

## 1.4.8 Private Line Service (PLS) [C.2.5.1]

*Agencies can maintain continuity with existing services as well as transition to Networx services over AT&T's private line service (PLS). PLS provides a global, dedicated, high-speed, reliable solution, featuring a wide variety of bandwidth options that will benefit Agencies.*

### 1.4.8.1 Technical Approach to Transport/IP/Optical Service Delivery [L.34.1.4.1]

#### 1.4.8.1.a Approach to Service Delivery

(a) Analyze the service requirements specified in this solicitation and describe the approaches to service delivery for each service.

AT&T's private line service (PLS) is a low-risk, high-quality, globally available service that provides the transmission path for private digital data lines. PLS is available in the U.S. with speeds of 9.6 kbps through 10 Gbps and supports full duplex, point-to-point, and multipoint configurations. Analog lines can be provided as an option. The service is used to support applications, such as voice, data, multimedia, and encrypted communications. **Figure 1.4.8.1-1** below illustrates the architecture used for global PLS delivery.

**Table 1.4.8.1-1** lists available service types for the most comprehensive suite of private line services in the industry.



Figure 1.4.8.1-1: AT&T Private Line Services Architecture.

SERVICE TYPE	DESCRIPTION	DATA RATE	OPTIONS
Single Channel	Helps Agencies economically meet a wide variety of communication needs by providing a dedicated interoffice channel.	9.6 Kbps 56 Kbps 64 Kbps	
Fractional T1 (FT1)	Agencies order for only the bandwidth they need for their applications through a common network of digital facilities.	128 Kbps 192 Kbps 256 Kbps 320 Kbps 384 Kbps 448 Kbps 512 Kbps 576 Kbps 640 Kbps 704 Kbps 768 Kbps	
T1	Offers a cost-effective solution for high-volume private line users	1.544 Mbps	
Fractional T3 (FT3)	Enables Agencies to order for only the bandwidth they need to serve their higher speed applications	4.5 Mbps 6.2 Mbps 7.7 Mbps 10.8 Mbps 32 Mbps	
T3/T45	Brings the benefits of fiber optic technology to Agencies requiring cost-effective, dedicated 45 Mbps facilities for high-volume data, multimedia, and video communications	44.736 Mbps	
OC-3 and OC-3c	High-capacity digital service, in channelized or concatenated format	155 Mbps	
OC-12 or OC-12c	High-capacity digital service, in channelized or concatenated format	622 Mbps	
OC-48 or OC-48c	High-capacity digital service, in channelized or concatenated format	2.5 Gbps	
OC-192 or OC-192c	High-capacity digital service, in channelized or concatenated format	10 Gbps	

SERVICE TYPE	DESCRIPTION	DATA RATE	OPTIONS
IPL	AT&T International Private Line Service provides digital, end-to-end connections between U.S. and non-U.S. locations	Speeds vary by country to include: E1 STM-1 E3 STM-4 STM-16	
Ethernet Private Line Service - WAN	Delivered over AT&T's inter-city network via SONET encapsulation. Point-to-point, fixed-bandwidth Private Line service to Agencies that need to transport Ethernet packets to locations in different metropolitan areas.	50/150/600/1000 Mbps	

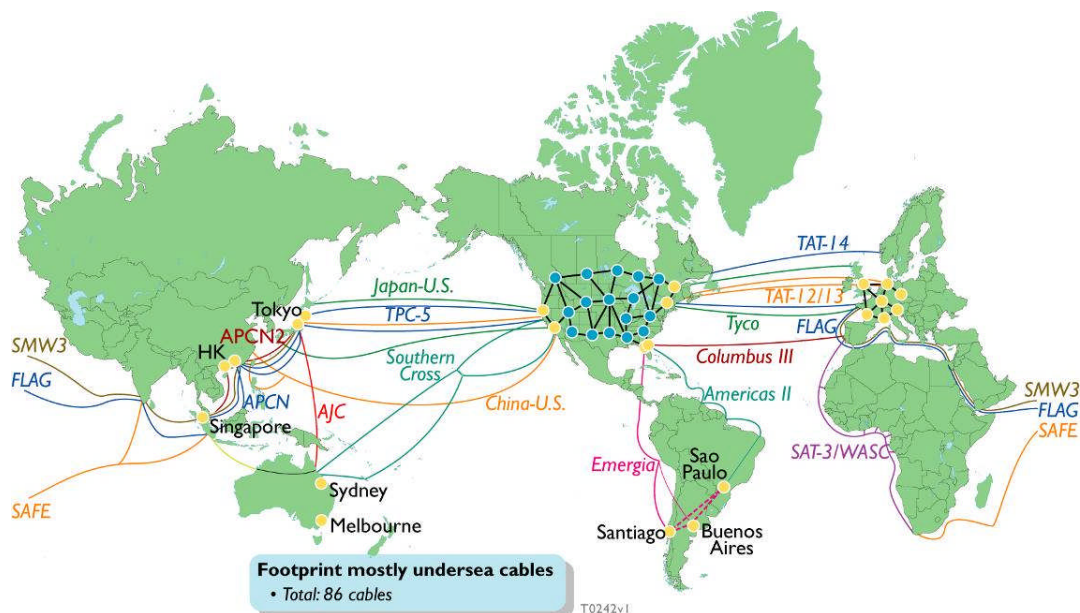
**Table 1.4.8.1-1: AT&T Private Line Services.** AT&T most comprehensive suite of private line services in the industry. Delivered over its global SONET/SDH infrastructure.

