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The Year Ahead:

IT Industry at a Crossroads in 2009

IDEAS analysts recently conferred to identify some key IT industry trends that are poised to play out in 2009, given the uncertainty resulting from global economic difficulties. While the recent financial results from the technology suppliers paint a mixed picture, the credit crunch and resulting cash-flow squeeze could very well dry up an organization's ability to make major investments in new technology, at least in the short term. The downturn will force IT departments to rethink almost every initiative, as they stretch out technology replacement cycles as long as possible in order to delay procurement costs. Even if funds become available, firms will be reluctant to invest in projects with multiyear payback cycles while they are laying off longtime employees. Instead, firms will want to make sure they can survive until the economy turns around, and they will defer new capital expenses in the interim.

Projects with payback periods longer than 12 months will likely be postponed or cancelled, but modernization projects that promise to show a more rapid return on investment may be seriously considered. Most initiatives will be driven primarily by the desire to cut costs, either in terms of reduced energy consumption, or other operational savings. For example, thin-client deployments promise to significantly cut the management and support costs of desktop computing. Installing new servers with more efficient power and cooling may result in some operational savings from reduced energy costs, but users may conclude that they can achieve nearly the same results simply by consolidating workloads on existing servers and operating them at higher levels of utilization. However, in some cases, users may invest in more sustainable gear so that they can capitalize on tax incentives given by governments to encourage environmentally desirable behavior. In past recessions, when capital spending dried up, governments sometimes offered investment tax incentives to get the economy going again, and in this case, such incentives may be contingent on adopting more efficient IT infrastructure.

IT vendors will shift from a product-centric focus to pushing complete drop-in solutions that align with the desire of IT departments to slash operating costs. As the vendors scramble to promote their offerings with promises of short-term Return on Investment (ROI), the rate of product technology updates may increase. Server shipments should thus be healthy, but much of the growth will be in x86 servers, resulting in lower Average Selling Prices (ASPs) overall. While IT acquisition costs may come down in the US market, upward pressure could remain on list prices in other geographies as a result of currency movements.

Server Hardware

For UNIX servers, IBM's POWER architecture now has the performance lead. However, the next major update of Intel's

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> **"External messaging from vendors may still focus on protecting the environment, but internally, the green message will be all about saving money."**

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Itanium processor, code-named "Tukwila," should offer a very competitive solution based on price/performance, assuming that Intel stays on track with the current Tukwila development schedule. A competitive Itanium chip could rejuvenate HP's Integrity platform, and will also boost some of the Itanium Solutions Alliance vendors. It is less certain whether Sun will maintain its schedule for delivering the next major update of its UltraSPARC processor, code-named "Rock." Nonetheless, we expect to see more competition among traditional UNIX-based midrange and high-end servers in the second half of 2009.

The low acquisition cost of x86 servers and widespread Windows/Linux usage will continue to erode the low-end and midrange UNIX server market. Increasing multicore capabilities of x86 processors will challenge even midrange UNIX servers. "Entry" UNIX servers will be less common in Small and Medium-Sized Businesses (SMBs) but more widely deployed as replicated scale-out configurations in large enterprises.

Dell and HP will continue to benefit from the popularity of x86 servers, but their overall success will depend on their ability to adapt their value propositions to the harsh economic conditions, and present those propositions effectively. Companies with deep exposure to the financial industry – i.e., IBM and Sun – will need to develop revenue streams in new products, services, and geographies as their sales in the banking and financial sectors drop. Fujitsu will be the wildcard of 2009. With a solid product line, deep worldwide services capabilities, and a strong desire to succeed on a global basis, Fujitsu could emerge as one of the next big IT vendors. Expect some surprising acquisitions that will help Fujitsu's global push.

Virtualization

Virtualization technology will continue to become a standard part of IT infrastructures, not just in servers, but also in storage, networks, and desktops. Firms of all sizes have become confident with the use of virtualization for production workloads, and they will continue to consolidate workloads via virtualization to achieve higher utilization of existing servers. Virtualization will make it easier for older servers – which have the highest maintenance costs or highest energy costs – to be retired from service. Dynamic translation software, such as provided by Transitive (now part of IBM), will enable consolidation from heterogeneous hardware and operating environments. IBM's future plans for Transitive are not known, but existing Transitive translators to x86 and Itanium remain in use. We expect to see some erosion of legacy architectures as the movement of workloads to x86, Itanium, or POWER is accelerated by Transitive technology.

