photodiode
API	Application Programming Interface
APPC	Advanced Program-to-Program Communication
APPN	Advanced Peer-to-Peer Networking
APS	Automatic Protection Switching
ARE	All Routes Explorer (Source Route Bridging)
ARM	Asynchronous Response Mode
ARP	Address Resolution Protocol (IETF)
ARPA	Advanced Research Projects Agency
ARPANET	Advanced Research Projects Agency Network
ARPU	Average Revenue per User
ARQ	Automatic Repeat Request
ASCII	American Standard Code for Information Interchange
ASI	Alternate Space Inversion
ASIC	Application Specific Integrated Circuit
ASIC	Application-Specific Integrated Circuit
ASK	Amplitude Shift Keying
ASN	Abstract Syntax Notation
ASP	Application Service Provider

AT&T	American Telephone and Telegraph
ATDM	Asynchronous Time Division Multiplexing
ATM	Asynchronous Transfer Mode
ATM	Automatic Teller Machine
ATMF	ATM Forum
AU	Administrative Unit (SDH)
AUG	Administrative Unit Group (SDH)
AWG	American Wire Gauge
B2B	Business-to-Business
B2C	Business-to-Consumer
B8ZS	Binary 8 Zero Substitution
BANCS	Bell Administrative Network Communications System
BBN	Bolt, Beranak, and Newman
BBS	Bulletin Board Service
Bc	Committed Burst Size
BCC	Blocked Calls Cleared
BCC	Block Check Character
BCD	Blocked Calls Delayed
BCDIC	Binary Coded Decimal Interchange Code
Be	Excess Burst Size
BECN	Backward Explicit Congestion Notification
BER	Bit Error Rate
BERT	Bit Error Rate Test
BGP	Border Gateway Protocol (IETF)
BIB	Backward Indicator Bit (SS7)
B-ICI	Broadband Intercarrier Interface
BIOS	Basic Input/Output System
BIP	Bit Interleaved Parity
B-ISDN	Broadband Integrated Services Digital Network
BISYNC	Binary Synchronous Communications Protocol
BITNET	Because It's Time Network
BITS	Building Integrated Timing Supply
BLSR	Bidirectional Line Switched Ring
BOC	Bell Operating Company
BPRZ	Bipolar Return to Zero
Bps	Bits per Second
BRI	Basic Rate Interface
BRITE	Basic Rate Interface Transmission Equipment
BSC	Binary Synchronous Communications
BSN	Backward Sequence Number (SS7)
BSRF	Bell System Reference Frequency
BTAM	Basic Telecommunications Access Method
BUS	Broadcast Unknown Server
C/R	Command/Response
CAD	Computer-Aided Design
CAE	Computer-Aided Engineering
CAGR	Compound Annual Growth Rate
CAM	Computer-Aided Manufacturing
CAP	Carrierless Amplitude/Phase modulation
CAP	Competitive Access Provider
CAPEX	Capital Expenditure

CARICOM	Caribbean Community and Common Market
CASE	Common Application Service Element
CASE	Computer-Aided Software Engineering
CAT	Computer-Aided Tomography
CATIA	Computer-Assisted Three-dimensional Interactive Application
CATV	Community Antenna Television
CBEMA	Computer and Business Equipment Manufacturers Association
CBR	Constant Bit Rate
CBT	Computer-Based Training
CC	Cluster Controller
CCIR	International Radio Consultative Committee
CCIS	Common Channel Interoffice Signaling
CCITT	International Telegraph and Telephone Consultative Committee
CCS	Common Channel Signaling
CCS	Hundred Call Seconds per Hour
CD	Collision Detection
CD	Compact Disc
CDC	Control Data Corporation
CDMA	Code Division Multiple Access
CDPD	Cellular Digital Packet Data
CD-ROM	Compact Disc-Read Only Memory
CDVT	Cell Delay Variation Tolerance
CEI	Comparably Efficient Interconnection
CEPT	Conference of European Postal and Telecommunications Administrations
CERN	European Council for Nuclear Research
CERT	Computer Emergency Response Team
CES	Circuit Emulation Service
CEV	Controlled Environmental Vault
CGI	Common Gateway Interface (Internet)
CHAP	Challenge Handshake Authentication Protocol
CICS	Customer Information Control System
CICS/VS	Customer Information Control System/Virtual Storage
CIDR	Classless Interdomain Routing (IETF)
CIF	Cells In Frames
CIR	Committed Information Rate
CISC	Complex Instruction Set Computer
CIX	Commercial Internet Exchange
CLASS	Custom Local Area Signaling Services (Bellcore)
CLEC	Competitive Local Exchange Carrier
CLLM	Consolidated Link Layer Management
CLNP	Connectionless Network Protocol
CLNS	Connectionless Network Service
CLP	Cell Loss Priority
CM	Communications Module (Lucent 5ESS)
CMIP	Common Management Information Protocol
CMISE	Common Management Information Service Element
CMOL	CMIP Over LLC
CMOS	Complementary Metal Oxide Semiconductor
CMOT	CMIP Over TCP/IP
CMP	Communications Module Processor

CNE	Certified NetWare Engineer
CNM	Customer Network Management
CNR	Carrier-to-Noise Ratio
CO	Central Office
CoCOM	Coordinating Committee on Export Controls
CODEC	Coder-Decoder
COMC	Communications Controller
CONS	Connection-Oriented Network Service
CORBA	Common Object Request Brokered Architecture
COS	Class of Service (APPN)
COS	Corporation for Open Systems
CPE	Customer Premises Equipment
CPU	Central Processing Unit
CRC	Cyclic Redundancy Check
CRM	Customer Relationship Management
CRT	Cathode Ray Tube
CRV	Call Reference Value
CS	Convergence Sublayer
CSA	Carrier Serving Area
CSMA	Carrier Sense Multiple Access
CSMA/CA	Carrier Sense Multiple Access with Collision Avoidance
CSMA/CD	Carrier Sense Multiple Access with Collision Detection
CSU	Channel Service Unit
CTI	Computer Telephony Integration
CTIA	Cellular Telecommunications Industry Association
CTS	Clear To Send
CU	Control Unit
CVSD	Continuously Variable Slope Delta modulation
CWDM	Coarse Wavelength Division Multiplexing
D/A	Digital-to-Analog
DA	Destination Address
DAC	Dual Attachment Concentrator (FDDI)
DACS	Digital Access and Cross-connect System
DARPA	Defense Advanced Research Projects Agency
DAS	Dual Attachment Station (FDDI)
DAS	Direct Attached Storage
DASD	Direct Access Storage Device
DB	Decibel
DBS	Direct Broadcast Satellite
DC	Direct Current
DCC	Data Communications Channel (SONET)
DCE	Data Circuit-terminating Equipment
DCN	Data Communications Network
DCS	Digital Cross-connect System
DCT	Discrete Cosine Transform
DDCMP	Digital Data Communications Management Protocol (DNA)
DDD	Direct Distance Dialing
DDP	Datagram Delivery Protocol
DDS	DATAPHONE Digital Service (Sometimes Digital Data Service)
DDS	Digital Data Service
DE	Discard Eligibility (LAPF)

DECT	Digital European Cordless Telephone
DES	Data Encryption Standard (NIST)
DID	Direct Inward Dialing
DIP	Dual Inline Package
DLC	Digital Loop Carrier
DLCI	Data Link Connection Identifier
DLE	Data Link Escape
DLSw	Data Link Switching
DM	Delta Modulation
DM	Disconnected Mode
DM	Data Mining
DMA	Direct Memory Access (computers)
DMAC	Direct Memory Access Control
DME	Distributed Management Environment
DMS	Digital Multiplex Switch
DMT	Discrete Multitone
DNA	Digital Network Architecture
DNIC	Data Network Identification Code (X.121)
DNIS	Dialed Number Identification Service
DNS	Domain Name System (IETF)
DOD	Direct Outward Dialing
DOD	Department of Defense
DOJ	Department of Justice
DOV	Data Over Voice
DPSSK	Differential Phase Shift Keying
DQDB	Distributed Queue Dual Bus
DRAM	Dynamic Random Access Memory
DSAP	Destination Service Access Point
DSF	Dispersion-Shifted Fiber
DSI	Digital Speech Interpolation
DSL	Digital Subscriber Line
DSLAM	Digital Subscriber Line Access Multiplexer
DSP	Digital Signal Processing
DSR	Data Set Ready
DSS	Digital Satellite System
DSS	Digital Subscriber Signaling System
DSSS	Direct Sequence Spread Spectrum
DSU	Data Service Unit
DTE	Data Terminal Equipment
DTMF	Dual Tone Multifrequency
DTR	Data Terminal Ready
DVRN	Dense Virtual Routed Networking (Crescent)
DWDM	Dense Wavelength Division Multiplexing
DXI	Data Exchange Interface
E/O	Electrical-to-Optical
EBCDIC	Extended Binary Coded Decimal Interchange Code
EBITDA	Earnings before Interest, Tax, Depreciation and Amortization
ECMA	European Computer Manufacturer Association
ECN	Explicit Congestion Notification
ECSA	Exchange Carriers Standards Association
EDFA	Erbium-Doped Fiber Amplifier

EDI	Electronic Data Interchange
EDIBANX	EDI Bank Alliance Network Exchange
EDIFACT	Electronic Data Interchange For Administration, Commerce, and Trade (ANSI)
EFCI	Explicit Forward Congestion Indicator
EFTA	European Free Trade Association
EGP	Exterior Gateway Protocol (IETF)
EIA	Electronics Industry Association
EIGRP	Enhanced Interior Gateway Routing Protocol
EIR	Excess Information Rate
EMBARC	Electronic Mail Broadcast to a Roaming Computer
EMI	Electromagnetic Interference
EMS	Element Management System
EN	End Node
ENIAC	Electronic Numerical Integrator and Computer
EO	End Office
EOC	Embedded Operations Channel (SONET)
EOT	End of Transmission (BISYNC)
EPROM	Erasable Programmable Read Only Memory
EPS	Earnings per Share
ERP	Enterprise Resource Planning
ESCON	Enterprise System Connection (IBM)
ESF	Extended Superframe Format
ESOP	Employee Stock Ownership Plan
ESP	Enhanced Service Provider
ESS	Electronic Switching System
ETSI	European Telecommunications Standards Institute
ETX	End of Text (BISYNC)
EVA	Economic Value Added
EWOS	European Workshop for Open Systems
FACTR	Fujitsu Access and Transport System
FAQ	Frequently Asked Questions
FASB	Financial Accounting Standards Board
FAT	File Allocation Table
FCF	Free Cash Flow
FCS	Frame Check Sequence
FDD	Frequency Division Duplex
FDDI	Fiber Distributed Data Interface
FDM	Frequency Division Multiplexing
FDMA	Frequency Division Multiple Access
FDX	Full-Duplex
FEBE	Far End Block Error (SONET)
FEC	Forward Error Correction
FEC	Forward Equivalence Class
FECN	Forward Explicit Congestion Notification
FEP	Front-End Processor
FERF	Far End Receive Failure (SONET)
FET	Field Effect Transistor
FHSS	Frequency Hopping Spread Spectrum
FIB	Forward Indicator Bit (SS7)
FIFO	First In First Out

