

# Point-to-Point



31 August 2001  
Vol. XVI, No. 8

ENS, ENSC, ENSE and LAN Services

## Management Update: The 2001 Gartner Firewall Market Magic Quadrant

As hacking attacks and cybercrime incidents continue to soar, many CIOs and other executives are extremely interested in getting insights on the measures their enterprises should take to secure corporate networks. To help those executives with their planning, Gartner presents its Firewall Market Magic Quadrant for 2001. The leader, Check Point Software Technologies, is feeling pressure from above and below. Firewalls with gigabit throughput from NetScreen Technologies, Cisco Systems and SonicWall set the stage for the performance battle.

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## Management Update: The Gartner 2001 Hype Cycle — Emerging Trends and Technologies

To help their enterprises gain a competitive advantage, many CIOs and other executives are quite interested in knowing what emerging technologies are candidates to be considered for early adoption. To help those executives with their planning, Gartner points out that among the trends and technologies that are at the peak of inflated expectations in this year's Hype Cycle are Web services, mobile commerce (m-commerce), instant messaging for enterprises, personal digital assistant (PDA) phones and digital signatures.

### The Gartner Hype Cycle for 2001

Gartner presents the Hype Cycle for 2001 (see Figure 2) and explains the technologies and trends at each stage. The Hype Cycle is a method to characterize the life cycle of technologies or trends (see the sidebar,

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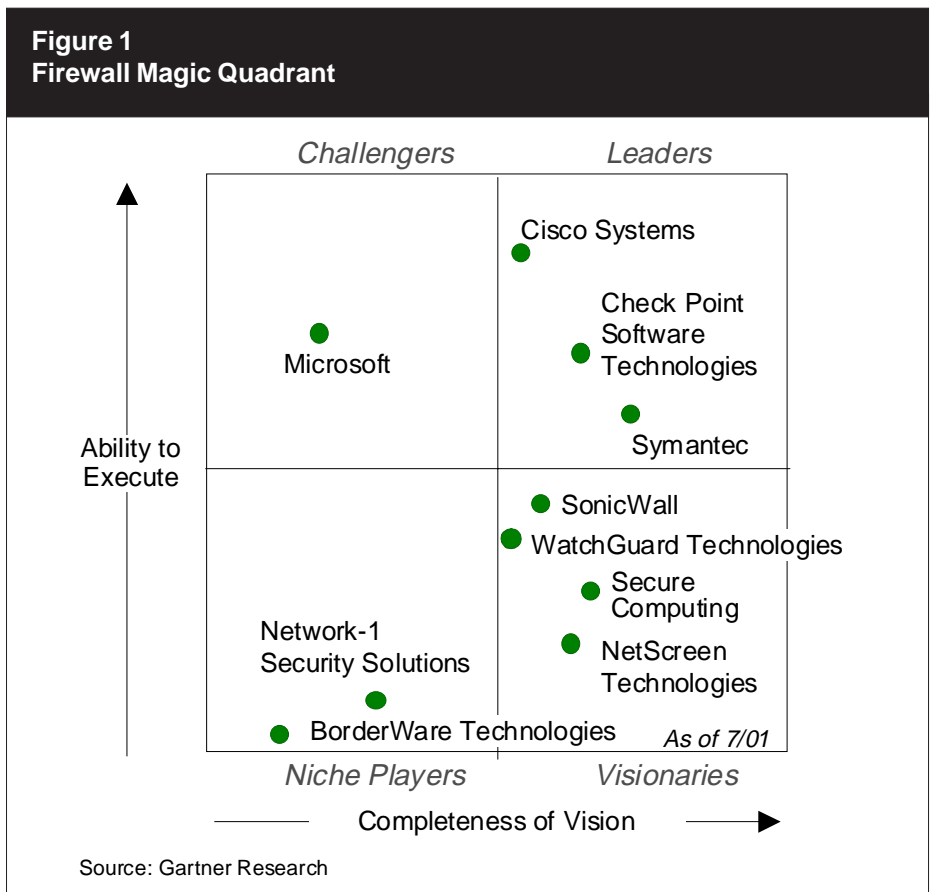
# Management Update: The 2001 Gartner Firewall Market Magic Quadrant (continued from page 1)

## Firewall Market Dynamics

Firewalls can provide strong protection against unauthorized access to enterprise networks and computer systems. The firewall marketplace has bucked the slowdown in IT spending experienced by the rest of the industry in the first half of 2001. New products, new releases and new features characterize this healthy and growing segment. A lack of merger and acquisition activity signifies that the market is in an expansion phase.

The entrenched leaders are under pressure to improve the manageability of their products, as well as the reporting capabilities. Firewall appliance vendors are experiencing increased sales as they attempt to protect their installed base with gigabit throughput devices. Gartner advises enterprises to evaluate firewall vendors based on the manageability of their platforms.

Better data analysis and firewall management are the most frequently requested capabilities by Gartner clients. Enterprises still purchase best-of-breed products for security and are looking for simplified central management tools that can gather, analyze and report security incidents, logs and service-level activity without having to buy from a single vendor. Gateway-to-gateway virtual private network (VPN) services remain the province of the firewall, and tools are needed to assist in



setting up and maintaining VPN tunnels between competing products. Management and reporting capability has become one of Gartner's key criteria for evaluating a firewall vendor's vision (see Figure 1).

### Leaders

Check Point Software Technologies is the entrenched enterprise firewall leader. It is the product of choice for global enterprises with multiple Internet gateways and VPN requirements.

- Check Point is pressured from below by firewall appliance vendors that offer simpler set-up and management options, as well as lower costs.
- Pressure from above is being exerted by Cisco Systems and NetScreen Technologies with high throughput firewall appliances in the gigabit wire speed range.
- Check Point has responded with high-end product announcements, including the Nokia IP740, and development agreements with CoSine Communications and Crossbeam Systems.

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- Check Point's "Next Generation" remake addresses the demands for better management, usability, reporting and scalability.
- For its appliance strategy, Check Point continues to broaden the number of hardware platforms it is partnering with.
- Intrusion.com and Compaq Computer are introducing Check Point firewalls on Linux-based appliances to complement Check Point's relationship with Nokia.

In the race to improve performance, Cisco Systems introduced the 535 PIX firewall with gigabit throughput.

- PIX firewalls are the choice for large customers of Cisco, but the lack of powerful management tools is a significant drawback.
- The first version of PIX Device Manager does not allow the management of multiple devices from the same console or consolidate logs from multiple sources.
- It converts graphical user interface input into PIX command-line instructions.

As the only vendor in the Leaders quadrant that has a powerful suite of security management tools, Symantec has the opportunity to leverage management and reporting, as well as integration with other security devices in the battle for enterprise sales. The rebranding of Axent Technologies' Raptor as the Symantec Enterprise Firewall is an effective way to allow customers to focus on capabilities in their evaluations.

