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UNBUNDLED ACCESS/ELEMENTS

1. Introduction

1.1 U S WEST shall provide unbundled Network Elements in accordance with this Agreement, the Act, FCC rules and regulations, and state rules, regulations and orders. The price for each Network Element is set forth in Attachment 1 of this Agreement. Except as otherwise set forth in this Attachment, ATTI may order Network Elements as of the Effective Date of this Agreement.

1.2 General Terms

1.2.1 U S WEST agrees to make available the following unbundled Network Elements which are addressed in more detail in the following sections of this Attachment: (a) local loop, (b) local and tandem switches **(including all vertical switching features provided by such switches)**, (c) interoffice transmission facilities, (d) network interface devices, (e) signaling and call-related database facilities, (f) operations support systems functions, and (g) operator and directory assistance facilities.[1]

(The language shown below in Section 1.2.2, 2.1 and 2.2 implements the Commission's decision for combining unbundled elements.)[2]

1.2.2 As described in Section 2.9.1 below, U S WEST shall offer each Network Element individually. In addition, USW will provide UNE Combinations to ATTI that it currently combines in its network. USW shall offer such individual Network Elements and Combinations in order to permit ATTI to combine the identified Network Elements obtained from U S WEST with network components provided by itself or by third parties to provide Telecommunications Services to ATTI 's subscribers. USW must perform, and ATTI must pay for, the functions necessary to combine requested UNEs in any technically feasible manner either with other UNEs from USW's network, or with network elements possesed by ATTI. USW is not required to combine UNEs in any manner requested if not technically feasible, but must combine UNEs ordinarily combined in the USW network in the manner they are typically combined. Rates, terms and conditions will be as determined by the Commission unless otherwise agreed by the parties in writing. ICB pricing will be used where prices are otherwise not available. ATTI may purchase unbundled Network Elements individually or in Combinations without restrictions as to how those elements may be rebundled.[3]

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[1] Per AT&T Order at page 10, Issue 18.
[2] This language reflects the Commission's decision relating to combining unbundled elements. Commission Decision at 21.
[3] Per AT&T Order at pages 12-13, Issue 25.

2. Unbundled Network Elements

2.1 U S WEST shall offer Network Elements and Combinations to ATTI on rates, terms and conditions that are just, reasonable, and non-discriminatory in accordance with the terms and conditions of this Agreement.

2.2 U S WEST shall permit ATTI to connect ATTI's facilities or facilities provided to ATTI by third parties with each of U S WEST's unbundled Network Elements and Combinations at any technically feasible point designated by AT&T.

2.3 ATTI may use one or more Network Elements to provide any feature, function, capability, or service option such Network Element(s) is capable of providing or any feature, function, capability, or service option described in the technical references identified herein, or as may otherwise be determined by AT&T.[4]

2.3.1 ATTI may, at its option, designate any technically feasible method of access to unbundled Network Elements, including access methods currently or previously in use by U S WEST.

2.4 ATTI may purchase unbundled Network Elements without restrictions as to how ATTI may rebundle those elements.[5]

2.5 For each Network Element, U S WEST shall provide a demarcation point (e.g., at a Digital Signal Cross Connect, DCS, Light Guide Cross Connect panel or a Main Distribution Frame) and, if necessary, access to the ATTI side of such demarcation point, which ATTI agrees is suitable. Where U S WEST provides combined Network Elements at ATTI's direction, however, no demarcation point shall exist between such contiguous Network Elements.

2.6 (Intentionally left blank for numbering consistency)

2.7 This Attachment describes the initial set of Network Elements which ATTI and U S WEST have identified as of the Effective Date of this Agreement:

Loop
Network Interface Device
Distribution (subject to the BFR)
Local Switching
Operator Systems
Shared Transport
Common Transport
Dedicated Transport
Signaling Link Transport
Signaling Transfer Points
Service Control Points/Databases
Tandem Switching
911
Directory Assistance

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[4] Per AT&T Order at pages 12-13, Issue 25.
[5] Per AT&T Order at pages 12-13, Issue 25.

2.8 ATTI and U S WEST agree that the Network Elements identified in this Attachment are not all of the possible Network Elements.

2.9 ATTI may identify additional or revised Network Elements as necessary to provide Telecommunications Services to its subscribers, to improve network or service efficiencies or to accommodate changing technologies, customer demand, or other requirements.

2.9.1 ATTI will request such Network Elements in accordance with the Bona Fide Request process described in Part A of this Agreement. Additionally, if U S WEST provides any Network Element that is not identified in this Agreement to itself, to its own subscribers, to a U S WEST Affiliate or to any other Person, U S WEST shall make available the same Network Element to ATTI on terms and conditions no less favorable to ATTI than those provided to itself or to any other party.

3. Standards for Network Elements

3.1 Each Network Element shall be furnished at a service level equal to or better than the requirements set forth in the technical references identified herein for each such Network Element, as well as any performance or other requirements, identified in this Attachment, subject to Sections 1.3.1 and 1.3.2 of Part A of this Agreement.

3.2 If one or more of the requirements set forth in this Agreement are in conflict, the Parties agree to resolve such conflict in accordance with the dispute resolution provisions of Part A of this Agreement.

3.2.1 U S WEST shall provide to AT&T, upon request, engineering, design, performance and other network data sufficient for ATTI to determine that the requirements of this Section 3 are being met. In the event such data indicates that the requirements set forth herein are not being met, U S WEST shall, within ten (10) Business Days, cure any design, performance or other deficiency and provide new data sufficient for ATTI to determine that such deficiencies have been cured.

3.2.2 U S WEST agrees to work cooperatively with ATTI to provide Network Elements that will meet ATTI's needs in providing Telecommunications Services to its subscribers.

3.3 Unless otherwise requested by AT&T, each Network Element or any Combination thereof and the connections between Network Elements provided by U S WEST to ATTI shall be made available to ATTI at any technically feasible point, that is equal to or better than the manner in which U S WEST provides such Network Elements, Combinations and connections to itself, to its own subscribers, to a U S WEST Affiliate or to any other Person.

Description of Unbundled Elements

4. Tandem Switching

U S WEST will provide a tandem switching element ("Tandem Switching") on an unbundled basis. The tandem switch element includes the facilities connecting the trunk distribution frames to the switch, and all the functions of the switch itself, including those facilities that establish a temporary transmission path between two (2) other switches. The definition of the tandem switching element also includes the functions centralized in tandems rather than in separate end

office switches, such as call recording, the routing of calls to Operator Services, and signaling conversion functions.

4.1 Definition:

Tandem Switching is the function that establishes a communications path between two (2) switching offices through a third switching office (the tandem switch) including, but not limited to, those of AT&T, U S WEST, independent telephone companies (ICOs), IXCs and wireless carriers.

4.2 Technical Requirements

4.2.1 Tandem Switching provided by U S WEST to ATTI shall have the same capabilities or equivalent capabilities as those described in Bell Communications Research TR-TSY-000540 Issue 2R2, Tandem Supplement, June 1, 1990. The requirements for Tandem Switching include, but are not limited to, the following:

4.2.1.1 Tandem Switching shall provide signaling to establish a tandem connection;

4.2.1.2 Tandem Switching shall provide screening (digit analysis) and routing as designated by AT&T;

4.2.1.3 Where technically feasible, Tandem Switching shall provide recording of all billable events designated by AT&T;

4.2.1.4 Tandem Switching shall allow passing of Advanced Intelligent Network triggers supporting AIN features;

4.2.1.5 Tandem Switching shall provide connectivity to Operator Systems as designated by AT&T;

4.2.1.6 Tandem Switching shall provide access to toll free number portability database where ATTI sends such traffic to a tandem;

4.2.1.7 Tandem Switching shall allow the passing of all functions associated with traffic for all trunk interconnection discussed under the "Network Interconnection" section of this Agreement (e.g., SS7, MF, DTMF, Dial Pulse, PRI-ISDN, DID, and CAMA-ANI (if appropriate for 911));

4.2.1.8 Tandem Switching shall provide connectivity to PSAPs where 911 solutions are deployed and the tandem is used for 911; and

4.2.1.9 Tandem Switching shall provide connectivity to transit traffic to and from other carriers.

4.2.2 Tandem Switching shall accept connections (including the necessary signaling and trunking interconnections) between end offices, other tandems, IXCs, ICOs, CAPs and CLEC switches.

4.2.3 Tandem Switching shall provide local tandeming functionality between two (2) end offices, including two (2) offices belonging to different CLECs (e.g., between an ATTI end office and the end office of another CLEC).

4.2.4 Tandem Switching shall preserve CLASS/LASS features and Caller ID as traffic is processed. Additional signaling information and requirements are provided in Section 15 of this Attachment 3.

4.2.5 Tandem Switching shall record billable events and send them to the area billing centers designated by AT&T. Billing requirements are specified in Attachment 5 to this Agreement.

4.2.6 U S WEST shall perform routine testing and fault isolation on the underlying switch providing Tandem Switching and all its Interconnections. When requested by AT&T, the results and reports of the testing shall be made immediately available to AT&T.

4.2.7 When requested by AT&T, U S WEST shall provide to ATTI for review performance data regarding traffic characteristics or other measurable elements with respect to ATTI traffic.

4.2.8 Tandem Switching shall control congestion using capabilities such as Automatic Congestion Control and Network Routing Overflow. Congestion control provided or imposed on ATTI traffic shall be at parity with controls being provided or imposed on U S WEST traffic (e.g., U S WEST shall not block ATTI traffic and leave its own traffic unaffected or less affected).

4.2.9 Tandem Switching shall route calls to U S WEST or ATTI endpoints or platforms (e.g., Operator Services and PSAPs) on a per call basis as designated by AT&T. Detailed primary and overflow routing plans for all interfaces available within the U S WEST switching network shall be mutually agreed to by ATTI and U S WEST. Such plans shall meet ATTI requirements for routing calls through the local network.

4.2.10 Tandem Switching shall process originating toll free traffic received from an ATTI local switch.

4.2.11 In support of AIN triggers and features, Tandem Switching shall provide SSP capabilities when these capabilities are not available from the Local Switching Network Element.

4.2.12 The Local Switching and Tandem Switching functions may be combined in an office. If this is done, both Local Switching and Tandem Switching shall provide all of the functionality required of each of those Network Elements in this Agreement.

4.3 Interface Requirements

4.3.1 Tandem Switching shall provide interconnection to the E911 PSAP where the underlying Tandem is acting as the E911 Tandem.

4.3.2 Tandem Switching shall interconnect, with direct trunks, to all carriers with which U S WEST interconnects.

4.3.3 U S WEST shall provide all signaling necessary to provide Tandem Switching with no loss of feature functionality.

4.3.4 For applicable call types, Tandem Switching shall interconnect with ATTI's switch, using two-way trunks, for traffic that is transiting via the U S WEST

network to interLATA or intraLATA carriers. At ATTI's request, Tandem Switching shall record and keep records of traffic for billing.

4.3.5 At ATTI's request, Tandem Switching shall provide overflow routing of traffic from a given trunk group or groups onto another trunk group or groups according to the methodology employed by U S WEST as designated by AT&T.

4.4 Tandem Switching shall meet or exceed each of the requirements for Tandem Switching set forth in the following technical references:

4.4.1 Bell Communications Research TR-TSY-000540 Issue 2R2, Tandem Supplement, June 1, 1990;

4.4.2 GR-905-CORE covering CCSNIS;

4.4.3 GR-1429-CORE for call management features; and

4.4.4 GR-2863-CORE and GR-2902-CORE for CCS AIN interconnection.

5. Shared Transport

U S WEST will provide unbundled access to shared transmission facilities between end offices and the tandem switch. Further, U S WEST will provide unbundled access to dedicated transmission facilities between its central offices or between such offices and those of competing carriers. This includes, at a minimum, interoffice facilities between end offices, IXC POPs, end offices or tandems of U S WEST, and the end offices of U S WEST and requesting carriers. In addition, U S WEST will provide all technically feasible transmission capabilities, such as DS-1, DS-3, and Optical Carrier levels (e.g. OC-3/12/48/96) that ATTI could use to provide Telecommunications Services.[6]

6. Common Transport

6.1 Definition

Common Transport is an interoffice transmission path between U S WEST Network Elements shared by carriers. Where U S WEST Network Elements are connected by intra-office wiring, such wiring is provided as a part of the Network Elements and is not Common Transport. U S WEST shall offer Common Transport as of the Effective Date of this Agreement, at DS-0, DS-1, DS-3, STS-1 or higher transmission bit rate circuits. Common Transport consists of U S WEST inter-office transport facilities and is distinct and separate from Local Switching.

6.2 Technical Requirements

6.2.1 U S WEST shall be responsible for the engineering, provisioning, and maintenance of the underlying equipment and facilities used to provide Common Transport.

