# PROTECTING THE NETWORK

## *Keeping Mission-Critical Resources Up and Running*

*Business continuity demands an always-on computing infrastructure with continuous access to the information that serves as the lifeblood of all companies. And the most basic engine of business continuity is the power that keeps enterprises up and running. Here's a closer look at the power- and cooling-related challenges facing today's IT infrastructures.*

*As seen in:*

InformationWeek

# Power Protection and the Extended Enterprise

## New Challenges Abound

### Business continuity. "High-nines" availability. High density. Risk management. Information security.

These are just a few of the buzzwords that are shaping the landscape of modern business. Because as the Internet, computer technology and other components of the Information Age hurtle relentlessly forward, enterprises everywhere have come to depend on their IT infrastructures to give them the information and applications they need, when they need it. That's because information is indeed knowledge, and knowledge is power—the power that hones the competitive edge of an organization, supports operational resiliency, protects its brand, and enables it to deliver ever-higher levels of customer service and satisfaction.

Having continuous access to the stream of mission-critical information and applications that businesses now require is a function of both technology proliferation and business demands. Many IT solutions have emerged—especially in recent years—to protect, store, secure and access mission-critical data. The list is long and growing: Data storage solutions. Web hosting. Security and recovery products. Internet e-commerce. New network architectures. And acronyms such as ERP, RFID, POS, EFT and a host of others—all of which translate into better ways to keep information available and flowing, speed products to market and keep the enterprise up and running efficiently.

Today's mission-critical networks are generally protected by redundancy. But while IT is focused on delivering 24 x 7 business continuity, new applications and equipment are continually being added to the network— especially in remote sites

**Without sufficient power protection, seconds of downtime can cost millions in losses.**

unmanned by IT staffs. In this increasingly complex, real-time enterprise, it's easy to overlook a fundamental imperative—the need for power protection.

The same basic electrical power that enables a simple light bulb to illuminate a room is also at the root of all of today's complex IT-driven enterprises—at the core of virtually every aspect of their businesses. Because without power protection,

threats such as blackouts, disruptions and spikes can lead to latency, downtime and equipment damage. The result is that e-commerce sites go down, customer service goes offline, supplier communications are disrupted and compliance isn't reported in a timely manner. Seconds of downtime can cost millions in losses. Clearly, the mission-critical operations of today's extended enterprise are now facing a new set of challenges that threaten to undermine the availability of the networked power that we all take for granted. These evolving challenges are forcing IT professionals to expand their thinking and include power as a key, mission-critical component of their IT infrastructures.

### New Uptime Frontiers

IT managers know that as technology continues to become more powerful and complex, the network will be able to carry and accommodate more functions of their businesses than ever. That, in turn, elevates the network to mission-critical status—a trend that clearly is only going to accelerate in the future. As the network becomes more important, it's also being extended to encompass all aspects of the global enterprise. Applications such as remote computing, IP telephony, supply chain management and wireless communications are every bit as essential as the traditional functions at the heart of a company's centralized data center operations. Whether housed in the data center or running on equipment at remote sites, better power protection strategies are vital as physical and electronic operations and systems intertwine and extend their footprint. Unfortunately, this new scenario creates far more complexity and many more potential points for failure across the enterprise, its network and its entire IT infrastructure. Failure means loss of availability, which translates directly into loss of business. And as keeping the network up and running has increased in importance, so also has the importance of creating an adaptive architecture to shore up daily operations and enhance the ongoing stability of IT performance.

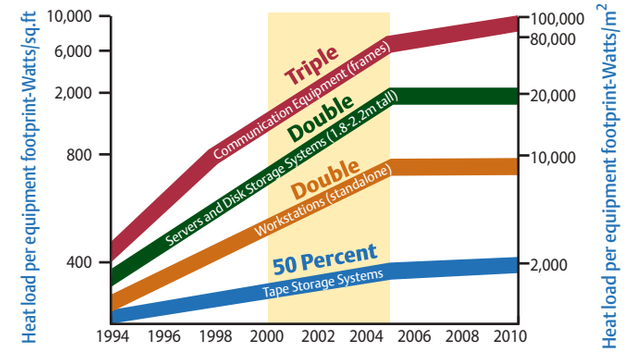
### Power at the Core of IT Strategies

As the enterprise network becomes more distributed and new network-based applications continue to emerge, the need for mission-critical power and related cooling technology increases. The issues surrounding the power and climate that support the network are forcing IT staffs to increasingly focus on solid design and effective partnering to forego network downtime. And this new area of focus is revealing that traditional power/cooling solutions are in many cases no longer up to the task of protecting the extended enterprise.

