

ADDENDUM 7 TO APPENDIX 8 TO SCHEDULE 3.3 TO THE
COMPREHENSIVE INFRASTRUCTURE AGREEMENT
STATEMENT OF TECHNICAL APPROACH

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Statement of Technical Approach to Data Network

Northrop Grumman will deliver a reliable, scalable and secure network infrastructure to the Commonwealth that is managed across a single multi-service network. Northrop Grumman will provide network-centric managed services that deliver rigorously measured and reported metrics to meet or exceed the aforementioned SLAs.

Northrop Grumman will transform the existing network to MPLS VPNs. Northrop Grumman will mitigate the risk of transformation by building gateways between the FR/ATM and the MPLS VPNs to maintain interoperability. Northrop Grumman will leverage MCI as a partner to minimize risk in the access migration.

Northrop Grumman will re-address the network by reusing the Commonwealth of Virginia's existing class B Internet Protocol (IP) addresses to obtain meaningful prefixes based on geography, agencies and buildings that eliminate duplicate private addresses, minimize the size of routing tables and allow route summarization. This is a prerequisite for the migration toward network-based services over the new MPLS VPN network.

Detailed Managed End-to-End Service Solution

Initially, Northrop Grumman's networking approach will operate the current network solution "as is" over the existing Layer-2 FR/ATM network provided by MCI. Northrop Grumman will minimize the risk as it upgrades connectivity by leveraging all access managed by MCI for VITA's data network services. For network services that are on Verizon's Virginia Network, such as those of the Department of Corrections, Northrop Grumman will work with Verizon to provide the continuing operation of those services.

Migration to an MPLS VPN Service Architecture

Northrop Grumman will re-address the network reusing VITA's two class B address spaces. Northrop Grumman will re-address the network using industry experience based on a hierarchical schema, taking into account routing table minimization, elimination of duplicate private addresses, route summarization, topology, agencies, buildings, and floor while leaving room for flexibility in growth.

Northrop Grumman will upgrade or replace all LAN equipment that does not meet its performance standards, in order to develop a standard so an end-to-end management for Eligible Customers can be deployed. Applications will obtain the correct service level all the way from the LAN through Northrop Grumman's MPLS WAN service. Northrop Grumman will consistently manage VITA's customer edge routers, which will have dynamic routing, VPN configuration and QoS support across the VITA WAN backbone.

MCI will build an Internet gateway for VITA between the FR/ATM network and the MPLS VPN network service to provide communications between Eligible Customers during the transition of sites from a Layer-2 network to a Layer-3 network. MCI will provide capacity management to transition the network to the MPLS backbone network.

Network Operations Center for Managed Services

Initially, MCI will operate the Network Operations Center (NOC) out of the MCI Network Management Center (NMC) located at MCI's Richmond Operations Center. MCI will staff the NOC with personnel specifically assigned to support the Commonwealth. The center will operate

from 6 a.m. to 12 a.m., Monday through Friday, and 8 a.m. to 5 p.m. on Saturday, except for official Commonwealth holidays. In addition, MCI has a team of field operation technicians who maintain the MCI network and infrastructure in Virginia.

The MCI Network Management Center (NMCs) proactively monitors network performance. The NOC will provide a configuration management process for order entry and WAN provisioning services. Northrop Grumman will utilize MCI for initial NOC services until the Richmond Enterprise Solutions Center is completed and ready for daily operations at which time and in accordance with Northrop Grumman and VITA approved schedules, NOC services will operate out of the Richmond Enterprise Solutions Center. Production NOC services will be performed in accordance to VITA and Northrop Grumman approved service levels.

Internet Secure Gateway (ISG)

Northrop Grumman's Internet Secure Gateway (VITA ISG) design provides a consolidated, security-focused Internet presence. The VITA ISG provides detailed reporting and administration control to the VITA ESOC, facilitating the centralized security posture.

The ISG provides firewall protection for the VITA enterprise, permitting traffic that specifically conforms to VITA's information security policy. Techniques implemented at this layer include stateful-inspection fire-walling, packet filtering and access control lists. Northrop Grumman will implement combinations of these techniques and technologies to develop the most robust system possible in the VITA environment.

