Quality Excellence for Suppliers of Telecommunications Forum (QuEST Forum)

TL 9000 Quality System Metrics

Product Category Table Release 2.5 Version A

03-02-00

For further information, see the QuEST Forum Web page at: www.questforum.org

Appendix A: Product Category Tables

1. List of Tables

This Page Intentionally Blank

Table A-1. Product Category Definitions			
Category Code	Category:	Definition:	Examples:
1	***Switching***	***Equipment for the physical or virtual interconnection of communication channels in response to a signaling system. The switching category is broadly defined to include packet or circuit switched architectures.***	
1.1	Circuit Switch	Equipment for the termination of subscriber lines and/or trunk lines and the dynamic interconnection of these ports or channels in a digital transmission facility. A circuit switch establishes a dedicated circuit, as opposed to a virtual circuit, in response to a signal. Stored Program Control (SPC) is the most common type of switching equipment used at end offices and tandem offices. These systems use either analog or digital switching. The switching system used must have the capability to send, receive and be actuated by signals, e.g., access line signals, or inter-office in-band or common-channel signaling. This category includes all circuit switches regardless of transmission medium, i.e., wireline, or wireless.	• End-office • Tandem • Tandem access • Remote • Service Switching Point [SSP] • Mobile Switching Center [MSC]
1.2	***Packet Switch***	***Equipment for switching or routing data on virtual, as opposed to dedicated, circuits. The service is packet switched in that the customer's data is transported as a sequence of data blocks (packets) that do not exceed a specified size. This packetization permits data from many data conversations to share a given transmission facility economically through statistical multiplexing. Such data conversations are known as virtual circuits, which are full duplex and connection-oriented.***	
1.2.1	Public Packet Switched Network (PPSN)	Equipment for the provision of connection-oriented, packet-switched communication services designed to provide economical data transport based on internationally standardized packet protocols. The packet switch is the primary switching element of the network allowing efficient connectivity to many customers. The access concentrator concentrates traffic from lower-speed access lines for more efficient packet-switch port usage and performs any necessary protocol conversion via the Packet Assembler/Disassembler (PAD) function.	• X.25 packet switch • Access concentrator / PAD
1.2.2	IP Packet Switch / Router	Equipment which moves variable-length IP (Internet Protocol) packets from source to destination. Routing generally uses software algorithms to optimize one (1) or a combination of data-transport "metrics" such as delay, the use of reliable	

Note 1: Product Categories listed in RED and *italicized* will be used for possible Data Aggregation only. Metrics must be submitted per the lower Product Category listing.

Note 2: Remember that the following Metrics (FRT, OFR & OTD) are applicable and required for all product categories.

Table A-1. Product Category Definitions			
Category Code	Category:	Definition:	Examples:
		paths, “hops” between servers, etc. Switching is generally faster than routers since the decision as to where to send the packet is done by hardware, but are also limited to less sophisticated algorithms than are routers to determine which path the packets should use. Most systems provide a combination of routing and switching, as appropriate, to best serve the needs of the user.	
1.2.3	Asynchronous Transfer Mode (ATM) Switch	Switching equipment which operates at OSI Level 2 (hardware layer) to move fixed-length (53-byte) data cells from source to destination over virtual paths or channels. ATM is designed to support mixed data types (voice, video, computer communications, etc.), provides selectable Quality of Service guarantees and easily enables billing for data switching services. Throughput of up to 622 Mbps is commonly available in ATM Switches.	
1.2.4	Frame Relay Switch	Switching equipment which operates at OSI Level 2(hardware) to move variable-length Frame Relay Frames over virtual circuits from source to destination. Data are moved without data integrity checks or flow control at up to T3 rates.	
2	***Signaling***	***Equipment for the provision of signaling, i.e., states applied to operate and control the component groups of a telecommunications circuit to cause it to perform its intended function. Generally speaking, there are five (5) basic categories of "signals" commonly used in the telecommunications network. Included are supervisory signals, information signals, address signals, control signals, and alerting signals. This category includes those signaling products that function within the telecommunications network and excludes (possibly similar) products which would normally provide enhanced services outside the network, or on the customer premises such as ACD, IVR, or voice messaging systems.***	
2.1	Service Control Point (SCP)	A signaling point that functions as a database to provide information to another SCP or Service Switching Point (SSP). Transaction Capabilities Application Part (TCAP) queries and responses are used to communicate with the SCP as is done for 800 Data Base Service and ABS. SCPs may support one (1) or more services per SCP and SCPs may be deployed singularly as stand-alone nodes, as mated pairs, or as multiple replicates (more than 2) to increase their availability. SCPs, connected to STPs, are associated with applications that consist of service-specific software and a database of customer-related information. This product	• Service Control Point • Service nodes • Service resource facilities

Note 1: Product Categories listed in RED and *italicized* will be used for possible Data Aggregation only. Metrics must be submitted per the lower Product Category listing.

Note 2: Remember that the following Metrics (FRT, OFR & OTD) are applicable and required for to all product categories.

Table A-1. Product Category Definitions			
Category Code	Category:	Definition:	Examples:
		category includes conventional SCP equipment, plus other platforms such as service nodes, intelligent peripherals, or service resource facilities, which may combine capabilities of a SCP, SSP or which may be used to provide AIN functionality or other enhanced services within the network.	
2.2	Signaling Transfer Point (STP)	A signaling point with the function of transferring signaling messages from one signaling link to another and considered exclusively from the viewpoint of the transfer. An STP is a specialized routing signaling point (SP). It is an SS7-based packet switch that transfers SS7 messages to and from other SPs and is always deployed in mated pairs for reliability. The STP uses the Message Transfer Part (MTP) and the Signaling Connection Control Part (SCCP) of the SS7 protocol to screen and route messages destined for other nodes in the SS7 network. It functions as an SS7 network routing hub, interfacing with SPs only through SS7 links and not voice or data trunks. Within the LEC CCS network structure, STPs are architecturally referred to as either Local STPs (LSTPs) or Regional STPs (RSTPs).	
2.3	Home Location Register (HLR)	Equipment to provide a permanent database used in wireless applications to identify a subscriber and to contain subscriber data related to features and services. It stores information such as service profiles, location and routing information for roamers, service qualification, interface for moves, adds and changes. It communicates with other HLRs and provides access to maintenance functions such as fault information, performance data, and configuration parameters.	
3	***Transmission***	***Equipment for the connection of the switched and interoffice networks with individual customers. An integral part of the distribution network is the loop, which connects the customer to the local central office (CO), thus providing access to the interoffice network.***	
3.1	***Outside Plant***	***The part of the telecommunications that is physically located outside of telephone company buildings. This includes cables, supporting structures, and certain equipment items such as load coils. Microwave towers, antennas, and cable system repeaters are not considered outside plant.***	
3.1.1	***Transmission Medium***	***Optical fiber, metallic cable, or other physical medium for the transmission of analog or digital communications.***	

Note 1: Product Categories listed in RED and *italicized* will be used for possible Data Aggregation only. Metrics must be submitted per the lower Product Category listing.

