Sink or Swim with CTI

When a company's IS staff is asked to manage its telephones and integrate them with computer systems, it's best to jump right in.

By Howard Baldwin

When Faye Clow was called into her boss's office at Premier Cruise Lines in Cape Canaveral, FL, three years ago, she expected to be laid off because the company was downsizing. Instead, the travel firm asked two others in her department to set sail, and her boss gave Clow, an MIS support specialist, responsibility for the company's computer and telephone systems. Her first thought was, yes, the company phone list does need to be updated. Once she had a better sense of what her boss was asking, her first move was to ask the accounting department to send over the company's phone bill. Three dollies stacked with boxes full of bills from local, long-distance and cellular telephone companies were wheeled into her office. "That was when I realized I had no idea what I was doing," she says.

As Clow quickly discovered, having responsibility for both the computer system and the telephone system in a corporation is no simple task. Nor is it impossible. As telephone systems have progressed from proprietary, mysteriously managed boxes to digital switches with open software interfaces, they've come to resemble computer systems. Data is data, after all. This is an appropriate conjunction, too, because as computer networks have put more power on the desktop, both users and management expect the two indispensable devices that sit there—the phone and the computer—to work in concert. The result is called computer/telephone integration (CTI).

A daunting task? Perhaps. But those who've already been asked to sink or swim when it comes to these new responsibilities report that the water's fine. They offer a life preserver to MIS personnel suddenly asked to incorporate telephony into their responsibilities. Making the transition is a matter of four strategic steps. First, apply the concepts of data networking to the phone network (while expecting to learn some new jargon). Second, as you integrate IS and telephony, manage your resources carefully (both hardware and people). Third, always remember that the key is not what's best for the folks in IS or the folks in telecom, it's what's best for the customers. Finally, when you start implementation, remember to maintain the organizational skills you used during the integration. Fundamentally, it's a matter of communication (pun intended).

Figuring It Out

Fortunately, veterans of CTI maintain, learning about telephony is like learning about other technology. In large part it's a question of talking to vendors and their customers who've already made the transition. At Premier Cruise Lines, Clow frequently picked the brains of vendors of computer hardware and software and telephony alike, but especially the latter. "I had never administered a PBX [public branch exchange] and had to learn by reading the manual. They're not well-written," she warns.

It's especially important to keep a level perspective. At the most fundamental level, you're simply tackling another application. It happens to be a rather complicated application, and it can match IS phrase for phrase when it comes to jargon, but what major application doesn't have that? The advice is that you can survive this, as you did other unfamiliar application areas.

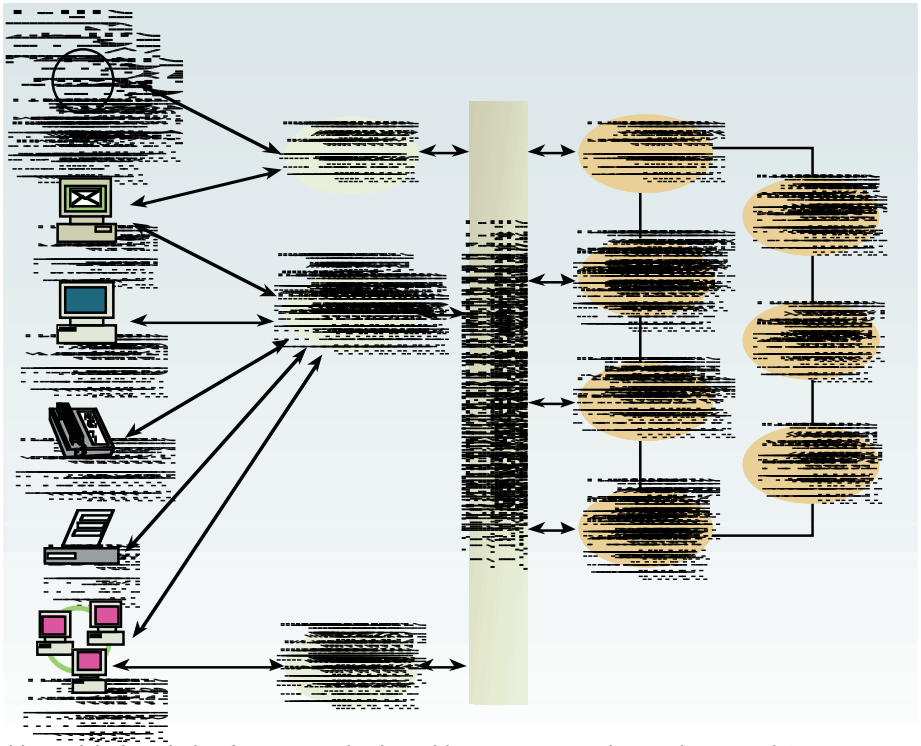
In addition, learning about the subject today is easier now than it was five years ago. Telephony has been slowly working its way into both local- and wide-area networks. PBXs, otherwise known as switchboards, are becoming better integrated with computer systems. PBX vendors such as AT&T, Northern Telecom and Rolm have been opening up the specifications for the PBXs so application developers can write drivers and application pro-

