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EMTEC ADVISER

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Indiana Live Casino in Shelbyville, Ind.

Playing the Odds

Experience, connections make Emtec the best bet to provide technology infrastructure for Indiana Live Casino.

The gaming industry has been around since ... well ... practically forever. Greek mythology holds that at the beginning of time, Zeus, Hades and Poseidon threw dice to divvy up the universe between heaven, hell and the sea. (Seeing as Zeus became king of the gods, the lord of Mount Olympus and the master of

sky and thunder, one presumes he must have hit a natural on the comeout roll.)

One thing that has remained constant down through the centuries is that the house wins by playing percentages and limiting risk. The Cordish Company's Gaming Operations division didn't stray from that philosophy when seeking a technology partner to design, configure and implement the network and communications infrastructure for its permanent casino, Indiana Live Casino in Shelbyville, Ind.

Emtec, Inc.'s specific experience with the gaming industry's unique application, security and regulatory requirements made the firm the best bet, according to Don Kneisel, Vice President of Information Technology for the Cordish Company-Gaming Operations. Having previously worked with Emtec when he was with Tropicana Casino and Resort, Atlantic City, NJ, Kneisel

knew the odds of a successful project were stacked in his favor.

By the Book

"I chose Emtec based upon my prior engagements with them," said Kneisel. "They know my industry and have proven themselves. I do not have time to teach a Casino 101 course to a new vendor."

In fact, Emtec practically wrote the book on gaming network implementations. With a long track record of successful engagements for customers such as Caesars, Tropicana, Resorts International, Harrah's, and Mt. Airy Hotel and Casino, the experts at Emtec have a rare understanding of the industry's distinctive technology challenges. Security and availability are obvious high priorities, as is the need for a future-proof

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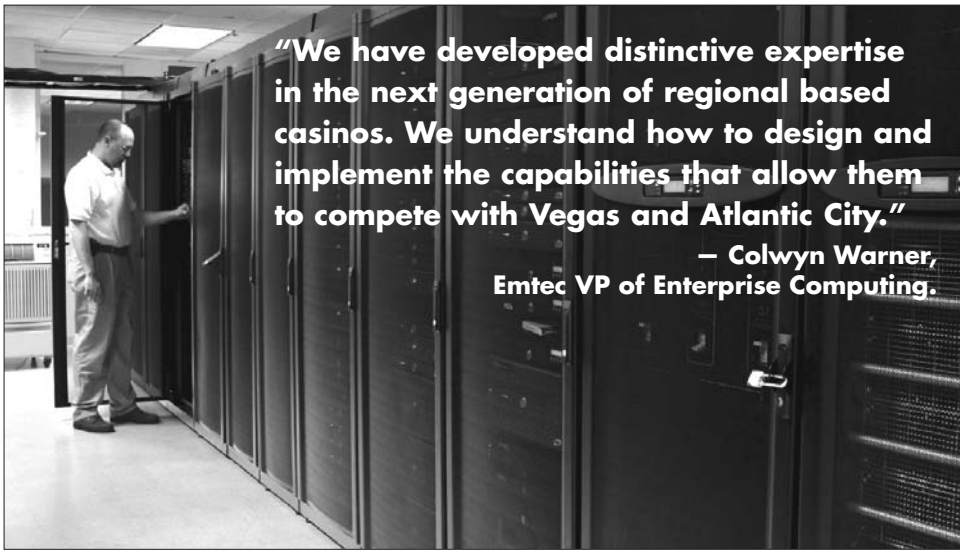
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"We have developed distinctive expertise in the next generation of regional based casinos. We understand how to design and implement the capabilities that allow them to compete with Vegas and Atlantic City."

**— Colwyn Warner,
Emtec VP of Enterprise Computing.**

Cover Story

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infrastructure to accommodate rapidly evolving gaming technology. Of particular interest to The Cordish Company-Gaming Operations was Emtec's singular proficiency in launching regional casinos.

Thinking Big

In spite of those obstacles, regional casino development is one of the hottest trends in the hospitality industry. Industry analysts say that as thrifty consumers cut back on big-ticket spending, they are taking fewer gambling trips to Las Vegas or Atlantic City and looking to try their luck somewhere closer to home. Yet, they still expect a Vegas-style experience.

"We have developed distinctive expertise in the next generation of regional based casinos," said Colwyn Warner, Emtec's VP of Enterprise Computing. "We understand how to design and implement the capabilities that allow them to compete with Vegas and Atlantic City."

Those capabilities include server-based gaming, wireless wagering, slot accounting, player tracking and reporting, database marketing, cashless capabilities, and loyalty programs. In addition, creating a Vegas experience requires a strong relationship with slot-machine manufacturers, application providers and third-party producers of such casino mainstays as computer-controlled sound and light shows.

"The Cordish Company-Gaming Operations valued our understanding of casino environments, the relationships we've built in Vegas and Atlantic City and our ability to lever-

age those in other parts of the country to ensure a successful opening," said Warner. "Even when we're working in an area where it is hard to find people with the right technical background, our clients know we can deliver the expertise to the location — wherever it is — to get the job done within the launch window."

The Ground Floor

Located 20 minutes from downtown Indianapolis, the Indiana Live Casino is the largest land-based casino in the Midwest. The \$300 million, 223,000-square-foot project was built adjacent to the Indiana Downs horse-racing track and was developed and is managed by The Cordish Company.