6.2.2 In accordance with Sections 1.3.1 and 1.3.2 of Part A of this Agreement, at a minimum, Common Transport shall meet all of the requirements set forth in the

[6] Per AT&T Recommendations at page 25, Issue 142.

following technical references, as applicable for the transport technology being used:

6.2.2.1 ANSI T1.101-1994, American National Standard for Telecommunications-Synchronization Interface Standard Performance and Availability;

6.2.2.2 ANSI T1.102-1993, American National Standard for Telecommunications - Digital Hierarchy - Electrical Interfaces;

6.2.2.3 ANSI T1.102.01-199x, American National Standard for Telecommunications - Digital Hierarchy - VT1.5;

6.2.2.4 ANSI T1.105-1995, American National Standard for Telecommunications - Synchronous Optical Network (SONET) - Basic Description including Multiplex Structure, Rates and Formats;

6.2.2.5 ANSI T1.105.01-1995, American National Standard for Telecommunications - Synchronous Optical Network (SONET) Automatic Protection Switching;

6.2.2.6 ANSI T1.105.02-1995, American National Standard for Telecommunications - Synchronous Optical Network (SONET) - Payload Mappings;

6.2.2.7 ANSI T1.105.03-1994, American National Standard for Telecommunications - Synchronous Optical Network (SONET) - Jitter at Network Interfaces;

6.2.2.8 ANSI T1.105.03a-1995, American National Standard for Telecommunications - Synchronous Optical Network (SONET)-Jitter at Network Interfaces - DS-1 Supplement;

6.2.2.9 ANSI T1.105.05-1994, American National Standard for Telecommunications - Synchronous Optical Network (SONET) - Tandem Connection;

6.2.2.10 ANSI T1.105.06-199x, American National Standard for Telecommunications - Synchronous Optical Network (SONET) - Physical Layer Specifications;

6.2.2.11 ANSI T1.105.07-199x, American National Standard for Telecommunications - Synchronous Optical Network (SONET) - Sub STS-1 Interface Rates and Formats;

6.2.2.12 ANSI T1.105.09-199x, American National Standard for Telecommunications - Synchronous Optical Network (SONET) - Network Element Timing and Synchronization;

6.2.2.13 ANSI T1.106-1988, American National Standard for Telecommunications - Digital Hierarchy - Optical Interface Specifications (Single Mode);

6.2.2.14 ANSI T1.107-1988, American National Standard for Telecommunications - Digital Hierarchy - Formats Specifications;

6.2.2.15 ANSI T1.107a-1990, American National Standard for Telecommunications - Digital Hierarchy - Supplement to Formats Specifications (DS3 Format Applications);

6.2.2.16 ANSI T1.107b-1991, American National Standard for Telecommunications - Digital Hierarchy - Supplement to Formats Specifications;

6.2.2.17 ANSI T1.117-1991, American National Standard for Telecommunications - Digital Hierarchy - Optical Interface Specifications (SONET) (Single Mode - Short Reach);

6.2.2.18 ANSI T1.403-1989, Carrier to Subscriber Installation, DS-1 Metallic Interface Specification;

6.2.2.19 ANSI T1.404-1994, Network-to-Subscriber Installation - DS-3 Metallic Interface Specification;

6.2.2.20 ITU Recommendation G.707, Network node interface for the synchronous digital hierarchy (SDH);

6.2.2.21 ITU Recommendation G.704, Synchronous frame structures used at 1544, 6312, 2048, 8488 and 44736 kbit/s hierarchical levels;

6.2.2.22 Bellcore FR-440 and TR-NWT-000499, Transport Systems Generic Requirements (TSGR): Common Requirements;

6.2.2.23 Bellcore GR-820-CORE, Generic Transmission Surveillance: DS-1 & DS-3 Performance;

6.2.2.24 Bellcore GR-253-CORE, Synchronous Optical Network Systems (SONET); Common Generic Criteria;

6.2.2.25 Bellcore TR-NWT 000507, Transmission, Section 7, Issue 5 (Bellcore, December 1993) (A module of LSSGR, FR-NWT-000064.);

6.2.2.26 Bellcore TR-NWT-000776, Network Interface Description for ISDN Subscriber Access;

6.2.2.27 Bellcore TR-INS-000342, High-Capacity Digital Special Access Service-Transmission Parameter Limits and Interface Combinations, Issue 1, February 1991;

6.2.2.28 Bellcore ST-TEC-000052, Telecommunications Transmission Engineering Textbook, Volume 2: Facilities, Third Edition, Issue 1, May 1989; and

6.2.2.29 Bellcore ST-TEC-000051, Telecommunications Transmission Engineering Textbook Volume 1: Principles, Third Edition, Issue 1, August 1989.

7. Dedicated Transport

7.1 Definition:

7.1.1 Dedicated Transport is an interoffice transmission path between ATTI designated locations to which ATTI is granted exclusive use. Such locations may include U S WEST central offices or other locations, ATTI network components, other carrier network components, or subscriber premises.

7.1.2 U S WEST shall offer Dedicated Transport in each of the following manners:

7.1.2.1 as capacity on a shared facility;

7.1.2.2. as a circuit (e.g., DS-1, DS-3, STS-1) dedicated to AT&T; and

7.1.2.3 as a system (i.e., the equipment and facilities used to provide Dedicated Transport such as SONET ring) dedicated to AT&T.

7.1.3 When Dedicated Transport is provided as a circuit or as capacity on a shared facility, it shall include, as appropriate:

7.1.3.1 multiplexing functionality;

7.1.3.2 grooming functionality; and,

7.1.3.3 redundant equipment and facilities necessary to support protection and restoration.

7.1.4 When Dedicated Transport is provided as a system, it shall include:

7.1.4.1 transmission equipment such as multiplexers, line terminating equipment, amplifiers, and regenerators;

7.1.4.2 inter-office transmission facilities such as optical fiber, **dark fiber**[7], copper twisted pair, and coaxial cable;

7.1.4.3 redundant equipment and facilities necessary to support protection and restoration; and

7.1.4.4 access to the Digital Cross-Connect System ("DCS") functionality as an option in the same manner provided to IXCs that purchase transport services. DCS is described below in Section 7.5 of this Attachment 3.

7.2 Technical Requirements

This Section sets forth technical requirements for all Dedicated Transport.

7.2.1 When U S WEST provides Dedicated Transport as a circuit or a system, the entire designated transmission circuit or system (e.g., DS-1, DS-3, STS-1) shall be dedicated to ATTI designated traffic.

7.2.2 U S WEST shall offer Dedicated Transport using currently available technologies including, but not limited to, DS-1 and DS-3 transport systems, SONET Bi-directional Line Switched Rings, SONET Unidirectional Path Switched Rings, and SONET point-to-point transport systems (including linear add-drop systems), at all available transmission bit rates.

[7] Per AT&T Order at pages 11-12, Issue 22.

7.2.3 When requested by AT&T, Dedicated Transport shall provide physical diversity. Physical diversity means that two (2) circuits are provisioned in such a way that no single failure of facilities or equipment will cause a failure on both circuits.

7.2.4 When physical diversity is requested by AT&T, U S WEST shall provide the maximum feasible physical separation between transmission paths for all facilities and equipment, unless otherwise agreed to by AT&T.

7.2.5 Upon ATTI's written request and where available in the U S WEST network, U S WEST shall provide real time and continuous remote access to performance monitoring and alarm data affecting, or potentially affecting, ATTI's traffic.

7.2.6 U S WEST shall offer the following interface transmission rates for Dedicated Transport:

7.2.6.1 DS-1 (Extended SuperFrame - ESF/B8ZS, D4, and unframed applications shall be provided, except for those local/EAS tandems as designated by U S WEST);

7.2.6.2 DS-3 (C-bit Parity, M13, and unframed applications shall be provided);

7.2.6.3 SONET standard interface rates in accordance with ANSI T1.105 and ANSI T1.105.07 and physical interfaces per ANSI T1.106.06, including referenced interfaces. In particular, VT1.5 based STS-1s will be the interface at an ATTI service node; and

7.2.6.4 where available, SONET standard interface rates in accordance with International Telecommunications Union ("ITU") Recommendation G.707 and Plesiochronous Digital Hierarchy ("PDH") rates per ITU Recommendation G.704.

7.2.7 U S WEST shall provide intraoffice wiring up to a suitable Point of Termination ("POT") between Dedicated Transport and ATTI designated equipment. U S WEST shall provide the following equipment for the physical POT:

7.2.7.1 DSX1 or DCS for DS-1s or VT1.5s;

7.2.7.2 DSX3 or DCS for DS-3s or STS-1s; and

7.2.7.3 Light guide cross-connect for optical signals (e.g., OC-3 and OC-12).

7.2.8 For Dedicated Transport provided as a system, U S WEST shall design the system, including, but not limited to, facility routing and termination points, according to ATTI specifications.

7.2.9 Upon ATTI's request and where available, U S WEST shall provide ATTI with electronic provisioning control, of ATTI specified Dedicated Transport via Command-A-Link or equivalent interface in the same manner as is provided to IXCs.

7.2.10 U S WEST shall offer Dedicated Transport together with and separately from DCS.

7.3 Technical Requirements for Dedicated Transport Using SONET Technology.

This Section sets forth additional technical requirements for Dedicated Transport using SONET technology including rings, point-to-point systems, and linear add-drop systems.

7.3.1 All SONET Dedicated Transport provided as a system shall:

7.3.1.1 be synchronized with a primary Stratum 1 level timing source;

7.3.1.2 provide SONET standard interfaces as available in the U S WEST network and consistent with generally accepted industry standards which properly interwork with SONET standard equipment from other vendors, including, but not limited to, SONET standard section, line and path performance monitoring, maintenance signals, alarms, and data channels;

7.3.1.3 provide Data Communications Channel ("DCC") or equivalent connectivity through the SONET transport system. Dedicated Transport provided over a SONET transport system shall be capable of routing DCC messages between ATTI and SONET network components connected to the Dedicated Transport. For example, if ATTI leases a SONET ring from U S WEST, that ring shall support DCC message routing between ATTI and SONET network components connected to the ring; and

7.3.1.4 support the following performance requirements for each circuit (STS-1, DS-1, DS-3, etc.):

7.3.1.4.1 no more than ten (10) Errored Seconds Per Day (Errored Seconds are defined in the technical reference at Section 7.4.5); and

7.3.1.4.2 no more than one (1) Severely Errored Second Per Day (Severely Errored Seconds are defined in the technical reference at Section 7.4.5).

7.3.2 SONET rings shall:

7.3.2.1 be provisioned on physically diverse fiber optic cables (including separate building entrances where available). "Diversely routed" shall be interpreted as the maximum feasible physical separation between transmission paths, unless otherwise agreed to by AT&T;

7.3.2.2 support dual ring interworking per SONET Standards where available in the U S WEST network;

7.3.2.3 provide the necessary redundancy in optics, electronics, and transmission paths such that no single failure will cause a service interruption;

7.3.2.4 where available, provide the ability to disable ring protection switching at ATTI's direction (selective protection lock-out). This requirement applies to line switched rings only;

7.3.2.5 where available, provide the ability to use the protection channels to carry extra traffic. This requirement applies to line switched rings only;

7.3.2.6 provide 50 millisecond restoration as defined in SONET standards;

7.3.2.7 where available, have settable ring protection switching thresholds that shall be set in accordance with ATTI's specifications;

7.3.2.8 where available, provide revertive protection switching with a settable wait to restore delay with a default setting of five (5) minutes. This requirement applies to line switched rings only;

7.3.2.9 provide non-revertive protection switching. This requirement applies to path switched rings only; and

7.3.2.10 adhere to the following availability requirements, where availability is defined in the technical reference set forth in Section 7.4.5:

7.3.2.10.1 no more than 0.25 minutes of unavailability per month; and

7.3.2.10.2 no more than 0.5 minutes of unavailability per year.

7.4 In accordance with Sections 1.3.1 and 1.3.2 of Part A of this Agreement, at a minimum, Dedicated Transport shall meet each of the requirements set forth in Section 7.2.3 of this Attachment 3 and in the following technical references:

7.4.1 ANSI T1.105.04-1995, American National Standard for Telecommunications - Synchronous Optical Network (SONET) - Data Communication Channel Protocols and Architectures;

7.4.2 ANSI T1.119-1994, American National Standard for Telecommunications - Synchronous Optical Network (SONET) - Operations, Administration, Maintenance, and Provisioning (OAM&P) Communications;

7.4.3 ANSI T1.119.01-1995, American National Standard for Telecommunications - Synchronous Optical Network (SONET) Operations, Administration, Maintenance, and Provisioning (OAM&P) Communications Protection Switching Fragment;

7.4.4 ANSI T1.119.02-199x, American National Standard for Telecommunications - Synchronous Optical Network (SONET) Operations, Administration, Maintenance, and Provisioning (OAM&P) Communications Performance Monitoring Fragment; and

7.4.5 ANSI T1.231-1993 - American National Standard for Telecommunications - Digital Hierarchy - Layer 1 In-Service Digital Transmission Performance Monitoring.

7.5 Digital Cross-Connect System

7.5.1 Definition

7.5.1.1 Digital Cross-Connect System ("DCS") is a function which provides automated cross connection of Digital Signal level 0 (DS-0) or higher transmission bit rate digital channels within physical interface facilities. Types of DCSs include but are not limited to DCS 1/0s, DCS 3/1s, and DCS 3/3s, where the nomenclature 1/0 denotes interfaces typically at the DS-1 rate or greater with cross-connection typically at the DS-0 rate. This same nomenclature, at the appropriate rate substitution, extends to the other types of DCSs specifically cited as 3/1 and 3/3. Types of DCSs that cross-connect Synchronous Transport Signal level 1 (STS-1) or other Synchronous Optical

Network (SONET) signals (e.g., STS-3) are also DCSs, although not denoted by this same type of nomenclature. DCS may provide the functionality of more than one of the aforementioned DCS types (e.g., DCS 3/3/1 which combines functionality of DCS 3/3 and DCS 3/1). For such DCSs, the requirements will be, at least, the aggregation of requirements on the "component" DCSs.

7.5.1.2 In locations where automated cross connection capability does not exist, a Digital Signal Cross-Connect ("DSX") or light guide cross-connect patch panels and D4 channel banks or other DS-0 and above multiplexing equipment used to provide the function of a manual cross connection will be made available.

7.5.1.3 Interconnection between a DSX or light guide cross-connect, to a switch, another cross-connect, or other service platform device, is included as part of DCS.

7.6 DCS Technical Requirements

7.6.1 DCS shall provide completed end-to-end cross connection of the channels designated by AT&T.

7.6.2 DCS shall perform facility grooming, multipoint bridging, one-way broadcast, two-way broadcast, and facility test functions, where technically feasible.

7.6.3 DCS shall provide multiplexing, format conversion, signaling conversion, or other functions, where technically feasible.

7.6.4 The end-to-end cross connection shall be input to the underlying device used to provide DCS from an operator at a terminal or via an intermediate system. The cross connection assignment shall remain in effect whether or not the circuit is in use.

7.6.5 U S WEST shall administer and maintain DCS.

7.6.6 Where available, U S WEST shall provide various types of DCSs, including:

7.6.6.1 DS-0 cross-connects (typically termed DCS 1/0);

7.6.6.2 DS1/VT1.5 (Virtual Tributaries at the 1.5Mbps rate) cross-connects (typically termed DCS 3/1);

7.6.6.3 DS-3 cross-connects (typically termed DCS 3/3);

7.6.6.4 STS-1 cross-connects; and

7.6.6.5 other technically feasible cross-connects designated by AT&T.

7.6.7 U S WEST shall provide immediate and continuous configuration and reconfiguration of the channels between the physical interfaces (i.e., U S WEST shall establish the processes to implement cross connects on demand), where available, based on engineering forecasts.

7.6.8 U S WEST shall provide scheduled configuration and reconfiguration of the channels between the physical interfaces (i.e., U S WEST shall establish the processes to implement cross connects on the schedule designated by AT&T)

or, at ATTI's option, permit ATTI to control such configurations and reconfigurations, where available, based on engineering forecasts.

7.6.9 DCS shall continuously monitor protected circuit packs and redundant common equipment.

7.6.10 DCS shall automatically switch to a protection circuit pack on detection of a failure or degradation of normal operation.