FITL	Fiber In The Loop
FLAG	Fiber Ling Across the Globe
FM	Frequency Modulation
FOIRL	Fiber Optic Inter-Repeater Link
FPGA	Field Programmable Gate Array
FR	Frame Relay
FRAD	Frame Relay Access Device
FRBS	Frame Relay Bearer Service
FSK	Frequency Shift Keying
FSN	Forward Sequence Number (SS7)
FTAM	File Transfer, Access, and Management
FTP	File Transfer Protocol (IETF)
FTTC	Fiber to the Curb
FTTH	Fiber to the Home
FUNI	Frame User-to-Network Interface
FWM	Four Wave Mixing
GAAP	Generally Accepted Accounting Principles
GATT	General Agreement on Tariffs and Trade
GbE	Gigabit Ethernet
Gbps	Gigabits per Second (Billion bits per second)
GDMO	Guidelines for the Development of Managed Objects
GDP	Gross Domestic Product
GEOS	Geosynchronous Earth Orbit Satellites
GFC	Generic Flow Control (ATM)
GFI	General Format Identifier (X.25)
GFP	Generic Framing Procedure
GFP-F	Generic Framing Procedure-Frame-Based
GFP-X	Generic Framing Procedure-Transparent
GMPLS	Generalized MPLS
GOSIP	Government Open Systems Interconnection Profile
GPS	Global Positioning System
GRIN	Graded Index (fiber)
GSM	Global System for Mobile Communications
GUI	Graphical User Interface
HDB3	High Density, Bipolar 3 (E-Carrier)
HDLC	High-level Data Link Control
HDSL	High-bit-rate Digital Subscriber Line
HDTV	High Definition Television
HDX	Half-Duplex
HEC	Header Error Control (ATM)
HFC	Hybrid Fiber/Coax
HFS	Hierarchical File Storage
HLR	Home Location Register
HPPI	High Performance Parallel Interface
HSSI	High-Speed Serial Interface (ANSI)
HTML	Hypertext Markup Language
HTTP	Hypertext Transfer Protocol (IETF)
HTU	HDSL Transmission Unit
I	Intrapictures
IAB	Internet Architecture Board (formerly Internet Activities Board)
IACS	Integrated Access and Cross-connect System

IAD	Integrated Access Device
IAM	Initial Address Message (SS7)
IANA	Internet Address Naming Authority
ICMP	Internet Control Message Protocol (IETF)
IDP	Internet Datagram Protocol
IEC	Interexchange Carrier (also IXC)
IEC	International Electrotechnical Commission
IEEE	Institute of Electrical and Electronics Engineers
IETF	Internet Engineering Task Force
IFRB	International Frequency Registration Board
IGP	Interior Gateway Protocol (IETF)
IGRP	Interior Gateway Routing Protocol
ILEC	Incumbent Local Exchange Carrier
IM	Instant Messenger (AOL)
IML	Initial Microcode Load
IMP	Interface Message Processor (ARPANET)
IMS	Information Management System
InARP	Inverse Address Resolution Protocol (IETF)
InATMARP	Inverse ATMARP
INMARSAT	International Maritime Satellite Organization
INP	Internet Nodal Processor
InterNIC	Internet Network Information Center
IP	Intellectual Property
IP	Internet Protocol (IETF)
IPO	Initial Product Offer
IPX	Internetwork Packet Exchange (NetWare)
IRU	Indefeasible Rights of Use
IS	Information Systems
ISDN	Integrated Services Digital Network
ISO	International Organization for Standardization
ISO	Information Systems Organization
ISOC	Internet Society
ISP	Internet Service Provider
ISUP	ISDN User Part (SS7)
IT	Information Technology
ITU	International Telecommunication Union
ITU-R	International Telecommunication Union-Radio Communication Sector
IVD	Inside Vapor Deposition
IVR	Interactive Voice Response
IXC	Interexchange Carrier
JEPI	Joint Electronic Paynets Initiative
JES	Job Entry System
JIT	Just in Time
JPEG	Joint Photographic Experts Group
KB	Kilobytes
KM	Knowledge Management
Kbps	Kilobits per Second (Thousand Bits per Second)
KLTN	Potassium Lithium Tantalate Niobate
KM	Knowledge Management
LAN	Local Area Network

LANE	LAN Emulation
LAP	Link Access Procedure (X.25)
LAPB	Link Access Procedure Balanced (X.25)
LAPD	Link Access Procedure for the D-Channel
LAPF	Link Access Procedure to Frame Mode Bearer Services
LAPF-Core	Core Aspects of the Link Access Procedure to Frame Mode Bearer Services
LAPM	Link Access Procedure for Modems
LAPX	Link Access Procedure half-duplex
LASER	Light Amplification by the Stimulated Emission of Radiation
LATA	Local Access and Transport Area
LCD	Liquid Crystal Display
LCGN	Logical Channel Group Number
LCM	Line Concentrator Module
LCN	Local Communications Network
LD	Laser Diode
LDAP	Lightweight Directory Access Protocol (X.500)
LEAF®	Large Effective Area Fiber® (Corning product)
LEC	Local Exchange Carrier
LED	Light Emitting Diode
LENS	Lightwave Efficient Network Solution (Centerpoint)
LEOS	Low Earth Orbit Satellites
LER	Label Edge Router
LI	Length Indicator
LIDB	Line Information Database
LIFO	Last In First Out
LIS	Logical IP Subnet
LLC	Logical Link Control
LMDS	Local Multipoint Distribution System
LMI	Local Management Interface
LMOS	Loop Maintenance Operations System
LORAN	Long-range Radio Navigation
LPC	Linear Predictive Coding
LPP	Lightweight Presentation Protocol
LRC	Longitudinal Redundancy Check (BISYNC)
LS	Link State
LSI	Large Scale Integration
LSP	Label Switched Path
LSR	Label Switched Router
LU	Line Unit
LU	Logical Unit (SNA)
MAC	Media Access Control
MAN	Metropolitan Area Network
MAP	Manufacturing Automation Protocol
MAU	Medium Attachment Unit (Ethernet)
MAU	Multistation Access Unit (Token Ring)
MB	Megabytes
MBA™	Metro Business Access™ (Ocular)
Mbps	Megabits per Second (Million bits per second)
MD	Message Digest (MD2, MD4, MD5) (IETF)
MDF	Main Distribution Frame

MDU	Multi-Dwelling Unit
MEMS	Micro Electrical Mechanical System
MF	Multifrequency
MFJ	Modified Final Judgment
MHS	Message Handling System (X.400)
MIB	Management Information Base
MIC	Medium Interface Connector (FDDI)
MIME	Multipurpose Internet Mail Extensions (IETF)
MIPS	Millions of Instructions Per Second
MIS	Management Information Systems
MITI	Ministry of International Trade and Industry (Japan)
MITS	Micro Instrumentation and Telemetry Systems
ML-PPP	Multilink Point-to-Point Protocol
MMDS	Multichannel, Multipoint Distribution System
MMF	Multimode Fiber
MNP	Microcom Networking Protocol
MON	Metropolitan Optical Network
MoU	Memorandum of Understanding
MP	Multilink PPP
MPEG	Motion Picture Experts Group
MPLS	Multiprotocol Label Switching
MPAS	Multiprotocol Lambda Switching
MPOA	Multiprotocol Over ATM
MRI	Magnetic Resonance Imaging
MSB	Most Significant Bit
MSC	Mobile Switching Center
MSO	Mobile Switching Office
MSPP	Multi-Service Provisioning Platform
MSVC	Meta-signaling Virtual Channel
MTA	Major Trading Area
MTBF	Mean Time Between Failure
MTP	Message Transfer Part (SS7)
MTSO	Mobile Telephone Switching Office
MTTR	Mean Time to Repair
MTU	Maximum Transmission Unit
MTU	Multi-Tenant Unit
MVNO	Mobile Virtual Network Operator
MVS	Multiple Virtual Storage
NAFTA	North American Free Trade Agreement
NAK	Negative Acknowledgment (BISYNC, DDCMP)
NAP	Network Access Point (Internet)
NARUC	National Association of Regulatory Utility Commissioners
NAS	Network Attached Storage
NASA	National Aeronautics and Space Administration
NASDAQ	National Association of Securities Dealers Automated Quotations
NATA	North American Telecommunications Association
NATO	North Atlantic Treaty Organization
NAU	Network Accessible Unit
NCP	Network Control Program
NCSA	National Center for Supercomputer Applications
NCTA	National Cable Television Association

NDIS	Network Driver Interface Specifications
NDSF	Non-Dispersion-Shifted Fiber
NetBEUI	NetBIOS Extended User Interface
NetBIOS	Network Basic Input/Output System
NFS	Network File System (Sun)
NIC	Network Interface Card
NII	National Information Infrastructure
NIST	National Institute of Standards and Technology (formerly NBS)
NIU	Network Interface Unit
NLPID	Network Layer Protocol Identifier
NLSP	NetWare Link Services Protocol
NM	Network Module
Nm	Nanometer
NMC	Network Management Center
NMS	Network Management System
NMT	Nordic Mobile Telephone
NMVT	Network Management Vector Transport protocol
NNI	Network Node Interface
NNI	Network-to-Network Interface
NOC	Network Operations Center
NOCC	Network Operations Control Center
NOPAT	Net Operating Profit After Tax
NOS	Network Operating System
NPA	Numbering Plan Area
NREN	National Research and Education Network
NRZ	Non-Return to Zero
NRZI	Non-Return to Zero Inverted
NSA	National Security Agency
NSAP	Network Service Access Point
NSAPA	Network Service Access Point Address
NSF	National Science Foundation
NTSC	National Television Systems Committee
NTT	Nippon Telephone and Telegraph
NVOD	Near Video on Demand
NZDSF	Non-Zero Dispersion-Shifted Fiber
OADM	Optical Add-Drop Multiplexer
OAM	Operations, Administration, and Maintenance
OAM&P	Operations, Administration, Maintenance, and Provisioning
OAN	Optical Area Network
OBS	Optical Burst Switching
OC	Optical Carrier
OEM	Original Equipment Manufacturer
O-E-O	Optical-Electrical-Optical
OLS	Optical Line System (Lucent)
OMAP	Operations, Maintenance, and Administration Part (SS7)
ONA	Open Network Architecture
ONU	Optical Network Unit
OOF	Out of Frame
OPEX	Operating Expenses
OS	Operating System
OSF	Open Software Foundation

