

8. **Dedicated Transport**

8.1. **Definition:**

Dedicated Transport is an interoffice transmission path between AT&T designated locations. Such locations may include GTE central offices or other equipment locations, AT&T network components, or other carrier network components.

8.1.1. GTE shall offer Dedicated Transport in each of the following ways:

8.1.1.1. As capacity on a shared circuit.

8.1.1.2. As a circuit (e.g., DS1, DS3, STS-1) dedicated to AT&T.

8.1.1.3. As a system (i.e., the equipment and facilities used to provide Dedicated Transport such as SONET ring) dedicated to AT&T. Prices and availability of systems will be provided by GTE using the bona fide request process set forth in Attachment 12 to this Agreement.

8.1.2. When Dedicated Transport is provided as a circuit or as capacity on a shared circuit, it shall include (as appropriate):

8.1.2.1. Multiplexing functionality;

8.1.2.2. [Intentionally Deleted]

8.1.2.3. [Intentionally Deleted]

8.1.3. To the extent Dedicated Transport is provided pursuant to this Agreement as a system, it shall include: Transmission equipment such as multiplexers, line terminating equipment, amplifiers, regenerators; and inter-office transmission facilities such as optical fiber, copper twisted pair, and coaxial cable. To the extent Dedicated Transport is provided as a system, the Parties shall work together to design that system (including but not limited to facility routing and termination points and facility routing over existing transport facilities between GTE and a second carrier to carry traffic designated for that carrier);

8.1.3.1. [Intentionally deleted.]

8.1.3.2. [Intentionally deleted.]

- 8.1.3.3. Redundant equipment and facilities necessary to support protection and restoration; and,
- 8.1.3.4. Dedicated Transport includes the Digital Cross-Connect System (DCS) functionality as an option. DCS is described below in Section 8.4.
- 8.2. **Technical References**  
This Section sets forth technical references, subject to Section 23.19 of the General Terms and Conditions of this Agreement, for all Dedicated Transport.
- 8.2.1. When GTE provides Dedicated Transport as a circuit or a system, the entire designated transmission circuit or system (e.g., DS1, DS3, STS-1) shall be dedicated to AT&T designated traffic.
- 8.2.2. GTE shall offer Dedicated Transport in all then Currently Available technologies including, but not limited to, DS1 and DS3 transport systems, SONET (or SDH) Bi-directional Line Switched Rings, SONET (or SDH) Unidirectional Path Switched Rings, and SONET (or SDH) point-to-point transport systems (including linear add-drop systems), at all available transmission bit rates.
- 8.2.3. For DS1 or VT1.5 circuits, Dedicated Transport shall, at a minimum, meet the performance, availability, jitter, and delay references specified for Customer Interface to Central Office "CI to CO" connections in the technical references listed in Appendix A to this Attachment 2, at paragraph 2.6 thereof.
- 8.2.4. For DS3 circuits, STS-1 circuits, and higher rate circuits, Dedicated Transport shall, at a minimum, meet the performance, availability, jitter, and delay references specified for Customer Interface to Central Office "CI to CO" connections in the technical reference listed in Appendix A to this Attachment 2, at paragraph 2.13 thereof.
- 8.2.5. When requested by AT&T, Dedicated Transport shall provide physical diversity. Physical diversity means that two circuits are provisioned in such a way that no single failure of facilities or equipment will cause a failure on both circuits.
- 8.2.6. When physical diversity is requested by AT&T, GTE shall provide the maximum available physical separation between intra-office and inter-office transmission paths (unless otherwise agreed by AT&T).

- 8.2.7. Upon AT&T's request, GTE shall provide Real Time and continuous remote access to performance monitoring and alarm data affecting, or potentially affecting, AT&T's traffic.
- 8.2.8. GTE shall offer the following interface transmission rates for Dedicated Transport:
  - 8.2.8.1. DS1 (Extended SuperFrame - ESF, D4, and unframed applications shall be provided);
  - 8.2.8.2. DS3 (C-bit Parity, M13, and unframed applications shall be provided);
  - 8.2.8.3. 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 AT&T service node.
  - 8.2.8.4. SDH Standard interface rates in accordance with International Telecommunications Union (ITU) Recommendation G.707 and Plesiochronous Digital Hierarchy (PDH) rates per ITU Recommendation G.704.
- 8.2.9. GTE shall provide cross-office wiring up to a suitable Point of Termination (POT) between Dedicated Transport and AT&T designated equipment. GTE shall provide the following equipment for the physical POT:
  - 8.2.9.1. DSX1 for DS1s or VT1.5s;
  - 8.2.9.2. DSX3 for DS3s or STS-1s; and
  - 8.2.9.3. LGX for optical signals (e.g., OC-3 and OC-12)
- 8.2.10. [Intentionally deleted]
- 8.2.11. [Intentionally deleted]
- 8.2.12. Upon AT&T's request, GTE shall provide AT&T with electronic provisioning control of Dedicated Transport purchased by AT&T and connected to a Digital Cross Connect System (DCS), if the DCS is capable of partitioned access and control.
- 8.2.13. [Intentionally deleted]

- 8.2.14. At a minimum, Dedicated Transport shall meet each of the references set forth in Section 7.2 and in the technical references listed in Appendix A to this Attachment 2, under paragraph 7 thereof.
- 8.3. Technical References for Dedicated Transport Using SONET technology.
- This Section sets forth additional technical references, subject to Section 23.19 of the General Terms and Conditions of this Agreement, for Dedicated Transport using SONET technology including rings, point-to-point systems, and linear add-drop systems.
- 8.3.1. All SONET Dedicated Transport provided as a system shall:
- 8.3.1.1. Be synchronized from both a primary and secondary Stratum 1 level timing source. Additional detail on synchronization references are given in Section 13.4.
- 8.3.1.2. Provide SONET standard interfaces which properly interwork with SONET standard equipment from other vendors. This includes, but is not limited to, SONET standard Section, Line, and Path performance monitoring, maintenance signals, alarms, and data channels.
- 8.3.1.3. 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 AT&T SONET network components connected to the Dedicated Transport. For example, if AT&T leases a SONET ring from GTE, that ring shall support DCC message routing between AT&T SONET network components connected to the ring.
- 8.3.1.4. Support the following performance references for each circuit (STS-1, DS1, DS3, etc.):
- 8.3.1.4.1. No more than 10 Errored Seconds Per Day (Errored Seconds are defined in the technical reference at Appendix A to this Attachment 2 at paragraph 7.5); and
- 8.3.1.4.2. No more than 1 Severely Errored Second Per Day (Severely Errored Seconds are defined in the technical references set forth in Appendix A to this Attachment 2, at paragraph 7.5).

- 8.3.2. All SONET rings shall, subject to Section 23.19 of the General Terms and Conditions of this Agreement:
- 8.3.2.1. Be provisioned on physically diverse fiber optic cables (including separate building entrances where available and diversely routed intra-office wiring). "Diversely routed" shall be interpreted as the maximum feasible and available physical separation between transmission paths, unless otherwise agreed by AT&T.
  - 8.3.2.2. Support dual ring interworking per SONET Standards.
  - 8.3.2.3. Provide the necessary redundancy in optics, electronics, and transmission paths (including intra-office wiring) such that no single failure will cause a service interruption.
  - 8.3.2.4. Provide the ability to disable ring protection switching at AT&T's direction (selective protection lock-out). This reference applies to line switched rings only.
  - 8.3.2.5. Provide the ability to use the protection channels to carry traffic (extra traffic). This reference applies to line switched rings only.
  - 8.3.2.6. Provide 50 millisecond restoration unless a ring protection delay is set to accommodate dual ring interworking schemes.
  - 8.3.2.7. Have settable ring protection switching thresholds that shall be set in accordance with AT&T's specifications.
  - 8.3.2.8. Provide revertive protection switching with a settable wait to restore delay with a default setting of 5 minutes. This reference applies to line switched rings only.
  - 8.3.2.9. Provide non-revertive protection switching. This reference applies to path switched rings only.
  - 8.3.2.10. Be based upon the following availability references, where availability is defined in the technical reference listed in Appendix A to this Attachment 2, at paragraph 7.5 thereof.
    - 8.3.2.10.1. No more than 0.25 minutes of unavailability month; and
    - 8.3.2.10.2. No more than 0.5 minutes of unavailability per year.