AT&T offers local, U.S., and non-U.S PLS. **Table 1.4.8.1-2** summarizes AT&T's approach in delivering PLS to the Agency.

SERVICE DELIVERY APPROACH	TECHNICAL DESCRIPTION
Global network reach	<p>With more than:</p> <p>[REDACTED]</p> <p>An ultra-capacity express overlay network has been created with state-of-the-art SONET and optical networking technologies. Refer to <b>Figure 1.4.8.1-2</b> for international coverage of PLS.</p> <p>[REDACTED] Our extensive global infrastructure provides both high- and low-speed International Private Line (IPL) options to the Government. Refer to Section 1.3.4, Non-domestic Services, and Appendix D, Bilateral and Other Carrier Agreements, for depictions of our global infrastructure.</p>
Easy-to-provision service	<ul style="list-style-type: none"> <li>AT&amp;T <b>BusinessDirect</b>® portal is the secure website that delivers online tools for efficient, effective, convenient e-Servicing 24x7x365. The powerful, productivity-enhancing online tools enable customers to:</li> </ul> <p>[REDACTED]</p> <ul style="list-style-type: none"> <li>AT&amp;T <b>BusinessDirect</b> map is an online tool that shows the Agency's network [REDACTED] and provides intuitive point-and-click network-management capabilities across AT&amp;T services.</li> <li>AT&amp;T e-Maintenance is a key tool that enables the Agency to report service troubles and follow the progress of trouble resolution quickly and easily on the web.</li> <li>AT&amp;T e-Order is an efficient online tool that enables the Agency to place service orders for optical wavelength services quickly and accurately.</li> </ul>

SERVICE DELIVERY APPROACH	TECHNICAL DESCRIPTION
Reliable network	<p>AT&amp;T has deployed the intelligent optical network, which has the following features:</p> <ul style="list-style-type: none"> <li>• [REDACTED], next-generation network featuring multiservice platforms as edge vehicles and intelligent optical switches at the core</li> <li>• Currently deployed in more than [REDACTED] and carrying live traffic [REDACTED]</li> <li>• Ability to restore service faster in the event of a failure or disaster; [REDACTED]</li> </ul>
Survivability	<p>To provide Agency service survivability, AT&amp;T provides network disaster recovery (NDR) services. NDR services provide fast recovery capabilities for Agencies' critical business component work centers, applications/platforms, data, and networks.</p> <p>NDR uses its extensive satellite communications capabilities to provide communications support for relief efforts using links and specialized equipment.</p>
Extensibility	<p>Underlying PLS transport network is upgradable [REDACTED]</p>

**Table 1.4.8.1-2: Approach in delivering PLS.** AT&T's reliable and upgradable network delivers PLS to the Agency service location with the highest availability.



**Figure 1.4.8.1-2: AT&T International Footprint.** Agencies benefit from AT&T's international coverage for PLS and one-stop shopping for global transport requirements.

The PLS architecture is compliant with all Layer 1 standards, such as American National Standards Institute (ANSI) T1.102/107/403/503/510 for T1 and Telcordia PUB GR-499 CORE for T3, as well as ANSI T1.105 for SONET. High availability is maintained by arranging for transport diversity to each service delivery point (SDP), which provides the option of transport route avoidance.

### 1.4.8.1.b Benefits to Technical Approach

(b) Describe the expected benefits of the offeror's technical approach, to include how the services offered will facilitate Federal Enterprise Architecture objectives (<http://www.whitehouse.gov/omb/egov/a-1-fea.html>).

AT&T's Networx services, in general, and PLS, in particular, support the Government's vision of transformation through the use of the Federal Enterprise Architecture (FEA) by providing the technologies that contribute to the Agency's mission objectives. **Table 1.4.8.1-3** describes each service in relation to FEA, summarizes its contribution, and/or provides an example of how it facilitates FEA implementation.