OSI	Open Systems Interconnection (ISO, ITU-T)
OSI RM	Open Systems Interconnection Reference Model
OSPF	Open Shortest Path First (IETF)
OSS	Operation Support Systems
OTDM	Optical Time Division Multiplexing
OTDR	Optical Time-Domain Reflectometer
OUI	Organizationally Unique Identifier (SNAP)
OVD	Outside Vapor Deposition
OXC	Optical Cross-Connect
P/F	Poll/Final (HDLC)
PAD	Packet Assembler/Disassembler (X.25)
PAL	Phase Alternate Line
PAM	Pulse Amplitude Modulation
PANS	Pretty Amazing New Stuff
PBX	Private Branch Exchange
PCI	Pulse Code Modulation
PCI	Peripheral Component Interface
PCMCIA	Personal Computer Memory Card International Association
PCN	Personal Communications Network
PCS	Personal Communications Services
PDA	Personal Digital Assistant
PDH	Plesiochronous Digital Hierarchy
PDU	Protocol Data Unit
PIN	Positive-Intrinsic-Negative
PING	Packet Internet Groper (TCP/IP)
PLCP	Physical Layer Convergence Protocol
PLP	Packet Layer Protocol (X.25)
PM	Phase Modulation
PMD	Physical Medium Dependent (FDDI)
PNNI	Private Network Node Interface (ATM)
PON	Passive Optical Networking
POP	Point of Presence
POSIT	Profiles for Open Systems Interworking Technologies
POSIX	Portable Operating System Interface for UNIX
POTS	Plain Old Telephone Service
PPP	Point-to-Point Protocol (IETF)
PRC	Primary Reference Clock
PRI	Primary Rate Interface
PROFS	Professional Office System
PROM	Programmable Read Only Memory
PSDN	Packet Switched Data Network
PSK	Phase Shift Keying
PSPDN	Packet Switched Public Data Network
PSTN	Public Switched Telephone Network
PTI	Payload Type Identifier (ATM)
PTT	Post, Telephone, and Telegraph
PU	Physical Unit (SNA)
PUC	Public Utility Commission
PVC	Permanent Virtual Circuit
QAM	Quadrature Amplitude Modulation
Q-bit	Qualified data bit (X.25)

QLLC	Qualified Logical Link Control (SNA)
QoS	Quality of Service
QPSK	Quadrature Phase Shift Keying
QPSX	Queued Packet Synchronous Exchange
R&D	Research & Development
RADSL	Rate Adaptive Digital Subscriber Line
RAID	Redundant Array of Inexpensive Disks
RAM	Random Access Memory
RARP	Reverse Address Resolution Protocol (IETF)
RAS	Remote Access Server
RBOC	Regional Bell Operating Company
RF	Radio Frequency
RFC	Request For Comments (IETF)
RFH	Remote Frame Handler (ISDN)
RFI	Radio Frequency Interference
RFP	Request For Proposal
RFQ	Request for Quote
RHC	Regional Holding Company
RHK	Ryan, Hankin and Kent (Consultancy)
RIP	Routing Information Protocol (IETF)
RISC	Reduced Instruction Set Computer
RJE	Remote Job Entry
RNR	Receive Not Ready (HDLC)
ROA	Return on Assets
ROE	Return on Equity
ROI	Return on Investment
ROM	Read-Only Memory
ROSE	Remote Operation Service Element
RPC	Remote Procedure Call
RPR	Resilient Packet Ring
RR	Receive Ready (HDLC)
RTS	Request To Send (EIA-232-E)
S/DMS	SONET/Digital Multiplex System
S/N	Signal-to-Noise Ratio
SAA	Systems Application Architecture (IBM)
SAAL	Signaling ATM Adaptation Layer (ATM)
SABM	Set Asynchronous Balanced Mode (HDLC)
SABME	Set Asynchronous Balanced Mode Extended (HDLC)
SAC	Single Attachment Concentrator (FDDI)
SAN	Storage Area Network
SAP	Service Access Point (generic)
SAPI	Service Access Point Identifier (LAPD)
SAR	Segmentation and Reassembly (ATM)
SAS	Single Attachment Station (FDDI)
SASE	Specific Applications Service Element (subset of CASE, Application Layer)
SATAN	System Administrator Tool for Analyzing Networks
SBS	Stimulated Brillouin Scattering
SCCP	Signaling Connection Control Point (SS7)
SCP	Service Control Point (SS7)
SCREAM™	Scalable Control of a Rearrangeable Extensible Array of Mirrors

	(Calient)
SCSI	Small Computer Systems Interface
SCTE	Serial Clock Transmit External (EIA-232-E)
SDH	Synchronous Digital Hierarchy (ITU-T)
SDLC	Synchronous Data Link Control (IBM)
SDS	Scientific Data Systems
SEC	Securities and Exchange Commission
SECAM	Sequential Color with Memory
SF	Superframe Format (T-1)
SGML	Standard Generalized Markup Language
SGMP	Simple Gateway Management Protocol (IETF)
SHDSL	Symmetric HDSL
S-HTTP	Secure HTTP (IETF)
SIF	Signaling Information Field
SIG	Special Interest Group
SIO	Service Information Octet
SIP	Serial Interface Protocol
SIR	Sustained Information Rate (SMDS)
SLA	Service Level Agreement
SLIP	Serial Line Interface Protocol (IETF)
SM	Switching Module
SMAP	System Management Application Part
SMDS	Switched Multimegabit Data Service
SMF	Single Mode Fiber
SMP	Simple Management Protocol
SMP	Switching Module Processor
SMR	Specialized Mobile Radio
SMS	Standard Management System (SS7)
SMTP	Simple Mail Transfer Protocol (IETF)
SNA	Systems Network Architecture (IBM)
SNAP	Subnetwork Access Protocol
SNI	Subscriber Network Interface (SMDS)
SNMP	Simple Network Management Protocol (IETF)
SNP	Sequence Number Protection
SOHO	Small-Office, Home-Office
SONET	Synchronous Optical Network
SPAG	Standards Promotion and Application Group
SPARC	Scalable Performance Architecture
SPE	Synchronous Payload Envelope (SONET)
SPID	Service Profile Identifier (ISDN)
SPM	Self Phase Modulation
SPOC	Single Point of Contact
SPX	Sequenced Packet Exchange (NetWare)
SQL	Structured Query Language
SRB	Source Route Bridging
SRP	Spatial Reuse Protocol
SRS	Stimulated Raman Scattering
SRT	Source Routing Transparent
SS7	Signaling System 7
SSL	Secure Socket Layer (IETF)
SSP	Service Switching Point (SS7)

SST	Spread Spectrum Transmission
STDN	Statistical Time Division Multiplexing
STM	Synchronous Transfer Mode
STM	Synchronous Transport Module (SDH)
STP	Signal Transfer Point (SS7)
STP	Shielded Twisted Pair
STS	Synchronous Transport Signal (SONET)
STX	Start of Text (BISYNC)
SVC	Signaling Virtual Channel (ATM)
SVC	Switched Virtual Circuit
SXS	Step-by-Step Switching
SYN	Synchronization
SYNTRAN	Synchronous Transmission
TA	Terminal Adapter (ISDN)
TAG	Technical Advisory Group
TASI	Time Assigned Speech Interpolation
TAXI	Transparent Asynchronous Transmitter/Receiver Interface (Physical Layer)
TCAP	Transaction Capabilities Application Part (SS7)
TCM	Time Compression Multiplexing
TCM	Trellis Coding Modulation
TCP	Transmission Control Protocol (IETF)
TDD	Time Division Duplexing
TDM	Time Division Multiplexing
TDM	Time Division Multiplexing
TDMA	Time Division Multiple Access
TDR	Time Domain Reflectometer
TE1	Terminal Equipment type 1 (ISDN capable)
TE2	Terminal Equipment type 2 (non-ISDN capable)
TEI	Terminal Endpoint Identifier (LAPD)
TELRIC	Total Element Long-Run Incremental Cost
TIA	Telecommunications Industry Association
TIRKS	Trunk Integrated Record Keeping System
TL1	Transaction Language 1
TLAN	Transparent LAN
TM	Terminal Multiplexer
TMN	Telecommunications Management Network
TMS	Time-Multiplexed Switch
TOH	Transport Overhead (SONET)
TOP	Technical and Office Protocol
TOS	Type of Service (IP)
TP	Twisted Pair
TR	Token Ring
TRA	Traffic Routing Administration
TSI	Time Slot Interchange
TSLRIC	Total Service Long-Run Incremental Cost
TSO	Terminating Screening Office
TSO	Time-Sharing Option (IBM)
TSR	Terminate and Stay Resident
TSS	Telecommunication Standardization Sector (ITU-T)
TST	Time-Space-Time Switching