Note 2: Remember that the following Metrics (FRT, OFR & OTD) are applicable and required for all product categories.

Table A-1. Product Category Definitions			
Category Code	Category:	Definition:	Examples:
3.1.1.1	***Metallic Products***	***Metallic as opposed to optical or wireless transmission media.***	
3.1.1.1.1	Metallic Conductor Cable	Metallic pairs of conductors housed in a protective cable	• Metallic cable • Central office coaxial cable • Hybrid coaxial/twisted pair drop
3.1.1.1.2	Metallic Connectors	Devices used to terminate a metallic cable.	• Coaxial connectors • Coaxial distribution connectors
3.1.1.2	***Optical Fiber Products***	***Optical, as opposed to metallic or wireless transmission media.***	
3.1.1.2.1	Optical Fiber	A glass fiber wherein light is propagated and any associated covering.	• Multimode fiber • Standard single mode Fiber • Dispersion shifted fiber • Non-zero dispersion shifted fiber • Loose tube cable • Central tube cable
3.1.1.2.2	Optical Connectors	Device used to terminate an optical cable	• Optical SC,ST, or MT connectors • Connectorized cable assemblies, e.g., optical fiber ribbon fanouts
3.1.1.3	***Transmission Components***	***Components embedded in the transmission medium other than cable or connectors***	
3.1.1.3.1	Active Components	Metallic components containing electronics	• Coaxial drop amplifiers • Fiber optic data links
3.1.1.3.2	Passive Optical Components	Optical components containing no electronics	• Wavelength Division Multiplexer [WDM]

Note 1: Product Categories listed in RED and *italicized* will be used for possible Data Aggregation only. Metrics must be submitted per the lower Product Category listing.

Note 2: Remember that the following Metrics (FRT, OFR & OTD) are applicable and required for to all product categories.

Table A-1. Product Category Definitions			
Category Code	Category:	Definition:	Examples:
			• Add drop multiplexers • Fiber optic dispersion compensators • Optical isolators • Filters • Attenuators
3.1.1.3.3	Ancillary Equipment	Other transmission components not specifically covered in other transmission component categories. Typically passive.	• Surge protectors • Bonding and grounding hardware • Taps
3.1.2	***Physical Structure***	***Equipment for the support of telephone transmission media. These physical structures include poles, towers, conduits, equipment enclosures such as huts.***	
3.1.2.1	Enclosures	Enclosures for network equipment located in the outside plant.	• Fiber optic splice enclosures • ONU enclosures • Organizer assemblies • Seal assemblies • Controlled environment Vaults
3.1.2.2	Support structures	Products for the physical support of transmission media or enclosures.	• Telephone poles • Pedestals • Microwave / radio towers
3.1.2.3	Conduits	Channels for the containment of optical fiber or metallic cable.	• Innerduct • Multi-bore conduit • PVC pipe
3.2	***Transport Equipment***	***Equipment located in the central office or at the customer premises, but inside the network demarcation point, for the transmission of digital or analog communication over transmission media. This product category includes equipment for terminating, interconnecting, and multiplexing***	

Note 1: Product Categories listed in RED and *italicized* will be used for possible Data Aggregation only. Metrics must be submitted per the lower Product Category listing.

Note 2: Remember that the following Metrics (FRT, OFR & OTD) are applicable and required for all product categories.

Table A-1. Product Category Definitions			
Category Code	Category:	Definition:	Examples:
		communications circuits.	
3.2.1	Cross Connect Systems	Equipment to provide a physical termination point for physical cables and individual conductors. They can be manual or automated, metallic or optical. Cross-connect systems, such as distributing frames, Digital Signal Cross Connects (DSXs) and Fiber Distributing Frames (FDFs) provide the following basic functions: cross-connection of network distribution facilities and equipment in the central office, electrical protection for conductive media, test access, temporary disconnection, and termination points for facilities and equipment.	• Digital Signal Cross Connect (DSX) • Digital Interface System (DIS) • Fiber Distribution Frame (FDF) • Feeder Distribution Interface (FDI) • Digital Cross-connect System (DCS) • Electronic DSX • Optical DSX • Optical Interface Systems
3.2.2	***Carrier Systems / Multiplexers***	***Equipment for transmitting multiple communication channels over a single transmission facility. This category includes equipment for transmission over interoffice trunks, for example, from central to remote offices.***	
3.2.2.1	***Interoffice / Long Haul***	***Equipment for transmission between central offices, between exchanges, or between carriers, as opposed to transmission between an end office and a remote location, typical of a loop carrier.***	
3.2.2.1.1	Metallic Carrier System	Carrier system that uses metallic transmission medium.	• Analog carrier (N-,L-carrier) • D4, D5 digital carrier
3.2.2.1.2	***Optical Carrier System***	***Carrier system that uses optical transmission medium.***	
3.2.2.1.2.1	SONET / SDH Transport Systems	Fully featured digital transmission system employing optical medium	• OC-3, 12, 48, or 192 SONET equipment configurable as linear or ring. • Similar for STM-x SDH

Note 1: Product Categories listed in RED and *italicized* will be used for possible Data Aggregation only. Metrics must be submitted per the lower Product Category listing.

Note 2: Remember that the following Metrics (FRT, OFR & OTD) are applicable and required for to all product categories.