### Coming Up for Air: A Matter of High Density

It's clear that computer rooms, data centers and other high-availability facilities are very different today than they were just a few years ago. With Moore's Law still holding true after almost 40 years, today's systems are significantly smaller and more powerful than the systems they've replaced. But with the added power consumed by hot blades and the density of packed racks there comes a price: heat. In electronics, there's a direct correlation between power consumed and heat generated. And that heat can be fatal to the systems that generate it. In the data center, racks that consume 10kW or more of power are becoming common. But the traditional raised-floor cooling system is often unable to effectively remove the heat generated by these systems. As a result, hot spots emerge that will reduce equipment life unless addressed. And simply increasing cooling capacities is not a workable solution, as it can potentially increase cooling costs without increasing effectiveness. The volume of air that can be pumped under the floor is limited—and can create uneven flow across the room. Without new approaches to equipment cooling, many enterprises will be limited in their ability to adapt new technologies such as blade servers. This trend is also playing out on the network edge, where increased equipment and new capabilities such as Power over Ethernet (PoE) are creating power and cooling requirements in wire closets that match those of a small computer room. Where previous-generation systems may have been able to rely on building air conditioning and basic UPS protection, newer systems are likely to require dedicated precision air conditioning and data center quality power protection.

**THE HEAT IS ON:** Each year, more powerful computing and communications equipment is being packed into ever-smaller spaces. This increasing density leads to more heat output, placing a premium on precision cooling solutions that prevent thermal overload and keep equipment up and running to protect business continuity.




The heat density issue illustrates the growing importance of the power and coolinginfrastructure to business continuity. Enterprise IT managers will need the cooperation and support of their facilities organization— as well as system vendors that can provide them with a complete and extensive support infrastructure.

These are the issues facing today's business enterprises as they grapple with the current climate of mission-critical power, cooling and associated performance monitoring solutions. That's because extending comprehensive protection across the network has become paramount; today's rapidly growing focus on business continuity and information availability demands nothing less.

# Liebert Corporation

Liebert®

EMERSON Network Power

## Giving IT the Power It Needs to Succeed

www.liebert.com

The changing requirements for power, cooling and monitoring now facing enterprise computing are forcing many IT professionals to reconsider their protection strategies. Strategies that were acceptable in the past—such as adding power protection on a per-rack basis, or protecting systems on the network edge with "desktop-quality" UPS protection—are simply no longer sufficient.

One of the companies paving the way to the next generation of infrastructure protection technologies is Liebert Corporation, the world's leading provider of mission-critical power and cooling technology and services that protect the availability of network data and applications. Headquartered in Columbus, Ohio, Liebert was founded in 1965 and is an Emerson Network Power company. With more than 5,000 employees, 11 plants worldwide, 450 representatives and distributors, 350 customer engineers and 2,200 resellers, the company's depth and breadth has established it as an acknowledged global leader in providing network availability and business continuity.

Throughout its history of almost 40 years, Liebert has pioneered power, cooling and monitoring protection systems for mission-critical applications in the data centers of global enterprisesand organizations of all sizes. Today, in fact, over one million of thecompany's power and cooling systems are installed throughout more than 100 countries around the world and in every Fortune 500 company.

### A Heritage of Mission-Critical Protection

Liebert solutions provide greater protection against costly downtime and data loss than competitive alternatives because they're designed specifically for mission-critical applications. The company's long-standing experience and expertise in mission-critical power and cooling technology has given it a unique perspective into the changing climate of today's extended enterprises.

Liebert helps IT professionals identify and cost-effectively rectify the hidden power and cooling vulnerabilities that can threaten the ongoing stability of the networks that their businesses rely on. As a result, the company's solutions deliver most everything that IT and facilities administrators need to ensure the availability of their expanding networks.

Liebert delivers unparalleled protection of critical systems through a platform comprising power, cooling

Liebert DS Precision Cooling System

and monitoring technologies that meet the unique and ever-changing requirements of its customers' networks across all industries. From financial services to health care, manufacturing to retail, transportation to utilities, government to education

**The 9 Zones for High 9s Protection**

1. Data centers
2. Mechanical rooms
3. Monitoring operations centers
4. Computer rooms
5. Network closets
6. Rooftops
7. Telecom wireline / wireless spaces
8. Emergency shelters
9. Offices/Desktops

to communications and beyond, Liebert serves every industry in the world that depends on power protection to survive and prosper. In meeting the needs of this diverse customer base, Liebert solutions serve an ever-widening range of applications. All fit under the umbrella of tailored Liebert solutions, which enhance the availability of mission-critical systems and applications to lower the cost of doing business, drive increased revenue and deliver a competitive advantage.