TSTS	Time-Space-Time-Space Switching
TTL	Time to Live
TU	Tributary Unit (SDH)
TUG	Tributary Unit Group (SDH)
TUP	Telephone User Part (SS7)
UA	Unnumbered Acknowledgment (HDLC)
UART	Universal Asynchronous Receiver Transmitter
UBR	Unspecified Bit Rate (ATM)
UDI	Unrestricted Digital Information (ISDN)
UDP	User Datagram Protocol (IETF)
UHF	Ultra High Frequency
UI	Unnumbered Information (HDLC)
UNI	User-to-Network Interface (ATM, FR)
UNIT™	Unified Network Interface Technology™ (Ocular)
UNMA	Unified Network Management Architecture
UPS	Uninterruptable Power Supply
UPSR	Unidirectional Path Switched Ring
UPT	Universal Personal Telecommunications
URL	Uniform Resource Locator
USART	Universal Synchronous Asynchronous Receiver Transmitter
USB	Universal Serial Bus
UTC	Coordinated Universal Time
UTP	Unshielded Twisted Pair (Physical Layer)
UUCP	UNIX-UNIX Copy
VAN	Value-Added Network
VAX	Virtual Address Extension (DEC)
vBNS	Very High Speed Backbone Network Service
VBR	Variable Bit Rate (ATM)
VBR-NRT	Variable Bit Rate-Non-Real-Time (ATM)
VBR-RT	Variable Bit Rate-Real-Time (ATM)
VC	Venture Capital
VC	Virtual Channel (ATM)
VC	Virtual Circuit (PSN)
VC	Virtual Container (SDH)
VCC	Virtual Channel Connection (ATM)
VCI	Virtual Channel Identifier (ATM)
VCI	Virtual Channel Identifier (ATM)
VCSEL	Vertical Cavity Surface Emitting Laser
VDSL	Very High-speed Digital Subscriber Line
VDSL	Very High bit rate Digital Subscriber Line
VERONICA	Very Easy Rodent-Oriented Netwide Index to Computerized Archives (Internet)
VGA	Variable Graphics Array
VHF	Very High Frequency
VHS	Video Home System
VID	VLAN ID
VINES	Virtual Networking System (Banyan)
VIP	VINES Internet Protocol
VLAN	Virtual LAN
VLF	Very Low Frequency
VLR	Visitor Location Register (Wireless)

VLSI	Very Large Scale Integration
VM	Virtual Machine (IBM)
VM	Virtual Memory
VMS	Virtual Memory System (DEC)
VOD	Video-on-Demand
VP	Virtual Path
VPC	Virtual Path Connection
VPI	Virtual Path Identifier
VPN	Virtual Private Network
VR	Virtual Reality
VSAT	Very Small Aperture Terminal
VSB	Vestigial Sideband
VSELP	Vector-Sum Excited Linear Prediction
VT	Virtual Tributary
VTAM	Virtual Telecommunications Access Method (SNA)
VTOA	Voice and Telephony over ATM
VTP	Virtual Terminal Protocol (ISO)
WACK	Wait Acknowledgment (BISYNC)
WACS	Wireless Access Communications System
WAIS	Wide Area Information Server (IETF)
WAN	Wide Area Network
WAP	Wireless Application Protocol (Wrong Approach to Portability)
WARC	World Administrative Radio Conference
WATS	Wide Area Telecommunications Service
WDM	Wavelength Division Multiplexing
WIN	Wireless In-building Network
WISP	Wireless ISP
WTO	World Trade Organization
WWW	World Wide Web (IETF)
WYSIWYG	What You See Is What You Get
xDSL	x-Type Digital Subscriber Line
XID	Exchange Identification (HDLC)
XNS	Xerox Network Systems
XPM	Cross Phase Modulation
ZBTSI	Zero Byte Time Slot Interchange
ZCS	Zero Code Suppression

Glossary of Terms

Numerical

3G 3G systems will provide access to a wide range of telecommunication services supported by both fixed telecommunication networks and other services specific to mobile users. A range of mobile terminal types will be supported, and may be designed for mobile or fixed use. Key features of 3G systems are compatibility of services, small terminals with worldwide roaming capability, Internet and other multimedia applications, high bandwidth, and a wide range of services and terminals.

4G 4G networks extend 3G network capacity by an order of magnitude, rely entirely on a packet infrastructure, Use network elements that are 100% digital, and offer extremely high bandwidth.

A

Abend A contraction of the words 'Abnormal End' used to describe a computer crash in the mainframe world.

Absorption A form of optical attenuation in which optical energy is converted into an alternative form, often heat. Often caused by impurities in the fiber, hydroxyl absorption is the best-known form.

Acceptance Angle The critical angle within which incident light is totally internally reflected inside the core of an optical fiber.

Access The set of technologies used to reach the network by a user.

Accounts Payable Amounts owed to suppliers and vendors for products and/or services that have been delivered on credit. Most accounts payable agreements call for the credit to be reconciled within 30 to 60 days.

Accounts Receivable Money that is owed to the corporation.

Add-Drop Multiplexer (ADM) A device used in SONET and SDH systems that has the ability add and remove signal components without having to demultiplex the entire transmitted transmission stream, a significant advantage over legacy multiplexing systems such as DS3.

Aerial Plant Transmission equipment (including media, amplifiers, splice cases, etc.) that is suspended in the air between poles.

Alternate Mark Inversion The encoding scheme used in T-1. Every other 'one' is inverted in polarity from the one that preceded or follows it.

ALU Arithmetic Logic Unit; the "brain" of a CPU chip.

Amplifier A device that increases the transmitted power of a signal. Amplifiers are typically spaced at carefully selected intervals along a transmission span.

Amplifier A device used in analog networks to strengthen data signals.

Amplitude Modulation A signal encoding technique in which the amplitude of the carrier is modified according to the behavior of the signal that it is transporting.

Amplitude Modulation The process of causing an electromagnetic wave to carry information by changing or modulating the amplitude or loudness of the wave.

AMPS Advanced Mobile Phone Service; the modern analog cellular network.

Analog A signal that is continuously varying in time. Functionally, the opposite of digital.

Analog A word that means “constantly varying in time.”

Angular misalignment The reason for loss that occurs at the fiber ingress point. If the light source is improperly aligned with the fiber’s core, some of the incident light will be lost, leading to reduced signal strength.

Armor The rigid protective coating on some fiber cables that protects them from crushing and from chewing by rodents.

ASCII American Standards Code for Information Interchange. A 7-bit data encoding scheme.

ASIC Application-Specific Integrated Circuit, which is a specially designed IC created for a specific application.

Asset What the company owns.

Asynchronous Data that is transmitted between two devices that do not share a common clock source.

Asynchronous Transfer Mode (ATM) A standard for switching and multiplexing that relies on the transport of fixed-size data entities called cells which are 53 octets in length. ATM has enjoyed a great deal of attention lately because its internal workings allow it to provide quality of service (QoS), a much-demanded option in modern data networks.

ATM Adaptation Layer (AAL) In ATM, the layer responsible for matching the payload being transported to a requested quality of service level by assigning an ALL Type which the network responds to.

ATM Asynchronous Transfer Mode; one of the family of so-called fast packet technologies characterized by low error rates, high speed, and low cost. ATM is designed to connect seamlessly with SONET and SDH.

Attenuation The reduction in signal strength in optical fiber that results from absorption and scattering effects.

Avalanche Photodiode (APD) An optical semiconductor receiver that has the ability to amplify weak, received optical signals by “multiplying” the number of received photons to intensify the strength of the received signal. APDs are used in transmission systems where receiver sensitivity is a critical issue.

Average Revenue per User (ARPU) The average amount of revenue generated by each customer, calculated by dividing total revenue by the total number of subscribers.

Axis The center line of an optical fiber.

B

Back Scattering The problem that occurs when light is scattered backward into the transmitter of an optical system. This impairment is analogous to echo which occurs in copper-based systems.

Balance Sheet The balance sheet provides a view of what a company owns (its assets) and what it owes to creditors (its liabilities). The assets always equal the sum of the liabilities and shareholder equity. Liabilities represent obligations the firm has against its own assets. Accounts payable, for example, represent funds owed to someone or to another company that is outside the corporation, but that are balanced by some service or physical asset that has been provided to the company.

Bandwidth A measure of the number of bits per second that can be transmitted down a channel.

Bandwidth The range of frequencies within which a transmission system operates.

Baseband In signaling, any technique that uses digital signal representation.

Baud The *signaling rate* of a transmission system. This is one of the most misunderstood terms in all of telecommunications. Often used synonymously with bits-per-second, baud usually has a very different meaning. By using multibit encoding techniques, a single signal can simultaneously represent multiple bits. Thus the bit rate can be many times the signaling rate.

Beam Splitter An optical device used to direct a single signal in multiple directions through the use of a partially reflective mirror or some form of an optical filter.

BECN Backward Explicit Congestion Notification; a bit used in frame relay for notifying a device that it is transmitting too much information into the network and is therefore in violation of its service agreement with the switch.

Bell System Reference Frequency (BSRF) In the early days of the Bell System, a single timing source in the Midwest provided a timing signal for all central office equipment in the country. This signal, delivered from a very expensive cesium clock source, was known as the BSRF. Today, GPS is used as the main reference clock source.

Bend Radius The maximum degree to which a fiber can be bent before serious signal loss or fiber breakage occurs. Bend radius is one of the functional characteristics of most fiber products.

Bending Loss Loss that occurs when a fiber is bent far enough that its maximum allowable bend radius is exceeded. In this case, some of the light escapes from the waveguide resulting in signal degradation.

Bidirectional A system that is capable of transmitting simultaneously in both directions.

Binary A counting scheme that uses Base 2.

Bit Rate Bits-per-second.

Bluetooth An open wireless standard designed to operate at a gross transmission level of 1 Mbps. Bluetooth is being positioned as a connectivity standard for personal area networks.

Bragg Grating A device that relies on the formation of interference patterns to filter specific wavelengths of light from a transmitted signal. In optical systems, Bragg Gratings are usually created by wrapping a grating of the correct size around a piece of fiber that has been made photosensitive. The fiber is then exposed to strong ultraviolet light which passes through the grating, forming areas of high and low refractive indices. Bragg Gratings (or filters, as they are often called) are used for selecting certain wavelengths of a transmitted signal, and are often used in optical switches, DWDM systems and tunable lasers.

Broadband Historically, broadband meant “any signal that is faster than the ISDN Primary Rate (T1 or E1). Today, it means “big pipe” – in other words, a very high transmission speed.

Broadband In signaling the term means analog; in data transmission it means “big pipe” (high bandwidth).

Buffer A coating that surrounds optical fiber in a cable and offers protection from water, abrasion, etc.

Building Integrated Timing Supply (BITS) The central office device that receives the clock signal from GPS or another source and feeds it to the devices in the office it controls.

Bundling A product sales strategy in which multiple services (voice, video, entertainment, Internet, wireless, etc.) are sold as a converged package and invoiced with a single, easy-to-understand bill.

Bus The parallel cable that interconnects the components of a computer.