7.6.11 DCS equipment shall be equipped with a redundant power supply or a battery back-up.

7.6.12 U S WEST shall have available and utilize spare maintenance facilities and equipment necessary for provisioning repairs.

7.6.13 At ATTI's option, U S WEST shall provide, where available, ATTI with real time performance monitoring and alarm data on the signals and the components of the underlying equipment used to provide DCS that actually impact or might impact ATTI's services. For example, this may include hardware alarm data and facility alarm data on a DS-3 in which an ATTI DS-1 is traversing.

7.6.14 At ATTI's option, U S WEST shall provide ATTI with real time ability to initiate tests on integrated equipment used to test the signals and the underlying equipment used to provide DCS, as well as other integrated functionality for routine testing and fault isolation where available.

7.6.15 Where available, DCS shall provide SONET to asynchronous gateway functionality (e.g., STS-1 to DS-1 or STS-1 to DS-3).

7.6.16 Where available, DCS shall perform optical to electrical conversion where the underlying equipment used to provide DCS contains optical interfaces or terminations (e.g., Optical Carrier level 3, i.e., OC-3, interfaces on a DCS 3/1).

7.6.17 Where available, DCS shall have SONET ring terminal functionality where the underlying equipment used to provide DCS acts as a terminal on a SONET ring.

7.6.18 DCS shall provide multipoint bridging of multiple channels to other DCSs. ATTI may designate multipoint bridging to be one-way broadcast from a single master to multiple tributaries, or two-way broadcast between a single master and multiple tributaries.

7.6.19 DCS shall multiplex lower speed channels onto a higher speed interface and demultiplex higher speed channels onto lower speed interfaces as designated by AT&T.

7.7 DCS Interface Requirements

7.7.1 U S WEST shall provide physical interfaces on DS-0, DS-1, and VT1.5 channel cross-connect devices at the DS-1 rate or higher. In all such cases, these interfaces shall be in compliance with applicable Bellcore, ANSI, ITU, and ATTI standards.

7.7.2 U S WEST shall provide physical interfaces on DS-3 channel cross-connect devices at the DS-3 rate or higher. In all such cases, these interfaces shall be in compliance with applicable Bellcore, ANSI, ITU, and ATTI standards.

7.7.3 U S WEST shall provide physical interfaces on STS-1 cross-connect devices at the OC-3 rate or higher. In all such cases, these interfaces shall be in compliance with applicable Bellcore, ANSI, ITU, and ATTI standards.

7.7.4 Interfaces on all other cross-connect devices shall be in compliance with applicable Bellcore, ANSI, ITU, and ATTI standards.

7.8 In accordance with Sections 1.3.1 and 1.3.2 of Part A of this Agreement, DCS shall, at a minimum, meet all the requirements set forth in the following technical references:

7.8.1 ANSI T1.102-1993, American National Standard for Telecommunications - Digital Hierarchy - Electrical Interfaces;

7.8.2 ANSI T1.102.01-199x, American National Standard for Telecommunications - Digital Hierarchy - VT1.5;

7.8.3 ANSI T1.105-1995, American National Standard for Telecommunications - Synchronous Optical Network (SONET) - Basic Description including Multiplex Structure, Rates and Formats;

7.8.4 ANSI T1.105.03-1994, American National Standard for Telecommunications - Synchronous Optical Network (SONET) - Jitter at Network Interfaces;

7.8.5 ANSI T1.105.03a-1995, American National Standard for Telecommunications - Synchronous Optical Network (SONET): Jitter at Network Interfaces - DS-1 Supplement;

7.8.6 ANSI T1.105.06-199x, American National Standard for Telecommunications - Synchronous Optical Network (SONET) - Physical Layer Specifications;

7.8.7 ANSI T1.106-1988, American National Standard for Telecommunications - Digital Hierarchy - Optical Interface Specifications (Single Mode);

7.8.8 ANSI T1.107-1988, American National Standard for Telecommunications - Digital Hierarchy - Formats Specifications;

7.8.9 ANSI T1.107a-1990, American National Standard for Telecommunications - Digital Hierarchy - Supplement to Formats Specifications (DS-3 Format Applications);

7.8.10 ANSI T1.107b-1991, American National Standard for Telecommunications - Digital Hierarchy - Supplement to Formats Specifications;

7.8.11 ANSI T1.117-1991, American National Standard for Telecommunications - Digital Hierarchy - Optical Interface Specifications (SONET) (Single Mode - Short Reach);

7.8.12 ANSI T1.403-1989, Carrier to Subscriber Installation, DS-1 Metallic Interface Specification;

7.8.13 ANSI T1.404-1994, Network-to-Subscriber Installation - DS-3 Metallic Interface Specification;

7.8.14 ITU Recommendation G.707, Network node interface for the synchronous digital hierarchy (SDH);

7.8.15 ITU Recommendation G.704, Synchronous frame structures used at 1544, 6312, 2048, 8488 and 44736 kbit/s hierarchical levels;

7.8.16 FR-440 and TR-NWT-000499, Transport Systems Generic Requirements (TSGR): Common Requirements;

7.8.17 GR-820-CORE, Generic Transmission Surveillance: DS1 & DS3 Performance;

7.8.18 GR-253-CORE, Synchronous Optical Network Systems (SONET): Common Generic Criteria; and

7.8.19 TR-NWT-000776, Network Interface Description for ISDN Subscriber Access.

8. Loop

8.1 Definition

8.1.1 A Loop is a transmission facility between a distribution frame, or its equivalent, in a U S WEST central office or wire center, and the Network Interface Device (as defined herein) or network interface at a subscriber's premises, to which ATTI is granted exclusive use. This includes, but is not limited to, two-wire and four-wire analog voice-grade loops, and two-wire and four-wire loops that are conditioned to transmit the digital signals needed to provide ISDN, ADSL, HDSL, and DS-1 level signals. A Loop may be composed of the following components:

Loop Concentrator/Multiplexer
Loop Feeder
Network Interface Device (NID)
Distribution

8.1.1.1 ATTI may purchase Loop and NID on an unbundled basis. ATTI shall use the BFR process set forth in Part A of this Agreement to request unbundling of Loop Concentrator/Multiplexer, Loop Feeder and Distribution.

8.1.2 If U S WEST uses Integrated Digital Loop Carrier ("DLC") systems to provide the local Loop, U S WEST will make alternate arrangements, equal in quality, to permit ATTI to order a contiguous unbundled local Loop. These arrangements may, at U S WEST's option, include the following: providing ATTI with copper facilities or universal DLC that meet established technical parameters, deploying Virtual Remote Terminals, allowing ATTI to purchase the entire Integrated DLC, or converting integrated DLCs to non-integrated systems.

8.1.3 U S WEST shall provide the BRI U interface using 2-wire copper loops in accordance with TR-NWT-000393, January 1991, Generic Requirements for ISDN Basic Access Digital Subscriber Lines.

8.2 Technical Requirements

Subdivided to each component as detailed below.

8.3 Interface Requirements

Subdivided to each component as detailed below.

8.4 Loop Components

8.4.1 Loop Concentrator/Multiplexer

8.4.1.1 Definition:

8.4.1.1.1 The Loop Concentrator/Multiplexer is the Network Element that:

(a) aggregates lower bit rate or bandwidth signals to higher bit rate or bandwidth signals (multiplexing); (b) disaggregates higher bit rate or bandwidth signals to lower bit rate or bandwidth signals (demultiplexing); (c) aggregates a specified number of signals or channels to fewer channels (concentrating); (d) performs signal conversion, including encoding of signals (e.g., analog to digital and digital to analog signal conversion); and (e) in some instances performs electrical to optical (E/O) conversion.

8.4.1.1.2 The Loop Concentrator/Multiplexer function may be provided through a DLC system, channel bank, multiplexer or other equipment at which traffic is encoded and decoded, multiplexed and demultiplexed, or concentrated.

8.4.1.2 Technical Requirements

8.4.1.2.1 The Loop Concentrator/Multiplexer shall be capable of performing its functions on the signals for the following services, as needed by ATTI to provide end-to-end service capability to its subscriber, including, but not limited to:

8.4.1.2.1.1 two-wire & four-wire analog voice grade loops;

8.4.1.2.1.2 two-wire & four-wire loops conditioned to transmit the digital signals needed to provide digital services;

8.4.1.2.1.3 4-wire digital data (2.4Kbps through 64Kbps and "n" times 64Kbps (where n < 24);

8.4.1.2.1.4 DS3 rate private lines where available; and

8.4.1.2.1.5 Optical SONET rate private lines where available.

8.4.1.2.2 The Loop Concentrator/Multiplexer shall perform the following functions as appropriate:

8.4.1.2.2.1 analog to digital signal conversion of both incoming and outgoing (upstream and downstream) analog signals;

8.4.1.2.2.2 multiplexing of the individual digital signals up to higher transmission bit rate signals (e.g., DS-0, DS-1, DS-3, or optical SONET rates) for transport to the U S WEST central office through the Loop Feeder; and

8.4.1.2.2.3 concentration of end-user subscriber signals onto fewer channels of a Loop Feeder (when available the concentration ratio shall be as specified from time to time by AT&T).

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8.4.1.2.2.4 Concentration ratios shall not impair analog or digital performance.

8.4.1.2.3 ATTI may request U S WEST to provide power for the Loop Concentrator/Multiplexer through a non-interruptible source, if the function is performed in a central office, or from a commercial AC power source with battery backup, if the equipment is located outside a central office. Such power shall also adhere to the requirements stated herein.

8.4.1.2.4 In accordance with Sections 1.3.1 and 1.3.2 of Part A of this Agreement, the Loop Concentrator/Multiplexer shall be provided to ATTI in accordance with the following Technical References:

8.4.1.2.4.1 Bellcore TR-NWT-000057, Functional Criteria for Digital Loop Carrier Systems, Issue 2, January 1993;

8.4.1.2.4.2 Bellcore TR-NWT-000393, Generic Requirements for ISDN Basic Access Digital Subscriber Lines;

8.4.1.2.4.3 T1.106 - 1988, American National Standard for Telecommunications - Digital Hierarchy - Optical Interface Specifications (Single Mode);

8.4.1.2.4.4 ANSI T1.105-1995, American National Standard for Telecommunications - Synchronous Optical Network (SONET) - Basic Description including Multiplex Structure, Rates and Formats;

8.4.1.2.4.5 ANSI T1.102-1993, American National Standard for Telecommunications - Digital Hierarchy - Electrical Interfaces;

8.4.1.2.4.6 ANSI T1.403-1989, American National Standard for Telecommunications - Carrier to Subscriber Installation, DS-1 Metallic Interface Specification;

8.4.1.2.4.7 Bellcore GR-253-CORE, Synchronous Optical Network Systems (SONET), Common Generic Criteria;

8.4.1.2.4.8 Bellcore TR-TSY-000008, Digital Interface Between the SLC 96 Digital Loop Carrier System and a Local Digital Switch, Issue 2, August 1987;

8.4.1.2.4.9 Bellcore TR-NWT-000303, Integrated Digital Loop Carrier System Generic Requirements, Objectives and Interface, Issue 2, December 1992; Rev. 1, December 1993; Supplement 1, December 1993;

8.4.1.2.4.10 Bellcore TR-TSY-000673, Operations Systems Interface for an IDLC System, (LSSGR) FSD 20-02-2100, Issue 1, September 1989; and

8.4.1.2.4.11 Bellcore Integrated Digital Loop Carrier System Generic Requirements, Objectives and Interface, GR-303-CORE, Issue 1, September 1995.

8.4.1.3 Requirements for an Intelligent Loop Concentrator/ Multiplexer:

8.4.1.3.1 In addition to the basic functions described above for the Loop Concentrator/Multiplexer, the Intelligent Loop Concentrator/Multiplexer ("IC/M") shall provide facility grooming, facility test functions, format conversion and signaling conversion, as appropriate.

8.4.1.3.2 The underlying equipment that provides such IC/M function shall continuously monitor protected circuit packs and redundant common equipment.

8.4.1.3.3 The underlying equipment that provides such IC/M function shall automatically switch to a protection circuit pack on detection of a failure or degradation of normal operation.

8.4.1.3.4 The underlying equipment that provides such IC/M function shall be equipped with a redundant power supply or a battery back-up.

8.4.1.3.5 ATTI may request U S WEST to provide ATTI with real time performance monitoring and alarm data on IC/M elements that may affect ATTI's traffic. This includes IC/M hardware alarm data and facility alarm data on the underlying device that provides such IC/M function.

8.4.1.3.6 ATTI may request U S WEST to provide ATTI with real time ability to initiate tests on the underlying device that provides such IC/M function integrated test equipment as well as other integrated functionality for routine testing and fault isolation.

8.4.1.4 Interface Requirements

8.4.1.4.1 The Loop Concentrator/Multiplexer shall meet the following interface requirements, as appropriate for the configuration that ATTI designates:

8.4.1.4.2 The Loop Concentrator/Multiplexer shall provide an analog voice frequency copper twisted pair interface at the serving wire center.

8.4.1.4.3 The Loop Concentrator/Multiplexer shall provide digital 4-wire electrical interfaces at the serving wire center.

8.4.1.4.4 The Loop Concentrator/Multiplexer shall provide optical SONET interfaces at rates of O1.C-3, OC-12, OC-48, and OC-N.

8.4.1.4.5 The Loop Concentrator/Multiplexer shall provide the Bellcore TR-303 DS-1 level interface at the serving wire center. Loop Concentrator/ Multiplexer shall provide Bellcore TR-08 modes 1&2 DS1 interfaces when designated by AT&T.

8.4.1.4.6 The Intelligent Loop Concentrator/Multiplexer shall be provided to ATTI in accordance with the Technical References set forth in Sections 8.4.1.2.4.8 through 8.4.1.2.4.11, above.

8.4.2 Loop Feeder

8.4.2.1 Definition:

8.4.2.1.1 The Loop Feeder is the Network Element that provides connectivity between (a) a Feeder Distribution Interface ("FDI") associated with Loop Distribution and a termination point appropriate for the media in a central office, or (b) a Loop Concentrator/Multiplexer provided in a remote terminal and a termination point appropriate for the media in a central office.

8.4.2.1.2 Pursuant to a Bona Fide Request for unbundled feeder or distribution, U S WEST shall provide ATTI physical access to the FDI and the right to connect the Loop Feeder to the FDI.

8.4.2.1.3 Upon request from ATTI regarding a specific area, U S WEST shall provide information on FDI within a reasonable time. If such information is available as part of U S WEST's operations support system, it must be made available to ATTI on the same terms and conditions as it is available to U S WEST.

