



1.4.1 Voice Services (VS) [C.2.2.1] [L.34.1.4.6]

Agencies will experience service continuity for Voice Services (VS) over a global network with built-in security, quality, and resilience. High-quality performance under routine and critical conditions is supported by [REDACTED] investment to broaden and strengthen AT&T's network infrastructure. With access to a full set of VS features and high-performance options, Agencies have the flexibility to design solutions that exceed Government requirements.

Agencies will gain greater worldwide connectivity with a long-distance network that supports both circuit and packet switching for Voice Services (VS). The AT&T global network connects virtually every country and territory worldwide with service reliability, resilience, and security no other carrier can match. Our long-distance voice network extends to more than 230 countries and recorded 99.995-percent reliability in 2004 and transports more than 300 million long-distance calls on a typical weekday. Most are circuit-switched calls, but many Government and business customers are beginning to make greater use of voice over IP (VoIP). **Figure 1.4.1-1** depicts an overview of the VS access and connectivity that Agencies will receive under Networkx.

"AT&T is the largest long-distance service provider in the U.S. and is the best-known brand name in telecommunications worldwide. AT&T has one of the most extensive and far-reaching networks in the world, supporting a wide portfolio of business and consumer voice, data and Internet services."

--Current Analysis
June 30, 2005

AT&T's network uses about [REDACTED]

[REDACTED] To expand global reach, AT&T partners with domestic and foreign carriers (Refer to Section 1.3.4, Non-Domestic Services, for additional details).





Figure 1.4.1-1: Voice Services. Agencies will achieve access and connectivity to all required terminations with voice services that are global, secure, and reliable.



To strengthen VS reliability and increase availability, congestion and call flow are dynamically managed through a [REDACTED] and expansive, protective, and restrictive network call management controls implemented by AT&T's Global Network Operations Center (GNOC):

- Expansive controls allow the routing to expand beyond the normal in-chain routing during failure or overflow conditions.
- Protective controls manage the spread of congestion in the network by restricting normal trunk access and overflow.
- Restrictive controls limit the effects of network congestion and maintain network traffic at a level as high as possible.

The Gartner Group (November 2004) designated AT&T for its Leader Quadrant for Global Network Service Providers: "AT&T has ... a presence in more than 60 countries or approximately 1,500 cities. It has interconnect relationships with carriers in more than 230 countries. AT&T's primary strengths globally include its U.S. presence, its customer base, its international voice business, its ownership of transmission facilities and a common worldwide Multiprotocol Label Switching (MPLS)-based infrastructure. ... Companies typically prefer AT&T when they have a strong coverage requirement in the United States."

Table 1.4.1-1 lists fundamental aspects of our approach to meet the service requirements for VS.

| SERVICE DELIVERY APPROACH | DESCRIPTION |
|-------------------------------------|--|
| Service Continuity | <ul style="list-style-type: none"> • Smoothly transition FTS2001 voice services to Networkx contractor • Offer service redundancy and diversity to provide critical service performance • Provide reliable, resilient, and global network • Develop continuity of operations plan to provide recovery and business continuity following natural disaster or other catastrophic event |
| Voice Communications | <ul style="list-style-type: none"> • Provide local and long-distance service • Offer feature-rich service options from full-service portfolio • Maintain feature continuity with new forms of access |
| Business Continuity | [REDACTED] |
| Standards Compliance | <ul style="list-style-type: none"> • Comply with applicable American National Standards Institute (ANSI), Telcordia, and International Telecommunications Union (ITU) standards |
| Support for Federal Programs | [REDACTED] |
| Interoperability | Connect to and interoperate with: <ul style="list-style-type: none"> • Government-specified terminations • Public Switched Telephone Network (PSTN) |



| SERVICE DELIVERY APPROACH | DESCRIPTION |
|--|---|
| | <ul style="list-style-type: none">• Other Networkx contractors' networks• Immarsat terminals• IP networks |
| Networkx Vision for Future Services | <ul style="list-style-type: none">• Provide circuit-switched voice network for the life of Networkx• Migrate with Agencies to take advantage of converged networks and Services over IP (SoIP) |

Table 1.4.1-1: Approach to Service Requirements. *Service continuity, reliability, redundancy, and disaster preparedness mean Agencies can count on meeting voice service requirements now and in the future.*

Drawing on extensive experience providing voice communications, AT&T has resources in place to provide the quality, continuity, and integrity of VS required under Networkx. When Agency employees pick up the phone, they can be confident their calls will go through.

