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Good morning – and thank you for having me here.

All of us at AMD are proud to be participating in this year's VMworld, just as we have since its inception in 2004.

During these last three years, VMworld has quickly gained a reputation – of enthusiasm, of excitement, and of optimism.

This incredible energy you have is well placed.

Once or twice in a technology generation, our community conceives an innovation so profound, so breathtaking, that it fundamentally alters our outlook on what is possible and what is to come.

Many of you in this room are the pioneers of such an innovation.

...it is an innovation that is extending the tradition of information technology to allow our customers to do more with less.

...it is an innovation that is creating entirely new opportunities for our industry to address two of our most important challenges: energy efficiency and affordable Internet access.

...and perhaps most profoundly, it is an innovation that is accelerating the shift in control from IT vendors to IT customers.

That innovation of course, is virtualization, and at AMD we're proud to have been there with you at the beginning, working to take the power of virtualization to the mainstream x86 computing world - out of the hands of a few into the hands of the many.

I'm honored to be standing here today, to both celebrate our progress, and look forward with great optimism and enthusiasm to our future.

The idea of virtualization for x86 computers presented the industry with a choice: get on board with the change this technology will bring, or get out of the way.

Diane and her team were among the first to understand the power that virtualization held for industry standard computers. They not only got on board with the idea, but took it to dramatically new heights.

And at AMD, we're proud of our contributing role to the powerful vision Diane brought to the industry.

Back in 2003, AMD launched the x86-based AMD Opteron processor.

It proved to be a seminal product for the IT community.

The AMD Opteron processor allowed for seamless migration from 32-bit to 64-bit computing. It brought energy-efficient computing to the server room. And it set new benchmarks for performance.

But thanks in part to the pioneering work of VMware, it proved to be even more.

The dual-core, x86, 64-bit AMD Opteron processor provided the perfect platform for VMware's innovative software, VMware ESX.

Servers now had the CPU and memory performance needed to take full advantage of the cutting edge solutions VMware was delivering. And they could do so within an industry standard, forcing no disruption costs into the IT budget.

VMware immediately understood the importance of AMD's Direct Connect Architecture, and worked hand-in-hand with our hardware partners to qualify and certify AMD systems with VMware ESX.

Our strong engineering relationship has continued, focusing on improving the efficiency of virtualization and addressing user issues like enabling VMotion across the entire range of AMD Opteron processors with AMD-V Extend Migration functionality.

The results of this engineering effort can be seen in leading edge demos at the AMD booth and throughout the show.

This strong partnership between our two companies runs deeper than just products and technologies.

Recently, both AMD and VMware were founding members of the Green Grid, a consortium pioneering new data center designs to improve energy-efficient performance.

The Green Grid is a collective industry response to one of the greatest challenges of our generation: global climate change.

In addressing this challenge, our industry has both a responsibility, and opportunity, to play a leadership role.

AMD recently commissioned a study conducted by Dr. Jonathan Koomey, a staff scientist at Lawrence Berkeley National Laboratories and consulting professor at Stanford University.

That study found that in 2005, U.S.-based data centers, including servers, cooling and auxiliary equipment, consumed approximately 45 billion kilowatt-hours, resulting in total utility bills amounting to almost \$3 billion.

To put this into perspective, this is equivalent to five 1,000 megawatt nuclear power plants, making the U.S. the hungriest consumers of data center power on the planet.

The energy consumed by data centers in the U.S. in 2005 was roughly equal to the energy consumed by the entire state of Mississippi that same year.

These numbers represent a doubling of energy consumption by data centers alone between 2000 and 2005.

When ticking off facts like these, two conclusions become very clear:

First, the time for debating global climate change is over. It is time to own up to our responsibility to address this challenge, and do so now.

Second, to effectively meet this challenge we must make our energy-saving solutions not just acts of goodwill, but acts of good business.

Good business means creating energy-efficient solutions that don't just address global climate change, but also the bottom line of our users.

For every \$1 in server spending today, 50 cents is spent to power and cool the installed base of servers. This number is expected to increase to 70 cents for every dollar spent on new hardware by 2010.

This is an unacceptable penalty on those who use our products.

It is in addressing this energy cost penalty that the great strength of VMware and AMD's partnership becomes evident.

The power of virtualization, coupled with industry-leading energy efficient processing, to help our users reign in these skyrocketing energy costs is becoming well understood.

In AMD's own Austin data center, we consolidated 117 servers into 7 active ESX 3.0 servers plus 2 swing servers.

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The result is a projected 79 percent reduction in power consumption.