Table A-1. Product Category Definitions			
Category Code	Category:	Definition:	Examples:
			equipment
3.2.2.1.2.2	WDM / DWDM / Optical Amplification Products	Shelf level sub-systems used for multiplexing, de-multiplexing, or amplification of optical signals. Lack the built in protection, electrical conversion and other features of a SONET Transport System.	• Wavelength Division Multiplexer [WDM] • Dense Wavelength Division Mulitplexer
3.2.2.1.3	Microwave	Carrier system that employs fixed microwave transmission.	• 6, 8, 11, or 18 gigahertz microwave radio
3.2.2.2	Loop Carrier	Equipment for deploying multiple voice or digital channels over fewer physical channels than would be otherwise required (a "pair gain" function).). Loop carriers are typically digital systems which employ time-domain multiplexing (TDM) but may include analog systems as well. Loop carrier systems consist of a Central Office Terminal (COT) located near the switching system, a Remote Terminal (RT) located near the customer to be served and a transmission facility connecting the COT to the RT. Individual communications circuits (such as POTS and Foreign Exchange [FX]) are accepted as separate inputs at the COT (RT), time-division multiplexed (in a digital loop carrier) by the loop carrier system and reproduced at the RT (COT). There is an analog-to-digital (A/D) conversion of analog inputs to the DLC and these signals, which are carried digitally within the DLC, undergo a digital-to-analog (D / A) conversion when output at the COT or RT. The transmission facility used by a loop carrier may be metallic cable pairs, repeated metallic cable pairs, or optical fibers.	• Digital loop carrier (DLC) • Universal digital loop carrier (UDLC) • SLC remote terminal • Integrated digital loop carrier • Analog loop carrier
3.2.3	Line Terminating Equipment / Distributing Frames	Equipment to provide the termination point for voice-grade and voice-grade compatible facilities and equipment in a central office. It is composed of protectors, connectors and terminal strips or blocks. Distributing frames are categorized as either conventional or modular.	• Tall conventional distributing frames • Low-Profile Conventional Distribution Frames (LPCDFs) • Conventional protector frames • Combined Main Distributing Frame

Note 1: Product Categories listed in RED and *italicized* will be used for possible Data Aggregation only. Metrics must be submitted per the lower Product Category listing.

Note 2: Remember that the following Metrics (FRT, OFR & OTD) are applicable and required for all product categories.

Table A-1. Product Category Definitions			
Category Code	Category:	Definition:	Examples:
			(CMDF) • Subscriber Main Distributing Frame (SMDF) • Trunk Main Distributing Frame (TMDF) • Intermediate Distributing Frame (IDF) • Tie-Pair Distributing Frame (TPDF). • Office repeater bays
3.2.4	Digital Subscriber Line (DSL)	Equipment for the transport of high-speed digital data on the embedded copper plant. DSL typically will operate over nonrepeatered, POTS-like, conditioned unloaded loops out to CSA ranges. This product category includes central office and remote units, regenerators or range extenders, and supporting equipment.	• ISDN • HDSL • ADSL • DDS
3.3	***Wireless Transmission***	***Equipment for analog or digital transmission to the subscriber unique to wireless services. This category does not include interoffice or long-haul wireless carrier systems.***	
3.3.1	Base Station Equipment	Equipment which provides the interface between wireless systems and the Public Switched Telephone Network (PSTN). It provides, for example, electrical signaling isolation as well as switching, routing, billing, and features capabilities. It provides subsystems for vocoding and selecting hand off decision.	• BSC • BSS
3.3.2	Base Transceiver System (BTS)	Equipment which provides the radio link to the mobile subscribers. It is connected to the BSC though a backhaul interface between the BSC and BTS for both vocoded and overhead packet traffic.	• BTS
3.3.3	Pilot Beacon Unit (PBU)	Equipment whose primary purpose is to transmit and ANSI J-STD-008 Pilot channel and ANSI J- STD-008 Sync channel and a partial ANSI J-STD-008 Paging channel. The PBU is intended to notify a mobil unit of a change in CDMA coverage and can be used to assist in the execution of cellular CDMA-AMPS and inter-frequency CDMA-CDMA hand-off. It is designed with the capability for	

Note 1: Product Categories listed in RED and *italicized* will be used for possible Data Aggregation only. Metrics must be submitted per the lower Product Category listing.

Note 2: Remember that the following Metrics (FRT, OFR & OTD) are applicable and required for to all product categories.

Table A-1. Product Category Definitions			
Category Code	Category:	Definition:	Examples:
		extended temperature and environmental operation ranges.	
4	***Operations & Maintenance***	***Equipment, systems, and services for the management, upkeep, diagnosis and repair of the communications network.***	
4.1	***Test Systems***	***Equipment to support testing of the network. This category includes permanently installed equipment used to provide a centralized test capability or local test access, as opposed to portable equipment, as might be carried by a craftsperson.***	
4.1.1	Test Access Equipment	Equipment to provide test access to transmission circuits. Test access equipment is in series with the customer circuit at all times and therefore directly affects the circuit reliability. This equipment is designed with transmission equipment issues in mind. This equipment may have analog and perhaps a variety of digital (i.e., T1, E1) types.	
4.1.2	Test Equipment, Embedded	Equipment to perform tests on transmission circuits. This equipment is designed with transmission equipment issues in mind. Test equipment is NOT generally in series with the customer circuit and may be connected to a variety of access equipment and network elements with integral access features. This equipment may have analog and perhaps a variety of digital (i.e., T1, E1) types. Failure of this equipment doesn't bring down customer circuits; however, it inhibits the ability to maintain the network and to restore lost service.	
4.1.3	Test Support Software	Computer software that runs on a general purpose computer (office environment) and perhaps the maintenance network that the computer uses to communicate with the CO access and test equipment.	
4.2	***Operations Support Systems***	***Systems that provide TMN (Telecommunication Management Network) compliant, flexible, scaleable, and interoperable solutions to automate service activation, service assurance, and network capacity management processes to worldwide existing and emerging network services and equipment providers.***	
4.2.1	On Line Critical	Real time systems, demanding high availability, typically 24 hours a day and 7 days per week.	• Network traffic management • Surveillance of 911 • Fire alarms

Note 1: Product Categories listed in RED and *italicized* will be used for possible Data Aggregation only. Metrics must be submitted per the lower Product Category listing.

