

3.0 WITS Technical Approach

Verizon is the unmatched leader for mission critical network infrastructure in the National Capital Region (NCR). Managing the current [REDACTED], [REDACTED], [REDACTED] WITS network gives Verizon the ability to far exceed the standard level of customer service provided by any other telecommunications provider. [REDACTED], [REDACTED], [REDACTED], [REDACTED], Verizon has continuously invested in this infrastructure, providing both a solid foundation and a platform for innovation to meet evolving Federal telecommunications needs. For WITS 3, Verizon is bringing together the combined capabilities of the current WITS2001 offered by Verizon and the new services that result from the merger with MCI Communications.

Given the mission-critical nature of telecommunications services and the fact that a vast majority of Federal agencies in the NCR use WITS2001 to procure them, Verizon understands the importance of service continuity for WITS 3. Choosing Verizon as GSA's partner for WITS 3 helps ensure the Federal Government's core mission critical network infrastructure services will continue uninterrupted.

The following sections describe Verizon's network architecture and infrastructure supporting the delivery of an unmatched offering of voice and data services to WITS 3 customers. ***From today's Central Office Exchange Service (Centrex) and Private Branch Exchange (PBX)-dependent environment to the Internet Protocol (IP)-Based architecture of the future that will converge communications, information, and entertainment services, Verizon's 360° of Service means total service coverage and continuity throughout the NCR and comprehensive integrated end-to-end solutions to all WITS 3 customers.***

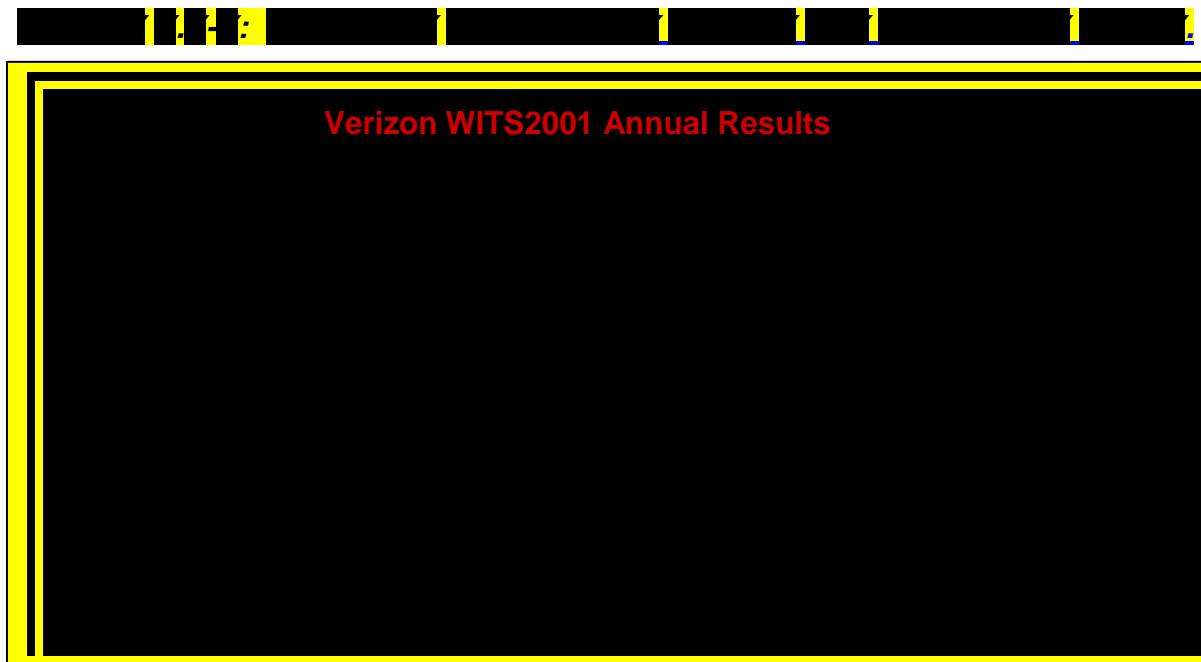
To provide supplemental information to Verizon's WITS 3 Technical Approach, three appendices have been included at the end of this volume of the

proposal:

[Redacted content]

3.1 Verizon's Network Architecture and Services (L.30.1.3.1)

Verizon's WITS 3 architecture is in place and [REDACTED] in the NCR. The current WITS network, designed by Verizon in partnership with the Government, offers Government users optimized local service functionality using the most advanced and cost-effective networks available today. *Figure 3.1-1: WITS2001 Operations* demonstrates Verizon's successful performance in operations and maintenance of the existing WITS2001 network.