1.4.1.a Reserved [L.34.1.4.6.a]

1.4.1.a.1 Reserved

1.4.1.a.2 Reserved



1.4.1.a.3 **Reserved**

1.4.1.b **Reserved [L.34.1.4.6.b]**

1.4.1.c **Technical Description [L.34.1.4.6.c]**

The offeror shall describe all optional Transport/IP/Optional Services offered to include:

(c) A technical description of how the service requirements (e.g., capabilities, features, interfaces) are satisfied for all proposed optional services.

AT&T satisfies the service requirements for VS by providing the Government with the interfaces, access, connectivity, capabilities, and features required.

Most voice calls will be provided through our circuit-switched network for both on-net and off-net communications.

The foundation of service continuity and quality for a Networx contractor is a reliable, resilient network. As a service provider with a global reach, the AT&T



network provides substantial benefits for Networkx customers. **Figure 1.4.1.c-1** depicts key assets and performance characteristics of the global network.

As Agencies migrate toward more IP-centric methods, we anticipate that shift will be reflected in greater numbers of VoIP calls. From the user’s perspective, calls will seamlessly traverse circuit-switched and IP networks, using a multiplicity of protocols, yet remain transparent.

Figure 1.4.1.c-1: Network Assets and Performance Characteristics. *The global reach, capacity, and points of presence of the AT&T network give Agencies ready access to voice, data, and video services, wherever needed.*

Every call will be completed promptly and reliably and will provide high quality communications.

1.4.1.c.1 Technical Capabilities

AT&T’s Voice Services will provide the technical capabilities specified in the RFP. **Table 1.4.1.c-1** details our VS capabilities.

| CAPABILITY | DESCRIPTION |
|--|---|
| Uniform Numbering Plan | AT&T supports and will continue to support and comply with the ITU-Telecommunications Service Sector (TSS) Integrated Services Digital Network (ISDN) E.164 uniform numbering and addressing plan. |
| Network Intercept | Network will route calls to intercept announcements for disconnected numbers, time-out during dialing, network congestion, denial of access to off-net and on-net calls, denial of access to features and other conditions. |
| User-to-User Signaling on ISDN D-Channel | Non-call associated signaling (NCAS) allows users to communicate by means of user-to-user signaling without setting up a circuit-switched connection. |
| Voice Quality | G.711 is an ITU standard, approved in 1965, for converting analog signals, such as voice, into pulse code modulated (PCM) 64 kbps digital signals. AT&T has long met this requirement by providing <i>toll quality</i> calls over its circuit-switched network. |

Table 1.4.1.c-1: Key [REDACTED] Capabilities. *Agencies receive unparalleled service quality that provides the Government VS when and where needed.*



1.4.1.c.2 Features

AT&T's [REDACTED] will provide a VS platform for Federal Agencies under Networkx. **Table 1.4.1.c-2** highlights key service components and their value to the Government. To deliver these features, AT&T will build on its AT&T **BusinessDirect**[®] service portal and provide the Government with a web-based window into our support of required and optional services under Networkx.