gramming interfaces (APIs) to incorporate them into networks. At the same time, increased use of high-speed T-1 lines has made it easier to see how the telephone network and the computer network work together to transport data. As ISDN becomes more prevalent, carrying both voice and data simultaneously, the differences will blur even further.

As a result, many IS people recommend envisioning a single big network. "Think of it as one thing," suggests David Andrews, director of operations for Telecharge, a ticket-selling service in New York City. He views the concept of bringing a T-1 into a phone switch and having 24 channels as no different than bringing a T-1 line into a multiplexing device and breaking into 24 channels for data. "Phone switches and automatic call-distribution systems are computers with memory and CPU and hard drives," he says. "If you're doing application development, you're going to communicate with the switch in a standard way with TCP and APIs, just the way you would talk to any computing device."

Even the diagrams are similar. Think of the phone-to-switch diagram the same way you'd think of a PC-to-server diagram, suggests Kent Kushar, executive vice president of J. Frank Consulting in Palo Alto, CA. "It's like when LAN guys had to understand wiring—they had to understand the actual facilities where they were working. If you're a data networking person and you have an understanding of facilities and network components and their hierarchy [within your organization], then understanding telephony is not hard."

On the other hand, it's important not to understate the dimensions of what you'll need to learn when telephony falls in your lap. Be prepared to understand such things as phone call queueing—that is, what happens to calls when they come into a system before they're answered, because your staff can't answer 100 percent of the calls immediately; integrating voice-mail systems—some of which may be proprietary; unification of messaging—that is, creating universal mailboxes for employees into which voice, e-mail and fax messages all go; and even phone calling over the Internet. Telephony won't leave any segment of your IS expertise untouched. For example, because storing voice recordings, as in a voice-mail system, takes up more space than text, you'll even have to rethink your storage capacity.



This model of a solution for communicating with customers employs an integrated CTI architecture. *Source: J. Frank Consulting*

To boost your technical knowledge, sources also recommend attending industry seminars, such as those sponsored by *Business Communications Review* (www.bcr.com), and trade shows, such as the Computer Telephony Expo (www.ctexpo.com), which is held twice a year. In addition, the part of AT&T that kept the name, as both a switch vendor and long-distance provider, sponsors user groups for its toll-free customers, among other constituencies.

Integrating Personalities

You may not have the luxury of becoming comfortable with telephony terms before you start dealing with staff issues regarding CTI, so you'll be learning in parallel with your coworkers. The lines between computers and telephones haven't blurred sufficiently enough to mask concerns of traditional IS and telecom folks, so you'll have to be prepared to tackle cultural issues as well. Most people agree that telecom and IS should be combined into one department, but that's not always easy, as John Bowling recalls.

His firm, PSI Energy, is the public utility for two-thirds of Indiana. It decided to consolidate its telephone services from 49 regional offices into its headquarters just outside Indianapolis four years ago. Bowling, now call center supervisor, made the mistake of raising his hand in a meeting when one of the executives asked if anyone knew about telephone switches. "I was in an office once when we installed a new telephone switch, so I was thereby appointed to be the technical coordinator for our consolidation effort," he remembers.

His response was to form a team with the telecom and IS departments to meet on a regular basis, trying to hash out what this CTI was supposed to look like. It wasn't easy initially. "We were married to each other for three to four months," he recalls. "We almost ate, drank and slept together. We traveled to visit sites together. We argued." They debated the pros and cons of LANs versus WANs, terminals versus PCs, hard-wired connections versus server-based connections, and other topics. Tensions arose because both IS and telecom wanted to go with the technologies with which they were most familiar. The ultimate proposal required a "spirit of compromise," Bowling says, and the PSI group was successful ultimately because it focused not on the goals of IS or of telecom, but the goals of the company.