In a highly innovative approach to opening, the casino actually operated out of a 70,000-square-foot temporary tent facility while the permanent facility was being constructed. Emtec was brought in after the tent facility began operating in August 2008 to make modifications to the backbone network that supports casino operations, 2,000 slot machines and electronic gaming tables, six bars, two nightclubs, four restaurants and three retail stores.

A crucial element was the design and implementation of the wireless network that would allow customers to wager on horse races while inside the casino. Everything needed to be integrated with the existing network and back-end financial systems, and it all had to be enveloped by a security system that would segregate traffic according to gaming commission regulations.

"We brought in Emtec to provide a seamless transition from our temporary casino to our permanent casino," said Kneisel. "Wireless was something new we added to the permanent casino and I wanted a highly secure and stable solution."

The Wireless Edge

The Emtec team implemented a Cisco Unified Wireless Network, which combines the best elements of wireless and wired networking to deliver scalable, manageable and secure WLANs. Emtec also modified core switches and Active Directory settings to ensure proper integration, and had everything up and running weeks in advance of Indiana Live's permanent casino's grand opening on March 13, 2009.

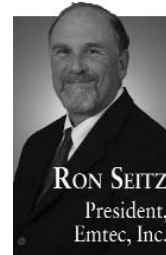
"With the current design, the wireless network is completely scalable to cover the entire complex and a hotel — if one is built in the future," said Kneisel. "We are experiencing a very stable network. I am thoroughly impressed with Emtec and have already recommended them to others in the industry."

Building a new regional casino from the ground up naturally involves some element of risk. Economic shifts, cost overruns, construction delays, regulatory restraints and inadequate labor resources all could lead to expensive delays. But when it comes to selecting a technology partner, high-level expertise, professional connections and overall experience with the gaming industry's technology requirements make Emtec a safe bet.

Staying Focused on the Client

Our cover story on the Indiana Live casino project illustrates one of the central principles that guide us here at Emtec: Putting Clients First!

There were a lot of good reasons the casino's management firm chose Emtec to design, configure and implement the network and communications infrastructure for the new facility. Our track record with similar projects, our eminently qualified staff and our broad connections within the gaming industry all were important considerations.



RON SEITZ
President,
Emtec, Inc.

In the final analysis, however, it was all about trust.

Don Kneisel, Vice President of Information Technology for the Cordish Company-Gaming Operations, had previously worked with Emtec when he was with another gaming industry firm. Our ability to earn his trust by demonstrating skill, integrity and reliability in that engagement opened the door for the Indiana Live opportunity.

It isn't an unusual occurrence for us. We have a long list of clients who have counted on us for multiple technology projects down through the years. Certainly, technical expertise and pricing are factors in any engagement — and we can compete with anyone on those aspects. However, our clients know they are going to get something more from Emtec: a partner that listens to their needs and takes the time to build relationships that will last.

One of the chief ways we accomplish this is through advocacy. Just as attorneys help guide their clients through the complexities of the legal system, our consultants and engineers work on behalf of our clients to sift through myriad vendors and products. Our vendor-agnostic, consultative approach ensures that you get the best solution for your needs — today and tomorrow.

Client advocacy drives everything we do, and not just the sales process. If you have a problem, we use our vendor relationships to help leverage the most rapid, cost-effective solution possible. We also serve as your voice, advising vendors of your needs and challenges to help drive product and service enhancements.

It's always exciting and rewarding when clients come back to us for repeat business. It tells us that our "customer-first" approach is working, and reminds us to keep using our knowledge, expertise, experience and vendor relationships to deliver solutions that fit your individual needs.

Reining in Risk-Takers

Employee education needed to combat growing threats from user errors, studies suggest.

As the reliance on centralized offices shifts to distributed business models and remote workforces, lines are blurring between work life and personal life. Unfortunately, this overlap frequently results in employees engaging in behaviors that can place corporate data at serious risk — and recent surveys indicate that organizations are dramatically underestimating the threat.

In its annual “Trends in Information Security” survey, CompTIA identified human error as the primary cause of the most severe security breaches, yet found that companies were actually de-emphasizing security training for non-IT staff. Only 45 percent of the organizations surveyed provided such training in 2008, down from 53 percent a year earlier.

“Unintentional security breaches by non-IT staff cost companies thousands of dollars in lost productivity and business downtime,” said Terry Erdle, senior vice president of skills certification for CompTIA. “This demonstrates a need for more employee trainings and deeper knowledge of technology functions.”

Beyond IT’s Reach

The proliferation of collaborative devices and applications such as smartphones, laptops, Web 2.0 applications, video and other social media are driving the operational shift, giving employees the tools to become far

more collaborative and mobile than previously possible. But removed from direct control of the organization, these tools are also being used in ways that would not pass muster with IT security staff.

For instance, nearly two-thirds of the respondents in Cisco’s global security survey admitted using work computers daily for personal use. Activities included music downloads, shopping, banking, blogging, participating in chat groups and more. Half of the employees use personal e-mail to reach customers and colleagues, but only 40 percent said this is authorized by IT.

“Fueled in part by the rapid adoption of portable hardware like laptops, flash drives and smart phones, and by distributed information technologies such as crowd sourcing, social networks, virtualization and cloud storage, end-users are exposed to new IT security threats every day,” said Tim Herbert, vice president of research at CompTIA. “Security threats grow along with the expanding reach of IT, so non-IT employees need to be continually trained on the latest IT security threats.”

