# QWEST Communications International Inc. Technical Publication

## QWEST, INC. DOCUMENTATION REQUIREMENTS FOR SUPPLIERS



77362
Issue F
September 2001

# NOTICE

This publication is intended for the purpose of notifying QWEST, Inc. Suppliers of their responsibilities in providing documentation associated with Materiel and/or Licensed Software.

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If further information is required, please contact:

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Throughout this publication, the term QWEST signifies QWEST Communications International Inc.

COMMENTS on PUB 77362

PLEASE TEAR OUT AND SEND YOUR COMMENTS / SUGGESTIONS TO:

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|---|---|
| Was this Publication valuable to you in understanding The technical parameters of our service? | YES _____ NO _____ |
| Was the information accurate and up-to-date? | YES _____ NO _____ |
| Was the information easily understood? | YES _____ NO _____ |
| Were the contents logically sequenced? | YES _____ NO _____ |
| Were the tables and figures understandable and helpful | YES _____ NO _____ |
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# 1. Introduction

## 1.1 General

This publication is intended for the purpose of notifying QWEST Suppliers of their responsibilities in providing documentation associated with Materiel and/or Licensed Software.

All QWEST Suppliers must fully comply with the documentation requirements specified in this publication, other QWEST publications, and Bellcore publications. Should any conflict exist between Telcordia and QWEST publications, the Supplier will adhere to the specifications in the QWEST publications.

Supplier Documentation includes practices, procedures and other documents used by the customer in its day-to-day operations.

Documentation should cover activities necessary for the planning, engineering, ordering, installing, provisioning, testing, training, operating, maintaining, repairing, and Automatic Message Accounting (AMA) functions associated with Materiel and Licensed Software used by QWEST.

Supplier product documentation will be accurate and immediately delivered and/or available (per customer document delivery requirements). Documents will be the most recent issue and will contain lists that show the updates to that document. It is QWEST's intent that all new documentation be supplied in electronic formats as specified in Chapter 6.

The issue numbers and dates associated with all references are the most current at the time this publication was issued and are subject to change.

# 2. Format Requirements

## 2.1 General

The issue number and issue date will appear on each page of all paper Supplier Documentation.

Document issues will be numbered and dated so that QWEST can manage the flow of documentation and remove outdated documents from circulation.

The Supplier will provide easily understood step-by-step procedures for engineering, ordering, installing, provisioning, operating, maintaining, testing and repairing Materiel and Licensed Software.

The documentation will be arranged in chronological order and in a Task Oriented Practice (TOP) format for Materiel and Licensed Software that are not accessible via computer terminal (see IP 10260 "Standards for Task Oriented Practices", 1977).

The Supplier will provide documentation in an appropriate format; for example, "menu-driven" or other software generated instructions that comply with preliminary requirements as outlined in Bellcore Technical Reference TR-TSY-000824, "OTGR: User System Interface User System Access, Section 10.1 (A Module of OTGR, FR-NWT-000439)" and Bellcore Technical Advisory, TA-TSY-000228, "Generic Human Factors Requirements for Network Terminal Equipment: Preliminary" for Materiel and Licensed Software accessible via computer terminals for instructions about the installation, operation, maintenance, testing, engineering, or administration.

## 3. Reproduction

QWEST may reproduce any documentation, including copyrighted or similar proprietary and confidential notices, for the purpose of planning, engineering, ordering, installing, provision, testing, operating, maintaining and repairing of Materiel, Licensed Software or Services.

# 4. Document Delivery

## 4.1 General

If QWEST elects to install or has others install the product, the Supplier will deliver installation documentation six weeks prior to the ship date as defined in the contract.

The Supplier will provide planning documents that cover future Materiel and Licensed Software versions or generic a minimum of one year prior to the date such Materiel and Licensed Software will be available to order.

The Supplier will provide engineering, provisioning, network switch administration and AMA documents that cover new Materiel and Licensed Software versions or generic a minimum of three months prior to the date such Materiel and Licensed Software will be available to order.

The Supplier will deliver the required Supplier documentation to the specified sites at no charge:

- On or before the shipment date, one complete set of job specific documentation which describes the installing, provisioning, testing, operating maintaining and repairing or the materiel, licensed software or service to the engineering center and job site locations specified in the order.
- On or before the shipment date, one complete set of job specific central office records as defined in the QWEST Communications International Inc. Technical Publication 77351, "Central Office Telecommunications Equipment Engineering Standards," and standard drawings as defined in QWEST Communications International Inc. Technical Publication 77352, "Central Office Telecommunications Equipment Standard Drawing Requirements," to the Records Group, 6912 S. Quentin Street, Englewood, CO 80112.
- On or before the shipment date, one complete set of Materiel and Licensed Software Document electronic PDF format, unless otherwise indicated in the contract, to E*MEDIA, 1801 California, Room 1330, Denver, CO 80202.
- When the contract specifies delivery of documentation in electronic PDF format (see Chapter 6), the following will be delivered to E*MEDIA, 1801 California, Room 1330, Denver, CO 80202 as applicable:

- One complete set of Electronic Switching Assistance Center (ESAC) required documentation.
- One complete set of Maintenance Engineering required documentation.
- One complete set of Switching Control Center (SCC) required documentation.
- One complete set of Network Switch Administration / Network

Administration Center
(NAC) required documentation.

- One complete set of Interconnect Documentation (for complete details see Chapter 9).

- If the contract excludes delivery of documentation in electronic PDF format, the documents listed in D,1 through D,5 will be delivered in paper form to the location specified by the customer.

4.2 The Supplier will deliver the required Supplier documentation to the specified sites at no charge:

A. On or before the shipment date, one complete set of job specific documentation which describes the installing, provisioning, testing, operating maintaining and repairing of the materiel, licensed software or service to the engineering center and job site locations specified in the order.

B. On or before the shipment date, one complete set of job specific central office records as defined in QWEST Communications International Inc. Technical Publication 77351, "Central Office Telecommunications Equipment Engineering Standards," and standard drawings as defined in QWEST Communications, Inc. Technical Publication 77352, "Central Office Telecommunications Equipment Standard Drawing Requirements," to the Records Group, 6912 S. Quentin Street, Englewood, CO. 80112.

C. On or before the shipment date, one complete set of Materiel and Licensed Software Documentation to Information Resource Management (IRM), 1801 California, Room 1340, Denver, CO. 80202.

D. At the customer's request, one set of Electronic Switching Assistance Center (ESAC) required documentation will be sent to a specified location.

E. At the customer's request, one set of Maintenance Engineering required documentation to a specified location.

F. At the customer's request, one complete set of Switching Control Center (SCC) required documentation to a specified location.

G. At the customer's request, one complete set of Network Switch Administration / Network Administration Center (NAC) required documentation to a specified location.

H. At the customer's request, one complete set of Interconnect Documentation (for complete details see Paragraph 9.00).

# 5. Documentation Updates

## 5.1 General

All documentation will be updated to reflect any system or feature changes.