8.4. **Digital Cross-Connect System (DCS)**

8.4.1. Definition:

When AT&T requests a functionality that GTE is required to provide to AT&T pursuant to this Agreement, GTE will provision this functionality at a level of quality equal to that which it provides to itself.

8.4.1.1. DCS is a function which provides automated cross connection of Digital Signal level 0 (DS0) 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 DS1 rate or greater with cross-connection typically at the DS0 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-1s) 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 guidelines will be, at least, the aggregation of guidelines on the "component" DCSs.

8.4.1.2. In locations where automated cross connection capability does not exist, DCS will be defined as the combination of the functionality provided by a Digital Signal Cross-Connect (DSX) or Light Guide Cross-Connect (LGX) patch panels and D4 channel banks or other DS0 and above multiplexing equipment used to provide the function of a manual cross connection.

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

8.5. DCS Technical References. GTE shall provide DCS at the same level of quality as GTE provides in its own network. For example, DCS shall, where Currently Available:

8.5.1. Provide completed end-to-end cross connection of the channels designated by AT&T.

- 8.5.2. Perform facility grooming, multipoint bridging, one-way broadcast, two-way broadcast, and facility test functions.
- 8.5.3. Provide multiplexing, format conversion, signaling conversion, or other functions.
- 8.5.4. [Intentionally deleted.]
- 8.5.5. GTE shall continue to administer and maintain DCS, including updates to the control software to current available releases.
- 8.5.6. GTE shall, to the extent Currently Available, provide various types of Digital Cross-Connect Systems including:
  - 8.5.6.1. DS0 cross-connects (typically termed DCS 1/0);
  - 8.5.6.2. DS1/MT1.5 (Virtual Tributaries at the 1.5Mbps rate) cross-connects (typically termed DCS 3/1);
  - 8.5.6.3. DS3 cross-connects (typically termed DCS 3/3);
  - 8.5.6.4. STS-1 cross-connects; and
  - 8.5.6.5. Other Currently Available cross-connects designated by the Parties.
- 8.5.7. To the extent GTE provides such capability to itself, GTE shall provide in accordance with Section 8.2.12 of this Attachment 2, immediate and continuous configuration and reconfiguration of the channels between the physical interfaces.
- 8.5.8. To the extent GTE provide such capability to itself, GTE shall provide scheduled configuration and reconfiguration of the channels between the physical interfaces (i.e., GTE shall establish the processes to implement cross connects on the schedule designated by the Parties).
- 8.5.9. To the extent GTE provides such capability to itself, DCS shall continuously monitor protected circuit packs and redundant common equipment.
- 8.5.10. To the extent GTE provides such capability to itself, DCS shall automatically switch to a protection circuit pack on detection of a failure or degradation of normal operation.

- 8.5.11. To the extent GTE provides such capability to itself, the underlying equipment used to provide DCS shall be equipped with a redundant power supply or a battery back-up.
- 8.5.12. To the extent GTE provides such capability to itself, GTE shall provide to AT&T spare facilities and equipment if ordered by AT&T, at AT&T's expense to the extent such costs are not included in the cost of the unbundled network element, necessary for provisioning repairs, and to meet AT&T's Direct Measures of Quality (DMOQs) as specified in the Provisioning and Maintenance sections.
- 8.5.13. To the extent GTE provides such capability to itself, GTE shall provide to AT&T upon AT&T's request, and at AT&T's expense to the extent such costs are not included in the cost of the unbundled network element, 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 AT&T's services.
- 8.5.14. At AT&T's option and to the extent GTE provides such services to itself and is capable of providing such service to AT&T on a partitioned access and control basis, GTE shall provide AT&T 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.
- 8.5.15. Where Currently Available, DCS shall provide SONET to asynchronous gateway functionality (e.g., STS-1 to DS1 or STS-1 to DS3).
- 8.5.16. Where Currently 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).
- 8.5.17. Where Currently Available, DCS shall have SONET ring terminal functionality where the underlying equipment used to provide DCS acts as a terminal on a SONET ring.

8.5.18. **Where Currently Available, DCS shall provide multipoint bridging of multiple channels to other DCSs. AT&T 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. Intentionally**

deleted]

**[ Combinations ]**

- 8.5.19. Where Currently Available, 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.
- 8.6. **DCS Interface References (subject to Section 23.19 of the General Terms and Conditions of this Agreement):**
- 8.6.1. GTE shall provide physical interfaces on DS0, DS1, and VT1.5 channel cross-connect devices at the DS1 rate or higher. In all such cases, these interfaces shall be in compliance with applicable Bellcore, ANSI, ITU, and AT&T standards.
- 8.6.2. GTE shall provide physical interfaces on DS3 channel cross-connect devices at the DS3 rate or higher. In all such cases, these interfaces shall be in compliance with applicable Bellcore, ANSI, ITU, and AT&T standards.
- 8.6.3. GTE 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 AT&T standards.
- 8.6.4. Interfaces on all other cross-connect devices shall be in compliance with applicable Bellcore, ANSI, ITU , and AT&T standards.
- 8.6.5. DCS shall, at a minimum, meet all the references set forth in the technical references listed in Appendix A to this Attachment 12, under paragraph 8 thereof.
9. **Signaling Link Transport**
- 9.1. **Definition:**  
Signaling Link Transport is a set of two or four dedicated 56 Kbps. transmission paths between AT&T-designated Signaling Points of Interconnection (SPOI) that provides appropriate physical diversity.

- 9.2. **Technical Guidelines (subject to Section 23.19 of the General Terms and Conditions of this Agreement):**  
Signaling Link Transport shall consist of full duplex mode 56 kbps transmission paths. GTE shall provide Interfaces at the same level of quality as GTE provides in its own network:
- 9.3. Of the various options available, Signaling Link Transport shall perform in the following two ways:
- 9.3.1. As an "A-link" which is a connection between a switch and a home Signaling Transfer Point Switch (STPS) pair; and
- 9.3.2. As a "D-link" which is a connection between two STPS pairs in different company networks (e.g., between two STPS pairs for two Competitive Local Exchange Carriers (CLECs)).
- 9.4. Signaling Link Transport shall consist of two or more signaling link layers as follows:
- 9.4.1. An A-link layer shall consist of two links.
- 9.4.2. A D-link layer shall consist of four links.
- 9.4.3. A signaling link layer provided to AT&T pursuant to this Agreement shall perform at the same level of quality and performance levels as a similar signaling link layer in GTE's network. Examples of objectives may be:
- 9.4.3.1. There shall be no more than two minutes down time per year for an A-link layer; and
- 9.4.3.2. There shall be negligible (less than 2 seconds) down time per year for a D-link layer.
- 9.4.4. Where Currently Available, a signaling link layer shall satisfy interoffice and intraoffice diversity of facilities and equipment. Example objectives are:
- 9.4.5. No single failure of facilities or equipment causes the failure of both links in an A-link layer; and
- 9.4.6. No two concurrent failures of facilities or equipment shall cause the failure of all four links in a D-link layer.

9.5. **Interface References** GTE shall provide Interfaces at the same level of quality as GTE provides for Interfaces Currently Available in its own network. Subject to Section 23.19 of the General Terms and Conditions of this Agreement, such interfaces shall, for example, be based on but not limited to the following references:

9.5.1. There shall be a dedicated DS1 (1.544 Mbps) interface at the AT&T-designated SPOIs. Each 56 kbps transmission path shall appear as a DS0 channel within the DS1 interface.

10. **Signaling Transfer Points (STPs)**

10.1. **Definition:** Signaling Transfer Points is a signaling network function that includes all of the capabilities provided by the signaling transfer point switches (STPs) and their associated signaling links which enable the exchange of SS7 messages among and between switching elements, database elements and signaling transfer point switches.