SERVICE DELIVERY APPROACH	BENEFITS	FEA FACILITATION
<b>Global Network Reach</b>	AT&T has an extensive network reach with our local and longhaul CONUS coverage as well as our international coverage. To address Agencies' future needs, the network is constantly being expanded and improved.	<ul style="list-style-type: none"> <li>Horizontal and vertical information sharing</li> <li>Coverage that supports Technical Reference Model's service transport technologies</li> </ul>
<b>Easy to Provision Service</b>	AT&T <b>BusinessDirect</b> provides Agencies with the ability to manage their dedicated PLS network on a web portal. Agencies benefit from the features of AT&T <b>BusinessDirect</b> as follows: <ul style="list-style-type: none"> <li>Save time by minimizing the need to place phone calls and the wait for callbacks</li> <li>Improve productivity by increasing automation and minimizing manual data entry</li> <li>Improve accuracy of transactions by reducing or eliminating data entry errors</li> <li>Reduce costs by increasing productivity and redirecting headcount</li> <li>Experience superior service.</li> </ul>	E-Government Helps facilitate day-to-day business operations, as defined by the Business Reference Model (BRM)
<b>Reliable Network</b>	Agencies benefit from protection against hard failures anywhere within the AT&T network.	<ul style="list-style-type: none"> <li>Performance measurement</li> <li>Provide high-quality service delivery of the Technical Reference Model's service transport technologies</li> </ul>
<b>Survivability</b>	AT&T offers disaster recovery services as part of network assurance in response to any outages caused by disasters. These services provide fast recovery capabilities for Agencies' critical business component work centers, applications/platforms, data, and networks.	<ul style="list-style-type: none"> <li>Performance measurement</li> <li>Network survivability in case of a manmade or natural disaster of the Technical Reference Model service transport networks</li> </ul>
<b>Extensibility</b>	The network is designed for a smooth transition to multiprotocol label switching (MPLS)-based virtual private line-based services.	<ul style="list-style-type: none"> <li>Budget/ performance integration</li> <li>Support for convergence of transport technologies enables continued support of the Technical Reference Model's service transport technologies</li> </ul>

**Table 1.4.8.1-3: Benefits and FEA facilitation of PLS Approach.** Agencies are empowered to achieve superior performance with AT&T's PLS.

AT&T's development of net-centric technologies supports solutions based on service-oriented architecture (SOA), which uses standardized, web-adapted components. Our approach meets the following criteria:

- Technical Reference Model capabilities are fully met and linked to the Service Component Reference Model (SRM) and Data Reference Model (DRM).
- These links are structured to support Business Reference Model (BRM) functions and provide line-of-sight linkage to mission performance and ultimate accomplishment per the Performance Reference Model (PRM)
- AT&T operates as an innovative partner through Networx to help achieve the vision of the FEA to enhance mission performance.

#### **1.4.8.1.c Major Issue to Service Delivery**

(c) Describe the problems that could be encountered in meeting individual service requirements, and propose solutions to any foreseen problems.

In transitioning into any new service delivery model, whether it be task-based or fully outsourced, unforeseen issues can always arise. Therefore, it is important that GSA selects a service provider that brings the depth and background needed to minimize an Agency's risk during transition. Our experience has enabled us to develop proven methods, processes, and procedures applicable to the simplest or the most complex projects.

**Table 1.4.8.1-4** lists the top 6 service delivery risks and our mitigation strategy. [REDACTED]

[REDACTED]
[REDACTED]
[REDACTED]
[REDACTED]
[REDACTED]
[REDACTED]

Risks	Risk Description	Risk Mitigation
Implementation	In our experience, all Agencies are concerned about business disruption when transitioning networks. Adequate planning can minimize this risk.	[REDACTED]
Requirements change or confusion	Often location information is inaccurate and site POCs are no longer valid.	[REDACTED]
Fiber cuts	Cuts to fiber along transmission routes normally caused by construction activities can cause service disruption.	[REDACTED]
Equipment failures	Failures to any of the network element equipment along the transmission routes can cause service disruption.	[REDACTED]
Manmade and natural disasters	Disasters that affect the SDP building infrastructure, whether manmade (terrorist activity) or natural (earthquake, flood, etc), can cause service disruption.	[REDACTED]



RISKS	RISK DESCRIPTION	RISK MITIGATION
Synchronization	Failure to obtain the required timing.	[REDACTED]

**Table 1.4.8.1-4: Risks and Mitigations for Delivery of PLS.** *AT&T's experience in delivering PLS to both commercial and Government customers has resulted in process and infrastructure improvements that offer Agencies a PLS solution that mitigates many common risks.*

AT&T engineers its underlying PL support network with enough resiliencies to mitigate risk service outages and, thus, delivers highly reliable service to the Agency SDPs.

AT&T has taken steps to identify risk and provide risk mitigation associated with delivering PLS. AT&T is committed to service excellence and will work with the Agency to identify and resolve potential problems that might occur during service delivery.

#### 1.4.8.1.d Network Architecture Synchronization

(d) Describe the synchronization network architecture to support the offeror's access and transport networks.

AT&T is a leader in the area of network synchronization, by virtue of our active role in the international and domestic standards organizations and our existing industry-unique dedicated timing and synchronization network for distributing Stratum 1-traceable timing to our own national and international telecommunications networks.

Synchronization for access and transport networks begin with the Federal Government's cesium-based standard signal, which is distributed to a series of Global Positioning Satellites (GPS) systems. AT&T derives synchronization from those GPS systems as the primary clock source. [REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

## 1.4.8.2 Satisfaction of Transport/IP/Optical Performance Requirements [L.34.1.4.2]

### 1.4.8.2.a Service Quality and Performance

(a) Describe the quality of the services with respect to the performance metrics specified in Section C.2 Technical Requirements for each service.