8.4.2.1.4 The physical medium of the Loop Feeder may be copper twisted pair, or single or multi-mode fiber or other technologies as designated by AT&T. In certain cases, ATTI will require a copper twisted pair loop even in instances where the medium of the Loop Feeder for services that U S WEST offers is other than a copper facility. Special construction charges may apply if no copper twisted pair facilities are available.

8.4.2.2 Requirements for Loop Feeder

8.4.2.2.1 The Loop Feeder shall be capable of transmitting analog voice frequency, basic rate ISDN, digital data, or, where available in the network, analog radio frequency signals, as appropriate.

8.4.2.2.2 U S WEST shall provide appropriate power for all active elements in the Loop Feeder. U S WEST will provide appropriate power from a central office source, or from a commercial AC source with rectifiers for AC to DC conversion and 8-hour battery back-up when the equipment is located in an outside plant Remote Terminal ("RT").

8.4.2.3 Additional Requirements for Special Copper Loop Feeder Medium

In addition to the requirements set forth above, ATTI may require U S WEST to provide copper twisted pair Loop Feeder unfettered by any intervening equipment (e.g., filters, load coils, and range extenders), so that ATTI can use these Loop Feeders for a variety of services by attaching appropriate terminal equipment at the ends.

8.4.2.4 Additional Technical Requirements for DS-1 Conditioned Loop Feeder

In addition to the requirements set forth above, ATTI may designate that the Loop Feeder be conditioned to transport a DS-1 signal. The requirements for such transport are defined in the references below in Section 8.4.2.6.

8.4.2.5 Additional Technical Requirements for Optical Loop Feeder

In addition to the requirements set forth above, ATTI may designate that Loop Feeder will transport DS-3 and OC-n (where "n" is defined in the technical reference in Section 8.4.1.2.4.4). The requirements for such transport are defined in the references below in Section 8.4.2.6.

8.4.2.6 In accordance with Sections 1.3.1 and 1.3.2 of Part A of this Agreement, U S WEST shall offer Loop Feeder in compliance with the requirements set forth in the following Technical References:

8.4.2.6.1 Bellcore Technical Requirement TR-NWT-000499, Issue 5, December 1993, section 7 for DS-1 interfaces;

8.4.2.6.2 Bellcore TR-NWT-000057, Functional Criteria for Digital Loop Carrier Systems, Issue 2, January 1993;

8.4.2.6.3 Bellcore TR-NWT-000393, Generic Requirements for ISDN Basic Access Digital Subscriber Lines;

8.4.2.6.4 ANSI T1.106-1988, American National Standard for Telecommunications - Digital Hierarchy - Optical Interface Specifications (Single Mode);

8.4.2.6.5 ANSI T1.105-1995, American National Standard for Telecommunications - Synchronous Optical Network (SONET) - Basic Description including Multiplex Structure, Rates and Formats;

8.4.2.6.6 ANSI T1.102-1993, American National Standard for Telecommunications - Digital Hierarchy - Electrical Interfaces;

8.4.2.6.7 ANSI T1.403-1989, American National Standard for Telecommunications - Carrier to Subscriber Installation, DS-1 Metallic Interface Specification; and

8.4.2.6.8 Bellcore GR-253-CORE, Synchronous Optical Network Systems (SONET), Common Generic Criteria.

8.4.2.7 Interface Requirements

8.4.2.7.1 The Loop Feeder point of termination ("POT") within a U S WEST central office will be as follows:

8.4.2.7.1.1 Copper twisted pairs shall terminate on the MDF;

8.4.2.7.1.2 DS-1 Loop Feeder shall terminate on a DSX1, DCS1/0 or DCS3/1; and

8.4.2.7.1.3 Fiber optic cable shall terminate on a light guide termination panel or equivalent.

8.4.2.7.2 In accordance with Sections 1.3.1 and 1.3.2 of Part A of this Agreement, Loop Feeder shall be equal to or better than each of the applicable interface requirements set forth in the following technical references:

8.4.2.7.2.1 Bellcore TR-TSY-000008, Digital Interface Between the SLC 96 Digital Loop Carrier System and a Local Digital Switch, Issue 2, August 1987;

8.4.2.7.2.2 Bellcore TR-NWT-000303, Integrated Digital Loop Carrier System Generic Requirements, Objectives and Interface, Issue 2, December 1992; Rev. 1, December 1993; Supplement 1, December 1993; and

8.4.2.7.2.3 Bellcore Integrated Digital Loop Carrier System Generic Requirements, Objectives and Interface, GR-303-CORE, Issue 1, September 1995.

9. Distribution

9.1 Definition:

9.1.1 Distribution provides connectivity between the NID component of Loop Distribution and the terminal block on the subscriber-side of an FDI. The FDI is a device that terminates the Distribution Media and the Loop Feeder, and cross-connects them in order to provide a continuous transmission path between the NID and a telephone company central office. There are three (3) basic types of feeder-distribution connections: (a) multiple (splicing of multiple distribution pairs onto one (1) feeder pair); (b) dedicated ("home run"); and (c) interfaced ("cross-connected"). While older plant uses multiple and dedicated methods, newer plant and all plant that uses DLC or other pair-gain technology necessarily uses the interfaced connection method. The FDI in the interfaced design makes use of a manual cross-connection, typically housed inside an outside plant device ("green box") or in a vault or manhole.

9.1.2 The Distribution may be copper twisted pair, coax cable, single or multi-mode fiber optic cable or other technologies. A combination that includes two (2) or more of these media is also possible. In certain cases, ATTI shall require a copper twisted pair Distribution even in instances where the Distribution for services that U S WEST offers is other than a copper facility. Special construction charges may apply if no copper twisted pair facilities are available.

9.2 Requirements for All Distribution

9.2.1 Distribution shall be capable of transmitting signals for the following services, as requested by AT&T:

9.2.1.1 two-wire & four-wire analog voice grade loops; and

9.2.1.2 two-wire & four-wire loops conditioned to transmit the digital signals needed to provide digital services.

9.2.2 Distribution shall transmit all signaling messages or tones. Where the Distribution includes any active elements that terminate any of the signaling messages or tones, these messages or tones shall be reproduced by the Distribution at the interfaces to an adjacent Network Element in a format that maintains the integrity of the signaling messages or tones.

9.2.3 U S WEST shall not interfere with ATTI's ability to support functions associated with provisioning, maintenance, performance monitoring and testing of the unbundled Distribution.

9.2.4 Distribution shall be equal to or better than all of the applicable requirements set forth in the following technical references:

9.2.4.1 Bellcore TR-TSY-000057, "Functional Criteria for Digital Loop Carrier Systems"; and

9.2.4.2 Bellcore TR-NWT-000393, "Generic Requirements for ISDN Basic Access Digital Subscriber Lines".

9.3 Additional Requirements for Special Copper Distribution

In addition to Distribution that supports the requirements set forth in Section 9.2. above, ATTI may designate Distribution to be copper twisted pair unfettered by any intervening equipment (e.g., filters, load coils, range extenders) so that ATTI can use these loops for a variety of services by attaching appropriate terminal equipment at the ends.

9.4 Additional Requirements for Fiber Distribution

Fiber optic cable Distribution shall be capable of transmitting signals for the following services in addition to the those set forth in Section 9.2.1 above:

9.4.1 DS-3 rate private line service;

9.4.2 Optical SONET OC-n rate private lines (where "n" is defined in the technical reference in Section 8.4.1.2.4.4); and

9.4.3 Where available in the U S WEST network, Analog Radio Frequency based services (e.g., Cable Television (CATV)).

9.5 Additional Requirements for Coaxial Cable Distribution

Where available in the U S WEST network, coaxial cable (coax) Distribution shall be capable of transmitting signals for the following services in addition to those set forth in Section 9.2.1 above:

9.5.1 Broadband data, either one way or bi-directional, symmetric or asymmetric, at rates between 1.5 Mb/s and 45 Mb/s; and

9.5.2 Analog Radio Frequency based services (e.g., CATV).

9.6 Interface Requirements

9.6.1 Signal transfers between the Distribution and the NID and an adjacent Network Element shall have levels of degradation that are within the performance requirements set forth in Section 18.2 of this Attachment.

9.6.2 Distribution shall be at least equal to each of the applicable interface requirements set forth in the following technical references:

9.6.2.1 Bellcore TR-NWT-000049, "Generic Requirements for Outdoor Telephone Network Interface Devices", issued December 1, 1994;

9.6.2.2 Bellcore TR-NWT-000057, "Functional Criteria for Digital Loop Carrier Systems", issued January 2, 1993;

9.6.2.3 Bellcore TR-NWT-000393, "Generic Requirements for ISDN Basic Access Digital Subscriber Lines"; and

9.6.2.4 Bellcore TR-NWT-000253, SONET Transport Systems: Common Criteria (A module of TSGR, FR-NWT-000440), Issue 2, December 1991.

10. Local Switching

10.1 Definition:

10.1.1 Local Switching is the Network Element that provides the functionality required to connect the appropriate lines or trunks wired to the Main Distributing Frame ("MDF") or Digital Cross Connect ("DCC") panel to a desired line or trunk. The desired connection path for each call type will vary by subscriber and will be specified by ATTI as a routing scenario that will be implemented in advance as part of or after the purchases of the unbundled Local Switching. **Such functionality shall include all of the features, functions, and capabilities that the underlying U S WEST local switch is capable of providing,**[8] **including, but not limited to: line signaling and signaling software, digit reception, dialed number translations, call screening, routing, recording, call supervision, dial tone, switching, telephone number provisioning, announcements, calling features and capabilities (including call processing), Centrex, or Centrex-like services, Automatic Call Distributor ("ACD"), Carrier pre-subscription (e.g., long distance carrier, intraLATA toll), Carrier Identification Code ("CIC"), number portability capabilities, testing and other operational features inherent to the switch and switch software.** The Local Switching function also provides access to transport, signaling (ISDN User Part ("ISUP") and Transaction Capabilities Application Part ("TCAP")), and platforms such as adjuncts, Public Safety Systems (911), Operator Services, Directory Assistance Services and Advanced Intelligent Network ("AIN"). Remote Switching Module functionality is included in the Local Switching function. Local Switching shall also be capable of routing local, intraLATA, interLATA, and international calls to the subscriber's preferred carrier, call features (e.g., call forwarding) and Centrex capabilities.

10.1.2 Local Switching, including the ability to route to ATTI's transport facilities, dedicated facilities and systems, shall be unbundled from all other unbundled Network Elements, i.e., Operator Systems, Common Transport, Shared Transport and Dedicated Transport.

10.2 Technical Requirements

10.2.1 Local Switching shall be equal to or better than the requirements for Local Switching set forth in Bellcore's Local Switching Systems General Requirements FR-NWT-000064.

10.2.1.1 U S WEST shall route calls to the appropriate trunk or lines for call origination or termination.

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[8] Per AT&T Order at page 10, Issue 18.

10.2.1.2 U S WEST shall route calls on a per line or per screening class basis to (a) U S WEST platforms providing Network Elements or additional requirements, (b) ATTI designated platforms, or (c) third-party platforms.

10.2.1.3 U S WEST shall provide to ATTI recorded announcements as furnished by ATTI and call progress tones to alert callers of call progress and disposition. The installation cost shall be borne by ATTI for such announcements and call progress tones to the extent they are different than those standardly used by U S WEST.

10.2.1.4 U S WEST shall change a subscriber from U S WEST's services to ATTI's services without loss of feature functionality, unless designated otherwise by AT&T.

10.2.1.5 U S WEST shall perform routine testing (e.g., Mechanized Loop Tests ("MLT") and test calls such as 105, 107 and 108 type calls) and fault isolation on ATTI's unbundled Network Elements, as designated by AT&T.

10.2.1.6 U S WEST shall repair and restore any equipment or any other maintainable component that may adversely impact ATTI's use of unbundled Local Switching.

10.2.1.7 U S WEST shall control congestion points such as mass calling events and network routing abnormalities using capabilities such as Automatic Call Gapping, Automatic Congestion Control, and Network Routing Overflow. Application of such control shall be competitively neutral and not favor any user of unbundled switching or U S WEST.

10.2.1.8 U S WEST shall perform manual call trace as designated by ATTI and shall permit subscriber originated call trace.

10.2.1.9 U S WEST shall record all billable events, involving usage of the Network Element, and send the appropriate recording data to ATTI as further described in Attachment 5.

10.2.1.10 For Local Switching used as E911 tandems, U S WEST shall allow interconnection with ATTI switches in that same local switch used as a E911 tandem and shall route calls to the appropriate Public Safety Access Point (PSAP). In the event the Local Switching element and the E911 tandem are contained within the same U S WEST switch, such trunking shall be provided on an intra-switch basis.

10.2.1.11 Where U S WEST provides the following special services, it shall provide to AT&T:

10.2.1.11.1 essential Service Lines;

10.2.1.11.2 Telephone Service Prioritization ("TSP");

10.2.1.11.3 related services for handicapped;

10.2.1.11.4 where U S WEST provides soft dial tone, it shall do so on a competitively-neutral basis; and

10.2.1.11.5 any other service required by law or regulation.

10.2.1.12 U S WEST shall provide Switching Service Point ("SSP") capabilities and signaling software to interconnect the signaling links destined to the Signaling Transfer Point Switch ("STP"). In the event Local Switching is provided out of a switch without SS7 capability, the Tandem shall provide this capability as further described in Section 4 of this Attachment 3. These capabilities shall adhere to Bellcore specifications TCAP (GR-1432-CORE), ISUP (GR-905-CORE), Call Management (GR-1429-CORE), Switched Fractional DS1 (GR-1357-CORE), Toll Free Service (GR-1428-CORE), Calling Name (GR-1597-CORE), Line Information Database (GR-954-CORE), and Advanced Intelligent Network (GR-2863-CORE).

10.2.1.13 U S WEST shall provide interfaces to adjuncts through industry standard and Bellcore interfaces. These adjuncts may include, but are not limited to, Service Node, Service Circuit Node, Voice Mail and Automatic Call Distributors. Examples of existing interfaces are ANSI ISDN standards Q.931 and Q.932.

10.2.1.14 Upon ATTI's request, U S WEST shall provide performance data regarding a subscriber line, traffic characteristics or other measurable elements to AT&T.

10.2.1.15 U S WEST shall offer all technically feasible Local Switching features, and, in providing such features, do so at parity with those provided by U S WEST to itself or any other Person.