Other eyebrow-raising behaviors identified in Cisco’s survey of 1,000 employees and 1,000 IT professionals from various industries and company sizes in 10 countries included:

Altering security settings: One of five employees altered security settings on work devices to bypass IT policy so they could access unauthorized Web sites. When asked why, more than half (52 percent) said they

simply wanted to access the site; a third said, “it’s no one’s business” which sites they access.

Use of unauthorized applications: Seven of 10 IT professionals said employee access of unauthorized applications and Web sites (e.g. unsanctioned social media, music download software, online shopping venues) ultimately resulted in as many as half of their companies’ data loss incidents.

Sharing sensitive corporate information: One of four employees (24 percent) admitted to verbally sharing sensitive information to non-employees such as friends and family — or even strangers. When asked why, some of the most common answers included, “I needed to bounce an idea off someone” and “I needed to vent.”

Sharing corporate devices: Almost half of the employees surveyed (44 percent) share work devices with others, including non-employees, without supervision.

Unprotected devices: At least one in three employees leave computers logged on and unlocked when they’re away from their desk. These employees also tend to leave laptops on their desks overnight, sometimes without logging off, creating potential theft incidents and access to corporate and personal data.

Storing logins and passwords: One in five employees store system logins and passwords on their computer or write them down and leave them on their desk, in unlocked cabinets, or pasted on their computers.

Losing portable storage devices: Almost one in four (22 percent) employees carry corporate data on portable storage devices outside of the office, which presents high risk if the devices are lost or stolen.

Allowing “tailgating” and unsupervised roaming: About one in five employees allow non-employees to roam around offices unsupervised, and about the same number have allowed unknown individuals to tailgate behind employees into corporate facilities.

Training Needed

“Businesses are enabling employees to become increasingly collaborative and mobile,” said John N. Stewart, chief security officer of Cisco. “Without modern-day security technologies, policies, awareness and education, information is more vulnerable. Today, data is in transit, in use, within programs, stored on devices, and in places beyond the traditional business environment, such as at home, on the road, in cafes, on airplanes and trains. This trend is here to stay.”

In order to combat the growing risk from unsafe employee behavior, organizations should structure employee education programs, develop risk management plans and establish security best practices.

“To protect your data effectively, we need to start understanding the risk characteristics of business and then base technology, policy, and awareness and education plans on those factors,” said Stewart. “Data protection requires teamwork across the company. It’s not just an IT job anymore.”

Financial Institutions Fear Uptick in Security Threats

Security budget cuts, staff complacency and lower employee morale are factors that could expose global financial institutions to an increased risk of data breaches, according to Deloitte Touche Tohmatsu’s sixth annual survey of global financial institutions’ information security efforts.

“Consumer trust is already waning. As such, it is important for financial institutions to be vigilant in protecting their data and implementing checks and balances to reduce the risk and potentially catastrophic consequences of security failures,” said Mark Steinhoff, the leader of Deloitte’s financial services security and privacy group, and a contributor to the report. “With the many challenges confronting the industry this year, combating security breaches should not fall by the wayside.”

Based on interviews with senior security officers from the world’s top global financial institutions, the survey identified three major causes for concern:

BUDGET CUTS. More than half of respondents (56 percent) said budgetary constraints and/or lack of resources are the leading barriers to ensuring

information security, while lack of resources is identified by one-third as the leading cause of failure of information security projects.

MORALE. The majority of respondents (86 percent) confirm that human error is the leading cause of information systems failure. They fear more breaches, due in part to employees who are distracted or disgruntled because of job insecurity and increased stress.

COMPLACENCY. Internal and external breaches at financial institutions worldwide have fallen over the past 12 months, which could lead employees to become less vigilant about security. More than a third (36 percent) of respondents expressed concern about insiders’ misconduct, and 58 percent are concerned about their ability to protect their organization from internal cyber-attacks.

“How you keep your infrastructure and technologies safe is something all institutions should be focused on in 2009,” said Steinhoff. “This will be a challenging year, no matter how you slice it.”



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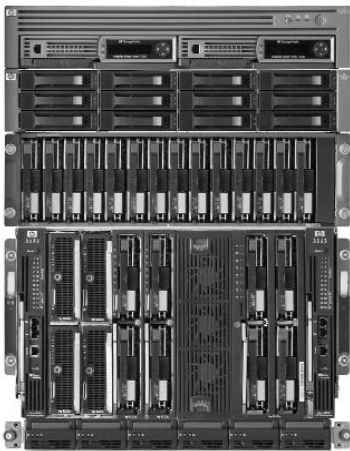
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Effective E-mail Management

An e-mail retention policy and archival solution helps protect against legal, regulatory and business risks.

If your organization were the target of litigation or a regulatory investigation, you'd likely be required to produce financials, customer records, contracts and related documentation, right?

Not so fast.

All of those e-mails zipping through your messaging system would also be subject to scrutiny. That's right: you would be forced to sift through all of the forwarded jokes, gossip, lunch invitations and other purely social messages to find those relating to the legal or regulatory issue in question. Worse yet, this process could yield messages that might prove damaging to your organization.

A comprehensive e-mail retention policy coupled with an effective e-mail archival solution can help mitigate these risks. By establishing best practices and implementing the right technology tools, organizations can ensure the successful management of e-mail business records, reduce e-discovery costs, improve productivity and enhance security.

