

1. Purpose and Overview

This document is provided in the Appendix of the XCel and GDSL System Practices in order to clarify the meaning of industry and GoDigital terms used by GoDigital in the descriptions, instructions and supporting documentation for GoDigital Systems and Products.

Acronym / Term	Definition / Description	ACO	ACO, Alarm Cut Off
μC	μC, Microcontroller Electronic component used in a circuit or printed circuit board.	ACU	ACU, Alarm Control Unit (Ref: GoDigital product terminology) GoDigital common card for alarms and timing input on the XCel line of shelves.
μP	μP, Microprocessor Electronic component used in a circuit or printed circuit board.	ADM	ADM, Add-Drop Multiplexer
0xnnn	C notation for Hexadecimal number nnn , Reference programming terminology.	ADR or ADR4	ADR, Add/Drop Repeater (Ref: GoDigital product terminology) A GoDigital Add/Drop Repeater receives and regenerates an XCel or GDSL loop digital signal, and also supports service drops at the ADR location. ADR is considered a <i>smart</i> element.
2B1Q	2B1Q, 2 Binary 1 Quaternary line coding A very simple baseband line-coding system used in the USA for ISDN and HDSL. It is a multi-level line code that uses two positive, and two negative voltages. Therefore, the receiver must detect both amplitude and polarity of the signals, but not the phase. The 2B1Q-encoding scheme tends to be susceptible to impulse noise. For this reason QAM techniques are generally more suited to higher data-rates (see CAP), although 2B1Q works extremely well in the local loop at 160 kb/s. In North America, both ISDN and HDSL use similar line coding because 2B1Q cuts the overall bit stream line-rate in half, since 2-bits are carried in each symbol. This also has advantages when bundling HDSL pairs and other (T-1) pairs, in that the power spectrum is centered much lower, which minimizes crosstalk.	ADSL	ADSL, Asymmetric Digital Subscriber Line Short for asymmetric digital subscriber line, a new technology that allows more data to be sent over existing copper telephone lines (POTS). ADSL supports data rates of from 1.5 to 9 Mbps when receiving data (known as the downstream rate) and from 16 to 640 kbps when sending data (known as the upstream rate).
3PE	3PE, Three Port Extender (QPC441)	Advanced Diagnostics	Advanced Diagnostics (GoDigital product terminology) A GoDigital applications software program that aides in observing loop and equipment status in XCel Systems. Initially released as a PC-based application on a CD by GoDigital with PC interconnection to a GoDigital shelf via a serial port.
3U	3U, Three standard rack spacing units 1U is equal to 1.75", 3U is equal to 5.25"	AFPS	AFPS, Automatic Facility Protection Switching
4TEL	4TEL A mechanized test interface pioneered by Teradyne Telecommunications, 4TEL is an integrated surveillance and troubleshooting system for analog and digital access networks that helps service providers reduce the cost of maintaining their networks. The system provides reports that enable faults to be dispatched appropriately, with accurate fault isolation and diagnostic test results. GoDigital equipment supports an abbreviated set of 4TEL test result signatures with certain versions of the GoDigital XCel and GDSL POTS systems.	AIS	AIS, Alarm Indication Signal
5U	5U, Five standard rack spacing units 1U is equal to 1.75", 5U is equal to 8.75"	AIU	AIU, Analog Interface Unit
ACD	ACD, Automatic Call Distribution	ANSI	ANSI, American National Standards Institute
		ANSI T1.413	ANSI T1.413 ANSI standard for ADSL. One of three standards used in North America. The Others are G.lite and G.DMT Full Rate. One of the earliest ADSL standards.
		APP NOTE or APPL NOTE	APP NOTE, applications Note Published GoDigital technical information to aid in understanding use, operation and special procedures regarding GoDigital products in specific applications and circumstances.
		APS	APS, Automatic Protection Switching

Technical Note

GoDigital Technical Glossary



ATM	ATM, Asynchronous Transfer Mode Standard for cell structured data network payload.	Carrier-Node	CarrierNode™ (Ref: GoDigital product terminology) A GoDigital product associated with XCel Systems. CarrierNode can replace a standard GoDigital COT with a small, integrated COT package that can be placed in an office or remote location (example: at an DLC RT site), and can host multiple GoDigital XCel loops.
ATU-C	ATU-C, ADSL Terminal Unit – Central Office An ADSL DSLAM, normally located in the Central Office.	CAS	CAS, Call Associated Signaling (e.g., RBS)
ATU-R	ATU-R, ADSL Terminal Unit – Remote An ADSL modem that is locally powered CPE. The ATU-R receives an ADSL signal from the network and provides a short reach Ethernet connection to a PC with the ADSL payload.	CCIS	CCIS, Common Channel Inter-office Signaling
B8ZS	B8ZS, Bipolar with 8 Zero Substitution	CCITT	CCITT, International Telegraph and Telephone Consultative Committee
B-ISDN	B-ISDN, Broadband ISDN	CCS	CCS, Hundred Call Seconds
BER	BER, Bit Error Ratio	CID	CID, Customer Interface Device
BER	BER, Basic Encoding Rules (for ASN.1)	CLASS	CLASS, Customized Local Area Signaling Service A suite of services provided by most LECs, including Anonymous Caller Rejection, Auto-Callback, Auto-Recall, Calling Name/Number Delivery and Blocking, Distinctive Ringing, Customer-Originated Trace, Ring Again, and Selective Call Acceptance/Forwarding/Rejection.
BET	BET, Building Entrance Terminal	CLEC	CLEC, Competitive Local Exchange Carrier (Competitive LEC)
Bit Synchronization	Bit Synchronization The process of identifying the boundaries between successive information bits in a digital bit stream.	CLEI	CLEI, Common Language Equipment Identification (Ref: Telcordia Technologies, Inc.) The CLEI code contains intelligent ten-character codes that can identify telecommunications equipment with great precision. Accepted by RBOCs as the industry standard, its primary applications include inventory control, investment tracking and provisioning. There is a 1:1 relationship between a CLEI code and a vendor's Product ID.
BITS	BITS, Building Integrated Timing Supply An application of External Timing Ports. Reference: timing & synchronization specifications	CLID	CLID, Calling Line Identification A service offered by LECs in which the calling line number is delivered with the call.
BPV	BPV, Bipolar Violation Reference: timing & synchronization specifications	Clock	Clock , A source of periodic timing information. Reference: timing & synchronization specifications
BRI	BRI, Basic Rate Interface Basic Rate ISDN with two 64 kbps DS0s and one 16 kbps data channel. BRI requirements are defined (primarily) in TR-NWT-000397, ISDN Basic Access Transport System Requirements.	Clock Holdover	Clock Holdover or Clock Holdover Mode An operating condition of a clock in which its local oscillator is not locked to an external synchronization reference but is using storage techniques to maintain its accuracy with respect to the last known frequency comparison with a synchronization reference.
Broadband	Broadband Normally defined as bandwidth capacity greater than one DS1: 1.544 Mbps ≤ Broadband Also, "Broadband" is also (often) generically referred to or defined as bandwidth capable of supporting / delivering real time full motion video and high speed data.		
CAL	CAL, Customer Access Line		
CAP	CAP, Carrierless Amplitude/Phase DSL modulation technique, CAP is related to quadrature amplitude modulation (QAM). Both are single carrier signals, where the data rate is divided in two and modulated onto two orthogonal carriers (I and Q) before being combined and transmitted. Unlike DMT, CAP operates in the time domain rather than the frequency domain.		

