

# Four organizations enable anywhere, any device CAD productivity

Leading design and manufacturing organizations centralize 3D apps and data for high-performance remote collaboration.



Centralization is transforming the way design and manufacturing companies operate. Faced with the demands of an increasingly global and competitive economy, these organizations are using virtual CAD desktops to provide their distributed workforce with access to apps and data from any location, on any device.

CAD professionals—including mobile, remote, contract and offshore team members—can work, collaborate and manage design cycles from anywhere with a high performance experience. Companies can assemble teams more flexibly, begin projects more quickly and grow their business more seamlessly. By moving processing to the datacenter, companies eliminate the need to buy, support and maintain high-end CAD workstations. Data remains secure in the datacenter, protecting valuable intellectual property. The entire organization becomes more flexible and efficient while bringing products to market more quickly at a lower cost.

Citrix XenDesktop is quickly becoming the solution of choice for users of high-end graphics who seek the benefits of centralization. Companies can virtualize high-end graphics applications and entire CAD workstations to provide remote access from anywhere, over any network location, on any device. HDX 3D Pro acceleration technologies enhance the visual performance and delivery of even the most demanding applications, ensuring a high-quality experience in any user scenario. Citrix Receiver, a universal, light-weight client, provides any-device access to Windows applications including Macs, tablets and smartphones.

This paper discusses the experiences of four design and manufacturing companies with Citrix solutions powered by XenDesktop.

### **Centralization empowers users with anywhere, any device access to 3D data and apps**

Design and manufacturing companies are embracing a new approach to IT. Instead of installing CAD applications on costly high-end workstations, they are moving desktops, apps and data to the datacenter, where they can be accessed remotely on demand by users anywhere. Virtualized desktops and apps are executed on server-based virtual machines, freeing people to work on any device they choose—even a tablet. Network optimizations ensure an experience that looks, feels and acts like a traditional PC no matter how people access it or what kind of device they use.

Beyond increasing efficiency and reducing cost, this approach helps design and manufacturing companies address three key priorities:

- **Security** – Companies can expand their collaboration with contractors, business partners and outsourcing providers while keeping product design intellectual property and customer data secure within the datacenter.

- **Mobility** – People can work with CAD applications, design documents and 3D models anywhere, on any device—even a tablet at a customer location or on the shop floor—to accelerate design and production.
- **Time to market** – Team members can collaborate remotely from any location to enable faster project launches and follow-the-sun development cycles. Server-based processing speeds calculations to further accelerate work.

The latest innovations have brought datacenter-hosted design and engineering workstations to new levels of performance. No longer the exclusive realm of early adopters, virtualization is now a mainstream strategy with powerful benefits for any design and manufacturing organization.

### **The Citrix solution to deliver 3D apps centrally with a high-performance experience**

The most complete and effective virtualization solution for 3D apps comes from Citrix, the longtime leader in virtualization and mobile workstyles. Accessible on any device, the solution provides compression and graphics acceleration technologies to optimize professional 3D graphics apps over low-bandwidth, high-latency networks. Designed for seamless integration and proven in demanding production environments, the Citrix solution combines high performance with simplicity and manageability unmatched by point solutions or piecemeal strategies.

The solution includes:

**XenDesktop for hosting and delivering apps and desktops** – XenDesktop enables companies to virtualize and deliver both apps and desktops over any type of network and cloud infrastructure through a single, unified platform. Companies can use common policies and tools to simplify deployment and management for users in any location and network environment. XenDesktop supports the full range of desktop and app delivery scenarios, allowing the flexibility to optimally address every use case in the organization. The solution provides full functionality on mobile devices for Windows-based 3D graphics apps, extending their utility to the manufacturing floor, customer sites and anywhere else design and manufacturing professionals work.