The experienced personnel and proven procedures that currently provide these services are in place to make certain that the same level of quality performance metrics will continue without interruption to the WITS 3 network.

This infrastructure will provide WITS 3 customers unmatched service offerings. The WITS 3 service offerings and interfaces available will include Voice Services (VS; 3.2.1), Circuit Switched Data Service (CSD; 3.2.2.1), Dedicated Transmission Service (DTS; 3.2.2.2), Teleconferencing Service (TS; 3.2.2.3), Frame

Relay Service (FRS; 3.2.2.4), Asynchronous Transfer Mode Service (ATMS; 3.2.2.5), Dark Fiber Service (DFS; 3.2.2.6), Internet Access Service (IAS; 3.2.2.7), and Gigabit Ethernet Service (GES; 3.2.2.8). All of these service offerings are currently available and being successfully delivered using the existing Verizon network. *Figure 3.1-2: Verizon WITS 3 Service Offerings* displays Verizon’s service offerings which are discussed in detail in Proposal Section 3.2 Voice Services.

Figure 3.1-2: Verizon WITS 3 Service Offerings

Verizon will provide WITS 3 technical solutions for all Mandatory Voice and Optional Data Services, Customer Premises Equipment and Technical Support requested by GSA and more.	
Verizon’s WITS 3 Voice Services	Verizon’s WITS 3 Data Services
<ul style="list-style-type: none"> ▶ Analog Trunking, Digital Hand-off & ISDN PRI for TDM PBXs ▶ Centrex Analog & ISDN BRI ▶ IP Trunking for IP PBXs ▶ Hosted IP Centrex (HIPC) ▶ Fully-managed VoIP solutions based on agency-specific requirements 	<ul style="list-style-type: none"> ▶ Circuit Switched Data Service (CSDS) ▶ Dedicated Transmission Service (DTS) including SONET & DWDM ▶ Audio & Video Teleconferencing (TS) ▶ Frame Relay Service (FRS) ▶ Asynchronous Transfer Mode Service (ATMS) ▶ Dark Fiber Services (DFS) ▶ Internet Access Service (IAS) including Digital Subscriber Line (DSL) access ▶ Gigabit Ethernet Service (GES)

Verizon, as the NCR’s Incumbent Local Exchange Carrier (ILEC), delivers service coverage and integrated end-to-end solutions throughout the NCR. As a facility-based provider, Verizon has invested in the infrastructure and provides services directly on its voice and data switches, interoffice facilities (e.g., multiplexers, copper, and fiber cables), and optical transport services. Verizon’s NCR ILEC status and WITS2001 incumbency ensures direct control over the quality, security, and reliability of the mission-critical network infrastructure and associated services. As the local provider of the Public Switched Telephone Network (PSTN) NCR infrastructure, Verizon delivers a “day one” no risk transition.

Interoperability of next-generation IP/Multi-Protocol Label Switching (MPLS) networks with the PSTN is essential since traditional voice systems will remain in operation for years to come. Verizon has defined a network architecture supporting full interoperability not only among its various internal IP and Time Division

Multiplexing (TDM) networks, but also with the public networks and the private networks of partners and other providers. Verizon is fully committed to using standards-based approaches for address translation and secure interoperability with Network and Defense Switched Network (DSN).

Current WITS2001 Architecture - The Network-Hosted Voice Solution

Verizon Centrex is a managed network-hosted communications service that the majority of enterprise customers use today. Centrex provides mission-critical network infrastructure in the NCR and serves the Government by providing quality service on demand. Voice customers have come to expect this high-quality Centrex service.