CMDT	CMDT, CO MDT unit. (Ref. GoDigital product terminology) A CMDT is a plug-card for the GoDigital XCel Multi-Service Access Shelf that provides various MLT and 4Tel signatures to respond to Mechanized Loop Test requests.	CTU	CTU, Central office Termination Unit (Ref. GoDigital product terminology) A GoDigital plug-in card that resides in an XCel or GDSL Shelf. The CTU accepts service lines from a central office switch, a DLC or other host equipment, and initiates a XCel or GDSL loop to GoDigital outside plant units for drop and service delivery to subscribers.
CMIP	CMIP, Common Management Information Protocol	CU	CU, Channel Unit
CMIS	CMIS, Common Management Information Service	CV	CV, Coding Violation
CMISE	CMISE, Common Management Information Service Element	DA	DA, Distribution Area
CO	CO, Central Office A switching center that terminates and interconnects lines and trunks from users.	DAC	DAC, Digital to Analog Converter
Composite Clock	Composite Clock For GoDigital products composite clock is a 64 kHz AMI signal, with no DC content, which has a 5/8 duty cycle and has a bipolar violation every 8 kHz (unless otherwise stated in GoDigital Specifications).	DAML	DAML, Digital Added Main Line A point-to-point line pair gain device, usually delivering two standard POTS lines over a single twisted pair to the customer premises. The unit is utilized at the customer interface to split the two POTS lines onto separate twisted pairs to interface the house wiring.
COT	COT, Central Office Terminal The Central Office end of a Digital Loop Carrier or Subscriber Loop Carrier System. Typically the term refers to the COT shelf in a designated DLC System, with the downstream end being referred to as the Remote Terminal or Remote Terminal Unit. GoDigital COT refers to an XCel or GDSL shelf that interfaces with the central office switch or other host equipment, and which supports XCel or GDSL loops.	DB9F-RJ11	DB9F-RJ11 Adapter for PC interface to a serial port.
CPE	CPE, Customer Premises Equipment Also referred to as "Customer Provided Equipment". Telephone apparatus mounted on the user's premises and connected to the telephone network, but owned by the subscriber.	DBC	DBC, Dial Back Number
CPU	CPU Central Processing Unit Electronic component used in a circuit or printed circuit board.	DCB	DCB, Digital Channel Bank
Cross-box	Cross-box Same as the SAI or Service Access Interface. Refers to location where copper pairs are groomed from the F1 to F2 loop distribution cable.	DCC	DCC, Digital Communications Channel
CSA	CSA, Carrier Serving Area	DCN	DCN, Data Communications Network
CSC	CSC, Common Signaling Channel	DCS	DCS, Digital Cross-connect System
CT	CT, Channel Termination	DDS	DDS, Digital Data System
		DEMUX	DEMUX, Demultiplex
		DL	DL, Data Link
		DLC	DLC, Digital Loop Carrier Also <i>Subscriber Loop Carrier</i> . A digital loop carrier is an intelligent, digital transmission platform used to combine many voice and/or data channels over existing copper, fiber, or wireless transmission facilities. A DLC transports high amounts of bandwidth and services closer to the end customer, and delivers those services to the subscriber. The DLC provides for efficient use of the outside plant facilities (copper cable and/or fiber).
		DMT	DMT, Discrete Multi-Tone Modulation A DSL modulation technique, DMT uses many narrowband carriers transmitting at once in parallel, and each carrying a small fraction of the total information. The many discrete bands, or sub-channels, are independently modulated with a carrier frequency corresponding to the center frequency of the bin and processed in parallel. Unlike CAP, DMT operates in the frequency domain rather than the time domain. DMT's ANSI T1.413 standard specifies 256 subcarriers, each with a 4 kHz bandwidth. They