AT&T understands that the key performance indicators (KPIs) chosen by the Government are built around realistic thresholds that represent operational assurance. [REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED] **Table 1.4.8.2-1** summarizes the performance metrics to which AT&T adheres versus the Government's targets.

KEY PERFORMANCE INDICATOR (KPI)	SERVICE LEVEL	PERFORMANCE STANDARD (THRESHOLD)	PROPOSED SERVICE QUALITY LEVEL
Availability (POP-to-POP)	Routine	99.8%	[REDACTED]
	Critical	99.98% *	[REDACTED]
Availability (SDP-to-SDP)	Routine	99.4%	[REDACTED]
	Critical	99.98%	[REDACTED]
Time to Restore (TTR)	With Dispatch	8 hours	[REDACTED]
	Without Dispatch	4 hours	[REDACTED]

**Table 1.4.8.2-1: Performance Metrics for PLS.** Actual performance metrics for availability and time to restore meet or exceed the required AQL.

AT&T will comply with and meet or exceed the PLS quality performance metrics specified in Section C.2.5.1.4.1, as **illustrated in Table 1.4.8.2-1**.

To maintain our availability and time-to-restore (TTR) metrics, AT&T uses a facility architecture that allows the underlying facility infrastructure to maintain connectivity in case of equipment failure or physical damage. Examples include the following:

- **SONET Ring Restoration** – AT&T's core network architecture consists of four-fiber, bidirectional, line-switched rings. Two fibers are for service and two fibers are for protection, which provide self-healing restoration capabilities. In the event of failure, traffic is automatically switched to a fully redundant backup facility, typically in less than 60 milliseconds.
- **Fast Automatic Restoration System (FASTAR)<sup>TM</sup>** – Fast, automatic restoration is one of the key tools to maintain network reliability of AT&T's inter-exchange carrier (IXC) transport network.
- **Intelligent Optical Network** – This network is built on meshed, point-to-point SONET facilities with intelligent optical switches at the core.
- Detailed and specific AT&T plant protection practices are used at all times when work is performed around our buried facilities. In addition, AT&T participates in the various state *one-call* systems. During any excavation activities around the AT&T cable, our network technicians provide plant protection for the underground facilities. The responsibility of the AT&T's technician is to locate and mark the cable, observe the contractor, and stand by for restoration, if necessary.

AT&T's current processes and procedures in service monitoring achieve 99.98 percent availability and time to restore (TTR) of 4 hours without dispatch, and 8 hours with dispatch. KPIs are constantly maintained.

**1.4.8.2.b Approach to Monitoring and Measuring Performance**

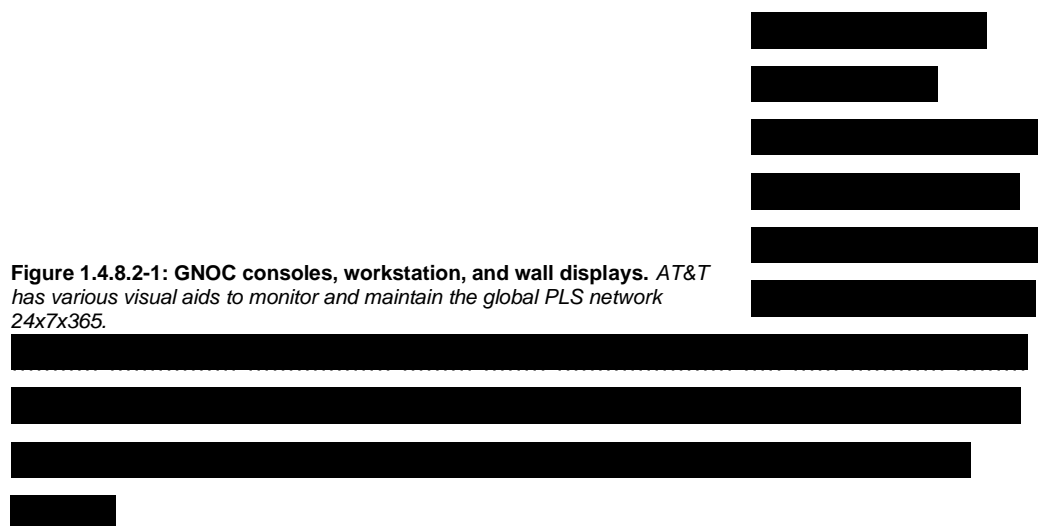
(b) Describe the approach for monitoring and measuring the Key Performance Indicators (KPIs) and Acceptable Quality Levels (AQLs) that will ensure the services delivered are meeting the performance requirements.

AT&T's network operations technical team conducts continuous testing and monitoring of the network. The testing and monitoring is done to verify conformance to KPI requirements. POPs, service nodes, transmission network elements, and spares are monitored 24x7x365 at each local site and at AT&T's Global Network Operations Center (GNOC) in Bedminster, New Jersey. **Table 1.4.8.2-2** summarizes the measuring approach for availability and TTR.

KPI	MONITORING & MEASURING APPROACH
Availability (point-of-presence [POP]-to-POP)	[REDACTED]
Availability (service delivery point [SDP]-to-SDP)	[REDACTED]
Time to Restore (TTR)	[REDACTED]

**Table 1.4.8.2-2: Monitoring and measuring approach to maintain availability and time to restore KPIs.** [REDACTED]

**Figure 1.4.8.2-1** shows the setup of the GNOC.



**Figure 1.4.8.2-1: GNOC consoles, workstation, and wall displays.** AT&T has various visual aids to monitor and maintain the global PLS network 24x7x365.

[REDACTED]  
[REDACTED]  
[REDACTED]

Network maintenance is performed [REDACTED]  
[REDACTED]  
[REDACTED]

The first time the service is provided through the Networx contract, the performance must be verified. The KPIs will be monitored to certify that the service performance complies with the AQL. [REDACTED]

[REDACTED]  
[REDACTED]  
[REDACTED]

[REDACTED] The service verification process is presented in greater detail in Section 1.3.2.d, Approach to Perform Service Delivery Verification.

#### 1.4.8.2.c Performance Level Improvements

(c) If the offeror proposes to exceed the Acceptable Quality Levels (AQLs) in the Key Performance Indicators (KPIs) required by the RFP, describe the performance level improvements.

Agencies will benefit from enhanced service performance when the KPI performance thresholds are exceeded. **Table 1.4.8.2-3** summarizes the proposed improvements to the KPI performance thresholds, and the benefits that Agencies will experience through the higher service performance.

KPI	NETWORK AQL	AT&T PROPOSED AQL	IMPROVEMENT PERCENTAGE
[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]

**Table 1.4.8.2-3: Performance Level Improvements.** [REDACTED]  
[REDACTED]  
[REDACTED]

[illegible]

#### **1.4.8.2.d Rationale and Benefits for Additional Performance Metrics**

(d) Describe the benefits of, rationale for, and measurement of any additional performance metrics proposed.

The KPIs defined by the Government for Private Line Services will provide a comprehensive assessment for service verification and service performance monitoring. Therefore, AT&T does not propose additional KPIs for PLS.

#### **1.4.8.3 Satisfaction of Transport/IP/Optical Service Specifications [L.34.1.4.3]**

##### **1.4.8.3.a Service Description**

(a) Provide a technical description of how the service requirements (e.g., capabilities, features, interfaces) are satisfied.

AT&T offers Agencies a low-risk, secure, high quality, globally available PLS that is fully compliant with Government requirements. PLS provides a dedicated line (duplex transmission) connecting two or more Agency locations, allowing transmission of data, voice, and video applications. The connectivity between the end points (Agency locations) are permanently and physically established unless a service request for modification, move, or disconnect is received from the contracting Agency. PLS contains two key elements:

- Local Channel – The connection between the Agency SDP and the AT&T POP/Central Office.
- Inter-office Channel (IOC) – The connection between two AT&T POPs/central offices.

Two levels of PLS are provided:

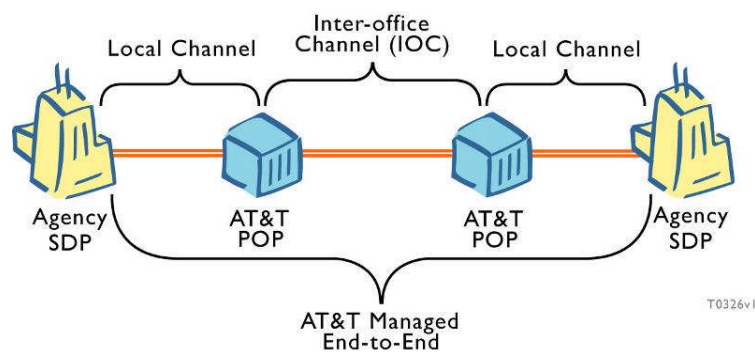
- SDP-to-SDP Service
- POP-to-POP Service.

Each service is more fully described in **Table 1.4.8.3-1**.

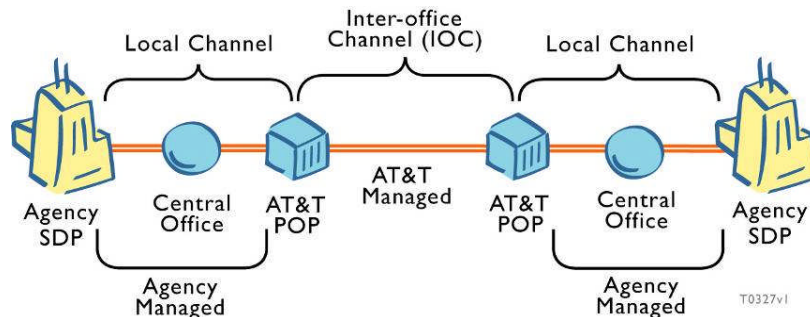


SERVICE	DESCRIPTION
SDP-to-SDP	With SDP-to-SDP service, both the local channel and the inter-office channel (IOC) are provided. End-to-end provisioning, maintenance, billing, and total support of the service are provided. <i>This service offering provides the level of full service that Agencies expect from a vendor. An example of an SDP-to-SDP service configuration is shown in Figure 1.4.8.3-1.</i>
POP-to-POP	With POP-to-POP service, only the IOC is provided. The Agency provides the local channel from the local exchange carrier (LEC), incumbent local exchange carrier (ILEC) of their choice, or Agency-owned access on dark fiber-based facilities. <i>Figure 1.4.8.3-2 shows an example of a POP-to-POP service configuration.</i>

**Table 1.4.8.3-1: Summary of POP-to-POP and SDP-to-SDP PLS.** AT&T offers two types of service to meet the Agency's needs.



**Figure 1.4.8.3-1: Private Line Service with Fully Managed End-to-End Connectivity to Agency SDP.** This configuration provides a single POC for all service needs so that the Agency has a high-quality delivery of services in both the transport (IOC) and access (local channel) sections of the circuit.



**Figure 1.4.8.3-2: Private Line Service with Agency-managed Dedicated Access to SDP.** This configuration allows for more Agency control of access (local channel) for the PLS delivered.

Tables 1.4.8.3-2 and 1.4.8.3-3 provide a technical description of the adherence to standards, connectivity options, technical capabilities, and features that AT&T's PLS offers.

SERVICE REQUIREMENTS	TECHNICAL DESCRIPTION	BENEFITS
Standards	All PLS interfaces adhere to the ANSI , ITU-T, and Telcordia standards listed in Section C.2.5.1.1.2 of the RFP.	Agencies have interoperability with other networks that that use standard interfaces

SERVICE REQUIREMENTS	TECHNICAL DESCRIPTION	BENEFITS
Connectivity	AT&T's PLS can be engineered and deployed to interface with Government-specified termination, such as private branch exchanges (PBXs), routers, etc. Also, at the request of the Agency, AT&T's PLS can interface with other Networx contractor's networks at a mutually agreed on demarc location, such as a carrier hotel, collocated POP, etc., provided the two Networx contractors mutually agree on any necessary terms and conditions.	Agencies have interoperability with existing Agency networks as well as continuity of service for circuits that ride on other carriers networks
Technical Capabilities	AT&T's PLS supports the following capabilities: <ul style="list-style-type: none"> <li>• Transparency to any Layer 2 and above protocol</li> <li>• Data transparency of all bit sequences</li> <li>• Support of 56 and 64 kbps DS0 circuits</li> <li>• Support of channelized and unchannelized T1 line rate</li> <li>• Support of fractional T1 rate per Agency's requirements</li> <li>• Support of channelized and unchannelized T3 line rate</li> <li>• Support of fractional T3 rate per Agency's requirements</li> <li>• Support of channelized and unchannelized E1 line rate for non-US locations</li> <li>• Support of channelized and unchannelized E3 line rate for non-US locations</li> <li>• Support of channelized and unchannelized SONET OC-3 line rate</li> <li>• Support of channelized and unchannelized SONET OC-12 line rate</li> <li>• Support of channelized and unchannelized SONET OC-48 line rate</li> <li>• Support of channelized and unchannelized SONET OC-192 line rate</li> <li>• Support of 4.8, 9.6 and 19.2 kbps subrate DS0 interfaces per Agency requirements</li> <li>• Support of analog 4 kHz bandwidth on an individual case basis at Agency's request</li> </ul>	Agencies benefit from a variety of dedicated transmission rates to choose from to maximize the total cost of ownership in the operations of their networks

**Table 1.4.8.3-2: Standards, Connectivity Options, and Technical Capabilities of AT&T's PLS.** *Our PLS offers many capabilities and AT&T supports various line rates according to specific requirements.*

SERVICE REQUIREMENTS	TECHNICAL DESCRIPTION	BENEFITS
Multipoint connection	This feature allows interconnection of three or more subscribers' premises, as follows: <ul style="list-style-type: none"> <li>• <b>Branch Off</b> – In this configuration, each Agency SDP has dual connectivity from diverse ILEC central offices from the AT&amp;T POP for a dual-access architecture. All Agency SDPs connected to the POPs can be treated as one shared medium in such a way that traffic can <i>branch off</i> to any of the SDPs on the network. Any SDP on the network can send and receive data to any other SDP on the network.</li> <li>• <b>Drop and Insert</b> – An architecture that supports the dropping of a channel (e.g., T1, T3, OC3, or OC12) at one SDP location from the higher speed backbone and the adding (or inserting) of a channel from another SDP location to the higher speed backbone. This feature is supported as part of the AT&amp;T PLS add-drop multiplexer solution.</li> </ul>	Agencies benefit as follows: <ul style="list-style-type: none"> <li>• <b>Branch off</b> – Agencies will have a PL network architecture which allows any to any connectivity between designated SDPs.</li> <li>• <b>Drop and Insert</b> – allows for efficient bandwidth usage to enable the lowest possible cost of ownership</li> </ul>

SERVICE REQUIREMENTS	TECHNICAL DESCRIPTION	BENEFITS
Special routing	This feature provides different routes for PLS circuits, based on the arrangements discussed below: <ul style="list-style-type: none"> <li><b>Transport Diversity</b> – For transport diversity, the enhanced diversity routing option (EDRO) is offered.</li> <li><b>Transport Avoidance</b> – For transport avoidance, customer specified routing and avoidance (CSRA) is offered.</li> </ul>	Agencies benefit as follows: <ul style="list-style-type: none"> <li>A circuit will not be lost due to a network failure at one geographic location</li> <li>Enables the Agency to enhance the reliability of their dedicated networks.</li> </ul>
Analog line conditioning [optional]	Voice grade C (e.g., C3) and D (e.g., D6) conditioning for analog lines is provided through Type II arrangements with the serving ILEC, as applicable to Agency needs.	Allows Agencies to support legacy services
Low bit rate voice [optional]	Voice at 32 kbps and analog data at 4.8 kbps using AT&T-provided equipment is offered through Type II arrangement with the serving ILEC.	Allows Agencies to support legacy services
7.5 kHz audio	Transport is provided, as applicable by Agency need, to allow for a 7.5 kHz analog, audio signal. The signal is compressed by AT&T-provided equipment to allow for transmission over a DS0 channel through arrangement with the serving ILEC.	Allows Agencies to support legacy services

**Table 1.4.8.3-3: Technical description of AT&T's PLS features.** Many options are provided by the PLS, expediting the PLS process and benefiting the Agency.

### **1.4.8.3.a.1 EDRO for Transport Diversity and CSRA for Transport Avoidance**

Enhanced Diversity Routing Option (EDRO) provides physically diverse IOCs so a failure at one geographic location will not lead to the loss of both circuits.

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED] With EDRO, a point of failure within the IOC is no longer a problem—all traffic can be rerouted to the diverse circuit.

CSRA allows Agencies to specify the routing of their IOC to avoid one or more specific AT&T central offices. [REDACTED]

[REDACTED]

[REDACTED]

Agencies who subscribe to EDRO are eligible for CSRA.

Internal control is established (i.e., electronic flagging of routes) to prevent accidental dismantling of diversified/avoidance routes, especially during routine route optimization initiatives.

#### **1.4.8.3.b Attributes and Values of Service Enhancements**

(b) If the offeror proposes to exceed the specified service requirements (e.g., capabilities, features, interfaces), describe the attributes and value of the proposed service enhancements.

The service requirements defined by the Government for Private Line

Services are complete and comprehensive. [REDACTED]

[REDACTED]

#### **1.4.8.3.c Service Delivery Network Modifications**

(c) Describe any modifications required to the network for delivery of the services. Assess the risk implications of these modifications.

Agencies receive a low-risk solution through AT&T's ability to offer PLS upon contract award without modifications to the network or operational support systems.

#### **1.4.8.3.d Transport/IP/Optical Service Experience**

(d) Describe the offeror's experience with delivering the mandatory Transport/IP/ Optical Services described in Section C.2, Technical Requirements.

AT&T has provided PLS both to Government and commercial customers.

**Tables 1.4.8.3-4 - 6** summarizes a recent deployment of PLS to service [REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

CLIENT NEED	SOLUTION	CREATED VALUE

**Table 1.4.8.3-4: PLS Enhanced Service/Cost Avoidance.** Agencies will benefit from AT&T's experience, lessons learned, and network capabilities.

CLIENT NEED	SOLUTION	CREATED VALUE

**Table 1.4.8.3-5: PLS Cost Reduction Example.** Agencies use PLS to support mission critical needs.

CLIENT NEED	SOLUTION	CREATED VALUE

**Table 1.4.8.3-6: PLS Value Creation for HITS.** Dedicated secure private line networks for military locations throughout the Hawaiian Islands.

AT&T maintains [REDACTED] Government private line circuits. Agencies will achieve similar benefits from the same high-quality service experienced by GEICO, CTS and HITS.

## 1.4.8.4 Robust Delivery of Transport/IP/Optical Services

### [L.34.1.4.4]

#### 1.4.8.4.a Network Traffic Utilization

(a) Given the offeror's current network capacity and utilization, explain how the offeror will support the Government requirements specified in the traffic model. Describe the impact on capacity and utilization, as well as any infrastructure build out contemplated.

[REDACTED]

[REDACTED]

[REDACTED]

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

Table

**1.4.8.4-1** describes the impact of the Agencies' forecasted SONET services traffic growth from Years 1 through 10.

[illegible]

**Table 1.4.8.4-1**

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

114

#### 1.4.8.4.b System Robustness and Resiliency

(b) Describe the measures and engineering practices designed to provide robustness of the access and backbone networks, ensure resiliency, and plan for growth.