- One copy of all revisions will be provided to E*MEDIA, 1801 California, Rm. 1330, Denver, CO. 80202, at no charge for the life of the equipment and/or licensed software.
- One copy of all revisions will be provided to locations specified in this chapter at no charge during the warranty period of the equipment and/or licensed software.
  - The Supplier will provide E*MEDIA with a list of the paper documents and the media the documents are provided in every location was receiving 90 days prior to the warranty expiration.
- A "Reason for Reissue" or "Change History" section will be included in each document describing the changes in that issue.
- The Supplier will update the Materiel COMMON LANGUAGE® Equipment Identification (CLEI™) Code whenever there are changes that require that the Customer Continuing Property Records be updated.

# 6. E*MEDIA System Document Receipt

## 6.1 Document File Types

Documentation is to be provided to QWEST in the following electronic formats (see section 6.3 for acceptable media types). The matrix shown below indicates required, preferred and negotiable formats.

| Status | Format Description |
|---|---|
| REQUIRED | • Portable Document Format (PDF)<br>• Hyper Text Markup Language (HTML) |
| PREFERRED | • PDF |
| NEGOTIABLE | MS document structure & content in Word 6.0 or above |
| | Document structure & content in Rich Text Format (RTF) compatible with MS Word 6.0 on Macintosh or on a DOS/Windows PC |
| | Document structure & content in Maker Interchange Format (MIF) 3.0 or above |
| | Postscript format |

## 6.2 Document Information Road Map

Document files should have logical file extensions to identify the file type as follows:

Information Road Map should include Read Me file explaining each file provided in the delivery by document name, number of pages, document creator, list of subdirectory files and a description of subdirectory files.

## 6.3 Document Media Types

The following media types are listed in order of preference for large (2MB or greater) document transfer. Smaller documents can use the appropriate media type.

- Compact Disk Read-Only Memory (CD-ROM)
- 3.5" PC or Macintosh Floppy
- 8mm Exabyte® high capacity cartridge tape (2.3 Gig)

# 7. Documentation for Reliability and Quality Assurance

## 7.1 General

The Supplier will document its use of a quality control program for documentation. Such information will be sufficient for QWEST to ensure that the Supplier's Documentation quality control program covers at least the following for both Materiel and Licensed Software:

- An effective internal process to ensure that qualified Subject Matter Experts (SMEs) review and certify the accuracy and completeness of product documentation.
- A management system to ensure control of documentation updates.
- Field audits performed to ensure the effectiveness of Supplier's Documentation quality control program.
- A "customer feedback" process (e.g., customer comment cards) to be used in evaluating the quality of Supplier Documentation as perceived by QWEST.

The Supplier will provide documentation containing sufficient information to determine whether the system meets QWEST reliability and quality requirements. The documentation will cover system design, development manufacturing program.

## 7.2 System Design Documentation

Supplier documentation will include all system availability and reliability parameters for describing the expected availability and reliability of the product and all its sub-elements. It shall also include the methods used for determining those availabilities and reliabilities.

Supplier will provide system availability and reliability results for all performances parameters discussed in Bellcore product-specific criteria documents, such as the Bellcore Family of Requirements TR-TSY-000064, "LATA Switching Systems Generic Requirements, (LSSGR), 1992 Edition".

The failure rates and models used will be documented and will be consistent with methods specified in Bellcore Technical Reference TR-NWT-000332, "Reliability Prediction Procedure for Electronic Equipment, (A Module of RQGR, FR-NWT-000796)".

Supplier Documentation will include a listing of all circuit pack (plug-in) types or codes used in the product, with the applicable predicted failure rate for each. Supplier documentation will include information in sufficient detail to enable QWEST to independently verify all data.

Supplier documentation will include the definition of unavailability (e.g., Bit Error Ration (BER) exceeding a redetermined value).

Availability and reliability parameters will be documented for the minimum and maximum configurations of the system.

Supplier will provide documentation describing all methods for expansion of the equipment and their effect on availability and reliability.

Supplier documentation will detail the expected level of infant mortality at the time of shipment, including the amount of operation the equipment would typically receive before shipment to QWEST (sometimes referred to as the "burn-in" period). The documentation will also explain the calculation methods used to determine the remaining infant mortality. Supplier documentation will include the infant mortality model.

Supplier documentation will state the environment conditions required for a product that is intended for central office environments. Documentation shall be similar to TR-EOP-000063, "Network Equipment-Building System (NEBS) Generic Equipment Requirements, (A Module of LSSGR, FR-NWT-000064 and of TSGR, FR-NWT-000440)."

In all cases, Supplier documentation will include a description of the test conditions used by Supplier to assure that the product operates properly in the extremes of the allowed environmental conditions.

Supplier documentation will include information on flammability standards, see Bellcore Technical Reference, TR-EOP-000063, (see Reference Section) to which the product conforms. This will include information on results of flammability tests to which the product and its components have been subjected.

- Flammability standards information will be updated whenever there is a change in Supplier's use of components used in the manufacture of Supplier's Materiel.

Supplier documentation will present the sub-assemble design and procurement criteria used in enough detail so that conformance to the criteria of Bellcore Technical References TR-NWT-000078, "Generic Physical Design Requirements for Telecommunications Products and Equipment" and TR-TSY-000357, "Component Reliability Assurance Requirements for Telecommunications Equipment, (A Module of RQGR, FR-NWT-000796)" can be determined.

Supplier documentation will be in sufficient detail that QWEST can be assured that Materiel and Licensed Software meets all generic reliability criteria in Telcordia's product-specific Reliability and Quality Generic Requirements (RQGR) documents, such as Bellcore Technical References TR-NWT-000284, "Reliability and Quality Switching Systems Generic Requirements (RQSSGR), (A Module of RQGR, FR-NWT-000796)" and TR-TSY-000418, "Generic Reliability Assurance Requirements for Fiber Optic Transport Systems, (A Module of RQGR, FR-NWT-000796)".

## 7.3 Development and Manufacturing Program Documentation

The Supplier will have documentation detailing all qualifications and requalification programs of at least the following:

- Components and Vendors
- System Design
- Environmental Conditions
- Manufacturing Processes
- Software Products and Processes

The Supplier will have a quality-controlled manual that details all quality-related functions in the factory and includes the functions of the Supplier's quality assurance and quality control organizations.

The Supplier will have a reliability controlled engineering manual that addresses the reliability aspects of the product, including description of at least the following:

- Estimation of Materiel and Licensed Software reliability.
- Methods used to predict unit and system reliability.
- Estimation of the failure rate of the equipment and how it is derived.
- Early life reliability of infant mortality of the equipment at the time of shipment.
- Materiel and Licensed Software development, test and reliability assurance programs.
- Program for estimating and ensuring the reliability of electronic devices.