	can be independently modulated from zero to a maximum of 15 bits/sec/Hz. This allows up to 60 kbps per tone. The ITU standards G.DMT and G.lite also employ DMT in their implementation. At low frequencies, where copper wire attenuation is low and signal to noise ratio (SNR) is good it is common to use a very dense constellation - greater than 10 bits/Hz is typical. In unfavorable line conditions, modulation can be relaxed to accommodate lower SNR-usually 4 bits/Hz or less, and deliver the necessary noise immunity. Furthermore, as the system measures line integrity, it can avoid or compensate for crosstalk or interference. This is particularly useful, for example, when reducing modulation in a band where an AM station is causing radio frequency interference (RFI).		
DNE	DNE, Digital Network Element	E1	E1 A digital circuit used primarily in Europe that operates at 2.048 Mbps and offers 30 voice channels of service. An E1 is the international standard equivalent of a North American "T1", but has greater capacity (30 DS0s) than the T1 (24 DS0s).
DNS	DNS, Domain Name Services	ECSA	ECSA, Exchange Carriers Stands Association
DPBX	DPBX, Digital Private Branch Exchange	EFS	EFS, Error Free Second
DPLL	DPLL, Digital Phase Lock Loop	EIA	EIA, Electronic Industries Association
DS0	DS0, Digital Signal Level Zero , 64 kbps digital signal, in Digital Signal Hierarchy. Digital equivalent of a single POTS line and also the basic building block for the dial-up digitally switched telephone network.	ELmax	ELmax, EWL Loop Maximum Value (GoDigital product terminology) Value derived from a GoDigital Table. Value defines the location in a loop, beyond which a GoDigital System element can be placed in order to ensure specific CO-based ADSL deployment objectives for reach and data speeds.
DS1	DS1, Digital Signal Level One , 1.544 Mbps digital signal, in Digital Signal Hierarchy. A channelized DS1 carries twenty-four (24) DS0 switch-based services.	EM	EM, Element Manager
DS3	DS3, Digital Signal Level Three , 44.7 Mbps digital signal, in Digital Signal Hierarchy. A channelized DS3 carries twenty-eight (28) DS1s, and 672 DS0s.	EMd	EMd, EWL Maximum Distance (GoDigital product terminology) Value identifying the maximum EWL loop reach, planned or expected for CO-based ADSL services in the same binder group as GoDigital Systems; which need to be protected. From downstream degradation. GoDigital suggests a default value when no local standards are in place.
DSL	DSL, Digital Subscriber Line	EMS	EMS, Element Management System
DSLAM	DSLAM, DSL Access Multiplexer	EMs	EMs, EWL Minimum Speed. GoDigital terminology identifying the minimum ADSL speed downstream that must be ensured in CO-based ADSL services, when installing . GoDigital system in the same binder group. GoDigital suggests a default value when no local standards are in place.
DSX	DSX, Digital Signal Cross-connect A convenient central point and/or element of electronic equipment for cross-connecting, rearranging, patching and testing digital equipment and facilities.	EPL	EPL, EWL of the Planned Location (GoDigital product terminology) Identifies the EWL distance from the CO, for the proposed placement of a unit in a loop that requires protection of CO-based downstream ADSL speeds. Used in GoDigital's deployment guideline calculations for specific element placement verification.
DTE	DTE, Digital Transmission Equipment	EMI	EMI, Electro-Magnetic Interference
DTF	DTE, Digital Transmission Facility	EOC	EOC, Embedded Operations Channel
DTMF	DTMF, Dual Tone Multi-Frequency	ERL	ERL, Echo Return Loss
DTI	DTI, Digital Trunk Interface	ES	ES, Errored Second
Dumb Element	Dumb Element (GoDigital product terminology) An element in a loop that has no capability to communicate and update status to other upstream and downstream elements.	ESD	ESD, Electro-Static Discharge

ESF	ESF, Extended Super Frame DS-1 w/ 4 kb data channel, Reference: Signal format, framing, timing & synchronization specifications	GDSL®	GoDigital Digital Subscriber Loop (Ref: GoDigital product terminology) Designates a GoDigital System that is hosted in a GoDigital GDSL Standard 3U shelf. This includes all early GoDigital Systems, prior to the introduction of the GoDigital XCel Shelf. GDSL is a Registered Trademark of GoDigital.
ESFDL	ESFDL, Extended Super Frame Data-Link,	GDSL-3i	GDSL-3i, GDSL Three Line ISDN/IDSL System (Ref: GoDigital product terminology) A small GoDigital Digital/Subscriber Loop Carrier System that provides ISDN and IDSL loop extension and pair gain, transporting up to three ISDN or IDSL lines over extended reach on a single pair. The GDSL-3i System is hosted in a GoDigital GDSL Standard Shelf COT.
ETP(s)	ETP(s), External Timing Port(s) Reference: timing & synchronization specifications	GDSL-8	GDSL-8, GDSL Eight Line POTS System (Ref: GoDigital product terminology) A small GoDigital Digital/Subscriber Loop Carrier System that provides POTS loop extension and pair gain, transporting up to eight high quality POTS lines over extended reach on a single pair. The GDSL-8 System is hosted in a GoDigital GDSL Standard Shelf COT.
ETSI	ETSI, European Telecommunication Standards Institute	GR-63 or GR-63-CORE	GR-63-CORE “Network Equipment Building System (NEBS) Requirements: Physical Protection”, published by Telcordia Technologies. GR-63 identifies the minimum generic spatial and environmental criteria for all new telecommunications equipment systems used in a telecommunication network.
EWL	EWL, Equivalent Working Length on 26 gauge Per ANSI T1417,. This is the length of 26 gauge loops plus ¾ times the lengths of all other gauges combined.	GR-78 or GR-78-CORE	GR-78-CORE “Generic Requirements for the Physical Design and Manufacture of Telecommunications Products and Equipment”, published by Telcordia Technologies. GR-78 identifies the requirements for physical design and manufacture of products to be used in the field by network operators.
Exclusion Zone	Exclusion Zone Referencing a 25 pair binder group, the section of a loop of copper cable within which CO-based ADSL pairs reside and are vulnerable to interference from any additional digital signals that might be placed within that binder group.	GR-303 or GR-303-CORE	GR-303-CORE “Integrated Digital Loop Carrier System Generic Requirements, Objectives and Interface”, published by Telcordia Technologies. See also IDLC. GR-303 is a specification for an Integrated Digital Loop Carrier (IDLC) system. GR-303 describes the overall system functions and performance level requirements when a DLC (Digital Loop Carrier) is integrated into a LDS (Local Digital Switch). GR-303 describes a generic interface, one particular means of interfacing a RDT (Remote Digital Terminal) with the LDS. The GR-303 specification encompasses all aspects of the functionality of an IDLC system. The term “GR-303” is also commonly or generically used to describe a
FDL	FDL, Facility Data-Link		
Free Running	Free Running or Clock Free Run Mode An operating condition of a clock in which its local oscillator is not locked to an external synchronization reference and is using no storage techniques to sustain its accuracy.		
G.DMT	G.DMT or G.DMT Full Rate One of three standards used in North America. The Others are ANSI T1.413 and G.lite.		
G.lite	G.lite One of three standards used in North America. The Others are ANSI T1.413 and G.DMT Full Rate.		
G.shdsl	G.shdsl, Global.Standard High-Bit-Rate Digital Subscriber Line (ITU-T) Also known as G.991.2, G.shdsl is an international standard for symmetric DSL developed by the ITU. G.shdsl provides for sending and receiving high-speed symmetrical data streams over a single pair of copper wires at rates between 192 kbps and 2.31 Mbps using PAM-16 line coding. G. shdsl was developed to incorporate the features of other DSL technologies, such as ADSL and SDSL and will transport T1, E1, ISDN, ATM and IP signals. This is the first DSL technology to be developed from the ground up as an international standard. G.SHDSL was ratified by the ITU in Feb., 2001.		