Unfortunately, too few organizations have such policies and procedures in place, waiting instead for an e-discovery or regulatory request before even thinking about e-mail retention and archival. This reactionary approach can prove very costly.

What Is a 'Business Record'?

A recent study conducted by the Association of Record Managers and Administrators (ARMA) International reveals that a large majority of records management professionals feel unprepared when it comes to e-mail management (72 percent) and e-discovery (68 percent). The study also found that 62 percent of respondents lack an e-mail archiving system.

It's important to remember, however, that implementation of an e-mail archival solution is the final hurdle. An effective e-mail management strategy begins with the development of an e-mail retention policy. Given that only 34 percent of organizations have a formal e-mail retention policy in place, according to the ePolicy Institute, additional education is clearly needed.

The first step is to define, from a legal and regulatory perspective, what constitutes an electronic business record. This clearly written definition helps the organi-

zation distinguish messages involving business-related activities and transactions from insignificant and purely personal e-mails.

Once this definition is in place, the organization should make sure that every employee knows what kinds of messages must be retained, and understands his or her role in the organization's overall e-mail retention strategy. Because e-mail is generated throughout the organization, e-mail retention practices cannot focus on the IT department. All employees must take part in the archival of business-related e-mails and the purging of extraneous messages.

Processes, Training and Automation

Next, organizations should establish the policies and procedures necessary to ensure compliance with legal and regulatory e-mail retention rules. The e-mail retention policy should also address business requirements and risks, and be updated regularly as laws change and new technologies are adopted. In addition to establishing e-mail retention processes, organizations should define electronic business record lifecycles and delete messages as they become outdated.

Employees throughout the organization should receive training on how to comply with the formal e-mail retention policy. This training should stress that policy compliance is mandatory. Enforcement through disciplinary action and technology tools not only helps ensure effective e-mail management but illustrates to courts and regulators that the organization is serious about its e-mail retention obligations. Demonstrated consistency increases the odds of a favorable ruling should the organization become embroiled in an e-discovery dispute.

E-mail archival solutions play two key roles. First, these technology tools reduce e-discovery costs and help ensure policy compliance by automating e-mail archival processes. E-mail business records are preserved in a way that enables structured searches for rapid compliance with e-discovery and regulatory requests as well as day-to-day business operations.

Second, e-mail archival tools help ensure that e-mail business records meet evidentiary requirements. Because e-mail

must be authentic, trustworthy and tamper-proof to be considered legally valid, e-mail archival solutions should encrypt messages and protect against the deletion or alteration of archived e-mail.

Business Benefits

E-discovery is typically touted as the primary reason for establishing an e-mail retention policy and archival solution. Without effective e-mail management, organizations face incredibly expensive and time-consuming e-discovery challenges as well as the potential for costly court sanctions if they fail to meet e-discovery deadlines.

Regulatory requirements also compel organizations to get a handle on e-mail. Sarbanes-Oxley, HIPAA and the Gramm-Leach-Bliley Act all require the preservation, protection and control of business records, with the potential for huge fines and civil and criminal liability for non-compliance. Other government and industry regulations may also come into play.

However, effective e-mail management can provide organizations with a

number of key benefits. E-mail is not always a "smoking gun" — in fact, e-mail can often be used to protect the organization from legal liability. The ability to produce the right e-mail records at the right time helps win lawsuits, and may even compel an opponent to settle out of court. E-mail business records also help document transactions and personnel matters and aid in decision-making.

Given today's litigious environment and increased regulatory scrutiny, organizations face significant e-mail-related risks. Organizations of all sizes need an e-mail retention policy and automated e-mail archival solution to help speed the retrieval of e-mail records related to a legal claim. Effective e-mail management also helps ensure compliance with government and industry regulations and facilitates day-to-day business activities. E-mail is not a simple communication tool but rather a key component of any organization's business records.

10 Things You Should Never Say in E-mail or IM

George Carlin gave us the "Seven Words You Can't Say on Television." Elizabeth Charnock's claim to fame is the "10 Things You Should Never Put in E-mail." Charnock, CEO of e-discovery software provider Cataphora, says these phrases practically beg legal searchers to investigate further:

1. "I could get into trouble for telling you this, but..."
2. "Delete this e-mail immediately."
3. "I really shouldn't put this in writing."
4. "Don't tell So-and-So." Or, "Don't send this to So-and-So."
5. "She/He/They will never find out."
6. "We're going to do this differently than normal."
7. "I don't think I am supposed to know this, but..."
8. "I don't want to discuss this in e-mail. Please give me a call."
9. "Don't ask. You don't want to know."
10. "Is this actually legal?"

Charnock's list made its way to Roger Matus' "Death by E-mail" blog (www.deathbyemail.com) and has since circulated throughout the legal blogosphere. Matus says that if your message includes one of these phrases, you should probably just delete it without sending. Otherwise, if your organization becomes involved in litigation, you'll likely find that the message raises a lot of unpleasant questions during the e-discovery process.

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Goodbye, Desktop Phone

Hello, cost-saving, productivity-enhancing tools. A new breed of communication devices will provide workers with enhanced mobility, flexibility and multitasking capabilities.

The elements of the desktop landscape have changed dramatically in the past few decades, from blotters and adding machines in the 1950s to state-of-the-art laptops and LCD monitors today. One element has stayed fairly constant, however: the desktop telephone. The rotary dial may have been replaced with sophisticated color displays, but the basic concept of the desk phone has remained essentially the same over the years.

