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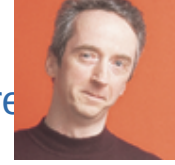

InfoWorld

November 29, 2004 Issue 48

GET TECHNOLOGY RIGHT

Will these troublemakers put IT out of business?

If these guys are right, all enterprise applications will soon be delivered as a service. They may be onto something.

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Marc Benioff
Salesforce.com

Halsey Minor
Grand Central Communications

FROM THE INFO TEST CENTER

Mother of Windows Management

MOM 2005 adds powerful application monitoring features and a new level of complexity p33

No SAN Is an Island

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Interactive Business Intelligence

HyperionÕs Essbase 7X takes a fresh, visual approach to business performance management p35

Software on demand:

The end of IT as we know it?

If you believe the hype, in just a few years all enterprise software will be delivered as a service

HALSEY MINOR, CEO OF HOSTED INTEGRATION PROVIDER GRAND CENTRAL Communications, has a powerful message for IT: "In four years ... basically the whole notion of enterprise application software is going to be dead." He believes application functionality will instead be available as hosted, pay-per-use services delivered by companies such as Salesforce.com. Putting his money where his mouth is, Minor has recently launched a $50 million venture capital fund with his own money to fuel on-demand startups. For its part, Grand Central will handle data and process integration between enterprises and multiple on-demand services.

Marc Benioff — CEO of Salesforce.com, which originated the "no software" marketing campaign — offers a similar view. "Enterprise software is dying out," he says. "Look at companies like IBM, which says things should be delivered on demand, and Oracle saying things should be delivered on demand. Even Siebel, who for years and years said it would never happen, is now saying it has to happen."

Bold talk. And when taken to its logical extreme, more than a little alarming for enterprise IT. One premise underlying the death-of-software argument upheld by Minor, Benioff, and others is that enterprise IT is drowning in complexity. The business side is tired of big licensing and hardware investments, endless software deployment cycles, random outages, and regulatory-compliance horrors. Rather than keep suffering all that, enterprises will pull the rip cord and opt for the hosted, on-demand model instead — or so the argument goes.

BY ERIC KNORR | PHOTOGRAPHY BY GLENN MATSUMURA

But if companies commit to that strategy wholesale, won't enterprise IT be subject to massive layoffs? Will those poor souls be sending their resumes to the likes of Minor and Benioff ?

On-demand proponents are quick to mute such overtones. "Those IT folks and those resources are going to be reallocated to the stuff that adds value to the organization," says Jason Maynard, senior North America software analyst at Merrill Lynch, which last April launched an on-demand index that tracks both pure-plays such as Salesforce.com and software-by-subscription from traditional software houses such as Microsoft.

Or as John Girard, CEO of hosted content management provider Clickability, puts it: "Insource the core and outsource the rest." But why should IT trust on-demand providers to handle "the rest," when just three years ago so many failed so spectacularly under another name, ASPs?

The answer is that, although the on-demand model is still evolving, many of the problems that scuttled the first round of ASPs have been or are being solved. Web services have helped make customization and integration easier. Identity management is bridging user provisioning between provider and enterprise. And various technologies — much of them developed by a handful of ASP survivors — are making hosted provider platforms more reliable, scalable, and secure.

Such advances lead many to identify on-demand software as the next big thing, although the number of current deployments is tiny compared with the software market as a whole. "In spite of all the hype around it, software as a service is the biggest thing to happen in software in 25 years," Girard says. "It's an enormous paradigm shift."

Titans of Hosted Services Discuss the Demand for On-Demand

Marc Benioff, chairman and CEO of Salesforce.com, elucidates his expectations for the hosted-app paradigm.

IW: Why is there resurgent interest in the hosted model?

MB: It's exciting. It's about a whole breadth of opportunity for the customer to be more successful than ever before, using a whole new model, [which is] very low cost and very easy to use

IW: To what degree is the attraction the difference in licensing structure versus the difference in technical implementation?

MB: I think it's really about total cost of ownership and risk-free implementation.

IW: So this is an incremental process?

MB: This is evolution. This is about a new paradigm that's just lower cost and easier to use than the old paradigm. And traditionally in our industry, that can become a huge success.

IW: What about the argument that this is all IP-based anyway and that IP is becoming client/server? IP already serves as the core of many enterprises. Does it matter where it lives?