	system or the framing on a set of T1 circuits when those T1s are transported between a GR-303 RDT and a GR-303 IDT, operating in GR-303 mode. Telcordia produces the GR-303 specification. Telcordia's first document was called TR-303, and some people still refer to the standard by this older name.		
GR-909 or GR-909-CORE	GR-909-CORE Generic Criteria for Fiber In the Loop Systems, published by Telcordia Technologies. Contains requirements that support integration of Fiber in the Loop Systems into a Local Digital Switch.	HDT	HDT, Host Digital Terminal
GR-1089	GR-1089 “Electromagnetic Compatibility and Electrical Safety – Generic Criteria for Network Telecommunications Equipment”, published by Telcordia Technologies. GR-1089 identifies the electrical a safety criteria necessary for equipment to perform safely and reliably in the telecommunications network.	HFC	HFC, Hybrid Fiber Coax
GoDigital	GoDigital Networks Corporation , GoDigital is a Registered Trademark of GoDigital Networks Corporation.	IAD	IAD, Integrated Access Device
GUI	GUI, Graphical User Interface An interface on a PC or computer that uses graphical drawings and point and click navigation.	IAT	IAT, Integrated Access Terminal
GOS	GOS, Grade of Service	ICL	ICL, Insertion Connection Loss
HW & H/W	HW & H/W, Hardware	IDC	IDT, Information Distribution Company
HDSL	HDSL, High-bit-rate DSL High-bit-rate Digital Subscriber Line (HDSL) technology is a transparent replacement for a T-1 repeatered line in the distribution plant. It allows DS-1 signals to be transported over distances of up to 12,000 feet on copper cable without line repeaters. HDSL technology meets the existing tariffed T-1.403-1989 service interface. HDSL eliminates engineering time and reduces the cost and provisioning time associated with conditioning T-1 lines. It is designed to operate in the presence of near-end crosstalk (NEXT), which means binder group separation is not necessary. HDSL uses two-pair copper cable for full-duplex transmission, using echo cancellation with each pair carrying 784 kb/s. The lower bit rate allows for a lower frequency range of operation that reduces channel loss and NEXT. HDSL technology meets the Bellcore line coding standard 2B1Q (two binary one quaternary) as defined by Bellcore TA-210, a four-level pulse amplitude modulation scheme. The power spectrum, NEXT performance, echo cancellation and adaptive filtering properties of the technology	IDLC	IDLC, Integrated Digital Loop Carrier A GR-303 Integrated Digital Loop Carrier system is a composite system that consist of an RDT and an Integrated Digital Terminal, which is part of the LDS. The distinguishing characteristic of IDLC systems from Universal DLC (UDLC) systems is the absence of a requirement for a Central Office Terminal (COT), although a COT may be present and used for other reasons. Distinguishing features of a GR-303 based architecture include: <ul style="list-style-type: none"> • Dynamic time slot assignment of DS0-based switched traffic (normally for POTS), and dynamic bandwidth loading between the RDT and the IDT, controlled by the IDT and based on real time software-based control and management. • Concentration of services at the remotely placed RDT location for efficient transport and equipment loading. • Advanced Operations Systems (OS) • Normally able to operate in either Integrated or Universal modes.
		IDT	IDT, Integrated Digital Terminal In GR-303, the Integrated Digital Terminal refers to portion of an IDLC system that resides in the Local Digital Switch (LDS). The IDT maintains communication with and control of all RDT elements that are assigned to it.
		IG	IG, Interface Group In GR-303, a designated amount of bandwidth managed as a unit between an IDT and RDT. Normally 2 to 28 DS1s.
		ILEC	ILEC, Incumbent LEC
		INST NOTE	INST NOTE, Installation Note Published GoDigital instructions and guidelines to aid in the planning, engineering and installation of GoDigital products. New products are normally shipped with an Installation Note in the shipping package.
		IO	IO, Inter-Office
		IP	IP, Internet Protocol
		ISDN	ISDN, Integrated Systems Digital Network

ISO	ISO, International Standards Organization	LOS	LOS, Loss Of Signal Reference: digital signal format, framing, timing & synchronization specifications
ISP	ISP, ISP, Internet Service Provider		
ITU-T	ITU-T, International Telecommunication Union – Telecommunications Standardization Sector	LPF	LPF, Passive Low-Pass Filter A passive low-pass filter is used to combine a POTS line and an ADSL line on the same distribution and/or drop pair to a subscriber NID. Another passive low-pass filter (normally within the NID) is used to separate the POTS and ADSL for delivery to CPE on separate wiring inside the subscriber residence. Enables POTS that is sharing a copper pair with an ADSL signal to be dropped to the telephone without the ADSL frequencies.
Jitter	Jitter Short-term variations of significant instances of a digital signal from their ideal positions in time. Short term implies phase oscillations of frequency greater than or equal to 10 Hz. Timing jitter may lead to crosstalk and/or distortion of the original analog signal and is a potential source of slips at the input ports of digital switches.		
LAN	LAN, Local Area Network	LRB	LRB, Loop Reverse Battery
LAPB	LAPB, Link Access Protocol Balanced	LSSGR	LSSGR, LATA Switching Systems Generic Requirements
LAPD	LAPD, Link Access Protocol D-channel	LT	LT, Line Termination
LATA	LATA, Local Access and Transport Area	LU	LU, Line Unit
LC	LC, Loop Closure	LULT	LULT, Line Unit/Line Termination
LCF	LCF, Loop Current Feed	M&Ps	M&Ps, Methods and Procedures
LCFO	LDFO, Loop Current Feed Open	MDF	MDF, Main Distributing Frame
LDS	LDS, Local Digital Switch	MDT	MDT, Mechanized Drop Testing (Ref: GoDigital product terminology) Similar to MLT terminology, but used by GoDigital to differentiate XCel and GDSL POTS systems that can test the quality of a drop pair from a GoDigital RTU or ADR. GoDigital Systems without “MDT” are capable of “Standard Loop Testing” to test system status from the GoDigital CTU to the RTU, but are not able to test the quality of the drop beyond the RTU. GoDigital MDT testing is based on GR-909 and TR-398 abbreviated drop testing and reports status for CTU FAIL, Bad DSL/RTU Bad RTU, Hazardous Potential, Foreign Electromotive Force Test (FEMF), Resistive Faults Test, Receiver-Off-Hook Test, Ringers Test, or ALL OK.
LEC	LEC, Local Exchange Carrier Any local exchange telephone company that serves a particular area. Can be either an incumbent (ILEC) or a competitive (CLEC) carrier.		
LED	LED, Light Emitting Diode		
LET	LET, Line Equipment Transfer		
LFACS	Loop Facility Assignment Control System (Ref: Telcordia Technologies, Inc.) LFACS is an inventory and assignment system for the outside plant (local loop) facilities that support DS0-level (and, in some cases, DS1-level) services. LFACS maintains an inventory of customer locations and the outside plant facilities that serve each location.		
LMC	LMC, Loop Maintenance Center	MFS	MFS, Main Frame Synchronization Synchronization signal generated at the system clock controller.
LO	LO, Loop Open	Micro-filter	Microfilter A low-pass filter that blocks ADSL high frequencies. Enables POTS that is sharing a copper pair with an ADSL signal to be dropped to the telephone without the ADSL frequencies.
LOF	LOF, Loss Of Frame Reference: digital signal format, framing, timing & synchronization specifications		
Loop Timing	Loop Timing A synchronization arrangement where an equipment transmit clock is locked to the corresponding receive clock.	Mini-Ram	Mini-Ram Small number of ADSL lines served by a locally powered RT and normally connected back to a hosting DSLAM via a T1.
LOP	LOP, Loss Of Pointer Reference: digital signal format, framing, timing & synchronization specifications		