Well, it may soon be time to say goodbye to your desktop phone. Analysts at Gartner predict that 40 percent of enterprise knowledge workers will have abandoned or removed their desk phones by 2013. Instead, these workers will be using handheld devices, sophisticated headsets and other tools that provide mobility and an array of communication and collaboration features.

The increase of worker mobility and flexibility has resulted in the creation of various worker classifications and nicknames, such as Corridor Warriors, Road Warriors, Home Workers and Telecommuters. These workers utilize telecommunications technologies such as virtual private networks, videoconferencing, unified communications and IP telephony to communicate with their central offices. They need communications devices that make it easy to tap into these services, along with enhanced flexibility, mobility and multitasking capabilities.

"The need for enhanced communications is resulting in the creation of a series of communication tools and devices that are helping the employee to efficiently perform his/her job at any location and on the go," said Frost & Sullivan Research Analyst Alaa Saayed. "These business endpoints include unified communications clients, integrating multiple communication applications such as messaging, presence, and conferencing, and mobile soft clients."

Talk About Possibilities

Gartner analysts believe that enterprises in North America will be supporting more mobile phones than desktop phones by 2011. Although most users will continue to have a desktop phone during this transitional period, mobile phones will ultimately become more prevalent

and replace desktop voice hardware to become the primary device.

"The adoption and standardization of corporate-liable mobile phones in the enterprise has been driven by the use of smart phones, wireless e-mail and the integration of these phones into IP telephony systems, while improved in-building coverage and lower mobile service costs have also played a part," said Phil Redman, research vice president at Gartner.

Frost & Sullivan sees enterprise headsets as the key to providing continuous communication, independent of the type of worker, location or device used. Headsets offer a cost-effective way to tap into softphones and other devices while providing workers with hands-free capabilities.

The research firm estimates that the world enterprise headset market earned nearly \$850 million in revenue in 2007 and expects the market to exceed \$1 billion in 2014. The increasing sophistication of communication devices and greater recognition of the technology's benefits will keep the market buoyant despite the economic downturn.

Speaking of Benefits

Organizations are embracing these new devices because they help boost worker efficiency and productivity, control overall costs, and maximize the return on investment in the latest communications services. Research suggests that enhancing productivity depends as much upon the communications device at hand as on the communications services that are available. As a result, organizations are demanding enterprise-class, software-driven devices that are flexible enough to support an employee's changing roles, tasks and location, while offering broader functionality than traditional communications tools.

Many organizations are also looking to reduce costs by eliminating desktop phones, particularly in light of the growing trend toward remote workers, hot-desking and other business practices that unlink an individual from a fixed location. With complex desk phones costing several hundred dollars per unit, significant cost savings are possible. According to Gartner, organizations should consider

whether users need both a desk phone and a mobile device, and plan to reduce any unnecessary expenses.

The desktop telephone isn't going to disappear from desktops overnight. According to a recent report from market research firm In-Stat, 31 million voice-centric business IP phones will ship by 2012 as IP-based communication continue to replace TDM networks at a steady pace in the workplace.

"Within the business market, corded IP phones remain the standard, and will continue to dominate the enterprise IP phone market through 2012," said Norm Bogen, In-Stat analyst.

But while resistance from some employees will prevent total elimination of the desk phone, the trend is clear. More and more knowledge workers will be saying hello to new communications devices that provide greater flexibility and more efficient communications while lowering costs. Over time, the desktop phone may go the way of the adding machine and the blotter.

Going Mobile: How to Transition From Desktop to Mobile Phones

As mobile communications becomes more prevalent within the enterprise, organizations will need to plan how they manage usage, support and costs. Although mobile hardware generally costs less than desktop phones, mobile services can cost five times more than a wired call. This could represent a huge shift in the budget for communications services.

Gartner recommends a four-step plan for enterprises to ensure a smooth transition to mobility:

1. PLAN. It's important to determine how and when the organization will support mobile technologies, who gets mobile voice and data, and what the cost impact will be. Many providers are willing to add additional wireless coverage for little or no cost, although this may mean consolidating to a primary provider to get the best deals and ensure that everyone has the same carrier. Organizations should also be aware that more capable mobile phones will drive the need to support other applications, which could impact other IT areas such as application development and security.

2. PROCURE. Contract renegotiation offers a good opportunity to institute new fixed and mobile plans. Organi-

zations should look at zoned billing, flat-rate unlimited and mobile-to-mobile plans to reduce the cost of cellular calling.

3. MANAGE. As the transition from fixed to mobile occurs, enterprises need to have a solid policy that addresses usage, costs, standards and security. IT should work with business groups to develop a thorough mobile policy that specifies who gets mobile services and how much will be spent. Mobile device platforms should be standardized so that application development and support can be centralized and managed more easily. Organizations also need to prepare the help desk for supporting a more challenging user, which could mean employing specialized technicians.

4. REMOVE. Organizations should remove unnecessary desk phones to reduce hardware and operating costs and increase efficiency. Each mobile user should have one number, one voice mail and a softphone. Gartner suggests making an annual count so that licensing fees can be rectified to reduce costs and surplus desk phones used for incoming non-mobile users.

Flirting with Change

Many organizations are falling head over heels for thin-client and zero-client computing. Is it a match for your environment?

Thin, uncomplicated, reliable and secure. Suitable for long-term relationship.