10.2. **Technical References** GTE shall provide access to STPs at the same level of quality as GTE provides access to Currently Available STPs in its own network, subject to Section 23.19 of the General Terms and Conditions of this Agreement. For example:

10.2.1. STPs shall provide access to all other Network Elements connected to the GTE SS7 network. These include:

10.2.1.1. GTE Local Switching or Tandem Switching;

10.2.1.2. GTE Service Control Points/DataBases;

10.2.1.3. Third-party local or tandem switching systems; and

10.2.1.4. Third-party-provided STPs.

10.2.2. The connectivity provided by STPs shall fully support the functions of all other Network Elements connected to those STPs on the GTE SS7 network. This explicitly includes the use of the GTE SS7 network to convey messages which neither originate nor terminate at a signaling end point directly connected to the GTE SS7 network (i.e., transient messages). When the GTE SS7 network is used to convey transient 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.

- 10.2.3. If a GTE tandem switch routes calling traffic, based on dialed or translated digits, on SS7 trunks between an AT&T local switch and third party local switch, the GTE SS7 network shall convey the TCAP messages that are necessary to provide Call Management features (Automatic Callback, Automatic Recall, and Screening List Editing) between the AT&T 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 the GTE STPs provided the third party's STPs and the AT&T local STPs are both connected to the GTE STPs to which the AT&T local switch is connected.
- 10.2.4. STPs shall provide all functions of the SCCP necessary for Class 0 (basic connectionless) service. In cases where the destination signaling point is a GTE local or tandem switching system or data base, or is an AT&T or third party local or tandem switching system directly connected to the GTE SS7 network, 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 GTE SS7 network, and shall not perform SCCP Subsystem Management of the destination.
- 10.2.5. When such capability is deployed in the GTE network, STPs shall provide all functions of the OMAP commonly provided by STPs, as specified in the reference set forth in Appendix A to this Attachment 2, at paragraph 9.5. This includes:
- 10.2.5.1. MTP Routing Verification Test (MRVT); and,
- 10.2.5.2. SCCP Routing Verification Test (SRVT).
- 10.2.6. This Section 10.2.6 applies when such capabilities are deployed in the GTE network. In cases where the destination signaling point is a GTE local or tandem switching system or DB, or is an AT&T or third party local or tandem switching system directly connected to the GTE 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 GTE SS7 network. This reference shall be superseded by the specifications for Internetwork MRVT and SRVT if and when these become approved ANSI standards and available capabilities of GTE STPs.

- 10.2.7. AT&T and GTE agree to participate in the industry IN Forum "Interconnection and Access Group" project to address interconnection requirements for multiple third party AIN SCP access to GTE's switch triggers. AT&T and GTE recognize that actual commencement of tests under this project will be determined by all participants in the project.
- 10.3. **Interface References** GTE shall provide Interfaces at the same level of quality as GTE provides for Interfaces Currently Available in its own network, subject to Section 23.19 of the General Terms and Conditions of this Agreement. For example:
- 10.3.1. GTE shall provide the following STPs options to connect AT&T or AT&T-designated local switching systems or STPSs to the GTE SS7 network:
- 10.3.1.1. An A-link interface from AT&T local switching systems; and,
- 10.3.1.2. A D-link interface from AT&T local STPSs.
- 10.3.2. Subject to Section 23.19 of the General Terms and Conditions of this Agreement, each type of interface shall be provided by one or more sets (layers) of signaling links, as follows:
- 10.3.2.1. An A-link layer shall consist of two links.
- 10.3.2.2. A D-link layer shall consist of four links.
- 10.3.3. [See Section 13.5.3.3 of this Attachment.]
- 10.3.4. [See Section 13.5.3.4 of this Attachment.]
- 10.4. **Message Screening**
- 10.4.1. GTE shall set message screening parameters so as to accept messages from AT&T local or tandem switching systems destined to any signaling point in the GTE SS7 network with which the AT&T switching system is connected and has a legitimate signaling relation.
- 10.4.2. GTE shall set message screening parameters so as to accept messages from AT&T local or tandem switching systems destined to any signaling point or network interconnected within the GTE SS7 network with which the AT&T switching system is connected and has a legitimate signaling relation.

- 10.4.3. GTE shall set message screening parameters so as to accept messages destined to an AT&T local or tandem switching system from any signaling point or network interconnected within the GTE SS7 network with which the AT&T switching system is connected and has a legitimate signaling relation.
- 10.4.4. GTE shall set message screening parameters so as to accept and send messages destined to an AT&T SCP from any signaling point or network interconnected to those STPs within the GTE SS7 network with which the AT&T SCP is connected and has a legitimate signaling relation.
- 10.5. STPs shall meet or exceed the references for STPs set forth in the technical references listed in Appendix A to this Attachment 2, under paragraph 9 thereof.

11. **Service Control Points/Databases**

11.1. **Definition:**

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.

- 11.1.1. 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., an 800 database stores customer record data that provides information necessary to route 800 calls).

11.2. **Technical References for SCPs/Databases** (subject to Section 23.19 of the General Terms and Conditions of this Agreement):

References for SCPs/Databases within this section address storage of information, access to information (e.g. signaling protocols, response times), and administration of information (e.g., provisioning, administration, and maintenance). All SCPs/Databases shall be provided to AT&T in accordance with the following references, except where such a reference is superseded by specific references set forth in Sections 11.3 to 11.7.

- 11.2.1. GTE shall make available physical interconnection to SCPs through the SS7 network and protocols, as specified in Section 10 of this Attachment, with TCAP as the application layer protocol.
- 11.2.2. Except for GTE's directory assistance databases, GTE shall provide physical interconnection to databases via industry standard interfaces and protocols. GTE will provide AT&T with copies of its directory assistance databases on magnetic tape. GTE will also provide to AT&T daily updates to its directory assistance databases on magnetic tape. AT&T and GTE shall agree on the type of magnetic tape, the format of the data on the tapes, the locations for delivery of the tapes, and all other implementation issues that the parties need to be resolved within ten days of the Effective Date of this Agreement. If the parties fail to reach agreement pursuant to this Section, the parties will submit the disputed issues to the alternative dispute resolution process as set forth in this Agreement.
- 11.2.3. The reliability of interconnection options shall be consistent with requirements for diversity and survivability as specified in Section 10 of this Attachment (which applies to both SS7 and non-SS7 interfaces).
- 11.2.4. [Intentionally deleted.]
- 11.2.5. GTE shall provide 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).
- 11.2.6. GTE shall provide Database maintenance consistent with the maintenance requirements as specified in this Agreement.
- 11.2.7. GTE shall provide billing and recording information to track database usage consistent with connectivity billing and recording requirements as specified in this Agreement.
- 11.2.8. GTE shall provide SCPs/Databases in accordance with the physical security requirements specified in this Agreement.
- 11.2.9. GTE shall provide SCPs/Databases in accordance with the logical security requirements specified in this Agreement.
- 11.3. **Line Information Database (LIDB).**  
This Subsection defines and sets forth additional references for the

Line Information Database.

11.3.1.

Definition:

The Line Information Database (LIDB) is a transaction-oriented database accessible through Common Channel Signaling (CCS) networks. It contains records associated with customer Line Numbers and Special Billing Numbers (in accordance with the references set forth in the technical reference listed in Appendix A to this Attachment 2, at paragraph 10.5.). LIDB accepts queries from other Network Elements 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 provides 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 GTE 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.

11.3.2.

Technical References (subject to Section 23.19 of the General Terms and Conditions of this Agreement):

11.3.2.1.

Prior to the availability of a long-term solution for Local Number Portability, GTE shall enable AT&T to store in GTE's LIDB any customer Line Number or Special Billing Number record, for which the NPA-NXX or NXX-0/1XX Group is supported by that LIDB.

11.3.2.2.