**HDX 3D Pro technologies for enhanced performance over any network connection** – The XenDesktop remoting protocol includes HDX 3D Pro technologies to enhance the visual performance and delivery of graphics-intensive applications, including OpenGL and DirectX apps. WAN optimization technologies improve user density over the network, increase server scalability in the datacenter and lower bandwidth requirements. Deep compression technologies and quality of service (QoS) controls prioritize and optimize application performance over any network connection, including WANs with as little as 2MB of bandwidth and RTL as high as 200ms. Hardware-level GPU acceleration provides smoother visual performance.

## The real-world experiences of four organizations using XenDesktop with HDX 3D Pro

### 1. ABB delivers high-performance CAD desktops worldwide

ABB Schweiz AG, headquartered in Zurich, Switzerland, is a leading global supplier of power and automation technology with 145,000 employees and operations in approximately 100 countries. To keep pace with globalization and take advantage of new opportunities in emerging markets, the company decided to open a global engineering center in Bangalore, India. The project schedule required the IT team to these users in India with access to applications, including Siemens Solid Edge and Autodesk E3.series CAD applications, in only seven months. To support its users in India, the company needed a way to overcome the network bottleneck its internal network infrastructure posed for its central engineering databases, which were hosted in Switzerland. The network's WAN links were not designed to support remote processing for extensive construction plans. Building a local database in India would have taken too long and generated significant data traffic on the WAN.

#### *Solution*

ABB already used XenDesktop to make standard applications such as Microsoft Office and SAP available to several distributed sites, but CAD apps posed higher resource requirements. HDX 3D Pro technologies built in to the XenDesktop virtualization solution make it possible to provide even high-end applications over WAN connections with as little as 2 Mbps of bandwidth per user. To optimize network performance, HDX 3D Pro compresses image data before it is sent over the network to the user. By using the computing power of server GPUs to accelerate CAD graphics rendering, the solution minimizes bandwidth requirements and ensures high-performance access for users even over the WAN. HDX 3D Pro also offers advantages for the LAN, since the solution requires about 90 percent less bandwidth than other available products on the market.

#### *Benefits*

ABB quickly enabled its professionals in India with the high-quality CAD experience their work requires, making it possible to start up its new global engineering center on time. The company's Citrix solution has also brought new flexibility for ABB's users. XenDesktop with HDX 3D Pro eliminates the need for a special graphics processor on local CAD workstations, allowing ABB to support engineering professionals on standard notebooks. This frees them to work wherever the need arises, on the road or in the home office, on any device. At the same time, the solution supports professional graphics peripherals such as large displays and the Connexion 3D Space Mouse. Centralization helps ABB maintain a high degree of safety. Sensitive design data always remains in the protected datacenter and is never stored on unsecured devices. The solution continues to help ABB capitalize on new opportunities worldwide; when a new R&D team was set up in Poland, the IT organization simply extended the infrastructure and made the CAD workstations available from Switzerland for the additional users.

"Until now we have had to deal frequently with the peculiarities of heterogeneous client devices. By contrast, our Citrix virtual desktops provide users with a single platform, high performance and the flexibility to work anywhere," said Yavuv San, IS manager for ABB Schweiz AG.

### **ABB Schweiz AG**

#### **Industry**

Manufacturing

#### **Challenges**

Provision remote CAD workstations within existing network capacity

#### **Solution**

- XenDesktop with HDX 3D Pro
- XenServer
- NetScaler
- Autodesk E3 series
- Siemens Solid Edge
- NVIDIA Quadro series graphics cards
- Connexion 3D Space Mouse

#### **Benefits**

- Delivering high performance over low bandwidth
- Providing a high-definition experience on any device
- Provisioning remote desktops rapidly with full security

## 2. Knightec creates a virtual engineering studio

Knightec has a vision to become the Nordic region's leading technical consultancy in product and production development. The firm's 350 engineers collaborate from throughout Sweden, a distributed model which made it difficult to start client work quickly. For each project, the firm had to bring a team together in the same location and provision professional CAD workstations—a time-consuming and cumbersome process. Knightec needed a better way to provide its engineers with access to powerful CAD workstations from anywhere in the world, without having to install and support CAD applications over the network. The firm also wanted to eliminate the need to invest in, maintain and ship a fleet of costly CAD workstations around the country to support its professionals.

