

Today's Telecom Solutions are Complex

Knowing the Right Questions Leads to Success

End-Users, from the Small or Medium sized Business (SMB) to the Fortune 500 Enterprise, are all evaluating the many IT and telephony options available to them. Should they change from their old PBX to an IP PBX? Should they tear out an old frame relay or private line network and replace it with MPLS or larger Ethernet pipes? The world of telecom is as specialized as ever and has certainly evolved over the last 15 years. With that evolution, service providers, consultants and VARs have had to change and adjust as well. The baseline question will always be the same, does this fit in my budget and does it solve my short-term problem and long-term goals? The questions to ask to get to those final answers are what has changed and advanced in the industry.

In days gone by, selling a voice or data T1 meant being able to credibly quote a circuit price and solid installation interval. A network consultant's job used to be much simpler. The consultant's primary role was to negotiate contracts with various service providers for their customers. They needed to know which vendors were meeting quick installation intervals as well as accurately billing the end user once the service was installed. These were on the checklist to meet the needs of the customer. Once the vendor contracts were in place, the consultants could spend most of their time working with customers on relatively simple networks while having peace of mind that they had pricing options to keep them competitive.

Today, the picture has become more complex. IP Telephony has changed the dial tone marketplace forever, inviting end users to evaluate new technology in the form of IP PBXs and SIP trunking. Network needs of the customer have expanded and bandwidth needs have grown dramatically. Where T1s and T3s used to provide enough bandwidth, today, the demand for 100Mb+ bandwidth is common. In addition, Hurricane Katrina, 9/11 and ice storms in the Northeast have moved disaster recovery planning and



implementation to the top of nearly every telecom or IT managers' to-do list. These needs drive the customer desire for products like MPLS and protected Ethernet rings.

Building IT and telephony infrastructure, even for a small business, is more complex today than ever before. Equipment must be compatible, IP schemes must properly route traffic and the overall network design now has multiple facets to consider. When done right, the final network can be very efficient, powerful and protect a company from disaster. When done wrong, it can be a huge headache to maintain.

The path to the right network design is not short. Patience is a necessity for all involved in the process. Design, re-think and re-design have become part of the pre-sales process. Questions for the carrier, the equipment

provider and the customer have become a common and critical aspect of the process. The rest of this article provides you with excerpts of conversations our design engineers have had with our consultants and end users. The goal is to give you some idea of the time involved in building a network and the types of questions you should be asking yourself as you go through the process.

What is MPLS?

MPLS stands for Multi-Protocol Label Switching. It is a technology that takes data packets and tags them with a priority level. Using these priority levels, the packets can be sent more efficiently and more quickly over a network to their end destinations. This increased efficiency allows customers

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to build networks in which all of their sites can communicate with all the other sites. It also allows for traffic such as voice and video to traverse the network without jitter or extra latency.

When does MPLS make sense?

MPLS often makes sense for customers with multiple sites that need to be connected or when two sites are geographically diverse. For example, a customer with sites in Massachusetts, California and Florida, MPLS may be more cost effective than private line.

Does your MPLS network support voice, video and multicast traffic?

For American Telesis, our MPLS network offerings do support these options. Not all networks can support all these types of traffic. This is one of the most important questions you need to ask early on.

What is CoS? What questions should I ask about CoS?

Class of Service is related to the question above. Your CoS profile is how you set up the tagging of the traffic on your network. Traffic like voice or video is tagged as a priority and sent to its destination ahead of other queued traffic. Things like email or data transfers that are not so sensitive (thinking in milliseconds) are held in queue behind the voice traffic. In the end, everything gets where it needs to go, but it all is sent in the right order according to priority.

When discussing Class of Service, ask what percentage of traffic can be priority traffic (voice/video). Many carriers will limit you to a small percentage, or increase your monthly billing, to accommodate your network needs. You should also ask how many traffic queues a carrier can handle. Five or six is a good answer. If the answer is fewer than that, ask why.

You should also talk to your provider about re-allocating CoS bandwidth needs down the road. What if you don't have voice on your network today, but in 6 months you want to run voice between offices. What does it take to make those changes and will the network support those changes? With American Telesis, we support those changes in Class of Service without increasing the monthly billing to our customers.

What is multicast?

IP Multicast is a bandwidth-conserving technology that reduces traffic by simultaneously delivering a single stream of information to many (hundreds or even thousands)

of end users. Applications that take advantage of multicast include video conferencing, corporate communications, distance learning, and distribution of software, stock quotes, and news.

What kind of equipment can I use for an MPLS network?

You will need routers at each site to connect to the MPLS cloud. Those routers can be supplied by American Telesis, or you can procure them on your own. One of the most important questions to ask at this phase is what kind of routing protocol can my provider handle. If this is not figured out from the beginning, you could end up purchasing equipment that is not compatible with the provider.

Telesis orders the equipment, the customer knows what is happening from start to finish at every level. From this early design document, full project management details, reports and spreadsheets can be delivered to the customer so that they can track a 3-site or a 300-site network with ease.

I read about Ethernet, but how do I get it in this Building?

Ethernet can be delivered a couple of ways. American Telesis can deliver Ethernet over copper solutions if your building does not have fiber. This allows you to receive bandwidth from 1.5Mb to 12Mb without having to invest in expensive routers that accept multiple T1s.

Where a customer needs bandwidth that

... American Telesis will walk through this entire process step by step with a customer. In all cases, American Telesis will work with you to design exactly what fits the bill for your customer.

What does OSI, Layer 1, 2 & 3 mean?

The OSI (Open Systems Interconnection) model is a model that defines the networking framework for implementing different protocols in seven layers. Controls are passed from one layer to the next. Layer 1 is the physical layer, the copper, the fiber or any physical part of the path. Layer 2 encodes and decodes data packets into bits. Layer 3 provides the switching and routing technologies that create logical paths or virtual circuits from one point to the next.

How secure is MPLS?

MPLS is as secure as other Layer 2 technologies like Frame Relay or ATM.

How do you coordinate the rollout of a multi-site network?

One of the first steps in the deployment of any network is to create a complete network design document to which all parties (the customer, the consultant, the carrier and the equipment vendors) can refer. This will ensure that every detail is worked through before equipment and circuits are ordered. Big details, such as the hand-off type at each customer site are determined. (Since MPLS can be delivered via DSL, wireless access, T1, T3, OCx or Ethernet - this topic is critical to determine early on!) In addition, IP addressing schemes, routing protocols and desired delivery dates are determined in advance. In this way, whether it is the customer ordering equipment, or a fully managed solution where American

is 100Mb, 300Mb or even Gigabit speeds, American Telesis will work closely with the consultant and the customer to get fiber to their premise so that these large bandwidths can be achieved. While all the design and possible construction can take time for these larger bandwidths, the advantages at the end make it all worthwhile. The ability to increase from 100Mb to 300Mb to 600Mb in days can provide a customer with flexibility that never existed with T1, T3 or even OC3 services. With the right planning, the customer does not have to upgrade their equipment with each change. Their focus can be on growing the business and supporting more applications, rather than growing their routers.

In these situations, American Telesis will walk through this entire process step by step with a customer. Some customers with SAN (Storage Area Network) traffic need the ability to handle Jumbo frames, which means the carrier portion of the circuit has to be provisioned right. Some customers need diverse entrances built into their building, with the path traversing a protected ring between their sites. Some customers only need the 100Mb as a backup with no extras. In all cases, American Telesis will work with you to design exactly what fits the bill for your customer.