Note 2: Remember that the following Metrics (FRT, OFR & OTD) are applicable and required for all product categories.

Table A-1. Product Category Definitions			
Category Code	Category:	Definition:	Examples:
4.2.2	On Line Non-critical	Real time systems with lower availability demands than on line critical systems.	• Provisioning • Dispatch • Maintenance
4.2.3	Off Line	Traditional business systems that are run off line sometimes in batch mode, typically overnight and do not have high availability expectations.	• Inventory • Billing records • Service creation platform
5	***Common systems***	***Any of a variety of specialized generic, shared equipment to support network elements. Common systems include power systems and the Network Equipment-Building System (NEBS) that provides space and environmental support for network elements. These systems are located in central offices and remote building locations.***	
5.1	Synchronization	Equipment for operating digital systems at a common clock rate (frequency synchronization). This category includes primary reference sources and other timing signal generators that produce a timing signal traceable to UTC.	• Stratum 1,2, 3E domestic, TNC, LNC and Type 1 International • GPS timing receivers, cesium, loran, or CDMA RF pilot timing reference generators.
5.2	General Purpose Computers	A category reserved for computer complexes (one or more interconnected machines) that perform general business functions for a TSP but which do not provide any telephony transmission or storage service to subscribers or other TSP customers, or which may provide such services, but are not sold to the service provider as part of a system designed exclusively for that purpose. The purposes to which such machines may be put include but are not limited to: • Accounting systems • Billing systems • Legal systems • Ordering systems • Business Information systems	• Terminals • PCs • Workstations • Mini, mid, mainframes

Note 1: Product Categories listed in RED and *italicized* will be used for possible Data Aggregation only. Metrics must be submitted per the lower Product Category listing.

Note 2: Remember that the following Metrics (FRT, OFR & OTD) are applicable and required for to all product categories.

Table A-1. Product Category Definitions			
Category Code	Category:	Definition:	Examples:
		• HR functions • Engineering and support functions • Marketing and Sales functions	
5.3	Power Systems	Equipment for the provision of power to network equipment. Power systems provide two (2) principal functions: the conversion of the commercial AC power source to DC voltages required by the network equipment and the generation and distribution of emergency (reserve) power when the commercial power is interrupted. This category also includes the ringing plant, a redundant plant which supplies the ringing voltage, frequency, tones, and interrupter patterns	• AC rectifiers/battery chargers • Battery systems • Uninterruptable Power Supplies (UPS) • DC to AC inverters • DC to DC bulk converters • AC and DC switch gear • Ring generator • Power distribution panels
6	***Customer Premises***	***Equipment installed beyond the network demarcation point. Although commonly installed on the subscriber's premises, equipment with essentially identical function installed in the service provider's facility may also be classified as customer premises equipment.***	
6.1	***Enhanced Services Platforms***	***Systems that provide an environment in which service-specific application programs can execute and an infrastructure by which those application programs can provide enhanced services. Although each enhanced services platform has a corresponding service creation environment, that creation environment is sometimes packaged separately and may execute on a different platform.***	
6.1.1	Interactive Voice Response (IVR) Platforms	Equipment used to allow menu navigation and information retrieval, often from legacy databases external to the IVR platform itself.	
6.1.2	Messaging Platforms	Equipment for storage and retrieval of voice and/or fax messages	Voice mail systems
6.1.3	Multi-Application Platforms	Equipment which provides an environment rich in capabilities so that multiple, possible disparate services can be provided concurrently.	Unified/Universal Messaging (system providing a subscriber the

Note 1: Product Categories listed in RED and *italicized* will be used for possible Data Aggregation only. Metrics must be submitted per the lower Product Category listing.

Note 2: Remember that the following Metrics (FRT, OFR & OTD) are applicable and required for all product categories.

Table A-1. Product Category Definitions			
Category Code	Category:	Definition:	Examples:
			means, from a given device, to manipulate messages originated on like or different devices. Such devices include, but are not limited to, conventional telephone handsets, wireless handsets, PC terminals, fax machines, and email)
6.2	***Terminal Equipment***	***Equipment connected to the network demarcation point which provides a service to the subscriber. Terminal equipment includes telephone sets, whether wireline, cordless, cellular, PCS, or other voice terminals, fax machines, answering machines, modems, data service units (DSUs), or ISDN terminal adapters.***	
6.2.1	***Voice Terminals***	***Conventional, wireless, cellular, PCS, or other voice terminal equipment.***	
6.2.1.1	Wireline Telephone Sets	Telephone sets connected to conventional wireline (POTS) circuits.	• POTS telephone sets • Cordless telephones
6.2.1.2	Wireless Subscriber User Terminals	The subscriber user terminal made to transmit and receive voice and/or data communication using Telecommunication Infrastructure equipment not requiring hard lines as a means of transport. User terminals may be of any functional technology available for public use.	• Wireless single mode user terminal • Wireless mobile user terminal • Wireless stationary user terminal • Wireless multi-mode user terminal • Wireless multi-purpose user terminal • Wireless Global user terminal
6.2.2	Fax equipment	Equipment for sending or receiving facsimile (fax) over conventional voice-grade	

Note 1: Product Categories listed in RED and *italicized* will be used for possible Data Aggregation only. Metrics must be submitted per the lower Product Category listing.

Note 2: Remember that the following Metrics (FRT, OFR & OTD) are applicable and required for to all product categories.