| SERVICE FEATURE OR COMPONENT | SERVICE DESCRIPTION | BENEFITS |
|--|--|--|
| Virtual private network | [REDACTED] provides: <ul style="list-style-type: none"> • Access from customer locations to AT&T switched network • Connection by all-digital electronic switching systems • Customized call handling • Network performance and control [REDACTED] | Flexibility and reliability of AT&T's SDN provides Government with substantial benefits: <ul style="list-style-type: none"> • Agencies with wide variations in calling volume to geographically dispersed locations can economically include those sites in their VS network. |
| Flexible call-routing functions | Specialized software embedded in AT&T switched network performs routing functions transparently: <ul style="list-style-type: none"> • Alternate call-routing patterns • Virtually nonblocking network • Features and management capabilities of a private network | <ul style="list-style-type: none"> • Agencies can easily add remote locations, large and small, to their network. |
| Programmable features | Agencies will be able to program: <ul style="list-style-type: none"> • Call screening • Account codes and authorization codes • Uniform reports showing usage details for all network locations | <ul style="list-style-type: none"> • [REDACTED] compatibility with existing PBX and private networks will extend the life of current Government assets. |
| [REDACTED] | [REDACTED] operates within [REDACTED] to provide: <ul style="list-style-type: none"> • Centralized database that stores Government's unique [REDACTED] definition • Capability to screen outgoing calls • Prompt for authorization codes or other caller-entered digits • Instructions to [REDACTED] to play announcement for caller | <ul style="list-style-type: none"> • Programmable features, such as advanced numbering plan, call screening, account codes, and authorization codes, give Agencies exceptional network control. |
| [REDACTED] | This digital switching vehicle provides: [REDACTED] | <ul style="list-style-type: none"> • Agencies can retain in-place private numbering plans. |
| [REDACTED] | This database provides: [REDACTED] | <ul style="list-style-type: none"> • Government gains additional security from a closed environment with private numbering plans, screening provisions, and use of authorization codes to meet Agency accounting and management requirements. |
| Common Channel Signaling (CCS) Network | This packet-switched signaling network provides: <ul style="list-style-type: none"> • Signaling completely separate from call transmission path • Decreases in call completion time of [REDACTED] | |

Table 1.4.1.c-2: Key SDN Components or Features. Agencies will receive voice services through a network designed to incorporate flexibility in multiple dimensions, including access, connectivity, compatibility, and programmability.

the Government can tailor its VS choices to meet requirements as well as preferences. Agencies can choose to exercise direct management of many features or have them adapted to Agency requirements by AT&T.

1.4.1.c.3 Interfaces

Table 1.4.1.c-3 presents the interfaces required for VS under Networkx. These are similar to those that AT&T now provides to Agencies under its FTS2001 Crossover and other Federal contracts.

| UNI TYPE | INTERFACE TYPE AND STANDARD | PAYLOAD DATA RATE OR BANDWIDTH | SIGNALING TYPE |
|---------------|---|--------------------------------|--|
| 1 | Analog Line: Two-Wire (Std: Telcordia SR-TSV-002275) | 4 kHz Bandwidth | Line – Loop Signaling |
| 2 | Analog Line: Four-Wire (Std: Telcordia SR-TSV-002275) | 4 kHz Bandwidth | Line – Loop Signaling |
| 3 | Analog Trunk: Two-Wire (Std: Telcordia SR-TSV-002275) | 4 kHz Bandwidth | Trunk – Loop Signaling (loop and ground start) |
| 4 | Analog Trunk: Four-Wire (Std: Telcordia SR-TSV-002275) | 4 kHz Bandwidth | Trunk – Wink Start Signaling |
| 5 | Analog Trunk: Four-Wire (Std: Telcordia SR-TSV-002275) | 4 kHz Bandwidth | Trunk - E&M Signaling |
| 6 | Digital Trunk: T1 (Std: Telcordia SR-TSV-002275 and ANSI T1.102/107/403) | Up to 1.536 Mbps | T1 Robbed-Bit Signaling |
| 7 | Digital Trunk: ISDN PRI T Reference Point (Std: ANSI T1.607 and 610) | Up to 1.536 Mbps | ITU-TSS Q.931 |
| 8 | Digital: T3 Channelized (Std: Telcordia GR-499-CORE) | Up to 43.008 Mbps | SS7, T1 Robbed-Bit Signaling |
| 9 (Non-U.S.) | Digital Trunk: E1 Channelized (Std: ITU-TSS G.702) | Up to 1.92 Mbps | SS7, E1 Signaling |
| 10 (Non-U.S.) | Digital: E3 Channelized (Std: ITU-TSS G.702) | Up to 30.72 Mbps | SS7, E1 Signaling |
| 11 | Digital Line: ISDN BRI S and T Reference Point (Std: ANSI T1.607 and 610) | Up to 128 kbps (2x64 kbps) | ITU-TSS Q.931 |

Table 1.4.1.c-3: Key VS Interfaces. Agencies will receive a wide variety of network interfaces to meet the Government's VS needs.