MLT®	MLT, Mechanized Loop Testing A methodology and system for checking and reporting the quality of a subscriber copper loops based on published Telcordia specifications. MLT is a registered trademark of Lucent Technologies. GoDigital supports these systems and associated CO switches and equipment that initiate and collect results of these drop tests. GoDigital also supports various types of signature sets in the reporting of the test results. See also MDT and Standard Loop Test.	NI	NI, Network Interface
MN	MN, Metallic Noise Noise on a copper cable pair, usually the result of a voltage imbalance on the circuit or of introduced AC power influence.	NMA	NMA, Network Monitoring and Analysis
MSA	MSA, Multi-Service Access Shelf (GoDigital product) The GoDigital Networks shelf that resides in a CO rack. It has 20 slots available to deploy GoDigital POTS, ADSL, or ISDN services the in 23" shelf, 16 active slots in the 19" shelf.	NMI	NMI, Non-Maskable Interrupt Reference: timing & synchronization specifications
MTIE	MTIE, Maximum Time-Interval Error The maximum time-interval error (TIE) for all possible measurement intervals within the measurement period. Reference: timing & synchronization specifications	Node	Node or Timing Node A geographic location at which there are one or more interconnected synchronous digital equipment elements. Reference: timing & synchronization specifications
MUX	MUX, Multiplex or Multiplexer	NOTE	NOTE, Network Office Terminating Equipment
Narrow-band	Narrowband Normally defined as bandwidth capacity based on one DS0 payload: Narrowband ≤ 64 kbps	NSA	NSA, Non-Service Affecting
NE	NE, Network Element	NTE	NTE, Network Terminating Equipment
NEBS	NEBS, Network Equipment Building Standards, (See GR-63)	NTT	NTT, Numbered (No.) Test Trunk
NGDLC	NGDLC, Next Generation Digital Loop Carrier Introduced in the early 1990s, the term "NGDLC" has found use in a relative generic sense to mean any new DLC. There are however, primary differentiating characteristics of a NGDLC compared to a DLC which include the following features: <ul style="list-style-type: none"> • NGDLC is designed to support and take advantage of high-speed optical transport, specifically SONET (compared to a DLC which may or may not have an optical transport option added on). • NGDLC is normally also identified with the capability of supporting GR-303 in an RDT and IDT configuration. Although, a COT may be used, and initially the NGDLC may be installed without implementing GR-303. 	OC1	OC1, Optical Carrier - Level 1 51.840 Mbps optical-digital signal, in SONET Hierarchy.
NGN	NGN, Next Generation Network	OC3	OC3, Optical Carrier - Level 3 155.520 Mbps optical-digital signal, in SONET Hierarchy.
NGW	NGW, Network Gateway	OC12	OC12, Optical Carrier - Level 12, 622.080 Mbps optical-digital signal, in SONET Hierarchy.
		OE	OE, Operating Equipment
		OIM	OIM, Operations Interface Module
		OOF	OOF, Out-Of-Frame
		OOS	OOS, Out-Of-Service
		OPS/INE	OPS/INE, Operations System / Intelligent Network Element
		OR	OR, Office Repeater
		ORB	ORB, Office Repeater Bay
		OS	OS, Operations System
		OSI	OSI, Open System Interconnection An open standard for communication between two points in the network, with the objective of providing interoperability among different products from different vendors.
		OSMINE	OSMINE, Operations Systems Modification of Intelligent Network Elements (Telcordia Technologies, Inc.) Telcordia's modification procedure that integrates equipment manufacturers' network elements or products with Telcordia developed operations systems. OSMINE encourages systems integration in a multi-vendor environment.
		OSP	OSP, Outside Plant Any equipment or cabling that exists outside the central office.

