4.2.4 Asynchronous Transfer Mode Service (ATMS) (L.34.1.4.6, M.2.1.2)

Qwest's native ATMS provides compliance with Networx requirements. It also enables interoperation with our converged IP core network to ensure service continuity and a path to next generation services for Agencies.

Qwest's Asynchronous Transfer Mode Service (ATMS) meets the requirements of the Networx RFP and provides a flexible suite of service offerings for future needs. Qwest's ATMS is fully integrated with our Frame Relay (FR) platform, providing access to our Multi-Protocol Label Switched (MPLS) core network. This architecture makes Qwest's ATMS ideal for seamless integration of customer sites with a broad range of bandwidth requirements and a wide variety of access architectures.

Qwest's ATMS features Virtual Circuit (VC) configurations up to Optical Carrier Level 12 (OC-12) and five Quality of Service (QoS) levels: Constant Bit Rate (CBR), Variable Bit Rate real-time (VBR-rt), Variable Bit Rate non-real-time (VBR-nrt), and Unspecified Bit Rate (UBR). Access is offered over a wide range of bandwidth options, from digital signal level 1 (DS-1) through OC-12, including 2xDS-1 up to 8xDS-1.

Qwest's ATMS is global in reach, extending directly to Asia and Europe via our multiple international suppliers. We already provide service to Government and commercial customers throughout the world.

Qwest's ATMS is proactively monitored 24x7x365 with the additional capability of reporting statistical and alarm information directly to Agencies via Qwest's Web-based reporting service, the Qwest Control Networx Portal.

Our current Government customers, [redacted] are equipped to internetwork their Frame Relay Service (FRS) and ATMS because of our switching platform. Our converged core network design allows ATM site connectivity to Internet Protocol (IP) sites [redacted]. This approach and worldwide reach allows the Government flexibility and reliability now and the confidence that Qwest can address their needs in the future.

Figure 4.2.4-1 provides an easy reference to correlate the narrative requirement to our proposal response.

Figure 4.2.4-1. Table of ATMS Narrative Requirements

Req_ID	RFP Section	Proposal Response
30639	C.2.3.2.3.1 (24)	4.2.4.3.3
35052	C.2.3.2.4	4.2.4.4

4.2.4.1 Reserved (L.34.1.4.6 (a))

4.2.4.2 Reserved (L.34.1.4.6 (b))

4.2.4.3 Satisfaction of ATMS Requirements (L.34.1.4.6(c))

The following three sub-sections describe how Qwest will satisfy the capabilities, features, and interfaces requirements of the RFP.

4.2.4.3.1 Satisfaction of ATM Capabilities Requirements (L.34.1.4.3(a), C.2.3.2.1.4)

Qwest's ATM network enables a broad range of technical service capabilities and supports all of the technical capabilities required for ATMS. ***Figure 4.2.4-2*** summarizes our technical approach to supporting ATMS capabilities. Qwest fully complies with all mandatory stipulated and narrative capabilities requirements for ATMS. The text in Figure 4.2.4-2 provides the technical description required per L.34.1.4.3(a) and does not limit or caveat Qwest's compliance in any way.

Figure 4.2.4-2. Qwest's Technical Approach to ATMS Capabilities

ID #	Name of Capability	[redacted]
1	ATMS over PVCs and/or SVCs	[redacted]
2	QoS on PVC/SVC basis	[redacted]
3	Bandwidth on Demand	[redacted]
4	Provisioning as Pt-Pt VC	[redacted]
5	Local Access	[redacted]
6	Agency Network Management System access to edge switch	[redacted]
7	Multiple PVC/SVC Speeds	[redacted]
8	Symmetrical or Asymmetrical PVCs	[redacted]
9	VP/VC Addressing Support	[redacted]

[redacted]

Qwest's highly qualified pre-sales engineering, network planning, provisioning, and operations organizations have supported this service [redacted]. Our network planning, design, and implementation engineers adhere to all applicable industry standards and insist that our network equipment vendors do the same. [redacted] Our engineering staff performs detailed compliance tests on all new equipment or software that is deployed in our network, contributing to the outstanding reliability and interoperability of our ATM network.

[redacted]

Qwest's ATM consists of a managed, fully interoperable, and scalable suite of services based on a high-performance platform designed to maximize availability and reliability. The services are comprised of local access,

ATM/FR ports, and PVCs or SVCs. [redacted] Qwest's ATMS [redacted] providing a total solution for the Government's current and future requirements.

[redacted]

[redacted] Qwest will arrange with the serving Local Exchange Carrier (LEC)/Competitive Exchange Carrier (CLEC) to provide access.

[redacted]

Qwest supports all technical capabilities required for ATMS. Our service approach provides significant flexibility in regard to the provisioning of VCs and the assignment of PCR, SCR, and MCR for full capacity of the access circuit.