Butt Splice A technique in which two fibers are joined end-to-end by fusing them with heat or optical cement.

C

Cable An assembly made up of multiple optical or electrical conductors, as well as other inclusions such as strength members, waterproofing materials, armor, etc.

Cable Assembly A complete optical cable that includes the fiber itself and terminators on each end to make it capable of attaching to a transmission or receive device.

Cable Plant The entire collection of transmission equipment in a system, including the signal emitters, the transport media, the switching and multiplexing equipment, and the receive devices.

Cable Vault The subterranean room in a central office where cables enter and leave the building.

Call Center A room in which operators receive calls from customers.

Capital Expenditures (CAPEX) Wealth in the form of money or property, typically accumulated in a business by a person, partnership, or corporation. In most cases capital expenditures can be amortized over a period of several years, most commonly five.

Capital Intensity A measure that has begun to appear as a valid measure of financial performance for large telecom operators. It is calculated by dividing capital spending (CAPEX) by revenue.

Cash Burn A term that became a part of the common lexicon during the dot-com years. It refers to the rate at which companies consume their available cash.

Cash Flow One of the most common measures of valuation for public and private companies. True cash flow is exactly that – a measure of the cash that flows through a company during some defined time period after factoring out all fixed expenses. In many cases cash flow is equated to EBITDA. Usually, cash flow is defined as income after taxes minus preferred dividends plus depreciation and amortization.

CCITT Consultative Committee on International Telegraphy and Telephony. Now defunct and replaced by the ITU-TSS.

CDMA Code Division Multiple Access, one of several digital cellular access schemes. CDMA relies on frequency hopping and noise modulation to encode conversations.

Cell Loss Priority (CLP) In ATM, a rudimentary single-bit field used to assign priority to transported payloads.

Cell Relay Service (CRS) In ATM, the most primitive service offered by service providers, consisting of nothing more than raw bit transport with no assigned AAL types.

Cell The standard protocol data unit in ATM networks. It comprises a five-byte header and a 48-octet payload field.

Cellular Telephony The wireless telephony system characterized by the following: low-power cells; frequency reuse; handoff; central administration.

Center Wavelength The central operating wavelength of a laser used for data transmission.

Central Office A building that houses shared telephony equipment such as switches, multiplexers, and cable distribution hardware.

Central Office Terminal (COT) In loop carrier systems, the device located in the central office that provides multiplexing and de-multiplexing services. It is connected to the remote terminal.

Chained Layers The lower three layers of the OSI Model that provide for connectivity.

Chirp A problem that occurs in laser diodes when the center wavelength shifts momentarily during the transmission of a single pulse. Chirp is due to instability of the laser itself.

Chromatic Dispersion Because the wavelength of transmitted light determines its propagation speed in an optical fiber, different wavelengths of light will travel at different speeds during transmission. As a result, the multi-wavelength pulse will tend to “spread out” during

transmission, causing difficulties for the receive device. Material dispersion, waveguide dispersion and profile dispersion all contribute to the problem.

CIR Committed Information Rate; the volume of data that a frame relay provider absolutely guarantees it will transport for a customer.

Circuit Emulation Service (CES) In ATM, a service that emulates private line service by modifying (1) the number of cells transmitted per second and (2) the number of bytes of data contained in the payload of each cell.

Cladding The fused silica “coating” that surrounds the core of an optical fiber. It typically has a different index of refraction than the core, causing light that escapes from the core into the cladding to be refracted back into the core.

CLEC Competitive Local Exchange Carrier; a small telephone company that competes with the incumbent player in its own marketplace.

CMOS Complimentary Metal Oxide Semiconductor, a form of integrated circuit technology that is typically used in low-speed and low-power applications.

Coating The plastic substance that covers the cladding of an optical fiber. It is used to prevent damage to the fiber itself through abrasion.

Coherent A form of emitted light in which all the rays of the transmitted light align themselves the same transmission axis, resulting in a narrow, tightly focused beam. Lasers emit coherent light.

Compression The process of reducing the size of a transmitted file without losing the integrity of the content by eliminating redundant information prior to transmitting or storing.

Concatenation The technique used in SONET and SDH in which multiple payloads are “ganged” together to form a super-rate frame capable of transporting payloads greater in size than the basic transmission speed of the system. Thus, an OC-12c provides 622.08 Mbps of total bandwidth, as opposed to an OC-12, which also offers 622.08 Mbps, but in increments of OC-1 (51.84 Mbps).

Conditioning The process of “doctoring” a dedicated circuit to eliminate the known and predictable results of distortion.

Congestion The condition that results when traffic arrives faster than it can be processed by a server.

Connectivity The process of providing electrical transport of data.

Connector a device, usually mechanical, used to connect a fiber to a transmit or receive device or to bond two fibers.

Core The central portion of an optical fiber that provides the primary transmission path for an optical signal. It usually has a higher index of refraction than the cladding.

Core The central high-speed transport region of the network.

Counter-Rotating Ring A form of transmission system that comprises two rings operating in opposite directions. Typically, one ring serves as the active path while the other serves as the protect or backup path.

CPU Central Processing Unit. Literally the chipset in a computer that provides the intelligence.

CRC Cyclic Redundancy Check; a mathematical technique for checking the integrity of the bits in a transmitted file.

Critical Angle The angle at which total internal reflection occurs.

Cross-Phase Modulation (XPM) A problem that occurs in optical fiber that results from the nonlinear index of refraction of the silica in the fiber. Because the index of refraction varies according to the strength of the transmitted signal, some signals interact with each other in destructive ways. Cross-Phase Modulation is considered to be a fiber nonlinearity.

CSMA/CD Carrier Sense, Multiple Access with Collision Detection; the medium access scheme used in Ethernet LANs and characterized by an “if it feels good do it” approach.

Current Assets Those assets on the balance sheet that are typically expected to be converted to cash within a year of the publication date of the balance sheet. Current assets typically include such line items as Accounts Receivable, Cash, Inventories and Supplies, any Marketable Securities held by the corporation, Prepaid Expenses, and a variety of other less critical items that typically fall into the Other line item.

Current Liabilities Obligations that must be repaid within a year

Current Ratio Calculated by dividing the current assets for a financial period by the current liabilities for the same period. Be careful: a climbing current ratio might be a good indicator of improving financial performance, but could also indicate that warehoused product volumes are climbing.

Customer Relationship Management (CRM) A technique for managing the relationship between a service provider and a customer through the discrete management of knowledge about the customer.

Cutoff Wavelength The wavelength below which single mode fiber ceases to be single mode.

Cylinder A stack of tracks to which data can be logically written on a hard drive.

D

Data Raw, unprocessed zeroes and ones.

Data Communications The science of moving data between two or more communicating devices.

Data Mining A technique in which enterprises extract information about customer behavior by analyzing data contained in their stored transaction records.

Datagram The service provided by a connectionless network. Often said to be unreliable, this service makes no guarantees with regard to latency or sequentiality.

DCE Data Circuit Terminating Equipment; a modem or other device that delineates the end of the service provider's circuit.

DE Discard Eligibility bit; a primitive single-bit technique for prioritizing traffic that is to be transmitted.

Debt to Equity Ratio Calculated by dividing the total debt for a particular fiscal year by the total shareholder equity for the same financial period.

Decibel (dB) A logarithmic measure of the strength of a transmitted signal. Because it is a logarithmic measure, a 20 dB loss would indicate that the received signal is one one-hundredth its original strength.

Dense Wavelength Division Multiplexing (DWDM) A form of frequency division multiplexing in which multiple wavelengths of light are transmitted across the same optical fiber. These DWDM systems typically operate in the so-called L-Band (1625 nm) and have channels that are spaced between 50 and 100 GHz apart. Newly-announced products may dramatically reduce this spacing.

Detector An optical receive device that converts an optical signal into an electrical signal so that it can be handed off to a switch, router, multiplexer, or other electrical transmission device. These devices are usually either NPN or APDs.

Diameter Mismatch Loss Loss that occurs when the diameter of a light emitter and the diameter of the ingress fiber's core are dramatically different.

Dichroic Filter A filter that transmits light in a wavelength-specific fashion, reflecting non-selected wavelengths.

Dielectric A substance that is non-conducting.

Diffraction Grating A grid of closely spaced lines that are used to selectively direct specific wavelengths of light as required.

Digital A signal characterized by discrete states. The opposite of analog.

Digital Hierarchy In North America, the multiplexing hierarchy that allows 64 Kbps DS-0 signals to be combined to form DS-3 signals for high bit rate transport.

Digital Literally, 'discrete.'

Digital Subscriber Line Access Multiplexer (DSLAM) The multiplexer in the central office that receives voice and data signals on separate channels, relaying voice to the local switch and data to a router elsewhere in the office.

Diode A semiconductor device that only allows current to flow in a single direction.

Direct Attached Storage (DAS) A storage option in which the storage media (hard drives, CDs, etc.) are either integral to the server (internally mounted) or are directly connected to one of the servers.

Dispersion Compensating Fiber (DCF) A segment of fiber that exhibits the opposite dispersion effect of the fiber to which it is coupled. DCF is used to counteract the dispersion of the other fiber.

Dispersion The spreading a light signal over time that results from modal or chromatic inefficiencies in the fiber.

Dispersion-Shifted Fiber (DSF) A form of optical fiber that is designed to exhibit zero dispersion within the C-Band (1550 nm). DSF does not work well for DWDM because of Four Wave Mixing problems; Non-Zero Dispersion Shifted Fiber is used instead.

Distortion A known and measurable (and therefore correctable) impairment on transmission facilities.

Dopant Substances used to lower the refractive index of the silica used in optical fiber.

DS-1 Digital signal level 1, a 1.544 Mbps signal.

DS-2 Digital signal level 2, a 6.312 Mbps signal.

DS3 A 44.736 Mbps signal format found in the North American Digital Hierarchy.

DSL Digital Subscriber Line, a technique for transporting high-speed digital data across the analog local loop while (in some cases) transporting voice simultaneously.

DTE Data Terminal Equipment; user equipment that is connected to a DCE.

DTMF Dual-Tone, Multi-Frequency; the set of tones used in modern phones to signal dialed digits to the switch. Each button triggers a pair of tones.

Duopoly The current regulatory model for cellular systems; two providers are assigned to each market. One is the wireline provider (typically the local ILEC), the other an independent provider.