Table A-1. Product Category Definitions			
Category Code	Category:	Definition:	Examples:
		lines.	
6.2.3	Data Modems	Equipment for digital communications over voice-grade lines	
6.2.4	Digital Data Service Units	Equipment for the interconnection of data terminal equipment (DTE) with a digital communications service. Such equipment typically provides a network interface and one or more DTE interfaces and may be configurable.	• DDS CSU / DSU • ISDN CSU / DSU • IDSN terminal adapter • T1 CSU DSU
6.3	Automatic Call Distribution (ACD) systems	Equipment for the distribution of incoming calls to any of a number of destinations based on some programmed logic. ACD systems are typically used in customer support call centers or sales centers.	
6.4	Private Branch Exchange (PBX)	Equipment to provide circuit switched voice and fax communications services, optimized for medium to large sized customer sites. Now is evolving to utilize ATM and IP networks and support multimedia communications.	
6.5	Small Communications System (Key Telephone System)	Equipment to provide circuit switched voice and FAX communications services, optimized from small to medium sized customer sites. Now is evolving to utilize IP networks.	
7	***Services***	*Result generated by activities at the interface between the supplier and the customer and by supplier internal activities to meet the customer needs.* *NOTES:* *1. The supplier or the customer may be represented at the interface by personnel or equipment;* *2. Customer activities at the interface with the supplier may be essential to the service delivery;* *3. Delivery or use of tangible products may form part of the service delivery; and* *4. A service may be linked with the manufacture and supply of tangible product.[4]*	
7.1	Installation Service	Contracted service to position, configure, and/or adjust a product.	
7.2	Engineering Service	Contracted service to design and/or develop a product. This includes, but is not limited to, the documentation necessary for positioning, configuring , connecting, and/or adjusting.	
7.3	Maintenance Service	Contracted service to maintain customer's equipment and/or systems.	
7.4	Repair Service	Contracted service to repair customer's equipment and/or systems	

Note 1: Product Categories listed in RED and *italicized* will be used for possible Data Aggregation only. Metrics must be submitted per the lower Product Category listing.

Note 2: Remember that the following Metrics (FRT, OFR & OTD) are applicable and required for all product categories.

Table A-1. Product Category Definitions			
Category Code	Category:	Definition:	Examples:
7.5	Call Center	Contracted service to process customer requests. This service may include problem response, problem resolution, and/or information sharing.	
7.6	Support Service	Contracted service that is not included in another product category.	
8	***Components and Subassemblies***	*Individual components or assemblies provided for use in telecommunications systems excluding those already covered by a specific product category in another product family. These items would typically be used by other suppliers and not sold directly to service providers except as replacement parts.*	
8.1	Components	Individual self-contained devices without separable parts.	• Crystals, ASIC's, Lasers, optical detectors, any individual piece part
8.2	***Subassemblies***	*A device made up of a number of components for use in a telecommunications system. This device is a portion of the completed system, but would not make up the entire system.*	
8.2.1	Simple	Less than 11 components or 49 solder connections excluding connectors	• VCXO's
8.2.2	Medium Complexity	More than 10 components or 48 solder connections but less than 51 components or 241 solder connections excluding connectors.	• Multi die hybrids • Optical assemblies • DC/DC converter "bricks"
8.2.3	High Complexity	More than 50 components or 240 solder connections but less than 501 components or 2401 solder connections excluding connectors	• Medium sized printed circuit assemblies
8.2.4	Very High Complexity	More than 500 components or 2400 solder connections excluding connectors	• Single board computers

Note 1: Product Categories listed in RED and *italicized* will be used for possible Data Aggregation only. Metrics must be submitted per the lower Product Category listing.

Note 2: Remember that the following Metrics (FRT, OFR & OTD) are applicable and required for to all product categories.

Table A-2. Metric Applicability Table (Normalized Units)

Product Category		*Hardware and Common Hardware Software*				*Software Only*			
Code	Description	Downtime Performance H, S	Outage Frequency H, S	Return Rate H	Problem Reports H,S	Corrective Patch Quality	Feature Patch Quality	Software Update Quality	Release Application Aborts
TL 9000 Metric/Submetric Symbols (See Table A-5.)		SO2; SO4;	SO1;SO3;	RR (all)	NPR (all)	CPQ (all)	FPQ (all)	SWU (all)	RAA (all)
RQMS Alternative Metric Symbols (See Table A-5.)		*r,h,DPMs,c_*	r,h,OFMs,c		IPR (all)	DPQ (all)	DFP (all)	DSU (all)	RAQ (all)
1	***Switching***								
1.1	Circuit Switch	Min/sys/yr.	Outages /sys/yr.	Returns/ 10,000 Ter minations/yr.	Prob/ sys/mo.	%	%	%	%
1.2	***Packet Switch***								
1.2.1	Public Packet Switched Network (PPSN)	Min/sys/yr.	Outages /sys/yr.	Returns/ 10,000 Ter minations/yr.	Prob/ sys/mo.	%	%	NA	%
1.2.2	IP Packet Switch/Router	Min/NC/yr	Outages /NC/yr.	Returns/ 10,000 Ter minations/yr.	Prob/ sys/mo.	NA	NA	%	NA
1.2.3	Asynchronous Transport Mode (ATM) Switch	Min/OC-1/ /yr.	Outages /OC-1/yr.	Returns/ 10,000 Ter minations/yr.	Prob/ sys/mo.	NA	NA	%	NA
1.2.4	Frame Relay Switch	Min/sys/yr.	Outages /sys/yr.	Returns/ 10,000 Ter minations/yr.	Prob/ sys/mo.	NA	NA	%	NA
2	***Signaling***								
2.1	Service Control Point (SCP)	Min/sys/yr.	Outages /sys/yr.	Returns/ System/yr.	Prob/ sys/mo.	%	%	%	%
2.2	Signaling Transfer Point (STP)	Min/sys/yr.	Outages /sys/yr.	Returns/ System/yr.	Prob/ sys/mo.	%	%	%	%
2.3	Home Location Register (HLR)	NA	NA	NA	Prob/ sys/mo.	%	%	%	%

Note 1: Product Categories listed in RED and *italicized* will be used for possible Data Aggregation only. Metrics must be submitted per the lower Product Category listing.

Note 2: Remember that the following Metrics (FRT, OFR & OTD) are applicable and required for all product categories.

Note 3: If the normalization factor contains the word "shipped", then the quantity shipped in the 12 months ending prior to the month being reported shall be used.