As a full service provider, we were among the first to enable alternate access options, such as supplier access, to our ATMS. [redacted]

Qwest's ATMS/FRS will connect Government and Government-specified locations at Service Delivery Points (SDPs) via routers, Layer 2 and

Layer 3 switches, multiplexing/switching devices, computers, and other ATM access devices. The SDP for an Agency location is the interface through which the Agency receives the traffic [redacted]. In order to enable the service, each site must connect the service through a Qwest-provided User-to-Network-Interface (UNI).

4.2.4.3.2 Satisfaction of ATMS Feature Requirements (L.34.1.4.3(a), C.2.3.2.2)

In Qwest's ATM topology design, ATM traffic is transported over the ATM backbone via Qwest's multi-platform switches. As a result, Qwest's ATMS solution is seamless across a reduced level of architectural tiers/hops, allowing multiple access options at a variety of speeds and guaranteed QoS, serviced by a single, integrated, end-to-end NMS.

The advantage to Agencies is the ability to deploy a [redacted] configuration to cost-effectively connect lower and higher volume locations. [redacted]

Qwest's ATMS allows an Agency to truly realize the power of a converged network through gateway connectivity to the Qwest IP network.

Figure 4.2.4-5 provides an overview of Qwest's technical approach in meeting the required ATMS features.

Qwest fully complies with all mandatory stipulated and narrative features requirements for ATMS. The text in Figure 4.2.4-5 provides the technical description required per L.34.1.4.3(a) and does not limit or caveat Qwest's compliance in any way.

Figure 4.2.4-5. Qwest's Technical Approach to Networx ATMS Features

ID #	Name of Feature	[redacted]
1 [Optional]	Circuit Emulation Services	
2	Disaster Recovery PVCs	
3	Port Diversity	
4	Internetworking Services	
5	Inverse Multiplexing for ATM (IMA)	
6	IP-enabled ATM	
7 [Optional]	Point-to-Multipoint PVCs	

4.2.4.3.3 Satisfaction of ATMS Interface Requirements (L.34.1.4.3(a), C.2.3.2.3)

Qwest's ATMS supports UNI access methods that meet RFP requirements. At the SDP, Qwest supports a broad range of SEDs to enable an extensive set of interfaces, bandwidth, and signaling capabilities. Qwest fully complies with all mandatory stipulated and narrative interface requirements for ATMS. The text in ***Figure 4.2.4-6*** provides the technical description required per L.34.1.4.3(a) and does not limit or caveat Qwest's compliance in any way.

Figure 4.2.4-6. Qwest-Provided ATM Interfaces at the SDP

UNI Type	Interface Type and Standard	Payload Data Rate or Bandwidth	Signaling or Protocol Type	[redacted]
1	ITU-TSS V.35	Up to 1.536 Mbps	AAL Type 5	
2	EIA RS-449	Up to 1.536 Mbps	AAL Type 5	
3	EIA RS-530	Up to 1.536 Mbps	AAL Type 5	
4 [Optional]	DS1	Up to 1.536 Mbps	AAL Type 1	
5 [Optional]	DS1	Up to 1.536 Mbps	AAL Type 5	
6 [Optional]	DS3	Up to 43.008 Mbps	AAL Type 1	
7	DS3	Up to 43.008 Mbps	AAL Type 5	
8 [Optional]	DS1	Up to 1.536 Mbps	Native Mode	
9	DS3	Up to 43.008 Mbps	Native Mode	
10 [Optional]	ITU-TSS V.35	Up to 1.536 Mbps	AAL Type 3/4	
11 [Optional]	EIA RS-449	Up to 1.536 Mbps	AAL Type 3/4	
12 [Optional]	EIA RS-530	Up to 1.536 Mbps	AAL Type 3/4	
13 [Optional]	DS1	Up to 1.536 Mbps	AAL Type 3/4	
14 [Optional]	DS3	Up to 43.008 Mbps	AAL Type 3/4	
15 [Optional]	SONET OC-3c	Up to 148.608 Mbps	AAL Type 3/4	
16 [Optional]	SONET OC-12c	Up to 594.432 Mbps	AAL Type 3/4	
17 [Optional]	SONET OC-48c	Up to 2.378 Gbps	AAL Type 5	
18 [Optional]	SONET OC-48c	Up to 2.378 Gbps	AAL Type 3/4	

UNI Type	Interface Type and Standard	Payload Data Rate or Bandwidth	Signaling or Protocol Type	[redacted]
19 [Optional]	E-1 (Non Domestic)	Up to 1.92 Mbps	AAL Type 3/4	[redacted]
20 [Optional]	E-3 (Non Domestic)	Up to 30.72 Mbps	AAL Type 3/4	[redacted]
21	COAX	Up to 43.008 Mbps	Native Mode	[redacted]
22 [Optional]	OC-3c	Up to 148.608 Mbps	Native Mode	[redacted]
23 [Optional]	High Speed Serial Interface (HSSI)	Up to 43.008 Mbps	HSSI	[redacted]
24 [Optional]	HSSI	From 2xDS1, in multiples of DS1, up to and including 8xDS1	HSSI	[redacted]

High Speed Serial Interface (Req_ID 30639, C.2.3.2.3.1(24))

[redacted]

Qwest's IMA is an excellent alternative for Agencies that require broadband applications but are in areas where DS-3 or fiber is unavailable or depleted. With IMA, the Agency has flexibility to grow their network as their needs change by providing a natural bandwidth progression in the 3 to 12 Mbps bandwidth range. [redacted]

4.2.4.4 ATMS Quality of Service (L34.1.4.6(d))

[redacted] as shown in ***Figure 4.2.4-7.*** For ATMS, all of the point-to-point Service Level Agreement (SLA) metrics listed in Figure 4.2.4-7 are measured on an end-to-end site or site-pair basis, SDP to SDP.