Robustness and resiliency of private line circuits are provided by the methods summarized in **Table 1.4.8.4-2**.

[illegible]

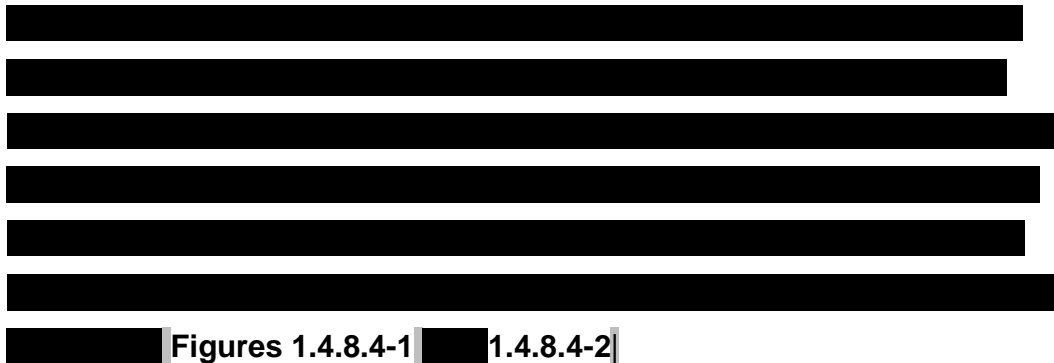
ROBUSTNESS AND RESILIENCY METHOD	DESCRIPTION

**Table 1.4.8.4-2: Robustness and Resiliency.** Agencies will use a network designed to manage service problems.

**Table 1.4.8.4-3** summarizes the service characteristics associated with PLS.

SERVICE CHARACTERISTIC	TOOLS	THRESHOLDS
Service robustness	Availability	
Service resiliency	Mean Time to Repair (MTTR)	
Service growth	Service Order Trending	

**Table 1.4.8.4-3: Service Characteristics of PLS.** Network elements are certified by AT&T Labs for performance and functionality before they are installed in the AT&T network providing Agencies the confidence in the systems robustness and resiliency.



**Figures 1.4.8.4-1** **1.4.8.4-2**

**Figure 1.4.8.4-1:** for

Figure 1.4.8.4-2: [REDACTED] to  
for [REDACTED]

[REDACTED]  
[REDACTED]  
[REDACTED]

Rigorous engineering practices and measurements of the network allow Agencies to obtain a scalable, reliable service to build and operate their mission-critical applications. Private Line network capacity planning within AT&T is driven by three main factors (**Table 1.4.8.4-4**).

MAJOR CAPACITY PLANNING FACTORS	
Business planning	[REDACTED]
Technology migrations	[REDACTED]
Historic growth	[REDACTED]

**Table 1.4.8.4-4: Key Capacity Planning Factors.** Network capacity buildout is based on both predictive and measured data. AT&T strives to provide service from a network with more than enough capacity to do the job and grow.

Private Line services provided to the Agencies are secure, scalable, and reliable. The backbone and access networks are engineered for robustness and also easily scalable to accommodate Agency requirements for bandwidth growth.



## **1.4.8.5 Transport/IP/Optical Service Optimization and Interoperability [L.34.1.4.5]**

### **1.4.8.5.a Approach to Optimizing IP-based and Optical Services**

(a) Describe the offeror's approach for optimizing the engineering of IP-Based and Optical Services.

The engineering of IP-based and optical services are optimized is detailed in Section 1.3.6.2.a, Approach to Optimizing IP-Based and Optical Services.

### **1.4.8.5.b Network Architecture Optimization**

(b) Describe how the offeror will utilize methods such as remote concentration, switching/routing capabilities, and high bandwidth transmission facilities to optimize the network architecture.

A description of how the AT&T network architecture is optimized is detailed in Section 1.3.6.2.b, Methods for Optimizing the Network Architecture.

### **1.4.8.5.c Optimizing Engineering Techniques**

(c) Describe the engineering techniques for optimizing access for improved performance or increased efficiency in areas where large concentrations of diverse customer applications exist (e.g., the use of multiservice edge platforms).

Optimization of the access for improved performance or increased efficiency through the use of multiservice edge (MSE) platforms in a resilient network configuration is described in Section 1.3.6.2.c, Performance Level Improvements.

### **1.4.8.5.d Vision to Implement Service Internetworking**

(d) Describe the offeror's vision for implementing service internetworking over a common infrastructure (e.g., IP-centric architecture). Include a view on network interoperability, control plane integration, and optical infrastructure support for IP-Based Services. Describe the benefits and rationale of the offeror's approach.

The implementation of service internetworking over a common infrastructure, including network interoperability, control plane integration and optical infrastructure support, is described in Section 1.3.6.2.d, Vision for Service Interoperability.

## **1.4.8.6 Stipulated Deviations**

AT&T takes neither deviation nor exception to the stipulated requirements.