Thrashing out CTI between departments is important to get maximum value out of those facets that the computer and telephone systems have in common. "The key is synchronization. Make sure you're solving the problems once and solving them all together," says Jerry Cohen, prin-

cipal voice engineer for Georgia Power in Atlanta, part of the Southern Company conglomerate of southeastern utility companies. He advises that, however you design your network topology, it should be the same for both voice and data. For instance, keep the protocols simple. "Our objective is to go to a single protocol, rather than multiple protocols working together," he says. Georgia Power is moving toward TCP/IP, but to do that will require the PBX also to understand TCP/IP.

You have to be determined to get those efficiencies, Cohen says. "It's got to be driven by reducing costs. If by combining departments and moving telecom to the data side, you get lower operation and equipment costs, do it. Not just 10 percent savings, but 30 to 40 percent savings. If you can't get that, it's not worth it."

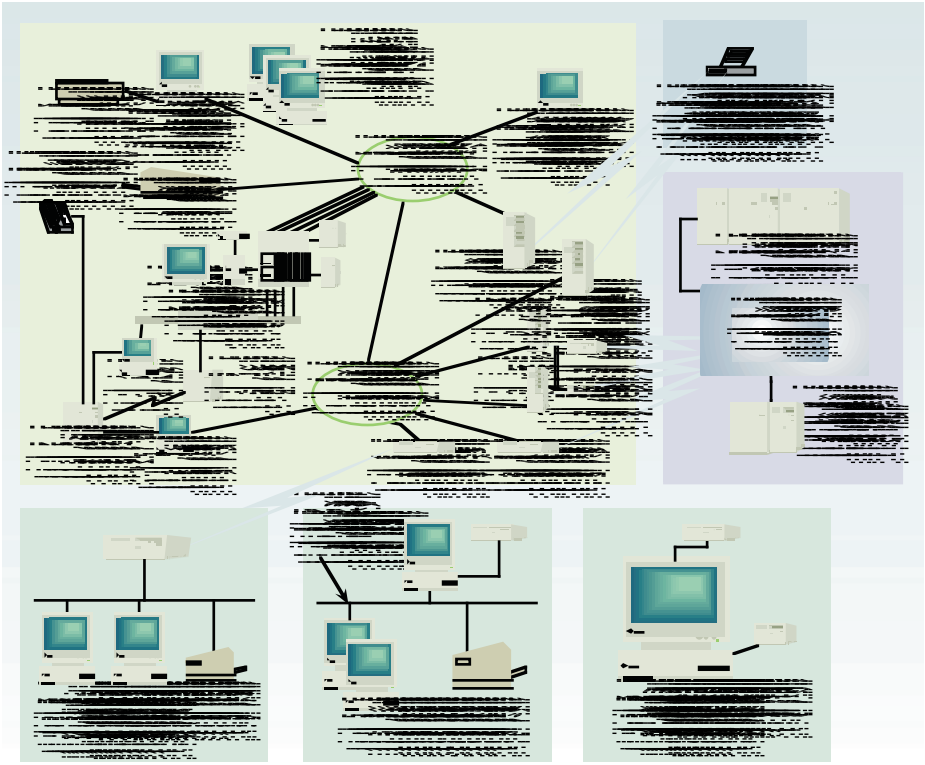
Remember the Customer

Throughout the integration process, it's important to focus on the people for whom you're doing all this work, insist both IS and telecom folks. It's to benefit two entities: the business itself and its customers. The customers may be the customer service representatives who staff the phones and get screen pops on incoming calls from the mainframe database, or they may be the people calling in—or both. Recognizing that common goal will keep the process rolling.

"If it came down to IS, telecom or customer service, customer service was going to prevail," says PSI Energy's Bowling. He is concerned that if the technical folks had their way, they'd be likely to come up with technologically sexy "whiz-bang tricks and gimmicks." But if it's impossible for the customer service representatives to understand the system, those gimmicks don't do anybody any good.

Generally, the MIS person has to keep a broader perspective of the company as a whole, suggests Cynthia Holladay, group marketing manager for telephony application developer Aspect Telecommunications in San Jose, CA. Even before MIS brings a telephony application such as automatic call distribution into a call center, she says, "Ask questions of the people currently managing that environment. How do they run it? What's important to them?"

Then, Holladay adds, you have to get into the telephony-related details, such as how much time elapses on average before a call is answered and how long the caller has to deal with the interactive voice response (IVR) system that they use to route their call to the correct agent. Once you know these benchmarks, you need to be able to monitor the system after it's up and running to make sure you're still achieving these same targets. "You have to put the metrics in place to see what your costs are and refine the applications to be more cost-effective," she says. It's fine to focus on customer service, but to serve the business also, you have to maximize resources and minimize the cost of running the call center.



