

Boston College Technology Council Conference Insight Report



BCTC Annual Dinner ***w/ Joe Tucci of EMC*** **2009**

Conference Insight Report
Provided By:



BCTC Annual Dinner

w/ Joe Tucci of EMC

CONFERENCE INSIGHT REPORT

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About Boston College Technology Council

The Boston College Technology Council was established in 2001 by University Trustee Peter W. Bell '86 and Daniel J. Nova '83. They served as Co-Chairs for 5 years before David A. Donatelli '87 and John S. Gallant '79 were appointed as Co-Chairs of the East Coast Chapter in 2006. A West Coast Chapter was established in 2003 under the leadership of William S. McKiernan '78, who has served as Chair since its inception.

The Council's mission is to support Boston College in its endeavor to become a significant leader in the business of technology while advancing collegiality among its members from the technology community.

For more information regarding the Boston College Technology Council and/or membership, please e-mail bctc@bc.edu.

Keynote Speaker



Joseph M. Tucci

Chairman, President and CEO, EMC Corporation

Joe Tucci is Chairman of the Board of Directors, President and Chief Executive Officer of EMC Corporation. Tucci has been EMC's Chairman since January 2006 and President and CEO since January 2001, one year after he joined the company as President and Chief Operating Officer.

Headquartered in Hopkinton, Massachusetts, with 25,000-plus employees operating in more than 50 countries, EMC is the world leader in products, services, and solutions for information management and storage. EMC reported revenues of \$8.23 billion in 2004. Its current market capitalization places it among the 10 most valuable information technology product companies in the world.

Since his arrival at EMC, Tucci has led EMC through a period of dramatic revitalization, continued market share gains, and sustained double-digit growth. He has transformed EMC's business model from what was a near exclusive focus on high-end storage platforms to what is now the industry's most comprehensive portfolio of best-of-breed platforms, software, services, and solutions that enable organizations to implement information lifecycle management, aligning their IT infrastructure with their business based on the changing value of their information. Today, EMC operates with a balanced product portfolio in which software and services generate more than 50% of its annual revenues and hardware less than 50%. EMC has evolved with its market from an information management and storage company to a provider of open information infrastructure.

Over the past several years, Tucci has overseen the most aggressive new-product introduction cycles in the company's history, led EMC into multi-platform open software for storage, information, and content management, expanded the company's marketplace beyond the enterprise to commercial and small-medium businesses, broadened the company's industry alliances, and established new selling, partnership, and distribution channels.

Concurrently, he has spearheaded the investment of more than \$4 billion (since 2003) in strategic software acquisitions aimed at filling out EMC's product portfolio, entering new market segments, and expanding the company's addressable market opportunity. Over this period he has strengthened EMC's management team with the integration of executives from other major technology companies. In addition, he has championed EMC's use of Six Sigma to improve its business processes and engaged employees in the Total Customer Experience, EMC's commitment to consistently exceed customers' expectations for quality, service, innovation and interaction. Acknowledging EMC's rejuvenation, the editors of *Business Week* named Tucci one of Corporate America's best senior managers of 2004.

Before joining EMC, Tucci directed the financial and operational rebirth of Wang Global during six years as its Chairman and CEO. At Wang, he guided the company through a rapid and successful emergence from Chapter 11 bankruptcy protection and transformed the company from a midrange computer manufacturer into a worldwide leader in networked technology services and solutions. Under his leadership, Wang acquired and integrated ten companies from 1995 through 1999, and its market capitalization more than tripled. In June 1999, Wang was acquired by Getronics NV.

Prior to joining Wang in 1990, Tucci was President of U.S. Information Systems for Unisys Corporation, a position he assumed after the 1986 merger of Sperry and Burroughs that created Unisys. He began his career as a systems programmer at RCA Corporation and holds a bachelor's degree from Manhattan College and an MBA from Columbia University.

Tucci is one of 150 CEO members of The Business Roundtable and the former chairman of its Task Force on Education and the Workforce. He is one of nine chief executives who steer The Technology CEO Council, the IT industry's leading public policy advocacy organization, and is a member of the Executive Committee of TechNet, a network of CEOs who work to advance the U.S.'s global leadership in innovation. In addition, Tucci is a member of the Board of Directors of Paychex, Inc., a member of the Board of Advisors of the Carroll School of Management at Boston College, a member of the Board of Overseers of Northeastern University, a member of the Advisory Board of Tsinghua University, in Beijing, China, and an Overseer, Boston Symphony Orchestra.