Prior to the availability of a long-term solution for Local Number Portability, GTE shall enable AT&T to store in GTE's LIDB any customer Line Number or Special billing Number record, and NPA-NXX and NXX-0/1XX Group Records, belonging to an NPA-NXX or NXX-0/1XX owned by AT&T. The terms and conditions upon which such storage shall be made available to AT&T shall be set forth in a LIDB storage agreement to be entered into between the Parties.

11.3.2.3.

Subsequent to the availability of a long-term solution for Local Number Portability, GTE shall enable AT&T to store in GTE's LIDB any customer Line Number or Special Billing Number record, regardless of the number's NPA-NXX or NXX-0/1XX. The terms and conditions upon which such storage shall be made available to AT&T shall be set forth in a LIDB storage agreement to be entered into between the Parties.

- 11.3.2.4. GTE shall perform the following LIDB functions for AT&T's customer records in LIDB:
  - 11.3.2.4.1. Billed Number Screening (provides information such as whether the Billed Number may accept Collect or Third Number Billing calls); and
  - 11.3.2.4.2. Calling Card Validation
- 11.3.2.5. GTE shall process AT&T's customer records in LIDB at least at parity with GTE customer records. With respect to other LIDB functions, GTE shall indicate to AT&T what additional functions (if any) are performed by LIDB in their network.
- 11.3.2.6. Within two (2) weeks after a request by AT&T, GTE shall provide AT&T with a list of the customer data items which AT&T 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.
- 11.3.2.7. [Intentionally deleted.]
- 11.3.2.8. [Intentionally deleted.]
- 11.3.2.9. [Intentionally deleted.]
- 11.3.2.10. GTE shall make changes to NPA-NXX and NXX-0/1XX Group Records, and Line Number and Special Billing Number Records associated with AT&T Customer, as requested by AT&T, within time frames at parity with those time frames in which GTE makes such changes for its own or any other carrier's customers.
- 11.3.2.11. In the event that end user customers change their local service provider, GTE shall maintain customer data (for line numbers, card numbers, and for any other types of data maintained in LIDB excluding GTE-issued line based calling card numbers and associated PINs) so that such customers shall not experience any interruption of service due to the lack of such maintenance of customer data.
- 11.3.2.12. All additions, updates and deletions of AT&T data to the LIDB shall be solely at the direction of AT&T.

- 11.3.2.13. GTE shall provide priority updates to LIDB for AT&T data upon AT&T's request (e.g., to support fraud protection).
- 11.3.2.14. [Intentionally deleted.]
- 11.3.2.15. GTE shall perform backup and recovery of all of AT&T's data in LIDB in the same manner as GTE performs backup and recovery of GTE's data, including sending to LIDB all changes made since the date of the most recent backup copy.
- 11.3.2.16. GTE shall, to the extent GTE can partition LIDB measurements and reports, provide to AT&T access to LIDB measurements and reports at least at parity with the capability GTE has for its own customer.
- 11.3.2.17. To the extent GTE can partition LIDB measurements and reports, GTE shall provide AT&T with LIDB reports of data which are missing or contain errors, as well as any misroute errors to the degree and on the same schedule as GTE provides such reports to itself.
- 11.3.2.18. GTE shall prevent any access to or use of AT&T data in LIDB by GTE personnel or by any other party that does not have a need to know such information in order to provide services pursuant to this Agreement.
- 11.3.2.19. Where technically feasible and Currently Available, GTE shall provide AT&T 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 listed in Appendix A to this Attachment 2, at paragraph 10.5.) for Customer Data that is part of an NPA-NXX or NXX-0/1XX wholly or partially owned by AT&T at least at parity with GTE Customer Data. AT&T will provide GTE the screening information associated with LIDB Data Screening of AT&T data in accordance with this requirement.
- 11.3.2.20. GTE shall accept queries to LIDB associated with AT&T Customer records, and shall return responses in accordance with the references of this Section 11.
- 11.3.2.21. [Intentionally deleted.]
- 11.3.2.22. [Intentionally deleted.]

11.3.2.23. [Intentionally deleted.]

11.3.2.24. [Intentionally deleted.]

11.3.2.24.1. [Intentionally deleted.]

11.3.2.24.2. [Intentionally deleted.]

11.3.2.24.3. [Intentionally deleted.]

11.3.2.24.4. [Intentionally deleted.]

11.3.2.24.5. [Intentionally deleted.]

11.3.2.24.6. [Intentionally deleted.]

11.3.2.24.6.1. [Intentionally deleted.]

11.3.2.24.6.2. [Intentionally deleted.]

11.3.2.24.6.3. [Intentionally deleted.]

11.3.3. **LIDB Interface References** (subject to Section 23.19 of the General Terms and Conditions of this Agreement): GTE shall offer LIDB in accordance with the references of this Subsection.

11.3.3.1. The interface to LIDB shall be in accordance with the technical reference listed in Appendix A to this Attachment 2, at paragraph 10.3.

11.3.3.2. The CCS interface to LIDB shall be the standard interface listed in Appendix A to this Attachment 2, at paragraph 10.3.

11.3.3.3. The LIDB Data Base interpretation of the ANSI-TCAP messages shall comply with the technical reference listed in Appendix A to this Attachment 2, at paragraph 10.4. Global Title Translation shall be maintained in the signaling network in order to support signaling network routing to the LIDB.

11.4. **Toll Free Number Database**

The Toll Free Number Database is a SCP that provides functionality necessary for toll free (e.g., 800 and 888) number services by providing routing information and additional so-called vertical features during call set-up in response to queries from

SSPs. GTE shall provide the Toll Free Number Database in accordance with the following:

11.4.1. Technical References (subject to Section 23.19 of the General Terms and Conditions of this Agreement):

11.4.1.1. GTE shall make the GTE Toll Free Number Database available for AT&T to query with a toll-free number and originating information.

11.4.1.2. 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 GTE switch.

11.4.2. Signaling Interface References (subject to Section 23.19 of the General Terms and Conditions of this Agreement):

The signaling interface between the AT&T or other local switch and the Toll-Free Number database shall use the TCAP protocol as specified in the technical reference listed in Appendix A to this Attachment 2, at paragraph 10.1, together with the signaling network interface as specified in the technical reference listed in Appendix A to this Attachment 2, at paragraphs 10.2. and 10.6.

11.5. **Automatic Location Identification/Data Management System (ALI/DMS)**

11.5.1. The ALI/DMS Database contains customer information (including name, address, telephone information, and sometimes special information from the local service provider or customer) used to determine to which Public Safety Answering Point (PSAP) to route the call. The ALI/DMS database is used to provide more routing flexibility for E911 calls than Basic 911.

11.6. **Technical References (subject to Section 23.19 of the General Terms and Conditions of this Agreement):** GTE shall provision the Automatic Location Identification/Data Management System (ALI/DMS) and shall provide to AT&T the associated functions and capabilities of that system at the same level of quality as GTE provides to itself.

11.6.1. GTE may provide the Emergency Services Data Base in accordance with the following: GTE may offer AT&T a data link to the port connection for the ALI/DMS database or permit AT&T to provide its own data link to the port connection for the ALI/DMS

database to AT&T immediately after AT&T inputs information into the ALI/DMS database. Alternatively, AT&T may utilize GTE to enter customer information into the database on a demand basis, and validate customer information on a demand basis.

