

Protecting and Diversifying Critical Telecommunications Services



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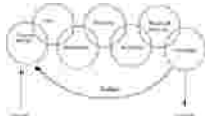
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In this first article of a new three-part series, Leo Wrobel takes a broad-brush view of the importance of telecommunications in today's business and the precautions you should take in advance to maintain the integrity of your telecom network.

Over the past few years, the prevalence of telecommunications services in support of today's businesses has created new areas of concern to contingency planners. Indeed, entire new mediums of doing business, including "businesses without storefronts" have come to dominate the landscape. It is, therefore, important to understand the new dynamics inherent within these enterprises because most make money without ever seeing a customer come through the door.

Today's e-commerce obviously depends on a strong integration of telecommunications with distributed data processing. These configurations are often referred to as a *seamless solution*.

[Figure 1](#) (from one of my previous articles) represents a hypothetical manufacturing company that is deeply dependent on both information and telecommunication technology. For companies like his one, when telecommunications fails, the cash register stops since virtually all its business comes over the phone or Internet, in a manner designed to make it easy for the customer to buy



[Figure 1](#) Seamless solution

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The first thing you will note in Figure 1 is that the process, like any good process, begins and ends with the customer. Starting on the left side of the diagram, you see a customer dialing in, probably on an incoming 800 number to a customer service center. (This can also be described using the Internet as the customer access method—consider Ebay for example.)

This customer service center will naturally utilize many types of technology to handle the load. In the inbound call processing mode, it would probably include Automated Call Distribution (ACD) equipment designed to handle heavy inbound call loads and service customers promptly.

In the Ebay or Amazon.com model, data routing equipment is in place to handle customers from the Internet. To make it even more confusing, there is no more *voice* and no more *data*—strictly speaking, anyway. Both technologies are now based largely on I/P packets.

So you see, voice is really data, and data is still data. Any questions? For the nontechnical-savvy recovery planner, such nuances are enough to boggle the mind.

Whether the customer is on the phone or a PC, either seamless solution is designed to do the same thing: respond quickly, efficiently, and accurately to a customer's inquiry *while the customer is on the phone and hot to buy*.

In this mode of operation what might have been "I'll call you back later" now becomes "How many would you like to order RIGHT NOW?" That's because telecom services (voice or data) allow the customer easy access, and other

technology places all the tools needed to close the sale within easy reach of the person making the sale

Naturally, management loves systems like these because they substantially increase sales. That's why companies buy so many of them. If there is one thing that I have learned in my 21 years in disaster recovery, however, it's that the capability to back up a system usually delays its installation by a few years. Perhaps that is why you are interested in this article.

If you are trying to update your disaster recovery plan to reflect these new realities, this series will demonstrate a few tricks of the trade. These tips will help maintain the integrity of these important systems and increase their resiliency in a disaster.

Backing Up Today's Seamless Application

With this understanding, look at Figure 1 from a disaster recovery perspective. Which circle is most important in the process, as far as the company's long-term profitability? Most would answer, "The customer service function," and this answer is probably correct because the walk-in market for many of today's enterprises is nonexistent.

Therefore, as technologists, our job becomes one of looking at what technical platforms support the Customer Service Center (whether voice or data communications) and making them as fault-tolerant and resilient as possible.

Part of this process is to select equipment with a very low mean time between failure (MTBF) rate for use within the organization. Another is to scan the area that contains the equipment for obvious risks, such as storing combustibles in a critical telephone or server closet.

An equally important part of the process is telecommunications, which can be tough because this part of the seamless solution is not always under your direct control. It may, in fact, reside with multiple vendors who do not work for you. For that reason you will be tasked with selecting telecommunication providers capable of providing diversity and fault-tolerance in their networks. This is especially important today when options for vendors are becoming more limited, and in many ways the public network is remonopolizing.

With this in mind, let's start with two questions about telecom diversity:

- Do you need two separate carriers to have telecommunications diversity?
- Can you have telecommunications diversity from a single carrier?

The answer to the first question is "no." The answer to the second question is "yes!" There, in two lines you have your executive summary. The reasons *why* this is true however will fill the rest of this article (and also the next two), so read on for a few tips.

Bringing Business Closer to the Customer

I have often used examples of companies such as 1-800-FLOWERS, Ebay, and Home Shopping Club as examples of how companies become very successful simply by making it easier for users to use their services.

Consider 1-800-FLOWERS. This is their telephone number: 1-800-F-L-O-W-E-R-S. Now, forget the number! Get the picture? By making it easy for a customer to avail themselves of its service (flower delivery), the company has become a resounding success.

The Ebay and Amazon models use a different dynamic by enabling their cash register with the Web. Still, there are similarities between the two. Whether fed with a data or voice communications medium, organizations like these depend upon very fast turnover of products in order to be profitable.

The products advertised on Home Shopping Club might reside in the warehouse for only a few days because the money comes from turning them over quickly, not storing them. Ditto Walmart.com and others.

Many times products are advertised using expensive television advertising, which invariably gives the customer a 1-800 number or an easy-to-remember URL.

Once again, consider the dependence on telecommunications! A single cable cut at just the wrong time by a wayward contractor could wipe out a huge chunk of sales

Protecting Incoming 800 Service

A considerable amount of marketing effort has been expended by carriers advertising service guarantees for 800 service. This is probably money well spent because even senior executives who are not technical understand the importance of being able to answer incoming calls

Just about anyone can envision a large center full of people sitting there knitting, filing their nails, and doing everything except answering the phones. The implied message is "How long can your business survive a disruption like this?" Remember to use this visual image when pitching executives about necessary expenditures in telecommunications.