Sure, that could describe a personals ad on craigslist, but it is also a fairly accurate representation of thin-client computing. Offering significant cost, security and administrative benefits, thin clients are increasingly seen as attractive alternatives to traditional desktop PCs.

Thin clients are the ideal partners for desktop virtualization solutions, in which the desktop environment, applications and data reside on a centralized server within the data center. A thin client has its own memory, processor and network connectivity but no hard disk drive — or any of the baggage that goes with it. IT is freed from the tasks of patching operating systems, installing and updating applications, and ensuring that data is protected on each and every desktop. What's more, thin clients cost less, are more reliable and require less frequent upgrades than PCs.

By addressing some of the most troublesome problems facing IT — desktop administration, data security and technology refresh costs — thin-client computing is gaining more and more admirers. However, there is a new face in town that is attracting a lot of attention. So-called zero-client or ultra-thin-client solutions take thin-client computing to the next level. Which will win the hearts of desktop administrators?

A Lot of Experience

Thin clients have been around for awhile. In fact, the thin-client computing concept grew out of the old mainframe environment, in which “dumb terminals” provided the interface to centralized applications. And “interface” pretty much describes a thin client's function. In essence, a thin client accepts the user's keystrokes and mouse movements and sends them to the application, then accepts the application's video output and displays it for the user.

Thin clients began seeing renewed interest as relief for the high cost of PC management and support, but their mainframe legacy tarnished their reputation somewhat. Critics saw them as character-oriented devices unsuited to today's graphics-intensive environment. It takes more processing power and bandwidth to process graphics, and more still to handle multimedia, offsetting some of the benefits of thin-client computing.

However, thin clients have continued

to evolve along with the marketplace. The leading manufacturers of thin-client solutions offer an array of options suited to a variety of end-user and application requirements. Some support Windows and Linux operating systems as well as specialized “thin” OSs. The most powerful provide support for voice, video and rich media, multiple displays, wireless connectivity, and more. These solutions provide a robust end-user experience while enabling organizations to capitalize on desktop virtualization.

“As businesses look at ways to optimize the desktop with virtualization technologies, end-users want an uncompromised experience via methods that are most familiar to their existing environment, including demanding applications that require graphics acceleration, high-quality video display and VoIP compatibility,” according to Mark Bowker, analyst at Enterprise Strategy Group.

Low Maintenance

Of course, not every end-user needs those kinds of features. If the key is to minimize desktop acquisition and administration costs, it's important to select the simplest device for each application. And with no memory, processor or operating system, the zero client is about as uncomplicated as it gets.

The zero client is essentially a connectivity device optimized for the desktop virtualization environment. Zero client solutions include software that runs inside each user's virtualized desktop and routes data to and from a zero client device, which typically includes an Ethernet jack, a VGA plug, audio input and output connections and USB connectors for input devices. Direct connectivity between the zero client and the host software eliminates the need for network protocols that can increase network overhead and degrade performance.

Zero clients offer all of the benefits of thin clients, with a lower cost per unit. What's more, zero clients consume much less power than their thin client and PC counterparts — some as little as three watts.

Neither thin clients nor zero clients are right for everyone. They're not sufficient for power users who need to do a lot of local processing with applications, for example. But for many organizations seeking to control costs, improve security, reduce energy consumption and streamline desktop management, thin-client and zero-client computing is a match made in heaven.

Oversights Expose Network Gear

Nearly three-quarters of all networking devices have known security vulnerabilities that may expose organizations to external and internal security attacks, global IT solutions and services provider Dimension Data claims. In its recent “Network Barometer Report,” the firm also says that each device deployed — such as a router, gateway, switch, etc. — has an average of 30 configuration errors, despite the fact that there are widely published and recommended standards to safeguard against these problems.

“While the implications are alarming, the problems we uncovered can often be easily addressed,” said Rich Schofield, global business development manager, Network Integration, Dimension Data. “The most basic protection measures against threats that could harm an organization, such as having proper access and password configurations, are simply not in place. It's the functional equivalent of leaving the doors and windows unlocked when you leave home. Organizations must take action now, working to shore up their networks before they incur reputational or shareholder damage.”

Other major issues reported include expiring support and aging equipment. The report says that 43 percent of all network equipment reviewed was found to be at least at end-of-sale status, signifying increased difficulty in purchasing spare parts. Of that equipment, 56 percent was beyond either end of software maintenance or last day of support.

SMBs Anticipate IT Investments

An increasing number of IT decision makers from small and midsized businesses (SMBs) say they plan to make technology investments over the next few months, according to a recent survey by CDW IT Monitor. According to the survey, 29 percent of small businesses expect budget increases in the next six months, and 18 percent of midsized businesses anticipate hiring in the next six months.

Despite these encouraging signs, confidence among survey respondents remains somewhat low, said CDW Vice President Mark Gambill.

“The challenging economic times everyone has experienced are by no means over. But for the first time in more than a year, we are seeing green shoots that indicate returning confidence in the IT industry,” said Gambill. “The fact that an increasing number of IT decision makers are anticipating any amount of future growth at this time is reason to believe the first signs of spring may have arrived in what has been a gloomy economic climate.”

Review of U.S. Cyberwar Policy Urged

The current policy and legal framework regulating use of cyberattack by the U.S. is ill-formed, undeveloped and highly uncertain, says a new report from the National Research Council. The committee issuing the report recommends that U.S. policy should be informed by open national debate on the technological, policy, legal and ethical issues of cyberwarfare.