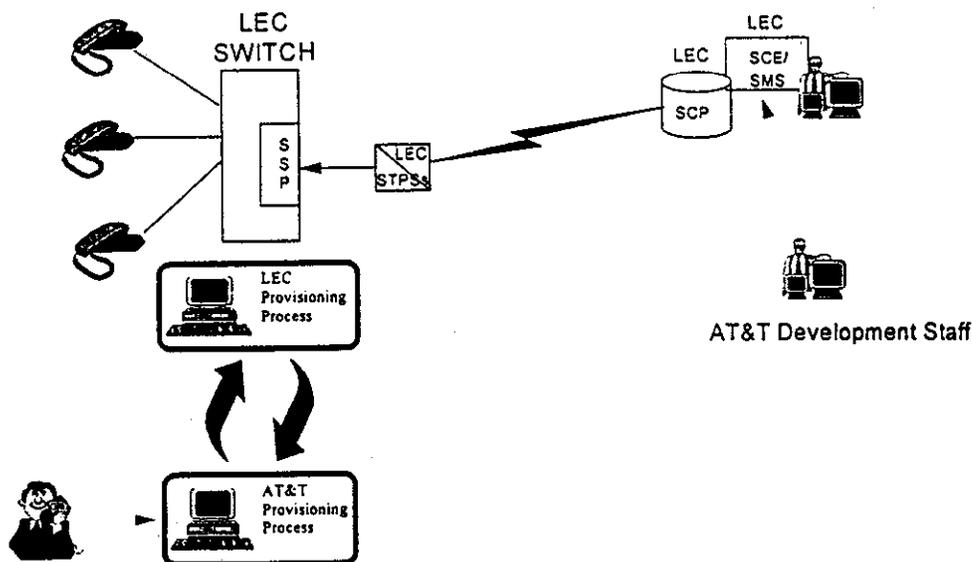
- 11.6.2. The ALI/DMS database shall where Currently Available, contain the following customer information:
  - 11.6.2.1. Name;
  - 11.6.2.2. Address;
  - 11.6.2.3. Telephone number; and
  - 11.6.2.4. Other information as appropriate (e.g., whether a customer is blind or deaf or has another disability).
  - 11.6.2.5. When GTE is responsible for administering the ALI/DMS database in its entirety, ported number NXXs entries for the ported numbers should be maintained and updated appropriately.
  - 11.6.2.6. When Remote Call Forwarding (RCF) is used to provide number portability to the local customer and a remark or other appropriate field information is available in the database, the shadow or "forwarded-to" number sent from AT&T to GTE and an indication that the number is ported shall be added to the customer record.
  - 11.6.2.7. If GTE is responsible for configuring PSAP features (for cases when the PSAP or GTE supports an ISDN interface) the Parties shall work together to ensure that CLASS Automatic Recall (Call Return) is not used to call back to the ported number.
  - 11.6.2.8. [Intentionally deleted.]
- 11.6.3. SCPs/Databases shall meet or exceed the references for SCPs/Databases set forth in the technical references listed in Appendix A to this Attachment 2, under paragraph 10.
- 11.7. Service Creation Environment and Service Management System (SCE/SMS) Advanced Intelligent Network (AIN) Access
  - 11.7.1. Advanced Intelligent Network (AIN) Database. AT&T shall have the right to obtain access to and to use GTE's service applications in the GTE SMS in addition to AT&T's own service applications that AT&T deploys via the GTE SMS to the GTE SCP, as required

below. AT&T may use and access such service applications either through AT&T Switch(es) to the GTE AIN SCP via interconnection of the GTE SS7 and AT&T SS7 networks or through its purchase of unbundled elements, including local switching, from GTE. When AT&T obtains access to GTE's service applications using an AT&T switch, this interconnection arrangement shall result in the GTE AIN SCP recognizing the AT&T Switch as at least at parity with GTE's Local Switch in terms of interfaces, performance and capabilities.

- 11.7.1.1. GTE STPs shall maintain global title translations necessary to direct AIN queries for select global title address and translation type values to and from the AT&T SS7 network, within the global title translation capacity to the STP.
- 11.7.1.2. Requirements for billing and recording information to track AIN query-response usage shall be consistent with Connectivity Billing and Recording requirements as specified in Attachment 6 (e.g., recorded message format and content, timeliness of feed, data format and transmission medium).
- 11.7.1.3. GTE shall provide to AT&T all necessary testing resources and staff to perform service certification testing prior to service deployment in accordance with the Cooperative Testing section of this Agreement.
- 11.7.1.4. [Intentionally deleted]
- 11.7.1.5. When AT&T selects SS7 Access, GTE will provide interconnection of its SS7 network per Section 10 of this Attachment 2 with AT&T's SS7 network for exchange of AIN TCAP messages between AT&T's SSP and GTE's AIN SCP.
- 11.7.1.6. STPs shall offer SS7 AIN Access in accordance with the technical references listed in Appendix A to this Attachment 2, under paragraph 11.
- 11.7.2. SCE/SMS AIN Access shall provide AT&T the ability to create service applications in the GTE SCE and deploy those applications via the GTE SMS to the GTE SCP. This interconnection arrangement shall provide AT&T access to the GTE development environment and administrative system in a manner at least at parity with GTE's ability to deliver its own AIN-based services, subject to reasonable security arrangements. SCE/SMS AIN Access is the development of service applications within the GTE

Service Creation Environment, and deployment of service applications via the GTE Service Management System. AT&T requests to use the GTE SCE will be subject to request, review and testing procedures to be agreed upon by the Parties. See Figure 2 below.

FIGURE 2



- 11.7.2.1. GTE 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 AT&T at least equal priority to GTE.
- 11.7.2.2. The GTE SCE/SMS shall allow for multi-user access with proper source code management and other logical security functions as specified in the Security section of this Agreement.
- 11.7.2.3. The GTE SCP shall partition and protect AT&T service logic and data from unauthorized access, execution or other types of compromise.
- 11.7.2.4. GTE shall provide training and documentation for AT&T 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 GTE to its development staff. Training will be conducted at a mutually agreed upon location provided that AT&T shall reimburse GTE for the cost of providing such resources.

- 11.7.2.5. When AT&T selects SCE/SMS AIN Access, GTE shall provide for a secure, controlled access environment on-site, and, if Currently Available, via remote data connections (e.g., dial up, LAN, WAN).
- 11.7.2.6. When AT&T selects SCE/SMS AIN Access, GTE shall allow AT&T to download data forms and/or tables to GTE SCP via GTE SMS without intervention from GTE (e.g., customer subscription).
- 11.7.2.7. Service Control Points (SCP)/Databases shall offer SCE/SMS AIN Access in accordance with requirements of GR-1280-CORE, AIN SCP Generic Requirements.
- 11.7.3. Any mediation to GTE's AIN database that GTE decides to apply, including the application of network management controls determined by GTE to be necessary to protect the SCP from an overload condition, will be done in a competitively neutral and nondiscriminatory basis for all users of the AIN database, including GTE and its customers. For example, any load mediation will affect all links to the STP, including those of GTE or its customers, in a like manner. AT&T agrees to provide forecast information of its AIN requirements sufficient to permit GTE to engineer sufficient capacity on GTE's AIN SCP platform.

## 12. Tandem Switching

### 12.1. **Definition:**

Tandem Switching is the function that establishes a communications path between two switching offices through a third switching office (the tandem switch).

### 12.2. **Technical References** (subject to Section 23.19 of the General Terms and Conditions of this Agreement): GTE shall provide Tandem Switching capabilities where Currently Available and at the same level of quality as GTE provides in its own network, for example:

12.2.1. Signaling to establish a tandem connection;

12.2.2. Screening and routing;

- 12.2.3. Recording of all billable events;
- 12.2.4. Connectivity to Operator Systems;
- 12.2.5. Access to Toll Free number portability database;
- 12.2.6. All trunk interconnections discussed under the "Network Interconnection" section (e.g., SS7, MF, DTMF, DialPulse, PRI-ISDN, DID, and CAMA-ANI (if appropriate for 911));
- 12.2.7. Connectivity to PSAPs where 911 solutions are deployed and the tandem is used for 911; and
- 12.2.8. Connectivity to transit traffic to and from other carriers.
- 12.2.9. Acceptance of connections (including the necessary signaling and trunking interconnections) between end offices, other tandems, IECs, ICOs, CAPs and CLEC switches.
- 12.2.10. Local tandeming functionality between two end offices including two offices belonging to different CLEC's (e.g., between an AT&T end office and the end office of another CLEC that subtends that tandem).
- 12.2.11. Preservation of CLASS/LASS features and Caller ID as traffic is processed. Additional signaling information and references are provided in Section 10.
- 12.2.12. Billing requirements are specified in Attachment 6 of this Agreement.
- 12.2.13. GTE shall perform routine testing and fault isolation on the underlying switch that is providing Tandem Switching and all its interconnections to the extent such testing and fault isolation is Currently Available. When requested by AT&T, and where Currently Available, the results and reports of the testing shall be made available to AT&T. If AT&T requests testing and fault isolation which GTE does not provide for itself, GTE may agree to perform such testing. If GTE agrees to perform such higher quality testing, GTE shall be entitled to recover costs associated therewith to the extent that such costs are not otherwise included in the cost of the element.