Think about that. A 79 percent reduction in power consumption. Imagine that kind of savings multiplied across data centers worldwide.

Now I know some of us in this room might look at these server consolidation numbers with great fear. 117 servers down to 9? That's a lot fewer servers we need to buy.

But the great promise of IT has always been to enable our customer to do more with less.

And for those hardware companies that rely on their ability to innovate, rather than simply protecting their business model, virtualization opens up new and potentially rewarding opportunities.

IDC data suggests that customers are deploying more richly configured systems in support of virtualization. Increases in memory, IO and disk have lead to higher average selling values for server hardware.

The message here is one VMware and AMD know well: customer-centric innovation isn't just good for the customer, but also for the industry. And in this case, it's good for the environment.

In the fight against global climate change, we view VMware as a kindred spirit in our belief that companies can both do well and do good.

It is rare in our industry to find a partnership that cuts across culture, technology and philosophy.

Thank you to Diane, and thank you to your team, for being that kind of partner with AMD.

Given the impact x86-based virtualization has had just on energy efficiency in the data center, it is no surprise that our future looks bright.

IDC estimates that of all new physical servers shipped in 2005, just under 5% were for virtualization. We expect that this will increase dramatically by 2010 when just under 15% of all new servers will host virtual machines.

By 2010, IDC estimates more than \$20 billion will be spent on server hardware that is partitioned using virtual machine technology. That is up 68 percent in five years, and amounts to almost one-third of all spend for server hardware.

For virtualized servers, between 2005 and 2010, the Compound Annual Growth Rate is forecasted to be more than 40 percent.

As Malcolm Gladwell might say, virtualization has reached the tipping point. It is no longer an application accessible only by a few. And its benefits to IT consumers are truly revolutionizing our industry, thanks to many of you here today.

Now I know you've probably seen dozens of virtualization success stories.

And I know you're the last audience that needs to hear of the incredible future that lies ahead of us.

But if there is one lesson our industry must continually remember, it is to never take the future for granted.

So while today we have cause to celebrate, we must also use our time together at this conference to ask the hard question: are we doing everything within our power to make virtualization's future as bright as we know it can be?

At AMD, we realize that because we've played a privileged role in getting virtualization to where it is today, we must also make sure the future of virtualization lives up to the high expectations of our customers and partners.

That responsibility includes ensuring we give the enterprise the maximum amount of choice when it comes to AMD/VMware solutions.

Together with our OEM partners, AMD is delivering.

Four years ago we only had one server certified on ESX 2.1.

Today we have more than 20 servers and 15 blade servers certified on ESX 3.0.

According to IDC, we have 40% share of the worldwide 4P server market. AMD believes this is a direct result of our 4P platform being seen as one of the industry's most compelling platforms for virtualization.

Our responsibility to ensuring a healthy future for virtualization also includes continually pushing the envelope of processor innovation.

Our objective: ensure that our hardware innovations expand, not limit, what is possible with your software innovations.

And it is here that we have some very recent, and very exciting, news.

Yesterday Diane joined AMD on stage to celebrate the launch of AMD's Quad-Core Opteron processor.

This latest evolution of the AMD Opteron processor is the industry's first, native-quad core processor.

The Quad-Core AMD Opteron processor offers outstanding performance coupled with critical investment protection and will once again make it the leader in performance-per-watt.

But perhaps most important to our conversation, Quad-Core AMD Opteron processors are specifically tailored to optimize virtualization, and become a platform for the next generation of virtualization innovations.

To transport us into the future and give us a glimpse of what will be possible in a world of true quad-core x86 processing, I'd like to welcome to the stage AMD Senior Fellow, Leendert Van Doorn.

Leendert brings to AMD a rich background in operating systems, virtualization, and security.

He is a major driver in our efforts to create hardware that addresses the needs of today's complex software environments

Leendert van Doorn

It is very exciting for me to be here because yesterday we didn't just launch our Quad-Core AMD Opteron processor, we also introduced what I would coin, the 2nd generation hardware virtualization support.

Let's face it, the first generation of x86 hardware virtualization extension did what it was designed for, but it didn't give you the near native guest performance you really need in a virtualized environment.

With the Quad-Core AMD Opteron processor that is **changing**.

By adding features such as nested page table support, which at AMD we're dubbing rapid virtualized indexing, we are eliminating a major virtualization bottleneck.

This slide shows you how rapid virtualized indexing gives you outstanding performance gains and you'll see more examples of that during the AMD sessions in this week's conference.

Not only does this greatly improve the performance of the guest virtual machines, it also dramatically reduces the size of a virtual machine monitor because you no longer have to implement the complicated code to maintain shadow page tables.

And this is getting to what I want to discuss with you today.

Once you have a really small virtual machine monitor you can put it in the firmware, say BIOS, and it is always there.

Just imagine turning on your server or your notebook and virtualization is built in. It is just there.

What would a world like that look like?

Obviously, the key value of virtualization is to reduce the total cost of ownership (TCO) by getting more utilization out of your computer.

Our computers are greatly underutilized right now and virtualization enables you to use that excess capacity.

But it does more than that; it also preserves your investment.

It future proofs your infrastructure.

You can take an existing virtual machine and migrate it to new hardware without having to upgrade the OS or the applications that are contained in it.

Manageability will be a snap.

You will get all the standard benefits of virtualization such as; virtual machine cloning, virtual appliances, disaster recovery, simplified testing and deployment, and all of the other numerous benefits that virtualization can provide.

Just imagine that these functions are part of every computer you will ever buy and the headaches it will save you?

Let's look at two examples in more detail. The virtual datacenter and the client of the future.

Let's think for a moment about the datacenter of the future where everything is going to be virtual, even the data center itself.

"Waiting for 5 months to install a server into a datacenter", as a customer once told me, is a thing of the past.

You simply create a new VM using the excess capacity you already have and you get your new project going and roll in the new servers lazily based on capacity trends.

Why stop at consolidating virtual machines?

Even the small back office server farms, which can be quite substantial, can be consolidated as an entire virtual datacenter, including storage and networking.

You just have multiple virtual datacenters sharing the same physical infrastructure, very much what we do today with virtual machines.

Disaster recovery would consist of copying the entire virtual data center to a remote site.

You can even envision using active replication, a well known fault tolerance technique, to implement a hot standby datacenter.

Manageability is going to be a key element of this virtualized datacenter.

Being able to manage all these virtual resources, optimize for power efficiency and provide strong security isolation guarantees across all the virtual datacenters is critical.

Even though we traditionally think of virtualization as a server consolidation play, virtualization will have a huge impact on how we deal with clients in the future.

The thing that is currently the buzz in the industry is to move clients to a virtualized backend server and replace the workstation with a "dumb" terminal.

Another way where virtualization will impact the client is when we add a VMs to, say, every notebook.

Just imagine having two or more partitions, some that run business applications that interact directly with your servers at work and other completely isolated VMs for personal use.

This separation between work and play ensures that viruses cannot cross from one partition to the other or confidential information can be accidentally leaked.

Image management is another key development.

I don't know about you, but everyone I know who is computer savvy is the sysadmin for their immediate friends and family.

In my case, that is no different.

Only ... I get to be the sysadmin for my 84 year mother in law who lives 6000 miles away near Amsterdam.

What I wouldn't give for her to be able to click a button and start with a fresh, fully working virtual machine after she or any of her grand children messed things up.

This is what virtualization enables.

Obviously the same applies to your employees.

You can easily manage their machines and contents from dedicated service centers around the world.

It is exactly that ease of management and recovery that is a key criteria for our 50x15 initiative to succeed.

50x15 is the initiative founded by AMD to enable 50 percent of the world's population with affordable Internet access by the year 2015.

If we are going to connect half the world's population by 2015, we need to make sure we give these users the tools to manage and recover from mistakes – and this is where virtualization will play a key role.

Moving forward you will hear more from AMD on our third generation hardware virtualization support.

Thank you Hector.

Hector Ruiz

Thank you Leendert.

Pick any of the great IT innovations of the last thirty years: the personal computer; the cell phone, the Internet; broadband. These innovations have much in common.

They turned the competitive landscape of the IT industry upside down.

They created enormous value for shareholders and customers.

They became platforms for future generations of disruptive innovation.

And they all, in rather dramatic fashion, wrestled control away from the IT industry and put it in the hands of consumers.

Today there can be no doubt that virtualization is the latest entry to that list of transformative innovations.

But while we are off to a great start, virtualization is still in its infancy. Our history is far from being written.

So as we move forward, into the challenging quarters and product launches ahead of us, let us be mindful of what brought us to this place where we stand now – a place of great accomplishment, but greater promise:

...a recognition that openness and true partnership help not just our own businesses, but also those of our customers.

...an acceptance of our responsibility to not just be profitable corporations, but also respectful global citizens

...and a continued commitment to a brand of innovation that puts the customer's need ahead of our own.

If we let this past be a guide to our future, I believe there is little we cannot accomplish together.

Thank you for having me here today.