A typical network topology for an integrated CTI system can be complex. The management group must identify potential bottlenecks and points of failure. *Source: J. Frank Consulting*

Putting It All Together

When it comes time to inaugurate the new system, it's easy to echo the sneaker ad and say, Just do it. Well, don't. Implementing CTI requires an ongoing commitment, insist those who have done it, because once you've integrated the technology, you have to integrate your personnel, too. This may be more complicated than the planning process discussed earlier, because you'll be reorganizing the way telecom and IS people work together on a regular basis.

The most important piece of advice seems to be to bring staff under the IS aegis. Even at PSI Energy, where Bowling doubles as call center supervisor and telecom switch administrator, two IS people are on what might as well be permanent loan to his group. Officially, they work for IS, but they spend all their time in the call center. From a management standpoint, Bowling calls this a "strategic alliance" between the call center and the IS department.

Clow of Premier Cruise Lines agrees. Although she believes that learning about telephony has significantly enriched her career, the circumstances of her transition were difficult. "If you were going to do this in a healthy way, you would migrate those people [administering the telephony system] into MIS," she says. As it was, the person responsible for the PBX was in administration and the person responsible for the call center was part of passenger services. "The responsibilities really belong in MIS, because you're talking about computer systems and everyone in the company interfaces with them," Clow reasons. If anyone in the company needs something computer-related, they should be able to call just one place for service.

At the same time, however, you can't ignore the importance of telephony expe-

rience. When Telecharge switched over from an asynchronous data terminal system to a client/server system, it meant rewiring all its offices. "It was a spaghetti mess," Andrews recalls, remembering the legacy of wires that had been installed by Nynex and outside vendors. "There was years of history in the floor, and there'd been little coordination between factions," he says. To avoid making this mistake a second time, the IS department took over responsibility for the cabling infrastructure, and Andrews added an experienced telecom person to his staff. If you don't combine telecom and IS, he warns, "the division of labor becomes ridiculous. It's easier to have the same thing run by the same person in the same department."

What else can you do? Regular staff meetings that bring together telecom and IS are both prudent and logical, but IS managers recommend going one step further when integrating services: cross-train your staff. Teach each group about the other technologies. After all, you're going to invest in your own training, so prepare to invest in theirs as well. "You need to recognize that people are assets and there are costs associated with those assets," says Andrews. "One of those costs is training. You already have an employee who has a knowledge base of his process and the company's process. That's a known quantity. It makes sense to educate them, because the return will be greater than with someone you hire off the street."

There are other advantages, too. In some companies, the telecom staff is part of the facilities organization. There's network knowledge going to waste in that department. By bringing telecom into the IS department, you gain a knowledge worker who may have been underused in another department, suggests Henry Thayer, director of voice and data communications at Blue Cross/Blue Shield of Rhode Island in Providence. "I spread the work around. I have one of my voice guys doing Internet work now. I'm getting a better return on my investment by making better use of those skills," he says, adding that an IS manager might be pleasantly surprised by getting to know the telecom staff better. "These people were a lot more literate about PCs and networks than you thought they might be." In the reorganization that merged the two groups, Thayer lost two employees. He didn't have to replace them, however, because combining the group improved its efficiency.

Seems Like Old Times

As noted at the outset, incorporating telephony into your MIS group is mostly a matter of communication: educating yourself, keeping your staff up to date and instituting cross-training. And even though adding telephony may sound as easy as adding any other application, it's important to apply basic IS management principles. One last piece of advice comes from Georgia Power's Cohen, and anyone who's tried to roll over one new system to another overnight will appreciate it.

"Don't [at first] replace a central PBX that handles several thousand people with 20 servers," he says. Instead, he advises starting at the edge of the network perimeter and working your way back in. "Go to an office with 20 people and put in a single PC that's both a PBX and a file server," he suggests. After that effort is accomplished successfully, do another and another, gradually moving in toward the central switch. Learning to do the small stuff right, Cohen says, will make the big installation easy.

If this still seems daunting, again remember that you've already survived waves of integration. Twelve years ago, it was the advent of PCs. Eight years ago, it was connecting those PCs into LANs. Four years ago, it was reengineering how those networks shared information with the mainframe. Now CTI is coming.

"IS was right in the middle of all that reengineering. They were the executors of that change," says Kushar of J. Frank Consulting. "Now that's done, and the concern is on customer service. The IS guys have a real opportunity to apply the data processing discipline to the telephony function and use their skills to help the telephony side grow faster." IT

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