MB: It only matters where it lives if it's the lowest-cost, highest-value solution. Where it is doesn't exist. It just happens that on-demand is the lowest cost and the easiest to use.

MARC BENIOFF

IW: Are there quick make-or-break issues on the technical side?

MB: You've got to look at eBay and Amazon. These are the best solutions: written on big database servers with high-performance systems, high-performance hardware, massive amounts of storage, scalable app servers delivering pages under 500 milliseconds. To really analyze if a company has got the on-demand thing down, does their product look like Amazon or eBay from an architectural and a user interface and every other perspective?

IW: With enterprise applications, you're talking about deep integration. To what degree is SOA [service-oriented architecture] a gating factor?

MB: I'm trying to move you away from that and move you more toward looking at what makes eBay and Amazon so successful. It's the usability, the pervasiveness, the intuitiveness, the low cost, right? Selling things on eBay is a lot cheaper than setting it up on your store. Forget Salesforce.com. These are the attributes that companies want: low cost, ease-of-use, persistence.

IW: Should IT managers fear you?

MB: I don't think so. ... The CIO's job overall is going to be more strategic, more about finding the right thing to do for the business and less about the managing of DB2.

"The pay-and-pray model of enterprise software is over."

— Halsey Minor, Grand Central Communications

This Year's Model

Even Michael Conlon, a University of Florida technology strategist whose large IT operation has made a point of doing everything itself, is thinking about making the shift in certain areas. E-mail, application monitoring, and HR functions could all be candidates. "You identify things that are commodity, not core, to the business, and [that are] well-defined. If they can be executed off campus, that's fine."

One explanation for the sudden openness to the on-demand model has to do with licensing. Customers are tired of the "Costco" style of software purchasing, as Merrill Lynch's Maynard terms it. "I can't eat that many cheese nips in my lifetime. A four-gallon drum of licorice; that's how we buy enterprise software," he says. Paying for what you consume rather than paying up front for a lifetime of usage fits better with today's downsized IT budgets.

According to Grand Central's Minor, botched deployments provide even greater motivation to make the on-demand switch. He points to Avis, which recently sank millions in an ERP system that never saw the light of day. "The pay-and-pray model of enterprise software is over," Minor says. "Instead, it's going to be delivered as utility, where you'll pay for successful delivery like you pay for your phone calls." Rather than the "big bang" theory of utility computing promoted by IBM, where enterprise datacenters suddenly become self-healing and self-managing, the on-demand model is more like utility computing, one enterprise application at a time.

Poor visibility is another factor for moving to an on-demand model, suggests Todd Johnson, president of Jamcracker, which began as an aggregator of hosted IT services such as VPN and backup and currently provides platform

Grand Central Communications CEO Halsey Minor extols the virtues of sharing.

IW: Why should enterprises change the way they consume apps?

HM: Having gone through the whole bubble, it's clear that you can spend $100 million on enterprise software and get nothing back.

IW: For this model to work, federated identity would need to be in place.

HM: Our 5.0 product provides the ability to federate identity into our infrastructure. We manage identity and tie it to policy from all the different end points. The combination of identity and policy, delivered as a service, allows all these services to interact.

HALSEY MINOR

IW: Pull the rip cord; get it as a service?

HM: And massively reduce risk. ...You can build on top of our platform, and it costs you nothing. You don't really start incurring cost until you start moving transactions over our network. Take a simple use case: When somebody sells something, how do you take your CRM system and get that data into your financial system so you can charge the customer? You need to buy an app server, hardware for the app server, an identity management system, a database from Oracle, a datacenter. ... You've already made a massive investment in a very simple process.

IW: But the more [Grand Central] takes on, the more it becomes a single point of failure.

HM: For a lot of customers, they're their own single point of failure. The level of redundancy we build into what we do far exceeds what they can afford to pay for themselves. The processes that we have to put in place, the people that we have to employ, the ability to be able to swap out machines at three o'clock in the morning — it makes no sense for companies to try and run that.

IW: But many of them are doing it.

HM: But a lot of them in the integration area have given up because of failure. With integration, there are a lot of integration points, where people have just given up trying to connect, because the risk is too high.

IW: Are you asking these guys to throw their hardware investment out the window?

HM: There's no upfront cost in using our platform. The entire framework all the way through — they can build a service, prototype it, run it, and figure out whether they want to continue.