Figure 4.2.4-7. Qwest Compliance with Government Performance Metrics

Key Performance Indicator (KPI)		Service Level	Performance Standard (Threshold)	Acceptable Quality Level (AQL)	[redacted]
Av (PVC)		Routine	99.925%	≥ 99.925%	
GOS (MAX Cell Transfer Delay CONUS)	CBR	Routine	50 ms	≤50 ms	
	VBRrt	Routine	55ms	≤55 ms	
	VBRnrt	Routine	60 ms	≤60 ms	
GOS (Max Cell Loss Ratio)	CBR	Routine	1.00E-09	≤1.00E-09	
	VBRnrt	Routine	1.00E-06	≤1.00E-06	
	VBRrt	Routine	1.00E-07	≤1.00E-07	
GOS (Max Cell Delay Variation)	CBR	Routine	1 ms	≤1 ms	
	VBRrt	Routine	1.5 ms	≤1.5 ms	
Time to Restore		Without Dispatch	4 hours	≤ 4 hours	
		With Dispatch	8 hours	≤ 8 hours	

Performance Levels and AQLs (Req_ID 35052; C.2.3.2.4)

Qwest has responded below to all of the mandatory AQLs of KPIs shown in RFP C.2.3.2.4.1. Qwest is providing a native ATM service and, as described below, fully supports the CBR performance requirements specified in RFP C.2.3.2.4.1.

[redacted]

This is possible because Qwest's ATM and FR services are deployed over a redundant, secure, and scalable fiber-optic network infrastructure that yields very high availability rates.

Qwest meets Time to Restore (TTR) AQLs. The geographically dispersed, redundant Qwest Worldwide Data Operations Centers provide

proactive monitoring and network maintenance 24x7x365. Our NMS records all ATMS [redacted] alarms into our central database continuously while, at the same time, triggering auto-generated trouble tickets. These alarm histories and trouble tickets are available to our operations team for troubleshooting purposes and to Agencies through the Qwest Control Networx Portal. Our portal can be used by Agencies to query status, performance statistics, equipment configuration, and fault histories. Qwest also uses this operations infrastructure to provide Event Notification, where we notify our customers of network issues.

Qwest meets the Networx requirements for ATMS in terms of Grade of Service. Performance monitoring statistics are collected continuously for ATM ports and VCs/SVCs. These performance statistics are stored in Qwest's Bulk Statistics Server via Simple Network Management Protocol (SNMP). They are retrievable by both operations personnel and Agencies via the Qwest Control Networx Portal. Our Portal can be used by Agencies for querying status, performance statistics, equipment configuration, and fault histories.

Qwest meets Networx requirements for cell transfer delay. This guarantee is based on efficiencies inherent in Qwest's SONET-based multi-service platform and network routing that reduces the chance of delay.

Qwest meets the requirements of ATMS through our ATM Class of Services (CoS). For critical applications requiring higher levels of availability, performance, or restore criteria, ATMS CBR provides the desired quality of service for applications requiring higher levels of availability, performance, or restore criteria. For applications specified as routine, ATMS UBR will satisfy the data transport requirements.

Qwest's ATMS [redacted] provides peak performance and increases network capacity, reduces network complexity, allows for network

consolidation, and improves network flexibility, reliability, and security. Qwest's performance metrics are aligned with the Networx AQL objectives.

4.2.4.5 ATMS Performance Improvements (L.34.1.4.6 (e))

[redacted] In the event that an Agency has a specific business need or application problem, Qwest will discuss service enhancements. Qwest will operate in good faith to engineer an ATMS solution to serve unique Agency needs. Through a special combination of vendor solutions and talented engineering capabilities, Qwest will serve an Agency's business needs.

Qwest has a Domestic Network Diversity Services™ (Diversity) feature that is included in our ATMS offering. At the Agency's request and where available, Qwest will provide a second physically separate ATM connection that is provisioned and maintained distinctly from the Agency's primary Qwest's ATM circuit. The following describes diversity:

- Custom-engineered feature by Qwest, based upon available Qwest facilities.
- Identified and maintained in the Qwest database systems, as related to primary and diversely routed ATM circuits.
- Defined relationship maintained between the primary ATM circuit and the diversely routed ATM circuit, or a predefined path that either avoids or routes to a specified geographic location on the circuit path (single circuit diversity).

The diversity feature is available [redacted] on existing Qwest domestic facilities.

4.2.4.6 Experience with ATMS Delivery (L34.1.4.6(f))

[redacted]

Qwest currently provides ATMS [redacted]

4.2.4.7 Characteristics and Performance of Access Arrangements (L34.1.4.6 (g), C.2.16)

Qwest realizes that a key differentiator is the ability to ensure robust access, not only to the traditional ILECs, but to the emerging diversity of CLECs. This combination enables Qwest to leverage itself—as an ILEC in 14 states in the western U.S. and to the other ILECs and CLECs—to provide robust access solutions that meet our customers' needs.

To ensure the service quality and reliability of access methods, Qwest uses the same discipline and approach that we use to maintain our own facilities-based portions of the service.

Qwest has the staff and procedures to engineer extremely high-availability access arrangements. [redacted]

Agencies should expect the best possible provisioning intervals to get their service up and running. Qwest has a long and excellent track record of on-time delivery service, with reliable service delivery intervals. As shown in [redacted] Qwest has maintained an excellent, best-in-class service delivery interval for our Government customers. [redacted] represents actual service turn-up from the customer's perspective, including all aspects of access, provisioning, demarcation extension, and equipment installation for a major Government department nationwide network.

[redacted]

This performance has direct benefits to Agencies. It means that Qwest has the ability to define aggressive timelines for service transitions. [redacted]

[redacted] Qwest is the right choice for Agencies who want to take advantage of a leading-edge provider already equipped with an integrated, converged, next generation network. Qwest will facilitate a smooth transition, minimize costs, and reduce the time that an Agency's two networks, old and new, need to operate simultaneously.

To provide access services, Qwest has a broad variety of agreements with local carriers to ensure flexibility, quality, and reliability. Qwest has strict quality standards for how we connect with other carriers to maintain this high level of performance.

Dedicated Access Facilities

Qwest uses our own facilities and leased access facilities to connect Agency locations to Qwest network services. Qwest performs network engineering and planning, ensuring that the access from our backbone to the Agency's location meets our strict standards for high-quality, reliable services.

[redacted]

[redacted]

All Qwest backbone services monitor the availability and condition of our access providers. [redacted] These trouble tickets are worked by our Network Operations Centers. Chronic access problems are easily identified, and we work with our access providers to redesign or re-engineer these circuits to restore acceptable service levels.

More information about Qwest's access arrangements, including wireline access arrangements for ATMS, may be found in Section 3.2, *Approach to Ensure Service Quality and Reliability*.

4.2.4.8 Approach for Monitoring and Measuring ATMS KPIs and AQLs (L34.1.4.6(h))

Qwest monitors and measures the KPIs and AQLs using automated processes that pull data from the root source, summarize it, and display it [redacted]. These [redacted] display actual results and provide a color-coded visual indicating whether performance goals have been achieved. Our approach is to completely automate the Web display of results from data collection. This ensures that the focus is on responding to performance issues, rather than on performance report generation. The automated reporting process eliminates any question of manipulating the performance data.

For network KPIs, we use Statistical Analysis System to display the Network Reliability Scorecard. This includes the KPIs, the objectives, and a clear graphical representation of objectives met or missed for each reporting period. The scorecard is our tool to show both upper management and network management the current health of the network. The scorecard is reviewed daily at the executive level to ensure proper attention and focus as well as by our network management teams to ensure that Service Quality Levels are consistently met.

For all services that Qwest offers, we use the [redacted] trouble ticketing system. [redacted] is a trouble ticketing system that is an industry-leading commercial-off-the-shelf application that we have customized to make more effective for our needs. From this system, we collect many useful metrics that we use internally to evaluate and improve our processes, including TTR. The calculation for TTR uses the same business rules as the Government requires for its services.

For ATMS, all of the point-to-point SLA metrics listed in Figure 4.2.4-7 are assessed on an end-to-end site or site-pair basis, SDP to SDP. These data elements are used to ensure that all customer data network AQLs are systematically supported by the network. Additionally, key network infrastructure interfaces (e.g., Aggregation Ports/Network-to-Network Interfaces, ATM Trunk Ports) are monitored for Packet/Cell Loss (including errors and discards) and availability, ensuring that no customer AQL issues are traceable to key network infrastructure ports.

For ATM, Qwest uses [redacted] to obtain PVC latency cell loss ratio, cell transfer delay, cell delay variation, availability, PVC level bi-directional statistics per class of service (transmit/receive bytes/cells, transmit discards), and port level

statistics (average and average peak transmit/receive utilization and discard rates, transmit error rates).

Qwest network management systems collect data directly from the ATM switches and SEDs via SNMP. This information is transferred to internal databases, where it is distributed to Qwest Control Networx Portal. This Portal provides Agencies with regularly reported performance statistics.

This information is also shared internally with Qwest's Worldwide Data Operations Center, which continuously monitors the performance of the network. ATMS network utilization is monitored by the Qwest Infrastructure group, which is responsible for reporting statistics to the Data Network Planning and Design group.

4.2.4.9 ATMS Support of Time-Sensitive Traffic (L34.1.4.6(i))

All of Qwest's data networking solutions provide proven, industry-standard methods to ensure the quality of time sensitive traffic. Our network engineering and capacity planning ensure our ability to meet the challenge of voice transport. [redacted]

Qwest has best-in-class technical solutions and implementations of QoS mechanisms [redacted]

Our [redacted] network enables Agencies to pre-assign applications to service classes for virtual circuits.

Qwest's ATM PVCs support four QoS levels defined by the ATM standards committee: CBR, VBR-rt, VBR-nrt, and UBR.

- CBR – CBR provides the highest service priority and is designed to support real-time applications requiring a fixed amount of bandwidth. CBR cannot tolerate variations in delay. Unlike all other ATM service categories, CBR does not offer a burst, just a PCR that is guaranteed and given the highest priority through the network. CBR is recommended for circuit emulation, video, and voice applications.
- VBR – VBR is a service category where the rate of transmission varies. With VBR, each logical connection is assigned an average rate of transmission defined by SCR. VBR traffic can burst beyond SCR, a maximum burst size, up to a specified upper limit PCR [redacted] There are two types of VBR: VBR-rt and VBR-nrt.
  - VBR-rt is intended for real-time applications where each end connection maintains a timing relationship. VBR-rt features a high delivery rate with a low threshold for delay and delay variation, while allowing application and network bursts. The types of applications supported are: packetized voice or video, near real-time video, systems network architecture, and time-sensitive data.
  - VBR-nrt is designed for applications that can tolerate delay variation and have bursting traffic characteristics. A timing relationship is not required on each end of a connection. VBR-nrt can be used to support mission-critical data such as WAN/VPN connectivity, internetworking, Web hosting, e-commerce, store and forward non-real time video and audio, client-server (terminal-host) data, and directory and PKI types of services.

- UBR – UBR is a best effort service and provides no service guarantees. It consists of one component, PCR, and supports connections that have no performance requirements. UBR allows transport of information only if bandwidth is available. If network congestion occurs, the UBR cells are the first to be discarded. UBR supports non-mission critical data such as LAN emulation, remote access, fax, email, Internet/intranet access and file transfers.

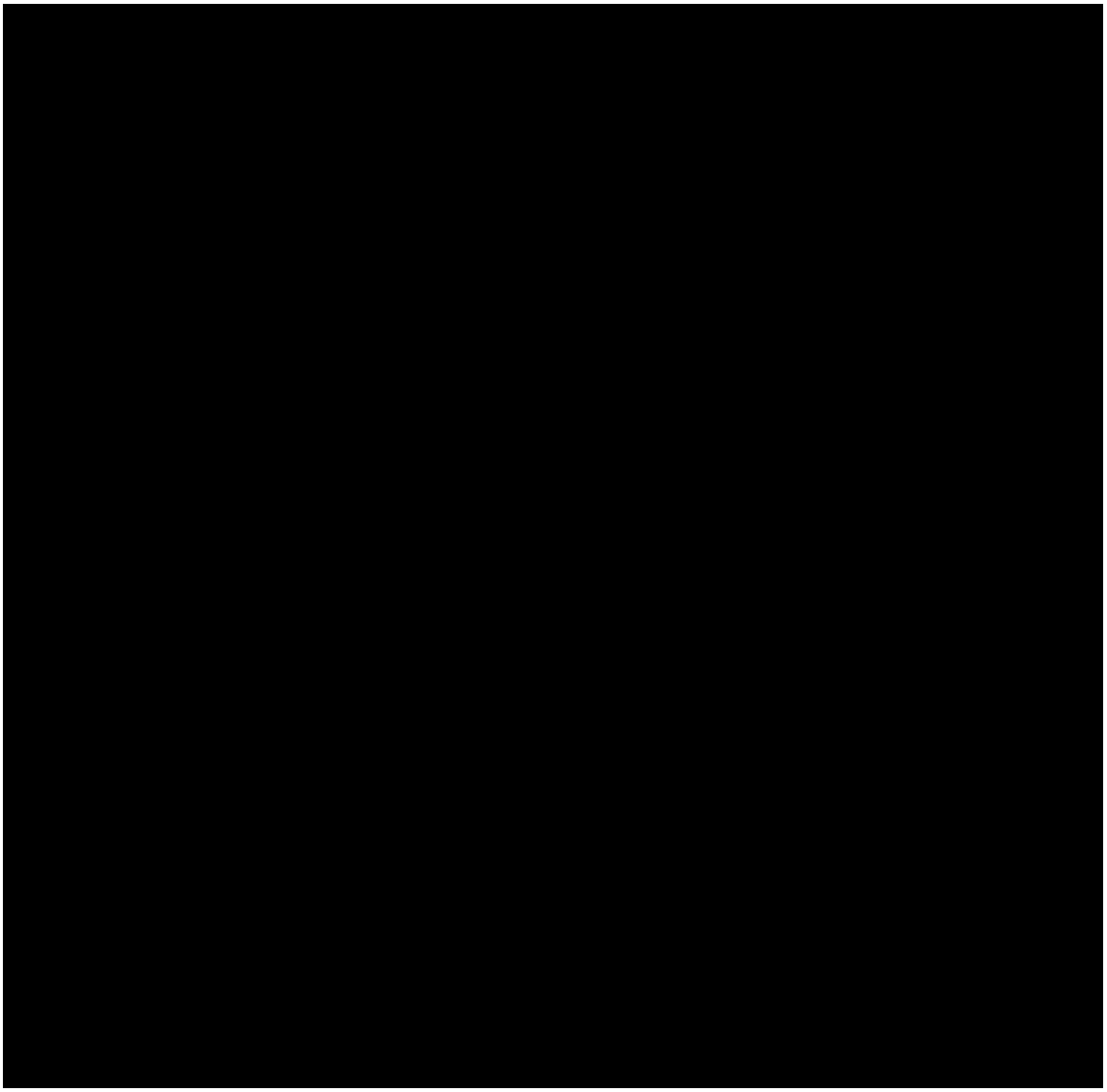
In general, voice is transported as CBR or VBR-rt. Video is transported as VBR-rt, and other data traffic could be transported as UBR. The Qwest network completely conforms to ATM standards—with the QoS enabled on a per-virtual circuit basis end-to-end—and strictly adheres to [redacted] traffic contracts.

For the ATMS, the Qwest network supports a virtual guarantee of cell or packet delivery using CBR, VBR-rt, and VFR-nrt. Since the traffic contract is obeyed end-to-end, no other traffic on the network can interfere with the minimum data rate in the virtual circuit's traffic contract parameters. Combined with Qwest's capacity planning, even failures of core ATM switches or backbone circuits will not reduce the network capacity to a point where it impacts customers' minimum traffic contract parameters.

4.2.4.10 ATMS Support for Integrated Access (L34.1.4.1(j))

Qwest's network architecture and data services approach directly enable a complete menu of integrated access options to virtually all of Qwest's services.

[redacted]



[redacted]

4.2.4.11 Infrastructure Enhancements and Emerging Services (L.34.1.4.6 (k))

Qwest has mature processes that enable us to envision, research, evaluate, engineer, deploy, and operate new or emerging services. Driven initially by the Chief Technology Office, Qwest evaluates new products and technologies for incorporation into the Qwest network, in partnership with Qwest Product Management.

[redacted]

[redacted]

4.2.4.12 Approach for Network Convergence (L.34.1.4.6(l))

Qwest already has a clear approach and has made significant progress in deploying a network that not only enables convergence from an Agency perspective, but is also a highly converged platform in itself. Qwest is moving toward a packet-based architecture to enable network evolution and

convergence. Centered on our private MPLS-based core, Qwest has already converged our public and private IP-based services over this network.

Qwest is committed to the elimination of stove-piped networks that create planning, operations, and interoperability issues for customers. [redacted] shows Qwest's approach to ensure that services have a uniform view of network and support infrastructure.

[redacted]

Multiple overlay networks are no longer established to deliver new services. Value is shifted to network-based services, where Qwest becomes a solutions provider. Applications-based services are delivered independent of the network infrastructure. [redacted]

[redacted] the use of a converged MPLS core significantly eases the problems normally associated with backbone traffic engineering. Without a converged backbone, each services network (for example, one for Internet, one for private IP services, and one for voice) needs to be traffic-engineered independently. The normal state of affairs is that one network has too much capacity and another has performance limitations that require a backbone or router upgrade. The issue is that a carrier gets into a situation where the upgrade for one services network requires a large upgrade that is not cost-effective [redacted]

[redacted]

[redacted]

[redacted]

[redacted]

4.2.4.14 Approach for IPv4 to IPv6 Migration (L34.1.4.1(n))

When Agencies select the Internet gateway or IP-enabled ATM options, IP addressing is an essential element to the solution. Qwest is well positioned to migrate its network from IPv4 to IPv6. [redacted]

[redacted]

[redacted]

[redacted]

4.2.4.15 Satisfaction of NS/EP Requirements (L34.1.4.6(o))

Qwest uses a structured multi-layered approach to supporting National Security and Emergency Preparedness (NS/EP) that is designed to address

each required function. Qwest has organizationally and strategically integrated risk management and security to encompass information technology and physical security. Our priorities are to protect our customers from the physical layer up through the entire Open Systems Interconnection stack, including all facets of cyber security.

Our approach ensures that Qwest complies with and provides priority for the Government's telecommunications requirements for NS/EP survivability, interoperability, and operational effectiveness during an emergency threat, whether caused by natural hazards, manmade disasters, infrastructure failures, or cyber events. [redacted]

Specifically, in accordance with RFP Section C.5.2.2.1, *NS/EP Basic Functional Requirements Matrix for Networx Services*, Qwest supports the following basic functional requirements for ATMS:

- **Enhanced Priority Treatment** (C.5.2.1(1)) – ATMS supporting NS/EP missions are provided preferential treatment over other traffic.
- **Secure Networks** (C.5.2.1(2)) – ATMS supporting NS/EP missions have protection against corruption of, or unauthorized access to, traffic and control, including expanded encryption techniques and user authentication, as appropriate.
- **Non-Traceability** (C.5.2.1(3)) – ATMS users are able to use NS/EP services without risk of usage being traced (that is, without risk of user or location being identified).

- **Restorability** (C.5.2.1(4)) – Should a service disruption occur, ATMS supporting NS/EP missions are capable of being re-provisioned, repaired, or restored to required service levels on a priority basis.
- **International Connectivity** (C.5.2.1(5)) – According to RFP section C.5.2.2.1, this requirement is not applicable to ATMS.
- **Interoperability** (C.5.2.1(6)) – ATMS will interconnect and interoperate with other Government or private facilities, systems, and networks that will be identified after contract award.
- **Mobility** (C.5.2.1(7)) – The ATMS infrastructure supports transportable, re-deployable, or fully mobile voice and data communications (i.e., Personal Communications Service, cellular, satellite, high frequency radio.
- **Nationwide Coverage** (C.5.2.1.(8)) – ATMS is readily available to support the national security leadership and inter- and intra- Agency emergency operations, wherever they are located.
- **Survivability/Endurability** (C.5.2.1(9)) – ATMS is robust to support surviving users under a broad range of circumstances, from the widespread damage of a natural or man-made disaster up to and including nuclear war.
- **Voice Band Service** (C.5.2.1(10)) – According to RFP Section C.5.2.2.1, this requirement is not applicable to ATMS.
- **Broadband Service** (C.5.2.1(11)) – ATMS provides broadband service in support of NS/EP missions (e.g., video, imaging, Web access, multimedia).
- **Scaleable Bandwidth** (C.5.2.1(12)) – NS/EP users will be able to manage the capacity of ATMS to support variable bandwidth requirements.

- **Affordability** (C.5.2.1(13)) – ATMS leverages network capabilities to minimize cost (for example, use of existing infrastructure, commercial off-the-shelf technologies, and services).
- **Reliability/Availability** (C.5.2.1(14)) – ATM Services perform consistently and precisely according to their design requirements and specifications and are usable with high confidence.

Details of how Qwest supports all 14 basic functional requirements listed in RFP Section C.5.2.2.1 are provided in Section 3.5.1, *Approach to Satisfy NS/EP Functional Requirements*, in this Technical Volume.

4.2.4.16 Support for Signaling and Command Links (L34.1.4.6(p))

[redacted]

[redacted]

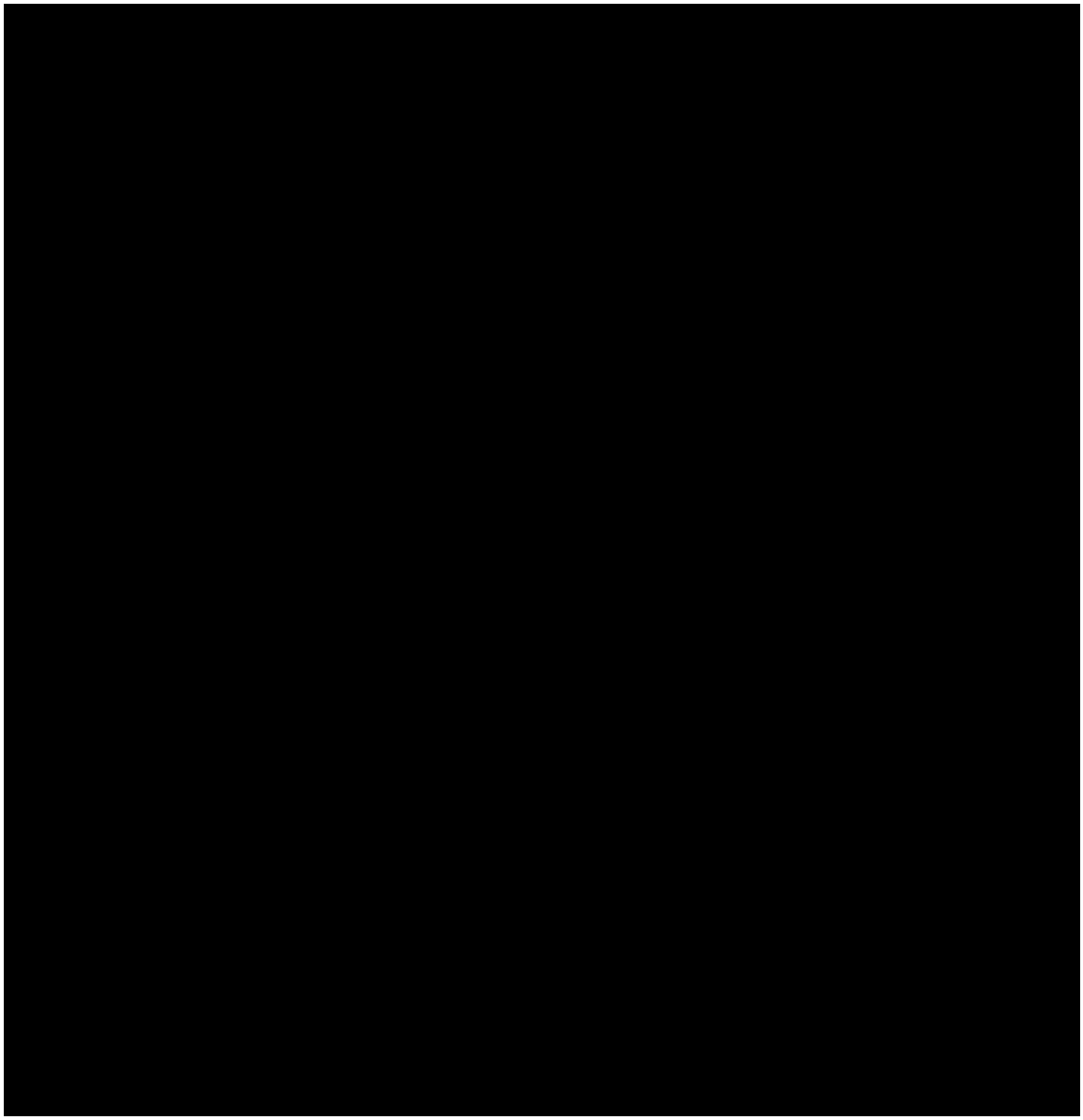
4.2.4.17 Service Assurance in the National Capital Region (L.34.1.4.6(q))

As discussed in Section 3.2, *Approach to Ensure Service Quality and Reliability*, Qwest provides network services in the National Capital Region (NCR) with a robust [redacted] network architecture designed and engineered to ensure service continuity in the event of significant facility failures or catastrophic impact. Qwest will continue to engineer critical services to meet each Agency's requirements to eliminate potential single points of failure or overload conditions that may affect their network service performance.

[redacted] Qwest also provides functionality that enables Government Emergency Telecommunications Service priority calling mechanisms.

Qwest will provide full NS/EP Functional Requirements Implementation Plan (FRIP) documentation upon contract award when requested to proceed with plan delivery. Qwest will update plans, including Part B addressing our strategy for supporting Agency NCR requirements, in accordance with RFP Section C.7.16.

Qwest understands the Government's requirement to assure performance of [redacted] network services in and around the NCR. [redacted] Each of these gateways provides complete redundancy to access Qwest nationwide and international network capabilities as well as regional voice and data services. [redacted] *Qwest's Robust Architecture for the National Capital Region*, shows the logical configuration of the major transport facilities as well as the services provided at each POP.



[redacted]

Qwest pre-subscribed this infrastructure from an ILEC and numerous CLECs. As presented in Section 3.2.2, *Arrangements with Other Service Providers for Carrying and Exchanging Traffic*, [redacted]

[redacted]

Qwest will address the strategy, technical systems, and administration, management, and operation requirements for the NCR in part B of our NS/EP FRIP (a draft appears as Appendix 2 to the Technical Volume).

4.2.4.18 Approach to Satisfying Section 508 Requirements (L34.1.4.1(r))

According to RFP Section C.6.4, *Section 508 Provisions Applicable to Technical Requirements*, Section 508 provisions are not applicable to ATMS. Qwest has fully described our approach to satisfying Section 508 requirements for applicable, offered services in Section 3.5.4, *Approach for Meeting Section 508 Provisions*, of this Technical Volume.

4.2.4.19 ATMS Impact on Network Architecture (L34.1.4.6(s))

[redacted]

As traffic increases, Qwest adds more VCs to the network. Qwest evaluates when larger or more VCs are needed to replace multiple lower bandwidth links. When the network architecture is optimized, the network becomes much easier to manage and results in improved KPIs for Agencies.

4.2.4.20 Optimizing the Engineering Approach to ATMS (L34.1.4.6 (t))

[redacted]

4.2.4.21 Vision for ATMS Internetworking (L34.1.4.6(u))

[redacted]

[redacted]

Converged services are available on Qwest's optimized infrastructure today. [redacted]

4.2.4.22 Support for Government ATMS Traffic (L34.1.4.6(v))

[redacted]

Qwest's fundamental ATM capacity planning methodology for Networx is derived from our standard capacity planning model in use today. We analyze both actual traffic and customer/Agency forecasts to create a combined forecast. This forecast is used to drive proactive network augmentation as needed. [redacted] Qwest closely and continuously monitors our backbone network links and has an aggressive upgrade policy to minimize any effects of congestion on customer traffic flows. [redacted]