The manufacturing program requirements will be documented and will include all of the following:

- Product sub-assemble procurement, inspection and testing.
- Product assembly, inspection and testing, including burn-in procedures.
- Product quality sampling procedures.

## 7.4 Software Quality Program Documentation

The Supplier will provide documentation to demonstrate that it has developed a quality control and assurance program for software as defined in Bellcore Technical References TR-TSY-000179, "Software Quality Program Generic Requirements (SQPR), (A Module of RQGR, FR-NWT-000796)," and TR-TSY-000282, "Software Reliability and Quality Acceptance Criteria (SRQAC), (A Module of RQGR, FR-NWT-000796)" including computer programs, Firmware, related data, and documentation.

- As required in Bellcore Technical Reference TR-TSY-000282 (see Reference Section) the Supplier will provide "officially issued" software documentation (not "preliminary" or "draft") at the transition from First Office Application (FOA) to general availability.

## 7.5 Product Support and Field Reliability Documentation

Supplier documentation will describe the following:

- Technical assistance programs, including emergency contact telephone numbers (preferably 800-type numbers) and hours of operation for technical assistance.
- Product implementation procedures, including FOA specific procedures.
- Product change notice procedures.
- Warranty information.
- Engineering complaint and operational trouble report programs.

The Supplier will have documentation describing their provision, use and support of field reliability monitoring programs for their products as prescribed in Bellcore Special Report SR-TSY-000963, "Network Switching Element Outage Performance Monitoring Procedures, (A Module of RQGR, FR-NWT-000796)".

The Supplier will have documentation describing a return and repair program for defective products, including a description of the product return procedures and expected turnaround time for all returned products.

- For the return and repair program, Supplier documentation will describe a method of tracking repaired products and a program for collecting actual failure rate data and "no trouble found" data on returned product.

# 8. Documentation for Inventory and Ordering

## 8.1 General

The Supplier will conform with COMMON LANGUAGE® Equipment Identification (CLEI™) standards as specified in QWEST Technical Publication 77361, "COMMON LANGUAGE® Equipment Classification (CLEI™) and Bar Code Labeling Requirements for Central Office Equipment," and Teclcordia Technical Reference TR-STS-000383, "Generic Requirements for COMMON LANGUAGE® Bar Code Labels".

The Supplier will provide an "Ordering Guide" that is sufficient for QWEST to ensure that all necessary components (including ancillary equipment) needed to install, test operate the product in its intended manner have been ordered and / or received.

# 9. Documentation for Interconnect Drawings

## 9.1 General

This section describes Interconnect Drawings and their use within QWEST.

The term "Interface Drawing" has been replaced by the term "Interconnect Drawings" because it better describes the type of information and intended use of these documents.

Interconnect Drawings are those drawings engineered by QWEST to facilitate the interconnection of a supplier's equipment with other equipment manufactured by the same supplier or with equipment manufactured by another supplier. All QWEST Interconnect Drawings are classified proprietary for use within QWEST (see Section 9.5, A regarding proprietary classification).

## 9.2 Purpose

Interconnect Drawing preparation consists of the engineering required to create a drawing that details requirements to connect a suppliers equipment. Interconnect is defined as the detailed interconnection information required between supplier's equipment where:

- The existing Central Office Equipment (COE) must be reconfigured.
- Additional interconnecting equipment is required.
- Interconnection is with cable and / or wire only and no further modification is necessary.

Interconnect Drawings are created to establish a permanent record of information needed to complete the Engineer, Furnish and Install (EFI) process.

The following information is typically depicted on Interconnect Drawings; however, other information may be necessary and should be included as part of the drawing.

- Block diagram showing the functional arrangement of equipment and how it interconnects with other equipment.
- Circuit description indicating, in narrative format, how the equipment interconnects with other equipment.
- Schematics showing in graphics format the electronic operation of the equipment.
- Footprint information showing (in plain view) the physical size of the equipment.

- Front equipment pictorials showing the physical arrangement of all equipment as it is mounted in a relay rack frame and the front and back plane of all sub-units.
- Type of framework and all special mounting information.
- Power drain and fuse requirements.
- Specific lead and connector pin assignment for all external connections.
- The type, gender and part number of all connectors.
- Cable and wire sizes as well as critical lengths.
- Alarm bit mapping information.
- Engineering and installers notes.
- Ordering information.

In some cases where equipment is complex, a separate equipment specification drawing may be required. Equipment specification drawings provide ordering and equipment arrangement information. A separate schematic drawing may also be required to illustrate the electronic operation and interrelationship of the equipment.

Interconnect Drawings are created to be used by the equipment engineer, detail engineer, installer, maintenance engineer, Central Office Technician, and Digital Service Operations Center (DSOC). They are not intended to be used as a replacement for supplier's drawings, but are instead to be used as a supplement to them.

## 9.3 Format

QWEST engineered Interconnect Drawings are created in a format closely resembling a combination of supplier equipment specification and circuit schematic drawings. Part E of QWEST Technical Publication 77351, (see Reference Section) contains information on supplier drawings and documentation.

QWEST engineered drawings are typically identified by five alphanumeric characters preceded by a two character prefix. Also a numeric suffix usually indicates drawing series number.

## 9.4 Interconnect Drawing Availability

Interconnect Drawings are maintained by QWEST. A current list of these drawings may be obtained by contacting the Interconnect Drawing Coordinator on (303) 792-6414.

## 9.5 Proprietary Classification of Interconnect Drawings

All Interconnect Drawings are classified "proprietary." These drawings are only for use with in QWEST or by agents hired by QWEST who have signed non-disclosure agreements.

# 10. Documentation Requirements

## 10.1 Documentation Guide

The Supplier will provide a Documentation Guide that includes a Master List of Material and Licensed Software Documentation and a Cross-Reference Index.

A Master List will include a minimum of the following:

- A complete list of all documentation available for Materiel and Licensed Software and the available media options.
- A description of each document for Materiel Licensed Software pertaining to and categorized as:

- Planning
- Engineering
- Ordering
- Installation
- Operation
- Maintenance
- Provisioning
- Testing
- Repair
- Administration
- Automatic Message Accounting (AMA)
- Reliability and Quality Assurance
- Supplier Support

- Identification of those documents considered proprietary or confidential by the Supplier.
- An explanation of the scheme used to number or code the documents.
- A listing of all Materiel and Licensed Software model numbers, versions or generics currently in use or available, and the current documentation associated with each.

A Cross-Reference Index that will enable users to locate information based on at least the following items:

- Title
- Subject
- Document Number
- Issue Number
- Dates of active issues and systems(s)/subsystems to which they apply.

For all Materiel and Licensed Software purchased as a result of this project, the Suppliers will provide either a complete new Master List, updated as new document are issued, or a convenient method of updating the Master List that allows the most current revisions to be inserted as documents are updated.

## 10.2 Hardware Documentation Requirements

All Supplier documentation will clearly state the product model number(s) for hardware to which it applies. Information unique to a particular model(s) and not applicable to others, shall be clearly identified as such.