1.4.1.d Service Quality and Performance Metrics

[L.34.1.4.6.d]

The offeror shall describe all optional Transport/IP/Optional Services offered to include:
 (d) A description of the quality of the services with respect to the performance metrics specified in Section C.2 Technical Requirements for each proposed optional service, and other performance metrics used by the offeror.

AT&T is committed to offering the Government the highest quality in VS. [REDACTED]

Table 1.4.1.d-1 lists our proposed service quality levels.

| KEY PERFORMANCE INDICATOR (KPI) | SERVICE LEVEL | PERFORMANCE STANDARD (THRESHOLD) | PROPOSED SERVICE QUALITY LEVEL |
|---|------------------|----------------------------------|--------------------------------|
| Availability (POP-to-POP) | Routine | 99.95% | [REDACTED] |
| Availability (SDP-to-SDP) | Routine | 99.5% | [REDACTED] |
| | Critical | 99.95% | [REDACTED] |
| Time to Restore (TTR) | With Dispatch | 8 hr | [REDACTED] |
| | Without Dispatch | 4 hr | [REDACTED] |
| Grade of Service (GoS) (Call Blockage) | Routine | 0.07 (SDP-to-SDP) | [REDACTED] |
| | | 0.01 (POP-to-POP) | [REDACTED] |
| | Critical | 0.01 (SDP-to-SDP & POP-to-POP) | [REDACTED] |

Table 1.4.1.d-1: Voice Service Performance Metrics. AT&T will meet or exceed Government requirements for VS KPIs.

The VS KPIs defined by the Government will provide a comprehensive assessment for service verification and service performance monitoring.

1.4.1.e Attributes and Value of Service Enhancements [L.34.1.4.6.e]

The offeror shall describe all optional Transport/IP/Optional Services offered to include: (e) If the offeror proposes to exceed the specified service requirements (e.g., capabilities, features, interfaces), a description of the attributes and value of the proposed service enhancements.

AT&T's [REDACTED] reduces the administrative burden the Government would experience if it selected a contractor whose VS platform was more

[REDACTED] Table 1.4.1.e-1 highlights service enhancements in addition to those described in Table 1.4.1.c-2.

| SERVICE ENHANCEMENT | DESCRIPTION | VALUE |
|------------------------|-------------|------------|
| [REDACTED] Flexibility | [REDACTED] | [REDACTED] |

| SERVICE ENHANCEMENT | DESCRIPTION | VALUE |
|---------------------|-------------|------------|
| [REDACTED] | [REDACTED] | [REDACTED] |
| [REDACTED] | [REDACTED] | [REDACTED] |
| [REDACTED] | [REDACTED] | [REDACTED] |
| [REDACTED] | [REDACTED] | [REDACTED] |
| [REDACTED] | [REDACTED] | [REDACTED] |
| [REDACTED] | [REDACTED] | [REDACTED] |
| [REDACTED] | [REDACTED] | [REDACTED] |
| [REDACTED] | [REDACTED] | [REDACTED] |
| [REDACTED] | [REDACTED] | [REDACTED] |
| [REDACTED] | [REDACTED] | [REDACTED] |

Table 1.4.1.e-1: Voice Service Enhancements. *The Government will gain added flexibility, control and cost efficiencies from VS enhancements.*



[Redacted]

[Redacted]

[Redacted]

“AT&T establishes the industry standard for online customer service and support with AT&T **BusinessDirect**. ... The level of feature support and integration, as well as AT&T’s use of e-bonding tools, sets them apart from the rest.”

--Yankee Group

Research Note: Telecommunication Strategies United States

January 3, 2005

[Redacted]

[Redacted]

Table 1.4.1.e-2 summarizes the proposed improvements to the performance thresholds.

| KEY PERFORMANCE INDICATOR (KPI) | SERVICE LEVEL | NETWORX AQL THRESHOLD | PROPOSED AQL | PERCENT IMPROVEMENT |
|---------------------------------|------------------|-----------------------|--------------|---------------------|
| Availability (POP-to-POP) | Routine | 99.95% | [Redacted] | [Redacted] |
| Availability (SDP-to-SDP) | Routine | 99.5% | [Redacted] | [Redacted] |
| | Critical | 99.95% | [Redacted] | [Redacted] |
| Time to Restore | Without Dispatch | 4 hr | [Redacted] | [Redacted] |

Note 1: Availability percent improvement = (Networx Yr Outage Time – AT&T Yr Outage Time)/Networx Yr Outage Time

[Redacted]

Table 1.4.1.e-2: Performance Level Improvements. Agencies will experience substantial performance and quality improvements with the proposed VS performance levels.