Interest will continue to grow in desktop virtualization, as organizations hope to achieve some of the same operational benefits from virtualizing clients that they realized from virtualizing servers. Various forms of virtualization can be used to shift the state of desktop computing from the clients to servers, allowing desktops to be managed with better economies of scale, reducing IT support costs, and making it easier for administrators to secure data. The drive to implement desktop virtualization will come from the top of organizations – i.e.,the CEO/CFO level – rather than the IT department. As the trends of desktop virtualization, mobile computing, and telecommuting converge, the traditional desktop PC form factor could near extinction.

Competition will heat up between the major x86 virtualization software providers, including VMware, Microsoft, and Citrix. The impact of Microsoft's Hyper-V on VMware's business will be watched particularly closely. VMware clearly has significant technical advantages over Hyper-V at present, but Hyper-V is the path of least resistance to virtualization for organizations that have converged on Microsoft's operating systems as their computing standard. Further, many organizations are not yet mature enough in their adoption of virtualization to take full advantage of VMware's technical advantages, and for these kinds of users, Hyper-V is "good enough" in its present state. While it may be premature to predict what the x86 virtualization market share will look like in a year from now, Microsoft seems poised to harvest large volumes of low-hanging fruit in the virtualization market in 2009.

At the same time, though, VMware is trying to redefine the "virtualization market" by proposing a new way for the industry to view computing in general. VMware proposes shifting the focus from a perspective

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> **"Whether recovery starts in the middle or the end of 2009, those who are nimble will be able to invest and out maneuver their competition."**

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based on individual physical servers, blades, and standard operating systems, to a vision in which individual workloads are implemented as "virtual appliances." These appliances would be entrusted to virtual infrastructures spanning organizations, and ultimately "Cloud" infrastructures hosted by third parties. While the vision for Cloud computing is indeed compelling, 2009 will see the hype around Cloud brought down to scale, as some of the issues with production deployment of Cloud services become clearer, including service levels, security, and predictive cost modeling. Some trials of Cloud computing for certain workloads may be accelerated as a result of the tight economy, though. For example, hosted e-mail services (i.e., Exchange) appear to be a particularly attractive area, as small and mid-sized shops start to question the need to invest in costly infrastructures to support basic communication and collaboration functions. As end users gain experience and confidence, other Cloud computing applications may become more common later in 2009.

Storage

In the storage area, customers will increase their focus on cost reductions and cost avoidance. As a result, the industry will finally start to see widespread adoption of deduplication. While customers have often talked about deduplication in the past year, many have refrained from actually implementing it. Similarly, we expect to see a significant uptake in the implementation of Thin Provisioning, again to increase utilization rates. Some cross-pollination will occur between different market segments. Midrange customers will demand enterprise features, while enterprise customers will selectively deploy midrange products based on Internet Protocol (IP) and Clustered Storage. Storage as a Service (SaaS) will gain traction, initially becoming established in the Small Office / Home Office (SoHo) or SMB space. SaaS offerings will concentrate on backup and disaster recovery functionality, as users endeavor to avoid additional capital outlays for these critical business functions. For enterprise datacenters, the integration of SaaS with server-side IT as Services (ITaS) will be a major competitive focus point.

Completing the commoditization of storage controllers, most Disk-Array Processor Enclosures (DPEs) will be based on industry-standard hardware running various storage-optimized operating systems. NAS competition will once again focus on general-purpose servers running file services, whereby Just a Bunch of Disks (JBOD) are connected as Direct Attached Storage (DAS) on the back end of the "file server."

Clustered storage – i.e., Clustered File Systems and Global Namespaces – will become mainstream offerings. Microsoft's storage offerings will be in a good position for taking share from traditional storage solutions, and even taking back share from Linux, with a new set of features in storage-optimized variations of Windows Server 2008.

Flash and Solid State Disk (SSD) technologies will reach mainstream adoption in the enterprise space. Flash and SSD will be architecturally justifiable, with new memory-based technologies replacing high-performance 15K rpm disks at the high end.

At the same time, disk will overtake tape in data protection solutions, driven by a continued focus on Disk-to-Disk (D2D) backup as well as Virtual Tape Libraries (VTL). New products such as low-power drives, low-rpm drives, and spin-down drives will accelerate this trend. However, tape technology will remain an important element for all customers, meeting archiving or offsite vaulting needs in a low-cost and "green" fashion.

New life will be given to the concepts of Information Lifecycle Management (ILM) and Hierarchical Storage Management (HSM), as users begin to deal with the new landscape of drive storage options, including caching optimizations, SSD, high-performance 15K rpm drives, FC, SAS, SATA, spin-down, etc.

Other Developments

Significant improvements will be made in the environmental sustainability of IT products. These improvements will result from industry initiatives such as EPA product ratings of power/performance; improved core technologies such as the power supply 80PLUS program; increases in utility electricity pricing; and increased customer awareness/education of best energy conservation practices. While some users will embrace "green" technology as a result of

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BLOG BITES (From IDEAS Insights: http://www.ideasint.blogs.com)

> **The SAS BL Switch represents a step forward in direct-attached storage (DAS) implementation.**

From "HP's SAS BL Switch Demonstrates the System-Vendor Advantage in Integrated Solutions | Joseph Zhou | November 17, 2008
http://ideasint.blogs.com/ideasinsights/2008/11/hps-sas-bl-switch-demonstrates-the-systemvendor-advantage-in-integrated-solutions.html

> **It may be counter intuitive, but . . . we are seeing evidence of price increases for some products in this bear market.**

From "IT Price Increases! In These Market Conditions?" | Gary Burgess | December 4, 2008
http://ideasint.blogs.com/ideasinsights/2008/12/it-price-increases-in-these-market-conditions-1.html

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hitting real constraints in terms of space, power, and/or cooling, most green computing projects will be motivated by the need to reduce operating costs. External messaging from vendors may still focus on protecting the environment, but internally, the green message will be all about saving money. Customers have already become savvy to vendors "greenwashing" their products, but they will become increasingly frustrated with vendors for not doing enough to provide easily accessible and usable information on product environmental data in a non-competitive and environmentally conscious manner.

"Internal outsourcing," or an equivalent buzz word, will become a major theme as many companies give up on running their own IT departments and choose to outsource everything to an IT services provider. Unlike traditional IT outsourcing, this form will require all of the IT equipment to continue residing on company property. Service Oriented Architecture (SOA) will grow in importance and the underlying architecture will diminish in importance as long as service levels can be met. Companies like IBM and HP will see this type of service offset the loss of product sales into the financial/banking market.

The IDEAS Bottom Line

An optimistic view would hold that economic recovery will start in mid- to-late 2009. Technology firms may lead that recovery, because new technology often brings compelling cost savings that can put companies back on the path to growth. Indeed, it may well be technology that ultimately pulls the world out of recession. So many new ideas will emerge and mature in 2009, that it could become a defining year for IT. Businesses that survive the recession will look quite different than they look today, and firms that do not embrace IT change in the next year may be out of business. Whether recovery starts in the middle or the end of 2009, those who are nimble will be able to invest and out-maneuver their competition. This notion applies to users of IT, as well as the hardware and software vendors themselves. The trick of course is timing – investing too early may deplete funds needed to hunker-down and survive, while investing too late risks someone else becoming the leader. In any event, the world of IT will look totally different in 2010 than it did in 2007. The changes will be profound, possibly having a similar impact on the IT industry to the introduction of the original PC nearly 30 years ago.■

Unisys ES7000/7600R Claims Top TPC-E Performance Honors

Unisys recently claimed the top TPC-E performance rank with a new result for the ES7000 Model 7600R server. The system tested was fully configured with sixteen 2.66 GHz Xeon X7460 processors and 512 GB of memory. Although the Xeon X7460 processor features six processing cores, for this test Unisys opted to only enable four of these cores for each of the 16 processors. Hence, the configuration used created a single system image consisting of 64 out of a possible 96 processor cores.

Old vs. New

This is the first TPC-E result to be released for the ES7000 Model 7600R. Table 1 below compares the performance result from this test and one for the more dated ES7000/one server.

Table 1. ES7000/7600R and ES7000/one TPC-E Performance Results Compared

Date	System	Configuration	tpsE	D/B
Nov 08	ES7000/7600R	16 x 2.66 GHz Xeon X7460/512 GB	1,493.42	1 NEW
Jul 07	ES7000/one	16 x 3.4G Hz Xeon 7140M/128 GB	660.85	2

Database Key:
1 - Microsoft SQL Server 2008 Enterprise Edition (64-bit)
2 - Microsoft SQL Server 2005 Enterprise Edition (64-bit)

As shown in the table, this new result – configured with the latest Xeon hex-core processor, four times the amount of memory, the latest edition of the Microsoft SQL database – more than doubles the performance of the ES7000/one result. It is important to note that the 7600R result was configured with 64 out of a possible 96 processor cores while the ES7000/one was configured with 32 cores.

Performance Top Ten

As stated previously, this result has claimed the top performance rank among all current TPC-E results. This new ES7000/7600R result improves upon the now second-placed NEC result by 7%.■

Table 2. Top Ten TPC-E Performance Results†

Rank	Company	Configuration	tpsE	$/tpSE	D/B
1	Unisys	ES7000 Model 7600R (16 ch / 64 co)	1,493.42	$958.04	1 NEW
2	NEC	Express5800/A1160 (12 ch / 64 co)	1,400.00	$1,190.24	1
3	IBM	System x3950 M2 (16 ch / 64 co)	1,250.00	$1,310.55	2
4	NEC	Express5800/1320Xf(32 ch / 64 co)	1,126.54	$2,771.79	3
5	IBM	System x3950 M2 (8 ch / 32 co)	804.00	$1,450.05	1
6	IBM	System x3850 M2 (4 ch / 24 co)	729.65	$457.27	1
7	FSC	PRIMERGY RX600 S4 (4 ch / 24 co)	721.40	$459.71	1
8	Inspur	NF520D2 (4 ch / 24 co)	702.90	Y4,771.37	1 *
9	Inspur	NF520D2 (4 ch / 24 co)	695.24	Y4,844.22	1 *
10	Dell	PowerEdge R900 (4 ch / 24 co)	671.35	$500.55	1

† Extracted from Competitive Profiles, an Ideas International service

* Denotes Chinese Yuan (CNY) currency

RESULT SUMMARY*

Date:	November 19, 2008
TPC-E:	ES7000 Model 7600R
Company:	Unisys
tpsE:	1,493.42
$/tpsE:	$958.04
Database:	Microsoft SQL Server 2008 Enterprise Edition (64-bit)
Operating System:	Microsoft Windows Server 2008 Datacenter Edition (64-bit)
Availability Date:	December 9, 2008
DB Server Config:	ES7000 Model 7600R (16 x 2.66 GHz Xeon X7460 processors [16 ch, 64 co] each with 16 MB L3 cache, 512 GB memory)
Client Config:	1 x ES3220L (with 2 x 2.0 GHz Xeon E5405 processors each with 2 x 6 MB L2 cache)
Initial DB Size:	5,809 GB
Cost of Ownership:	$1,430,752
Benchmark Rev:	1.6.0

*All prices in USD

Database Key for Table 2:
1 - Microsoft SQL Server 2008 Enterprise x86 Edition
2 - Microsoft SQL Server 2008 Datacenter Edition
3 - Microsoft SQL Server 2008 Enterprise Edition for Itanium

Season's Greetings

Ideas International (IDEAS) is the leading global supplier of comparative intelligence on enterprise IT infrastructure. Servicing both IT vendors and large-scale IT users, IDEAS products focus on: servers, storage; virtualization and consolidation; and software and infrastructure services. IDEAS' online products are backed up by expert industry analysts who can also deliver specialized advisory and consulting services.

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