The Supplier will provide a general description of the product hardware configuration, functions, capabilities, limitations, and physical characteristics.

Supplier Documentation will conform to the requirements of QWEST Technical Publication 77351, (see Reference Section). The Supplier will contact QWEST for any numbering of Central Office Drawings.

## 10.3 Software Documentation Requirements

All Supplier Documentation will clearly state the Licensed Software version(s) or generic(s) to which it applies. Information unique to particular version(s) or and not applicable to others, will be clearly identified as such.

The Supplier will provide a general description of Licensed Software, including an overview of the scope, objectives, architecture and capabilities of the system. This will include high-level flow and/or block diagrams. It will also specify the role of the software system as it relates to other systems (e.g., Operations Systems) and/or programs.

The Supplier will provide a Program Documentation Index that lists all program documents and the issue of each document that applies to each version or generic of the Licensed Software.

The Supplier will provide Patch Administration Documentation describing the Supplier's procedures for administering routine and Licensed Software corrections (patches), to in-service systems. This applies to any medium used by the Suppliers for providing these corrections (e.g., word-by-word overwrites distributed in printed form, whole programs distributed on disk or tape, or other medium).

- The Supplier will provide Patch Application Documentation with each routine Licensed Software correction (patch), consisting of notices and procedures pertaining to the application of patches.
- This documentation will include a description of patch, an identification of the patch (by sequence number or other identifying code), identification of the problem corrected by the patch, procedures for installing and testing the patch, and procedures for removing the patch if it causes problems.
- This documentation will contain a description of how patches are sequenced to ensure compatibility, i.e., a procedure for ensuring that applicable patches are implemented in all affected switching systems, and methods for determining which patches have been applied in a particular location.

The Supplier will provide Licensed Software loading and verification documentation that provides the procedures and guidelines to allow QWEST personnel to properly load and verify the loading of all types of Licensed Software into the equipment. These types of Licensed Software include, but are not limited to, initial configuration loads, generic updates, recent change updates, Licensed Software patches for problem resolution, etc.

Supplier documentation will explain diagnostic and / or error routines peculiar to individual programs, and will specify corrective action for all known error conditions.

The Supplier documentation will describe any manual and / or machine interfaces with functions within the system, and between the system and other systems (e.g., Operations Systems).

For each new Licensed Software release of fix, the Supplier will identify all modules in the load, their functions, and their relationships to each other and to any associated databases.

- The Supplier will identify all problems fixed in each release, all known problems remaining in the release, and all modules affected by the change.
- Changes to all affected documentation will also be included.

The Supplier will provide Licensed Software and Firmware code listing, language guides, programmers' guides, and other documentation to enable QWEST personnel to isolate problems. "Firmware" refers to programs resident in read-only memories.

The Supplier will provide annotated Licensed Software source code listings for all software in the system; where resident in a central processor unit, a distributed processor unit, or other auxiliary processor.

The Supplier will provide annotated Firmware code listing for all Firmware in the system; whether resident in a central processor unit, a distributed processor unit, or other auxiliary processor controller.

- Firmware listing will be of an expanded form with a hierarchical structure and contain general descriptive information at the top level and more detailed comments at lower levels, down to the individual instruction level.
- For each Firmware program unit, the listing will contain a prologue, a list of all entry and exit points from or to other units, and the code of the unit. The prologue will describe and define the purpose or function of the unit, its relationship to other units, and identify all sub-units.
- Comments will be provided for at least all key instructions (i.e., entry or exit points) and for instructions that are not self-explanatory. Data passed to each unit from other units, explicitly or implicitly, shall be clearly identified.
- In addition, Firmware Documentation will also include a program-to-memory device map for each memory device or unit, including starting and ending addresses for each resident program.

The Supplier will provide Program Flowcharts (i.e., pictorial presentations of the sequence of operations performed by the programs) showing the program functions and their logical sequence. Program Flowcharts will show the logical functions of the program, and not simply depict program instructions on a one-for-one basis (the detail and size of a flowchart depends on the program size and complexity).

The Supplier will provide Program Specifications that give a detailed description of each program, including what each program is to accomplish and the rules that are followed to achieve the intended results. If provided, the program Specifications, together with the program listings and program flowcharts, will provide a complete explanation of the programs so that interpretation by programmers or other persons experienced in the use of the program is not required.

The Supplier will provide program Maps and Database Layouts that include definitions, descriptions, layouts, address maps, storage assignments, available space maps, I/O maps or assignments, symbols, and symbolic and numerical equivalencies for all stored data (transient and non-transient) and programs, including indexes that make this information easy to use.

The Supplier will provide language guides or programming manuals for all programming languages used in the System Licensed Software and Firmware. These guides will contain sufficient information to interpret the functions performed by the code in the languages used.

International Telegraph and Telephone Consultative Committee (CCITT) definitions of software components will be used.

## 10.4 Hardware Requirements at a Network Interface (NI)

Supplier documentation will describe all type of Craft Interface Devices (CIDs), usually hard copy or video-display terminals, known to Supplier that can be used with Materiel. Examples are discussed in Bellcore Technical Advisory TA-TSY-000228, (see Reference Section). Where a public standard for the interface between the Supplier's Materiel and a CID is met, this will be stated.

Supplier documentation will include a TOP-format (or equivalent) document for CID installation and acceptance testing at the interface as well as a User Guide.

The Supplier will provide Hardware Documentation as it applies to each Network Interface. The Supplier will also provide forms for "Hard-Wired Units and Mountings" as described in Telcordia Technical Reference TR-ISD-000325, "Equipment Information Required from Suppliers for Operations Systems," that will be adapted for each external interface as well. Information from the forms includes schematic diagrams, cabling information, dimensions, and configurations or direct options, etc. The Supplier will also provide additional information related to these items, as required by QWEST.

The Supplier will indicate the version(s) of CID hardware with which their Materiel will interface. If specific hardware requirements and / or assumptions are used in designing the interface, they will be noted.

## 10.5 Software Requirements at a Network Interface

The Supplier will specify all the public software interface standards that Materiel and Licensed Software meets, with specific reference to the issue and date of the document describing the standard.

The Supplier will specify any known area of non-compliance with relevant software interface standards associated with Materiel and Licensed Software.

## 10.6 Operations Systems Interfaces

The Supplier will document the compatibility of their Material and Licensed Software with existing Operations Systems, and provide references to appropriate Telcordia, QWEST and Supplier documents and refer to OTGR: available separately as Telcordia Technical Reference TR-TSY-000481, "OTGR: Generic Operations Interface-Overview and Directory, Section 11, (A Module of OTGR FR-NWT-000439)" and Telcordia Family of Requirements FR-NWT-000482, "OTGR: Operations Applications Messages, 1992 Edition".