[Redacted]

[Redacted]

[Redacted]

[Redacted]

[Redacted]

[Redacted]

[Redacted]

1.4.1.f Offeror’s Experience [L.34.1.4.6.f]

The offeror shall describe all optional Transport/IP/Optional Services offered to include:
 (f) A description of the offeror’s experience (including major subcontractors) with delivering each proposed optional service.

AT&T has extensive experience providing VS for Government Agencies and commercial customers. Because voice communications are central to daily activities, the Government must have high-quality service. During 2004,



AT&T's network averaged [REDACTED]
[REDACTED]
[REDACTED]

The resilience and reliability of AT&T's network for routine and critical communications have led many Agencies to choose AT&T for VS. Examples of service provided to the Government are listed in **Table 1.4.1.f-1**.

| <i>Client Need</i> | <i>Solution</i> | <i>Created Value</i> |
|--------------------|-----------------|----------------------|
| [REDACTED] | [REDACTED] | [REDACTED] |

| <i>Client Need</i> | <i>Solution</i> | <i>Created Value</i> |
|--------------------|-----------------|----------------------|
| [REDACTED] | [REDACTED] | [REDACTED] |

| <i>Client Need</i> | <i>Solution</i> | <i>Created Value</i> |
|--------------------|-----------------|----------------------|
| [REDACTED] | [REDACTED] | [REDACTED] |

| Client Need | Solution | Created Value |
|-------------|------------|---------------|
| [REDACTED] | [REDACTED] | [REDACTED] |

Table 1.4.1.f-1: Experience Delivering Voice Services. Agencies can receive feature-rich VS [REDACTED]

When a crisis occurs, VS reliability is paramount. That was certainly the case in the wake of the 9/11 attacks when the PSTN was overwhelmed. Yet, AT&T provided [REDACTED]

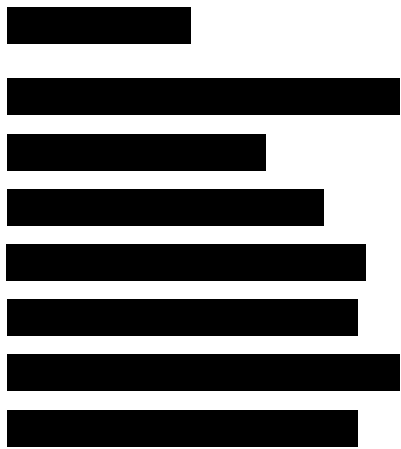


Figure 1.4.1.f-1: Network Disaster Recovery site in Jersey City, NJ, September 2001. Activated following the destruction of the World Trade Center, AT&T's NDR Team deployed to support the recovery of local network services in Manhattan and provide emergency communications for the New York City Police Department and relief Agencies.

[REDACTED] **Figure 1.4.1.f-1** shows the switch equipment that was deployed to provide communications for Lower Manhattan following the destruction of the World Trade Center.



"AT&T not only is the patriarch of today's disaster recovery programs, it also is the kingfish. AT&T has spent more than \$300 million on the effort since 1991, and much of that money has been spent on 20-foot semi-tractor trailers that house network equipment, capable of replicating any domestic or international transport scenario."

--Telephony Online
August 2003



[Redacted content]



1.4.1.g Access Arrangements, Characteristics, and Performance [L.34.1.4.6.g]

The offeror shall describe all optional Transport/IP/Optional Services offered to include:

(g) A description of the characteristics and performance of the access arrangements that will connect to the offeror's backbone network(s) to ensure service quality and reliability. A description of how the performance is consistent with industry best practices.