IW: Where's the line between what a customer does, what you do, and who owns the intellectual property?

HM: We're the platform. But we're the only platform that makes it really easy to be able to share your IP. We're a shared service in a shared space, so anybody who builds something can share it based on role and identity.

IW: Should IT managers fear you?

HM: No. They've said, 'We can now focus on the things that provide unique value to our customers.' — *E.K.*

technology for companies in the on-demand business. Today, enterprises are lucky if they can see beyond the next quarter, he says. The risks of an 18-month global Siebel rollout are enormous compared with a Salesforce.com deployment, which, even if sophisticated, should take no more than 90 days — and with zero investment in software licensing or hardware.

Mercury Interactive, which has been offering a hosted version of its application-monitoring solution for years, is in a unique position to observe customer reaction to the on-demand model. "We're not as religious as some. We offer a choice," says Christopher Lochhead, Mercury's chief marketing officer. During the sell cycle, he notes, customers like the idea that they can switch from hosted to internal deployment. But in fact, very few do. Today, Mercury delivers application management as a hosted service to between 3,000 and 4,000 customers, approximately half the installed base for that solution. "When the customer looks us in the eye and says, 'Hey, what's the best way to deploy your technology?,' we lead with the hosted offering."

Objections and Opportunities

Not everyone is biting, of course. Topping the list of doubts is whether hosted offerings can be properly integrated with internal enterprise apps, and skepticism over the efficacy of adapting on-demand solutions to unique business processes. And some IT managers bristle at relying on an outside host's ability to run its datacenter impeccably, not to mention maintain a solvent business. Total dependence on a browser-based UI is another sticking point (see "Can the Browser Meet the Demands of On-Demand?").

Ask any on-demand partisan about the integration issue, and you'll hear two words: Web services. As SOA (service-oriented architecture) and Web services spread across enterprises and as on-demand providers outfit their offerings with Web services interfaces, data-level integration gets easier inside and outside the enterprise. But in most cases, Web services' share of the integration pie remains small, which is one of the ideas behind Grand Central: Provide a complete services bus, which supports not only Web services but also legacy messaging protocols.

Grand Central, however, has more up its sleeve than helping on-demand providers and their customers to integrate. The company's approach not only facilitates customization, it focuses on integrating hosted services before they touch the customer's enterprise. "No one is going to buy a bunch of services and then buy a bunch of software to try to integrate them," Minor says. For example, he adds, Grand Central routinely integrates Salesforce.com with ADP payroll processing so that a customer can cut commission checks without leaving the Salesforce.com environment.

As hosted integration gets more sophisticated, customers can also begin developing process-based applications on the host's platform, an idea touted by Grand Central and by Salesforce.com with its sforce integration and application development platform. In fact, most on-demand providers — including Amazon and eBay, notes Salesforce.com's Benioff — seem headed in this direction. Customers get a development environment in which they can create unique functionality that, unlike conventional enterprise apps, won't break when a new version arrives.

Although the host's API limits the functionality of such applications, the potential for hosted application development doesn't stop with a handful of providers. As Eric Newcomer, CTO of enterprise integration company Iona, reminds us, one of the original ideas behind Web services was that applications could be built from components published as services across the Internet.

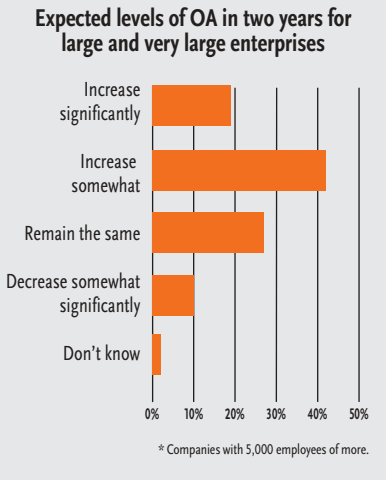
"I think we're seeing an increase in interest in getting the components instead of the whole package," Newcomer says. He also believes the reverse is true: Companies are trying to leverage their existing assets by service-enabling them and selling them on a subscription or pay-per-use plan.

For outside-the-firewall integration of multiple services on behalf of a single customer, federated identity management must be in place (infoworld.com/2227). Grand Central offers this in Version 5.0.