## Challengers

Microsoft quietly introduced the Internet Security Acceleration (ISA) Server for Windows 2000 this year. Challengers usually dominate a market by sitting out the early fray and entering the market when a clear direction is apparent, using their superior brand and marketing muscle to become a leader. Cisco accomplished this at the right time. Microsoft is late to the game. The market is shifting away from cumbersome enterprise software running on full-service operating systems. The number of features in ISA Server will lead to never-ending bugs and vulnerabilities. Gartner considers ISA Server to be a logical evolution to Microsoft Proxy Server.

## Visionaries

SonicWall has moved into the lead in the simple, low-cost firewall appliance segment, and has introduced a gigabit throughput firewall.

- SonicWall and WatchGuard Technologies continue to put pressure on the leaders by offering affordable appliances that are simple to configure and manage.
- The strong traction demonstrated by SonicWall moves it ahead of WatchGuard, while WatchGuard expands its product offering into host defenses with the introduction of its ServerLock and AppLock/Web products.

Secure Computing continues to be the security-focused vendor with the strongest suite of security products, including the Sidewinder firewall.

NetScreen Technologies' ASIC (application-specific integrated circuits) firewalls are capturing the carrier space. Its equipment on the edge of a network provider allows NetScreen to offer in-the-cloud firewall services. Gartner considers this to be the first indication of the trend away from customer premises equipment for managed security service providers.

Network-1 Security Solutions is focusing on the concept of distributed firewalls. Its CyberwallPLUS product is positioned against Network ICE's ICEpac and CyberSafe's Centrax in this space (Network ICE was recently acquired by Internet Security Systems). This battle will be won by the vendor that has the best central management console for pushing down security policies to every server, and ultimately every desktop, as well as managing the flood of alerts and logs generated by them.

The ever-resilient BorderWare Technologies is back in view and has been added to the Magic Quadrant based on its all-in-one firewall. That product flies in the face of standard practice of minimizing applications that run on the firewall by offering a product that combines firewall with SMTP and POP mail servers, twin

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## Management Update: The 2001 Gartner Firewall Market Magic Quadrant (continued)

Domain Name Service servers (external and internal), secure FTP and HTTP.

### Fond Farewell

With technology shifts and market turmoil taking their toll, Gartner bids farewell to Gauntlet from the firewall Magic Quadrant. Although Gauntlet has a loyal installed base and Network Associates has introduced a high-performance appliance (the PGP1000), Gartner believes that it will not be a candidate in competitive assessments. Network Associates announced that support for the NT version of Gauntlet will be discontinued on 1 July 2002. Gartner feels that it is only a matter of time before the Sun Microsystems and Hewlett-Packard versions reach the end of their effective lives.

### Ones to Watch

The escalating security threats and the increased exposure of business processes to the Internet are driving the introduction of new defenses. Stonesoft, a vendor of high-availability and load-balancing software that established a beachhead with its HA solution for Check Point, has introduced a firewall product called

StoneGate. This software solution will find traction in e-business environments that depend on uptime for achieving their financial objectives.

Whale Communications is making inroads in the United States, Israel and Europe with its e-Gap firewall. Its physical disconnect technology allows the operation of a “shuttle” that acts as an application layer gateway, offloading authentication, encryption (Secure Sockets Layer) and application-level inspection from the application. Early deployments are in front of critical servers. An application-specific e-Gap Webmail server addresses a component of enterprise infrastructure that is prone to vulnerabilities.

### New Segments

Not on the Magic Quadrant are low-price-point small office, home office firewalls and denial-of service defense devices. Linksys Group, SMC Networks, 2Wire and Netgear all provide DSL (digital subscriber line)/cable modem devices that also act as firewalls. For enterprise applications they will have to become securely manageable from a central location.

Specialized appliances from Arbor Networks, Captus Networks, VHB Technologies and Mazu Networks are designed to block protocol and flooding attacks.

### Bottom Line

- Because firewalls are key components of effective e-business, more demands are being put on them.
- Gartner maintains that the ability to manage security policies, issue alerts, and create readable, flexible activity logs will be the determining factor in choosing perimeter defense components.
- Those abilities will be required to qualify for leadership in the Gartner Firewall Magic Quadrant.

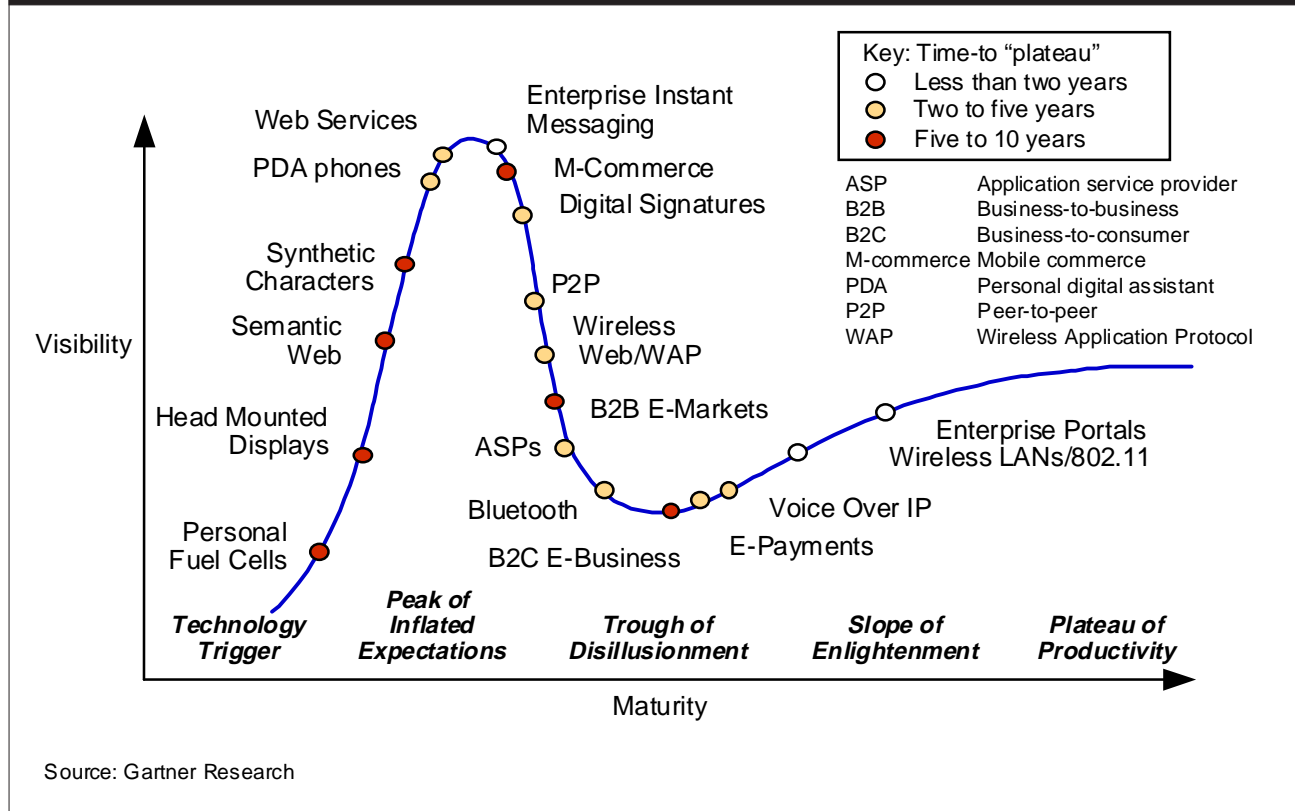
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*For related articles published in Point-to-Point, see:*