As WITS 3 services evolve, Government agencies that use Centrex do not have to worry about large capital outlays for technology that could soon become obsolete. Centrex is a network-based, feature-rich technology. Verizon takes care of implementing new technologies throughout the network. Centrex is one of Verizon's many voice solutions that help the agencies keep focused on their mission.

Choosing Centrex enables the Government to better manage its communications budget while continuing to advance its enterprise goals.

WITS 3 Centrex provides the following assurances:

- A gateway to the powerful Verizon network
- Service@once and Bill@once
- Freedom from the costs of maintenance and technology upgrades
- 24x7 monitoring at Verizon Network Operation Centers (NOCs)
- Ease of integration at multiple locations
- Cost-effective, scalable solution that evolves as needed.

Centrex's open, standards-based platform lets customers take advantage of the power of Verizon's public switched network, and Centrex's comprehensive menu

of standard and optional features makes it easy to create a tailored communications system to meet each Government agency's needs.

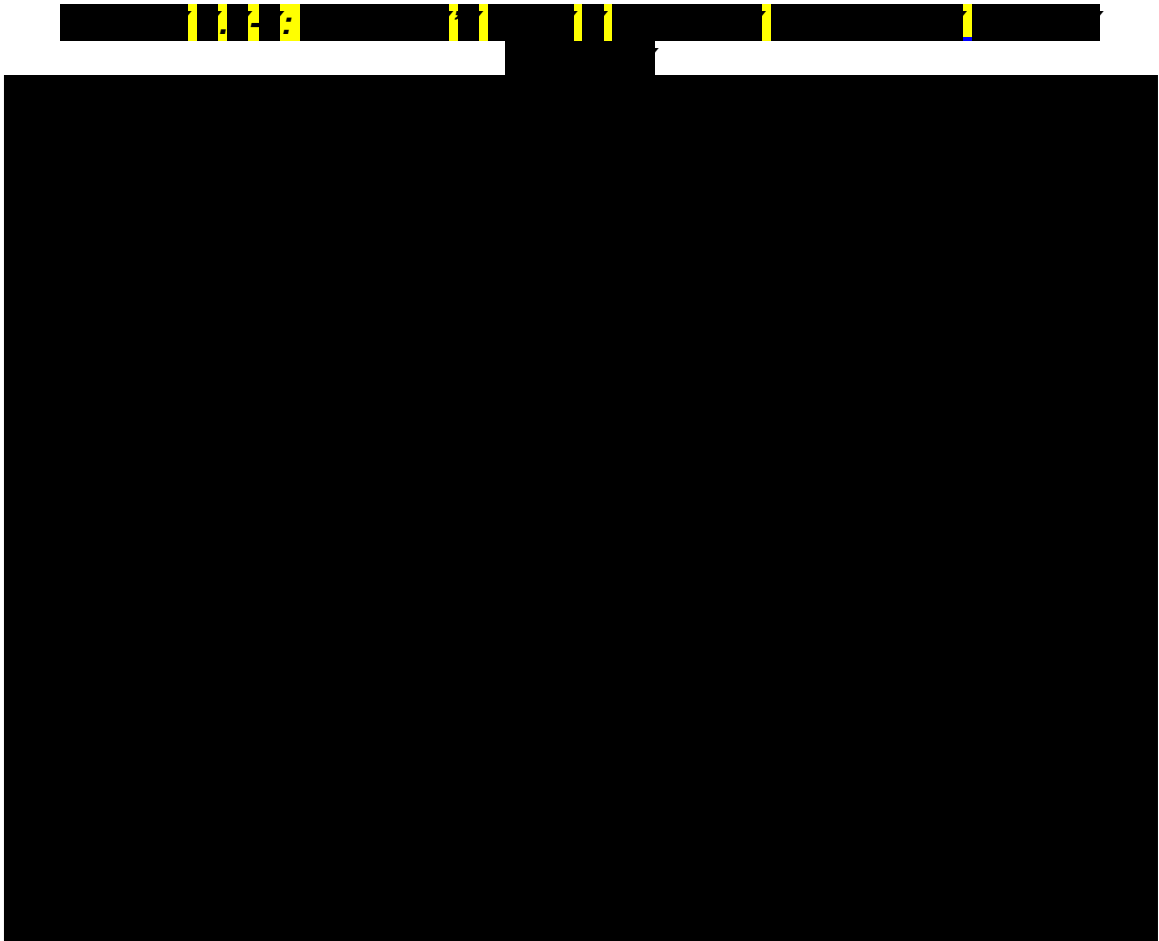
Complementing the Centrex offerings are Verizon's local access portfolio of services including Integrated Services Digital Network (ISDN) Primary Rate Interface (PRI) and analog/digital PBX trunks, which provide communications circuits between the local end office and the Government's PBX. ISDN PRI local access offers a high-speed, intelligent connection to the Verizon network and supports voice, data, video, and applications such as Internet access, remote LAN access, call centers, disaster recovery, and file transfer.

Evolving WITS Architecture – Toward Convergence

Verizon recognizes the need for integrating existing customer solutions with interconnected convergence elements. Converged solutions mean more than just putting voice and data over the same network. It also means putting traditional and next-generation solutions and services together to meet enterprise business needs.

Verizon is implementing a Converged IP Core Network – one that is based upon an IP/MPLS meshed network fabric utilizing emerging technologies to build value for customers at the Multi-Service Edge. Verizon is developing applications that enable efficiencies, provide rapid service introduction, and offer the most advanced integrated wireless and wire-line functionality in the world. Verizon's Multi-Service Edge continues to maintain backward integration to the PSTN while enabling advanced functionality, interoperability, and much greater transport effectiveness. Because of these strategic initiatives, Verizon's enterprise customers reap the benefits of both PSTN and IP worlds. End users can have seamless voice, video, and data experiences across both environments.

Figure 3.1-3 Verizon's WITS 3 Network Evolution displays Verizon's vision for moving toward a future converged network.



As the traditional voice telephone network becomes increasingly more integrated with the Internet, Verizon has developed technology to bridge these two worlds by enabling Internet access and the control of telephony features. The Verizon WITS 3 architecture and services provide the end user with the ability to be in charge of such features as station-level call control with call routing, scheduling, and alerting based on individually-defined rules.

A migration from TDM to IP requires leveraging existing assets as much as possible and that TDM and IP communications be interoperable. Verizon supports hybrid environments to enable Government agencies to leverage their existing investments while continually upgrading their services.

A voice transformation toward convergence can involve many interconnected components. Government agencies will want to put voice, data, and multimedia elements together in a way that best supports their needs. Each agency has a unique mission and operating environment and distinct architectural challenges and performance objectives. This diversity demands a unique approach to the planning, selection, implementation, and management of network services. Verizon will work with WITS 3 customers to define network performance requirements in the context of their enterprise objectives and to craft a migration path to next-generation services. While some agencies may choose a phased migration path to next-generation network services and applications, others could implement a major operational and managerial communications restructuring. As shown in Figure 3.1-4, User-Defined Network Evolution, Verizon's infrastructure and architecture supports each agency's ability to converge at their own pace.

Figure 3.1-4: User Defined Network Evolution

Convergence at the Agency's Own Pace

- **Control** your own mix of technology deployments
 - Centrex
 - PBX
 - IP PBX
 - Mobility Solutions
 - New Applications
 - Next Generation Hosted IP Voice Services
- **Evolve** your infrastructure while maintaining business processes
- **Mitigate risk** of changing technology and **protect** legacy investments
- **Avoid forklift upgrade** of existing services to deploy new technologies
- **Migrate** at a pace right for your Agency
- **Leverage** strengths of existing Centrex service

Verizon has solutions which deliver on your current requirements and position you for future evolution – while maintaining the freedom traditional Centrex has always provided.

Verizon will provide Government agencies expertise in managing the evolutionary changes that will come with convergence and will deliver the network architecture to support them. Verizon offers the broadest portfolio of Voice over IP (VoIP) services, including hosted VoIP, managed IP-PBX, SIP trunking, IP conferencing, and hosted IP contact center services. Significantly, Verizon can support SIP trunking on multiple vendor products through diverse access methods such as IP-Trunking, IP-Integrated Access, and IP-Flexible T1. In addition, Verizon is one of the few providers to offer VoIP services that are fully integrated with an IP/MPLS network. Customers will recognize the strength of Verizon's convergence strategy as they look to deploy converged VoIP solutions throughout the enterprise.

As the current WITS2001 provider, Verizon continues to invest in the underlying network infrastructure, wires, fibers, switches, and power upon which government agencies rely for their mission critical NCR services. This infrastructure is the underpinning for next generation convergence services; it is this infrastructure

investment that will make convergence services widely available across the entire NCR to customers and locations of all sizes. It is this high density, high diversity infrastructure—the only one of its kind in the NCR—which will support disaster recovery and COOP services for NCR agencies. ***More specifically, Verizon's network-based IP services provide the next-generation of mission-critical network infrastructure to transport applications across a high-speed, unified, multi-service, IP-enabled backbone infrastructure.***

3.1.1 Interconnecting the WITS 3 Network (L.30.1.3.1 (1.a))

The Verizon WITS 3 solution uses Verizon's local exchange network infrastructure, and therefore by its very nature, is interconnected, interoperable and diverse. XXXXXXX XXXX XXXXXXX XXXX-XXXXXXX, XXXXXX, XXX XXXXXXX XXXX X XXXXXXX XX XXXXXX XXXXXXXXXXX XXXXXXXXXXX XXXXXXXX (x.x. XXXXXXX, XXXXXXX, XXX).

As the ILEC for the NCR, Verizon currently provides standards-based network interoperability that includes local exchange service, intra-LATA toll, and connections to Inter-Exchange Carriers (IXC) for Inter-LATA access and transport.

Verizon is aware of the critical nature of the Government's communications and provides support today for interoperability between [REDACTED]

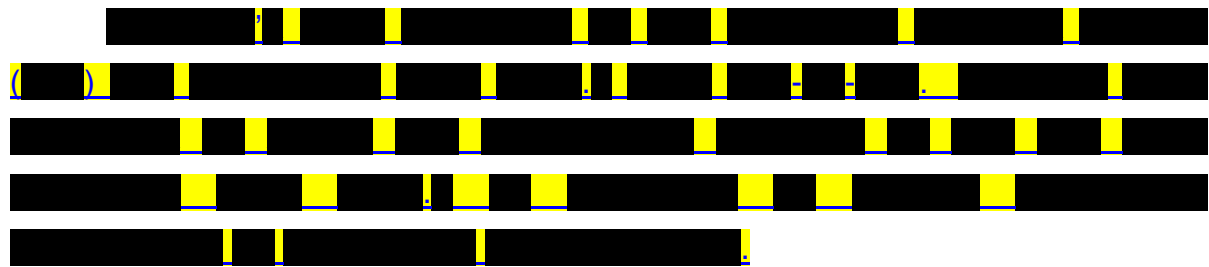
The required interoperability includes software translations and interconnection of physical interfaces with the associated service providers. Verizon has a standards-based network that effectively and efficiently transfers all information and control data within its own network and between its own network and those of any other service providers so that a given service offering operates transparently and without performance degradation for users.

3.1.2 Compatibility with Existing WITS2001 Interfaces (L.30.1.3.1 (1.b))

The Verizon WITS 3 solution, like WITS2001, is based on the same ILEC infrastructure, and therefore by its very nature, is compatible with all prior WITS2001 interfaces.

Verizon will effectively and efficiently transfer all information and control data within its network and between its network and those of any other service providers so that a given service offering operates transparently and without performance degradation for users. The Signaling System 7 (SS7) network that functions as part of the Verizon public switched network provides interoperability with all IXCs that operate within the Verizon local exchange area. This will provide the most advantageous arrangement for provisioning SS7 functionality for WITS 3 customers.

Verizon's voice customers can be assured of reliable, high-quality, cost-effective and innovative services that meet their mission-critical needs.



Verizon is a leader in the development of new standards and complies with them once they are commercially adopted by the telecommunications industry. Verizon is heavily involved with and well represented on [redacted] of the major telecommunications forums, some of which are listed in Table 3.1.1.1.1-2, Verizon's Position on Standards and Standards-Related Forums.

[Redacted header line]

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TSC* - Technical Subcommittee

This involvement helps assure Verizon’s customers that the company will continue to provide high quality services in this fast paced evolution of the telecommunications world.

3.1.3 Meeting DOD MLPP Requirements (L.30.1.3.1 (1.c); C.2.2.2.1)

Verizon will meet the DoD specified Multi-Level Precedence and Preemption (MLPP) requirements as identified in the Chairman of the Joint Chiefs of Staff Instruction (CJCSI) 6215.01B and DOD Instruction 8100.3, Department of Defense (DoD) Voice Networks and *Section C.2.2.1 of the WITS 3 RFP* by implementing the MLPP features

[REDACTED]

3.1.4 Ensuring Local Number Portability (LNP) (L.30.1.3.1 (1.d))

The Federal Communications Commission (FCC) has identified Metropolitan Statistical Areas (MSAs) in which Service Provider Portability (SPP) and Location Portability (LP) will be implemented. The telecommunications industry has developed architectures and systems to provide SPP/LP, which rely on the existing SS7 network and an interconnecting arrangement of rate and route databases. This capability provides users who remain at the same location the ability to change local service providers or locations. Verizon has completed all hardware and software installations to provide SPP/LP.

The Verizon Service@once system is capable of supporting LNP, both SPP and LP, within the WITS 3 network upon implementation. If legally and technically

possible, as specified in the RFP, Verizon will provide customers migrating to the WITS 3 network the option of retaining their current telephone number.

3.1.5 WITS 3 Evolution (L.30.1.3.1 (2))

Verizon's network infrastructure is managed to support traffic growth, evolution in service requirements, advances in technology, and changes in the regulatory environment. When advances in technology have been fully tested and certified in Verizon's laboratories and first office application trials, Verizon systematically plans and transitions to new technology that continues to support legacy and next-generation customer services. This methodology effectively eliminates the discontinuance of network elements until such time as new technology becomes standard. Just as the Verizon network evolved from analog/digital technologies and Time Division Multiplex (TDM) to packet switching, the company consistently keeps on top of the best, most beneficial technologies.

[REDACTED]

[Redacted text block]

Verizon is changing the customer user experience by providing consistent features and availability across the country. Today, a Centrex solution in one area may have a different feature set than that offer in another part of the country and that can impact the efficiency and training of end users. The Verizon hosted VoIP offering will include Web-enabled access to a uniform feature set in addition to access codes from remote locations. It will be easier to manage features with the use of a robust administrator Graphical User Interface (GUI). Because of these improvements, end users will have greater control over their features.

Choosing Centrex enables the Government to better manage its communications budget while continuing to advance its enterprise goals.

Verizon has emerged as one of the leading communications companies in the country. By virtue of its scale, scope, and network management experience, Verizon has broken through the traditional barriers to become a true national carrier. It has spent a long time preparing for this opportunity building the networks, the support structures, and the product sets required to successfully compete in this complex market.

[Redacted text block]

[REDACTED]

If an enterprise subscribes to network-based products, such as Centrex and other hosted services, they gain the full benefit of the network advancement without worrying about technology, administration, maintenance, or key software upgrades. Verizon takes care of the basics of communications technology to free enterprises to gain the maximum value from their business. Verizon continues to respond to a rapidly changing regulatory environment.

[REDACTED] Verizon will continue to respond, as needed, to regulatory changes.

3.1.6 WITS 3 Service Coverage Footprint (L.30.1.3.1 (3))

No other WITS 3 service provider can offer the service coverage of Verizon. In addition to covering the [REDACTED]

[REDACTED]

No other service provider can provide the density and reach of Verizon throughout the NCR, ensuring that there is no "digital divide" in serving both large and small agency offices.

[REDACTED]