OSS	OSS, Operations Support System	PMT	PMT or PED, or Serving Terminal Refers to location where copper pairs are groomed from the F2 loop distribution cable to the F3 drop pair.
OVCXO	OVCXO, Oven stabilized Voltage Controlled Crystal Oscillator Reference: timing & synchronization specifications and components	POH	POH, Path Overhead
PAM	PAM, Pulse Amplitude Modulation A line code technique for placing binary information on a carrier to transmit that information. The information being modulated controls the amplitude of the modulated pulses. Two common forms of PAM are 2B1Q and PAM-16.	POP	POP, Point of Presence
PCB	PCB, Printed Circuit Board	POT	POT, Point of Termination
PCM	PCM, Pulse Code Modulation Short for Pulse Code Modulation, a sampling technique for digitizing analog signals, especially audio signals. PCM samples the signal 8000 times a second; each sample is represented by 8 bits for a total of 64 kbps. There are two standards for coding the sample level. The Mu-Law standard is used in North America and Japan while the A-Law standard is used in most other countries. PCM is used with T1 and T3 carrier systems, as well as virtually all digital transmission of POTS in the network. These carrier systems combine the PCM signals from many lines and transmit them over a single cable or other medium.	POTS	POTS, Plain Old Telephone Service Traditional analog, voice telephone service. POTS includes voice transmission, normally includes CLASS service capability and also includes the ringing signaling and power to operate CPE telephone handsets. Other voice based services may be offered that are similar to POTS (Example: VoDSL), but these services may or may not be equivalent to POTS. In most cases, many of these new delivered voice services do not include the bandwidth capability for modem speeds, nor the delivery of ringing and operating voltage for the CPE.
PE	PE, Peripheral Equipment	PRC	PRC, Primary Reference Clock
PED	PED, Pedestal, or Serving Terminal/PMT Refers to location where copper pairs are groomed from the F2 loop distribution cable to the F3 drop pair.	PRI	PRI, Primary Rate Interface
PINX	PINX, Private Integrated Services Network Exchange (PABX, Key System...)	PRS	PRS, Primary Reference Source Equipment that provides a timing signal whose long term accuracy is maintained at 1×10^{-11} or better with optional verification to Universal Coordinated Time (UTC) and whose timing signal is used as the basis of reference for the control of other clocks within a network.
PISN	PISN, Private Integrated Services Network	PSTN	PSTN, Public Switched Telephone Network Refers to the international telephone system based on copper wires carrying analog voice data in the local loop and digitized voice information in switches and trunks.
PL	PL, Planned Location GoDigital term. Identifies the proposed unit location in a loop, in cumulative distance (feet or meters), from the CO MDF, including all cable types. Used in GoDigital Spectrum Management Guidelines	QAM	QAM, Quadrature Amplitude Modulation Quadrature amplitude modulation (QAM) is a method of combining two amplitude-modulated (AM) signals into a single channel, thereby doubling the effective bandwidth. QAM is used in CAP and DMT modulation schemes. In a QAM signal, there are two carriers, each having the same frequency but differing in phase by 90 degrees (one quarter of a cycle, from which the term quadrature arises). One signal is called the I signal, and the other is called the Q signal. Mathematically, one of the signals can be represented by a sine wave, and the other by a cosine wave. The two modulated carriers are combined at the source for transmission. At the destination, the carriers are separated, the data is extracted from each, and then the data is combined into the original modulating information.
Plesio-chronous	Plesiochronous Two signals are plesiochronous if their corresponding significant instances occur at nominally the same rate, any variation in the rate being constrained within specific limits. Reference: timing & synchronization specifications		
PLL	PLL, Phase-locked Loop Feedback-controlled system that locks a local clock to an incoming reference clock in frequency & phase.		
PM	PM, Performance Monitoring		

QFPI	QFPI, Cybele Quad Fiber Peripheral Interface	Repeater	Repeater An electronic device or unit placed between two other devices that repeats, or regenerates the signal between them, increasing the reach or distance between the two.
QoS	QoS, Quality of Service Normally defining specifications for the level of service provided. Example: guaranteed downstream ADSL speed.	RFI	RFI, Radio Frequency Interference or Remote Failure Indication
QPA	QPA, Quality Performance Analysis	RNR	RNR, Receiver Not Ready
RAI	RAI, Remote Alarm Indication	ROH	ROH, Receiver Off-Hook (tone)
RALB	RALB, Resource All Busy	ROS	ROS, Remote Operations Service
RBS	RBS, Robbed Bit Signaling	RSU	RSU, Remote Switching Unit
RCV	RCV, Receive	RT	RT, Remote Terminal The remote end of a Digital Loop Carrier or Subscriber Loop Carrier System. Typically the term refers to the DLCs RT shelf or rack of equipment in a cabinet, hut, or vault in a designated DLC System, with the upstream end in the central office being referred to as the COT
RDF	RDF, Remote Distributing Frame	RTU	RTU, Remote Termination Unit (Ref: GoDigital product terminology) A GoDigital Remote Terminal that terminates the DSL transport, taking a single-pair channelized DSL circuit and feeding subscriber POTS, ADSL, or ISDN drops. RTU is also a GR-303 term defined as a "Remote Test Unit". See <i>GR-303</i> . . In GoDigital's small Systems, RTU is not a GR-303 "RDT".
RDI	RDI, Remote Defect Indication	RTU	RTU, Right To Use Sometimes used when referring to billing practices and contractual terms.
RDT	RDT, Remote Digital Terminal In GR-303, the Remote Digital Terminal refers to portion of an IDLC system that resides and a remote location (external to the LDS). The RDT maintains communication with and is controlled by the IDT in/at the LDS, when operating in a GR-303 mode. The RDT is the location where POTS /switched DSO concentration occurs. A physical location can have a physical RDT, or multiple virtual RDTs in a physical RDT package.	SABME	SABME, Set Asynchronous Balance Mode Extender
Receive Clock	Receive Clock The timing reference extracted from the received bit stream.	SAI	SAI, Service Access Interface or Cross-box Refers to location where copper pairs are groomed from the F1 to F2 loop distribution cable.
REI	REI, Remote Error Indicator	SAP	SAP, Service Access Point
Remote DSLAM	Remote DSLAM A DSLAM that is small and configured to operate away from the Central Office.	SAPI	SAPI, Service Access Point Identifier
REN	REN, Ringer Equivalent Number Used to describe the load placed on the network by customer premise telephone equipment. The FCC decreed that the subscriber would be responsible for the load their CPE devices put on the phone line. Some guidelines were established: <ul style="list-style-type: none"> • Each device will have a REN, "ringer equivalent number", marked somewhere on the device. • The total of all of the RENs on any phone line should not exceed 5. • Devices that ring at 20 Hz will have a suffix of 'A' added to the REN. • Devices that ring at any frequency will have a suffix of 'B' added to the REN. • Typical phone lines have 85 to 105 Volts AC superimposed on a nominal -48 Volts DC. 	SCC	SCC, Switching Control Center
		SCCS	SCCS, Switching Control Center System
		SEFL	SEFL, Single Ended Fault Locating
		Serving Terminal	Serving Terminal/PMT/PED Refers to location where copper pairs are groomed from the F2 loop distribution cable to the F3 drop pair.
		Smart Element	Smart Element (GoDigital product terminology) An element in a loop that has processing capability to communicate and update status to other upstream and downstream elements.