### Beyond Technology: A "High Touch" Support Network

Liebert's long heritage and experience have enabled it to develop proven product solutions that provide important unique features, along with the scalability and redundancy to support network expansions. As mission-critical applications are added or expanded, Liebert's strategy protects against downtime, data loss, and equipment damage. In keeping with the needs of IT professionals to support their network build-out, Liebert products are designed for ease of maintenance, quality-tested at the factory and delivered completely assembled for rapid installation.

But while the breadth and depth of its products and technologies are a compelling reason to turn to Liebert for power protection solutions, the company is equally strong in the areas that extend beyond the products themselves. Today, Liebert is the only network power protection company with a dedicated network of local technical sales experts, solutions providers, contractors and engineers who can deliver the personal, expertand immediate help required by IT professionals: system and site assessments, product installations and ongoing support.

This robust "high touch" support network is key, considering the changing complexities and requirements for power, cooling and monitoring protection. Keeping pace with change is difficult enough for enterprise IT staffs; doing so without ongoing strategic and tactical support available on a local level— regardless of where a facility may be around the world—becomes a daunting proposition indeed. In this sense, Liebert can be depended on to keep enterprises up and running, ensure highest availability, and safeguard business continuity.

### Keeping Good Company

Along with the partnerships it forms with its customers around the world, Liebert maintains strategic working relationships

Liebert NX UPS

with industry leaders that include the likes of Cisco Systems, Dell and many others. These partnerships have been designed to ensure the continued effectiveness of the company's technology and the expertise of its technical and field representatives.

The final piece of the puzzle is corporate stability. Liebert's four decades of experience and established leadership are supplemented by its relationship with Emerson, a global enterprise with more than $14 billion in annual revenues. This relationship provides Liebert with additional resources and complementary solutions that help ensure that all customers, large and small, can benefit from optimal network uptime.

Put it all together, and Liebert is unique in its ability to protect mission-critical networks and ensure constant access to data, applications, and systems. For Liebert and Emerson Network Power, it's all about giving IT people the power they need to succeed, as the networked economy creates new challenges for business enterprises everywhere.

### Liebert Products

**Server and Client-side UPS Products** include single phase, basic protection, network protection, accessories and surge suppressors for protecting business-critical equipment—from a single PC to large network servers.

**Facility-Wide Surge Suppression Products** have numerous applications in suppressing transient voltage surges throughout facilities.

**Room/facility UPS and Power Conditioning Products** protect clusters of equipment or entire facilities, from mainframes to telecom applications to industrial sites.

**Precision Computer Cooling and Fluid-Cooling Systems** provide spot cooling in a control room or the total protection of a traditional raised-floor data center.

**Racks and Enclosure Systems** offer environmental and power protection and battery backup in a single package.

**Critical Monitoring and Connectivity Solutions** allow centralized or remote monitoring and control of Liebert equipment and other important systems.

**DC Power Products** provide modularity and ease of service for DC-dependent telecommunications equipment.

# Customer Testimonials

## Continuity for Customers: In Their Own Words

Over one million of Liebert's power and cooling systems are installed in companies of all sizes, throughout more than 100 countries around the world. Here in brief are a few excerpts from their stories.

### Time Warner: Shedding Light on the Blackout

Time Warner's data center in Manhattan is a hub for content delivery, supporting the company's RoadRunner broadband Internet service, video-on-demand and insertion of commercials into cable channels. The center had Uninterruptible Power Supplies (UPSes) from Liebert and another vendor that were protecting equipment when the Great Blackout of 2003 occurred.

While the UPSes from Liebert performed flawlessly throughout the power fluctuations that preceded the blackout, the outage itself and the transition back to utility power, the other UPSes did not fare so well. They experienced a number of problems that created significant downtime and resulted in burned-up power supplies on seven servers. "Seeing the performance of the Liebert systems during the Great Blackout convinced me that all of our critical systems need to be protected by double-conversion UPS systems," said Scott Widney, Time Warner's IT manager.

### SkyPort International: The Satellite Never Sleeps

As a member of the team that founded Compaq Computer, Guy Fielder, chief operations officer for SkyPort International, was responsible for developing the network on which the company's success would depend.

As a result, Liebert is Skyport's supplier of choice for systems that deliver the uninterrupted power, precision cooling and monitoring of SkyPort's teleport, which provides high-availability broadband satellite service to

**Guy Fielder, COO**
**SkyPort International**

companies across a range of industries. SkyPort broke ground for its teleport operations in early 2003 and completed its first encrypted Voice over Internet Protocol (VoIP) satellite transmission just 150 days later. As a result of this success, in 2004 the World Teleport Association named SkyPort the Teleport Developer of the Year.