But Todd Johnson of Jamcracker, whose Pivot Path solution helps on-demand providers handle user provisioning, cautions that properly integrating identity and security infrastructures among customers and hosted services is a tough problem — one that defeated more than a few first-wave ASPs.

Outsourced Apps

Many large enterprises * expect to rely more on OA (outsourced applications) during the next two years.



Always On?

In the end, the fear that an on-demand provider could fail remains the biggest single obstacle to large-scale enterprise adoption of software as a service. One can argue, as Grand Central's Minor does, that on-demand providers can afford to invest in redundancy and uptime at levels individual enterprises can only dream of achieving. Maybe so, but customers must be confident that the provider is doing everything right with its architecture, core technologies, security, and choice of partners.

IT has a natural resistance to losing control — and to losing personnel. "I think that there's some fear, but I'm not sure whether or not it's a rational fear," says Eric Peterson, site technology and operations analyst at JupiterResearch. "Out of one side of its mouth, IT says, 'We're too busy; we don't' have enough people to get X and Y and Z done.' But it [also] says, 'We don't want to give up any of the software that we already own because it reduces the size of our kingdom.' "

As usual, enterprise customers who see the merits of this paradigm shift — the first glimmers of utility computing — will benefit most. Internet infrastructure has already taken over the heart of the enterprise, causing the line between inside and outside the enterprise to blur. The physical locations of resources matter less and will fade progressively as technologies such as SOA and federated identity become universal.

Meanwhile, a good application is a good application. If an enterprise can get most of the functionality of a great shrink-wrapped solution through the browser with a magnitude less hassle and expense, IT can finally tuck into that backlog of important projects.

And that may be the best job security of all.

Pump Up the Browser

Can the browser meet the demands of on-demand? On-demand apps are by definition Web apps. That won't come as a shock to enterprises because most of the latest internally deployed enterprise apps — besides a few client/server holdouts — already rely on the browser to deliver user experience.

But where is the Web app headed? A decade ago, the browser exploded many of our assumptions about building and deploying software. We were shocked to discover that less was more and that worse was better.

We've yet to fully absorb the lessons that the browser and the Web can teach us. Now, as the on-demand trend heats up and the pendulum swings back toward the GUI — in the form of RIAs (rich Internet applications; infoworld.com/2207) — it's vital to understand the strengths and weaknesses of Web-style software, and to assess its real potential.

Macromedia, Microsoft, and Sun Microsystems don't exactly welcome that analysis. Each owns a client platform — Flash, Windows/.Net, Java — through which it hopes to control the delivery of software as a service. But nobody owns or can own the ascendant browser, Mozilla's Firefox. ActiveX dependencies and inertia rule it out as an immediate substitute for Internet Explorer, especially in many corporate settings. But Firefox will gradually pry open the door. Now that there's a viable open source alternative to Internet Explorer, enterprises burned by vendor lock-in would be ill-advised to ditch the browser for a proprietary client technology. And of course, they won't.

The question is, How does one selectively and strategically enrich the browser?

This isn't a new problem. Almost from the start, we've augmented core features with plug-ins that handle foreign data types such as PDF, multimedia, and vector graphics. And we've married it to run-time engines such as Java and Flash. But the integration of these technologies into the browser has been on ice for years.

Dynamic HTML can minimize server round-trips. But it has its limits.

Hardly anybody now remembers that LiveConnect, which enables two-way communication between JavaScript and Java applets, is still supported in the major browsers. The Netscape plug-in API is likewise widely supported but frozen in 1996.

The browser's Achilles' heel isn't merely its lack of support for advanced graphics. What really hampers developers and hurts users is the difficulty of managing complex interaction on the client. Dynamic HTML can minimize server round-trips and page refreshes, and applications such as Google's Gmail (infoworld.com/2144) have shown this approach to be more capable than you might think. But DHTML has its limits.

We clearly need more advanced widgetry to help us deal with a range of data types and to guide us through sophisticated interaction scenarios. In some cases, this machinery will be deployed using one or another flavor of pure RIA. Hitting the sweet spot will require hybrid applications that leverage the simplicity, familiarity, and general-purpose utility of the browser, while using RIA technologies selectively where they can deliver the most bang for the buck.