# 11. Documentation for Planning and Engineering

## 11.1 Specifications

Supplier's documentation will include specifications that contain comprehensive descriptions of Materiel and Licensed Software, its performance parameters, subscriber and NIs, Operations System interface, environmental and application capabilities and restrictions.

The specification will include a summary of the Supplier's compliance or non-compliance with
QWEST Technical Publications and Bellcore TAs / TRs.

The specification will identify performance parameters, operational interfaces, environmental capabilities, and application restrictions.

The Supplier will maintain the specification with current specific and verifiable information by providing updates or revisions as information changes, and at least concurrently with the availability of new versions of the Materiel and Licensed Software.

The specification will clearly state Materiel and Licensed Software versions(s) or generics(s) to which it applies. Information unique to particular version(s) or generics(s), and not applicable to others, will be clearly identified as such.

The specification will be stated concisely in terms that are verifiable and can be compared to applicable generic requirements. Where complete specifications would be excessively voluminous
(e.g., AMA formats or detailed feature specifications), references to specific issues and dates or more comprehensive Supplier documents may be used.

The specification will identify all system components, accessories and other applicable criteria that
QWEST may detail in the contracts.

The Supplier will provide a Reliability and Quality (R & Q) specifications for Materiel and Licensed Software describing the Supplier's programs and practices that assure reliability and quality.

The Product R & Q specification will be expressed in terms consistent with the, Bellcore Technical Reference TR-NWT-000284, (see Reference Section).

The Product R & Q Specification will satisfy the requirements in Chapter 4 and such specifications can be included as part of the contracts with the Supplier.

## 11.2 Planning Documentation

The Supplier will provide planning documentation (e.g., a Product Planning Guide) that includes information needed for QWEST's planning process. The following types of information will be required:

- Network switching planning information.
- Central office planning information.
- Central office Interconnect Drawing requirements.
- Power plant and ringing plant requirements.
- Building planning information.
- Product installation, test and maintenance information including Operations System interfaces.
- Product repair, return and/or spate parts requirements, including repair services offered or intended to be performed by the Supplier and repairs that may be performed by QWEST information on return of defective products and recommended levels of spares.

Supplier Documentation will provide detailed descriptions of Material and Licensed Software and the functions in the following categories:

- Switching equipment
- Frame equipment
- Hardwired equipment units
- Plug-in equipment units
- Mounting or backplane units for plug-in equipment
- Cross-connect equipment units
- Inter- and intra-frame cabling and wiring
- Craft interface terminals
- Test equipment, Instruments and tools

The Supplier will provide a Hardware Documentation Key and Index as documented in QWEST Technical Publication 77352, (see Reference Section).

The Supplier will provide Circuit Schematic Drawings as detailed in QWEST Technical Publication 77352, (see Reference Section).

The Supplier will provide Circuit Descriptions as detailed in QWEST Technical Publication 77352, (see Reference Section).

The Supplier will provide Wire Diagrams as detailed in QWEST Technical Publication 77352, (see Reference Section).

The Supplier will provide Equipment Specification Drawings as detailed in QWEST Technical Publication 77352, (see Reference Section).

The Supplier hardware documentation will include photographs and/or scale drawings of the product, which will include or be accompanied by dimensions of the product.

The Supplier will provide the forms shown in Bellcore Technical Reference TR-ISD-000325, Sections 2 and 3, (see Reference Section) including requested information for a complete hardware description.

The Supplier Documentation will provide a detailed description of Licensed Software and the function it performs.

Supplier Documentation will include information on Licensed Software to enable QWEST to perform planning and engineering functions in preparation for the use of the Licensed Software.

Supplier Software Documentation will state the effect of provisioning Licensed Software on Customer's Central and/or Distributed Process Units (CPUs/DPUs). In addition, Licensed Software Documentation will describe the effect of programs that increase demands on maximum memory capacity.

## 11.3 Engineering Documentation

The Supplier will provide Engineering Documentation that contains detailed information about how to properly configure the product for QWEST requirements. Documentation definitions include, but are not limited to the following:

- Product Description/Product Design Information
- Documentation that provides the definitions of each element of the product and the methods and guidelines for the Customer's engineers to configure the product to meet their requirement.
- Physical Characteristics
- Documentation that describes the depth, width, height, weight, framework construction, associated piece parts, and so forth for the engineer to properly configure the product.
- Design Specifications
- Documentation that provides the specific operating characteristics and the operating limitations, such as environmental concerns, floor loadings.

- Theory of Operations
- Documentation the provides the customer's personnel with the basic information on the operation of the equipment. This information will be at both overview and at detail levels, due to the utilization of the documentation by personnel with varying levels of expertise.
- Testing, Acceptance, and Operating Procedures
- A document that is concerned with testing, turn-up and Acceptance of the Materiel and Licensed Software after installation. The methods and procedures are defined to ensure the proper operation of the product.
- Trouble Analysis, Repair, and Replacement Procedures
- Documents that are concerned with resolving operational trouble and problems.
- Maintenance Recommendations, Change Notice Methods and Engineering Complaint Procedures
- Documents that describe how the Supplier provides the information on changes to the equipment to the customer and how the customer provides information on problems with the product to the Supplier. See QWEST Technical Publication 77354, "Guidelines for Product Change Notices,".
- Identification of Test Equipment, Tools, Test Sets and Apparatus
- Documents the identify the specific test equipment, tools, tests, apparatus that is required to properly turn-up the product.
- Operations Spares
- Documentation that provides the necessary information for the customer to determine the required level of spares, by type, for the product.
- Provisions for Supplementing Documentation
- Documentation which describes administrative methods by which QWEST documentation is updated by the Supplier.
- Returned Goods Procedures
- Documentation that provides information for QWEST to properly return equipment that has failed, requires a Supplier change, etc.

The Supplier will state the conformance of their products to Bellcore-documented Operations Systems Interface Specifications, or to embedded Operations Systems interfaces specified by
QWEST.

The Supplier will provide computerized equipment selection and component catalog functions and worksheets that are compatible with commonly available computers; such as IBM-compatible PC's or UNIX® based mainframe, mini-or microcomputers.

For traffic-affecting or traffic-affected products, the Supplier will provide Traffic Engineering Documentation that includes a detailed description of each traffic-affecting / affected component listed in Bellcore Technical Reference TR-TSY-000439, "Operations Technology Generic Requirements (OTGR)," Section 9. This publication will also include engineering procedures and logarithms used to establish required Materiel and Licensed Software unit quantities for initial growth jobs.

Traffic Engineering Documentation will include load vs. service relationships (e.g., load vs. blocking or delay curves), a description of all models and assumptions (e.g., Erlang B) used to derive the load service relations and any other data or computer simulations used.

Traffic Engineering documentation will also include the following:

- All capacity limitation.
- Economic factors that are affected by design configurations.
- Factors that influence the traffic performance of the system.
- Automatic or manual overload controls.