DWDM Dense Wavelength Division Multiplexing; a form of frequency division multiplexing that allows multiple optical signals to be transported simultaneously across a single fiber.

E

E1 The 2.048 Mbps transmission standard found in Europe and other parts of the world. It is analogous to the North American T1.

Earnings Before Interest, Tax, Depreciation and Amortization (EBITDA) EBITDA, sometimes called *operating cash flow*, is used to evaluate a firm's operating profitability before subtracting

non-operating expenses such as interest and other core, “non-business” expenses and non-cash charges. Long ago, cable companies and other highly capital-intensive industries substituted EBITDA for traditional cash flow as a *temporary* measure of financial performance without adding in the cost of building new infrastructure. By excluding all interest due on borrowed capital as well as the inevitable depreciation of assets, EBITDA was seen as a temporary better gauge of potential future performance.

Earnings per Share (EPS) Calculated by dividing annual earnings by the total number of outstanding shares.

EBCDIC Extended Binary Coded Decimal Interchange Code; an 8-bit data encoding scheme.

Edge The periphery of the network where aggregation, QoS and IP implementation take place. This is also where most of the intelligence in the network resides.

EDGE Enhanced Data for Global Evolution; a 384 Kbps enhancement to GSM.

Edge-Emitting Diode A diode that emits light from the edge of the device rather than the surface, resulting in a more coherent and directed beam of light.

Effective Area The cross-section of a single-mode fiber that carries the optical signal.

EIR Excess Information Rate; the amount of data that is being transmitted by a user ABOVE the CIR in frame relay.

Encryption The process of modifying a text or image file to prevent unauthorized users from viewing the content.

End-to-End Layers The upper four layers of the OSI Model that provide interoperability.

Enterprise Resource Planning (ERP) A technique for managing customer interactions through data mining, knowledge management and customer relationship management (CRM).

Erbium-Doped Fiber Amplifier (EDFA) A form of optical amplifier that uses the element erbium to bring about the amplification process. Erbium has the enviable quality that when struck by light operating at 980 nm, it emits photons in the 1550 nm range, thus providing agnostic amplification for signals operating in the same transmission window.

ESF Extended Superframe; the framing technique used in modern T-carrier systems that provides a dedicated data channel for non-intrusive testing of customer facilities.

Ethernet A LAN product developed by Xerox that relies on a CSMA/CD medium access scheme.

Evanescent Wave Light that travels down the inner layer of the cladding instead of down the fiber core.

Extrinsic Loss Loss that occurs at splice points in an optical fiber.

Eye Pattern A measure of the degree to which bit errors are occurring in optical transmission systems. The width of the “eyes” (Eye Patterns look like figure eights lying on their sides) indicates the relative bit error rate.

F

Facility A circuit.

Facilities-Based A regulatory term that refers to the requirement that CLECs own their own physical facilities instead of relying on those of the ILEC for service delivery.

Faraday Effect Sometimes called the magneto-optical effect, the Faraday Effect describes the degree to which some materials can cause the polarization angle of incident light to change when placed within a magnetic field that is parallel to the propagation direction.

Fast Ethernet A version of Ethernet that operates at 100 Mbps.

Fast Packet Technologies characterized by low error rates, high speed, and low cost.

FDMA Frequency Division Multiple Access; the access technique used in analog AMPS cellular systems.

FEC Forward Error Correction; an error correction technique that sends enough additional overhead information along with the transmitted data that a receiver can not only detect an error but actually fix it without requesting a resend.

FECN Forward Explicit Congestion Notification; a bit in the header of a frame relay frame that can be used to notify a distant switch that the frame experienced severe congestion on its way to the destination.

Ferrule A rigid or semi-rigid tube that surrounds optical fibers and protects them.

Fiber Grating A segment of photosensitive optical fiber that has been treated with ultraviolet light to create a refractive index within the fiber that varies periodically along its length. It operates analogously to a fiber grating and is used to select specific wavelengths of light for transmission.

Fiber-to-the-Curb (FTTC) A transmission architecture for service delivery in which a fiber is installed in a neighborhood and terminated at a junction box. From there, coaxial cable or twisted pair can be cross-connected from the O-E converter to the customer premises. If coax is used, the system is called Hybrid Fiber Coax (HFC); twisted pair-based systems are called Switched Digital Video (SDV).

Fibre Channel A set of standards for a serial I/O bus that supports a range of port speeds including 133 Mbps, 266 Mbps, 530 Mbps, 1 Gbps, and soon, 4 Gbps. The standard supports point to point connections, switched topologies, and arbitrated loop architecture.

Financial Accounting Standards Board (FASB) The officially recognized entity that establishes standards for accounting organizations to ensure commonality among countries and international accounting organizations.

Four Wave Mixing (FWM) The nastiest of the so-called fiber nonlinearities. FWM is commonly seen in DWDM systems and occurs when the closely spaced channels mix and generate the equivalent of optical sidebands. The number of these sidebands can be expressed by the equation $\frac{1}{2}(n^3-n^2)$, where n is the number of original channels in the system. Thus a 16-channel DWDM system will potentially generate 1,920 interfering sidebands!

Frame A variable size data transport entity.

Frame Relay Bearer Service (FRBS) In ATM, a service that allows frame relay frame to be transported across an ATM network.

Frame Relay One of the family of so-called fast packet technologies characterized by low error rates, high speed, and low cost.

Freespace Optics A metro transport technique that uses a narrow unlicensed optical beam to transport high-speed data.

Frequency Modulation The process of causing an electromagnetic wave to carry information by changing or modulating the frequency of the wave.

Frequency-Agile The ability of a receiving or transmitting device to change its frequency in order to take advantage of alternate channels.

Frequency-Division Multiplexing The process of assigning specific frequencies to specific users.

Fresnel Loss The loss that occurs at the interface between the head of the fiber and the light source to which it is attached. At air-glass interfaces, the loss usually equates to about 4%.

Full-Duplex Two-way simultaneous transmission.

Fused Fiber A group of fibers that are fused together so that will remain in alignment. They are often used in one-to-many distribution systems for the propagation of a single signal to multiple destinations. Fused fiber devices play a key role in passive optical networking (PON).

Fusion Splice A splice made by melting the ends of the fibers together.

G

Generally Accepted Accounting Principles (GAAP) Those commonly recognized accounting practices that ensure financial accounting standardization across multiple global entities.

Generic Flow Control (GFC) In ATM, the first field in the cell header. It is largely unused except when it is overwritten in NNI cells, in which case it becomes additional space for virtual path addressing.

GEOS Geosynchronous Earth Orbit Satellite; A family of satellites that orbit above the equator at an altitude of 22,300 miles and provide data and voice transport services.

Gigabit Ethernet A version of Ethernet that operates at 1,000 Mbps.

Global Positioning System (GPS) The array of satellites used for radiolocation around the world. In the telephony world, GPS satellites provide an accurate timing signal for synchronizing office equipment.

Go-Back-N A technique for error correction that causes all frames of data to be transmitted again, starting with the errored frame.

Gozinta "Goes into."

Gozouta "Goes out of."

GPRS General Packet Radio Service; another add-on for GSM networks that is not enjoying a great deal of success in the market yet. Stay tuned.

Graded Index Fiber (GRIN) A type of fiber in which the refractive index changes gradually between the central axis of the fiber and the outer layer, instead of abruptly at the core-cladding interface.

Gross Domestic Product (GDP) The total market value of all the goods and services produced by a nation during a specific period of time.

GSM Global System for Mobile Communications; the wireless access standard used in many parts of the world that offers two-way paging, short messaging and two-way radio in addition to cellular telephony.

GUI Graphical User Interface; the computer interface characterized by the "click, move, drop" method of file management.

Half-Duplex Two-way transmission, but only one direction at a time.

Haptics The science of providing tactile feedback to a user electronically. Often used in high-end virtual reality systems.

Headend The signal origination point in a cable system.

Header Error Correction (HEC) In ATM, the header field used to recover from bit errors in the header data.

Header In ATM, the first five bytes of the cell. The header contains information used by the network to route the cell to its ultimate destination. Fields in the cell header include Generic Flow Control, Virtual Path Identifier, Virtual Channel Identifier, Payload Type Identifier, Cell Loss Priority, and Header Error Correction.

Hertz (Hz) A measure of cycles per second in transmission systems.

Hop Count A measure of the number of machines a message or packet has to pass through between the source and the destination. Often used as a diagnostic tool.

Hybrid Fiber Coax A transmission system architecture in which a fiber feeder penetrates a service area and is then cross-connected to coaxial cable feeders into the customers' premises.

Hybrid Loop An access facility that uses more than one medium. For example, Hybrid-Fiber Coax (HFC, defined above) or hybrids of fiber and copper twisted pair.

I

ILEC Incumbent Local Exchange Carrier; an RBOC.

Income Statement The income statement is used to report a corporation's revenues, expenses and net income (profit) for a particular defined time period. Sometimes called a *Profit and Loss (P&L) Statement* or *Statement of Operations*, the Income Statement charts a company's performance over a period of time. The results are most often reported as *earnings per share* and *diluted earnings per share*. Earnings per share is defined as the proportion of the firm's net income that can be accounted for on a per-share basis of outstanding common stock. It is calculated by subtracting preferred dividends from net income and dividing the result by the number of common shares that are outstanding. Diluted earnings per share, on the other hand, takes into account earned or fully vested stock options that haven't yet been exercised by their owner, and shares that would be created from the conversion of convertible securities into stock.

Indefeasible Rights of Use (IRU) A long-term capacity lease of a cable. IRUs are identified by channels and available bandwidth and are typically granted for long periods of time.

Index of refraction A measure of the ratio between the velocity of light in a vacuum and the velocity of the same light in an optical fiber. The refractive index is always greater than one and is denoted 'n.'

Information Data that has been converted to manipulable form.

Infrared (IR) The region of the spectrum within which most optical transmission systems operate, found between 700 nm and 0.1 mm.

Injection Laser a semiconductor laser (synonym).

Inside Plant Telephony equipment that is outside of the central office.

Intermodulation A fiber nonlinearity that is similar to four-wave mixing, in which the power-dependent refractive index of the transmission medium allows signals to mix and create destructive sidebands.

Interoperability Characterized by the ability to logically share information between two communicating devices and be able to read and understand the data of the other.

Interoperability In SONET and SDH, the ability of devices from different manufacturers to send and receive information to and from each other successfully.