— Jon Udell

PETER SERLING

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General Business Industries
- ❑ 01. Defense Contractor / Aerospace
- ❑ 02. Retail
- ❑ 03. Wholesale / Distribution (non-computer)
- ❑ 04. Pharmaceutical / Medical / Dental / Healthcare
- ❑ 05. Financial Services / Banking
- ❑ 06. Insurance / Real Estate / Legal
- ❑ 07. Transportation / Utilities
- ❑ 08. Media (print / electronic)
- ❑ 09. Communication Carriers (telecomm, data comm., TV / cable)
- ❑ 10. Construction / Architecture / Engineering
- ❑ 11. Manufacturing & Process Industries (other than computer-related)
- ❑ 12. Research / Development

Technology Providers
- ❑ 13. Managed Service Provider / Business Service Provider
- ❑ 14. Technology Service Provider (ISP / ASP/ MSP, etc.)
- ❑ 15. Computer / Network Consultant
- ❑ 16. Systems or Network Integrator
- ❑ 17. VAR / VAD
- ❑ 18. Technology Manufacturer (hardware, software, peripherals, etc.)
- ❑ 19. Technology - Related Retailer / Wholesaler / Distributor

Government / Education
- ❑ 20. Government: federal (including military)
- ❑ 21. Government: state or local
- ❑ 22. Education

❑ 98. Other _____ (Please specify)

Please answer the questions on the following page.

2 WHAT IS YOUR PRIMARY JOB TITLE? (PLEASE CHECK ONLY ONE):

IT / Technology Professionals
- ❑ 01. Chief Technology Officer (CTO)
- ❑ 02. Chief Information Officer (CIO)
- ❑ 03. Chief Security Officer (CSO)
- ❑ 04. Vice President (including SVP, EVP, etc.)
- ❑ 05. Director
- ❑ 06. Manager / Supervisor
- ❑ 07. Engineer
- ❑ 08. Systems Analyst / Programmer / Architect
- ❑ 09. Consultant / Integrator
- ❑ 10. Developer
- ❑ 11. IT Staff
- ❑ 12. Other IT Professional _____ (Please specify)

Corporate / Business Management
- ❑ 13. CEO, COO, President, Owner
- ❑ 14. CFO, Controller, Treasurer
- ❑ 15. Vice President (including SVP, EVP, etc.)
- ❑ 16. Director
- ❑ 17. Manager / Supervisor
- ❑ 18. Other Business Management Title _____ (Please specify)

❑ 98. Other Title _____ (Please specify)

3 PLEASE INDICATE YOUR JOB FUNCTION(S)?

(PLEASE CHECK ALL THAT APPLY):

IT / Technology Functions
- ❑ 01. Executive
- ❑ 02. Department Management - IT
- ❑ 03. Research and Development Management
- ❑ 04. Systems / Network Management
- ❑ 05. Management of Enterprise Applications (CRM, ERP, SCM, etc.)
- ❑ 06. Applications Development
- ❑ 07. Consultant / Integrator
- ❑ 08. Other IT Department Management _____ (Please describe)
- ❑ 09. Other IT - Staff _____ (Please describe)

Corporate / Business Functions
- ❑ 10. Executive
- ❑ 11. Department Management - Business
- ❑ 12. Financial / Accounting Management
- ❑ 13. Research and Development Management
- ❑ 14. Sales / Marketing Management
- ❑ 15. Other Department Management
- ❑ 16. Other Department Staff _____ (Please describe)

❑ 98. Other _____ (Please describe)

4 HOW MANY PEOPLE ARE EMPLOYED AT THIS ORGANIZATION, INCLUDING ALL OF ITS BRANCHES, DIVISIONS AND SUBSIDIARIES?

(PLEASE CHECK ONE ONLY):

- ❑ 01. 20,000 or more
- ❑ 02. 10,000 - 19,999
- ❑ 03. 5,000 - 9,999
- ❑ 04. 1,000 - 4,999
- ❑ 05. 500 - 999
- ❑ 06. 100 - 499
- ❑ 07. 50 - 99
- ❑ 08. Less than 49

5 OVER THE COURSE OF ONE YEAR, DO YOU BUY, SPECIFY, RECOMMEND, OR APPROVE THE PURCHASE OF THE FOLLOWING PRODUCTS OR SERVICES WORTH:

*** CONSULTANTS: PLEASE INCLUDE WHAT YOU RECOMMEND FOR YOUR CLIENTS AS WELL AS WHAT YOU BUY FOR YOUR OWN BUSINESS, IF APPLICABLE. IF YOU CANNOT DISTINGUISH BETWEEN THIS AND OTHER LOCATIONS, PUT RESPONSE IN THE FIRST COLUMN.**

