



**Michael Dell Remarks  
The Foundation of E-Business  
Opening Keynote at the Windows 2000 Deployment Conference**

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With the tremendous changes that the Internet is driving in all industries, I believe that the success of our business -- and in fact, any business -- rests largely on the degree to which IT infrastructure is prepared within an organization for the Internet. The Internet will become as fundamental as electricity is in your business. To be successful, you will need an IT infrastructure that possesses the same attributes as your electrical infrastructure: a highly reliable system that is always available at the click of a switch; a very powerful and scalable system that is able to run a small city or even a city as large as San Francisco; and a simple, manageable, and flexible environment that is pervasive and available whenever and wherever you need it.

Today I am going to talk about IT infrastructure, the Internet infrastructure, Windows 2000, and how companies of all sizes are clearly racing towards a fundamentally new way of operating with the Internet at its core. The changes are profound for IT professionals. Speed is the guarantee between now and 2005. The number of users online is growing at an unprecedented rate, enabling new technologies and pointing toward massive growth. I believe that the Web will require twenty times more servers than exist today, in roughly 5.4 million square feet of new Internet data centers that are going to be built out over the next few years.

**The Pace of E-Business**

The Internet is penetrating the world three times faster than the television did, and ten times faster than radio. By the end of 2000, 38 percent of U.S. households will have two or more PCs. In North America, the high bandwidth market is projected to be in 33 percent of U. S. households by the year 2003. The conversion of the cable system to an IP data network and the rollout of high-speed DSL access is driving further use of the Internet. E-commerce is the top priority for 63 percent of CIOs, with almost 40 percent already selling online.

I believe that success will be determined by the strength of your Internet infrastructure, which is the foundation of your business. Your infrastructure must be built to emphasize four key attributes: reliability, scalability, manageability, and flexibility. Windows 2000 provides a leap forward in building each of these into your infrastructure and advancing standards-based computing throughout your Enterprise.

We are doing this ourselves at Dell. We have Windows 2000 systems serving 2.5 million users per week at [www.dell.com](http://www.dell.com). It is used extensively in our product design and engineering groups and we



have already started the conversion of 35,000 Dell email accounts using Exchange over to Windows 2000. Like you, we have developed a plan and are being very strategic in our rollout internally. I'm going to share more about our experiences and our customer experiences as they migrate later. But first, I'd like to talk to you about the foundation of your E-business.

### **Reliability**

The fast rise of commerce is what makes reliability a key part of the E-infrastructure. Reliability is no longer just a concern of the IT organization. It is critical to customer satisfaction, and ultimately, to the bottom line and success of any organization. Three years ago, if a Web server went down, customers became frustrated; maybe the CIO heard about it; and more than likely, the CEO didn't hear about it. But today, if a Web site goes down, all hell breaks loose inside a company; and certainly, the CEO hears about it. More likely than not, if it is a large company, it's on CNN or CNBC. Downtime is not allowed. In fact, downtime last year resulted in four billion dollars of lost E-commerce. Windows 2000's reliability features provide a major step forward in advancing "always available" computing.

As Microsoft has worked to build reliability into the infrastructure through the operating system, Dell is also doing its part to architect innovative features within its systems with Open Manage Resolution Assistant and desktop E-support -- automated, Internet-based management and support tools. This is the beginning of what we call "self-healing systems," systems that understand what is going on and can anticipate and proactively deal with problems before they might occur. It takes reliability to a new level, providing proactive alerts to system problems.

With Windows 2000, we are adding new features to the Resolution Assistant, such as a service portal with frequently asked questions; a natural language search engine to solve problems; unique configuration and warrantee information about individualized systems; and daily downloads of fixes and common issues to your own network. All are designed to preemptively solve service issues. In addition to a reliable infrastructure -- as Dell has grown to \$25 billion in the last fifteen years -- we have learned a lot about the importance of a scalable infrastructure.

### **Scalability**

As the number of Internet users triples between now and 2003, businesses will be vulnerable if their infrastructure can't keep pace. That is why we have migrated [www.dell.com](http://www.dell.com), which is the world's largest Windows-based commerce engine-to Windows 2000. Dell.com is now generating about 50 percent of Dell's revenues, or about 40 million dollars a day, to take advantage of the improved capabilities which improve the online customer experience.



We have worked to design and implement scalable high performance systems to handle the largest of computing jobs that are imaginable. In fact, we believe that all computing jobs will be tackled by these open industry standard-based computing solutions. Cornell University has installed Windows 2000 on a Dell-powered server cluster and storage system to create the world's most powerful Windows 2000 cluster. Cornell has estimated that this \$3 million system outperforms mainframe and UNIX systems, which cost roughly \$15 million, by 60 percent. Cornell, Dell, Microsoft, and Intel have created the Advanced Clustering Consortium. The applications for this include predicting the failure rate of airline parts, mapping protein structures for anticancer drug research, complex database marketing, stock market and financial analysis. The pioneering work we are doing around pure standards-based computing represents a remarkable expansion in the scope of computing jobs that can be taken on with this kind of platform.

### **Manageability**

The third key success ingredient to an E-infrastructure is the ability to manage a fast-growing organization and a frequently changing environment. Customers have told us that systems management is the most important benefit they expect to receive from Windows 2000. Windows 2000 delivers new levels of desktop and server management, and gives IT professionals more control. And it standardizes the instrumentation to monitor and manage system resources.

A great example of this is the work that Dell Technology Consulting has done with Microsoft to roll out the largest Active Directory site in the world with the Toronto District School Board. This project will increase the efficiency of their operation while better managing the 300,000 users at 600 sites with 65,000 desktop computers. Think about this: 60,000 people log into their system every day at 8:30 a.m. Their NT 4.0 architecture supports about 250 users per second, which makes the process slow and inefficient. With Windows 2000 and Active Directory, 10,000 users can log into the system every second. The performance and scalability features, along with Dell's servers, make these solutions ideal for hosting companies, for ISPs, for ASPs, and for CSPs.

### **Flexibility**

Finally, a business' flexibility in adapting to change and market dynamics will mark the winners and losers in this fast-changing Internet Age. Flexibility is a tight pairing of speed and agility. Linking businesses together using information is at the center of value creation in the Internet Age. Standards-based systems and Windows 2000 are ideal because they provide the flexibility to configure information assets easily.

The integration across businesses leads to the efficiency advantages that a lot of businesses are seeing, and certainly our business has seen for some time. Over the past year, we've been working very closely with Microsoft and our customers to build a great experience base to prepare for this launch. We're rapidly implementing Windows 2000 internally across our own business. We've been offering factory installation and product certification since the early beta releases. We have a Premier



migration program, and our Dell Technology Consulting Group is geared up to provide services to help customers in the conversion. We have technology and engineering collaboration with Microsoft around areas like clustering, storage area networks, and mobile computing. And we've got a very unique Windows 2000 Readiness Advisor, which allows you to go to [www.dell.com](http://www.dell.com) and see whether your system is ready for Windows 2000. In fact, we've already had several hundred thousand users access that site.

In the Internet economy, there's a tremendous amount of friction that exists in the way the economy works. The information systems that are being deployed today essentially remove that friction and provide a tremendous deflationary force in the economy. The Internet economy, depending on how you define it, is roughly doubling in size each year, and it's certainly affecting every industry. I believe that these changes represent a new force in the importance of IT in an organization -- it is now becoming extremely critical to the core functionality of your businesses and institutions. In fact, the IT infrastructure is quickly becoming the Internet infrastructure around the world.

At no other point in history has the role of the IT professional been as important as it is right now. It is essential that the infrastructure you build is as reliable, as scalable, as manageable, and as flexible as the electrical system that we have in this country. Windows 2000 is a tremendous leap forward for building these attributes into organizations and certainly Dell is implementing it ourselves in what is our most core application, [www.dell.com](http://www.dell.com).