Table A-2. Metric Applicability Table (Normalized Units)									
Product Category		*Hardware and Common Hardware Software*				*Software Only*			
Code	Description	Downtime Performance H, S	Outage Frequency H, S	Return Rate H	Problem Reports H,S	Corrective Patch Quality	Feature Patch Quality	Software Update Quality	Release Application Aborts
TL 9000 Metric/Submetric Symbols (See Table A-5.)		SO2; SO4;	SO1;SO3;	RR (all)	NPR (all)	CPQ (all)	FPQ (all)	SWU (all)	RAA (all)
RQMS Alternative Metric Symbols (See Table A-5.)		*r,h,DPMs,c_*	r,h,OFMs,c		IPR (all)	DPQ (all)	DFP (all)	DSU (all)	RAQ (all)
3	***Transmission***								
3.1	***Outside Plant***								
3.1.1	***Transmission Medium***								
3.1.1.1	Metallic Cable Products								
3.1.1.1.1	Metallic Conductor Cable	NA	NA	NA	None	NA	NA	NA	NA
3.1.1.1.2	Metallic Connectors	NA	NA	NA	Prob/ 10,000 units shipped/ yr.	NA	NA	NA	NA
3.1.1.2	***Optical Fiber Products***								
3.1.1.2.1	Optical Fiber	NA	NA	NA	None	NA	NA	NA	NA
3.1.1.2.2	Optical connectors	NA	NA	NA	Prob/ 10,000 units shipped/ yr.	NA	NA	NA	NA
3.1.1.3	***Transmission Components***								

Note 1: Product Categories listed in RED and *italicized* will be used for possible Data Aggregation only. Metrics must be submitted per the lower product Category listing.

Note 2: Remember that the following Metrics (FRT, OFR & OTD) are applicable and required for to all product categories.

Note 3: If the normalization factor contains the word "shipped", then the quantity shipped in the 12 months ending prior to the month being reported shall be used.

Table A-2. Metric Applicability Table (Normalized Units)

Product Category		*Hardware and Common Hardware Software*				*Software Only*			
Code	Description	Downtime Performance H, S	Outage Frequency H, S	Return Rate H	Problem Reports H,S	Corrective Patch Quality	Feature Patch Quality	Software Update Quality	Release Application Aborts
TL 9000 Metric/Submetric Symbols (See Table A-5.)		SO2; SO4;	SO1;SO3;	RR (all)	NPR (all)	CPQ (all)	FPQ (all)	SWU (all)	RAA (all)
RQMS Alternative Metric Symbols (See Table A-5.)		*r,h,DPMs,c_*	r,h,OFMs,c		IPR (all)	DPQ (all)	DFP (all)	DSU (all)	RAQ (all)
3.1.1.3.1	Active Components	NA	NA	Returns/ unit/yr.	Prob/ Unit/yr.	NA	NA	NA	NA
3.1.1.3.2	Passive Optical Components	NA	NA	Returns/ unit/yr.	Prob/ Unit/yr.	NA	NA	NA	NA
3.1.1.3.3	Ancillary Equipment	NA	NA	Returns/ unit/yr.	Prob/ Unit/yr.	NA	NA	NA	NA
3.1.2	***Physical Structure***								
3.1.2.1	Enclosures	NA	NA	Returns/ unit/yr.	Prob/ Unit shipped/ yr.	NA	NA	NA	NA
3.1.2.2	Support Structures	NA	NA	Returns/ unit/yr.	Prob/ Unit shipped/ yr.	NA	NA	NA	NA
3.1.2.3	Conduits	NA	NA	Returns/ unit/yr.	Prob/ meter shipped /yr.	NA	NA	NA	NA
3.2	***Transport Equipment***								
3.2.1	Cross Connect Systems	Min/DS1/yr.	Outages/ DS1/yr.	Returns/ 1000 DS1/ yr.	Prob/ sys/yr.	NA	NA	%	%
3.2.2	***Carrier Systems/Multiplexers***								

Note 1: Product Categories listed in RED and *italicized* will be used for possible Data Aggregation only. Metrics must be submitted per the lower Product Category listing.

Note 2: Remember that the following Metrics (FRT, OFR & OTD) are applicable and required for all product categories.

Note 3: If the normalization factor contains the word "shipped", then the quantity shipped in the 12 months ending prior to the month being reported shall be used.

Table A-2. Metric Applicability Table (Normalized Units)

Product Category		*Hardware and Common Hardware Software*				*Software Only*			
Code	Description	Downtime Performance H, S	Outage Frequency H, S	Return Rate H	Problem Reports H,S	Corrective Patch Quality	Feature Patch Quality	Software Update Quality	Release Application Aborts
TL 9000 Metric/Submetric Symbols (See Table A-5.)		SO2; SO4;	SO1;SO3;	RR (all)	NPR (all)	CPQ (all)	FPQ (all)	SWU (all)	RAA (all)
RQMS Alternative Metric Symbols (See Table A-5.)		*r,h,DPMs,c_*	r,h,OFMs,c		IPR (all)	DPQ (all)	DFP (all)	DSU (all)	RAQ (all)
3.2.2.1	***Interoffice/Long Haul***								
3.2.2.1.1	Metallic Carrier System	Min/DS1/yr.	Outages/ DS1/yr.	Returns/ DS1/yr.	Prob/ sys/yr.	NA	NA	%	%
3.2.2.1.2	***Optical Carrier System***								
3.2.2.1.2.1	SONET/SDH Transport Systems	Min/OC-1/yr.	Outage / OC-1/yr.	Returns/ OC-1/ yr.	Prob/ network element /yr	NA	NA	%	%
3.2.2.1.2.2	WDM/DWDM/Optical Amplification Products	Min/OC-1/yr.	Outages/ OC-1/yr.	Returns/ OC-1/ yr.	Prob/ network element /yr	NA	NA	%	%
3.2.2.1.3	Microwave	Min/DS1/yr.	Outages/ DS1/yr.	Returns/ DS1/yr.	Prob/ network element /yr	NA	NA	%	%
3.2.2.2	Loop Carrier	Min/DS1/yr.	Outages/ DS1/yr.	Returns/ DS1/yr.	Prob/ DS1/yr.	NA	NA	%	%
3.2.3	Line Terminating Equipment/Distributing Frames	NA	NA	Returns/ 10,000 terminations /yr.	Prob/ 10,000 terminations/yr.	NA	NA	%	NA

Note 1: Product Categories listed in RED and *italicized* will be used for possible Data Aggregation only. Metrics must be submitted per the lower product Category listing.

Note 2: Remember that the following Metrics (FRT, OFR & OTD) are applicable and required for to all product categories.

Note 3: If the normalization factor contains the word "shipped", then the quantity shipped in the 12 months ending prior to the month being reported shall be used.