***BCTC – Annual Dinner
w/ Joe Tucci of EMC***

Executive Summary

BCTC Annual Dinner: Joe Tucci, Chairman, President and CEO, EMC Corporation

Overview

In this keynote address, Joe Tucci addresses the shifting Information Technology industry landscape from a macro perspective. This is done through an in-depth examination of three (3) high-impact forces that are permanently changing the way the industry operates. Over the course of his presentation, Joe details both the technical aspects of emerging technologies and EMC's strategic approach to the marketplace as a whole. Major topics of conversation include:

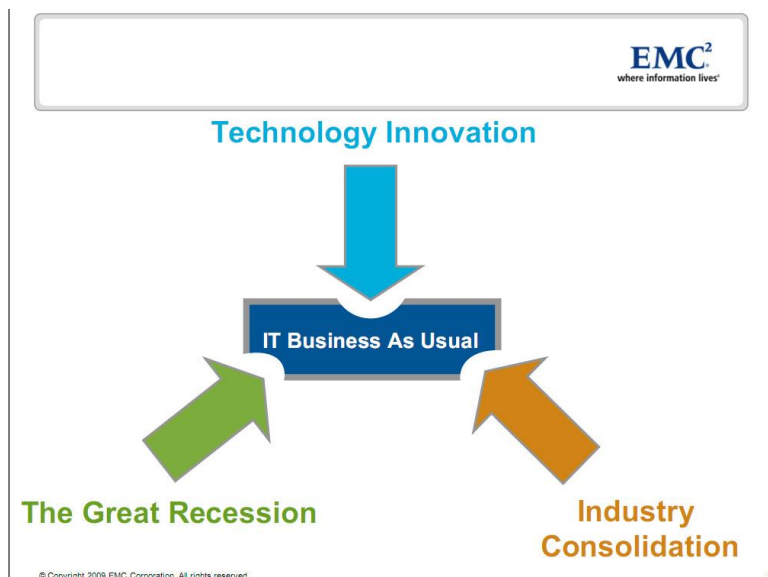
- [The impact of the Recession of 2008 on EMC and the overall IT industry](#)
- [EMC's guiding business principles for the next era of IT](#)
- [The impact of Virtualization and the advancements in Storage](#)
- [How consolidation is changing the face of the Information Technology](#)

Joe Tucci:

Tonight, I want to talk about the very rapidly changing landscape in IT. There's an old Chinese proverb, which I'll butcher here because through the years everybody has added a little bit to it. But the quote is, "May we live in interesting times" and I'm here to tell you that we're living in very interesting times here in tech-land. That is because there are three significant factors that are imposing on the IT "business as usual" landscape.

THE PERMANENTLY CHANGING FACE OF IT

In my opinion, IT will never come back to the way it looked at the peak, in 2006-07. You can see from the graphic that there are three massive forces that are eating away at the edges of what IT is. But the reality is that these forces will eat away the whole thing and something completely new and different will emerge.



These forces are: 1) technology innovation, 2) industry consolidation, 3) and what is now being called the Great Recession of 2008 which, hopefully, will start to wane at the end of this year. It's interesting to note that this Chinese proverb really started as a Chinese curse, so let's hope this isn't a curse.

THE GLOBAL ECONOMY

This is the first year since World War II that the world is expecting a decline in GDP - the latest consensus is 1.6%. I've seen ranges anywhere between 1.4% and 1.8% but I have seen no respected economist claim that it's going to be anything positive. That's not to say there aren't some areas like China, India or the Middle East where things will continue to grow, but that will be more than offset by the decline in other nations. In addition, global IT spending will decline, and it will probably be the biggest decline in the history of IT.

Session Quote

Customers are pushing out things they'd really like to have because it's not absolutely life threatening that they do have it.

- Joe Tucci

During the downturn of 2001-02, IT spending declined somewhere between 4 and 5%. The consensus that's coming in now tells us it'll be very high single digits to very low double digits for this downturn. So you're talking an 8% - 11% decline in IT spending, almost double the previous worst case.

So what are customers doing as a result? They're cutting back, they're going through restructurings, they're watching every penny, and what I've termed as "buying just enough, just in time." For example, EMC's sales force is pretty renowned and pretty aggressive and like any good sales force, we are very good at bringing in orders from future quarters. So if you needed a particular piece of technology three months from now, we would try to nicely convince you to bring it in to the current quarter. Now, customers are pushing out things they'd really like to have, because it's not absolutely life threatening that they do have it.

EMC'S GUIDING PRINCIPLES

So what I'd like to do is pass on the guiding principles that EMC going to live by going forward:

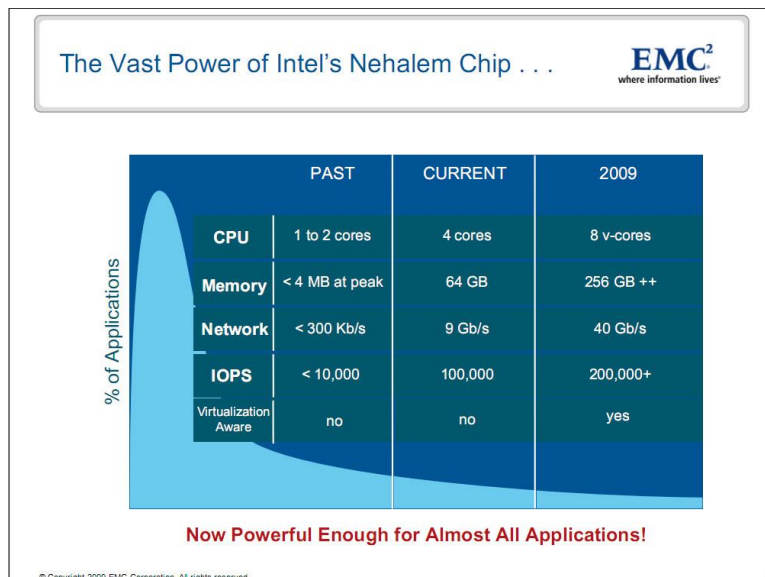
1. You can circle around the water cooler and talk about how tough things are, but the better thing to do is to spend more time in front of customers, understanding their problems and staying closer to them than ever before.
2. Use your power. We've come into a very strong position, both from a product and market cap standpoint, and we're going to use that to gain market share across the board.
3. Obviously, we're going to make sure that we watch every penny we spend, and we're going to watch our costs. We fared better than most companies in the 1st quarter of 2009; our revenues declined 9%, but the average of most big technology companies is in the mid-teens.
4. In spite of #3, we haven't cut R&D back at all. Last year, we spent almost 1.8 billion on R&D and we'll spend that again this year, and that's something that we know a lot of our competition can't do.
5. Opportunistic M&A: We have a \$26 billion market cap, we have almost \$10 billion in cash, and we're going to use that opportunistically and get bigger. The IT industry is going to continue to consolidate; we're going to be a consolidator.
6. The most important thing though, is to communicate, communicate, communicate. The most important people to communicate with is all my fellow EMCers all across the globe, and it is very

important to communicate with customers, with partners and with investors. And when you think you've done enough, just rev it back up again and then do it again and again and again because that's what's going to bind us to our customers, bind us to our partners, bind us to the market to get us through this.

PRESSURE #2: TECHNOLOGY INNOVATION

Let's start with the micro processor world. EMC has placed an all-in bet on x86 processors. It's not the most wild bet you've ever placed in your life, because if you look at the stats from 2008, 95% of world's server units were x86-based. 65% of the revenue dollars came from x86. It's the fastest growing of all the chip sets, and the investment in x86 technology is almost eight times its nearest competitor.

In early April, Intel announced their current generation of x86 technology called Nehalem. So in the past we had one core, then we went to two cores and on to four cores. Now we have eight virtual cores. Memory used to be 4MB, it went to 64GB, and now it's 256GB+. What's more, it will go to a terabyte into the not too distant future.



Network IOPS now get 40 gigabytes per second, and if you look at the iOs per second, that it will sustain in the storage world, you're over 200,000 IOPS. So it's pretty amazing what the technology can do.

Session Quote

The IT industry is going to continue to consolidate; we're going to be a consolidator.

- Joe Tucci

The other thing Intel has been working on is a technology called Vanderbilt, which involves making their chips "virtualization aware." So, in the past, the overhead for putting in a hypervisor like VMware was about 30% to 32% of average workloads. It's now down to 8% to 12%, depending on the workloads. It's pretty amazing what Intel's done with the amount of power that they're giving you – Moore's Law is alive and well. You'd be hard pressed to find an application that can't run on this chip set.

The next set of technology that is capitalizing off of the x86 is virtualization, which is totally changing the game. Back in 1999, VMware proved the concept when they virtualized the x86 chip set. They did it on

a work station and it got tremendous pick-up in the developer community. You'd be hard pressed to find a developer that didn't really migrate to this. It became viral and that's what attracted me to the company.

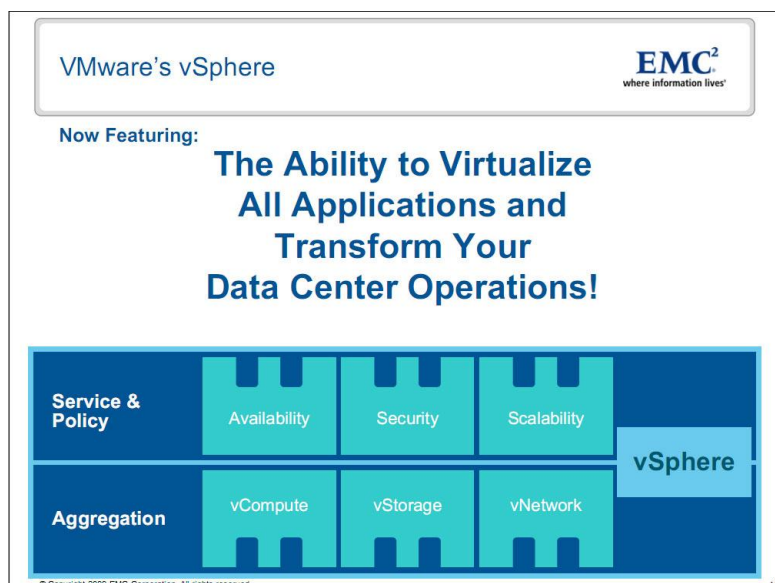
In 2002 they did the next obvious thing. They moved that same technology to the server so you could take a server, which on average were under 10% utilized, and did the same thing that they did to the workstation. Now you can take a server and you can break it up to make it look like 8 servers, increase utilization dramatically, and save the customers CapEx and OpEx. In 2005, they took it to the next logical level, which was virtualizing a group of servers. They came out with what was called cooperating hypervisors. This way you could grab, say, 10 blades to make it look like 100 servers and this really opened up the world of virtual infrastructure.

But now we've really taken it to a whole new height with our new product called vSphere. With vSphere, instead of taking groups of servers, you can now take literally thousands servers across multiple data centers and virtualize it. It really becomes a virtual data center operating system, a meta-OS, and it's actually changing the way that computing will work. What vSphere does essentially, is it has two sides of plug-ins so it aggregates compute, storage, and networking. A good instance of the aggregation of networking is Cisco's just announced Nexus' 1000V. There is no Nexus 1000V, it's all software which plugs into VMware. What they did was they used the hooks, the plug-ins VMware gave, to create a virtual switch. Because Nehalem is so fast it can handle a lot of virtual switching.

Session Quote

If you virtualize your data center you see every packet of information that flows; it sees every memory reference, it sees every register, it sees every iO. So it becomes a really good place to insert those policies and service level agreements.

- Joe Tucci



If you refer to the top part of the diagram, vSphere is also a way to insert policy. When you think of the policy world today, what you really want is to be able to run an app with certain policies and determine:

- what kind of security you want
- what kind of back-up you want for the storage
- what kind of alternate path you want for the networking
- what rules you want around your packets
- what kind of SLA's you want to set for your users

The problem today is that you insert these policies and SLA management all over the place; you put some in the network, some in the database, some in the app, some in the storage. What vSphere does is it gives you a natural place to put those service policies and service level agreements. If you think about it, the virtualization layer is the only thing in the data center. If you virtualize your data center you see every packet of information that flows; it sees every memory reference, it sees every register, it sees every iO. So it becomes a really good place to insert those policies and service level agreements.

So what's happening is we're building a very On Demand device world from how you manage it, and it's a pretty substantial change in code and direction. By taking these two things together, the Nehalem chip and vSphere, you have the ability to virtualize all applications and transform your data center operations.

THE FUTURE OF STORAGE

On the storage side, there are two devices (the disk drive and the flash drive) that are changing the way storage is built. On the disk drive side, you can now store two terabytes of information in 3.5 inch format. On the flash drive side, we are now shipping huge numbers of flash drives that are made out of

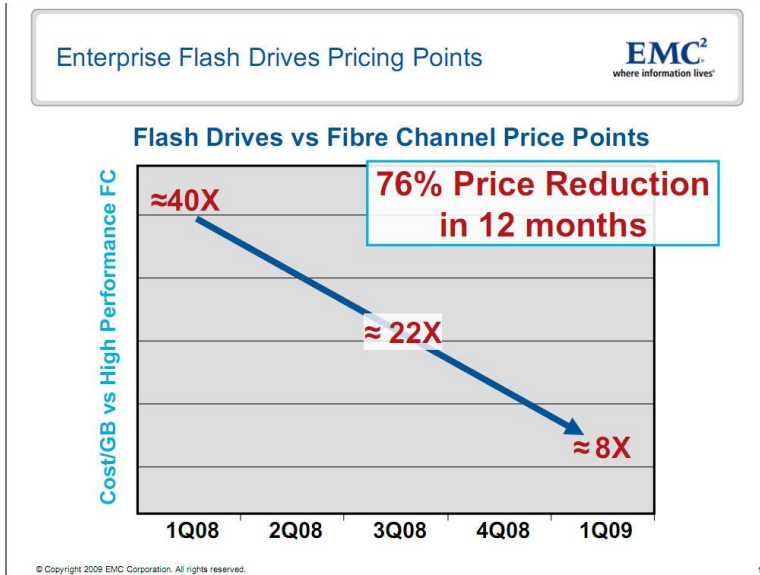
Session Quote

We're turning the data centers that customers have into internal clouds, and we're giving them all of the benefits that they have today, plus all the benefits that the cloud offers.

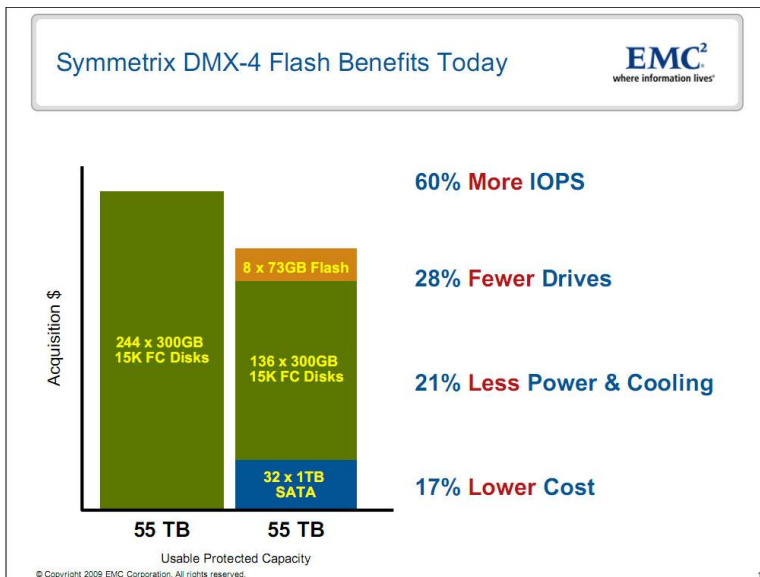
- Joe Tucci

SLC, making these two devices tremendously different. But they do have one thing in common, they're both very green. The disk drive has great density and spins at 7,500 rpm, so it doesn't generate that much heat or take that much power. The downside is that it's very slow and rebuild times are very long. The flash drive, on the other hand, is blindingly fast but much more expensive. This device is very green because there is no motor and need to move any mechanics. As these two things blend, it's going to change the entire industry.

While flash drives are expensive, this reality is changing rapidly. I'll give you an example of what's happening in the price of the flash drives. When we first announced them in Q1 08, they were forty times more expensive than a comparable per byte disk drive, but by the end of Q1 09 they were only 7-8 times more expensive.



As this continues it's going to change the whole storage landscape. To put it in perspective, if I wanted to build a very high performance array the old way, with the highest performance you could have, and I wanted to have 55 useable terabytes, I would have had to ship 244 300-gigabyte drives. That adds up to 72 terabytes, but obviously you waste some because you're protecting.



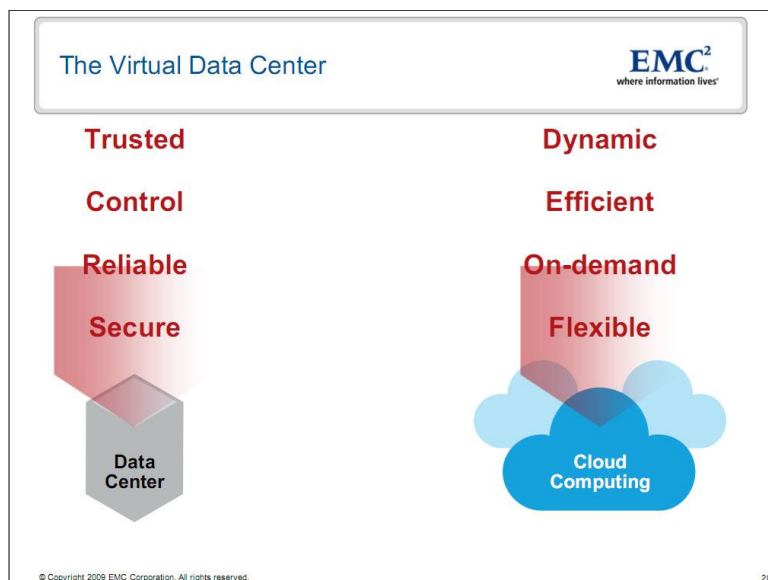
Another way to do it would be to use 32 terabytes of the slower drives that are less expensive but more dense and more green. Then you'd use 136 of the fiber channel drives and only eight of the 73-gigabytes flash drives. And when you use this approach you get 60% more iO's per second. That's 28% fewer drives, hence, over time you use 28% less floor space. It uses 21% less power cooling, and even today the cost is 17% less.

The Next Big Things in IT

I believe that next big things in IT will be:

- Data centers becoming fully virtualized
- Cloud computing models becoming mainstream
- Clients becoming virtualized, whether they be desktops, laptops, PDAs, or cell phones
- Applications becoming virtualized

So let's start today with a discussion of the data center and the way the way it's configured today, which is "mostly not virtualized."



In the left hand column, you'll see a number of characteristics that customers like about their data center: they're highly trusted, they're very reliable, they are secure, customers have a lot of control, people have spent years building change control processes so they know exactly what's happening, and they have great attributes. However, there's cloud computing; a new phenomena that's growing rapidly. And what customers think they like about cloud computing is that they see a dynamic world. I say that "customers think they like these things" because not many of our real customers do not use these them yet, but they will.

With the traditional data center, the application basically owns the infrastructure and it's not very dynamic. If you are running an exchange for messaging with a traditional data center, you've got to buy for the peak time of the year, peak time of the day. And when you're not in the peak, it's your loss because your infrastructure just sits there – it's very inflexible. With a virtualized data center you buy On Demand, as you're using it. This is very seductive to customers and so what we're going to do is virtualize both sides. The way vSphere is being written, it will run in service provider (already 400 service providers have signed up to run it) and it'll run in customers' data centers. We're turning the data centers that customers have into internal clouds, and we're giving them

Session Quote

What you're going to see is stripped down operating systems that are customized to run in the stack, pre-tested by whoever gives it to you.

- Joe Tucci

all of the benefits that they have today plus all the benefits that the cloud offers. And then, of course, the external cloud providers will be running the same sets of technology with the same benefits, and the virtualization will make sure that these loads can be federated between each other.

Now where the work comes in for the other part of EMC, the non-VMware part, is figuring out how to move information that's stored this rapidly. So you have to think about it in advance, "What might the system want to federate?" Then, of course, you also have to add into that your desire for business continuity and disaster recovery. And you need to do all of this very securely, because if you can operate either place, identity protection and verification becomes pretty darn important.

This world will become homogenous, customers will have their own data centers that'll look much more cloudlike; they won't have to buy for the peaks and they can share information easily. And then on the

Session Quote

What you can do now is take the client and run it in the data center. What you're doing is you're provisioning the user, not a device. The user can buy any device they want and they'll have the full experience with the full security with the full way you want to do within the company that you represent.

- Joe Tucci

other side of the cloud, they'll form partners. I think a lot of the major Telcos are going to get into this business, big time. By pulling in partners, you can federate and run some of your workload in the service provider community.

In effect, what you're doing is you're forming a private cloud. You pick partners, which are service providers who you're going to include in your cloud, running the same sets of infrastructure. Then you can work workloads within your private cloud will full security, and do it seamlessly and very simply.

Next thing I'll talk about is virtual applications as another Next Big Thing. A virtual application is where you bind the app to the middleware, the database, the other middleware components, and the OS. You don't need much of an OS for this because what a virtualization engine does, whether it be ours or Microsoft's or any other, is it lets the device drive itself so the OS does not have to. What you're going to see is stripped down operating systems that are customized to run in the stack, pre-tested by whoever gives it to you. They will put it in a container, a virtual container, and let you can drop that virtual container anywhere in your private cloud. This explains very succinctly why Microsoft doesn't exactly love VMware.

This changes the whole game spectrum from how you buy, how you service, and how you support these workloads. It will change what the app vendors will do too, they're going to be able to do a bit more, in a way. Currently, the complaint with almost any app is it takes too much customization and too much time. With this, an app vendor can package up different versions in different virtual appliances and ship it and the customer can just drop it right in.

The last thing that's happening is on the client side. It so happens that because you're virtualizing x86, you can virtualize those chip sets on a client. The one thing that we're doing ahead of time is that we're actually working with some of the handset and the PDA providers to put a level of virtualization code over the top of some of the chip that they use.

So, if you just think across the three paradigms that you use in the PC world, you have your desktop, you have your laptop and you have your net-book. What you can do now is take the client and run it in the data center. What you're doing is you're provisioning the user, not a device. The user can buy any device

they want and they'll have the full experience, with the full security with the full way you want to do it within the company that you represent. It's a much more secure way. All of a user's information is in a data center someplace that's secured and backed-up and business continuity is assured. And when they get on, they have all their information available to them. This is going to be bigger than the opportunity for server virtualization.

It's basically the same set of code. You have to do other things around it like connection brokers, graphics acceleration, protocols, and that's all work that's still being done. But there is a lot of effort going to go into this area. So that fills out the picture where you'll have these virtual clients that'll access these private clouds, that are running both new wave and existing applications across a federated community of internal clouds and external service provider clouds.









Session Quote

Most companies were really known for something specific, and now what's happening is everybody is getting into everybody else's sandbox.

- Joe Tucci

Pressure #3: Industry Consolidation

If I gave all of you a word association test and I said "networking," you guys are probably going to say, "Cisco." And if I said "micro processors," you'd probably say "Intel." If I said "micro processor software," you'd probably say Microsoft, and so on. The point that I'm making is that most companies were really known for something specific, and now what's happening is everybody is getting into everybody else's sandbox.

The Rapidly Changing Landscape in IT		EMC ² where information lives™
	Then	Now
	Networking	Unified Compute System, Networked Home, Video, e-Conferencing
	ERP/CRM App + DB+	Servers, Java, Storage, "Open Source"
	Applications	Middleware, Business Intelligence
	Servers, OS, Java	Middleware, DB, Storage, Networking, "open source"
	MF, OS, Middleware SW++, Services ++,	"Open Source," Cloud Computing Technology & Services
	Servers, Storage, PCs, Printers/Imaging	PDA's, EDS Services, Resource Management, Middleware
	Windows + Office	MSN, Search, Live gaming, Virtualization, Cloud Computing
	Storage	Virtualization, Security, Content & Resource Management, Cloud

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With EMC, we bought VMware, we bought RSA, we made major plays in content management with Documentum, so obviously we've broadened. Cisco is in networking and obviously video, e-conferencing, tele-presence and now, they've done unified computing system and are getting into the server business. But they're really getting into the server business from a unified computing aspect, so you're going to see very tight alliances formed. Basically, what Cisco and EMC are doing is we're virtually going to work like one, without going through the pains of merging. So if you ask me about our closest partner, it's Cisco by a long shot.

Oracle's probably changed the landscape more than anybody else. They started out with database then they went to apps, then they went big time into middleware and now, of course, they bought Sun. I assume that the most prized asset was Java, and now they own an operating system called Solaris. They have virtualization, and they've got an open source database. So I could go on and on and on.

It used to be the only big gorilla out there who was doing all of things was IBM, but now each big vendor has built a pretty rich stack and has formed pretty unique and pretty tight partnerships. Some, like Oracle and IBM are mostly going at it alone, but that's more the exception.

So at any rate, I submit to you that these Next Big Things in IT are going to create a vast opportunity for those of us that know and love the technology industry. But you need:

- The right vision and strategy
- A crisp execution on the product front and on the "Go to market" focus
- A well developed partner ecosystem - very few companies can go at it alone, and it's probably not a good strategy for most
- Financial strength is important - all these companies listed probably have \$10 billion in cash
- The dynamic leadership in place to make it happen

In closing, I told you what's on EMC's mind and what drives us. But more or less, I took things from an industry standpoint, because whether we do this, or whether we were successful or not, these things are going to happen. You will see private clouds emerge, you will see virtualization become the norm, you will find it very hard to find an application that can't run in the virtualized environment, and vendors will virtualize and pre-bundle and pre-tune their applications in the stack with the middleware and with the OS so it works perfectly.

It's been great being with you today, and if we have a few minutes I'd be happy to take any questions.

Audience Q&A:

Q1: Why did you spin out VMware? Doesn't it establish separate governance? They'll have fiduciary responsibilities to shareholders, and they may or may not be in EMC's interest. I'm sure you're a powerful force at the board, but you're still only one voice. Could 10% of that value, the \$2-3 billion or whatever it was, be that valuable relative to its centrality to your strategy?

Joe Tucci of EMC:

Well, we didn't spin it out; we sold 10% to the public. But the strategy was to put a spotlight on VMware by taking it public. And we put more spotlight on VMware and got more free press than you could imagine. When we took it public, we did it with a Control of Company Exemption, by issuing two shares of stocks. We own 85% of the company today outright, but we have 97% voting control, and anybody who bought that share knows that.

Now, we run VMware with very open standards, you can have some of our most fierce competitors and they'd be very close to VMware, but that's fine - that's the way we run it. But on the other side, we sold 2% to Cisco and 2% to Intel for obvious reasons. You're virtualizing the x86 chip, so Intel's a pretty important partner, and second, there's a lot of information moving around and Cisco does pretty well in

terms of networking. As far as governance goes, we have five board members from EMC, one who is totally external, and one from Intel. So the governance is fine and everybody's happy with the way we're running it. Plus, if we didn't take it public we would never have gotten all the notoriety we got.

Q2: Apple was noticeably absent from your list of major IT players. Do you have the feeling that Apple is now relegated to just a consumer products company and doesn't have a place in the IT infrastructure?

Joe Tucci of EMC:

No, I think Apple's a phenomenal company. But it's interesting; Apple takes a complete opposite view of life than we do. Apple is a device-centered company; they want total control of the device and the ecosystem around that device. They are controlling the iPhone, they are controlling the App Store, they are controlling the protocols, and they are dictating to their Telcos around that world and they're getting away with it because they're doing such a great job innovating.

We're the opposite of what they are, we're saying, "Device doesn't matter." But I marvel at Apple because we give everybody a PC and there's about 300 EMCers walking around Hopkinton with an Apple PC that they bought themselves. Now one of the things that we've done with VMware is create a product which you can put on Apple and you can run Windows. So, basically, when they're in their own environment, or when they're browsing the web, they use the Apple protocols and when they're on the EMC network they'll use the VMware hypervisor. This is just the way it's going to be. It also works the other way, but Apple doesn't want it to be that way. You could run an Apple on a Dell, because it's x86-based, but they certainly won't let that happen.

Session Quote

If it's a virtualized world, 70% of what an OS does, you don't need done anymore. So you can really thin-out these OSs' and really tune it around the app.

- Joe Tucci

Q3: Based on the research that my company does, we're not seeing a lot of production applications virtualized yet; it's really still in development or in testing inside the big shops. In your view, are vSphere and Nehalem going to get people over the edge?

Joe Tucci of EMC:

Last year about 75% of what we were selling was actually going in as a test. But this year 75% of VMware is in production environments. But very few companies run these products in a Tier 1 virtual environment today; they're doing Tier 2 or Tier 3. What Nehalem will do is bring the "Class A" applications.

Q4: Who are the potential losers as we move towards this new IT environment?

Joe Tucci of EMC:

Everybody's trying to eliminate a layer from the stack. So SAP, who just had their Sapphire Conference, is talking about how to go database-less. Of course, Oracle would never do that, but they'll talk about how to go OS-less. But I do think there's going to be money squeezed out of these stacks. If it's a virtualized world, 70% of what an OS does, you don't need done anymore. So you can really thin-out these OSs' and really tune it around the app.

Q5: Joe, you talked about the trends and the changes in virtualization and it would seem that coincident with the change comes an increased risk in security. As you go to a virtualized world the threat of cyber attack would seem to be higher, and it's got to be a real concern on the part of the end-users. How are you addressing that in your marketing and do you find yourself in having to address that issue with your clients?

Joe Tucci of EMC:

We actually think the virtualized world means a more secure world, not less secure. As a matter of fact, it's proving that way today. I recently read a poll that gave an award for the most reliable operating system and despite being only nine years old, VMware won and the mainframe was number two. Another poll looked at the security world, and the virtualization fared very well. In a way, it's going to be a more controlled world, but you're going to manage by setting policies and SLA's and of those polices that you're going to set, a lot of them are going to be security policies. That's one of the reasons why we went out and paid a lot of money to buy RSA; we understand how important it is.