SMC	SMC, Switch Maintenance Center	Spectrum Management	Spectrum Management Planned placement of electronics equipment in the copper loop such that interference is minimized or between service types. Specifically, the engineering and placement of electronics (repeaters and remote terminals) relative to the portion of the loop and binder group such that CO-based ADSL signals are not degraded in locations where they are most vulnerable to interference.
SMDF	SMDF, Subscriber Main Distributing Frame	Split Timing	Split Timing , An arrangement where equipment employs separate transmit and receive clocks on a transmission link having no particular relationship to one another.
Separate Network	Separate Network Node/collection of nodes whose synchronization responsibilities are borne by a single corporate interest.	SRL	SRL, Singing Return Loss
SLC	SLC, Subscriber Loop Carrier See also <i>Digital Loop Carrier</i> . A subscriber loop carrier is platform used to combine many voice and/or data channels over existing copper, fiber, or wireless transmission facilities. A SLC transports high amounts of bandwidth and services closer to the end customer, and delivers those services to the subscriber. The SLC provides for efficient use of the outside plant facilities (copper cable and/or fiber).	SS	SS, Supervisory System
Slip	Slip In reference to DS1s, a "controlled slip" is the repetition or deletion of a DS1 frame by the receiving equipment without loss of frame acquisition. A controlled slip is sometimes referred to as a "frame slip". Slips and controlled slips shall be considered synonymous in this document.	SS7	SS7, Signaling System Seven Signaling System 7 is a telecommunications protocol defined by the ITU as a way to offload PSTN data traffic congestion onto a wireless or wire line digital broadband network. SS7 is characterized by high-speed packet switching and out-of-band signaling using Service Switching (SSPs), Signal Transfer Points (STPs), and Service Control Points (SCPs) (collectively referred to as signaling points, or SS7 nodes). SS7 network and protocol are used for: <ul style="list-style-type: none"> • Basic call setup, management, and tear down • Wireless services such as personal communications services (PCS), wireless roaming, etc. • Local number portability (LNP) • Toll-free (800/888) and toll (900) wire line services • Enhanced call features such as call forwarding, and calling party name/number display • Efficient and secure worldwide telecommunications
SMS	SMS, Subscriber Management System Management element at the junction in the data network between the ATM transportation network and the IP network.	Standard Loop Test	Standard Loop Test GoDigital terminology referring to an abbreviated type of loop/drop testing, which is typically applied to pair gain systems that checks the integrity of a the electronics in a small DLC or SLC system but does not test the drop from the RTU. Standard Loop Test evaluates and reports on Trouble In CO Shelf, Trouble In Outside Plant, or Test OK. See also MLT® and MDT.
SNMP	SNMP, Simple Network Management Protocol		
Software Download	Software Download Ability and process of replacing or adding new and upgraded software or firmware to elements already deployed in the network.		
SONET	SONET, Synchronous Optical Network		
SPC	SPC, Stored Program Control		
SPCS	SPCS, Stored Program Control System		
SPE	SPE, Synchronous Payload Envelope		
Spec	Spec or Specification Published performance specifications, typically referring to form, fit or function, or in the case of industry "Specs", the form of measurable and defined requirements.		

Stratum Level	Stratum Level Timing accuracy level for network synchronization of network elements. Levels defined by ANSI/EIA. GoDigital products normally require timing reference specify a Stratum Level 3 or better. See GoDigital Specifications.	TACU	TACU, Timing and Alarm Control Unit (GoDigital product terminology) A GoDigital common card for alarms and timing input on the GDSL (3U) line of shelves. One per shelf. Required to support V.90 modem speeds on GDSL-8 with V.90 Systems.																								
	<table border="0"> <thead> <tr> <th>Stratum Level</th> <th>Free-Run Accuracy</th> <th>Holdover Stability</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>$\pm 1 \times 10^{-11}$</td> <td>Not applicable</td> </tr> <tr> <td>2</td> <td>$\pm 1.6 \times 10^{-8}$</td> <td>$\pm 1 \times 10^{-10}$ per day</td> </tr> <tr> <td>3E</td> <td>$\pm 4.6 \times 10^{-6}$</td> <td>$\pm 1 \times 10^{-8}$ / day for 1 day</td> </tr> <tr> <td>3</td> <td>$\pm 4.6 \times 10^{-6}$</td> <td>$\pm 3.7 \times 10^{-7}$ / day for 1 day</td> </tr> <tr> <td>(SONET)</td> <td>$\pm 20 \times 10^{-6}$</td> <td>Not defined</td> </tr> <tr> <td>4E</td> <td>$\pm 32 \times 10^{-6}$</td> <td>Not applicable</td> </tr> <tr> <td>4</td> <td>$\pm 32 \times 10^{-6}$</td> <td>Not applicable</td> </tr> </tbody> </table>	Stratum Level	Free-Run Accuracy	Holdover Stability	1	$\pm 1 \times 10^{-11}$	Not applicable	2	$\pm 1.6 \times 10^{-8}$	$\pm 1 \times 10^{-10}$ per day	3E	$\pm 4.6 \times 10^{-6}$	$\pm 1 \times 10^{-8}$ / day for 1 day	3	$\pm 4.6 \times 10^{-6}$	$\pm 3.7 \times 10^{-7}$ / day for 1 day	(SONET)	$\pm 20 \times 10^{-6}$	Not defined	4E	$\pm 32 \times 10^{-6}$	Not applicable	4	$\pm 32 \times 10^{-6}$	Not applicable	TAD or TAD4	TAD or TAD4, Terminating Add/Drop Unit (GoDigital product terminology) A four-line GoDigital remote terminal, taking a single-pair channelized DSL circuit and feeding up to 4 analog customer drops.
Stratum Level	Free-Run Accuracy	Holdover Stability																									
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		TAP	TAP, Test Access Path																								
		TCP/IP	TCP/IP, Transmission control Protocol / Internet Protocol																								
STS-1	STS-1, Synchronous Transport Signal – Level 1 , 51.840 Mbps electrical-digital signal, in SONET Hierarchy.	TCVCXO	TCVCXO, Temperature Compensated Voltage Controlled Crystal Oscillator Reference: timing & synchronization specifications and components																								
STS-3	STS-3, Synchronous Transport Signal – Level 3 , 155.520 Mbps electrical-digital signal, in SONET Hierarchy.	TDM	TDM, Time Division Multiplex																								
SVC	SVC, Switched Virtual Circuit	TECH NOTE	TECH NOTE, Technical Note Published GoDigital technical information to aid in understanding use, operation and special procedures.																								
SYNTRN	SYNchronous TRANsmision	TEI	TEI, Terminal End-point Identifier																								
STR	STR, Straight Through Repeater (GoDigital product) A GoDigital element that regenerates digital signal, 100% line-powered.	TIA	TIA, Telecommunications Industry Association																								
STRLP or STR LP	STRLP or STR LP, Straight Through Repeater with local power (GoDigital product terminology) A GoDigital Straight Through Repeater with that is powered by a local power source, enabling longer overall system reach.	TIE	TIE, Time-Interval Error , Variation in time delay of a given timing signal with respect to an ideal timing signal over a particular time period.																								
STRM or STR MOD	STRM or STR MOD, Straight Through Repeater Module (GoDigital product terminology) A GoDigital Straight Through Repeater in a 239-plug form factor, to fit inside a 239-type housing.	Timing Loop	Timing Loop , An unstable condition in which two equipment clocks transfer timing to each other, forming a loop without a designated master timing source.																								
SW or S/W	SW or S/W, Software	TL1	TL1, Transaction Language 1																								
SWDNLD	SWDNLD, Software Download	TLP	TLP, Transmission Level Point																								
Synchro-nization	Synchronization , Process of adjusting the corresponding significant instants of signals so that a constant phase relationship exists between them.	TMC	TMC, Time-slot Management Channel																								
T1	T1 A digital circuit used primarily in North America that operates at 1.544 Mbps and offers 24 voice channels of service.	TN	TN, Telephone Number																								
		TPI	TPI, Tip-Party Identification																								
		TR-08	TR-TSY-000008 “Digital Interface Between the SCL-96® Digital Loop Carrier System and a Local Digital Switch”, published by Telcordia Technologies. Describes the requirements necessary for an LDS to connect to a SLC-96 RT across a digital interface at the T1 rate of 1.544 Mbps. It also describes the interface requirements necessary for an RT to mimic the SCL-96 interface in order to interface with an LDS that meets the SCL-96 digital interface requirements.																								