The committee was co-chaired by Adm. William Owens, former vice chairman of the Joint Chiefs of Staff and former vice chairman and CEO of Nortel Corp., and Kenneth Dam, Max Pam Professor Emeritus of American and Foreign Law at the University of Chicago School of Law.

Cyberattacks — actions taken against computer systems or networks — are often complex to plan and execute but relatively inexpensive, and the technology needed is widely available. Defenses against such attacks are discussed, but questions on the potential for, and the ramifications of, the use of cyberattack as a component of the U.S. military and intelligence arsenal have not been the subject of much public debate.

“Cyberattack is too important a subject for the nation to be discussed only behind closed doors,” Owens and Dam said in a joint statement.



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Playing it Safe

Virtualization and automation help take the adventure out of disaster recovery planning.

His numerous exploits included the first successful expedition to the South Pole and the first trans-Arctic flight across the North Pole, yet the legendary Norwegian explorer Roald Amundsen did not think of himself as an “adventurer.”

“Adventure is just bad planning,” he once said.

Biographers say Amundsen was well-regarded among his peers for his ability to minimize risk through meticulous preparation, exceptional organizational skills and innovative survival techniques. These are the same qualities today’s CIOs should draw upon to ensure that business operations do not become an adventure in the face of a major disruptive event such as a natural disaster, human error or system failure.

It is crucial that organizations incorporate a comprehensive, proven disaster recovery plan into their overall business strategy to help ensure the recovery of data and applications with the least amount of impact to operations. Virtualization technology can dramatically minimize risk by automating the disaster recovery process and ensuring that it is executed rapidly, correctly and cost-effectively.

Keeping it Simple

A virtualization platform makes significant improvements to disaster recovery (DR) readiness by creating hardware independence. In a non-virtualized environment, data replication must occur between like arrays or like hosts. By abstracting the operating system from the hardware layer, virtualization allows IT shops to replicate asymmetrically — that is, without having to provide a matching host or disk at the disaster recovery site.

As in physical environments, however, disaster recovery in virtualized environments is typically implemented manually, requiring numerous complex steps to allocate recovery resources, perform bare metal recovery, perform data recovery and validate that systems are ready for use. These manual processes leave organizations exposed to significant risk of extended downtime because they are tough to set up, time-consuming to maintain and extremely difficult to test. As a result, only a subset of important systems can be adequately protected.

For example, traditional disaster recovery plans for data centers require extensive documentation consisting of

hundreds of pages of instructions contained in runbooks that are nearly impossible to keep accurate and up-to-date. The complexity of the manual recovery processes in these runbooks makes it difficult for organizations to reliably recover within their recovery time objectives.

However, a virtualized server environment dramatically increases the level of disaster recovery automation that is possible. There are a number of powerful workflow management systems engines on the market that can automate runbooks and effortlessly trigger the movement and restoration of virtual environments between virtual server clusters. Middleware from several vendors can be tightly integrated with storage replication software to connect with a DR site and map production resources to the corresponding resources at the recovery site.

Consider it Done

Having a recovery plan is an important step, but just as important is ensuring that the plan is reliable. Traditional recovery plans are often unreliable because they are hard to test, difficult to keep up to date, and depend upon correct execution of complex manual recovery processes. In a recent survey of more than 1,000 IT managers, nearly one-third reported that their tests failed to meet recovery time objectives. Human error was the leading reported cause of failure. Furthermore, nearly half of the respondents said they are reluctant to test their plans due to disruption to the business and lack of resources.

Automated testing tools for virtualized environments create an isolated testing environment on the recovery site, execute the recovery plan to be used in an actual failover and then clean up the testing environment once testing is complete. Test results are saved for viewing and export at any time. Hardware configuration dependencies are eliminated and testing can occur without impacting production systems.

A spirit of adventure often can lead to innovation in the business world, but when it comes to disaster planning, there is no place for uncertainty or risk. A DR solution must be as clear and predictable as possible because there is little room for error when mission-critical data and applications are at stake. Virtualization can help take the guesswork out of disaster recovery through hardware independence and automation.

Docs Grudgingly Adopt Technology

Although far more physicians are using technology than they were five years ago, most are doing so reluctantly, according to a recent survey by the American College of Physician Executives. Some doctors embrace the new measures, but a much larger number viewed healthcare technology as frustrating and difficult to use.

One physician even said that adopting electronic medical records was the “worst aspect of my 25 years in medicine. It has ruined doctor productivity, produced lower quality care and encouraged notes that are false to the point of fraud.”

Others said the cost was prohibitive and the software difficult to implement. A common complaint, especially among physicians who shuttle between hospitals and private practice, was that the available systems don’t do a good job of talking to one another.

Perhaps the biggest source of frustration was the lack of input from physicians when designing and implementing healthcare information technology systems. Many said that involving clinicians at the planning stages would prevent many of the problems that crop up later.

Social Networks, Blogs Gain Favor

Now visited by more than two-thirds (67 percent) of the global online population, “member communities,” which includes both social networks and blogs, has become the fourth-most popular online category — ahead of personal e-mail. The category is growing twice as fast as any of the other four largest sectors (search, portals, PC software and e-mail), according to a report by The Nielsen Company.

The ocean feature is on by default in the newest version of Google Earth. As users zoom in on the ocean they will see a dynamic water surface, and once they dive beneath the surface they can navigate 3-D sea floor terrain. The feature includes 20 content layers, containing information contributed by the world’s leading scientists, researchers, and ocean explorers.

