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Government Systems Sales Engineering Memorandum

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Authors: Wesley Kaplow
To: Anita Warren
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Author:
Dr. Wesley K. Kaplow
Chief Technology Officer
Qwest Government Services

Title:
Security Impacts of Emerging Networking Technology

Abstract:
New technologies, such as Multi-Protocol Label Switching (MPLS), are creating new ways to create Virtual Private Networks (VPNs). These VPNs serve distinct communities of interest and are generally created on a shared infrastructure. There are two broad areas that this talk will address. The first is related to security, and the spectrum of network security issues of creating VPNs – from using the public Internet, MPLS networks, and to private fiber infrastructures, will be explored. The second issue examines the issue creating networks using MPLS that have the Quality of Service capabilities that are comparable to more established mechanisms provided by technologies like ATM.

Service providers such as Qwest and others are now deploying commercial infrastructures that support the creation of MPLS VPNs – both layer 2 and layer 3. Their intent is to provide a common network that can provide services for a wide range of customer requirements. These basic requirements include security and availability. Security includes both the logical separation from other customer's traffic as well as for some customers, encryption. Customers demand high availability, which is both the reliability of network itself, as well as control against performance degradations due to normal and malicious traffic from other network users. Unfortunately, some of these requirements are currently in direct opposition to the normal reason of having an IP network – today's security solutions are point-to-point and can reduce the benefit of having a core network that enables any-to-any communications.

Up until recently, the most common approach to addressing these needs is to create completely separate networks for Internet services and series of private IP networks one for each specific requirement. In addition, the question about what to do with traditional services, such as ATM and Frame Relay also needs to be investigated. This talk will address the model that Qwest is using to develop a cost effective multi-use VPN infrastructure – simultaneously providing high-levels of network security and high-assurance performance.

About the Author:

Wes is a recognized expert in a wide range of telecommunications technology, systems, and equipment. As Chief Technology Officer for Qwest Government Services Division he is responsible for technology and product leadership, proposal development, sales engineering, and strategic direction. He is the primary interface to the other product development and planning organizations within Qwest. His technical leadership has helped Qwest win major Department of Defense and Civilian agency programs.

Prior to joining Qwest as one of the founders of Government Services Division in January 1998, Wes was a Distinguished Member of the Technical Staff for Bell Labs, Lucent Technologies.

He is the author of numerous reports and presentations to the government covering a broad spectrum of issues related to the impact of technology on government operations. This includes technology roadmaps, the impact of the combination of terrestrial and satellite communications systems, issues related to packet transport technology, and using public telecommunications infrastructure to solve enterprise Information Technology issues.

More recently, Wes has led Qwest's active participation in such leading-edge programs as the National Science Foundation's Distributed Terascale Facility and organizations such as the Global Grid Forum. His interests center on solving issues such as last mile multi-gigabit/second access and demonstrating the potential of using wavelength services, providing tens of gigabits/second over the wide area, to enable new types of data storage techniques and multi-supercomputer collaboration.

Wes has spoken at numerous conferences and invited talks, including the IEEE CCGrid2004, ICCN2003, GSA FTS User's Conference 2003, Global Grid Forum 5 2002; GSA FTS Next Generation Services Conference 2002; and the NSF Blue Ribbon Panel on Cyber Infrastructure 2002. He is the author of several refereed journal articles, and holds two patents in optical communications.

Wes received his Doctorate in Computer Science at Rensselaer Polytechnic Institute in Troy, New York, and holds a Masters of Science in Computer Science and a Bachelor of Science in Physics from New York University.