

# Using VOIP To Recover Telecommunications Services

**Chuck Reagan**

## A new generation of disaster recovery processes and telecom systems can help your enterprise deal with a crisis.

In the past year, the U.S. has experienced some of the most devastating storms in our history, resulting in catastrophic telecommunications failures. These disasters have highlighted the importance of enterprises planning for recovery in the event of network outages.

Although many U.S. companies have spent years developing and implementing extensive business continuity plans, a great deal of mystery still surrounds telecommunications continuity planning. Continuity plans remain focused on data restoration and recovery, but the definition of “data” is expanding.

Thanks to newly revised or instituted regulatory requirements, such as the Federal Financial Institutions Examination Council (FFIEC) and Sarbanes Oxley (SOX), companies are being asked to expand their plans to include telecommunications recovery. Contingency plans must be documented and tested on a regular basis, and some industries require that a senior executive be designated for ensuring the viability and regular testing of these business continuity plans.

Telecommunications restoration poses different issues than data or information recovery. In developing a telecommunication continuity solution, we must consider methodologies that are different from data recovery. By combining a new approach and new technologies, we can enhance an organization’s ability to not only recover its operations, but at the same time minimize the impact to its employees, vendors, clients and investors.

Let’s look at some telecommunications recov-

ery strategies used in the past, and why they have largely been ineffective in supporting the needs of today’s organizations.

### “We’ll Transfer Calls To Our Remote Office”

Enterprises began networking multiple sites together because they needed to share data throughout the organization. Many enterprises deployed wide area networks (WANs) to facilitate this transfer of data.

This solution works well for the intended benefit; however, these networks had a critical point of failure in regard to telecommunications: premises-based equipment.

With premises-based equipment such as routers and PBX systems, organizations can easily route or transfer incoming or outgoing calls from one site to another. However, these capabilities may be unavailable in a telecommunications recovery situation—for example, in the event that one or more offices experience an outage such as loss of power or an office evacuation.

Routers, PBX systems, as well as point to point telco circuits, all use commercial power, which may not be available in the event of an emergency. Even uninterruptible power supply (UPS) or back-up generators do not provide sustainable long-term solutions in the event of an extended outage.

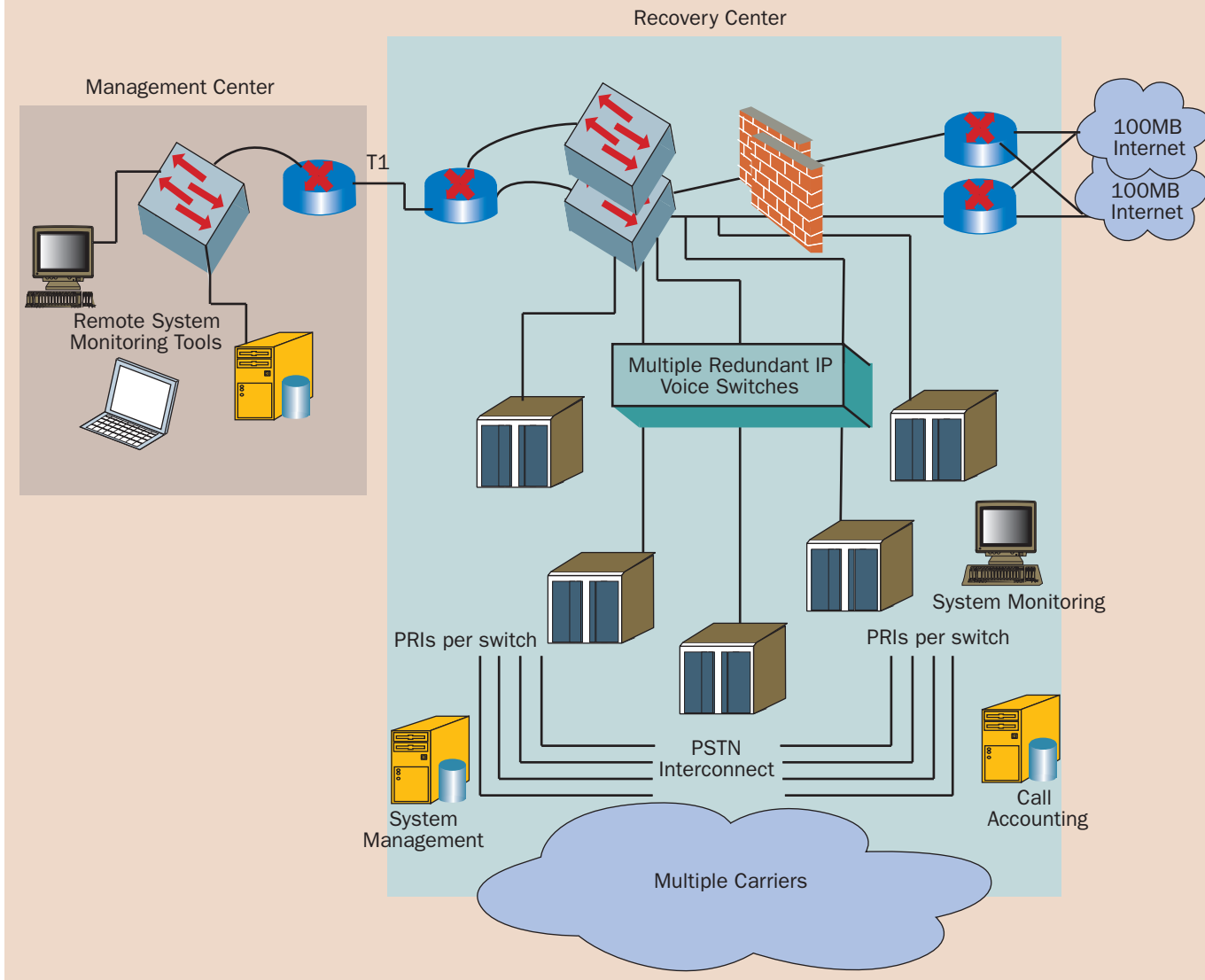
### “My Vendor Has A Quick-Ship Program”