- 12.2.14. GTE shall maintain AT&T's trunks and interconnections associated with Tandem Switching at least at parity to its own trunks and interconnections.
- 12.2.15. Upon AT&T's request, GTE shall provide to AT&T readily available industry standard reports regarding AT&T traffic characteristics that are generated by the tandem switches performing Tandem Switching purchased by AT&T to the extent GTE has the ability to segregate such information. For local and LEC carried intraLATA toll traffic, GTE shall provide Bellcore EMR industry standard formatted records. For interexchange carrier interLATA and intraLATA traffic, GTE shall provide EMI industry standard formatted records. If AT&T desires additional available information beyond that contained in industry standard reports, the Parties shall work together to satisfy AT&T's requirements to the extent GTE is obligated to meet such requirements under Applicable Law.
- 12.2.16. Tandem Switching shall control congestion using, for example, capabilities such as Automatic Congestion Control and Network Routing Overflow. Congestion control provided or imposed on AT&T traffic shall be at parity with controls being provided or imposed on GTE traffic (e.g., GTE shall not block AT&T traffic and leave its traffic unaffected or less affected).
- 12.2.17. Tandem Switching shall route AT&T calls to the GTE or AT&T endpoints or platforms (e.g., operator services and PSAPs) as designated by AT&T for each type of call. AT&T shall pay all costs associated therewith to the extent that such costs are not otherwise included in the cost of the element. Detailed primary and overflow routing plans for all AT&T interfaces, including AT&T traffic on GTE shared trunk groups, available within the GTE switching network shall be mutually agreed to by AT&T and GTE.
- 12.2.18. Tandem Switching shall process originating toll-free traffic received from an AT&T local switch. The Parties shall mutually agree on the methods and implementation procedures to be used to record and bill such traffic.
- 12.2.19. [Intentionally deleted.]

- 12.3. **Interface Guidelines** (subject to Section 23.19 of the General Terms and Conditions of this Agreement): GTE shall provide Interfaces for Tandem Switching at the same level of quality as GTE provides in its own network. For example:
- 12.3.1. Tandem Switching shall provide interconnection to the E911 PSAP where the underlying Tandem is acting as the E911 Tandem.
- 12.3.2. Tandem Switching shall interconnect, with direct trunks, to all carriers with which GTE interconnects.
- 12.3.3. GTE shall provide to the extent Currently Available, all signaling necessary to provide Tandem Switching with no loss of feature functionality.
- 12.3.4. Tandem Switching shall interconnect with AT&T's switch, using two-way trunks, for traffic that is transiting via the GTE network to interLATA or intraLATA carriers. GTE shall record tandem switching events necessary for GTE to bill AT&T for tandem switching and any applicable transport.
- 12.3.4.1. Notwithstanding Section 12.3.4 of this Attachment, where GTE's Tandems do not customarily record tandem switching events, the Parties shall jointly develop acceptable methods of tracking and billing for tandem switching.
- 12.3.5. At AT&T'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 upon which the Parties agree.
- 12.3.6. Subject to Section 23.19 of the General Terms and Conditions of this Agreement, Tandem Switching shall adhere to the Trunk Interface References provided in the "Network Interconnection" section.
- 12.4. Tandem Switching shall meet or exceed each of the technical references listed in Appendix A to this Attachment 2, under paragraph 12.
13. **Additional References** (subject to Section 23.19 of the General Terms and Conditions of this Agreement):

This Section 13 of Attachment 2 sets forth additional references for unbundled Network Elements offered to AT&T under this

Agreement.

13.1. **Cooperative Testing**

13.1.1. Definition:

Cooperative Testing means that the Parties shall cooperate with each other upon request or as needed to (1) ensure that any Network Elements provided to AT&T by GTE under this Agreement are in compliance with the requirements of this Agreement, (2) test the overall functionality of Network Elements provided by GTE to AT&T under this Agreement, and (3) ensure that all operational interfaces and processes are in place and functioning properly and efficiently for the provisioning and maintenance of Network Elements so that all appropriate billing data can be provided to AT&T.

13.1.2. **References**

Subject to and in conjunction with Section 23.19 of the General Terms and Conditions of this Agreement, AT&T and GTE will agree upon a process to resolve technical issues relating to interconnection of AT&T's network to GTE'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 company's management. If AT&T and GTE do not reach agreement on such a process within sixty (60) days of the commencement of negotiations, upon thirty (30) days notice to the other Party, a Party may submit any issues that have not been resolved by the Parties with respect to such process to the ADR procedures set forth in Section 15 and Attachment 1 of this Agreement unless both Parties agree to extend the time to reach agreement on such issues.

13.1.2.1. GTE will provision, test, and restore any Network Element that GTE provides to AT&T pursuant to this Agreement, in the same manner and to the same extent as GTE provisions, tests and restores such network elements in GTE's network that provide the same or similar functions and capabilities, and are located in similar central office conditions (e.g., central office or route) as the Network Elements provided to AT&T pursuant to this Agreement.

At AT&T's request, GTE will provide access to Network Elements provided pursuant to this Agreement sufficient for AT&T to test the performance of such Network Element(s) to AT&T's satisfaction, provided, however, GTE shall not be required to provide access

where provision of such access would raise or create reasonable network security concerns. In cases where GTE does not allow AT&T access to the Network Element, GTE shall make other arrangements to provide AT&T with test data as the Parties mutually agree.

**GTE shall provide AT&T access for testing at the MDF. 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, 24 hours per day.**

**[ Combinations ]**

- 13.1.2.2. AT&T may test any interfaces, Network Elements or Ancillary Functions and additional requirements provided by GTE pursuant to this Agreement.
- 13.1.2.3. Subject to Section 23.19 of the General Terms and Conditions of this Agreement, GTE shall provide engineering data as requested by AT&T for the loop components as set forth in Sections 2 and 3 of this Attachment which AT&T may desire to test. Such data shall include equipment engineering and cable specifications, signaling and transmission path data. GTE shall provide to AT&T the same type and quality of loop testing information that it provides to itself. Where GTE develops loop testing information as a matter of course, it will make that information available to AT&T where such information is relevant to AT&T's business. Where GTE maintains the internal discretion to test loops as needed, GTE will provide similar testing discretion to AT&T.
- 13.1.2.4. [Intentionally Deleted]
- 13.1.2.5. [Intentionally Deleted]
- 13.1.2.6. GTE shall temporarily provision selected Local Switching features for testing. Where applicable, rates and charges for unbundled ports and features, including but not limited to monthly rates, usage rates and nonrecurring charges, shall apply for the duration of such tests. Within 60 days of the Effective Date of this Agreement AT&T and GTE shall mutually agree on the procedures to be established between GTE and AT&T to expedite such provisioning processes for feature testing.