# 12. Documentation for Installation Groups

## 12.1 Installation Documentation

The Supplier will provide installation documentation covering the following situations:

- Installing a System
- Adding or making changes to an existing system; Materiel and Licensed Software, as in the case of growth additions or product change notices.

The Supplier will provide TOP-format documents or other appropriate procedures, such as terminal-accessed step-by-step instructions, for loading input data and verifying its accuracy. All information about the system configuration will be verifiable, and procedures for changing input data will be provided.

The Supplier will provide procedures for verifying proper operation of circuits following input of provisioning data.

The Supplier will provide procedures for verifying proper operation of their Materiel and Licensed Software with Operations Systems with which they are intended to interface.

The Supplier will provide documentation detailing acceptance tests for Materiel and Licensed Software and Services.

- The Supplier will provide documentation to allow for the performing of such acceptance tests without affecting in-service customers, or will provide suitable work-around procedures if design factors preclude this capability.
- Materiel and Licensed Software and Services Acceptance tests will exercise all feature capabilities and will provide for "stress testing" of such features.

## 12.2 Installation Procedures

Installation Documentation will give detailed procedures for:

- Materiel/System Assembly
- Initialization
- Installing New Licensed Software
- Acceptance Testing
- Contingency action in the event of installation failure.

The Supplier will provide TOP-format documents giving step-by-step installation instructions that will contain the following information:

- Detailed cabling schematics, equipment schematics, floor plans and supporting interface documentation.
- Installation procedures with intermediate test that verify proper operation of each installed unit or program.
- Acceptance tests suggested to be performed on the entire system.
- The Supplier will provide TOP-format procedures for connecting and disconnecting customers to/from the system.
- The Supplier will provide contingency (fall-back) procedures to be followed in the event of failure of a newly-installed generic program necessitating "fall-back" to the previous generic.
- The Supplier and QWEST will agree on the acceptance criteria that will be documented by the Supplier and which may be used to verify system operation. These criteria will include a provision for QWEST to monitor successful completion of Supplier initiated installation test and will include other tests or audits done by QWEST.
- The Supplier sill provide documentation in order for QWEST or a QWEST agent to successfully install and test the system.
- The Supplier will provide a list of tests and instructions on how to perform them and will provide a list of tools and test equipment required for the installation and testing of the product.

## 12.3 Growth Installation Procedures

The Supplier will provide procedures to permit updates to increase the capacity of an in-service system (capacity may refer to the number of customers, the bandwidth, the traffic-handling capacity, etc.). This information shall include methods for:

- Installing the new Materiel and Licensed Software.
- Testing the new Materiel and Licensed Software.
- Making any additions to a system database.

Supplier Documentation will provide warnings if updates to a system could affect service.

The Supplier will provide methods to determine the effects that new service or features may have on system performance in advance of any actual installation.

# 13. Documentation for Provisioning Groups

## 13.1 Provisioning Guide (Manual Applications)

The Supplier will provide a Provisioning Guide which includes detailed pictures, drawings, or diagrams showing hardware settings and value indications.

For each provisional option, the Provisioning Guide will include the following:

- Recommended Applications
- Prescribed settings and default or "factory" settings
- Guidelines for selecting settings
- Examples of proper settings for particular applications

## 13.2 Database Provisioning Guide

The Database Provisioning Guide (Translation Guide) will include information about all data components of Supplier's product. These data components include the following:

- Subscribers and subscriber features
- Network interfaces
- Craft and OS interfaces
- Provisional internal service units
- Equipment Assignments
- Routing and charging characteristics
- Parameters that conditions the suppliers product to function in the network environment.

The Database Provisioning Guide will include, for each data item of the Suppliers product, the following information:

- Data format and range of valid data values.
- Maximum quantity allowed for each data item type, or maximum size of each data table. Where this maximum quantity is provisional, the guide will describe the permissible range and default quantity.
- Effects of the value of the data item on system or subsystem capacity of other major functionality.
- Representative examples of combination of data which can be used in practical applications.

The Database Provisioning Guide will include information and instructions for the creation, addition, verification, retrieval and alteration of this data or will include specific references to other Supplier Documentation that gives such information and instructions.

# 14. Documentation for Maintenance Groups

## 14.1 General

The Supplier will develop, provide and maintain separate stand-alone documents for system maintenance, including:

- Maintenance Procedures
- Alarm and performance monitoring information
- System recovery procedures
- On-site field repair instructions
- Software documentation for maintenance
- Functional descriptions of each circuit board and schematic diagrams

Such documentation will be sufficiently complete to enable maintenance personnel engaged in an activity covered by one of the above documents to identify problem and repair a system without referring to another document, unless another activity is requested.

## 14.2 Maintenance Procedures

Maintenance Procedures will include the following:

- Operation and maintenance strategies for the system.
- Procedures and data for scheduled maintenance (preventive) and unscheduled maintenance (corrective).
- Expected frequency of maintenance actions, including the extent of conformance to published Bellcore criteria.
- Methods for testing and validating the performance of the System and its components.
- Identification of all tolls and instruments needed for all maintenance and testing.
- A list of all possible Materiel and Licensed Software error codes, with definitions and corrective actions agreed to between Supplier and QWEST.
- Methods for using remote maintenance control functions (e.g., via Operations Systems).
- Procedures for the use of any auxiliary programs of equipment.

- Safety instructions.
- Emergency 24-hour contact telephone numbers for field / technical assistance (preferable 800-type numbers).
- Emergency actions procedures for Materiel and Licensed Software problems.
- Supplier-recommended escalation procedures (for example, under what conditions should QWEST contact the Supplier for assistance).

The Supplier will provide TOP-format (or equivalent), step-by-step corrective action procedures for all possible trouble conditions identifiable by Supplier. A TOP-format (or equivalent) document will also be provided for scheduled preventive maintenance.

The Supplier will conform to maintenance measurement requirements as stated in Section 8.2 of the OTGR. Also available separately as Bellcore Technical Reference TR-NWT-00478, "OTGR: Measurements and Data Generation, Section 8 (A Module of OTGR, FR-NWT-000439)".

Maintenance procedures will specify the methods used to measure actual maintenance values against recommended values, and intended compliance with the appropriate sections of Bellcore Technical Reference TR-TSY-000439, (see Reference Section) will be notes.

If the Materiel and Licensed Software allows QWEST control, the Supplier will include expedited and speed maintenance procedures for the network provided and for QWEST.

## 14.3 Alarm and Performance Monitoring Information

Supplier will provide a list of all known alarm conditions, and the types of alarms (critical, major, minor) will be given.

Supplier Documentation will indicate how alarms are generated, displayed, and administered, including whether the product generates the alarm or provides thresholds that can be set for generation of alarms by Operations Systems.

The Supplier Documentation will specify alarm "threshold" values beyond which Supplier recommends that Operations Systems generate alarms.

Supplier will describe all alarm features that apply to Materiel and Licensed Software.

The Supplier will specify all performances monitoring functions, along with instructions of their local use.