10.2.1.15.1 Such feature offerings shall include, but are not limited to:

Basic and primary rate ISDN;
Residential features;
Custom Local Area Signaling Services (CLASS/LASS);
Custom Calling Features; and
Centrex (including equivalent administrative capabilities, such as subscriber accessible reconfiguration and detailed message recording).

10.2.1.15.2 ATTI may use the Bona Fide Request Process set forth in Part A of this Agreement to request unbundling of Advanced Intelligent Network ("AIN") triggers supporting ATTI and U S WEST service applications in U S WEST's SCPs.[9] U S WEST shall offer AIN-based services in accordance with applicable technical references. Such services may include, but are not limited to:

10.2.1.15.2.1 Off-Hook Immediate;

10.2.1.15.2.2 Off-Hook Delay;

10.2.1.15.2.3 Private EAMF Trunk;

10.2.1.15.2.4 Shared Interoffice Trunk (EAMF, SS7);

10.2.1.15.2.5 Termination Attempt;

10.2.1.15.2.6 3/6/10;

[9] Per AT&T Order at page 10, Issue 19.

10.2.1.15.2.7 N11;

10.2.1.15.2.8 Feature Code Dialing;

10.2.1.15.2.9 Custom Dialing Plan(s), including 555 services; and

10.2.1.15.2.10 Automatic Route Selection.

10.2.1.16 U S WEST shall assign each ATTI subscriber line the class of service designated by ATTI (e.g., using line class codes or other switch specific provisioning methods), and at ATTI's option shall route Directory Assistance calls from ATTI subscribers as directed by AT&T. This includes each of the following call types:

10.2.1.16.1 0+/0- calls;

10.2.1.16.2 911 calls;

10.2.1.16.3 411/DA calls;

10.2.1.16.4 InterLATA calls specific to PIC or regardless of PIC;

10.2.1.16.5 IntraLATA calls specific to PIC or regardless of PIC;

10.2.1.16.6 Toll free calls, prior to database query;

10.2.1.16.7 Call forwarding of any type supported on the switch, to a line or a trunk; and

10.2.1.16.8 Any other customized routing that may be supported by the U S WEST switch.

10.2.1.17 U S WEST shall assign each ATTI subscriber line the class of service designated by ATTI (e.g., using line class codes or other switch specific provisioning methods) and shall route operator calls from ATTI subscribers as directed by ATTI at ATTI's option. For example, U S WEST may translate 0- and 0+ intraLATA traffic, and route the call through appropriate trunks to an ATTI Operator Services Position System (OSPS). Calls from Local Switching must pass the ANI-II digits unchanged.

10.2.1.18 If an ATTI customer subscribes to AT&T-provided voice mail and messaging services, U S WEST shall redirect incoming calls to the ATTI system based upon designated service arrangements (e.g., busy, don't answer, number of rings). In addition, U S WEST shall provide a Standard Message Desk Interface-Enhanced (SMDI-E) interface to the ATTI system. U S WEST shall support the Inter-switch Voice Messaging Service (IVMS) capability.

10.2.1.19 Local Switching shall be offered in accordance with the requirements of the following technical references and their future releases:

10.2.1.19.1 GR-1298-CORE, AIN Switching System Generic Requirements;

10.2.1.19.2 GR-1299-CORE, AIN Switch-Service Control Point (SCP)/Adjunct Interface Generic Requirements;

10.2.1.19.3 TR-NWT-001284, AIN 0.1 Switching System Generic Requirements; and

10.2.1.19.4 SR-NWT-002247, AIN Release 1 Update.

10.2.2 Interface Requirements:

10.2.2.1 U S WEST shall provide the following interfaces to Loops:

10.2.2.1.1 Standard Tip/Ring interface, including loopstart or groundstart, on-hook signaling (e.g., for calling number, calling name and message waiting lamp);

10.2.2.1.2 Coin phone signaling as part of a public access line (PAL);[10]

10.2.2.1.3 Basic Rate Interface ISDN adhering to ANSI standards Q.931, Q.932 and appropriate Bellcore Technical Requirements;

10.2.2.1.4 Two-wire analog interface to PBX to include reverse battery, E&M, wink start and DID;

10.2.2.1.5 Four-wire analog interface to PBX to include reverse battery, E&M, wink start and DID;

10.2.2.1.6 Four-wire DS-1 interface to PBX or subscriber provided equipment (e.g., computers and voice response systems);

10.2.2.1.7 Primary Rate ISDN to PBX adhering to ANSI standards Q.931, Q.932 and appropriate Bellcore Technical Requirements;

10.2.2.1.8 Switched Fractional DS-1 with capabilities to configure Nx64 channels (where "n" = 1 to 24); and

10.2.2.1.9 Loops adhering to Bellcore TR-NWT-08 and TR-NWT-303 specifications to interconnect Digital Loop Carriers.

10.2.2.2 U S WEST shall provide access to the following, but not limited to:

10.2.2.2.1 SS7 Signaling Network or Multi-Frequency trunking, if requested by AT&T;

10.2.2.2.2 Interface to ATTI operator services systems or Operator Services through appropriate trunk interconnections for the system; and

10.2.2.2.3 Interface to ATTI Directory Assistance Services through the ATTI switched network or to Directory Services through the appropriate trunk interconnections for the system; and 950 access or other ATTI required access to interexchange carriers as requested through appropriate trunk interfaces.

[10] Per AT&T Recommendations at page 26, Issue 143.

10.3 Customized routing

10.3.1 Description

Customized routing will enable ATTI to direct particular classes of calls to particular outgoing trunks based upon line class codes. ATTI may use customized routing to direct its customers' calls to 411, 555-1212, 0+ or 0-, to its own Operator Services platform Directory Assistance platform.

10.3.2 Limitations

Because there is a limitation in the technical feasibility of offering custom routing beyond the capacity of the 1A ESS switch, custom routing will be offered to CLECs on a first-come, first-served basis.

10.4 Integrated Services Digital Network

10.4.1 Integrated Services Digital Network ("ISDN") is defined in two (2) variations. The first variation is Basic Rate ISDN ("BRI"). BRI consists of 2 Bearer (B) Channels and one Data (D) Channel. The second variation is Primary Rate ISDN ("PRI"). PRI consists of 23 B Channels and one D Channel. Both BRI and PRI B Channels may be used for voice, Circuit Switched Data ("CSD") or Packet Switched Data ("PSD"). The BRI D Channel may be used for call related signaling, non-call related signaling or packet switched data. The PRI D Channel may be used for call related signaling.

10.4.2 Technical Requirements — ISDN

10.4.2.1 U S WEST shall offer Data Switching providing ISDN that, at a minimum:

10.4.2.2 provides integrated Packet handling capabilities;

10.4.2.3 allows for full 2B+D Channel functionality for BRI; and

10.4.2.4 allows for full 23B+D Channel functionality for PRI.

10.4.2.5 Each B Channel shall allow for voice, 64 Kbps CSD, and PSD of 128 logical channels at minimum speeds of 19 Kbps throughput of each logical channel up to the total capacity of the B Channel.

10.4.2.6 Each B Channel shall provide capabilities for alternate voice and data on a per call basis.

10.4.2.7 The BRI D Channel shall allow for call associated signaling, non-call associated signaling and PSD of 16 logical channels at minimum speeds of 9.6 Kbps throughput of each logical channel up to the total capacity of the D channel.

10.4.2.8 The PRI D Channel shall allow for call associated signaling.

10.4.3 Interface Requirements — ISDN

10.4.3.1 U S WEST shall provide the BRI interface using Digital Subscriber Loops adhering to Bellcore TR-NWT-303 Specifications to Interconnect Digital Loop Carriers.

10.4.3.2 U S WEST shall offer PSD interfaces adhering to the X.25, X.75 and X.75' ANSI and Bellcore requirements.

10.4.3.3 U S WEST shall offer PSD trunk interfaces operating at 56 Kbps.

11. Network Interface Device

11.1 Definition:

11.1.1 The Network Interface Device ("NID") is a single-line termination device or that portion of a multiple-line termination device required to terminate a single line or circuit. One of the functions of the NID is to establish the network demarcation point between a carrier and its subscriber. The NID features two (2) independent chambers or divisions which separate the service provider's network from the subscriber's inside wiring. Each chamber or division contains the appropriate connection points or posts to which the service provider and the subscriber each make their connections.

11.1.2 ATTI may connect its NID to U S WEST's NID.

11.1.3 U S WEST will allow ATTI to locate dropwires, other than U S WEST's drop wires, inside an existing U S WEST combination NID used in the provisioning of telephone service for single tenant end users subject to the following conditions:

11.1.3.1 Sufficient space exists inside the combination NID to allow proper installation of equipment in accordance with the NID manufacturers specifications and per the National Electric Code;

11.1.3.2 In order to maintain maintenance integrity for the NID, ATTI will install its own overvoltage protection and customer bridging equipment, terminate the dropwires to that equipment, and assume all operational responsibilities and liabilities for that equipment;

In the event sufficient space is not available in the existing U S WEST NID, to accommodate additional drops, ATTI will be allowed to install and additional NID, at its own expense and the ATTI's NID can be connected to the existing U S WEST NID;

If the existing NID is not the new generation modular type, ATTI may install a new NID. U S WEST will be allowed to move its drop wire to the new NID and remove the old NID;

Within ninety (90) days of the Effective Date of this Agreement, the Parties agree to jointly develop a satisfactory process to address the issues with access to single and multi-party NIDs.

11.1.4 With respect to multiple-line termination devices, ATTI shall specify the quantity of NIDs it requires within such device.

11.2 Technical Requirements

11.2.1 The NID shall provide a clean, accessible point of connection for the inside wiring and for the Distribution Media and/or cross connect to ATTI's NID and shall maintain a connection to ground meeting the requirements as set forth below.

11.2.2 The NID shall be capable of transferring electrical analog or digital signals between the subscriber's inside wiring and the Distribution Media and/or cross connect to ATTI's NID.

11.2.3 All NID posts or connecting points shall be in place, secure, usable and free of any rust or corrosion. The protective ground connection shall exist and be properly installed. The ground wire shall be free of rust and corrosion and have continuity to ground.

11.2.4 The NID shall be capable of withstanding all normal local environmental variations.

11.2.5 Where the NID is not located in a larger, secure cabinet or closet, the NID shall be protected from vandalism. The NID shall be accessible to ATTI designated personnel. In cases where entrance to the subscriber premises is required to give access to the NID, ATTI shall obtain entrance permission directly from the subscriber.

11.2.6 U S WEST shall offer the NID together with, and separately from, the Distribution Media component of Loop Distribution.

11.3 Interface Requirements

11.3.1 The NID shall be the interface to subscribers' premises wiring for all loops.

11.3.2 The NID shall be at least equal to all the industry standards for NIDs set forth in the following technical references:

11.3.2.1 Bellcore Technical Advisory TA-TSY-000120 "Subscriber Premises or Network Ground Wire";

11.3.2.2 Bellcore Generic Requirement GR-49-CORE "Generic Requirements for Outdoor Telephone Network Interface Devices";

11.3.2.3 Bellcore Technical Requirement TR-NWT-00239 "Indoor Telephone Network Interfaces";

11.3.2.4 Bellcore Technical Requirement TR-NWT-000937 "Generic Requirements for Outdoor and Indoor Building Entrance"; and

11.3.2.5 Bellcore Technical Requirement TR-NWT-0001 33 "Generic Requirements for Network Inside Wiring."

12. Operator Systems

See Part A.

13. E911

See Part A.

14. Directory Assistance Data

See Part A.

15. Signaling Link Transport

15.1 Definition:

Signaling Link Transport is a set of two (2) or four (4) dedicated 56 Kbps transmission paths between AT&T-designated Signaling Points of Interconnection ("SPOI") that provides appropriate physical diversity and a cross connect at a U S WEST STP site.

15.2 Technical Requirements

15.2.1 Signaling Link Transport shall consist of full duplex mode 56 Kbps transmission paths.

15.2.2 Of the various options available, Signaling Link Transport shall perform in the following two ways:

15.2.1.1 as an "A-link" which is a connection between a switch or SCP and a home Signaling Transfer Point ("STP") pair; and

15.2.1.2 as a "D-link" which is a connection between two (2) STP pairs in different company networks (e.g., between two (2) STP pairs for two (2) (CLECs)).

15.2.3 Signaling Link Transport shall consist of two (2) or more signaling link layers as follows:

15.2.3.1 An A-link layer shall consist of two (2) links.

15.2.3.2 A D-link layer shall consist of four (4) links.

15.2.4 A signaling link layer shall satisfy a performance objective such that:

15.2.4.1 there shall be no more than two (2) minutes down time per year for an A-link layer transport only, and

15.2.4.2 there shall be negligible (less than 2 seconds) down time per year for a D-link layer transport only.

15.2.5 Where available, a signaling link layer shall satisfy interoffice and intraoffice diversity of facilities and equipment, such that:

15.2.5.1 no single failure of facilities or equipment causes the failure of both links in an A-link layer (i.e., the links should be provided on a minimum of two (2) separate physical paths end-to-end); and

15.2.5.2 no two concurrent failures of facilities or equipment shall cause the failure of all four (4) links in a D-link layer (i.e., the links should be

provided on a minimum of three (3) separate physical paths end-to-end).

15.2.6 For requested link layers, U S WEST will provide ATTI with the level of diversity available.

15.3 Interface Requirements

15.3.1 There shall be a DS-1 (1.544 Mbps) interface at the AT&T-designated SPOIs. Each 56 Kbps transmission path shall appear as a DS-0 channel within the DS-1 interface.

16. Signaling Transfer Points (STPs)

16.1 Definition:

Signaling Transfer Points ("STP"s) provide functionality that enable the exchange of SS7 messages among and between switching elements, database elements and signaling transfer points.

16.2 Technical Requirements

16.2.1 STPs shall provide signaling access to all other Network Elements connected to the U S WEST SS7 network. These include:

16.2.1.1 U S WEST Local Switching or Tandem Switching;

16.2.1.2 U S WEST Service Control Points/DataBases connected to or resident on service control points;

16.2.1.3 Third-party local or tandem switching systems connected to the U S WEST signaling network; and

16.2.1.4 Third-party-provided STPs connected to the U S WEST signaling network.

16.2.2 The connectivity provided by STPs shall fully support the functions of all other Network Elements connected to U S WEST's SS7 network. This includes the use of U S WEST's SS7 network to convey messages which neither originate nor terminate at a signaling end point directly connected to the U S WEST SS7 network (i.e., transit messages). When the U S WEST SS7 network is used to convey transit messages, there shall be no alteration of the Integrated Services Digital Network User Part ("ISDNUP") or Transaction Capabilities Application Part ("TCAP") user data that constitutes the content of the message.