- 13.1.2.7. Upon AT&T's request, GTE shall provide technical staff to meet with AT&T representatives to provide required support for Cooperative Testing.
- 13.1.2.8. Dedicated Transport and Loop Feeder may experience alarm conditions due to in-progress tests. GTE shall not remove such facilities from service without obtaining AT&T's prior approval.
- 13.1.2.9. GTE shall conduct 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 may cause a service interruption or degradation if such tests and procedures are at a time that is mutually acceptable to AT&T and GTE.
- 13.1.2.10. GTE shall provide a single point of contact to AT&T that is available 7 days per week, 24 hours per day for trouble status, sectionalization, resolution, escalation, and closure. Such staff shall be adequately skilled to allow expeditious problem resolution.
- 13.1.2.11. [Intentionally Deleted]
- 13.1.2.12. GTE shall participate in Cooperative Testing with AT&T upon AT&T's request to test any operational interface or process used to provide any Network Elements to AT&T.
- 13.1.2.13. AT&T and GTE shall endeavor to complete Cooperative Testing expeditiously.
- 13.1.2.14. During Cooperative Testing, GTE provisioning processes may, at GTE's sound discretion, be enhanced to deliver Network Elements to AT&T in shorter intervals than during subsequent normal service periods upon development of a rate for premium service provisioning.
- 13.1.2.15. GTE shall participate in Cooperative Testing requested by AT&T as mutually required to insure service performance, reliability and customer serviceability of a Network Element.
- 13.1.2.16. AT&T may accept or reject the Network Element ordered by AT&T if upon completion of cooperative acceptance testing, the tested Network Element does not, subject to Section 23.19 of the General Terms and Conditions of this Agreement, meet the appropriate technical or performance requirements for such Network Element.

- 13.2. **Performance References** (subject to Section 23.19 of the General Terms and Conditions of this Agreement):
- 13.2.1. Scope:  
This section addresses performance references for Network Elements and Ancillary Functions to provide local service. It includes references for the reliability and availability of Network Elements and Ancillary Functions, and examples of quality parameters such as transmission quality (analog and digital), and speed (or delay) that serve as a reference to the Parties in providing services pursuant to this Agreement. In addition, an overview of service performance references is given.
- 13.2.1.1. The General Performance References in this section apply to all aspects of Network Elements and Ancillary Functions. Additional references are given in this performance section and in the individual Network Elements sections.
- 13.2.1.2. GTE shall work cooperatively with AT&T to determine appropriate performance allocations across Network Elements.
- 13.2.2. Subject to Section 23.19 of the General Terms and Conditions of this Agreement, GTE shall meet or exceed the performance standards and references set forth in the technical references listed in Appendix A to this Attachment 2, under paragraph 13.
- 13.2.3. Services and Capabilities
- 13.2.3.1. Network Elements provided to AT&T pursuant to this Agreement shall provide services and capabilities consistent with Section 11.2 of the General Terms and Conditions of this Agreement. GTE shall not intentionally impair or degrade the services and capabilities of any Network Element(s) provided to AT&T pursuant to this Agreement.
- 13.2.3.1.1. [Intentionally deleted.]
- 13.2.3.1.2. [Intentionally deleted.]
- 13.2.3.1.3. [Intentionally deleted.]
- 13.2.3.1.4. [Intentionally deleted.]
- 13.2.3.1.5. [Intentionally deleted.]

- 13.2.3.2. [Intentionally deleted.]
- 13.2.3.2.1. [Intentionally deleted.]
- 13.2.3.2.2. [Intentionally deleted.]
- 13.2.3.2.3. [Intentionally deleted.]
- 13.2.3.2.4. [Intentionally deleted.]
- 13.2.3.2.5. [Intentionally deleted.]
- 13.2.3.2.6. [Intentionally deleted.]
- 13.2.3.2.7. [Intentionally deleted.]
- 13.2.4. Specific Technical References for Network Elements (subject to Section 23.19 of the General Terms and Conditions of this Agreement):
  - 13.2.4.1. The following sections 13.2.4.2 through 13.2.4.5.6.2.9.2 describe technical references and performance parameters for Network Elements and Ancillary Functions. The technical references and performance parameters listed in the following sections shall be subject to and interpreted in conjunction with Section 23.19 of the General Terms and Conditions of this Agreement such that failure by GTE to meet any of the technical criteria or performance parameters listed in such sections shall not constitute a breach of contract by GTE. Notwithstanding the above, nothing in this section shall remove or release GTE from its obligations under Section 11.2 of the General Terms and Conditions of this Agreement.
  - 13.2.4.2. Performance Allocation Transmission path impairments may be classified as either analog or digital, and will depend on the nature of the signal transmitted across the Network Element. Analog impairments are introduced on any analog portion of the loop, typically between the NID portion of Loop Distribution and the analog to digital (A/D) conversion, and are usually correlated with the length of the physical plant. Digital impairments are introduced by A/D conversion and by interfaces between digital Network Elements. In addition, noise can be introduced by either analog transmission or the A/D conversion.

- 13.2.4.3. Loop Architecture Parameters
  - 13.2.4.3.1. The following parameters apply to the entire path between the NID and the GTE switch.
    - 13.2.4.3.1.1. No more than 1 A-D conversion.
    - 13.2.4.3.1.2. No more than 1, 2-to-4-wire hybrid.
    - 13.2.4.3.1.3. No voice compression.
    - 13.2.4.3.1.4. No echo cancelers or suppressers.
    - 13.2.4.3.1.5. One digital loss pad per PBX.
    - 13.2.4.3.1.6. No digital gain.
    - 13.2.4.3.1.7. No additional equipment that might significantly increase intermodulation distortion.
  - 13.2.4.4. Transmission Impairments
    - 13.2.4.4.1. Analog Impairments Analog impairments are those introduced on portions of the end-to-end circuit on which communications signals are transmitted in analog format. These portions of the transmission path would typically be between NID and an A/D conversion, most commonly on the metallic loop. The performance on the analog portion of a circuit is typically inversely proportional to the length of that circuit.
      - 13.2.4.4.1.1. Loss
        - 13.2.4.4.1.1.1. Electrical loss is measured using a 1004 Hz 0.0dB one Milliwatt 900 ohm test tone.
        - 13.2.4.4.1.1.2. Off-hook electrical loss between the NID and the switch shall be no more than 8.0 dB for any line, and the mean value for all lines shall be 3.5 dB  $\pm$ 0.5 dB. On-hook electrical loss between the NID and the switch shall be no more than 4.0 dB above the off-hook electrical loss for any line.
      - 13.2.4.4.1.2. Idle Channel Circuit Noise
        - 13.2.4.4.1.2.1. Idle channel circuit noise (C-message) is added by analog facilities, by the A/D conversion of signals, by digital processing equipment

(e.g. echo cancelers, digital loss pads), robbed bit signaling, and errors on digital facilities.

13.2.4.4.1.2.2. Idle channel circuit noise shall be less than or equal to 18 dBmC.

13.2.4.4.1.3. Talker Echo

13.2.4.4.1.3.1. The primary source of echo is improper impedance-matching at the 2-to-4 wire hybrid in the GTE network. The impact on customer perception is a function of both echo return loss and delay.

13.2.4.4.1.3.2. Echo Return Loss (ERL) shall be greater than 26dB to a standard termination (900 ohms, 2.16 mFd), and greater than 14 dB to a telephone set off-hook. Singing Return Loss (SRL) shall be greater than 21dB to a standard termination, and greater than 11 dB to a telephone set off-hook.

13.2.4.4.1.4. Listener Echo

Listener echo is a double reflection of a transmitted signal at two different impedance mismatches in the end-to-end connection. While in extreme cases it can degrade voice transmission performance, listener echo is primarily an issue for voiceband data. The requirements on Talker Echo shall apply to Listener Echo.

13.2.4.4.1.5. Propagation and Processing Delay

13.2.4.4.1.5.1. Propagation delay is the delay involved in transmitting information from one location to another. It is caused by processing delays of equipment in the network and delays associated with traveling across transmission facilities.

13.2.4.4.1.5.2. GTE shall cooperate with AT&T to limit total service propagation and processing delay to levels at parity with that within the GTE local network.

13.2.4.4.1.6. Signal-to-Noise Ratio

13.2.4.4.1.6.1. The Signal-to-Noise Ratio (S/N) is a critical parameter in determining voiceband data performance. It is typically measured with a 1004 Hz tone.

13.2.4.4.1.6.2. GTE must provide on the Loop a signal-to-noise ratio of at least 37 dB between the NID and the end office.

13.2.4.4.1.7. C-Notched Noise

The requirements for Signal-to-Noise Ratio shall apply to C-

## Notched Noise.

### 13.2.4.4.1.8. Attenuation Distortion

13.2.4.4.1.8.1. Attenuation distortion, also known as frequency distortion or gain slope, measures the variations in loss at different frequencies across the voice frequency spectrum (200 Hz - 3400 Hz). It is measured by subtracting the loss at 1004 Hz from the loss at the frequency of interest.