- *Cross Talk, “Network Associates Changes Its Guard but Not Its Questionable Business Model,” 26 January 2001*
- *“CIO Alert: Managed Vulnerability Services Can Leave Hackers Out in the Cold,” 30 March 2001*
- *“Management Update: Firewall Market Magic Quadrant Update 2000,” 24 November 2000*

## Management Update: The Gartner 2001 Hype Cycle — Emerging Trends and Technologies (continued from page 1)

**Figure 2**  
Gartner Hype Cycle: 2001 Emerging Technologies and Trends



"Phases of the Hype Cycle"). The overall Hype Cycle is a "normalized" consolidation of the single technology Hype Cycles and the visibility scale is not absolute. Each technology's Hype Cycle is on a different scale. PDA phones are very near their Peak of Inflated Expectations. On this normalized scale, they

have, therefore, been placed higher than the more-visible m-commerce.

Gartner also presents a "radar" screen, which depicts, for each of the technologies and trends, the estimation of business impact and penetration in OECD (Organization for Economic Cooperation and Development) nations by 2010 (see Figure 3).

### On the Rise

Personal fuel cell technology is still largely in the development phase, but will represent a necessary upgrade because today's batteries will not meet the power requirements of future "always on" portable devices.

## Phases of the Hype Cycle

The Hype Cycle provides a snapshot of the position of a set of technologies in the inevitable cycle of hype and disillusionment that accompanies a technology's path to maturity. The Hype Cycle consists of the following phases:

- **Technology Trigger:** A breakthrough, public demonstration, product launch or other event generates significant press and industry interest.
- **Peak of Inflated Expectations:** During this phase of overenthusiasm and unrealistic projections, a flurry of well-publicized activity by technology leaders results in some successes, but more failures, as the technology is pushed to its limits.
- **Trough of Disillusionment:** Because the technology does not live up to its inflated expectations, it rapidly becomes unfashionable and the media will abandon the topic.
- **Slope of Enlightenment:** Focused experimentation and solid hard work by a diverse range of enterprises leads to true understanding of the technology's applicability, risks and benefits. Commercial-off-the-shelf methodologies and tools become available to ease the development process.
- **Plateau of Productivity:** The real-world benefits of the technology are demonstrated and accepted. Tools and methodologies are increasingly stable as they enter their second and third generations. The final height of the plateau varies according to whether the technology is broadly applicable or benefits only a niche market.

The semantic Web vision embraces standards and formal languages for semantically marking up content on the Web. The objective is to make the Web increasingly machine-readable, improving searches and system interoperability and, ultimately, enabling a new wave of automation. This will likely significantly affect all areas of e-business in the next three to six years.

Head-mounted displays will eventually give people full visual access to computer equipment, preferably while

mobile. Variations include retinal scanning displays, which augment a person's visual perception.

Synthetic characters are intended to converse with people in natural language to access online information and services (e.g., Artificial Life, eGain Communications or ActiveBuddy's instant-messenger-based "infobots").

M-commerce — transacting for goods or services via data-enabled mobile phones or PDAs — will be a high-

impact trend. It created a good deal of hype recently, but faces tough challenges: security, applications, costs and convenience of applications.

### At the Peak

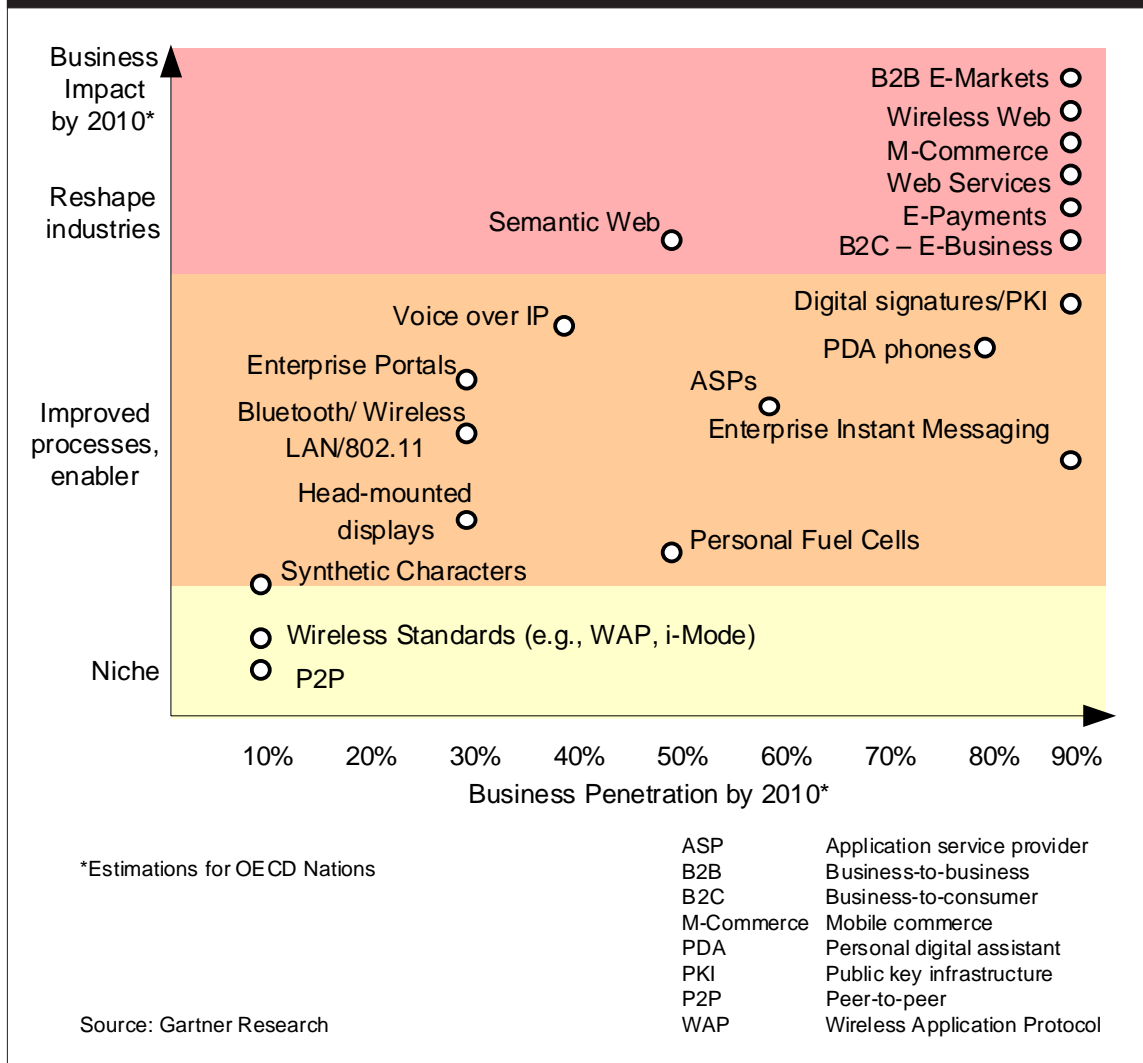
PDA phones, currently combining cellular phones and palm-top functionality, have gained significant visibility. When they provide sufficient features (e.g., more memory, better screens, longer-lasting batteries and MP3 players), Gartner expects adoption to increase steeply.