Table A-2. Metric Applicability Table (Normalized Units)

Product Category		*Hardware and Common Hardware Software*				*Software Only*			
Code	Description	Downtime Performance H, S	Outage Frequency H, S	Return Rate H	Problem Reports H,S	Corrective Patch Quality	Feature Patch Quality	Software Update Quality	Release Application Aborts
TL 9000 Metric/Submetric Symbols (See Table A-5.)		SO2; SO4;	SO1;SO3;	RR (all)	NPR (all)	CPQ (all)	FPQ (all)	SWU (all)	RAA (all)
RQMS Alternative Metric Symbols (See Table A-5.)		*r,h,DPMs,c_*	r,h,OFMs,c		IPR (all)	DPQ (all)	DFP (all)	DSU (all)	RAQ (all)
3.2.4	Digital Subscriber Line (DSL)	NA	NA	Returns/ DSL line/yr.	Prob/ DSL line/yr.	NA	NA	%	NA
3.3	***Wireless Transmission***								
3.3.1	Base Station Controller (BSC) and Base Station System (BSS)	Min/sys/yr.	Outages/ sys/yr.	Returns/ unit/yr.	Prob/ sys/yr.	%	%	%	%
3.3.2	Base Transceiver System (BTS)	Min/sys/yr.	Outages/ sys/yr.	Returns/ unit/yr.	Prob/ sys/yr.	%	%	%	%
3.3.3	Pilot Beacon Unit (PBU)	Min/sys/yr.	Outages / sys/yr.	Returns/ unit/yr.	Prob/ sys/yr.	%	%	%	%
4	***Operations & Maintenance***								
4.1.	***Test Systems***								
4.1.1	Test Access Equipment	NA	NA	Returns/ unit/yr.	Prob/ sys/yr.	NA	NA	%	%
4.1.2	Test Equipment, Embedded	NA	NA	Returns/ unit/yr.	Prob/ sys/yr.	NA	NA	%	NA
4.1.3	Test Support Software	Min/sys/yr.	Outages/ sys/yr.	NA	Prob/ sys/yr.	NA	NA	%	%
4.2	***Operations Support Systems***								
4.2.1	On Line Critical	Min/sys/yr.	Outages/ sys/yr.	Returns/ System/yr.	Prob/ sys/yr.	NA	NA	%	%

Note 1: Product Categories listed in RED and *italicized* will be used for possible Data Aggregation only. Metrics must be submitted per the lower Product Category listing.

Note 2: Remember that the following Metrics (FRT, OFR & OTD) are applicable and required for all product categories.

Note 3: If the normalization factor contains the word "shipped", then the quantity shipped in the 12 months ending prior to the month being reported shall be used.

Table A-2. Metric Applicability Table (Normalized Units)

Product Category		*Hardware and Common Hardware Software*				*Software Only*			
Code	Description	Downtime Performance H, S	Outage Frequency H, S	Return Rate H	Problem Reports H,S	Corrective Patch Quality	Feature Patch Quality	Software Update Quality	Release Application Aborts
TL 9000 Metric/Submetric Symbols (See Table A-5.)		SO2; SO4;	SO1;SO3;	RR (all)	NPR (all)	CPQ (all)	FPQ (all)	SWU (all)	RAA (all)
RQMS Alternative Metric Symbols (See Table A-5.)		*r,h,DPMs,c_*	r,h,OFMs,c		IPR (all)	DPQ (all)	DFP (all)	DSU (all)	RAQ (all)
4.2.2	On Line Non-Critical	Min/sys/yr.	Outages/ sys/yr.	Returns/ System/yr.	Prob/ sys/yr.	NA	NA	%	%
4.2.3	Off Line	Min/sys/yr.	Outages/ sys/yr.	Returns/ System/yr.	Prob/ sys/yr.	NA	NA	%	%
5	***Common Systems***								
5.1	Synchronization	Min/sys/yr.	Outages/ sys/yr.	Returns/ System/yr.	Prob/ sys/yr.	NA	NA	NA	NA
5.2	General Purpose Computers	Min/sys/yr.	Outages/ sys/yr.	Returns/ System/yr.	Prob/ sys/yr.	%	%	%	%
5.3	Power Systems	Min/sys/yr.	Outages/ sys/yr.	Returns/ unit/yr.	Prob/ sys/yr.	NA	NA	NA	NA
6	***Customer Premises***								
6.1	***Enhanced Services Platforms***								
6.1.1	Interactive Voice Response (IVR) Platforms	Min/sys/yr.	Outages/ sys/yr.	Returns/ System/yr.	Prob/ sys/yr.	NA	NA	%	%
6.1.2	Messaging Platforms	Min/sys/yr.	Outages/ sys/yr.	Returns/ System/yr.	Prob/ sys/yr.	NA	NA	%	%
6.1.3	Multi-Application Platforms	Min/sys/yr.	Outages/ sys/yr.	Returns/ System/yr.	Prob/ sys/yr.	NA	NA	%	%

Note 1: Product Categories listed in RED and *italicized* will be used for possible Data Aggregation only. Metrics must be submitted per the lower product Category listing.

Note 2: Remember that the following Metrics (FRT, OFR & OTD) are applicable and required for to all product categories.

Note 3: If the normalization factor contains the word "shipped", then the quantity shipped in the 12 months ending prior to the month being reported shall be used.