01. $100 million or more
02. $50,000,000 to $99,999,999
03. $30,000,000 to $49,999,999
04. $20,000,000 to $29,999,999
05. $10,000,000 to $19,999,999
06. $5,000,000 to $9,999,999
07. $2,500,000 to $4,999,999
08. $1,000,000 to $2,499,999
09. $600,000 to $999,999
10. $400,000 to $599,999
11. $100,000 to $399,999
12. $50,000 to $99,999
13. Less than $49,999
14. None

Product category	For this location: (write code in box)	For other locations: (write code in box)
Large systems		
Client computers		
Networking / Telecom (including servers)		
Internet / Intranet / Extranet		
Security		
Storage		
Peripheral equipment		
Software		
Service / Support		

6 PLEASE TELL US YOUR INVOLVEMENT WITH YOUR COMPANY'S STRATEGIC TECHNOLOGY INITIATIVES (PLEASE CHECK ALL THAT APPLY):

- ❑ 01. Integrate Technology with company goals
- ❑ 02. Define Architecture
- ❑ 03. Choose Technology Platforms
- ❑ 04. Develop Technology Integration Strategy
- ❑ 05. Test, pilot, implement emerging technologies
- ❑ 06. Scalability Planning
- ❑ 07. Build, Run Web Services
- ❑ 08. Internet / Network Infrastructure
- ❑ 09. Customer Relationship Management
- ❑ 10. External Partnership Management
- ❑ 11. Budgeting
- ❑ 12. Recruitment & Retention
- ❑ 13. Other_____ (Please describe)
- ❑ 99. None of the above

7 ARE YOU INVOLVED IN BUYING, SPECIFYING, RECOMMENDING OR APPROVING THE FOLLOWING SOFTWARE? (PLEASE CHECK ALL THAT APPLY):

- ❑ **01. Enterprise / E-Business Applications**
- ❑ 02. Customer Relationship Management (CRM / eCRM)
- ❑ 03. Enterprise Resource Planning (ERP)
- ❑ 04. Supply Chain / Procurement
- ❑ 05. Business Process Management
- ❑ 06. Business Intelligence / Data Mining
- ❑ 07. Knowledge Management
- ❑ 08. Portals
- ❑ 09. Collaborative Applications / Groupware
- ❑ 10. Project Management
- ❑ 11. Financial / Payroll / Billing
- ❑ 12. E-business / E-commerce
- ❑ 13. Database Management Systems (DBMS)
- ❑ 14. Data Warehouse
- ❑ 15. Manufacturing
- ❑ 16. Asset Management / Software Distribution
- ❑ 17. Performance / Application Management
- ❑ 18. Streaming Media
- ❑ 19. Other Enterprise / E-Business Applications
- ❑ **20. Integration Software**
- ❑ 21. Web Services
- ❑ 22. Web Services Orchestration
- ❑ 23. Application Servers
- ❑ 24. Enterprise Application Integration (EAI) / Middleware
- ❑ 25. Business Process Management
- ❑ 26. Legacy Application Integration Tools
- ❑ 27. Other Integration Software
- ❑ **28. Application Development**
- ❑ 29. Application Development Tools
- ❑ 30. Application Servers
- ❑ 31. Web services
- ❑ 32. Java / J2EE
- ❑ 33. XML
- ❑ 34. .NET
- ❑ 35. Testing Tools
- ❑ 36. Other Application Development Software

8 ARE YOU INVOLVED IN BUYING, SPECIFYING, RECOMMENDING OR APPROVING THE FOLLOWING HARDWARE? (PLEASE CHECK ALL THAT APPLY):

- ❑ **01. Hardware**
- ❑ 02. Mainframes
- ❑ 03. NT / Windows 2000 / .NET Servers
- ❑ 04. Unix Servers
- ❑ 05. Linux Servers
- ❑ 06. Blade Servers
- ❑ 07. PCs / Workstations
- ❑ 08. Notebooks / Laptops
- ❑ 09. PDAs / Handhelds / Pocket PC / Wireless Devices
- ❑ 10. Other Hardware
- ❑ **11. Peripherals**
- ❑ 12. Laser Printers
- ❑ 13. Inkjet Printers
- ❑ 14. Monitors
- ❑ 15. Flat Panel Displays
- ❑ 16. UPS (Uninterruptible Power Supply)
- ❑ 17. Network Copiers
- ❑ 18. Other Peripherals