The Supplier will provide a list of performances parameters and how they are stored (locally) and retrieved (remotely and locally).

The Supplier will provide details about interfaces to Operations Systems that include performance monitoring.

The Supplier will detail the effect of system resources of running performance-monitoring programs during busy hours.

### 14.4 System Recovery Procedures

The Supplier will provide TOP-format (or equivalent) documentation containing system recovery procedures and task sequences used to restore the system to service when a Materiel and Licensed Software fault, human error, or other problems have caused major portions of the system to become inoperative. These procedures will be self-explanatory and usable at the system site and at a remote maintenance center.

The Supplier will ensure that all Materiel and Licensed Software error codes identified in the maintenance procedures are up-to-date and readily available to maintenance and support organizations.

As new error codes are identified, they will be included by Supplier in a re-issue of the maintenance procedures, or an agenda that may me conveniently added to the basic document.

### 14.5 On-Site Field Repair Instructions

When on-site field repair is supported (provided) by the Supplier, the Supplier will include the following in TOP-format (or equivalent) maintenance instructions:

- The series of steps that technician’s follow to isolate the problem.
- Full specifications for tools and parts needed in the repair process.

### 14.6 Software Documentation For Maintenance

Supplier Documentation will provide methods to enable QWEST to verify the accuracy of the input variables or variable of software records of each circuit, facility, or equipment that are in Supplier's System (this could be in the form of translations records in switches or provisioning setting in transmission equipment).

Software Documentation will be sufficient to allow QWEST technician to step through process identified by Supplier as likely to be needed in the life of the Licensed Software.

The Supplier will provide a hard copy or on-line access to a current listing of all programs used and the method of reading the programs that reside in the equipment to allow customers to verify program integrity.

The Supplier will clearly identify output variables that are transmitted to other equipment.

Supplier's Documentation will assist QWEST to find the places in the program listing where a variable is used or modified, should the integrity of a variable's value be questioned.

Inputs expected from other programs of Firmware shall also be clearly identified in the code. If the value is stored in memory, a method to verify the value shall be provided.

If a layered protocol is used and many variables are passed but not stored, Supplier Documentation will provide any necessary mapping that gives expected verifiable values that would be stored after such a transaction. For example, if a value of loss is passed across the interface and stored, its value would be in binary. The troubleshooter could then need a translation to the decibel (db) value.

If a layered protocol is used and a series of messages is to be sent to another system, Supplier Documentation will provide a method to verify the proper sequence of variables that are passed and identify the timing constraints and plus shape limitations at the interface.

The Supplier will provide easy-to-read program listings. For example, a flow diagram (including data flow) would be used, where each block is defined, input and output variables are identified, and main programs and sub-routines are clearly defined by functions. Code would also be needed to back up the flow diagrams. Another example is an expanded version of the code where each routing and subroutine is clearly labeled (and indexed) and each function defined.

The Supplier will provide a TOP-format (or equivalent) document for applying routine software corrections (patch) to in-service Systems Suppliers Documentation and shall include the following:

- A description of the patch
- An identification of the patch (by sequence number or other identifying code).
- Methods for determining what patches have been applied in a particular location.
- Identification of the problem corrected by the patch.
- Procedures for installing the patch.
- Procedures for removing the patch if it causes problems.
- Identification of all affected equipment.
- Diagnostic flow charts.

The Supplier will provide advanced Software Maintenance Documentation for the use of expert-level QWEST personnel. Such documentation will provide information or tools that are useful to expert level maintenance personnel in analyzing and resolving difficult problems, including, but not limited to, documentation provided to personnel in Supplier's assistance center (or equivalent) and normally not available to customer personnel

# 15. Documentation for Network Switch/Network Administration Center (NAC)

## 15.1 Database Administration Documentation

The Supplier will provide NAC Documentation that gives detailed step-by-step procedures for the following:

- Deciding the data to be entered to meet particular service needs
- Formatting that data for entry into the system
- Verifying the values of the data in the system
- Activating the data for service
- Changing previously entered data

Software Documentation will describe the following generalized functions associated with memory administration and / or provisioning, as defined in Bellcore Technical Reference TR-TSY-000439, (see Reference Section) in TOP-format or computer "menu-driven" procedures:

- Interrogating
- Updating
- Adding data
- Changing data
- Deleting data
- Invoking pending command
- Beginning pending database update
- Ending pending database update
- Querying database
- Updating database
- Translating normal messages and error messages
- Deciphering the output messages as to what the output consists of. This would be accomplished through an output manual or reference guide.

## 15.2 Traffic Administration Documentation

The Supplier will provide Traffic Administration Documentation that gives complete procedures to be used by traffic administration personnel in performing the following functions:

- Gathering traffic data
- Validating traffic data
- Evaluating system performance and capacity
- Ensuring effective use and operation of the system
- Performing validation checks using Supplier provided data validation techniques
- Setting parameters based on Supplier provided recommendations and formulas
- Ensuring the availability of current documentation consistent with specific generic loads.

## 15.3 Network Traffic Management Documentation

The Supplier will provide documentation for Network Traffic Management that describes procedures for activating, de-activating, and monitoring any network management controls in Supplier's System.

Network Traffic Management Documentation will identify the following:

- Surveillance data collected from Supplier's System
- All controls the user has over the network or Supplier's System when using the product
- Interface specifications to a Network Operations System
- Any auxiliary capabilities

Network Traffic Management Documentation will provide information necessary for planning network operations and maintenance.

## 15.4 System Administration Documentation

The Supplier will provide System Administration Documentation which includes the procedures and the supporting rationale for performing the following system administration functions:

- Security management and enforcement of security procedures for access to the system, including password administration and restriction of functions which can be performed from certain interface terminals.
- Scheduling of automatic functions. Information will be provided for establishing, alerting and verifying the schedules for automatic system functions, including, for example:
- Traffic, performance and maintenance measurement collection and reporting schedules
- Routing activity switchovers in duplicated units
- System diagnostic or maintenance routines
- Subscriber facility or network facility routine tests
- AMA routines, such as media switchovers or generation or tracer records
- Other site-dependent data administration
- Verification and management of data which can be changed other than by the action of QWEST work groups. Examples are subscriber-originated data changes and data changes as a result of routine subscriber facility tests.
- Memory backup procedures and restoration of memory after system outage events.

# Documentation for Automatic Message Accounting Groups

## 16.1 General

In response to the Request For Proposal (RFP), Supplier will provide QWEST with a detailed list, including descriptions, of the supported AMA capabilities that the Materiel and Licensed Software offers.

- Supplier Documentation will clearly describe how to access, operate, control, and administer all supported AMA capabilities.
- Supplier Documentation will provide procedures to enable customer to set, change or inspect parameters employed in AMA operations.