16.2.3 If a U S WEST tandem switch routes traffic, based on dialed or translated digits, on SS7 trunks between an ATTI local switch and third party local switch, U S WEST's SS7 network shall convey the TCAP messages necessary to provide Call Management features (automatic callback, automatic recall, and screening list editing) between the ATTI local STPs and the STPs that provide connectivity with the third party local switch, even if the third party local switch is not directly connected to U S WEST's STPs.

16.2.4 STPs shall provide all functions of the MTP as specified in ANSI T1.111 (Reference 12.5.2). This includes:

16.2.4.1 Signaling Data Link functions, as specified in ANSI T1.111.2;

16.2.4.2 Signaling Link functions, as specified in ANSI T1.111.3; and

16.2.4.3 Signaling Network Management functions, as specified in ANSI T1.111.4.

16.2.5 STPs shall provide all functions of the SCCP necessary for Class 0 (basic connectionless) service, as specified in ANSI T1.112. In particular, this includes Global Title Translation ("GTT") and SCCP Management procedures, as specified in ANSI T1.112.4.

16.2.6 In cases where the destination signaling point is either a U S WEST local or tandem switching system or data base, or is an ATTI or third party local or tandem switching system directly connected to U S WEST's SS7 network, U S WEST STPs shall perform final GTT of messages to the destination and SCCP Subsystem Management of the destination. In all other cases, STPs shall perform intermediate GTT of messages to a gateway pair of STPs in an SS7 network connected with the U S WEST SS7 network, and shall not perform SCCP Subsystem Management of the destination.

16.2.7 STPs shall also provide the capability to route SCCP messages based on ISNI, as specified in ANSI T1.118, when this capability becomes available on U S WEST STPs.

16.2.8 STPs shall provide all functions of the OMAP commonly provided by STPs, as specified in the reference in Section 16.5.6. This includes:

16.2.8.1 MTP Routing Verification Test ("MRVT"); and,

16.2.8.2 SCCP Routing Verification Test ("SRVT").

16.2.9 In cases where the destination signaling point is either a U S WEST local or tandem switching system or database, or is an ATTI or third party local or tandem switching system directly connected to the U S WEST SS7 network, STPs shall perform MRVT and SRVT to the destination signaling point. In all other cases, STPs shall perform MRVT and SRVT to a gateway pair of STPs in an SS7 network connected with the U S WEST SS7 network. This requirement shall be superseded by the specifications for inter-network MRVT and SRVT if and when these become approved ANSI standards and available capabilities of U S WEST STPs.

16.2.10 STPs shall be equal to or better than the following performance requirements:

16.2.10.1 MTP Performance, as specified in ANSI T1.111.6; and

16.2.10.2 SCCP Performance, as specified in ANSI T1.112.5.

16.3 Interface Requirements

16.3.1 U S WEST shall provide the following STPs options to connect ATTI or AT&T-designated local switching systems or STPs to the U S WEST SS7 network:

16.3.1.1 An A-link interface from ATTI local switching systems.

16.3.2 Each type of interface shall be provided by one or more sets (layers) of signaling links, as follows:

16.3.2.1 An A-link layer shall consist of two (2) links.

16.3.3 The Signaling Point of Interconnection ("SPOI") for each link shall be located at a cross-connect element, such as a DSX-1, in the central office where the U S WEST STPs are located. There shall be a DS-1 or higher rate transport interface at each of the SPOIs. Each signaling link shall appear as a DS-0 channel within the DS-1 or higher rate interface.

U S WEST shall offer higher rate DS-1 signaling for interconnecting ATTI local switching systems or STPs with U S WEST STPs as soon as these become approved ANSI standards and available capabilities in U S WEST's network.

16.3.4 U S WEST shall provide MTP and SCCP protocol interfaces that shall conform to all relevant sections in the following specifications:

16.3.4.1 Bellcore GR-905-CORE, Common Channel Signaling Network Interface Specification (CCSNIS) Supporting Network Interconnection, Message Transfer Part (MTP), and Integrated Services Digital Network User Part (ISDNUP); and

16.3.4.2 Bellcore GR-1432-CORE, CCS Network Interface Specification (CCSNIS) Supporting Signaling Connection Control Part (SCCP) and Transaction Capabilities Application Part (TCAP).

16.4 Message Screening

16.4.1 U S WEST shall set message screening parameters in order to accept messages from ATTI local or tandem switching systems destined to any signaling point in the U S WEST SS7 network with which the ATTI switching system has a signaling relation.

16.4.2 U S WEST shall set message screening parameters in order to accept messages from ATTI local or tandem switching systems destined to any signaling point or network interconnected to the U S WEST SS7 network with which the ATTI switching system has a signaling relation.

16.4.3 U S WEST shall set message screening parameters in order to accept messages destined to an ATTI local or tandem switching system from any signaling point or network interconnected to the U S WEST SS7 network with which the ATTI switching system has a signaling relation.

16.4.4 U S WEST shall set message screening parameters in order to accept and send messages destined to an ATTI SCP from any signaling point or network interconnected to the U S WEST SS7 network with which the ATTI SCP has a signaling relation.

16.5 STP Requirements

16.5.1 Subject to the provisions of Section 1.3.1 and 1.3.2 of Part A of this Agreement, STPs shall be equal to or better than all of the requirements for STPs set forth in the following technical references:

16.5.2 ANSI T1.111-1992 American National Standard for Telecommunications - Signaling System Number 7 (SS7) - Message Transfer Part (MTP);

16.5.3 ANSI T1.111A-1994 American National Standard for Telecommunications - Signaling System Number 7 (SS7) - Message Transfer Part (MTP) Supplement;

16.5.4 ANSI T1.112-1992 American National, Standard for Telecommunications - Signaling System Number 7 (SS7) - Signaling Connection Control Part (SCCP);

16.5.5 ANSI T1.115-1990 American National Standard for Telecommunications - Signaling System Number 7 (SS7) - Monitoring and Measurements for Networks;

16.5.6 ANSI T1.116-1990 American National Standard for Telecommunications - Signaling System Number 7 (SS7) - Operations, Maintenance and Administration Part (OMAP);

16.5.7 ANSI T1.118-1992 American National Standard for Telecommunications - Signaling System Number 7 (SS7) - Intermediate Signaling Network Identification (ISNI);

16.5.8 Bellcore GR-905-CORE, Common Channel Signaling Network Interface Specification (CCSNIS) Supporting Network Interconnection, Message Transfer Part (MTP), and Integrated Services Digital Network User Part (ISDNUP); and

16.5.9 Bellcore GR-1432-CORE, CCS Network Interface Specification (CCSNIS) Supporting Signaling Connection Control Part (SCCP) and Transaction Capabilities Application Part (TCAP).

17. Service Control Points/Databases

17.1 Definition:

17.1.1 Databases are the Network Elements that provide the functionality for storage of, access to, and manipulation of information required to offer a particular service and/or capability. Databases include, but are not limited to: Number Portability, LIDB, Toll Free Number Database, Automatic Location Identification/Data Management System and AIN.

17.1.2 A Service Control Point ("SCP") is a specific type of Database Network Element functionality deployed in a Signaling System 7 ("SS7") network that executes service application logic in response to SS7 queries sent to it by a switching system also connected to the SS7 network. SCPs also provide operational interfaces to allow for provisioning, administration and maintenance of subscriber data and service application data (e.g., a toll free database stores subscriber record data that provides information necessary to route toll free calls).

17.2 Technical Requirements for SCPs/Databases

Requirements for SCPs/Databases within this section address storage of information, access to information (e.g., signaling protocols and response times), and administration of information (e.g., provisioning, administration, and maintenance). All SCPs/Databases shall be provided to ATTI in accordance with the following requirements, except where such a requirement is superseded by specific requirements set forth in Subparagraphs 17.3 through 17.7 of this Attachment:

17.2.1 U S WEST shall provide interconnection to SCPs through the U S WEST designated STPs using SS7 network and protocols, as specified in Section 16 of this Attachment, with TCAP as the application layer protocol.

17.2.2 Regional SCP pairs shall be available pursuant to applicable technical reference documents.

17.2.3 U S WEST shall provide to ATTI Database provisioning consistent with the provisioning requirements of this Agreement (e.g., data required, edits, acknowledgments, data format and transmission medium and notification of order completion).

17.2.4 The operational interface provided by U S WEST shall complete Database transactions (i.e., add, modify, delete) for ATTI subscriber records stored in U S WEST databases at parity with which U S WEST provisions its own subscriber records.

17.2.5 U S WEST shall provide Database maintenance consistent with the maintenance requirements as specified in this Agreement (e.g., notification of U S WEST network affecting events, testing, dispatch schedule and measurement and exception reports).

17.2.6 When and where available, U S WEST shall provide billing and recording information to track Database usage consistent with Connectivity Billing and recording requirements as specified in this Agreement (e.g., recorded message format and content, timeliness of feed, data format and transmission medium).

17.2.7 U S WEST shall provide SCPs/Databases in accordance with the physical security requirements specified in this Agreement.

17.2.8 U S WEST shall provide SCPs/Databases in accordance with the logical security requirements specified in this Agreement.

17.3 Number Portability Database

17.3.1 Definition:

The Number Portability ("NP") Database supplies routing numbers for calls involving numbers that have been ported from one local service provider to another. NP database functionality shall also include Global Title Translations ("GTT") for calls involving ported numbers even if U S WEST provides GTT functionality in another Network Element. U S WEST shall provide the NP Database in accordance with industry standards which shall supersede the following as needed.

17.3.2 Requirements

17.3.2.1 U S WEST shall make U S WEST NP Database available for ATTI switches to query to obtain the appropriate routing number on calls to ported numbers or the industry specified indication that the number is not ported for non-ported numbers in NPA-NXXs that are opened to portability. The specified indication will also be provided when the NPA-NXX is not open to portability.

17.3.2.2 Query responses shall provide such additional information (e.g., Service Provider identification) as may be specified in the NP implementation in the relevant regulatory jurisdiction.

17.3.2.3 U S WEST shall complete CLASS or LIDB queries routed to the U S WEST network by ATTI switches and return the appropriate response to the querying source.

17.3.2.4 The NP Database shall provide such other functionality as has been specified in the regulatory jurisdiction in which portability has been implemented.

17.3.2.5 Unavailability of the NP Database query and GTT applications shall not exceed four (4) minutes per year.

17.3.2.6 The U S WEST NP Database shall respond to a round trip query within 500 milliseconds or as amended by industry standards.

17.3.3 Interface Requirements

U S WEST shall interconnect the signaling interface between the ATTI or other local switch and the NP Database using the TCAP protocol as specified in the technical references in this Agreement, together with the signaling network interface as specified in the technical references in this Agreement, and such further requirements (e.g., AIN or IN protocols) as may be specified by regulatory or other bodies responsible for implementation of number portability.

17.4 Line Information Database (LIDB)

This Section 17.4 defines and sets forth additional requirements for the Line Information Database.

17.4.1 Definition:

The Line Information Database ("LIDB") is a transaction-oriented database accessible through Common Channel Signaling ("CCS") networks. It contains records associated with subscriber Line Numbers and Special Billing Numbers (in accordance with the requirements in the technical reference in Section 17.6.5). LIDB accepts queries from other Network Elements, or ATTI's network, and provides appropriate responses. The query originator need not be the owner of LIDB data. LIDB queries include functions, such as screening billed numbers, that provide the ability to accept Collect or Third Number Billing calls and validation of Telephone Line Number based non-proprietary calling cards. The interface for the LIDB functionality is the interface between the U S WEST CCS network and other CCS networks. LIDB also interfaces to administrative systems. The administrative system interface provides work centers with an interface to LIDB for functions such as provisioning, auditing of data, access to LIDB measurements and reports.

17.4.2 Technical Requirements

17.4.2.1 U S WEST shall enable ATTI to store in U S WEST's LIDB any line number or special billing number. ATTI will provide U S WEST a non-binding LIDB forecast. Prior to the availability of permanent NP, U S WEST shall enable ATTI to store in U S WEST's LIDB any subscriber Line Number or Special Billing Number record for ATTI

resale, unbundled Network Elements and facility based customers, in accordance with the technical reference in Section 17.6.5, whether ported or not, for which the NPA-NXX or NXX-0/IXX Group is supported by that LIDB.

17.4.2.2 Prior to the availability of permanent NP, U S WEST shall enable ATTI to store in U S WEST's LIDB any subscriber Line Number or Special Billing Number record for ATTI resale, unbundled Network Elements and facility based customers, in accordance with the technical reference in Section 17.6.5, whether ported or not, and NPA-NXX and NXX-0/IXX Group Records, belonging to an NPA-NXX or NXX-0/1 XX owned by AT&T.

17.4.2.3 Subsequent to the availability of permanent NP, U S WEST shall enable ATTI to store in U S WEST's LIDB any subscriber Line Number or Special Billing Number record for ATTI resale, unbundled Network Elements and facility based customers, in accordance with the technical reference in Section 17.6.5, whether ported or not, regardless of the number's NPA-NXX or NXX-0/IXX.

17.4.2.4 U S WEST shall perform the following LIDB functions (i.e., processing of the following query types as defined in the technical reference in Section 17.6.5) for ATTI's subscriber records in LIDB:

17.4.2.4.1 Billed Number Screening (provides information such as whether the Billed Number may accept Collect or Third Number Billing calls);

17.4.2.4.2 Calling Card Validation; and

17.4.2.4.3 Originating Line Number Screening (OLNS), when available.

17.4.2.5 U S WEST shall process ATTI's subscriber records in LIDB at least at parity with U S WEST subscriber records, with respect to other LIDB functions (as defined in the technical reference in Section 17.6). U S WEST shall indicate to ATTI what additional functions, if any, are performed by LIDB in its network. Within ninety (90) days after the Effective Date of this Agreement, the Parties shall develop an interim procedure to process ATTI subscriber records.

17.4.2.6 Within two (2) weeks after a request by AT&T, U S WEST shall provide ATTI with a list of the subscriber data items which ATTI would have to provide in order to support each required LIDB function. The list shall indicate which data items are essential to LIDB function, and which are required only to support certain services. For each data item, the list shall show the data formats, the acceptable values of the data item and the meaning of those values.

17.4.2.7 U S WEST shall provide LIDB performance in accordance with section 17.6.5.

17.4.2.8 U S WEST shall provide ATTI with the capability to provision (e.g., to add, update, and delete) NPA-NXX and NXX-0/IXX Group Records, and Line Number and Special Billing Number Records, associated with ATTI subscribers, directly into U S WEST's LIDB provisioning process. Within ninety (90) days after the Effective Date of this Agreement, the Parties

shall establish an interim process to meet the requirements of this Section.