The “quick-ship” method typically involves an arrangement with a PBX vendor for a new or spare PBX switch to be delivered and installed in the event of a disaster. This method was popular because it did not actually involve investment in an alternate PBX system, only the commitment or promise of an available “spare in the air.”

This method does not adequately support today’s organizations because it assumes the affected site will be available shortly after the disaster occurs, and that power and carrier telecom

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**FIGURE 1 Hosted Solution**



services are restored quickly. As the worst recent disasters have shown, this is not always the case.

### **“We Have A Hot-Site”**

Historically, hot-site arrangements come in two flavors: one in which an organization creates a fully redundant remote site, built and maintained in-house, or outsourcing this hot-site to a third party.

The redundant site traditionally included all items necessary to support the continued operations of an organization, including redundant voice and data systems, office equipment and carrier services. This solution was appropriate only for high-end organizations which could afford such a complete solution and its accompanying high investment. Many organizations developed these facilities only to see them fall victim to the cost-cutting axe.

Also, many organizations found it was unreal-

istic to assume that all their personnel would be willing to travel to a remote hot-site in the event of a true disaster. Consider the recent Gulf hurricanes; many employees stated that while they felt a loyalty to the organization, they simply were unable to travel to a distant site out of concern for their families. This would render the company-sponsored hot-site largely ineffective.

As a result, the third-party hot-site is currently the most attractive option for many organizations that wish to implement a disaster recovery plan. These sites offer attractive pricing on the storage and real-time back-up of an organization’s critical information systems, and typically offer cubicles or work stations on a per-seat basis.

Third-party hot-site costs involve a monthly subscription fee which allows access to an alternate datacenter space. The facility is preferably a hardened, highly secured datacenter in which an organization can place its redundant servers and



**The first step in designing a solution is to perform a traffic analysis**

other hardware in secure racks. Here, an organization receives the infrastructure required to recover critical business functions or information systems. Subscription fees (per full secure rack) generally start around \$1,000 per month for access to these recovery centers.

More and more of these facilities are now offering optional services such as access to emergency use cubicles, which can increase the cost by \$25 to \$100+ per seat. These costs typically include a cubicle workstation along with an Ethernet LAN port to your equipment and access to the Internet (a minimum of 1.5 Mbps should be provided).

More robust replication options involve streaming database backups to the third-party facility, and having that information stored on either customer-provided servers or equipment provided and maintained by the third-party service provider.

During recent events, these third-party organizations performed well in protecting and providing access to their customers' critical information systems; however, problems did arise in supporting the enterprise telecommunications network.

That's because, with third-party hot-site providers, data remains their primary focus; not telecommunications. Most third-party providers do not offer telecommunications recovery options, or view it as secondary to the overall recovery plan.

#### **New Solutions**

To deal with the challenges involved with disaster recovery for telecommunications, many organizations are now implementing a continuity plan that incorporates voice over IP (VOIP).

VOIP represents a crucial step forward in an enterprise's ability to develop a comprehensive telecommunications restoration and recovery solution. That's not to say that the solution is strictly IP, or delivered via IP only, but rather is IP enabled.

Employing VOIP-based technology, an organization now has the ability to blend and deploy solutions that can truly support recovery objectives by using various transport methods such as the public switched telephone network (PSTN), cellular, VOIP phones or even satellite-enabled uplinks.

Deploying an IP-based solution for telecommunications recovery can be accomplished in many ways, depending on the unique needs of an organization. In all cases, it is best to avoid the pitfalls outlined earlier regarding premise-based equipment—if the VOIP equipment is located on-site at a failed location, chances are it may be unavailable to you when you need it most.

#### **Self-Maintained vs. Hosted Applications**

Many medium- to large-sized organizations have IT departments which are comfortable with

designing and deploying VOIP solutions. These organizations may want to consider a "self-maintained" telecommunications recovery solution, which involves co-locating VOIP recovery equipment alongside data recovery equipment at a third-party service provider's site.