Ironically, 800 service is one of the simplest components to back up if you plan in advance. Most providers of 800 service will guarantee the redirection of an 800 number to any working 10-digit telephone number in North America within 10 minutes or less

This capability allows your organization to direct its calls to another company location, or even allows employees to answer these numbers on wireless phones or at home. It is surprising how many companies do not use this option when the capital-intensive part of it has already been done by the carriers themselves.

Plan ahead NOW and consult with your internal customers about where you can redirect your critical 800 lines if a disaster happens.

Incoming Telephone Service

Like 800 service, POTS (that's plain ordinary telephone service) can be quickly redirected in many cases. Instead of calling the long distance company, however, the call is made to the local telephone company, such as AT&T or Verizon.

In addition to POTS lines, many phone companies even allow for the redirection of direct inward dial (DID) trunks, T1 PRI, and other services commonly used in large call or data center environments. One again this must be done in advance to allow for the most flawless recovery

Special Services and Private Lines

Unlike incoming 800 service and incoming telephone service, private line circuits, such as T-1s, Synchronous Optical Network (SONET) entrance facilities, fiber optic rings, metro Ethernet links, and other "custom" services can be difficult and complex to restore.

Preplanning is absolutely essential because these services are hard-wired data services that do not move easily. Combine it with the fact that your organization's private lines might be the most revenue-impacting services your organization possesses. Voila! You have the makings of a world-class disaster if there is a failure.

If you do nothing in advance, there is often little that can be done after the fact and there is much to lose. For a great many companies today, a single cable cut that isolates the network all day literally deprives that company of 1/22 of a month's income.

Protecting Against Cable Cuts and Other Accidental Disruptions

In all my years in the disaster recovery business, I have never met anyone who has *never* had a cable cut. Since we are planning for what will *certainly happen*, let's briefly cover some of the ways we may protect against this threat.

Fiber Optic Cable Cuts (Long Haul)

When selecting a long-distance carrier, it's important to evaluate the type of protection it provides against disruptions. Remember that long-haul services often traverse the same right of way. This might include routing fiber optic lines

along railroads, highways, and other places where right of way exist

Train derailments are a common cause of long-distance service outages, and the same accident can get multiple carriers. If the derailment also spills a load of hazardous chemicals, the outage could be even more prolonged.

Concerns about service outages go beyond right of way concerns as well. Consider the fact that there are only a limited number of mountain passes to easily get over the Rocky Mountains to the U.S. or Canadian west coast. In the springtime, rapid thaws have been known to wash out sometimes a mile or more of roadway and cable at a time.

The network has evolved to the point where this rarely represents a total failure any more (because of other routes in the network), but even with alternate paths, but the network can become saturated. Callers will probably receive an "all circuits busy" recording when calling.

Note that all the comments above pertain to *switched* services. Private lines or custom services are still more problematic because of being custom-engineered and generally nailed down in place. They were never designed to move and they still take longer to restore in a disaster.

Local Cable Cuts

Local telephone cables, commonly referred to as the *last mile*, are also a constant source of disruption. Since these cables run through metropolitan areas where construction is frequent, it becomes very easy for construction crews to either dig up or core through these cables. (People do not dig up streets, they core under them, and often through telephone cables.)

Moreover, rights of way in major cities have been in continuous use for decades, and recordkeeping is not always what it should be. When a contractor or road crew begins digging, they are never really sure what they will hit on the way down. Water lines, electric lines, and even sewer lines all use the same right of way.

Software and Service Management Disruptions

Many times, disruptions to telecommunication systems are due not to cable cuts or hardware failure but to software or service management failure. A few years ago, the city of Dallas, Texas had a four-hour-long disruption during which it was difficult to place any type of telephone call in the Dallas metropolitan exchange.

The cause of the disruption was not due to a cable cut, tornado, or hurricane; it was because Garth Brooks concert tickets were on sale. Radio announcers broadcast this coveted sale, inundating the network with calls, thereby making other types of telephone calls difficult or impossible.

Similarly, software failures might also affect the network. Most modern central office switches have an elaborate series of software codes, blocks, and classes of service, which can be difficult to troubleshoot in the event of software failure.

VoIP networks represent a whole different area of concern. Remember that even in the most capable local operating companies, many personnel are still more comfortable with telephone test sets than with data scopes. Services such as VoIP, which save an organization money today, could be problematic in the event of a catastrophic failure that must be recovered quickly. Make sure that your vendor is trained on them and has the organizational depth to react quickly in an emergency.

By the same token, IP is incredibly resilient in a lot of respects. It was originally used by the military at a time when most AT&T primary toll offices could suddenly be in the upper atmosphere after a nuclear strike. If IP circuits were expected to work after that, if properly engineered they could stand up to just about any problem your organization could experience.

We'll discuss VoIP further in coming articles. The point here is to understand the dynamics of whatever technology you are using and be clear in advance on how long it would take to recover in a disaster.

Summary

I realize this article only scratched the surface of the technology, but hopefully you are now considering the

technology in the context of what your business does. Look carefully at the core business services your business offers. Then look closely at the telecommunications systems that support it

Be mindful of the fact that these services are probably the company's storefront, and that without them revenue production for the company becomes impossible.

Understand the role of seamless solutions in the long-term strategy of your organization, and what you must do to protect those systems so your company can enjoy continued success, productivity, and profitability.

I'll see you right here next month with more tips for helping your organization develop a resilient business resumption plan.

Good luck in your pursuits