17.4.2.9 Unless directed otherwise by AT&T, in the event end user subscribers change their local service provider to AT&T, U S WEST shall maintain subscriber data (for line numbers, card numbers, and for any other types of data maintained in LIDB) so that such subscribers shall not experience any interruption of service due to the lack of such maintenance of subscriber data.

17.4.2.10 All additions, updates and deletions of ATTI data to the LIDB shall be made solely at the direction of AT&T.

17.4.2.11 U S WEST shall provide priority updates to LIDB for ATTI data upon ATTI's request (e.g., to support fraud protection).

17.4.2.12 When available, U S WEST shall provide ATTI the capability to directly obtain, through an electronic interface, reports of all ATTI data in LIDB. Within ninety (90) days after the Effective Date of this Agreement, the Parties shall establish an interim process to meet the requirements of this Section.

17.4.2.13 (Intentionally left blank for numbering consistency)

17.4.2.14 U S WEST shall perform backup and recovery of all of ATTI's data in LIDB as frequently as U S WEST performs backup and recovery for itself and any other Person, including sending to LIDB all changes made since the date of the most recent backup copy. Backup will be performed weekly. When needed, recovery will take place within twenty-four (24) hours.

17.4.2.15 U S WEST shall provide to ATTI access to LIDB measurements and reports at least at parity with the capability U S WEST has for its own subscriber records and that U S WEST provides to any other party. Such access shall be electronic. Within ninety (90) days after the Effective Date of this Agreement, the Parties shall establish an interim process to meet the requirements of this Section.

17.4.2.16 U S WEST shall provide ATTI with LIDB reports of data which are missing or contain errors, as well as any misroute errors, within the same time period as U S WEST provides such reports to itself. Within ninety (90) days after the Effective Date of this Agreement, the Parties shall establish a process to meet the requirements of this Section.

17.4.2.17 U S WEST shall prevent any access to or use of ATTI data in LIDB by U S WEST personnel or by any other party not authorized in writing by AT&T.

17.4.2.18 If and when technically feasible, U S WEST shall provide ATTI performance of the LIDB Data Screening function, which allows a LIDB to completely or partially deny specific query originators access to LIDB data owned by specific data owners (in accordance with the technical reference in Section 17.6.5) for subscriber data that is part of an NPA-NXX or NXX-0/IXX wholly or partially owned by ATTI at least at parity with U S WEST subscriber data. U S WEST shall obtain from ATTI the

screening information associated with LIDB Data Screening of ATTI data in accordance with this requirement.

17.4.2.18.1 The parties agree to investigate technical feasibility of variable LIDB database screening to accomplish 17.4.2.18 above.

17.4.2.19 U S WEST shall accept queries to LIDB associated with ATTI subscriber records, and shall return responses in accordance with the requirements of this Section 17.

17.4.3 Interface Requirements

U S WEST shall offer LIDB in accordance with the requirements of this Section 17.4.3.

17.4.3.1 The interface to LIDB shall be in accordance with the technical reference in Section 17.6.3.

17.4.3.2 The CCS interface to LIDB shall be the standard interface described in Section 17.6.3.

17.4.3.3 The LIDB Database interpretation of the ANSI-TCAP messages shall comply with the technical reference in Section 17.6.4. Global Title Translation shall be maintained in the signaling network in order to support signaling network routing to the LIDB.

17.5 Toll Free Number Database

The Toll Free Number Database is an SCP that provides functionality necessary for toll free (e.g., 800 and 888) number services by providing routing information and additional vertical features during call set-up in response to queries from SSPs. This Section 17.5 supplements the requirements of Section 17.2 and 17.7. U S WEST shall provide the Toll Free Number Database in accordance with the following subsections:

17.5.1 Technical Requirements

17.5.1.1 U S WEST shall make the U S WEST Toll Free Number Database available, through its STPs, for ATTI to query from ATTI's designated switch including U S WEST unbundled Local Switching.

17.5.1.2 The Toll Free Number Database shall return carrier identification and, where applicable, the queried toll free number, translated numbers and instructions as it would in response to a query from a U S WEST switch.

17.5.2 Interface Requirements

The signaling interface between the ATTI or other local switch and the Toll-Free Number Database shall use the TCAP protocol as specified in the technical reference in Section 17.6.1, together with the signaling network interface as specified in the technical references in Sections 17.6.2 and 17.6.6.

17.6 SCPs/Databases shall be at least equal to all of the requirements for SCPs/Databases set forth in the following technical references:

17.6.1 GR-246-CORE, Bell Communications Research Specification of Signaling System Number 7, Issue 1 (Bellcore, December 199X);

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17.6.2 GR-1432-CORE, CCS Network Interface Specification (CCSNIS) Supporting Signaling Connection Control Part (SCCP) and Transaction Capabilities Application Part (TCAP) (Bellcore, March 1994);

17.6.3 GR-954-CORE, CCS Network Interface Specification (CCSNIS) Supporting Line Information Database (LIDB) Service 6, Issue 1, Rev. 1 (Bellcore, October 1995);

17.6.4 GR-1149-CORE, OSSGR Section 10: System Interfaces, Issue 1 (Bellcore, October 1995) (Replaces TR-NWT-001149);

17.6.5 GR-1158-CORE, OSSGR Section 22.3: Line Information Database 6, Issue (Bellcore, October 1995); and

17.6.6 GR-1428-CORE, CCS Network Interface Specification (CCSNIS) Supporting Toll Free Service (Bellcore, May 1995).

17.7 Advanced Intelligent Network ("AIN") Access, Service Creation Environment and Service Management System ("SCE/SMS") Advanced Intelligent Network Access

17.7.1 U S WEST shall provide mediated access to all U S WEST service applications, current or future (if technically feasible), resident in U S WEST's SCP through U S WEST's STPs. Such access may be from ATTI's switch or U S WEST's unbundled local switch.

17.7.2 SCE/SMS AIN Access shall provide ATTI the ability to create service applications in the U S WEST SCE and deploy those applications via the U S WEST SMS to the U S WEST SCP. This interconnection arrangement shall provide ATTI access to the U S WEST development environment and administrative system in a manner at least at parity with U S WEST's ability to deliver its own AIN-based services. SCE AIN Access is the development of service applications within the U S WEST Service Creation Environment capability. SMS AIN Access is the provisioning of service applications via the U S WEST Service Management System capability. AIN trigger provisioning will be accomplished through the U S WEST local unbundled switching.

17.7.3 Services Available. U S WEST shall make SCE hardware, software, testing and technical support (e.g., technical contacts, system administrator) resources available to AT&T. Scheduling of SCE resources shall allow ATTI at least equal priority to U S WEST.

17.7.4 Multi-user Access. The U S WEST SCE/SMS shall allow for multi-user access with proper source code management and other logical security functions.

17.7.5 Partitioning. When available, the U S WEST SCP shall partition and protect ATTI service logic and data from unauthorized SMS capability and SCE capability access, execution or other types of compromise.

17.7.6 Training and Documentation. U S WEST shall provide training and documentation for ATTI development staff only in cases in which such training or documentation is not reasonably available from another source. If training or documentation is required in accordance with this Section, it will be provided in a manner at least at parity with that provided by U S WEST to its development staff. Training will be conducted at a mutually agreed upon location.

17.7.7 Access Environment. When ATTI selects SCE/SMS AIN Access, U S WEST shall provide for a secure, controlled access environment on-site. When available ATTI may request mutually agreed upon remote data connections (e.g., dial up, LAN, WAN).

17.7.8 Data Exchange. When ATTI selects SMS AIN Access, U S WEST shall allow ATTI to download data forms and/or tables to the U S WEST SCP, via the U S WEST SMS capability, in the same fashion as U S WEST downloads such forms and/or tables for itself.

17.7.9 Certification Testing. Certification testing is typically a two step process that includes an off-line unit test followed by an on-line controlled introduction testing into one of each of the U S WEST switch types capable of supporting the service. Services created by ATTI will require certification testing by U S WEST before the services can be provisioned in the network. The scheduling of U S WEST certification testing resources for new ATTI services will be jointly coordinated and prioritized between U S WEST and AT&T. ATTI testing requirements will be given equal priority with both U S WEST and other providers' requirements. In most circumstances, such testing will be completed within sixty (60) days from the date the application is submitted by ATTI to U S WEST for certification. In circumstances involving complex applications requiring additional time for testing, U S WEST may request additional time and ATTI will not unreasonably withhold approval of such request. The certification testing procedures described in this Section may be augmented as mutually agreed to by the Parties.

17.7.10 Access Standard. SCPs/Databases shall offer SCE/SMS AIN Access in accordance with the requirements of GR-1280-CORE, AIN Service Control Point (SCP) Generic Requirements.

17.8 (Intentionally left blank for numbering consistency)

17.9 ATTI will provide to U S WEST timely non-binding forecasts of SS7 call transactions, link requirements, database query volumes, etc., as needed for sizing the individual network capabilities that ATTI will utilize under the terms of this Agreement.

17.10 CCS Service includes:

17.10.1 Entrance Facility - The entrance facility connects ATTI's signaling point of interface with the U S WEST Serving Wire Center ("SWC").

17.10.2 Direct Link Transport ("DLT") - The DLT connects the ATTI SWC to the U S WEST STP.

17.10.3 STP Port - The STP port provides the switching function at the STP. One (1) STP port is required for each DLT link. The port provides access to the SCP.

17.11 Advanced Intelligent Network ("AIN") triggers will be provided only to access U S WEST databases. Access to AIN functions is available only through the STP. If ATTI requires other access, it will submit a Bona Fide Request.

18. Additional Requirements

This Section 18 of Attachment 3 sets forth the additional requirements for unbundled Network Elements which U S WEST agrees to offer to ATTI under this Agreement.

18.1 Cooperative Testing

18.1.1 Definition:

Cooperative Testing means that U S WEST shall cooperate with ATTI upon request or as needed to (a) ensure that the Network Elements and Ancillary Functions and additional requirements being provided to ATTI by U S WEST are in compliance with the requirements of this Agreement, (b) test the overall functionality of various Network Elements and Ancillary Functions provided by U S WEST to ATTI in combination with each other or in combination with other equipment and facilities provided by ATTI or third parties, and (c) ensure that all operational interfaces and processes are in place and functioning properly and efficiently for the provisioning and maintenance of Network Elements and Ancillary Functions and so that all appropriate billing data can be provided to AT&T.

18.1.2 Requirements

Within forty-five (45) days of the Effective Date of this Agreement, ATTI and U S WEST will agree upon a process to resolve technical issues relating to interconnection of ATTI's network to U S WEST's network and Network Elements and Ancillary Functions. The agreed upon process shall include procedures for escalating disputes and unresolved issues up through higher levels of each Party's management. If ATTI and U S WEST do not reach agreement on such a process within the 45-day time period, any issues that have not been resolved by the Parties with respect to such process shall be submitted to the dispute resolution procedures set forth in Part A of this Agreement unless both Parties agree to extend the time to reach agreement on such issues.

18.1.2.1 U S WEST shall provide ATTI access for testing at any interface between a U S WEST Network Element or Combinations and ATTI equipment or facilities. Such test access shall be sufficient to ensure that the applicable requirements can be tested by AT&T. This access shall be available seven (7) days per week, twenty-four (24) hours per day.

18.1.2.2 ATTI may test any interfaces, Network Elements or Ancillary Functions and additional requirements provided by U S WEST to ATTI pursuant to this Agreement.

18.1.2.3 U S WEST shall provide engineering data as requested by ATTI for the loop components as set forth in this Attachment 3 which ATTI may desire to test. Such data shall include equipment engineering and cable specifications, signaling and transmission path data.

18.1.2.4 The Parties shall establish a process to provide engineering/office support information on unbundled Network Elements (e.g., central office layout and design records and drawings, system engineering and other applicable documentation) pertaining to a Network Element or Ancillary Function or the underlying equipment that is then providing a Network Element or Ancillary Function to AT&T.

18.1.2.5 Upon request from AT&T, U S WEST shall provide to ATTI all applicable test results from U S WEST testing activities on a Network Element or Ancillary Function or additional requirement or the underlying

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equipment providing a Network Element or Ancillary Function or additional requirements. ATTI may review such test results and may notify U S WEST of any detected deficiencies.

18.1.2.6 U S WEST shall temporarily provision ATTI designated Local Switching features for testing. Within sixty (60) days of the Effective Date of this Agreement, ATTI and U S WEST shall mutually agree on the procedures to be established between U S WEST and ATTI to expedite such provisioning processes for feature testing.

18.1.2.7 Upon ATTI's request, U S WEST shall make available technical support to meet with ATTI representatives to provide required support for Cooperative Testing. U S WEST shall define the process to gain access to such technical support.

18.1.2.8 Dedicated Transport and Loop Feeder may experience alarm conditions due to in-progress tests. U S WEST shall notify ATTI upon removal of such facilities from service.

18.1.2.9 U S WEST shall exercise its best efforts to notify ATTI prior to conducting tests or maintenance procedures on Network Elements or Ancillary Functions or on the underlying equipment that is then providing a Network Element or Ancillary Function, that will likely cause a service interruption or degradation of service.

18.1.2.10 U S WEST shall provide a single point of contact to ATTI that is available seven (7) days per week, twenty-four (24) hours per day for trouble status, sectionalization, resolution, escalation, and closure. Such staff shall be adequately skilled to allow expeditious problem resolution.[11]

18.1.2.11 U S WEST shall make available to ATTI access to 105 responders, 100-type test lines, or 102-type test lines associated with any circuits under test.

18.1.2.12 ATTI and U S WEST shall complete Cooperative Testing in accordance with the procedures set forth in Attachment 5.

18.1.2.13 U S WEST shall participate in Cooperative Testing requested by ATTI whenever it is deemed necessary by ATTI to insure service performance, reliability and subscriber serviceability.

18.1.2.14 ATTI may accept or reject the Network Element ordered by ATTI if, upon completion of cooperative acceptance testing, the tested Network Element does not meet the requirements stated herein.

18.2 Performance

18.2.1 Scope[12]

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[11] Per AT&T Order at page 26, Issue 47.

[12] Per AT&T Recommendations at page 26, Issue 144. Modified per AT&T Approval at page 13, paragraph F.

The performance of all Network Elements and Ancillary functions ATTI orders from U S WEST to provide local service will be at least equal to that it provides to itself, to any subsidiary, affiliate, or any party for which it provides a like service.