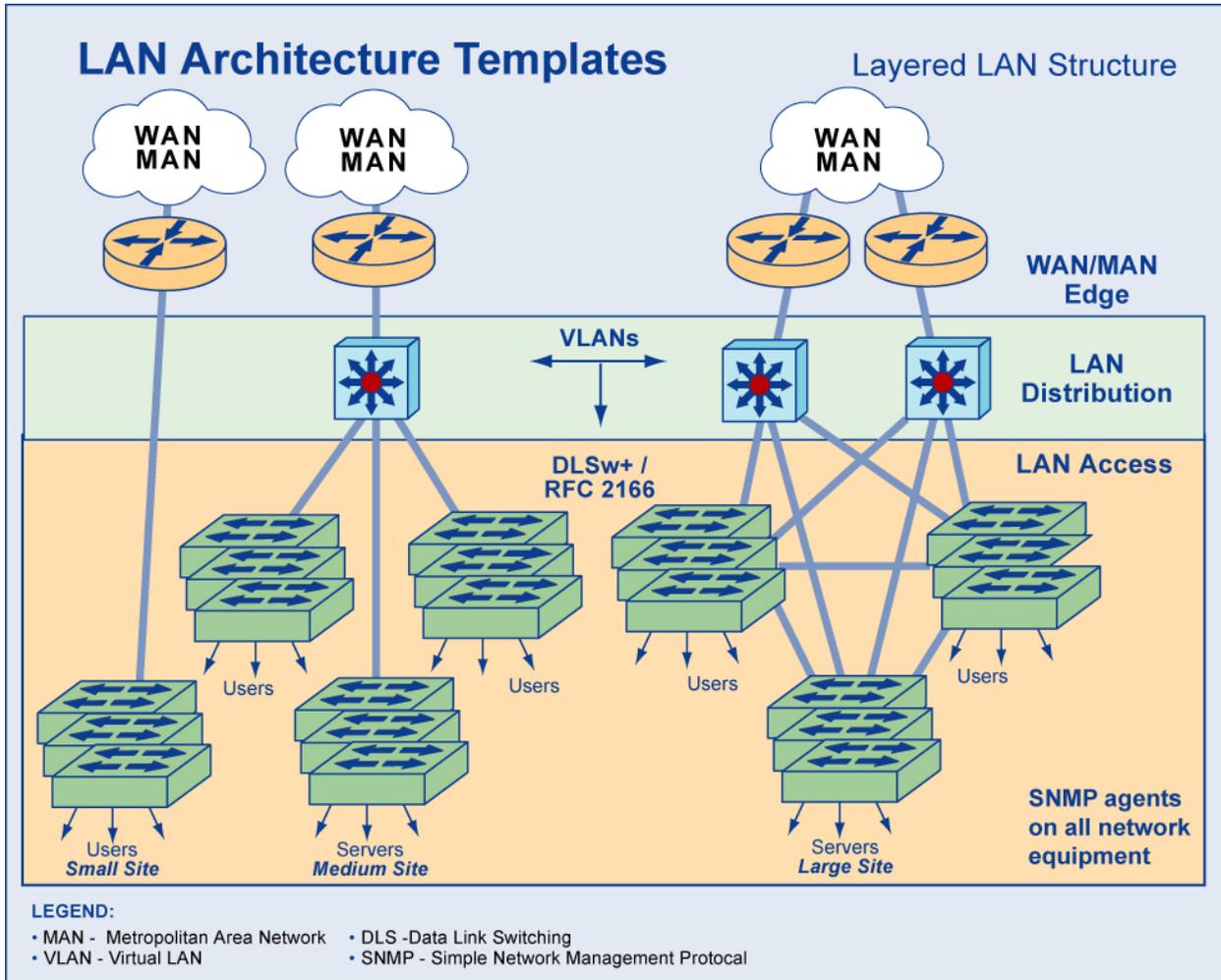
Northrop Grumman will implement an enterprise-class content filtering and caching system. The purpose of this system is to detect and prevent inappropriate material, or material that otherwise violates VITA's Internet usage policies, and deny access to that material; detect and prevent the sending of inappropriate or confidential e-mail messages; and initially quarantine these messages, allowing the VITA ESOC to review their content and elect either to take appropriate action or allow the message to pass. Additionally, proxy technology and content caching will be provided by this solution to allow expedited delivery of Internet content that has been deemed acceptable by VITA Internet usage policies.

Northrop Grumman will implement a hardware accelerated anti-virus solution that is capable of scanning thousands of packets per second to determine which of those messages or packets contains or contributes to an active virus, spyware or malware. The gateway antivirus solution will also provide security event information and administration control to the VITA ESOC to further deliver a centralized security posture.

The Northrop Grumman VITA ISG will also provide robust intrusion prevention services to the VITA enterprise, providing a proactive means to thwart and report intrusion attempts.

LAN Solution

Below is Northrop Grumman's LAN approach in **Exhibit 1**.



VITA 227_r1

Exhibit 1 LAN Approach

Northrop Grumman will standardize LANs across in-scope agencies to consistent agreed-upon architecture templates to take advantage of standard network operational design disciplines and leverage scripted management tools from the central NOC. Northrop Grumman will also standardize LAN number ranges to correspond to related common application functions across agencies.

WAN/Metropolitan Area Network (MAN) Edge Layer—This layer forms the backbone of the network and includes the MPLS carrier core facilities, customer edge routers, and access line interconnections. MCI will supply and manage the WAN core, the provider edge routers, and the customer edge routers for VITA. Verizon will continue to supply VITA’s MAN facilities.

The WAN/MAN layer routes network traffic from each VITA site to all other authorized VITA locations. The edge routers maintain QoS by managing traffic queues and enforce connectivity policies using ACLs. Gatekeeper functionality—in which a router monitors real-time WAN capacity, admits traffic so as not to exceed that capacity, and denies traffic about to overload the WAN—is contained in this layer. Gateway functions, including VoIP to PSTN, comprise an additional service provided by MCI that occurs in this layer. Rendezvous points, composed of software in selected customer edge routers, facilitate IP multicast that conserves bandwidth for real-time streaming media. WAN/MAN routers act as focal points and provide hooks for the major NOC management tools by reporting consolidated NetFlow data and SNMP information.

At selected sites, high availability options including diverse access paths, multiple independent routers, uninterrupted power supply (UPS), Hot Standby Routing Protocol (HSRP), and other techniques that have proved to increase uptime will be incorporated in the technical approach.

Distribution Layer—This layer includes sophisticated, multifunction Layer-3 switches. This layer enables proper packet routing among VITA's WAN, subnets and VLANs. The layer serves as the control boundary for broadcast and multicast domains. It provides a common measurement platform for infrastructure diagnostics such as intrusion detectors, remote network monitoring (RMON), and packet sniffers, and serves as the aggregation point for access layer switch trunks. VITA and agency-wide servers attach directly to switches at this layer, and avoid additional complexity that would be introduced if they attached at a different levels in the hierarchy. There will be no discrete distribution layer at VITA's small sites; access switches will be directly connected to the customer edge router. Typical distribution layer devices are Cisco 6500 series modular switches.

Access Layer—This layer includes Layer-2 and Layer-3 switches. This layer is sometimes called the desktop layer because it focuses on connecting nodes, such as workstations, laptops and IP telephones to the network. Smaller site-specific printers and servers attach to this layer as well. It provides all LAN service ports typically using 10/100/1000 BaseT ethernet, supplies IEEE 802.3af power over ethernet, participates in the IEEE 802.1w rapid spanning tree algorithm, separates traffic into assigned VLANs, marks outgoing packets with appropriate classes of service, and serves as a control point for connectivity to the network. Access layer switches are usually trunked to distribution layer switches, except at small sites where they trunk directly to WAN/MAN edge routers. Typical access layer devices are Cisco 3560 series stackable switches.

Technology Refresh

Northrop Grumman's technology refresh for routers and switches for the data network involves a complete refresh in years 2 and 3 of the contract. In years 8, 9, 10, 11, and 12, Northrop Grumman will refresh data network routers and switches at a 20% rate.