TR-57	TR-NWT-000057 “Functional Criteria for Digital Loop Carrier Systems”, published by Telcordia Technologies. Describes the functional requirements of UDLC systems consisting of COTS and RDTs. The term “TR-57” is often used generically to also describe the Universal or analog interface to a switch, but the actual TR-NWT specification includes transport, physical requirements, environmental requirements, reliability objectives as well as other areas.	VoDSL	VoDSL, Voice over DSL Voice based services carried within an ADSL line or other DSL line to the subscribers premise and delivered via a CPE modem to the subscriber’s telephone. See also “Voice Service”.
TR-303	TR-303 See GR-303. Telcordia produces the GR-303 specification. Telcordia's first document was called TR-303, and some people still refer to the standard by this older name.	VOP	VOP, Voice over Packet
Transmitter Clock	Transmitter Clock A clock used to time significant instances in the outgoing, transmit bit stream.	Voice Service	Voice Service, Voice Telephone Service Voice based services that may be similar to POTS, but which may or may not be equivalent to POTS. In most cases, many of these new delivered voice services do not include the bandwidth capability for modem speeds, nor the delivery of ringing and operating voltage for the CPE (Example: VoDSL).
TSC	TSC, Test System Controller	VT	VT, Virtual Tributary
TSI	TSI, Time-Slot Interchanger	VT1.5	VT1.5, Virtual Tributary (for payloads of roughly 1.5 Mbps)
UART	UART, Universal Asynchronous Receive/Transmit	Wander	Wander The long-term variations of the significant instances of a digital signal from their ideal positions in time. Long term implies that these variations are of low frequency (less than 10 Hz). Wander is mainly generated by variations in element slave clock behavior including those caused by disruptions in synchronization reference distribution. Excess wander causes controlled slips in synchronous networks.
UAS	UAS, UnAvailable Seconds	W-DCS	W-DCS, Wideband Digital Crossconnect System
UDC	UDC, Universal Digital Channel	Wideband	Wideband Normally defined as bandwidth capacity greater than one DS0 and less than or equal to one DS1: $64 \text{ kbps} < \text{Wideband} \leq 1.544 \text{ Mbps}$
UDLC	UDLC, Universal Digital Loop Carrier	XC	XC, Cross-connect
UDT	UDT, Universal Digital Terminal	XCel®	XCel GoDigital product line name. Designates any system in GoDigital’s Multi-Service or “HiCap” 5U shelf. XCel is a Trademark of GoDigital Networks Corp.
UI	UI, Unit Interval Example: UI = 648 ns = one pulse period for DS1 signal	XCel-4a	XCel-4a, XCel Four Line ADSL System (Ref: GoDigital product terminology) A small GoDigital Digital/Subscriber Loop Carrier System that provides ADSL loop extension and pair gain, transporting up to four ADSL lines over extended reach on a single pair. The XCel-4a System is hosted in a GoDigital XCel Multi-Service Shelf COT.
UNI-CODE	UNICODE UNiversal trunk-out-of-service CODE		
USI	USI, User System Interface		
UVCU	UVCU, Universal Voice-grade Channel Unit		
VC	VC, Virtual Circuit		
VCC	VCC, Virtual Channel Connection (ATM)		
VCXO	VCXO, Voltage Controlled Crystal Oscillator Reference: timing & synchronization specifications and components		
VDT	VDT, Visual Display terminal		
VF	VF, Voice Frequency		
VLSI	VLSI, Very Large Scale Integration		
VMWI	VMWI, Visual Message Waiting Indicator		
VNL	VNL, Via Net Loss		

- XCel-8** **XCel-8, XCel Eight Line POTS System**
(Ref: GoDigital product terminology)
A small GoDigital Digital/Subscriber Loop Carrier System that provides POTS loop extension and pair gain, transporting up to eight high quality POTS lines over extended reach on a single pair. The XCel-8 System is hosted in a GoDigital XCel Multi-Service Shelf COT.
- XCel-12** **XCel-12, XCel Twelve Line POTS System**
(Ref: GoDigital product terminology)
A small GoDigital Digital/Subscriber Loop Carrier System that provides POTS loop extension and pair gain, transporting up to twelve high quality POTS lines over extended reach on a single pair. The XCel-12 System is hosted in a GoDigital XCel Multi-Service Shelf COT.
- XCel-AD** **XCel-AD, XCel Advanced Diagnostic System**
(Ref: GoDigital product terminology)
A small GoDigital Digital/Subscriber Loop Carrier System that provides POTS loop extension and pair gain, transporting up to twelve high quality POTS lines over extended reach on a single pair. The XCel-12 System is hosted in a GoDigital XCel Multi-Service Shelf COT.
- XTAL** **XTAL, Crystal device**
Reference: timing & synchronization specifications and components

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