### Virginia Tech: Taking the Heat Out of High Density

When Virginia Tech developed plans to build one of the world's fastest supercomputers by clustering hundreds of smaller computers, they faced an unexpected challenge: heat removal. Using traditional data center cooling to remove the heat simply proved impractical in terms of airflow and space requirements. Liebert modeled the environment and found the ideal balance between the traditional cooling solution in place and the Liebert XD extreme density system. As a result, the project met its goal by being benchmarked as the world's third fastest supercomputer. "It's rare to find a company as large as Liebert that can act so quickly and be so agile in responding to a customer's needs," said Patricia Arvin, associate vice president of information systems and computing at Virginia Tech. "It was like having a Ferrari custom-designed and built with the efficiency of a Toyota."

### Safelite Auto Glass: Redefining Business Continuity

As the largest auto glass repair, replacement and claims management provider in the United States, Safelite Auto Glass was faced with the challenge of expanding its data center and redefining which systems were critical to business continuity. Liebert helped Safelite and its engineering partner TECH SITE develop a power protection system that cost-effectively met the requirements of not only the data center, but also the company's call center, which provides 24 x 7 support to customers. "With the data center expansion we were making a significant investment, and we needed the right infrastructure to protect that investment," said Randy Randolph, Safelite's vice president of market development and real estate. "Liebert went above and beyond our expectations. They were involved in every phase of the project—from providing guidance on the best systems for our application to reviewing specifications with the electricians who installed the systems. They really demonstrated their commitment to service."

### Bethpage School District: Heeding the Call

The Bethpage Union Free School district stood to realize cost savings of up to $100,000 annually by implementing IP telephony. But Terrence Clark, Bethpage's director of technology, realized that the reliability of the district's phone system was at stake. "My biggest concern was avoiding downtime," he said. Fortunately, Clark engaged Liebert solutions partner Innovative Business Solutions, which "helped us take a thorough look at our overall power protection situation and determine the best approach long-term."

"Our local rep is a valuable resource for product and application expertise," said Jason Blank of Innovative Business Solutions. "That enables us to take more of a solutions-based—rather than a product-based—approach with our customers." As a result, the district has made the transition to IP telephony successfully, even weathering the Great Blackout without a disruption in phone service.

To request your Mission-Critical Network Protection Kit, visit Liebert at **www.iw.liebert.com** or call 800.877.9222.

## Interview with Bob Bauer, Liebert President

**Q: Business continuity isn't a new concept. What's different about it today?**

**A:** The big difference is that it's not just an issue for Fortune 1000 companies, and it isn't limited to just the data center. It's extended across the network. And as the costs associated with business interruptions continue to increase, it's a concept that now affects everybody—including businesses of all sizes.

**Q: How is this all affecting the network?**

**A:** We're seeing a trend toward recentralization, back to the data center. But in doing that, you now have to account for all the distributed remote applications on the edge. It's much more complex. And the level of availability you need is increasing. Just a few years ago, the network closet at a remote site was for handling traffic on a local area network. With all these mission-critical apps running now, though, that closet has to be as reliable as your telephone system. It simply can't go down.

**Q: How aware of these trends are your customers?**

**A:** More so every day. Instead of working primarily with facilities people, we find ourselves speaking with CIOs and other members of senior management. Power protection and business continuity are things that are now on everyone's minds.

**Q: So why talk to Liebert?**

**A:** You need three things in place to make a protection strategy work: the right system and product architecture, a high level of applications expertise, and—above all—a mission-critical service and support infrastructure. Remove any one of those, and you have a problem. We provide all three.

**Q: Where do you go from here?**

**A:** Forward, on all fronts. Staying close to our customers. Continuing to refine our technology to keep pace with the power, cooling and monitoring requirements that ever-increasing equipment densities are demanding. Partnering with network leaders like Cisco, for example. And growing our network of channel partners, to extend our reach and ensure customers have the local support they need.

## Assessing Your Network Availability

**Does your power, cooling and monitoring strategy encompass all the crucial elements required to protect your mission-critical network and enterprise applications? Ask yourself these questions to determine the ultimate answer.**

- Does your UPS system match your load?
- Have you performed a sizing and cost analysis of your UPS system deployment?
- Do you monitor your computer rooms or server closets for heat and humidity?
- Do you have 24 x 7 UPS emergency services?
- Are there hot zones in your computer rooms or server closets where equipment heat densities exceed 100 watts per square foot?