Access arrangements for time division multiplexing (TDM) voice and other transport, IP and optical services are detailed in Section 1.3.2.a, Access Arrangements, Characteristics, and Performance.

1.4.1.h Approach to Perform Service Verification [L.34.1.4.6.h]

The offeror shall describe all optional Transport/IP/Optional Services offered to include:

(h) A description of the offeror's approach to perform verification of individual services delivered under the contract, in particular the testing procedures to verify acceptable performance and Key Performance Indicator (KPI)/Acceptable Quality Level (AQL) compliance.

Section 1.3.2.d, Approach to Perform Service Delivery Verification, describes how AT&T monitors and measures network and service performance.

Table 1.4.1.h-1 summarizes AT&T's approach to monitoring and measuring KPIs for Voice Services.

| KEY PERFORMANCE INDICATOR (KPI) | APPROACH TO MONITORING AND MEASURING |
|---------------------------------|---|
| Availability (POP-to-POP) | <div style="background-color: black; width: 100%; height: 10px;"></div> <div style="background-color: black; width: 100%; height: 10px;"></div> <div style="background-color: black; width: 100%; height: 10px;"></div> <div style="background-color: black; width: 100%; height: 10px;"></div> |
| Availability (SDP-to-SDP) | <div style="background-color: black; width: 100%; height: 10px;"></div> <div style="background-color: black; width: 100%; height: 10px;"></div> <div style="background-color: black; width: 100%; height: 10px;"></div> <div style="background-color: black; width: 100%; height: 10px;"></div> |
| Time to Restore | <div style="background-color: black; width: 100%; height: 10px;"></div> <div style="background-color: black; width: 100%; height: 10px;"></div> <div style="background-color: black; width: 100%; height: 10px;"></div> <div style="background-color: black; width: 100%; height: 10px;"></div> |



| KEY PERFORMANCE INDICATOR (KPI) | APPROACH TO MONITORING AND MEASURING |
|----------------------------------|--------------------------------------|
| Grade of Service (Call Blockage) | [REDACTED] |

Table 1.4.1.h-1: Monitoring and Measuring Voice Services. Agencies will easily access performance reports using AT&T **BusinessDirect**.

AT&T's performance on these AQLs will be captured by the processes described above and made available to Agencies through AT&T **BusinessDirect** in spreadsheet and graphic displays. The first time the service is provided through the Networx contract, the performance must be verified. The KPIs will be monitored to certify that service performance complies with the AQL. [REDACTED]

[REDACTED]

The service verification process is presented in greater detail in Section 1.3.2.c, Approach to Perform Service Delivery Verification.

Additionally, Voice Services requires an SLA with aggregate-based performance metrics that will be monitored and reported on a monthly basis.

[REDACTED]

1.4.1.i Approach to Ensure Time-sensitive Traffic Quality [L.34.1.4.6.i]

The offeror shall describe all optional Transport/IP/Optional Services offered to include:

(i) A description of the approach to ensure the quality of time-sensitive traffic (e.g., voice quality, video quality, video lip-synch) under different traffic patterns and load conditions on the offeror's network.

These issues are addressed in Section 1.3.2.d, Approach to Ensure Time-sensitive Traffic Quality.

1.4.1.j Approach to Support Performance Requirements [L.34.1.4.6.j]

The offeror shall describe all optional Transport/IP/Optional Services offered to include:

(j) A description of the approach for providing integrated access to locations that support customer applications with different performance requirements (e.g., voice, data, and video).

These issues are addressed in Section 1.3.3.a, Approach to Providing Integrated Access.

1.4.1.k Approach to Incorporate Emerging Services [L.34.1.4.6.k]

The offeror shall describe all optional Transport/IP/Optional Services offered to include:

(k) A description of the approach for incorporating into the offeror's network, infrastructure enhancements and emerging services that the offeror believes are likely to become commercially available in the timeframe covered by this acquisition, including a discussion of potential problems and solutions.

These issues are addressed in Section 1.3.3.d, Approach to Incorporate Emerging Technology.

1.4.1.l Approach for Network Convergence [L.34.1.4.6.l]

The offeror shall describe all optional Transport/IP/Optional Services offered to include:

(l) A description of the approach for network convergence. In particular, describe how the approach ensures service quality over the converged network for data, voice, video, and multimedia.