13.2.4.4.1.8.2. Attenuation distortion from the NID to the switch shall be within the range  $\pm 0.5$  dB for frequencies between 304 and 3004 Hz; from the switch to NID attenuation distortion shall be within the range  $\pm 0.5$  dB for frequencies between 204 Hz and 3004 Hz. In addition, attenuation distortion shall remain within the range +1dB/-3dB for frequencies between 200 Hz and 3500 Hz.

### 13.2.4.4.1.9. Envelope Delay Distortion

13.2.4.4.1.9.1. Envelope Delay Distortion (EDD) measures the difference in transit time of signals at different frequencies. EDD is measured relative to the transit time of a 1704 Hz. tone, and is given in microseconds. EDD is used as an approximation of the group delay of the channel.

13.2.4.4.1.9.2. EDD shall be: 1704 Hz to 604 Hz --  $\leq 350$  msec.; 1704 Hz to 2804 Hz --  $\leq 195$  msec.; 1704 Hz to 204 Hz --  $\leq 580$  msec.; 1704 Hz to 3404 Hz --  $\leq 400$  msec.

### 13.2.4.4.1.10. Phase Jitter

13.2.4.4.1.10.1. Phase jitter measures the unwanted angular modulation of a signal. It is caused by noise or the actual modulation of the signal by another unwanted signal. It displaces the zero crossings of a signal. It is measured in terms of peak-to-peak deviations of a 1004 Hz. tone from its nominal zero crossings, and in a particular frequency band (20-300 Hz and either 4-300 Hz or 2-300 Hz). Phase jitter impacts voiceband data performance and can make modems more susceptible to other impairments, including noise.

13.2.4.4.1.10.2. From the NID to the interexchange carrier point of termination, phase jitter shall be  $<1.5^\circ$  point-to-point in the 20-300 Hz band, and  $<1.8^\circ$  point-to-point in the 4-300 Hz. band.

13.2.4.4.1.11. Amplitude Jitter

13.2.4.4.1.11.1. Amplitude jitter is any deviation of the peak value of a 1004 Hz signal from its nominal value. Excessive amounts can impair voiceband data performance. It is primarily caused by noise but can also be caused by phase jitter, gain hits, or single frequency interference.

13.2.4.4.1.11.2. In NID-interexchange carrier point of termination,  $\leq 2.5\%$  of amplitude jitter is permitted in the 20-300 Hz band and  $\leq 2.9\%$  in the 4-300 Hz band.

13.2.4.4.1.12. Intermodulation Distortion

13.2.4.4.1.12.1. Intermodulation distortion (IMD) measures non-linear distortions of a signal. It compares the power of harmonic tones to the power of the transmitted tones. It is measured for both the 2nd and 3rd harmonics of the transmitted tones. IMD is caused by compression or clipping and can impair voiceband data performance. Both 2nd and 3rd order IMD between the NID and end office must be  $\geq 52\text{dB}$ .

13.2.4.4.1.13. Impulse Noise

13.2.4.4.1.13.1. Impulse noise is a sudden and large increase in noise on a channel for a short duration of time. Impulse noise is measured as a count of the number of times a noise threshold is exceeded during a given time period (typically 5 or 15 minutes). It is caused by protection switching, maintenance activities, electromechanical switching systems, digital transmission errors, and line coding mismatches. Impulse noise sounds like clicking noises or static on voice connections. Impulse noise impairs voiceband data performance.

13.2.4.4.1.13.2. The NID to interexchange carrier point of termination portions of connections shall introduce no impulse noise events within 6dB of the received signal power on 93% of all 15 minute connections. In addition, there shall be no more than 1 impulse noise event within 6 dB of the received signal power during any 30-minute period.

13.2.4.4.1.14. Phase Hits

13.2.4.4.1.14.1. Phase hits are a sudden change in the phase of a signal lasting at least 4 msec. Phase hits are measured using a threshold which indicates how much the phase of the signal has changed with respect to its nominal phase. Phase hits are caused by protection

switching and slips or other synchronization errors. Phase hits can impair voiceband data performance.

- 13.2.4.4.1.14.2. Between the NID and interexchange carrier point of termination, 99.75% of all 15-minute connections shall have no phase hits exceeding 10°. In addition, there shall be no more than 1 phase hit exceeding 10° in any 30-minute period.
- 13.2.4.4.1.15. Gain Hits
  - 13.2.4.4.1.15.1. Gain hits are sudden changes in the level of a signal that last at least 4 msec. Gain hits are measured against a threshold of typically 2-5 dB relative to the signal's nominal level. Gain hits are usually caused by protection switches and can impair voiceband data performance.
  - 13.2.4.4.1.15.2. Between the NID and the interexchange carrier point of termination, 99.5% of all 15-minute connections shall have no gain hits exceeding 3 dB. In addition, there shall be no more than 1 gain hit exceeding 3 dB in any 30-minute period.
- 13.2.4.4.1.16. Dropouts
  - 13.2.4.4.1.16.1. Dropouts are drops in the level of a signal of 12 dB or more for at least 4 msec. They are caused by protection switching events, radio fading, and conditions causing digital carrier systems to lose frame. Dropouts are critical for voiceband data performance but, if severe enough, will also affect voice quality.
  - 13.2.4.4.1.16.2. Between the NID and the interexchange carrier point of termination, 99.9% of all 15-minute connections shall have no dropouts and in addition, no connection shall suffer more than 1 dropout in any 60-minute period.
- 13.2.4.4.1.17. Frequency Shift
  - 13.2.4.4.1.17.1. Frequency shift measures any frequency changes that occur when a signal is transmitted across a channel. It is typically measured using a 1004 Hz tone. Frequency shift has very little impact on voice or voiceband data performance; however, round-trip frequency shifts can affect the ability of echo cancelers to remain converged.
  - 13.2.4.4.1.17.2. No more than 0.2 Hz frequency shift shall be on any connection. In addition, 99.5% of all calls shall have frequency shift < 0.1 Hz.

13.2.4.4.1.18. Crosstalk

13.2.4.4.1.18.1. Crosstalk is the presence of signals from other telephone connections on a circuit. Crosstalk can be either intelligible, when speech from other connections can be heard and understood, or unintelligible. Crosstalk is caused by inter-channel interference on the transmission system. Crosstalk is difficult to measure: it requires correlating signals on different circuits or using human listeners to identify its presence. Trouble reports may be used to estimate the probability of crosstalk.

13.2.4.4.1.18.2. 99% of Loop(s) shall have probability  $\leq 0.1\%$  of experiencing crosstalk exceeding -65 dBm0.

13.2.4.4.1.19. Clipping

13.2.4.4.1.19.1. Clipping occurs when part of a transmitted signal is dropped and does not reach the receiving portion on a connection. It can be caused by Digital Speech Interpolation (DSI) equipment used in Digital Circuit Multiplication Systems (DCMS) which increase the amount of traffic that transmission facilities carry, and by echo cancelers or echo suppressers.

No clipping incidents shall occur on any call.

13.2.4.4.2. Digital Impairments

Digital impairments occur in the signal wherever it is transmitted in digital format. These errors are usually introduced upon conversion of the signal from analog to digital, as well as at interfaces between digital components. While many digital impairments have little impact on subjective voice quality, they can impact voiceband data performance.

13.2.4.4.2.1. Signal Correlated Distortion

13.2.4.4.2.1.1. Signal correlated distortion (SCD) is unwanted noise or distortion introduced into a signal through the conversion of a signal from analog to digital format or through digital processing that changes the transmitted signal. SCD affects performance when a signal is being transmitted. The primary sources of SCD are signal encoders, echo cancelers, digital loss pads, and robbed bit signaling. SCD affects both voice and voiceband data performance.

13.2.4.4.2.1.2. The NID-to-end-office connection shall allow: