

The Network Dilemma - So Many Choices

How do you Select the Right One?

Customer network needs have grown and changed dramatically over the last several years. The complexity of software applications now requires greater bandwidth to satisfy the increase in application and data size. Corporations are continually adding remote offices to better serve their clientele, but in so doing, increasing their need for solutions to handle the voice and data needs of those remote sites. Telecommuting from home has enabled companies to increase worker productivity and decrease other overhead expenses, but has also added to the challenges that the IT department faces in ensuring that all the tools of the trade are at the disposal of the worker at home. The networking options that are available to solve the IT needs of a company seem to be as numerous as the number of companies themselves.

So, how do you, in all good “telecom conscience,” begin to propose a solution that fits the customer you are working with? Should you propose an MPLS solution? It is a newer technology that can allow for tremendous growth and efficient use of network bandwidth. Or, do you recommend an Ethernet solution? Ethernet seems to be on the cover of every telecom pub-



lication out there and is an environment that IT personnel feel comfortable in. Or, should you offer frame relay or private line? Is the only answer VPN over the Internet? Or, is that never the answer? Wait! Let's think this through...

Each technology has its place, depending on the customer. What will work for one customer will not necessarily meet the needs of another customer. Asking the right questions of the customer will allow you to engineer a proposal that meets their unique requirements and helps you make the sale.

To illustrate which questions to ask and how, we have put together a few case studies to show not only which network solution worked, but how the customer, their equipment vendor and the network provider came to that decision.

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NETWORK GLOSSARY:

CSU/DSU (Channel Service Unit / Data Service Unit) – a device, located at the customer premise, that is used to terminate an incoming digital channel. It must be on each end of a private line, whether the private line is 56K, T1 or T3. It performs certain line coding and line conditioning functions that must occur in order for data to pass between the two customer sites. One can think of it as a modem, however it passes data at much greater speeds and doesn't need a dial up function.

Ethernet – a Local Area Network (LAN) standard. Ethernet is used to connect computers, printers, servers, etc., within the same building or campus, via twisted pair copper at speeds of 10Mbps or 100Mbps.

Ethernet Private Line – an extension of a LAN to a WAN through the use of private lines to interconnect the offices. At each office, the private line is converted to Ethernet so that the customer can use a standard Ethernet cable to connect the incoming circuit to their existing LAN switches.

Frame Relay - a private telecommunications service designed for cost-efficient data transmission for intermittent traffic between customer sites in a wide area network (WAN). Frame relay puts data in a variable-size unit called a frame and leaves any necessary error correction (retransmission of data) up to the customer end-points, which speeds up overall data transmission.

Fully meshed – a network environment in which all sites can directly send traffic to any and all other sites.

Hub and Spoke – a network environment in which each remote site points back at only the host site. The host is considered the hub and the remote sites are considered the spokes.

LAN (Local Area Network) - the means by which computers, servers, printers and other devices inside a building, communicate with one another. The connectivity between devices may be via coaxial cable, Ethernet or wireless.

MPLS (MultiProtocol Label Switching) - a key networking protocol that gives service providers control over the traffic flowing through their networks. It can be used to carry many different kinds of traffic, including IP packets, as well as native ATM, SONET, and Ethernet frames. It allows for different access methods, such as DSL, T1 or T3 loops or Ethernet access. With the extra control that service providers have, they can now offer QoS to accommodate different traffic types.

Private Line – a direct circuit dedicated to the use of an end user for the purpose of directly connecting the two sites. A private line is always on and available. There is no potential for delays because there is no dial-up time or potential congestion in the network of the carrier.

QoS (Quality of Service) – in the analog telephony world, it is the measure of the telephone service to a subscriber. Is the call loud enough? Is it crystal clear? In the digital world, it is a measure of error rates, loss rates, delay, etc. A greater QoS means more sensitive traffic should pass through without any hiccups. For example, voice traffic is very sensitive to delays or errors on a line, while data traffic is less sensitive. That is because data packets can be resent, delivered and sorted back into the correct order, but voice must be delivered in the order in which it was sent.

SLA (Service Level Agreement) – an agreement between a service provider and the user that specifically define the nature of the service being provided. Within the agreement is a set of measurements that the service must live up to. These measurements might include restoration times for outages, average availability of the services and latency. The agreement also typically defines trouble-reporting procedures and penalties for not meeting the level of service demanded.

VPN (Virtual Private Network) – in essence, it is utilizing a part of someone else's network (a phone company, an Internet provider or a carrier) and carving out a space for your traffic. There are many ways to create a VPN. Dial tone, DSL Internet access, dedicated Internet access or dedicated facilities can all be used to create the network. In fact, these options can all be used together to create a network. VPN offerings vary widely between providers. Some providers create VPNs over the Internet while other providers will secure the VPN on a private network.

WAN (Wide Area Network) – a computer and/or voice network that spans an area outside of a building or campus, requiring some sort of lines to connect the sites. These lines might be leased lines, dial tone, or Internet access lines.

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