Intrinsic Loss Loss that occurs as the result of physical differences in the two fibers being spliced.

ISDN Integrated Services Digital Network; a digital local loop technology that offers moderately high bit rates to customers.

ISP Internet Service Provider; a company that offers Internet access.

ITU International Telecommunications Union; a division of the United Nations that is responsible for managing the telecomm standards development and maintenance processes.

ITU-TSS ITU Telecommunications Standardization Sector; the ITU organization responsible for telecommunications standards development.

J

Jacket The protective outer coating of an optical fiber cable. The jacket may be polyethylene, Kevlar®, or metallic.

JPEG Joint Photographic Experts Group; a standards body tasked with developing standards for the compression of still images.

Jumper An optical cable assembly, usually fairly short, that is terminated on both ends with connectors.

K

Knowledge Information that has been acted upon and modified through some form of intuitive human thought process.

Knowledge Management The process of managing all that a company knows about its customers in an intelligent way so that some benefit is attained for both the customer and the service provider.

L

Lambda A single wavelength on a multi-channel DWDM system.

LAN Emulation (LANE) In ATM, a service that defines the ability to provide bridging services between LANs across an ATM network.

LAN Local Area Network; a small network that has the following characteristics: privately owned; high speed; low error rate; physically small.

Large Core Fiber Fiber that characteristically has a core diameter of 200 microns or more.

Laser An acronym for 'Light Amplification by the Stimulated Emission of Radiation.' Lasers are used in optical transmission systems because they produce coherent light that is almost purely monochromatic.

Laser Diode (LD) A diode that produces coherent light when a forward biasing current is applied to it.

LATA Local Access and Transport Area; the geographic area within which an ILEC is allowed to transport traffic. Beyond LATA boundaries the ILEC must hand traffic off to a long-distance carrier.

LEOS Low Earth Orbit Satellite; satellites that orbit pole-to-pole instead of above the equator and offer near-instantaneous response time.

Liability Obligations the firm has against its own assets. Accounts payable, for example, represent funds owed to someone or to another company that is outside the corporation, but that are balanced by some service or physical asset that has been provided to the company.

Light Emitting Diode (LED) A diode that emits incoherent light when a forward bias current is applied to it. LEDs are typically used in shorter distance, lower speed systems.

Lightguide A term that is used synonymously with optical fiber.

Line Overhead (LOH) In SONET, the overhead that is used to manage the network regions between multiplexers.

Line Sharing A business relationship between an ILEC and a CLEC in which the CLEC provides logical DSL service over the ILEC's physical facilities.

Linewidth The spectrum of wavelengths that make up an optical signal.

Load Coil A device that tunes the local loop to the voiceband.

Local Loop The pair of wires (or digital channel) that runs between the customer's phone (or computer) and the switch in the local central office.

Long-Term Debt Debt that is typically due beyond the one-year maturity period of short-term debt.

Loose Tube Optical Cable An optical cable assembly in which the fibers within the cable are loosely contained within tubes inside the sheath of the cable. The fibers are able to move within the tube, thus allowing them to adapt and move without damage as the cable is flexed and stretched.

Loss the reduction in signal strength that occurs over distance, usually expressed in decibels.

M

M13 A multiplexer that interfaces between DS-1 and DS-3 systems.

Mainframe A large computer that offers support for very large databases and large numbers of simultaneous sessions.

MAN Metropolitan Area Network; a network, larger than a LAN, that provides high-speed services within a metropolitan area.

Market Cap(italization) Market cap is the current market value of all outstanding shares that a company has. It is calculated by multiplying the total number of outstanding shares by the current share price.

Material Dispersion A dispersion effect caused by the fact that different wavelengths of light travel at different speeds through a medium.

MDF Main Distribution Frame; the large iron structure that provides physical support for cable pairs in a central office between the switch and the incoming/outgoing cables.

Message Switching An older technique that sends entire messages from point to point instead of breaking the message into packets.

Metasignaling Virtual Channel (MSVC) In ATM, a signaling channel that is always on. It is used for the establishment of temporary signaling channels as well as channels for voice and data transport.

Metropolitan Optical Network (MON) An all-optical network deployed in a metro region.

Microbend Changes in the physical structure of an optical fiber caused by bending, that can result in light leakage from the fiber.

Midspan Meet In SONET and SDH, the term used to describe interoperability. See also *interoperability*.

Modal Dispersion (See Multimode Dispersion)

Mode A single wave that propagates down a fiber. Multimode fiber allows multiple modes to travel, while single mode fiber allows only a single mode to be transmitted.

Modem A term from the words 'modulate' and 'demodulate.' It's job is to make a computer appear to the network like a telephone.

Modulation the process of changing or *modulating* a carrier wave to cause it to carry information.

MPEG Moving Picture Experts Group; a standards body tasked with crafting standards for motion pictures.

MPLS A level three protocol designed to provide quality of service across IP networks without the need for ATM, by assigning QoS "labels" to packets as they enter the network.

MTSO Mobile Telephone Switching Office; a central office with special responsibilities for handling cellular services and the interface between cellular users and the wireline network.

Multi-dwelling Unit (MDU) A building that houses multiple residence customers such as an apartment building.

Multimode Dispersion Sometimes referred to as modal dispersion, multimode dispersion is caused by the fact that different modes take different times to move from the ingress point to the egress point of a fiber, thus resulting in modal spreading.

Multimode Fiber Fiber that has a core diameter of 62.5 microns or greater, wide enough to allow multiple modes of light to be simultaneously transmitted down the fiber.

Multiplexer A device that has the ability to combine multiple inputs into a single output as a way to reduce the requirement for additional transmission facilities.

Multiprotocol over ATM (MPOA) In ATM, a service that allows IP packets to be routed across an ATM network.

Multi-tenant Unit (MTU) A building that houses multiple enterprise customers such as a high-rise office building.

N

Near-End Crosstalk (NEXT) The problem that occurs when an optical signal is reflected back toward the input port from one or more output ports. This problem is sometimes referred to as 'isolation directivity.'

Net Income Another term for bottom-line profit.

Network Attached Storage (NAS) An architecture in which a server accesses storage media via a LAN connection. The storage media are connected to another server.

Noise An unpredictable impairment in networks. It cannot be anticipated; it can only be corrected after the fact.

Non-Dispersion Shifted Fiber (NDSF) Fiber that is designed to operate at the low-dispersion second operational window (1310 nm).

Non-Zero Dispersion-Shifted Fiber (NZDSF) A form of single mode fiber that is designed to operate just outside the 1550 nm window so that fiber nonlinearities, particularly FWM, are minimized.

Numerical Aperture (NA) A measure of the ability of a fiber to gather light, NA is also a measure of the maximum angle at which a light source can be from the center axis of a fiber in order to collect light.

O

OAM&P Operations, Administration, Maintenance and Provisioning, the four key areas in modern network management systems. OAM&P was first coined by the Bell System and continues in widespread use today.

OC-n Optical Carrier level n, a measure of bandwidth used in SONET systems. OC-1 is 51.84 Mbps; OC-n is n times 51.84 Mbps.

Operating Expenses (OPEX) Those expenses that must be accounted for in the year in which they are incurred.

Optical Amplifier A device that amplifies an optical signal without first converting it to an electrical signal.

Optical Burst Switching (OBS) A technique that uses a “one-way reservation” technique so that a burst of user data, such as a cluster of IP packets, can be sent without having to establish a dedicated path prior to transmission. A control packet is sent first to reserve the wavelength, followed by the traffic burst. As a result, OBS avoids the protracted end-to-end setup delay and also improves the utilization of optical channels for variable-bit-rate services.

Optical Carrier Level n (OC-n) In SONET, the transmission level at which an optical system is operating.

Optical Isolator A device used to selectively block specific wavelengths of light.

Optical Time Domain Reflectometer (OTDR) A device used to detect failures in an optical span by measuring the amount of light reflected back from the air-glass interface at the failure point.

OSS Operations Support Systems; another term for OAM&P.

Outside Plant Telephone equipment that is outside of the central office.

P

Packet A variable size entity normally carried inside a frame or cell.

Packet Switching The technique for transmitting packets across a wide area network.

Path Overhead In SONET and SDH, that part of the overhead that is specific to the payload being transported.

Payload In SONET and SDH, the user data that is being transported.

Payload Type identifier (PTI) In ATM, a cell header field that is used to identify network congestion and cell type. The first bit indicates whether the cell was generated by the user or by the network, while the second indicates the presence or absence of congestion in user-generated cells, or flow-related Operations, Administration & Maintenance information in cells generated by the network. The third bit is used for service-specific, higher-layer functions in the user-to-network direction, such as to indicate that a cell is the last in a series of cells. From the network to the user, the third bit is used with the second bit to indicate whether the OA&M information refers to segment or end-to-end-related information flow.

PBX Private Branch Exchange; literally a small telephone switch located on a customer prem. The PBX connects back to the service provider’s central office via a collection of high-speed trunks.

PCM Pulse Code Modulation; the encoding scheme used in North America for digitizing voice.

Phase Modulation The process of causing an electromagnetic wave to carry information by changing or modulating the phase of the wave.

Photodetector A device used to detect an incoming optical signal and convert it to an electrical output.

Photodiode A semiconductor that converts light to electricity.

Photon The fundamental unit of light, sometimes referred to as a quantum of electromagnetic energy.

Photonic The optical equivalent of the term 'electronic.'

Pipelining The process of having multiple unacknowledged outstanding messages in a circuit between two communicating devices.

Pixel Contraction of the terms 'picture element.' The tiny color elements that make up the screen on a computer monitor.

Planar Waveguide A waveguide fabricated from a flat material such as a sheet of glass, into which are etched fine lines used to conduct optical signals.

Plenum Cable Cable that passes fire retardant tests so that it can legally be used in plenum installations.

Plenum The air handling space in buildings found inside walls, under floors, and above ceilings. The plenum spaces are often used as conduits for optical cables.

Plesiochronous In timing systems, a term that means "almost synchronized." It refers to the fact that in SONET and SDH systems, payload components frequently derive from different sources, and therefore may have slightly different phase characteristics.

Pointer In SONET and SDH, a field that is used to indicate the beginning of the transported payload.

Polarization Mode Dispersion (PMD) The problem that occurs when light waves with different polarization planes in the same fiber travel at different velocities down the fiber.

Polarization The process of modifying the direction of the magnetic field within a light wave.