(Review the Text and Pictures)

AT&T's network is actually multiple networks that have been individually optimized to support voice, frame relay, IP, asynchronous transfer mode (ATM), and other services. Each service network is engineered so that single component failures will have virtually no impact on customers. Each network is managed to provide high quality, reliability, and availability.

In its diversity, the AT&T network resembles the Federated Architecture depicted in the GSA presentation, The Networx Initiative, by Assistant Commissioner

John C. Johnson in December 2004. In Section 1.3.2, AT&T lists the building blocks for access, transport, and management features of its current networks. Each service network has been engineered to provide superior performance and value. Incremental optimization within service families has, over time, increased the overall complexity of supporting network structures.

By migrating from multiple means of access to multiservice edge (MSE) devices, AT&T anticipates it will be able to reduce expenses and raise productivity for access as it has for multiple means of transport.

Figure 1.4.1.I-1 depicts the architecture of AT&T's services networks.

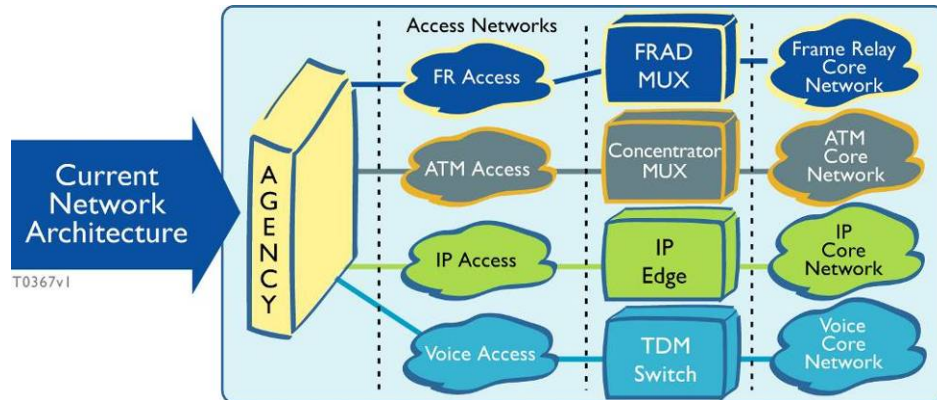


Figure 1.4.1.I-1: Current Services Networks. Agencies can use designated means of access to achieve end-to-end connectivity on current services networks.

In migrating to a converged multiprotocol label switching (MPLS) network built on IP transport, AT&T is altering the telecommunications landscape, shifting the means of transport to the network core. [REDACTED]

[REDACTED]

To preserve the investment of Agencies in ATM, frame relay, and other current technologies, [REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED] **Figure 1.4.1.I-2** depicts our target network architecture.

Figure 1.4.1.I-2: Converged Network Architecture. [REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

1.4.1.m Approach to Support Interoperability Between IP Networks and PSTN [L.34.1.4.6.m]

The offeror shall describe all optional Transport/IP/Optional Services offered to include:



[REDACTED]
[REDACTED]
[REDACTED]
[REDACTED] For

detailed discussion, refer to Section 1.3.5.b, Approach to Protecting SS7 Signaling Systems.

1.4.1.q National Capital Region Assured Service Network Architecture [L.34.1.4.6.q]

The offeror shall describe all optional Transport/IP/Optional Services offered to include:
(q) A description of how the network architecture will satisfy the requirements in Section C.5.2.7 for assured service in the National Capital Region, if applicable.

These issues are addressed in Section 1.3.5.c, National Capital Region Assured Service Network Architecture.

1.4.1.r Section 508 Approach [L.34.1.4.6.r]

The offeror shall describe all optional Transport/IP/Optional Services offered to include:
(r) A description of the offeror's approach for providing the capabilities needed to meet Section 508 provisions for each of the proposed optional services identified in Section C.6.4.

AT&T's approach to Section 508 requirements for VS and other services is addressed in Section 1.3.5.d, Section 508 Requirements.

1.4.1.s Optional Services Impact on Network Architecture [L.34.1.4.6.s]

The offeror shall describe all optional Transport/IP/Optional Services offered to include:
(s) A description of how the delivery of any optional services would impact the network architecture (e.g., security, quality and reliability, performance).