“With this latest version of Google Earth you can not only zoom into whatever part of our planet’s surface you wish to examine in closer detail, you can now dive into the world’s oceans that cover almost three-quarters of the planet and discover new wonders that had not been accessible in previous versions of this magical experience,” former Vice President Al Gore said at the launch event in San Francisco.

Work Surfers More Productive

A recent study of the University of Melbourne in Australia found that people who surf the Internet for personal reasons at work are 9 percent more productive than those who don’t. The study’s author says that such short breaks enable the mind to “rest itself,” leading to a higher total net concentration for a day’s work and, as a result, increased productivity.

The study looked at workers who were on the Internet for less than 20 percent of their total time in the office. Those with Internet addiction tendencies will have lower productivity, the report concluded.

“Firms spend millions on software to block their employees from watching videos, using social networking sites or shopping online under the pretense that it costs millions in lost productivity. That’s not always the case,” said Dr. Brent Coker of the university’s department of management and marketing.

Jack Andrys, CEO of Internet monitoring and analysis firm WebSpy, says the study’s findings should persuade organizations to be more lenient and allow for a certain amount of unrestricted online use. “As long as an Internet Usage Policy is established, well communicated and managed to prevent misuse, the majority of employees will prefer monitored Internet access to restricted or blocked access,” said Andrys.

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Virtualization Going Mobile

Developing technology aims to turn handheld devices into full-blown computing platforms.



There's little question that mobility has become a key feature of the technology landscape. What's changing is that mobile users want access to more than just e-mail. Organizations seeking to maximize the productivity of an increasingly mobile workforce need to give road warriors access to enterprise applications through their handheld devices.

That's easier said than done. Given the wide variety of handhelds, with a mix of features, operating systems and network technologies, organizations are struggling to incorporate mobile devices into their data center strategies. On top of that, mobile technologies are constantly changing, creating a moving target.

Virtualization can help. With virtualization, end-users can access their complete desktop operating environment through any network-connected device. Done right, virtualization makes it easy to deliver applications to mobile users and improves security because applications

and data are centralized in the data center.

"Gartner sees virtualization in the mobile space as a very promising and potentially a fast-emerging market. We predict that by 2012, more than 50 percent of new smart phones shipped will be virtualized," said Monica Basso, Research Vice President at Gartner. "Virtualization can enable enterprises and consumers to easily manage and secure their phones and it can also help handset vendors reduce bills of materials and shorten development cycles to allow for faster releases."

Breaking the Link

The key to this anticipated success is choosing the right virtualization solution. VMware, Citrix, Virtuallogix, and a handful of other companies including Green Hills Software, Open Kernel Labs, Trango Virtual Processors and Wind River Systems are among companies developing ways to apply virtualization technology to handheld devices.

Without virtualization, a mobile phone's underlying hardware can theoretically support any number of operating systems — but only one at a time. As a result, handset manufacturers traditionally have had to pick one OS to be linked to the hardware for the life of the product. So the product becomes either a Windows Mobile phone, a Symbian phone or an Android phone, etc.

With mobile virtualization, a hypervisor is embedded on a handheld device to decouple the applications and data from the underlying hardware. The virtualized device is then capable of running multiple software stacks, regardless of differences in chipsets, operating systems and device drivers. It's even possible to run two different operating systems side by side on the same device.

Many Benefits

Mobile virtualization offers numerous benefits for handset vendors. They typically spend a considerable amount of time porting a software stack multiple times, once for each platform. Virtualization eliminates that slow and expensive process, speeding time to market and cutting development costs.

Much as virtualization enables server consolidation, it also allows mobile devices to operate with fewer chipsets. Handhelds customarily have three separate processors for communication, appli-

cations and multimedia, but virtualized devices can do the job with just one or two chips.

Device security is improved through the compartmentalization of functions. Core phone services can be isolated from OS functions, reducing the risk of cross contamination. Mission-critical code and sensitive data can be "sand-boxed" into a trusted environment. In fact, organizations could deploy a corporate phone personality that runs separately from the user's personal phone on the same physical device. IT would be able to set up a "work" profile based upon corporate security policies while allowing the user a great deal of flexibility with their personal profile.

User Demand

Although mobile virtualization is still a nascent market, end-users are pressing for solutions that will allow them to use handheld devices as full-on computing platforms rather than mere communication tools. A recent survey by Open Kernel Labs found that corporate end-users and IT professionals believe mobile access to enterprise applications growth will outpace the growth of mobile e-mail over the next two years. Although this type of access is typically provided through a secure virtualized environment managed by corporate IT departments, the study further illustrates that corporate users expect to access this data from their mobile handsets.

In the survey of more than 500 IT professionals and corporate end users from the U.S. and U.K., 87 percent said it is "critical" that mobile workers have access to enterprise applications from their mobile phones. This includes access to corporate desktop applications, access to corporate servers and mobile access to corporate databases.

"As virtualization reaches out from the server room to make the desktop just another enterprise infrastructure asset, these handheld devices will be next," Rachel Chalmers, research analyst at 451 Group wrote in a recent study. "They're easily capable of functioning as mobile enterprise application end points. They're going to need exactly the same kinds of security, policy enforcement and central manageability as anything else in the modern, Web 2.0-friendly, regulatory-compliant enterprise. Enter virtualization."

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