Preform The cylindrical mass of highly pure fused silica from which optical fiber is drawn during the manufacturing process. In the industry, the preform is sometimes referred to as a 'gob.'

Private Line A dedicated point-to-point circuit.

Protocol A set of rules that facilitates communications.

Pulse Spreading The widening or spreading out of an optical signal that occurs over distance in a fiber.

Pump Laser The laser that provides the energy used to excite the dopant in an optical amplifier.

PVC Permanent Virtual Circuit; a circuit provisioned in frame relay or ATM that does not change without service order activity by the service provider.

Q

Q.931 The set of standards that define signaling packets in ISDN networks.

Quantize The process of assigning numerical values to the digitized samples created as part of the voice digitization process.

Quick Ratio Calculated by dividing the sum of cash, short-term investments and accounts receivable for a given period by the current liabilities for the same period. It measures the degree of a firm's liquidity.

R

RAM Random Access Memory; the volatile memory used in computers for short-term storage.

Rayleigh Scattering A scattering effect that occurs in optical fiber as the result of fluctuations in silica density or chemical composition. Metal ions in the fiber often cause Rayleigh Scattering.

RBOC Regional Bell Operating Company; today called an ILEC.

Refraction The change in direction that occurs in a light wave as it passes from one medium into another. The most common example is the "bending" that is often seen to occur when a stick is inserted into water.

Refractive Index A measure of the speed at which light travels through a medium, usually expressed as a ration compared to the speed of the same light in a vacuum.

Regenerative Repeater A device that reconstructs and regenerates a transmitted signal that has been weakened over distance.

Regenerator A device that recreates a degraded digital signal before transmitting it on to its final destination.

Remote Terminal (RT) In loop carrier systems, the multiplexer located in the field. It communicates with the central office terminal (COT).

Repeater See regenerator.

Resilient Packet Ring (RPR) A ring architecture that comprises multiple nodes that share access to a bi-directional ring. Nodes send data across the ring using a specific MAC protocol created for RPR. The goal of the RPR topology is to interconnect multiple nodes ring architecture that is media-independent for efficiency purposes.

Retained Earnings Represents the money a company has earned less any dividends it has paid out. This figure does not necessarily equate to cash; more often than not it reflects that amount of

money the corporation has reinvested in itself rather than paid out to shareholders as stock dividends.

Return on Investment (ROI) Defined as the ratio of a company's profits to the amount of capital that has been invested in it. This calculation measures the financial benefit of a particular business activity relative to the costs of engaging in the activity.

The profits used in the calculation of ROI can be calculated before or after taxes and depreciation, and can be defined either as the first year's profit or as the weighted average profit during the lifetime of the entire project. Invested capital, on the other hand, is typically defined as the capital expenditure required for the project's first year of existence. Some companies may include maintenance or recurring costs as part of the invested capital figure, such as software updates.

A word of warning about ROI calculations: Because there are no hard and fast rules about the absolute meanings of profits and invested capital, using ROI as a comparison of companies can be risky because of the danger of comparing apples to tractors, as it were. Be sure that comparative ROI calculations use the same bases for comparison.

ROM Read Only Memory Memory that cannot be erased; often used to store critical files or boot instructions.

S

Scattering The "backsplash" or reflection of an optical signal that occurs when it is reflected by small inclusions or particles in the fiber.

SDH The abbreviation for Synchronous Digital Hierarchy, the European equivalent of SONET.

Section Overhead (SOH) In SONET systems, the overhead that is used to manage the network regions that occur between repeaters.

Sector A quadrant on a disk drive to which data can be written. Used for locating information on the drive.

Securities and Exchange Commission (SEC) The government agency that is responsible for regulation of the securities industry.

Selective Retransmit An error correction technique in which only the errored frames are retransmitted.

Self-Phase Modulation (SPM) The refractive index of glass is directly related to the power of the transmitted signal. As the power fluctuates, so too does the index of refraction, causing waveform distortion.

Shareholder Equity Claims that shareholders have against the corporation's assets.

Sheath One of the layers of protective coating in an optical fiber cable.

Signaling The techniques used to set up, maintain and tear down a call.

Signaling Virtual Channel (SVC) In ATM, a temporary signaling channel used to establish paths for the transport of user traffic.

Simplex One way transmission only.

Single Mode Fiber (SMF) The most popular form of fiber today, characterized by the fact that it allows only a single mode of light to propagate down the fiber.

Soliton A unique waveform that takes advantage of nonlinearities in the fiber medium, the result of which is a signal that suffers essentially no dispersion effects over long distances. Soliton transmission is an area of significant study at the moment, because of the promise it holds for long-haul transmission systems.

SONET Abbreviation for the Synchronous Optical Network, a multiplexing standard that begins at DS3 and provides standards-based multiplexing up to gigabit speeds. SONET is widely used in telephone company long-haul transmission systems, and was one of the first widely deployed optical transmission systems.

Source The emitter of light in an optical transmission system.

Spatial Reuse Protocol (SRP)

SS7 Signaling System Seven, the current standard for telephony signaling worldwide.

Standards The published rules that govern an industry's activities.

Statement of Cash Flows The Statement of Cash Flows illustrates the manner in which the firm generated cash flows (the sources of funds) and the manner in which it employed those cash flows to support ongoing business operations.

Steganography A cryptographic technique in which encrypted information is embedded in the pixel patterns of graphical images. The technique is being closely examined as a way to enforce digital watermarking and digital signature capabilities.

Step Index Fiber Fiber that exhibits a continuous refractive index in the core which then "steps" at the core-cladding interface.

Stimulated Brillouin Scattering (SBS) A fiber nonlinearity that occurs when a light signal traveling down a fiber interacts with acoustic vibrations in the glass matrix (sometimes called photon-phonon interaction), causing light to be scattered or reflected back toward the source.

Stimulated Raman Scattering (SRS) A fiber nonlinearity that occurs when power from short wavelength, high power channels is bled into longer wavelength, lower power channels.

Storage Area Network (SAN) A dedicated storage network that provides access to stored content. In a SAN, multiple servers may have access to the same servers.

Store-and-Forward The transmission technique in which data is transmitted to a switch, stored there, examined for errors, examined for address information, and forwarded on to the final destination.

Strength Member The strand within an optical cable that is used to provide tensile strength to the overall assembly. The member is usually composed of steel, fiberglass or Aramid yarn.

Surface Emitting Diode A semiconductor that emits light from its surface, resulting in a low power, broad spectrum emission.

SVC A frame relay or ATM technique in which a customer can establish on-demand circuits as required.

Synchronous A term that means that both communicating devices derive their synchronization signal from the same source.

Synchronous Transmission Signal Level 1 (STS-1) In SONET systems, the lowest transmission level in the hierarchy. STS is the electrical equivalent of OC.

T

T1 The 1.544 Mbps transmission standard in North America.

T-3 In the North American Digital Hierarchy, a 44.736 Mbps signal.

Tandem A switch that serves as an interface between other switches and typically does not directly host customers.

TDMA Time division Multiple Access; a digital technique for cellular access in which customers share access to a frequency on a round-robin, time division basis.

Telecommunications The science of transmitting sound over distance.

Terminal Multiplexer In SONET and SDH systems, a device that is used to distribute payload to or receive payload from user devices at the end of an optical span.

Tight Buffer Cable An optical cable in which the fibers are tightly bound by the surrounding material.

Time-Division Multiplexing The process of assigning timeslots to specific users.

Token Ring A LAN technique, originally developed by IBM, that uses token-passing to control access to the shared infrastructure.

Total Internal Reflection The phenomenon that occurs when light strikes a surface at such an angle that all of the light is reflected back into the transporting medium. In optical fiber, total internal reflection is achieved by keeping the light source and the fiber core oriented along the same axis so that the light that enters the core is reflected back into the core at the core-cladding interface.

Transceiver A device that incorporates both a transmitter and a receiver in the same housing, thus reducing the need for rack space.

Transponder A device that incorporates a transmitter, a receiver, and a multiplexer on a single chassis.

Treasury Stock Stock that was sold to the public and later repurchased by the company on the open market. It is shown on the Balance Sheet as a negative number that reflects the cost of the repurchase of the shares rather than the actual market value of the shares. Treasury stock can later be retired or resold to improve earnings-per-share numbers if desired.

Twisted Pair The wire used to interconnect customers to the telephone network.

U

UPS Uninterruptible Power Supply; part of the central office power plant that prevents power outages.

V

Venture Capital (VC) Money used to finance new companies or projects, especially those with high earning potential. They are often characterized as being high-risk ventures.

Vertical Cavity Surface Emitting Laser (VCSEL) A small, highly efficient laser that emits light vertically from the surface of the wafer on which it is made.

Virtual Channel (VC) In ATM, a unidirectional channel between two communicating devices.

Virtual Channel Identifier (VCI) In ATM, the field that identifies a virtual channel.

Virtual Container In SDH, the technique used to transport sub-rate payloads.

Virtual Path (VP) In ATM, a combination of unidirectional virtual channels that make up a bi-directional channel.

Virtual Path Identifier (VPI) In ATM, the field that identifies a virtual path.

Virtual Private Network A network connection that provides private-like services over a public network.

Virtual Tributary (VT) In SONET, the technique used to transport sub-rate payloads.

Voice/Telephony over ATM (VTOA) In ATM, a service used to transport telephony signals across an ATM network.

Voiceband The 300 – 3300 Hz band used for the transmission of voice traffic.

W

WAN Wide Area Network; a network that provides connectivity over a large geographical area.

Waveguide A medium that is designed to conduct light within itself over a significant distance, such as optical fiber.

Waveguide Dispersion A form of chromatic dispersion that occurs when some of the light traveling in the core escapes into the cladding, traveling there at a different speed than the light in the core.

Wavelength Division Multiplexing (WDM) The process of transmitting multiple wavelengths of light down a fiber.

Wavelength The distance between the same points on two consecutive waves in a chain – for example, from the peak of wave one to the peak of wave two. Wavelength is related to frequency by the equation
where λ is the wavelength, c is the speed of light, and f is the frequency of the transmitted signal.

Window A region within which optical signals are transmitted at specific wavelengths to take advantage of propagation characteristic that occur there, such as minimum loss or dispersion.

Window Size A measure of the number of messages that can be outstanding at any time between two communicating entities.

Zero Dispersion Wavelength The wavelength at which material and waveguide dispersion cancel each other.

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