AT&T's network architecture will not be impacted should an Agency select AT&T as a VS provider. [REDACTED]

[REDACTED]
[REDACTED]
[REDACTED]



[REDACTED]

| VS TOOL | FUNCTION |
|------------|------------|
| [REDACTED] | [REDACTED] |
| [REDACTED] | [REDACTED] |
| [REDACTED] | [REDACTED] |
| [REDACTED] | [REDACTED] |
| [REDACTED] | [REDACTED] |
| [REDACTED] | [REDACTED] |
| [REDACTED] | [REDACTED] |
| [REDACTED] | [REDACTED] |

Table 1.4.1.s-1: Voice Service Tools. [REDACTED]

AT&T provides VS for Agencies and businesses throughout the United States and in many other countries. The VS network architecture is well-established and has sufficient capacity (Section 1.4.1.v) to accommodate the additional traffic that would be carried under Networkx.

1.4.1.t Approach for Optimizing IP-based and Optical Services [L.34.1.4.6.t]

The offeror shall describe all optional Transport/IP/Optional Services offered to include:
 (t) A description of the offeror's approach for optimizing the engineering of IP-Based and optical services.
 These issues are addressed in Section 1.3.6.2.a, Approach to Optimizing IP-Based Services.

1.4.1.u Vision for Implementing Service Internetworking [L.34.1.4.6.u]

The offeror shall describe all optional Transport/IP/Optional Services offered to include:
 (u) A description of 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.



These issues are addressed in Section 1.3.6.2.d, Vision for Service Interoperability.

1.4.1.v Network Traffic Utilization [L.34.1.4.6.v]

The offeror shall describe all optional Transport/IP/Optional Services offered to include:

(v) Given the offeror's current network capacity and utilization, an explanation of 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.

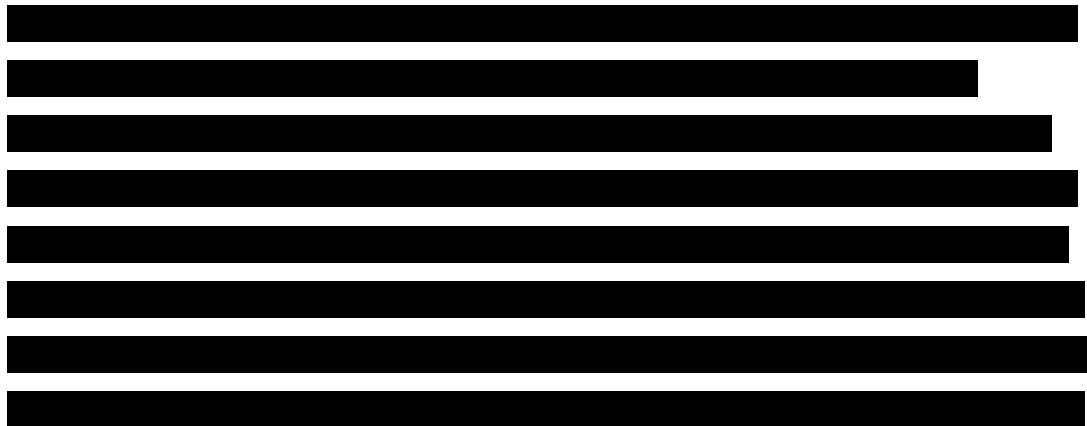


Figure 1.4.1.v-1 depicts the number of spare switch ports that can be assigned to support VS through 2016.

AT&T monitors switch usage on a daily basis and continually refines demand forecasts to provide

Figure 1.4.1.v-1: Spare Switch Capacity.

availability. We can redirect traffic to preclude overbooking demand and initiate asset recovery to make stranded switch ports available. Capacity for VoIP is addressed in Section 1.4.14.



1.4.1.w Stipulated Responses [L.34.1.2]

If the offeror proposes exceptions or deviations to any stipulated requirement, the rationale shall be stated in the Technical Volume and proposal references shall be provided in the cross reference table.

AT&T complies with all Stipulated Requirements for Voice Services.