Table A-2. Metric Applicability Table (Normalized Units)									
Product Category		*Hardware and Common Hardware Software*				*Software Only*			
Code	Description	Downtime Performance H, S	Outage Frequency H, S	Return Rate H	Problem Reports H,S	Corrective Patch Quality	Feature Patch Quality	Software Update Quality	Release Application Aborts
TL 9000 Metric/Submetric Symbols (See Table A-5.)		SO2; SO4;	SO1;SO3;	RR (all)	NPR (all)	CPQ (all)	FPQ (all)	SWU (all)	RAA (all)
RQMS Alternative Metric Symbols (See Table A-5.)		*r,h,DPMs,c_*	r,h,OFMs,c		IPR (all)	DPQ (all)	DFP (all)	DSU (all)	RAQ (all)
6.2	***Terminal Equipment***								
6.2.1	***Voice Terminals***								
6.2.1.1	Wireline Telephone Sets	NA	NA	Returns/ unit/yr.	Prob/unit shipped/ yr.	NA	NA	%	%
6.2.1.2	Wireless Subscriber User Terminals	NA	NA	Returns/ unit/yr.	Prob/unit shipped/ yr.	NA	NA	%	%
6.2.2	Fax Equipment	NA	NA	Returns/ unit/yr.	Prob/unit shipped/ yr.	NA	NA	%	%
6.2.3	Data Modems	NA	NA	Returns/ unit/yr.	Prob/unit shipped/ yr.	NA	NA	%	%
6.2.4	Digital Data Service Units	NA	NA	Returns/ unit/yr.	Prob/unit shipped/ yr.	NA	NA	%	%
6.3	Automatic Call Distribution (ACD) Systems	Min/sys/yr.	Outages/ sys/yr.	Returns/ System/yr.	Prob/ sys/yr.	NA	NA	%	%
6.4	Private Branch Exchange (PBX)	Min/sys/yr.	Outages/ sys/yr.	Returns/ System/yr.	Prob/ sys/yr.	NA	NA	%	%
6.5	Small Communications System (Key Telephone System)	Min/sys/yr.	Outages/ sys/yr.	Returns/ System/yr.	Prob/ sys/yr.	NA	NA	%	%

Note 1: Product Categories listed in RED and *italicized* will be used for possible Data Aggregation only. Metrics must be submitted per the lower Product Category listing.

Note 2: Remember that the following Metrics (FRT, OFR & OTD) are applicable and required for all product categories.

Note 3: If the normalization factor contains the word "shipped", then the quantity shipped in the 12 months ending prior to the month being reported shall be used.

Table A-2. Metric Applicability Table (Normalization Units)			
Product Category		*Applicability and Normalization Units for Services*	
Code	Description	Service Problem Reports	Service Quality
TL 9000 Metric/Submetric Symbols (See Table A-5.)		NPR (all)	SQ
RQMS Alternative Metric Symbols (See Table A-5.)		NA	NA
7	***Services***		
7.1	Installation Service	Prob/job/yr.	% audits conforming
7.2	Engineering Service	Prob/job/yr.	NA
7.3	Maintenance Service	Prob/unit maintained/yr.	% visits without callbacks
7.4	Repair Service	Prob/unit repaired/yr.	% of successful repairs
7.5	Call Center	Prob/1000 calls/yr.	% calls resolved within agreed upon time
7.6	Support Service	Prob/unit /yr.	% transactions without defect

Note 1: Product Categories listed in RED and *italicized* will be used for possible Data Aggregation only. Metrics must be submitted per the lower product Category listing.

Note 2: Remember that the following Metrics (FRT, OFR & OTD) are applicable and required for to all product categories.

Note 3: If the normalization factor contains the word "shipped", then the quantity shipped in the 12 months ending prior to the month being reported shall be used.

Table A-2. Metric Applicability Table (Normalized Units)

Product Category		*Hardware and Common Hardware Software*				*Software Only*			
Code	Description	Downtime Performance H, S	Outage Frequency H, S	Return Rate H	Problem Reports H,S	Corrective Patch Quality	Feature Patch Quality	Software Update Quality	Release Application Aborts
TL 9000 Metric/Submetric Symbols (See Table A-5.)		SO2; SO4;	SO1;SO3;	RR (all)	NPR (all)	CPQ (all)	FPQ (all)	SWU (all)	RAA (all)
RQMS Alternative Metric Symbols (See Table A-5.)		*r,h,DPMs,c_*	r,h,OFMs,c		IPR (all)	DPQ (all)	DFP (all)	DSU (all)	RAQ (all)
8	***Components and Subassemblies***								
8.1	Components	NA	NA	NA	Prob/ 10,000 units shipped/ yr.	NA	NA	NA	NA
8.2	***Subassemblies***								
8.2.1	Simple	NA	NA	Returns/unit/ yr.	Prob/ 10,000 units shipped /yr.	NA	NA	NA	NA
8.2.2	Medium Complexity	NA	NA	Returns/unit/ yr.	Prob/ 1,000 units shipped/ yr.	NA	NA	NA	NA

Note 1: Product Categories listed in RED and *italicized* will be used for possible Data Aggregation only. Metrics must be submitted per the lower Product Category listing.

Note 2: Remember that the following Metrics (FRT, OFR & OTD) are applicable and required for all product categories.

Note 3: If the normalization factor contains the word "shipped", then the quantity shipped in the 12 months ending prior to the month being reported shall be used.

Table A-2. Metric Applicability Table (Normalized Units)

Product Category		*Hardware and Common Hardware Software*				*Software Only*			
Code	Description	Downtime Performance H, S	Outage Frequency H, S	Return Rate H	Problem Reports H,S	Corrective Patch Quality	Feature Patch Quality	Software Update Quality	Release Application Aborts
TL 9000 Metric/Submetric Symbols (See Table A-5.)		SO2; SO4;	SO1;SO3;	RR (all)	NPR (all)	CPQ (all)	FPQ (all)	SWU (all)	RAA (all)
RQMS Alternative Metric Symbols (See Table A-5.)		*r,h,DPMs,c_*	r,h,OFMs,c		IPR (all)	DPQ (all)	DFP (all)	DSU (all)	RAQ (all)
8.2.3	High Complexity	NA	NA	Returns/unit/ yr.	Prob/ 100 units shipped /yr.	NA	NA	NA	NA
8.2.4	Very High Complexity	NA	NA	Returns/unit/ yr.	Prob/ 100 units shipped /yr.	NA	NA	NA	NA

Note 1: Product Categories listed in RED and *italicized* will be used for possible Data Aggregation only. Metrics must be submitted per the lower product Category listing.

Note 2: Remember that the following Metrics (FRT, OFR & OTD) are applicable and required for to all product categories.

Note 3: If the normalization factor contains the word "shipped", then the quantity shipped in the 12 months ending prior to the month being reported shall be used.

Document Name: Product Category Table Release 2.5
File Name: ProductCategoryTable25VerA.doc
Document Number: TL/04/01
Release Date: 6/01/01
Revision: 00
Revision Date: