1.5.12 Unified Messaging Service (UMS) [C.2.11.11]

Agencies need a messaging system that merges the use of voice mail, email, and fax. Using our unified messaging service (UMS), Agencies will receive and send messages of different types to and from different communications devices. Agency workers will use the system's unified contacts list capability to share common contacts between the Agency telephone system, desktop, wireless personal digital assistant (PDA), and cell phones.

AT&T provides unified messaging service (UMS) to Agencies through AnyPath® from Networx partner, Lucent. AnyPath is a robust unified messaging platform, providing subscribers with enhanced features that improve productivity and are user friendly. The AnyPath UMS offer will unify user's office phone with the Web and mobile communications devices. It includes features such as the following:

- Voicemail embedded in email
- Email read as voicemail
- Unified contacts list
- Web Messaging
- Personal Operator
- Speech-enabled navigation and speech dialing

To provide access capabilities from as many networks as possible, the UMS systems are built on top of the AT&T VoIP network topology and integrated with the Internet using a set of Web portal and Email server systems.

Figure 1.5.12-1 shows the basic network architecture of the UMS system.

Figure 1.5.12-1: The UMS Technical Architecture.

The UMS service platform contains several functional blocks and is deployed in a front-end/back-end architecture. The front end contains access and processing element and is largely based on the VoIP/SIP routing and processing model as shown in **Table 1.5.12-1** below. Also included in the front end are the Web and Email servers to provide access via the web.

ELEMENT	FUNCTION	BENEFIT
Email server connectivity	Provides email relay in SMTP format to interface with agency email systems such as ▮▮▮▮▮▮▮▮	Agencies do not need to overhaul their email systems to take part in a unified messaging network
TDM and VOIP call processing	• VoIP call processing provides a low cost universal access methodology to gain access to the UMS product. • TDM capabilities allow for the use of gateways such as the SMDI to TDM gateway.	• Agencies will not need to build special access networks to use the UMS product • UMS is an add-on product to VoIP and can be used as an "initial" VoIP product to start a VoIP conversion.
SIP signaling interfaces	SIP interfaces allow the UMS architecture to integrate easily with standard carrier based VoIP systems	• Agencies will have access to UMS through their VoIP network connection • The ability to access PSTN and cell networks through SIP provides agencies with more messaging reach

ELEMENT	FUNCTION	BENEFIT
VoIP/SIP Architecture	The VoIP/SIP based architecture allows the UMS system to become part of a VoIP network's call routing for services like find-me follow-me.	Agencies receive a service that will grow in functionality along with the growth of the emerging VoIP market.
Web messaging architecture	Web messaging provides message retrieval and manipulation tools through a web interface	Agencies will have access to their messages from anywhere there is access to the worldwide web.

Table 1.5.12-1: UMS Technical Architecture Features. *The UMS architecture is based in standard VoIP protocols and provides Agencies with a service that will grow with the emerging VoIP market.*

1.5.12.1   Email Server Connectivity

For unified messaging support, ▮▮▮▮▮▮ includes an Internet Message Access Protocol version four (IMAP4) and Post Office Protocol version three (POP3) proxy server to provide security for direct public access to the ▮▮▮▮▮▮ by *thick* email clients, such as ▮▮▮▮▮▮▮▮▮▮▮ The IMAP4/POP3 proxy runs in an N+1 active/active configuration for reliability and scalable capacity. Also included is an email simple mail transfer protocol (SMTP) gateway to act as a forwarding agent to Agencies that run their own email exchanger.

The messaging applications server (MAS) enables telephony users interface (TUI) access to external email servers configured for POP3 clients. MAS also supports POP3 email protocol interfacing to external email servers for ▮▮▮▮▮▮ web messaging capability.

1.5.12.2   TDM and VOIP Call Processing

The UMS is uniquely designed to support both TDM and VoIP telephony on the same platform, enabling efficient evolution of new services and seamless subscriber migration to VoIP. The UMS supports VoIP telephony, using the latest ▮▮▮▮▮ SIP standard technology for efficient call processing**.** VoIP/SIP standards are followed, such as SIP Invite and SIP Notify and common codecs, including G.729a/b and G.711. **Figure 1.5.12.2-1** depicts the ▮▮▮▮▮ front end (FE) and back end (BE) components supporting VoIP and PSTN telephony.

Figure 1.5.12.2-1:   **Supporting VoIP and PSTN Telephony.**

The ▇▇▇▇▇▇▇▇ telephony server provides real-time transport protocol (RTP) and real-time transport control protocol (RTCP) interfaces for the incoming and outgoing media streams that support calls – specifically audio. The RTP streams support a configured low bit-rate codec for the particular ▇▇▇▇▇ messaging system (with or without silence suppression of incoming audio). Silence suppression of the outgoing audio stream is provided for silence-only phrases (i.e., announcements). The low-bit rate VoIP codec supported is G.729a/b. The RTP streams also support G.711 speech (Mu-Law or A-Law) for incoming and outgoing audio streams.

1.5.12.3   Session Initiation Protocol (SIP) Signaling Interfaces

The ▇▇▇▇▇▇▇▇ telephony server runs a SIP user agent (SIPUA) to set up, modify, and tear down VoIP calls. The SIPUA populates call information in ▇▇▇▇▇▇▇▇▇▇▇, provides call events to applications, and supports

Use or disclosure of data contained on this sheet
is subject to the restriction on the title page of this proposal
      AT&T Proprietary   **Page 1052 of 1474**
December 13, 2006

application call-control activities. The SIP interface provides the signaling necessary to support full-feature parity for call handling. The SIP signaling standards supported are: Request for Comment (RFC) 3261, 3311, and 3265, and other approved and draft standards (e.g., MWI Event Package for SIP).

The ███████████ telephony server accepts incoming calls, makes new outgoing calls, transfers calls retaining access to dual tone multiple frequency (DTMF) signaling from the original caller (instead of hair-pinning to maintain DTMF access), and transfers calls with no further interaction with the original caller. Outgoing call setup also supports the same call information per secure sockets 7 (SS7) and primary rate interface (PRI) signaling, such as calling party number and carrier code.

1.5.12.4   VoIP/SIP Architecture

The UMS supports VoIP telephony access with SIP signaling to SIP enabled end points. VoIP/SIP standards are followed, such as SIP Invite and SIP Notify and common codecs, including G.729a/b and G.711. The ████████ UMS VoIP telephony server provides Real Time Protocol (RTP) and Real Time Control Protocol (RTCP) interfaces with embedded session descriptor protocol (SDP) for the incoming and outgoing media streams that support calls, specifically audio.

As part of the VoIP service, a SIP proxy runs on each VoIP server instance. Each proxy load-balances incoming calls only to the next available VoIP server at the hosted site. The load-balancing algorithm will divert TUI load from the VoIP server running the proxy to the least loaded backend and application systems to maintain proxy responsiveness and TUI performance. To achieve high availability and high performance, a pair of VoIP servers will provide an active/hot standby pair of SIP proxy servers for each site with

Use or disclosure of data contained on this sheet
is subject to the restriction on the title page of this proposal   **AT&T Proprietary**   **Page 1053 of 1474**
December 13, 2006

VoIP servers. **Figure 1.5.12.4-1** shows the SIP call flow for a typical session access using the VoIP access method.

Figure 1.5.12.4-1: Typical VoIP access call flow for voice message generation. ████████████████
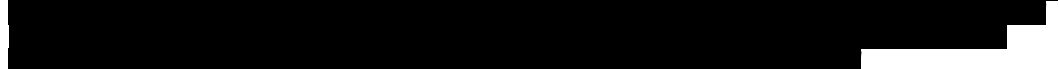
1.5.12.5   Web Messaging Architecture

Figure 1.5.12.5-1 displays the █████ web MS solution, which includes scalable web messaging front-end and back-end servers. The Web messaging back-end server interfaces to the █████ using standard IMAP4 and lightweight directory access protocol (LDAP) to exchange subscriber data. Web Messaging uses simple mail transfer protocol (SMTP) to send messages on █████ to external mail servers. By supporting these standard protocols,

████████ has the flexibility to integrate with other web portals. Integrations of existing or third-party web portals will be considered on a custom basis.

Figure 1.5.12.5-1: Messaging Front-End/Back-End Architecture. ████████████████████

Using this group of servers that are integrated into the AT&T VoIP architecture provides Agencies with messaging access and manipulation capabilities from multiple networks using multiple protocols and devices.

1.5.12.a   Attributes and Values of Service Enhancements [L.34.1.5.4.a]

(a) 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. [L.34.1.5.4.a]

Our proposal highlights features ████████ the specified requirements, including ███████████████████████████████ ███████████████████ (**Table 1.5.12.a-1**).

SERVICE ENHANCEMENT	DESCRIPTION	BENEFIT
████████	████████████████	████████████
████████	████████████████	████████████

SERVICE ENHANCEMENT	DESCRIPTION	BENEFIT
███	████████ █████████ ███████ ████	████████ ████████ ███
	████████ ████	
	████ ████	
███ ███	███████████████ ███████	██████████ ███
	█████████████	████ ███
	█████████	███████████ █████
	██████ ██	
███ ████	███████████ ████	█████████ ████
	█████████ █████	████ ███
	███████████	████ ███
	████████ ██	██████████ ████
	███	

Table 1.5.12.a-1: ████ **Features.** █████████████████████████████

███

███

██

██

██

██

██

███

██

███████████████████████████████████████

1.5.12.a.1   Personal Operator

███

███

███

██

██████████████████████████████████████

1.5.12.a.2   Web Messaging

██

███

███

██████████████████████████ **(Figure 1.5.12.a-1)**. ███████████████

███

██████████████████████████████

██████████████████████████   ████████████████████████

        ███████████   ██████████

████████████████████████   ████████████████████████

        ████████████   ████████████████████████

████████████████████████   • ████████████████████

        ████████   ████████████████

Figure 1.5.12.a-1: ███████ **Web** ████████████████████████
████████████████████

1.5.12.a.3   Speech Messaging

██
██
██
██
██
██
██
███████████████████████

██
██
██

Figure 1.5.12.a-2 ████████████████████████████████████

Figure 1.5.12.a-2: Speech ████████ Commands. █████████████████████
████████████████████

1.5.12.a.4   Speech Dialing

██

██

██

██

██

██

████████████████████████████████

1.5.12.b   Management and Applications Services Experience [L.34.1.5.4.b]

(b) A description of the offeror's experience (including major subcontractors) with delivering each proposed optional service. [L.34.1.5.4.b]

███ is a telecommunications industry leader supplying products and services to the Government and telecommunications service providers worldwide. ████████

designs, implements, operates, monitors, and maintains a world-class multi-vendor and multi-technology voice/data-converged network.

█████ is one of the industry's most experienced and knowledgeable network services organizations. ████████████████████████████████

██

██

██

██

█████████

█████ has the background to provide a smooth migration of subscribers from embedded legacy voice mail platforms. █████████████████████████

██

██

Technologies brings the following capabilities and benefits to the hosted solution:

- Ability to extend services across traditional and next-generation endpoints by leveraging its significant embedded network assets.
- Improved time to market by using █████ as a one-stop shop for "engineer, furnish, install, and integrate."
- Market Leadership:
  - No. 1 in code division multiple access (CDMA) technology (Dell'Oro Group, 12/31/04)
  - No. 1 in optical switching (Dell'Oro Group, 09/30/04)
  - No. 2 in dense wavelength division multiplexer (DWDM) Long Haul (Dell'Oro Group, 12/31/04)
  - No. 2 in Synchronous Optical Network/Synchronous Digital Hierarchy Asynchronous Disconnected Mode (SONET/SDH ADM), (Dell'Oro Group, 12/31/04).

In addition, ▮▮▮▮ has established relationships with the Government that will enhance the services to Networx, such as:

- Dedicated team working with Government Agencies
- ▮▮▮ a dedicated resource for providing Government customers with superior communications solutions using advanced technology.
- ▮▮▮▮▮▮▮▮▮▮▮▮▮▮▮▮▮▮▮▮▮▮▮ a diverse body of former senior U.S. Government officials and policymakers that will provide ▮▮▮▮▮ ▮▮▮▮▮▮▮▮▮▮▮ with guidance and advice, ▮▮▮▮▮▮▮▮▮▮▮▮ ▮▮▮▮▮▮▮▮▮▮▮▮▮▮▮▮▮▮▮▮▮▮▮▮

▮▮▮▮ is uniquely qualified to provide hosted messaging services. ▮▮▮▮▮ ▮▮▮▮▮▮▮▮▮▮▮▮▮▮▮▮▮▮▮▮▮ for example, provides the following benefits:

- Applications and platforms
- Operations, management, and maintenance of equipment and applications
- Tier 2 and 3 support for equipment and applications
- Optional Tier 1 customer interface services.

In addition, ▮▮▮▮▮▮▮▮▮▮▮▮▮▮▮▮▮▮▮▮▮▮▮▮▮▮▮▮▮▮▮▮▮▮▮▮ ▮▮▮▮▮▮▮▮▮▮▮▮▮▮▮▮▮▮▮▮▮▮▮▮▮▮▮▮▮ and provides the following benefits:

- Secure, dedicated facility with environmental redundancy
- Onsite staff for 24x7 service and support
- Proven experience managing service provider networks, applications, and network elements.

These capabilities offer FTS the following advantages:

- UMS solution that is economically scalable at all subscriber levels
- ▮▮▮▮▮▮▮, proven Internet protocol (IP)-based next-generation messaging platform with over 35 million mailboxes deployed worldwide

- Number One service provider for messaging in North American market.

1.5.12.c   Approach to Perform Service Verification [L.34.1.5.4.c]

(c) 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. [L.34.1.5.4.c]

AnyPath is designed to be highly available for answering calls and accepting messages. **Table 1.5.12.c-1** provides the AnyPath Messaging System reliability measurements.

KEY PERFORMANCE INDICATOR	SERVICE LEVEL	PERFORMANCE STANDARD (THRESHOLD)	PROPOSED SERVICE QUALITY LEVEL
Availability	Routine	99.7%	99.7%
Time to Restore	Without Dispatch	4 Hours	4 Hours
	With Dispatch	8 Hours	8 Hours

Table 1.5.12.c-1: Messaging System Reliability Measurements. *AnyPath provides high reliability and peak performance through the use of hot swappable components, mirrored disk arrays, and redundant architecture.*

LWS technical support personnel use an internal service-tracking program to provide timely resolution of issues. Service issues are addressed according to severity and escalated within a specific time period. **Figure 1.5.12.c-1** displays the criteria for escalation in the service-tracking hierarchy.

Figure 1.5.12.c-1: Service

1.5.12.d   Service Delivery Network Impact [L.34.1.5.4.d]

(d) A description of how the delivery of any optional services would impact the network architecture (e.g., security, quality and reliability, performance). [L.34.1.5.4.d]

Due to the modular, scalable, layered architecture of the AT&T service oriented architecture (SOA), applications such as UMS have no impact on the network architecture. In the AT&T SOA, UMS simply becomes a service node within the overall VoIP architecture.

1.5.12.e   Approach to Satisfy NS/EP [L.34.1.5.4.e]

(e) A description of the offeror's approach to satisfy each NS/EP basic functional requirement listed in Section C.5.2.2.1.1. [L.34.1.5.4.e]

According to the RFP, National Security/Emergency Preparedness (NS/EP) does not directly apply to UMS. Refer to Section 1.3.5(a) for more information on overall NS/EP issues.

1.5.12.f   National Capital Region Assured Service Network Architecture [L.34.1.5.4.f]

(f) 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. [L.34.1.5.4.f]

AT&T's approach to satisfy assured Service Network Architecture for the National Capital Region is covered in detail in Section 1.3.5.c, National Capital Region Assured Service Network Architecture in the Network Architecture section of the Technical Volume.

1.5.12.g   Section 508 Requirements [L.34.1.5.4.g]

(g) A description of the offeror's approach for providing the capabilities needed to meet Section 508 provisions identified in Section C.6.4 for the proposed optional services. [L.34.1.5.4.g]

AT&T's approach to complying with Section 508 provisions is covered in detail in Section 1.3.5.d, Section 508 Requirements, in the Network Architecture section of the Technical Volume.

1.5.12.h   Approach to Incorporating Optional Services, Enhancements, or Improvements [L.34.1.5.4.h]

(h) A description of the approach for incorporating into the proposed optional services, technological enhancements and improvements 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. [L.34.1.5.4.h]

████████ is a proven unified messaging solution that was first released to the market several years ago as a direct replacement of ██████████████ system. The ██████████████ Application messaging solution has over ██ ██████████ subscribers deployed globally. Since ████████ initial release, there have been five major releases annually and more ██████ ████████████████████ deployed globally.

██████ uses a proven development and test process to bring new features and functionality to its products. All ██████ solutions adhere to a structured quality gate process to verify product releases are high quality and on time, and meet customer requirements. **Table 1.5.12.h-1** provides a brief description of each quality gate.

QUALITY GATE	DESCRIPTION
Q14 – Concept/Feasibility	Onset of project; includes opportunity statement, functional product needs, and funding. **Feature Request - Customer requirements submitted.**
Q13 – Feasibility/Commitment	Market requirements, staffing plan, and draft feature list provided.
Q12 – Project Definition	Funding plan, product support plan, and **Feature Definition baselined.**
Q11 – Preliminary Project Planning	**Final feature list baselined**; Architecture, Feature, and Requirements documents assigned.
Q10 – Requirements Complete	Architecture, Feature, and Requirements documents baselined; Draft of Language Roadmap; Budget aligned.
Q9 – Project Commitment Business Plan	Product Roadmap, NPI Project Plan, Development Commitment Letter baselined.
Q7 – Software Implementation/Code Complete	Product Plan, Language Roadmap baselined. **FOA Customer Committed**; Hardware ECO for FOA submitted.
Q5 – Testing Commitment/Ready for Demos	System verification and interoperability tests 100% attempted; Software ECO for FOA submitted; Factory System Test (FST) in process; **FOA Test Plan in draft.**
Q4 – Ready for FOA <<define>>	**Product available for FOA customer install and testing**; Call completion, Performance capacity testing, system verification and interoperability tests all 92% passed; FOA Language CDs available for FOAs; Final versions of customer documentation and training; FST tests passed; **Web orderable interface available**; Various support functions operational.
Q1 – General Availability	**FOA testing complete and passed**; QFA stability 100% passed; Call completion and performance capacity testing 95% passed; System verification and interoperability tests 95% passed; **GA Pricing sheet available**; Various support functions executing.

Table 1.5.12.h-1: Quality Gate. *The quality gate process is followed by* ▮▮▮▮▮ *product management, engineering, manufacturing, order processing, and executive management.*

▮▮▮▮▮▮ product and development teams gather input from the customer base and technology advances to determine the features for each release schedule. Customer requirements are captured by a feature request document, which is reviewed by the ▮▮▮▮▮ team and scheduled on the release roadmap, based on requirement need and development effort. The ▮▮▮▮▮ release roadmap document is updated quarterly and shared with customers regularly for planning purposes.

Further information on AT&T's overall approach for incorporation of infrastructure enhancements and emerging technology is covered in detail in Section 1.3.3.d, Network Evolution, Convergence, and Interoperability in the Network Architecture section of the Technical Volume.

1.5.12.i   Approach to Service Delivery [L34.1.5.4.i]

(i) A technical description of how the service requirements (e.g., capabilities, features, interfaces) are satisfied for each proposed optional service. [L34.1.5.4.i]

The UMS Messaging System is interconnected to the AT&T VoIP network and the AT&T Internet and AT&T IP Core. Through these three network connections the UMS system can be accessed by Agency workers from a variety of locations. The UMS systems can also interact with non-agency message senders and recipients through various network conversions and interconnections such as the VoIP interconnect with the PSTN. The core of this interconnectivity lies within the data and voice conversion systems coupled with the message management conversion and connectivity tools. **Figure 1.5.12.i-1** shows the UMS systems and network interconnectivity with the message management and conversion tools and systems at the center of message management.

Figure 1.5.12.i-1: The UMS systems and network connectivity approach. *The UMS systems provide various types of messages and network interconnectivity through a set of user specific and automated message management and conversion tools.*

This approach to providing the UMS allows multiple service types to be implemented into a platform that has a single look and feel. Further this approach to UMS allows for the addition of future messaging types and contact networks as those technologies become available. **Table 1.5.12.i-1** below outlines the approach to the basic existing UMS features.

FEATURE	APPROACH	BENEFIT
The UMS Internet and web accessibility is provided and can use most web browsers including Internet Explorer and Netscape	The UMS server platforms are connected to the Internet via connections to the AT&T Internet core. A browser agnostic web portal is used to serve application data to users on the Internet	Government UMS users can access their messages from a variety of locations and platforms
The UMS provides a mailbox with a secure login and authentication	The UMS platform is mailbox oriented and requires that users log in using a touch tone PIN from telephone devices or by using a password PIN when using an Internet device	The mailbox usage is restricted to the intended individual keeping errant and untraceable malicious message out of the system

FEATURE	APPROACH	BENEFIT
The UMS provides the capability to navigate the mailbox through easy to use management commands including: • Message playback. Annotate or reply to email messages • Create distribution lists • Forward email messages to a fax machine. • Receive a fax as email • Message notification and prioritization. • Message notification to different • Personal greetings • Return a call while listening to voice mail.	• User's messages are stored in a single message store in a format that is easily convertible to any needed format • Agency users are able to operate the system, hear, read and move messages by accessing easy to use tools that are provided as front ends to the message store • Agency users can load and manage their contacts list in order to assist with "name recognized" navigation and sender/receiver labeling • In addition to the traditional UMS navigation tools, the UMS provides the ability to navigate message and make telephone calls using voice commands	• Government users can easily navigate the UMS system and have access to messages that were created in multiple formats • Forwarding messages in all of the standard formats is also easily accomplished

Table 1.5.12.i-1: The basic UMS features are provided by message management tools. *The basic UMS features are implemented using a core set of management and conversion tools that acts as a translator to go between the sender and recipient networks and the message store.*

Some of the features of the UMS are available due to the approach and architecture of the system. For example, using the same advanced speech to text engine that provides message format conversion from the services core message handler allows the system to be navigated completely using voice commands. Unlike other voice enabled systems, these commands do not need to be pre-recorded by the users and are less susceptible to background noise. Below, **Table 1.5.12.i-2** outlines the core systems based features of the UMS including the voice navigation capabilities.

FEATURE	APPROACH	BENEFIT
Use of Automatic number information (ANI) throughout the system	Using data that is available from the SIP VoIP interface, including ANI, data is tagged with caller information to assist in identifying the calling party automatically	Agency workers are able to better sort trough messages of importance for a more prompt reply or faster delivery of needed information
Text to speech engine translates text based messages	By placing the text to speech engine in the front end set of tools it is accessible for use when needed for interfaces that only receive audio	Users can retrieve messages left in multiple formats from multiple telephone based locations
Message Filters	Filters in place and on the development roadmap are based on time of day user presence and ANI	Agency workers can receive message notifications outside of the format the message may have originated in making them more productive

FEATURE	APPROACH	BENEFIT
Information management: • contact information • import and export UMS calendar and address book • synchronize contact information	• Contact information is managed via web Interface or by importing, including several different telephone numbers (i.e. business, mobile, fax) per contact. • Synchronization of the personal address book is supported through a re-importing process.	Agency workers will save time and effort using the contact information in their mailbox to manage and identify messages or to place calls form the UMS using voice dialing
UMS voice message available in a standard file format such as .wav	Message files are stored in the CELP format to allow for more accurate message operations such as text to speech and speech recognition. All audio messages are made available to users in .wav format.	Agency users benefit from both the use of MP3 or Wav based file playback, and the advanced features that can only be provided using a voice codec such as CELP
Access number assignment	All assigned numbers associated with the UMS come from the public block of numbers which can be moved between carriers using LNP.	This allows Agencies to retain their telephone number upon termination of service or at contract expiration
Follow Me Service	• True Follow-Me (Fm-Fm) service is provided using the AT&T follow me capabilities that are built into the VoIP network • Message notifications are sent to multiple devices providing a follow me message path that is equal to the path of true Fm-Fm service.	Agencies will be able receive message notifications in multiple locations over varying devices
Speech Enabled (Activated) Messaging	• Allows a subscriber to say simple, direct requests such as "Next Message" and "Delete Message" to navigate through their mailbox. This provides a speech command interface to the subscriber's Voice Mail, e-mail, video mail, and fax messages already accessible via the standard touch-tone interface. • ▮▮▮▮ enhances Speech Messaging with support for sending and forwarding of messages (using the Personal Address Book feature), and greeting administration. Speech Messaging also supports fall-back to DTMF commands as needed.	• Agency users can navigate all of their messages form any telephone. • Voice dialing allows users to access their contacts list from any phone any time using purely voice commands, including dialing and connecting to contacts

Table 1.5.12.i-2: The core UMS architecture provides unique features. *Additional and advanced features are provided by the core architecture and approach to message storage, creation and management.*

In addition to the general support of features and functionality, the data center based architecture allows for a high degree of systems availability through systems monitoring and maintenance. Since the majority of email and other universal type messaging systems are based on general computing platforms, this monitoring and maintenance approach has advantages to the use of distributed systems such as routers and other network access devices.

1.5.12.j   Service Quality and Performance [L34.1.5.4.j]

(a) A description of the quality of the services with respect to the performance metrics specified in section C.2 Techicnical Requirements for Each Proposed Optional Service, and Other Performance Metrics Used by the Offeror [L34.1.5.4.j].

███████ is designed to be highly available for answering calls and accepting messages. **Table 1.5.12.j-1** provides the ██████ Messaging System reliability measurements.

KEY PERFORMANCE INDICATOR	SERVICE LEVEL	PERFORMANCE STANDARD (THRESHOLD)	PROPOSED SERVICE QUALITY LEVEL
Availability	Routine	99.7%	███████
Time to Restore	Without Dispatch	4 Hours	███████
	With Dispatch	8 Hours	

Table 1.5.12.j-1: Messaging System Reliability Measurements. ██████ *provides high reliability and peak performance through the use of hot swappable components, mirrored disk arrays, and redundant architecture.*

The UMS consists of a combination of the AT&T VoIP network and the IP and Internet core networks, along with the ████████ UMS applications systems running in the ██████ data center which are monitored and managed 24x7x365. The systems are running in a network distributed environment within the ██████ data centers and are configured to fail-over to redundant processors in the event if a single processor or network failure.

While a single function processor system may exhibit availability as low as 99.8%, the distributed failover capability typically drives the per function availability into the 99.995% range. On the lower end of the availability scale, also at 99.8%, are systems such as the Fax receive and forward system and email forwarding which do not support the volume or type of processing that lend it to distributed processing.

Since overall availability is a function of the serial usage of the network and up to three of the functional blocks within the ██████ UMS data center, the overall systems availability is given by the equation:

$$(\text{Availability}_{acss})(\text{Availability}_{Msa})(\text{Availability}_{HndlStr})(\ (\text{Availability}_{Cvrsn})$$

In this equation the overall availability of the systems are as follows:

Access-Network/Port (Acss) – 99.996%
Message Access via UMS tool set (Msa) – 99.995%
Message-Handler/Message-Store (HndlStr) – 99.995%
(Email or PSTN) Message Conversion Systems (Cvrsn) - 99.8%

Placing the individual availability numbers in the equation produces the following result:

(.99996)(.99995)(.99995)(.998) = .9978 or 99.78% Available

Due to the lack of dispatch needed, quality of service is solely dependent on the multiplicative effect UMS systems and access network availability. Using the network distributed environment within the ▮▮▮ data center, the overall availability of the service meets the needs of the Government.

1.5.12.6   Narrative Text Requirements

1.5.12.6.1   UMS Method [C.2.11.11.1.4 (1)]

The following Unified Messaging Service capabilities are mandatory unless marked optional.
1. The contractor shall describe the proposed method(s) of UMS. [C.2.11.11.1.4(i)]

The UMS provides service using a mixed environment that includes both the unified messaging model and the integration of disparate messaging systems. The integrated messaging approach is provided to leverage the existing email server, such as ▮▮▮▮, and limit the subscriber impact during migration and use (**Figure 1.5.12.6-1**). The ▮▮▮ integrated messaging configuration includes the front end VoIP/Fax servers, automatic Speech recognition (ASR) and text to speech (TTS) servers, backend message processing and application servers, and a message store for message file holding. Also included are the Simple Mail Transfer Protocol (SMTP) mail relay point and the web access portal. At the customer location, the simple message desk interface (SMDI) to time division multiplexing (TDM) gateway (GW) provides SMDI messaging access for private business exchange (PBX) equipment that uses SMDI for traditional voice messaging access.

Aside from the ability to integrate with the Agency's existing email system, the UMS architecture provides a single storage and processing environment for

all non-email related messaging. This mixed environment provides a fully featured unified messaging product without requiring the Agencies to abandon prevailing technology.

Figure 1.5.12.6-1: Unified Messaging Architecture.

1.5.12.6.2   Capability to Import and Export [C.2.11.11.1.4 (8)]

The following Unified Messaging Service capabilities are mandatory unless marked optional.
8. The contractor shall provide the capability to import and export UMS calendar and address book information to Agency information stores, synchronize contact information with PDA's, and support directory services (including but not limited to Active Directory). [C.2.11.11.1.4 (8)]

The subscriber is able to easily manage contact information using the

The subscriber can manage his contact list using Web Messaging and/or Speech Messaging. The subscriber is able to maintain

using voice enrollment from the Speech Messaging user interface. The subscriber is able to export   from their

to a comma separated value (CSV) file or LDIF file for email clients, such as   . They can then upload the file to their personal contact list using Web Messaging.

The commands for voice enrolling contacts using Speech Messaging are identified in **Figure 1.5.12.6-2**. ████████████████████

██

██

Figure 1.5.12.6-2: ██████████████████████ **Commands.** ████████████████████████

1.5.12.6.3   Storage of Files [C.2.11.11.1.4 (9)]

The following Unified Messaging Service capabilities are mandatory unless marked optional.
9. The contractor shall store UMS voice message files in a standard file format (.wav or .mp3). [C.2.11.11.1.4 (9)]

The UMS stores messages in three basic formats related to its support for and integration with VoIP telephony. These three formats are based on standard codec-generated waveform or speech type digital transport technologies. The three formats are as follows:

████████████████████

██

██████

██████████████████████████████

██████████████████████████████

████████████████████████

██

██████████████████

*Use or disclosure of data contained on this sheet
is subject to the restriction on the title page of this proposal*   **AT&T Proprietary**   **Page 1067 of 1474**
December 13, 2006

The preferred method is to use the ████████ method for storage as it offers two distinct advantages over .wav or .mp3 file formats as shown in **Table 1.5.12.6-1**.

ADVANTAGE	DESCRIPTION	BENEFIT
File Size	████████████████████████	• File storage in the UMS system or on users PC's in minimized potentially reducing cost and lowering processing time. • Playback transport time is reduced making playback seem more natural.
Operability	████████████████████████	• Operations such as automatic speech generated dialing and speech to text capabilities are processed close to real time make the service more seamless in use. • Responses to spoken commands and playback seem more natural.

Table 1.5.12.6-1: Advantages Using ████████. *Using ████████ as a file format allows for direct automated operations that recognize components of spoken language, a capability not available from other formats such as mp3. In addition, ████████ files are smaller, which lowers storage costs, speeds transfer rates, and avoids conversion delays, thus improving playback and response times.*

For ease of use ,the UMS system provides two user options for file delivery. From the web portal, users can select to receive files in either ████████ or ████████. When using the ████████ delivery format, users play the audio files using the ████████ playback browser plug-in which automatically launches when the ██████████████████ If the ██████ format is selected, users are sent files that have been converted ██████ by the UMS core system, ████████████████████████████ and sent as part of a standard email message.

The ██████ platform currently does not support storage of ████████ ██████████████████████ as with licensing rights and patents issues.

1.5.12.6.4   User Authentication [C.2.11.11.1.4 (10)] (Not proposed)

The following Unified Messaging Service capabilities are mandatory unless marked optional.
10. The contractor shall provide strong authentication access and security by means of voice recognition and voice print, if required, by the subscribing Agency. [Optional] [C.2.11.11.1.4 (10)]

1.5.12.7   Stipulated Deviations

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

1.5.12.7.1   Reserved