Web services are software components that can be accessed over public networks using generally available ubiquitous protocols and transports — e.g., SOAP (Simple Object Access Protocol) over HTTP — and are being rightly touted as the next big step in Internet software development. Gartner expects significant savings in development time and costs.

Enterprise instant messaging is a tool for real-time communication. By 2004, 60 percent of real-time Internet-enabled communication between people via any means, including voice, text or call-and-response, will be driven through instant messaging technology (0.7 probability).

Digital signatures have become increasingly ready for deployment, but the complexities and costs of a public key infrastructure implementation are still preventing significant investments.

**Figure 3**  
**2001 Assessment of the Emerging Technologies and Trends**



**Sliding Into the Trough**

Peer-to-peer was hyped by the industry as a breakthrough in computing, but is now sliding fast into the Trough of Disillusionment. Design and management complexity will limit potential deployment benefits for general applications until 2004.

The wireless Web has great potential for m-commerce as well as other applications. However, inhibitors include lack of reliability, sufficient bandwidth, security and proven applications development principles.

Application service provider (ASP) models are still immature; their constant evolution is confusing enterprises. The ASP market is still

small compared to the overall IT services market, although it has tremendous long-term potential.

Bluetooth is set to become a defining force in portable devices. However, security issues, lack of support in Windows XP, delays in promised products, and interference with other communications technology (e.g., 802.11b) are slowing its adoption.

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## Management Update: The Gartner 2001 Hype Cycle — Emerging Trends and Technologies (continued)

Several e-business trends and technologies are at different stages of the Hype Cycle. Business-to-business (B2B) marketplaces and e-procurement are moving into the Trough of Disillusionment fast and we caution that by 2004, viable stand-alone e-procurement application vendors will cease to exist. Survivors will either converge with enterprise application vendors or with e-marketplace vendors (0.8 probability).

A similar downturn has occurred in business-to-consumer (B2C) e-business, where the confusion about return on investment is inhibiting large investments.

### Climbing the Slope

E-payments will emerge by 2004 and their adoption will likely be accelerated by several factors. The recent drop in advertisement effectiveness, advances in mobile payment options and Microsoft's new payment options in Windows XP have all brought current business models on the Internet into question.

Voice over IP (VoIP) applications allow for more sophistication and interaction in particularly in the

domain of quality of remote audio and video collaboration. Vendors, not user demand, are driving this market. Enterprises must be cautious about this technology when they adopt it and not be swayed by vendor hype.

Wireless LANs — specifically, 802.11b — have matured in recent years and will provide the primary means of wireless intranet communication for the next several years because they satisfy users' demand for high bandwidth at low cost.

Enterprise portals are continuing to mature and are entering their third generation.

### Overall Observations

Sometimes there are crowded spots on the Hype Cycle, where Gartner can present only a selection of trends and technologies. In particular, this year, the Trough of Disillusionment is very crowded — many of the e-business trends are here, as well as Web analytics, knowledge management and many more. This accurately reflects the global business technology climate.

Very few technologies are actually maturing at this stage — most of them are hardware devices, e.g., digital photography, DVD (digital videodisc) or Global Positioning System. This may be indicative of a larger trend: As the interdependencies and boundaries between technologies and applications increase or even begin to blur, the pace of technology maturation may slow.

### Bottom Line

- Planners should be aware of the Hype Cycle that governs nearly all trends and technologies.
- Enterprises should select potentially high-impact technologies and adopt them early for maximum benefit, but should ride out the Hype Cycle for less-critical technologies.

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Advanced Technologies & Applications

*For related articles published in Point-to-Point, see:*

- "Management Update: The Field Sales Wireless Wave — Much Promise, Some Weaknesses," 27 July 2001
- "CIO Alert: Key Technologies for 2000 to 2010," 28 April 2000

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# Management Update: The Need for Better Mobile Technology Management by Enterprises

Many CIOs and other enterprise executives are becoming increasingly aware that the use of wireless technology is an operational and competitive necessity in their enterprises. However, as mobility in enterprises grows rapidly, most enterprises don't use the tools that are necessary to manage their mobile workers. To help enterprises come to grips with this problem, Gartner discusses why enterprises must get better control of their mobile users before they move out of reach. Gartner provides advice and recommendations on how to achieve that control.

## The Increasingly Mobile Enterprise

To best assess the state of the enterprise mobile user, Gartner conducted a survey of more than 200 corporate users at its Mobile and Wireless conference held in San Diego in March 2001. Respondents to the survey indicated that approximately 30 percent of their employees can be considered mobile, which means that they are out of the office at least 20 percent of the time.

An increasingly remote and mobile workforce will place more demands on managers and support teams. Managing mobile systems — personal computers, handhelds,

remote access and other such devices — is fast becoming a higher-level priority for IT managers.

This also brings on a new complexity. Remote management tools that update applications and distribute new software (especially virus protection), automate backup procedures, synchronize data, manage security and allow remote control are a must.

## Mobile Management Needs

Through 2003, a divergence in mobile form factors will cause a minimum 10 percent increase in enterprises' mobile end-user operations and technical-support costs (0.8 probability). The recent Gartner survey showed that 30 percent of employees can be considered mobile. However, 39 percent of enterprises polled do not centrally control wireless services.

Enterprises must get a better handle on mobile user management. To manage total cost of ownership (TCO) in an age of device and individual proliferation, new IT management techniques are required. IS organizations that implement early and aggressive mobile management frameworks will be able to contain their costs of support because they will have an early, thorough, ongoing view of operational expenses.

## Telecom Costs Continue to Increase With Mobile

How do people in the enterprise and elsewhere keep in touch with mobile users? Cellular phones are becoming the dominant communications device, but that also means telecom costs will increase. While the average cost per call on a wired call is approximately \$.04 per minute, a wireless call still averages \$.12 a minute (from the contracts we have seen). Enterprises should expect telecom costs to increase as use continues to rise and new wireless applications, such as mobile data, are adopted.

## Mobile Service Purchasing

As wireless increasingly becomes more important to the corporate communications plan, and more money is being spent in this area than ever before, the purchase of wireless needs to become centralized within the enterprise. Today, 61 percent of enterprises have central wireless purchasing and 18 percent purchase centrally through lines of business (LOBs). That sounds high, but those numbers may be somewhat misleading. It is true that more enterprises are centrally purchasing wireless services through a procurement team, but in many cases, there are still LOBs that continue to purchase on their own, as well as

## Management Update: The Need for Better Mobile Technology Management by Enterprises (continued)

some individual users. In the Gartner survey, 21 percent of the respondents said that individuals continue to purchase their own wireless services.

Gartner strongly advises that enterprises continue to push for centrally purchased wireless services — even if there are numerous LOBs and divisions that fall under one group. That will ensure higher discounts through aggregated purchases, simplified management (pricing guidelines, adds, deletes, changes) and a corporate policy that manages adoption and usage (see the sidebar, “Establishing a Corporate Wireless Policy”). That includes negotiation and the use of service-level agreements (SLAs), which will be especially important as users rely more on wireless data service for applications such as e-mail and Internet and intranet access.

With a reliance on mobile wireless service for critical business needs, more enterprises should be evaluating and presenting SLAs to wireless carriers. Today, carriers sign SLAs based on customer service, but they should also be moving toward SLAs that cover network quality and reliability, including:

- End-to-end network availability
- Post-dial delay
- Maximum percentage of dropped calls in any service period
- Mean time to restore service
- Mean time to restore or replace user telephone hardware
- Provide station (cellular telephone)

### Establishing a Corporate Wireless Policy

A corporate usage policy for wireless based on job description or title is important in managing wireless services. Key initiatives include:

- Acceptable usage guidelines
- Mobile telephony expense procedure
- Corporate liability statement

- utilization on a monthly basis
- Provide dropped call-monitoring services
- Provide configurable management reporting capability
- Provide at least two weeks' notice of any proposed network maintenance or upgrade activity that may interrupt service delivered

### Wireless Data Service Issues

Only 11 percent of the Gartner survey respondents said they are using wireless data extensively, but 56 percent said they are in trials or have limited use of wireless data services. The most desired applications are mobile e-mail, contacts and calendar access.

In the beginning, enterprises should test out mobile applications in small pilots of 25 to 50 users and evaluate the costs vs. efficiencies and opportunities in the pilots to gain insight into larger-scale rollouts. Increased usage of wireless data adds to remote management issues, as well as potentially increasing monthly service fees and mobile device management and support. By year-end 2003, 50 percent of mobile workers will carry two or more mobile devices (0.7 probability).

### Mobile Devices Add Complexity and Costs

With the increase of interest in wireless data solutions, devices other than the cellular phone will come into predominant use. The cell phone is a very limiting form factor, so the PDA (personal digital assistant) will become the device of choice for those with a mobile data orientation. Some 57 percent of respondents said they prefer the PDA (integrated wireless and combined with a mobile phone) over any other access device.

PDAs make mobile data usage easier for the user by providing large displays, easier input functionality and faster processors, but its fragmented market (more than one standardized operating system) means difficult support issues for the IS organization. Also, TCO of a PDA can be as high as \$2,700 per user per year — much higher than low-cost support for cellular phones, but yet significantly less than notebook computers.

### Industry Challenges

- **Coverage:** Some 88 percent of respondents said that coverage is the top priority when choosing a

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service provider. Verizon Wireless currently leads the way in coverage, and also captures the highest satisfaction rating over its competitors.

- **Pricing:** With next-generation wireless data services, operators need to be conservative when evaluating pricing options. Some 54 percent said they are only willing to spend up to 10 percent to 20 percent more for next-generation wireless data services on top of existing voice services. Only 9 percent said they were willing to spend 30 percent to 50 percent more for services, approximately the range many operators are targeting.
- **Wireless Data Solutions:** Carriers are just now developing the

partnerships to put together end-to-end solutions for wireless data services. Most of the Gartner survey respondents, 73 percent, said they are interested in this type of carrier relations. Enterprises should look for carriers that can support user needs and include professional services, application integration, training and device support when evaluating wireless data solutions.

### Bottom Line

- The use of wireless technology is an operational and competitive necessity.
- Enterprises should beware of the increased costs that wireless technologies bring by doing the following:

- Enforcing strict mobile management policies
- Adopting best-practice strategies by centralizing purchase and management of wireless services
- Being aware of the additional impact on management and costs that future wireless data services will bring

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Analytical source: Phillip Redman,  
Enterprise Network Strategies

*For related articles published in Point-to-Point, see:*

- “Management Update: The Field Sales Wireless Wave — Much Promise, Some Weaknesses,” 27 July 2001
- “Management Update: Now Showing ... at Your Nearest Pocket Handset?” 15 December 2000

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## Management Update: Best Practices for Personal Digital Assistant Support

**P**ersonal digital assistants (PDAs) have become the new personal computing revolution. Even with the current economic slowdown, Gartner projects that worldwide PDA shipments in 2001 will reach about 14 million units. To help executives who are wrestling with PDA issues in their organizations, Gartner discusses why enterprises must develop support plans to minimize PDA support costs and security risks, and also provides best practices recommendations.

### Rapid Proliferation of Mobile Devices

The proliferation of mobile devices for immediate information access and work styles is quickly distorting the desktop and laptop hardware scenario. Consumer devices have invaded the enterprise — and users expect to perform their jobs with those devices. A few years ago, enterprises could ignore these devices because their entry cost was

high. Now, however, the entry cost is dropping to less than \$150.

The devices seem to be impossible to manage in a business environment, when their configurations tend to be informal. However, most enterprises cannot afford not to attempt to manage them, because they are already having a massive effect on user productivity. Through adoption of multiple mobile-computing appliances, users are creating the age of the “personal area

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## Management Update: Best Practices for Personal Digital Assistant Support (continued)

network.” But as every IT manager knows, user problems will eventually become IS organization problems, and the increase in complexity will be significant.

### **Best Practice No. 1**

**Every enterprise must develop a policy regarding PDAs.**

Enterprises that decide not to support PDAs must issue a formal policy statement to their employees explaining the reasons for the decision. Any condition offered, such as “not suited to the needs of the job,” “security risk” or “too expensive to manage” is debatable in the minds of individual users, who will still buy PDAs on their own. Enterprises that wish to enforce the policy must give clear examples of acceptable personal use of PDAs vs. unacceptable links between PDAs and company systems.

A comparison to a paper-based organizer might be considered (see Figure 4). In the paper analogy, employees can manually input or restrictively copy the most important items of their schedule into their personal PDAs, but cannot link to a company PC and download e-mails, company contacts/directories, and so on.

Enterprises that will support PDAs should review what they have learned from managing remote and mobile PCs, and then apply the rest of the recommendations listed below.

### **Best Practice No. 2**

**Enterprises should purchase PDAs for employees, rather than wait for employees to purchase their own. The IS organization must educate management that ownership is a prerequisite for stability and lower total cost of ownership (TCO).**

Today, most PDAs are purchased by individuals. However, as these devices begin to hold increasingly more-sensitive corporate data, they must become managed assets. Enterprises should purchase PDAs for users to eliminate the uncertainty of who controls the data on the device. In this way, enterprises can ensure that their policies regarding personal and corporate information are implemented, thereby improving security and information management.

### **Best Practice No. 3**

**The IS organization should use Gartner TCO models to estimate the impact of PDAs so that expenditures on management solutions may be justified.**

As PDAs are “asset tagged” and supported within the enterprise, they incur costs similar to those found on notebooks and other enterprise-owned devices. Thus, what may appear to be an inexpensive device has costs similar to other client computers due to the tasks required to support it.

- Through 2005, PDAs and other mobile appliances will raise enterprise TCO for client devices by 10 percent (0.7 probability).
- Individual PDAs can cost more than \$2,500 per year to maintain at a standard comparable to a workstation.

Gartner’s analysis of TCO for PDAs is based on a review of Windows CE and Palm OS platforms.

- Capital costs are based on a device costing \$450, in addition to a travel kit costing \$50.
- Provision is included for lost devices.
- Administration costs are considered equal for both platforms.
- Technical support costs are slightly higher for Windows CE due to its more-complex user interface.
- End-user operation costs represent about 40 percent of all costs, primarily due to the time investment required to keep PDAs synchronized with user desktops or servers.
  - Even at as little as five minutes per day (Gartner estimate), synchronization is a new diversion of user time that costs enterprises hard productivity losses.
  - By 2002, data synchronization will consume one hour per day, per user, per personal area network (0.7 probability).

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IT management must demonstrate to upper management and business-unit management that PDAs are following the same life cycle that PCs followed in the 1980s, and will have the same organizational impact. PCs were smaller than mainframes, but size didn't matter when it came to TCO and work style changes. PDAs are smaller than PCs. Again, size doesn't matter.

#### **Best Practice No. 4**

**To constrain budget growth, the IS organization must move to a user-based budget for hardware deployment plan vs. the specific device profiles now in use.**

IS organizations can consider a program from which users can select their own choices from an approved IT product list. Gartner compares this scenario to the methods used to offer healthcare options to employees. Each user is given a budget amount that should permit a sufficient number of productivity tools tailored to their individual needs. Users then select from a list of supported IT products, up to the amount of the budget. This plan should result in higher utilization of products and users who are more pleased with what they are given.

Business units must, in turn, commit to allocate per-capita budget funds to support the selection of PDAs. Rather than forcing specific devices onto users, IS will be seen as giving

users the choice of a range of devices, all of which happen to be configurations that are supportable by the enterprise help desk.

#### **Best Practice No. 5**

**The IS organization must set standards for synchronization products that support a wide variety of consumer appliances. It should not permit users to install their own synchronization tools.**

There are many popular products for general-purpose synchronization, available as independent retail products, as shareware and bundled with PDAs at purchase time. All synchronization products are immature. Future products should manage referential integrity and authentication for all three common PDA synchronization paths (see Figure 5) and provide for an administrative console. Gartner recommends that PDA synchronization standards be set immediately to ensure that the line between the controlled enterprise and the uncontrolled personal world of the employee remains intact.

More practices related to synchronization include:

- Synchronize regularly.
- Expect the unexpected.
- Discard all bundled software.
- Protect the data, and encrypt it.
- Synchronize multiple devices in parallel.
- Control, test and approve access methods.

- Control, test and approve introduction of new device types and their operating systems.
- Formalize the process — make it a user habit — but make it easy for the user to be successful.

#### **Best Practice No. 6**

**The IS organization must set standards for device security.**

Most PDAs power on by default with no security. Security settings for power-on passwords and hidden files have been mostly optional, and can be turned off by the user. Default encryption may involve simple keys that are known to hackers. When placed on networks, PDAs may be vulnerable to denial of service and spoofing attacks.

To reduce these risks, enterprises must specify not only which brands of PDAs will be supported, but also what operating system versions will be supported, because over time, all operating system vendors gradually fix the holes in their software. Ancient PDAs drawn from users' closets or handed down from friends are not suitable to withstand today's sophisticated hackers and thieves.

Enterprises must also specify what kind of power-on protection practices must be followed, as well as approved methods for file and network encryption. Products such as Communication Intelligence's Sign-On leverage the pen pad to enable users to sign on with their signature, or even a "secret doodle."

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## Management Update: Best Practices for Personal Digital Assistant Support (continued)

Virtual private networks, authentication tokens and PKI (public-key infrastructure) must be considered for sensitive applications, especially if they will be accessed over the Internet. More practices related to security include:

- Discard bundled security software.
- Provide all users with approved security software and training on how to use it. As with synchronization, formalize the process — make it a user habit — but make it easy for the user to be successful.

### **Best Practice No. 7**

**The enterprise help desk must create PDA-friendly services.**

The enterprise should maintain swap pools of spares of the most-popular PDAs, not as loaners, but as replacement systems. Employees must not send damaged or broken PDAs to retail service centers, because their PDAs are replaced, not repaired, and any data that was accessible on the PDA would then be potentially available to buyers of surplus equipment.

The enterprise's synchronization plan must include the capability for the help desk to re-image the user's PDA from the last performed synchronization with the user's laptop, or vice versa. Any units to be discarded or returned to manufacturers

need to have their memories erased before leaving company control.

### **Best Practice No. 8**

**When designing wireless online applications, enterprises should minimize the need for critical local data by using thin-client interfaces.**

PDAs are capable of supporting open environments such as Secure Sockets Layer-based Web screens, Java and XML (Extensible Markup Language), as well as proprietary thin clients such as Citrix Systems' Intelligent Console Architecture and Symantec PC Anywhere. Whenever a user's application requirement dictates online access to services, thin-client displays should be given priority to reduce the amount of local application and data that will need to be developed for the PDA. The same TCO benefits of thin clients on PCs apply conceptually to PDAs.

### **Best Practice No. 9**

**Provide PDA-relevant training.**

Enterprises will quickly acquire a baseline of experience with common problems, tips and techniques. PDA users should be given access to this knowledge through courses, online "Webinars" (including playback) and frequently asked questions files available online and downloaded to PCs and PDAs.

### **Bottom Line**

- While still considered by many IT managers as consumer technology, PDAs have become the new-millennium equivalent of the PC revolution of the 1980s.
- IS organizations must begin to bring these devices into the PC support venue, and thus must begin to assess TCO and its implications.
- Through 2005, PDAs will be the biggest challenge to manage and control among user platform choices, and the hardest on which to objectively prove return on investment.
- Gartner's Tactical Guideline recommendations are:
  - Develop a PDA policy even if the decision is not to support them.
  - Treat PDAs as emerging workstation platforms.
  - Include PDAs in IT procurement, training, support and security policies.

Written by Edward Younker,  
Research Products  
Analytical sources: Ken Dulaney  
and John Girard,  
Mobile Business Strategies

*For related articles published in Point-to-Point, see:*

- "Management Update: The Field Sales Wireless Wave — Much Promise, Some Weaknesses," 27 July 2001
- "Management Update: Now Showing ... at Your Nearest Pocket Handset?" 15 December 2000

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## Cross Talk

**Ban on Taxing Internet Access Gains, Online Sales Tax Uncertain.** On 2 August 2001, the U.S. House of Representatives' Judiciary Subcommittee on Commercial and Administrative Law voted to ban Internet access taxes permanently and to extend by five years the ban on new taxes on e-commerce (due to expire in October 2001). The panel also voted against an amendment that would have supported states' interests in collecting Internet sales taxes. Proponents of that amendment promise a new effort shortly. This bill awaits approval by the full House and the U.S. Senate.

Banning taxes on Internet access is an easy fix. Outside of a 103-year-old tax on interstate phone calls — including calls made to an Internet service provider (ISP) — no laws tax access to the Internet. More difficult is determining whether the federal government should continue the ban on taxes on e-commerce. E-commerce via the Internet remains a new frontier in tax policy, with ongoing debates about whether and what to tax. (For example, the House panel's action calls for continuation of the ban on "multiple and discriminatory" taxes on e-commerce, without defining what such taxes might be.) Hot action concerning Internet taxation will ignite if and when Congress takes up a proposal to tax online purchases. States with sales taxes complain that they lose out on revenue justly theirs when residents and enterprises buy CDs, books or business services over the Web and have them delivered or provided to their homes and offices. On the opposite side, enterprises active in business-to-business and business-to-consumer markets argue that such taxes will stifle — or even kill — e-commerce. Gartner predicts that the full House will take the easy road and pass legislation that bans taxing of Internet access and extends the moratorium. The Senate will probably follow suit, and the measure will become law, likely as part of a spending bill (0.8 probability). However, by 2003, the moratorium will end, with states lobbying for sales tax relief as they lose more sales tax revenue to online sales (0.7 probability).

Gartner believes that a revenue tax on e-commerce is inevitable, although the kind of tax and how it applies remain unclear. Therefore, enterprises should remain vigilant to all Internet tax proposals and should share with their representatives in Congress their views and supporting documentation on the potential impact of such taxes. Legislators rely on information from proponents and opponents of issues to help them fashion well-reasoned public policy. Enterprises will serve their best interests by ensuring that Congress weighs their concerns before enacting any Internet sales tax.

Analytical source: Ron Cowles, Enterprise Network Strategies

**Changes of Control at Telecom Italia and Olivetti Mean Continuing Uncertainty.** Control of Telecom Italia (TI) recently passed to a new joint venture, of which Pirelli owns 60 percent and an investment vehicle controlled by the Benetton clothing family owns 40 percent. The companies agreed to buy 23 percent of Olivetti, which had gained control of TI in 1999. Each partner in the joint venture already owned 1.8 percent of Olivetti, and the new joint holding of 27 percent gives them effective control of TI.

This deal keeps control of TI in Italian hands. In other countries, a 27-percent holding would not allow a predator to announce new top management. But Pirelli has done so, and Olivetti CEO Roberto Colaninno has conceded defeat. European antitrust considerations should not block the Pirelli/Benetton team since it

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## Cross Talk (continued)

comes from outside the telecommunication industry. The Italian government has already approved the deal. Pirelli has announced a new strategic focus on telecommunications but continues to work on the detail. The new managers will have a huge restructuring task. Apart from Olivetti, TI includes fixed and mobile phone businesses, the Seat Pagina Giallo yellow pages and TV interests, and the IT service businesses clustered around Finsiel and TI's IT operations. This cluster forms Italy's largest IT service group, with outsourcing contracts worth around \$2 billion a year. All these businesses mostly serve their home markets in Italy. These parts may be worth more than the whole, and Pirelli could usefully engage international partners for some or even all of them. The outcome will significantly affect the telecommunication and IT service businesses in Italy as well as Pirelli's previously core businesses in tires and cables.

Assuming that these businesses become less insular, the processes of change should benefit enterprises in Italy in the long run. In the short term, enterprises using telecommunication and IT services in Italy should make sure that the new management does not overlook their concerns for maintaining the continuity, quality and price of services. Enterprises should also prepare in case other changes of ownership occur, at least for some of the group's components.

Analytical sources: Jean-Claude Delcroix and Nigel Deighton, Enterprise Network Strategies Europe

**Rhythms and Covad Seek Bankruptcy Protection.** On 7 August 2001, Covad Communications Group, a provider of high-speed Internet access, said it would file for bankruptcy protection by mid-August. On 2 August 2001, digital subscriber line (DSL) service provider Rhythms NetConnections announced it had filed for reorganization under Chapter 11 of the U.S. Bankruptcy Code.

The contest for DSL market share has all but ended. By a landslide, the traditional telephone companies have won — e.g., incumbent local-exchange carriers (ILECs) and AT&T (which bought the assets of NorthPoint Communications Group in March 2001). The vanquished are the one-time high-flying data local-exchange carriers (DLECs) — e.g., NorthPoint, Rhythms and Covad — buffeted by a declining telecommunication market and heated competition to wire homes and businesses for high-speed Internet service.

Despite turmoil among providers, the demand for DSL Internet connections soars. Gartner Dataquest forecasts that DSL subscribers will total 3 million in 2001 and reach 13 million by 2005. The DLECs' major problem, therefore, was not marketing or demand but a wholesale business model that had significant built-in challenges:

- The need to invest in and build a nationwide DSL network
- Reliance on a third-party sales channel — i.e., Internet service providers (ISPs) — to sell their DSL service to consumers and enterprises
- A revenue-sharing scheme with ISP partners that put pressure on profitability
- The need to buy copper access lines from their chief DSL competitors, the ILECs
- A typical price point too low for significant profit-taking (\$39.95 per month)
- No legal mechanism to force ILECs to cooperate with DLECs over provisioning problems

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However, an increasingly fretful U.S. economy, the inability of many ISPs to aggressively sell and support DSL services, a too-little, too-late marketing switch aimed at more profitable enterprise offerings, and continued financial pressures took their toll on the major DLECs.

DSL increasingly is essential for such enterprise uses as teleworking and networking connections with small and branch offices. Gartner recommends that enterprises opt for DSL service from their ILEC or via a nationwide integrated service provider such as AT&T or WorldCom. Enterprises considering obtaining DSL service from a DLEC should thoroughly assess the DLEC's financial liquidity and enter into only short-term contracts (no more than 12 months). Moreover, enterprises should expect that prices will rise in all regions as a result of dwindling competition.

Analytical source: John Girard, Telecommuting and Remote Access

**Exodus Faces Bleak Trek Over Unstable Financial Ground.** Web hoster Exodus Communications — on the heels of internal overspending, dot-com failures and an overly ambitious build-out — continues to suffer financial ill health. Enterprises should be prepared to look for other providers.

Exodus recently updated its business outlook by estimating that revenue in 2Q01 would fall at least 10 percent below first-quarter results and that it would post a net loss in 2001 of about \$500 million. In May 2001, Exodus announced it would cut 675 jobs, and reduce discretionary spending and capital expenditures to cope with “challenging” market conditions. From a 52-week high of \$69 per share in September 2000, Exodus stock now trades below \$2.

The drumbeat of bad news continues for Exodus. Despite its cost-cutting efforts, Exodus struggles to survive. It has almost depleted its cash reserves in supporting a too-rapid growth strategy. Although management will likely paint a “can-do” picture of the company's prospects on 26 July 2001, Gartner believes that Exodus' ability to pull out of its slide without outside help is doubtful.

Despite such negative financial indicators, Gartner has not yet seen any “exodus” of enterprises away the Web-hosting market leader. However, Exodus' uncertain survival should spur enterprises to prepare themselves for life after Exodus. Accordingly, Gartner urges enterprises to do the following:

- Examine contracts for exit clauses and transition assistance allowances.
- Develop a service transition strategy that allows for less than 4 hours of overall downtime.
- Build requests for information and requests for proposals to solicit services from other providers.
- Evaluate contract renewal terms and conditions carefully. Enterprises should agree to short-term renewal (e.g., no longer than 12 months). Ideally, month-to-month contracts are safest if pricing terms are market rates.
- Monitor service-level agreements to ensure that customer support, response time and resource availability are in compliance. (Gartner clients have not reported any excessive or continued breaches.)

Analytical source: Ted Chamberlin, Enterprise Network Strategies

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## Cross Talk (continued)

**Lack of Security Processes Keeps Sending Enterprises to ‘Code Red.’** On 1 August 2001, security experts estimated that the Code Red worm had done relatively little damage, although the final assessment would take some time. One research firm, Computer Economics, estimated that enterprises worldwide spent \$1.2 billion fixing vulnerabilities in their IT systems that Code Red could exploit. The worm propagates itself through e-mail and exploits a weakness in Microsoft’s Internet Information Server (IIS) software, which runs on the Windows NT and 2000 operating systems. The worm directs infected PCs on the last day of the month to launch a denial-of-service (DoS) attack against the Web site of the U.S. White House.

DoS attacks send floods of data packets to target servers to make them crash or at least use up all available bandwidth and block legitimate access to the server. Emerging during a slow news cycle, the Code Red worm caused a massive DoS attack of another kind as the media made proclamations about Code Red’s impact and unleashed a tsunami of e-mail alerts, press releases and predictions of the Internet’s collapse. The bandwidth and attention consumed by this hype greatly outweighed the impact of the Code Red worm itself. Code Red will undoubtedly spur more government infrastructure protection committees, more investigations and more press releases. However, Gartner believes that this and similar incidents, which seem to occur monthly, really beg two simple questions:

- Why do Microsoft’s software products continue to provide easily exploited openings for such attacks?
- Why do enterprises that use Microsoft’s software fail to deploy the patches Microsoft releases to close those openings?

Microsoft’s Windows NT and 2000 — and particularly the IIS Web server program included with them — have had a continuing stream of security vulnerabilities exposed. Gartner has published a number of notes advising enterprises to take extra security precautions. Enterprises should recognize that any use of IIS in Internet-connected applications requires constant vigilance for security alerts, continual application of security patches, and the use of additional security products and services that quickly detect vulnerabilities and attacks against the numerous security holes in IIS.

Above all, enterprises should establish processes to make sure they promptly apply all security patches to all Internet-exposed systems and replace with more secure products those that continually have vulnerabilities exposed. As long as enterprises continue to use free software and expect to get more security than they paid for, attacks like Code Red will have a high probability of either succeeding in direct attacks or eating up attention and resources as hype makes enterprises suddenly realize their vulnerability.

Analytical source: John Pescatore, Information Security Strategies

**A Catastrophe Like Baltimore’s Train Fire Could Disrupt Your Communications.** On 23 July 2001, work crews in Baltimore removed the last rail car of a 60-car train that derailed and caught fire in a tunnel. The accident occurred on 18 July. The blaze destroyed a major fiber-optic cable and disrupted network services to enterprises in Maryland and other states on the East Coast of the United States.

An unforeseeable catastrophe could destroy major communication links anywhere at any time. In this case, a train carrying flammable materials derailed and burned for five days; another time it could be a flood, tornado or gas explosion. Although today’s networks are in general highly reliable and have

extensive restoration capabilities, this incident shows that they are far from failure-proof. High-capacity links face more than an infinitesimal risk of catastrophe because they tend to follow the same rights of way as railroads and subways, utility conduits, gas pipelines, and steam pipes. Fiber-optic cable has even been installed in sewer systems. Finally, construction crews working in metropolitan areas often sever communications cables by accident. It could take weeks to repair damaged cables.

Enterprises should ensure their carrier offers diverse physical access to the national communication grid for their mission-critical sites. In some cases, when carriers set up backup lines for enterprises, primary and backup lines run through the same physical space. Once the carrier has shown that primary and backup lines are physically separated, enterprises can refine their backup plans. For sites where mission-critical work occurs, enterprises should determine which functions are mission-critical and need instantaneous (and expensive) backup. For less crucial functions, enterprises can spend less to have available a backup circuit that the carrier can activate in several hours to two days.

Analytical source: Jay Pultz, Enterprise Network Strategies

**British Telecom Shows How to Leverage the Enterprise's Intellectual Capital.** Recently, British Telecommunications (BT) announced that it rebranded its antifraud unit as Azure. Formerly called Fraudwise, the unit sells monitoring software and services that reduce losses from fraud.

Azure provides an example of what Gartner has urged enterprises to do to maximize returns on their intellectual assets. In response to their own problems or opportunities, many enterprises develop expertise that solves marketwide problems. Thus, they can sell to others. BT developed software and knowledge in-house to reduce losses from fraudulent billing and other means to 0.2 percent, compared with an industry average of 3.2 percent. This service will appeal to other telecommunications carriers, and Azure/Fraudwise will also offer monitoring and analysis software, services, consulting and up-to-date information about fraud on its Web site. The context within which Fraudwise emerged from BT also holds a lesson. As with many former incumbent carriers, BT benefited from easy revenue growth from its voice and data services, and borrowed heavily to finance aggressive overseas expansion and expensive third-generation wireless licenses. However, fierce competition has driven bandwidth prices to commodity levels, and impatient investors demand a faster return on their investment and want BT to control its large debt. To boost its growth, BT must develop value-added services with higher profit margins than its traditional call-carrying business. A business such as Azure fits the bill nicely. Turning internal expertise into salable products represents an effective, efficient response to competitive pressure. After all, the owning enterprise has made the initial investment, and this approach does not require disruptions, such as developing partnerships with other companies or acquisitions. Also, leveraging knowledge assets into a business in its own right means the enterprise can transform operations from absorbers of capital into generators of revenue. In BT's case, it keeps the expertise within its own organization and can therefore develop security systems for its own use that are differentiated from the rest of the market.

Before looking outside for acquisitions and partnerships, enterprises should perform a thorough survey of internal tools and expertise that may offer a value proposition to other companies, especially those in the same industry.

Analytical sources: Kathy Harris and David Neil, Enterprise Network Strategies Europe

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