18.3 Protection, Restoration, and Disaster Recovery

18.3.1 Scope:

This Section refers specifically to requirements on the use of redundant network equipment and facilities for protection, restoration, and disaster recovery.

18.4 Synchronization

18.4.1 Definition:

Synchronization is the function which keeps all digital equipment in a communications network operating at the same average frequency. With respect to digital transmission, information is coded into discrete pulses. When these pulses are transmitted through a digital communications network, all synchronous Network Elements are traceable to a stable and accurate timing source. Network synchronization is accomplished by timing all synchronous Network Elements in the network to a stratum 1 traceable source so that transmission from these network points have the same average line rate.

18.4.2 Technical Requirements

The following requirements are applicable to the case where U S WEST provides synchronization to equipment that ATTI owns and operates within a U S WEST location. In addition, these requirements apply to synchronous equipment that is owned by U S WEST and is used to provide a Network Element to AT&T.

18.4.2.1 The synchronization of clocks within digital networks is divided into two parts: intra-building and inter-building. Within a building, a single clock is designated as the Building Integrated Timing Supply ("BITS"), which provides all of the DS-1 and DS-0 synchronization references required by other clocks in such building. This is referred to as intra-building synchronization. The BITS receives synchronization references from remotely located BITS such as a primary reference source. Synchronization of BITS between buildings is referred to as inter-building synchronization.

18.4.2.2 To implement a network synchronization plan, clocks within digital networks are divided into four stratum levels. All clocks in strata 2, 3, and 4 are synchronized to a stratum 1 clock, that is, they are traceable to a stratum 1 clock. A traceable reference is a reference that can be traced back through some number of clocks to a stratum 1 source. Clocks in different strata are distinguished by their free running accuracy or by their stability during trouble conditions such as the loss of all synchronization references.

18.4.2.2.1 Intra-Building

Within a building, there may be different kinds of equipment that require synchronization at the DS-1 and DS-0 rates. Synchronization at the DS-1 rate is accomplished by the frequency synchronizing presence of buffer stores at various DS-1 transmission interfaces. Synchronization at the DS-0 rate is accomplished by using a composite clock signal that phase synchronizes the clocks. Equipment requiring DS-0 synchronization frequently does not have adequate buffer storage to accommodate the phase variations among different equipment. Control of phase variations to an acceptable level is accomplished by externally timing all interconnecting DS-0 circuits to a single clock source and by limiting the interconnection of DS-0 equipment to less than 1,500 cable feet. Therefore, a BITS shall provide DS-1 and composite clock signals when the appropriate composite signal is a 64-kHz 5/8th duty cycle, return to zero with a bipolar violation every eighth pulse (B8RZ).

18.4.2.2.2 Inter-Building

U S WEST shall provide inter-building synchronization at the DS-1 rate, and the BITS shall accept the primary and/or secondary synchronization links from BITS in other buildings where necessary. From hierarchical considerations, the BITS shall be the highest stratum clock within the building and U S WEST shall provide operations capabilities. When available such capability includes, but is not limited to: synchronization reference provisioning; synchronization reference status inquiries; timing mode status inquiries; and alarm conditions.

18.4.3 Synchronization Distribution Requirements

18.4.3.1 Central office BITS shall contain redundant clocks meeting or exceeding the requirements for a stratum 3 clock as specified in ANSI T1.101-1994 and ANSI TI.105.09 and Bellcore GR-NWT-001244 Clocks for the Synchronized Network: Common Genetic Criteria.

18.4.3.2 Central office BITS shall be powered by primary and backup power sources.

18.4.3.3 If both reference inputs to the BITS are interrupted or in a degraded mode (meaning off frequency greater than twice the minimum accuracy of the BITS, loss of frame, excessive bit errors, or in Alarm Indication Signal), then the stratum clock in the BITS shall provide the necessary bridge in timing to allow the network to operate without a frame repetition or deletion (slip free) with better performance than specified in these technical references specified in 18.4.3.1.

18.4.3.4 DS-1s multiplexed into a SONET synchronous payload envelope within an STS-n (where "n" is defined in ANSI T1.105-1995) signal shall not be used as reference facilities for network synchronization.

18.4.3.5 The total number of Network Elements cascaded from the stratum 1 source shall be minimized.

18.4.3.6 A Network Element shall receive the synchronization reference signal only from another Network Element that contains a clock of equivalent or superior quality (stratum level).

18.4.3.7 U S WEST shall select for synchronization those facilities shown to have the greatest degree of availability (absence of outages).

18.4.3.8 Where possible, all primary and secondary synchronization facilities shall be physically diverse (this means the maximum feasible physical separation of synchronization equipment and cabling).

18.4.3.9 No timing loops shall be formed in any combination of primary and secondary facilities.

18.4.3.10 U S WEST shall continuously monitor the BITS for synchronization related failures.

18.4.3.11 U S WEST shall continuously monitor all equipment transporting synchronization facilities for synchronization related failures.

18.4.3.12 For non-SONET equipment, U S WEST shall provide synchronization facilities which, at a minimum, comply with the standards set forth in ANSI T1.101-1994.

18.4.3.13 For SONET equipment, U S WEST shall provide synchronization facilities that have time deviation (TDEV) for integration times greater than 0.05 seconds and less than or equal to ten (10) seconds, that is less than or equal to 100 nanoseconds. TDEV, in nanoseconds, for integration times greater than ten (10) seconds and less than 1000 seconds, shall be less than 31.623 times the square-root of the integration time.

18.5 SS7 Network Interconnection

18.5.1 Definition:

SS7 Network Interconnection is the interconnection of ATTI local Signaling Transfer Point (STPs) with U S WEST STPs. This interconnection provides connectivity that enables the exchange of SS7 messages among U S WEST switching systems and databases, ATTI local or tandem switching systems, and other third-party switching systems directly connected to the U S WEST SS7 network.

18.5.2 Technical Requirements

18.5.2.1 SS7 Network Interconnection shall provide signaling connectivity to all components of the U S WEST SS7 network through U S WEST STPs. These include:

18.5.2.1.1 U S WEST local or tandem switching systems;

18.5.2.1.2 U S WEST databases; and

18.5.2.1.3 other third-party local or tandem switching systems.

18.5.2.2 The connectivity provided by SS7 Network Interconnection shall support the functions of U S WEST switching systems and databases and ATTI or other third-party switching systems with A-link access to the U S WEST SS7 network.

18.5.2.3 SS7 Network Interconnection shall provide transport for certain types of Transaction Capabilities Application Part ("TCAP") messages. If traffic is routed based on dialed or translated digits between an ATTI local switching system and a U S WEST or other third-party local switching system, either directly or via a U S WEST tandem switching system, then it is a requirement that the U S WEST SS7 network convey via SS7 Network Interconnection the TCAP messages necessary to provide Call Management services (Automatic Callback, Automatic Recall, and Screening List Editing) between the ATTI local STPs and the U S WEST or other third-party STPs.

18.5.2.4 When the capability to route messages based on Intermediate Signaling Network Identifier ("ISNI") is generally available on U S WEST STPs, the U S WEST SS7 Network shall also convey TCAP messages using SS7 Network Interconnection in similar circumstances where the U S WEST switch routes traffic based on a Carrier Identification Code ("CIC").

18.5.2.5 SS7 Network Interconnection shall provide all functions of the MTP as specified in ANSI T1.111. This includes:

18.5.2.5.1 Signaling Data Link functions, as specified in ANSI T1.111.2;

18.5.2.5.2 Signaling Link functions, as specified in ANSI T1.111.3; and

18.5.2.5.3 Signaling Network Management functions, as specified in ANSI T1.111.4.

18.5.2.6 SS7 Network Interconnection shall provide all functions of the SCCP necessary for Class 0 (basic connectionless) service, as specified in ANSI T1.112.

18.5.2.7 Where the destination signaling point is a U S WEST switching system or database, or is another third-party local or tandem switching system directly connected to the U S WEST STPs (SS7 network), SS7 Network Interconnection shall include final GTT of messages to the destination and SCCP Subsystem Management of the destination.

18.5.2.8 Where the destination signaling point is an ATTI local or tandem switching system, SS7 Network Interconnection shall include intermediate GTT of messages to a gateway pair of ATTI local STPs, and shall not include SCCP Subsystem Management of the destination.

18.5.2.9 SS7 Network Interconnection shall provide all functions of the Integrated Services Digital Network User Part (ISDNUP), as specified in ANSI T1.113.

18.5.2.10 SS7 Network Interconnection shall provide all functions of the TCAP, as specified in ANSI T1.114.

18.5.2.11 If and when inter-network MTP Routing Verification Test (MRVT) and SCCP Routing Verification Test (SRVT) become approved ANSI standards and available capabilities of both U S WEST and ATTI STPs, SS7 Network Interconnection shall provide these functions of the OMAP.

18.5.2.11.1 The Parties shall develop a mutually agreed upon interim process for MRVT and SRVT within ninety (90) days of the Effective Date of this Agreement. Either Party shall be allowed to shut off MRVT/SRVT for preservation of network integrity.

18.5.2.12 SS7 Network Interconnection shall be equal to or better than the following performance requirements:

18.5.2.12.1 MTP Performance, as specified in ANSI T1.111.6;

18.5.2.12.2 SCCP Performance, as specified in ANSI T1.112.5; and

18.5.2.12.3 ISDNUP Performance, as specified in ANSI T1.113.5.

18.5.3 Interface Requirements

18.5.3.1 U S WEST shall offer the following SS7 Network Interconnection options to connect ATTI or AT&T-designated STPs to the U S WEST STPs (SS7 network):

18.5.3.1.1 D-link interface from ATTI STPs.

18.5.3.2 Each interface shall be provided by one or more sets (layers) of signaling links, as follows:

18.5.3.2.1 A D-link layer shall consist of four links.

18.5.3.3 The Signaling Point of Interconnection ("SPOI") for each link shall be located at a cross-connect element (e.g., DSX-1) in the central office where the U S WEST STPs are located. There shall be a DS-1 or higher rate transport interface at each of the SPOIs. Each signaling link shall appear as a DS-0 channel within the DS-1 or higher rate interface. U S WEST shall offer higher rate DS-1 signaling links for interconnecting ATTI local switching systems or STPs with U S WEST STPs as soon as these become approved ANSI standards and available capabilities of U S WEST STPs.

18.5.3.3.1 In each LATA, there will be two (2) SPOIs. The requirement for two SPOIs is driven by the critical importance attached by the Parties to signaling link diversity.

18.5.3.3.2 Each Party will designate one (1) of the two (2) SPOIs in a reasonable and efficient location in the LATA. A SPOI can be any existing cross connect point in the LATA.

18.5.3.3.3 Each signaling link requires a port on each Party's STP.

18.5.3.4 Where available, the U S WEST central office shall provide intraoffice diversity between the SPOIs and the U S WEST STPs, so that no single failure of intraoffice facilities or equipment shall cause the failure of both D-links in a layer connecting to U S WEST's STPs.

18.5.3.5 The protocol interface requirements for SS7 Network Interconnection include the MTP, ISDNUP, SCCP and TCAP. These protocol interfaces shall conform to the following specifications:

18.5.3.5.1 Bellcore GR-905-CORE, Common Channel Signaling Network Interface Specification (CCSNIS) Supporting Network Interconnection, Message Transfer Part (MTP), and Integrated Services Digital Network User Part (ISDNUP);

18.5.3.5.2 Bellcore GR-1428-CORE, CCS Network Interface Specification (CCSNIS) Supporting Toll Free Service;

18.5.3.5.3 Bellcore GR-1429-CORE, CCS Network Interface Specification (CCSNIS) Supporting Call Management Services; and

18.5.3.5.4 Bellcore GR-1432-CORE, CCS Network Interface Specification (CCSNIS) Supporting Signaling Connection Control Part (SCCP) and Transaction Capabilities Application Part (TCAP).

18.5.3.6 To the extent technically feasible, U S WEST shall set message screening parameters to block accept messages from ATTI local or tandem switching systems destined to any signaling point in the U S WEST SS7 network with which the ATTI switching system has a legitimate signaling relation.

18.5.4 SS7 Network Interconnection shall be equal to or better than all of the requirements for SS7 Network Interconnection set forth in the following technical references:

18.5.4.1 ANSI T1.110-1992 American National Standard Telecommunications Signaling System Number 7 (SS7) - General Information;

18.5.4.2 ANSI T1.111-1992 American National Standard for Telecommunications - Signaling System Number 7 (SS7) - Message Transfer Part (MTP);

18.5.4.3 ANSI T1.111A-1994 American National Standard for Telecommunications - Signaling System Number 7 (SS7) - Message Transfer Part (MTP) Supplement;

18.5.4.4 ANSI T1.112-1992 American National Standard for Telecommunications - Signaling System Number 7 (SS7) - Signaling Connection Control Part (SCCP);

18.5.4.5 ANSI T1.113-1995 American National Standard for Telecommunications - Signaling System Number 7 (SS7) - Integrated Services Digital Network (ISDN) User Part;

18.5.4.6 ANSI T1.114-1992 American National Standard for Telecommunications - Signaling System Number 7 (SS7) - Transaction Capabilities Application Part (TCAP);

18.5.4.7 ANSI T1.115-1990 American National Standard for Telecommunications - Signaling System Number 7 (SS7) - Monitoring and Measurements for Networks;

18.5.4.8 ANSI T1.116-1990 American National Standard for Telecommunications - Signaling System Number 7 (SS7) - Operations, Maintenance and Administration Part (OMAP);

18.5.4.9 ANSI T1.118-1992 American National Standard for Telecommunications - Signaling System Number 7 (SS7) - Intermediate Signaling Network Identification (ISNI);

18.5.4.10 Bellcore GR-905-CORE, Common Channel Signaling Network Interface Specification (CCSNIS) Supporting Network Interconnection, Message Transfer Part (MTP), and Integrated Services Digital Network User Part (ISDNUP);

18.5.4.11 Bellcore GR-954-CORE, CCS Network Interface Specification (CCSNIS) Supporting Line Information Database (LIDB) Service;

18.5.4.12 Bellcore GR-1428-CORE, CCS Network Interface Specification ("CCSNIS") Supporting Toll Free Service;

18.5.4.13 Bellcore GR-1429-CORE, CCS Network Interface Specification (CCSNIS) Supporting Call Management Services; and

18.5.4.14 Bellcore GR-1432-CORE, CCS Network Interface Specification (CCSNIS) Supporting Signaling Connection Control Part (SCCP) and Transaction Capabilities Application Part (TCAP).