The delicate part to this approach involves which services, and how much of them, you install to meet your recovery time objective.

First, a traffic analysis should be performed on your existing environment to determine exactly how many telephone circuits you should expect to install. This will be directly related to the type of business you are recovering and how many users are involved.

If you are recovering a corporate or administrative office, a good rule of thumb is to provide one available phone line for every three to five users. If your recovery solution involves call queuing, as found in call center or customer service applications, more phone lines will be needed to queue the calls waiting for an available agent. If you do not install enough lines up front, busy signals and unhappy customers are inevitable.

Call center applications are highly specialized, and involve a great deal of resources, so you should expect to involve the manager or supervisor of these departments to obtain real-time data on the maximum amount of calls that they have received during a peak calling period, and scale your solution accordingly.

In either case, you should consider installing ISDN-PRI (Primary Rate Interface) circuits. PRIs are flexible, multipurpose circuits which will enable the transport of toll-free, local and direct inward dial numbers, and provide 23 phone lines per circuit.

Remember; simply call-forwarding your telephone lines from one site to your recovery site is not adequate for a telecommunications recovery plan. You should consult with your carrier on their capabilities, and where possible, employ pre-engineered switch re-direct services. Such pre-arrangement will ensure that your documented plan is in place in the event of an emergency, and that they are prepared to support the call volume you anticipate.

If your solution involves using remote IP phones to recover your facility, such as home-based teleworkers, the amount of Internet bandwidth required is critical. While not all VOIP solutions are created equal, at a minimum, you should assume that each remote teleworker will require true broadband access. Most home broadband connections (cable modem or DSL) provide more than adequate bandwidth. At your VOIP equipment site, you should expect to use at least 50 kbps–100 kbps per simultaneous call, to support these remote users.

Costs for this method will be directly linked to the size solution you choose to deploy, and will include the cost of the IP-PBX, routing and fire-

wall hardware as well as monthly recurring fees for telco and Internet access.

If a “self-maintained” solution is not for you, there are now service providers who specialize in telecommunications disaster recovery.

These service providers offer IP-based networks which are constructed in secure sites such as a carrier co-location facility, thus creating an alternate or “hosted” telecommunications network solution (Figure 1). These network centers are co-located in facilities which provide all that is needed for survivability, such as redundant power, telco circuits and Internet connections, along with direct access to multiple telco carriers in the same facility.

A hosted solution provides an organization with the flexibility of deploying an IP-enabled system without the maintenance costs involved in a self-maintained model. Network upgrades, enhancements and, most importantly, the scaling of bandwidth and phone lines are all handled by the provider.

These providers will assist in developing a complete telecommunications recovery plan, along with on-line portal access so you can view the sites and employees which are a part of the recovery team. Employees, as well as the phone numbers that are to be recovered, are easily added, deleted or modified to update the recovery plan.

Like the self-maintained model, hosted VOIP providers can easily re-route calls via the PSTN, sending calls to an employee’s home, an alternate office and/or cellular phone. A VOIP recovery solution may also employ satellite technology in obtaining Internet access for VOIP call origination and termination.

Consider the following example: During the recent hurricanes in the Gulf Coast region, most of the local telco central offices (COs) were under water or unable to receive power. The result was that thousands of businesses could not receive, send or even re-direct their telephone numbers to alternate locations. Customers who did have traditional satellite phones found the network to be terribly overloaded, much like a cellular network during a crisis.

A hosted VOIP-based recovery solution, combined with scalable 802.11 wireless solutions with satellite uplink capability, provides Internet access as well as a VOIP gateway back to a hosted VOIP provider. With VOIP/satellite capability, enterprise VOIP calls will employ quality of service (QOS) techniques, giving that traffic priority over the other IP packets on the wireless solution, ensuring optimum quality.

Like the self-maintained recovery model, pricing for a hosted VOIP recovery solution can vary widely. Monthly costs are typically determined by the length of contract, the amount of sites and employees involved, as well as the amount of voice traffic anticipated during a recovery effort.


## Conclusion

One of the most important advantages in developing an IP-based solution is the flexibility it provides your personnel. VOIP services and clients such as Vonage and Skype have been adopted by consumers, as well as in an *ad hoc* fashion by enterprise users, and these alternatives can be brought to bear during a disaster. During a recovery effort, the enterprise can allow employees to work from home, an alternate facility or almost anywhere. The inherent flexibility of an IP-based solution allows more people to participate in the recovery process because they are no longer confined by geographic limitations.

VOIP provides a means of developing voice recovery solutions for enterprise and call center customers alike. If you have ever considered having a complete call center working from home during a recovery effort, now you can do so with the mobility that a VOIP recovery solution provides.

The Internet was originally designed to be a survivable network; in fact most European countries are currently building out their communications infrastructure over the Internet. Even during the recent hurricanes, the Internet was still available to those with access to power and an ISP.

Take steps today to ensure that your organization has not only a viable data recovery plan, but one that also incorporates your telecommunications network□



**Take advantage  
of the Internet’s  
inherent  
survivability and  
flexibility**