In applications requiring test tapes an AMA interface, Supplier will provide supporting documentation that meets the requirements of Bellcore Technical Reference TR-TSY-000508, "LSSGR: Automatic Message Accounting, Section 8-8.1, (A Module of LSSGR, FR-NWT-000064)". Such documentation will include the following:

- A hexadecimal dump of the entire tape
- A list of all call types the switch / recording system can handle
- Written descriptions of each call (or recordable event) in the order they appear on the tape
- A definitive summary of new features on the tape
- A summary on intent (i.e., the order of records on the tape and the intent of records that are other then normal calls)
- A statistical summary document to accompany the test tape

In applications requiring a teleprocessing method of outputting AMA data from Supplier's System, the Supplier will comply with the requirements of Bellcore Technical Reference TR-TSY-000385, "Automatic Message Accounting Teleprocessing System (AMATPS) Generic Requirements".

The Supplier will clearly explain the intended conformance of their system to publish Bellcore and
QWEST requirements for supported AMA functions and output media.

The Supplier will identify the equipment parameters that must be set to product all possible AMA Records (including tracer and statistical records).

The Supplier will provide TOP-format (or equivalent) document that identified procedures necessary to produce all AMA records.

The Supplier will update the information contained in AMA Documentation, to include all revisions that will have and impact on the AMA output media.

# 17. Definitions

## 17.1 Acronyms

| | |
|---|---|
| AMA | Automatic Message Accounting |
| AMATPS | Automatic Message Accounting Teleprocessing System |
| ASCII | American Standards Code for Information Interchange |
| BER | Bit Error Ratio |
| CCITT | International Telegraph and Telephone Consultative Committee |
| CD-ROM | Compact Disk Read-Only Memory |
| CID | Craft Interface Device |
| CLEI™ | COMMON LANGUAGE® Equipment Identification |
| CPU / DPUs | Customer's Central and / or Distributed Process Units |
| DSOC | Digital Service Operations Center |
| DTD | Document Type Definition |
| EDIMS | Electronic Documentation Information Management System |
| EFI | Engineer, Furnish and Install |
| ESAC | Electronic Switching Assistance Center |
| IPI | Information Products Interchange |
| IRM | Information Resource Management |
| LSSGR | LATA Switching systems Generic Requirements |
| NAC | Network Administration Center |
| NEBS | Network Equipment-Building Systems |
| NI | Network Interface |
| OTGR | Operations Technology Generic Requirements |
| PS | PostScript® |
| R & Q | Reliability and Quality |
| RFP | Request For Proposal |
| RQGR | Reliability and Quality Generic Requirements |
| RQSSGR | Reliability and Quality Switching Systems Generic Requirements |

| | |
|---|---|
| SCC | Switching Control Center |
| SGML | Standard Generalized Markup Language |
| SME | Subject Matter Expert |
| TCIF | Telecommunications Industry Forum |
| TIFF | Tagged Image File Format |
| TOP | Task Oriented Practices |

# 18. References

## 18.1 Bellcore Documents

TR-EOP-000063 Network Equipment-Building System (NEBS) Generic Equipment Requirements (A Module of LSSGR FR-NWT-000064 and of TSGR, FR-NWT-000440). Issue 3, March 1988

FR-NWT-000064 LATA Switching Systems Generic Requirements, (LSSGR), 1993 Edition. Issue 92, February 1992.

TR-NWT-000078 Generic Physical Design Requirement for Telecommunications Products and Equipment. Issue 3, December 1991.

TR-TSY-000179 Software Quality Program Generic Requirements (SQPR), (A Module of RQGR, FR-NWT-000796). Issue 1, July 1989.

TA-TSY-000228 Generic Human Factors Requirements for Network Terminal Equipment: Preliminary. Issue 1, February 1985.

TR-NWT-000282 Software Reliability and Quality Acceptance Criteria (SRQAC), (A Module of RQGR, FR-NWT-000796). Issue 1, December 1986.

TR-NWT-000284 Reliability and Quality Switching Systems Generic Requirements, (RQSSGR), (A Module of RQGR, FR-NWT-000796). Issue 2, October 1990.

TR-ISD-000325 Equipment Information Required from Supplier for Operations Systems. Issue 1, September 1986.

TR-NWT-000332 Reliability Prediction Procedure for Electronic Equipment, (A Module of RQGR, FR-NWT-000796).

TR-TSY-000357 Component Reliability Assurance Requirements for Telecommunications Equipment, (A Module of RQGR, FR-NWT-000796). Issue 1, December 1987.

TR-STS-000383 Generic Requirements for COMMON LANGUAGE® Bar Code Labels. Issue 5, January 1991.

TR-TSY-000385 Automatic Message Accounting Teleprocessing System (AMATPS), Generic Requirements. Issue 1, July 1986; Rev. 1, February 1990.

TR-TSY-000418 Generic Reliability Assurance Requirements for Fiber Optic Transport Systems (A Module of RQGR, FR-NWT-000796). Issue 1, May 1988.

TR-TSY-000439 Operations Technology Generic Requirements (OTGR). Issue 2, February 1988.

TR-NWT-000478 OTGR: Measurements and Data Generation, Section 8 (A Module of OTGR,
FR-NWT-000439). Issue 3, December 1990.

TR-TSY-000481 OTGR: Generic Operations Interface-Overview and Directory, Section 11, (A Module of OTGR, FR-NWT-000439). Issue 4, June 1990.

FR-NWT-000482 OTGR: Operations Applications Messages, 1992 Edition. Issue 92, January 1992.

TR-TSY-000508 LSSGR: Automatic Message Accounting, Section 8-8.1 (A Module of LSSGR, FR-NWT-000064). Issue 2, July 1987. Rev 1, March 1990.

TR-TSY-000824 OTGR: User-System Interface-User System Access, Section 10.1 (A Module of OTGR, FR-NWT-000439). Issue 2, February 1988.

SR-TSY-000963 Network Switching Element Outage Performance Monitoring Procedures, (A Module of RQGR, FR-NWT-000796). Issue 1, April 1989.

## 18.2 Information Publications (Pre-Divestiture Documents)

IP 10260 Standards for Task Oriented Practice (TOP). 1977.

## 18.3 QWEST, Inc. Technical Publications

PUB 77351 QWEST Central Office Telecommunications Equipment Engineering Standards. Module 1 Issue F, June 2001

PUB 77352 Central Office Telecommunications Equipment Standard Drawing Requirements. Issue B, September 2001

PUB 77354 Guidelines for Product Change Notices. Issue G, September 2001

PUB 77361 COMMON LANGUAGE® Equipment Classification and Bar Code Labeling Requirements for Central Office Equipment. Issue C, September 2001

18.4 Ordering Information

All documents are subject to change and their citation in this document reflects the most current information available at the time of printing. Readers are advised to check status and availability of all documents.

Employees of QWEST Communications International Inc. may order publications by submitting form RG 31-0033 to:

Central Distribution Center (CDC)
1005 17th St., S-30
Denver, CO 80202
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