9 ARE YOU INVOLVED IN BUYING, SPECIFYING, RECOMMENDING OR APPROVING THE FOLLOWING TECHNOLOGY SERVICES? (PLEASE CHECK ALL THAT APPLY):

- ❑ **01. Technology Services**
- ❑ 02. Systems / Application Integration
- ❑ 03. E-Business / Internet / Intranet / Extranet
- ❑ 04. Application Development
- ❑ 05. Application Hosting (ASP)
- ❑ 06. Web Hosting
- ❑ 07. Web Development
- ❑ 08. Security
- ❑ 09. Storage
- ❑ 10. Content Delivery Networks
- ❑ 11. Disaster Recovery / Business Continuity
- ❑ 12. Outsourcing
- ❑ 13. Utility Computing Services
- ❑ 14. Telecommunications
- ❑ 15. Call Center / IT Services
- ❑ 16. Consulting
- ❑ 17. Other Technology Services

10 ARE YOU INVOLVED IN BUYING, SPECIFYING, RECOMMENDING OR APPROVING THE FOLLOWING PRODUCTS OR TECHNOLOGIES? (PLEASE CHECK ALL THAT APPLY):

- ❑ **01. Networking**
- ❑ 02. LANs (Local Area Networks)
- ❑ 03. WANs (Wide Area Networks)
- ❑ 04. Switches / Routers / Hubs
- ❑ 05. Caching / Load Balancing
- ❑ 06. Grid / Utility Computing
- ❑ 07. E-mail
- ❑ 08. Instant Messaging / Peer-to-Peer
- ❑ 09. Content Delivery Networks
- ❑ 10. Network and Systems Management
- ❑ 11. Traffic Monitoring and Analysis
- ❑ 12. QoS (Quality of Service)
- ❑ 13. VoIP (Voice over IP)
- ❑ 14. Telecommunications
- ❑ 15. IP Telephony
- ❑ 16. Wireless
- ❑ 17. Remote Access
- ❑ 18. Web / Video Conferencing
- ❑ 19. Other Networking
- ❑ **20. Storage**
- ❑ 21. High-end / Enterprise Class Storage
- ❑ 22. Network Attached Storage (NAS)
- ❑ 23. Storage Area Networks (SANs)
- ❑ 24. Storage Management Software
- ❑ 25. IP Storage
- ❑ 26. Direct Attached Storage (DAS)
- ❑ 27. Storage Blades
- ❑ 28. Storage Backup (Tape, Disk, Optical, RAID)
- ❑ 29. Removable / Portable Storage
- ❑ 30. Disaster Recovery
- ❑ 31. Other Storage
- ❑ **32. Security**
- ❑ 33. Anti-Virus / Content Filtering
- ❑ 34. Firewall
- ❑ 35. VPN (Virtual Private Network)
- ❑ 36. Identity Management / Authentication
- ❑ 37. Intrusion Detection
- ❑ 38. Encryption
- ❑ 39. Other Security
- ❑ **40. Internet / Intranet / Extranet**
- ❑ 41. Web Servers
- ❑ 42. Web Development / Authoring Tools
- ❑ 43. Web Performance Management / Monitoring Software
- ❑ 44. Content Management / Document Management
- ❑ 45. Content Delivery Networks
- ❑ 46. Internet Software
- ❑ 47. Other Internet / Intranet / Extranet

11 WHICH OF THE FOLLOWING OPERATING SYSTEMS ARE IN USE OR PLANNED FOR USE AT THIS LOCATION? (PLEASE CHECK ALL THAT APPLY):

- ❑ 01. Windows XP
- ❑ 02. Windows 2000
- ❑ 03. Windows NT
- ❑ 04. Windows 95/98
- ❑ 05. Windows CE
- ❑ 06. Mac OS (Macintosh)
- ❑ 07. Solaris
- ❑ 08. UNIX
- ❑ 09. Linux
- ❑ 10. MVS, VMS, ESA
- ❑ 11. VM
- ❑ 12. OS 400
- ❑ 13. Netware
- ❑ 14. Palm OS
- ❑ 15. Other OS

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