### *Solution*

Knightec worked with Citrix partner AcelQ AB to implement XenDesktop with HDX 3D Pro. The firm now delivers its most important CAD applications through VDI desktops, including CATIA, Inventer, Pro/Engineer and Ansys. Engineers can access apps and data securely as web services through NetScaler, with a high-quality experience wherever they work and whatever device they use. Engineers can use even demanding professional CAD applications over any type of network connection—even at an Internet café. Engineers can also use their own personal tablets for work, connecting to their virtual desktops via Citrix Receiver.

### *Benefits*

Knightec engineers in any location can now form teams and work together seamlessly on projects, using their virtual desktops to access CAD applications and collaborate around project files. The firm can assign people to teams more flexibly and efficiently, and can split their time across multiple projects in different locations. Knightec can also hire consultants for projects without having to pay travel expenses, provide them with complete CAD workstations, and turn off their access easily at the end of the project. As a result, lead time for new projects has been shortened from three weeks to one or two days. Once work has begun, dramatic improvements in application performance—including a 400 percent decrease in calculating time for Ansys—help speed its completion. The firm has reduced cost as well, since the requirement for a professional workstation is reduced for every user and does not need to distribute and support software locally. Aging CAD workstations are being repurposed as thin clients or replaced with new, low-cost thin clients. The ability to assemble teams more quickly, accelerate their work and reduce overall cost has made it possible for Knightec to take on even larger projects. Knightec's virtual CAD studio is also a key selling point for recruiting new team members.

"With Citrix, we can offer talented engineers anywhere the ability to join Knightec, but work anywhere. We don't limit them to a specific office or chair—that's old school," said Jörgen Norman, CIO of Knightec. "The future is being able to choose where you want to sit and what you want to use, whether it's a small laptop or a tablet or anything else."

## **Knightec**

### **Industry**

Technology solutions and leadership consultants

### **Challenges**

Enable engineers to collaborate from any location

### **Solution**

- XenDesktop with HDX 3D Pro
- XenServer
- NetScaler
- Dassault CATIA
- Autodesk Inventer
- PTC Pro/Engineer
- ANSYS
- NVIDIA GRID series graphics cards

### **Benefits**

- Enabling CAE engineers to work and collaborate from anywhere
- Reducing project lead time from three weeks to 1 – 2 days
- Accelerating FEA calculations by average 400%
- Reducing the need for high-end CAD workstations
- Recruiting the best engineers in any location

### 3. Wiha speeds provisioning for a remote development site

Headquartered in Germany's Black Forest, Wiha Premium Tools is one of the world's leading manufacturers of precision hand tools for use in industry and skilled trades. In 2012, plans for a new Wiha development site in Waldkirch—two hours from its Schonach datacenter—posed a challenge for the company: how to provide a CAD infrastructure relatively quickly for the new facility. Developing a completely independent environment would have been costly and labor-intensive, and synchronizing data regularly with the head office would have taxed the network connection enormously.

#### *Solution*

Wiha had implemented Citrix technology in the 1990s to deliver business applications from its Schonach datacenter to users at its production facility in Mönchweiler. Now, the company worked with Citrix partner Makro Factory to upgrade its XenDesktop platform with HDX 3D Pro technology. The company now provides CAD workstations to engineers in Waldkirch as virtual desktops. The solution uses the support of NVIDIA graphics processors on the server to speed the rendering of complex graphics, and its compression codecs ensure good application performance even over relatively narrow WAN bandwidth. The multi-GPU pass-through function of Wiha's XenServer hypervisor made it possible to allocate a dedicated NVIDIA Quadro 2000 graphics card to each individual virtual machine. Developers in Waldkirch access their virtual workstations on standard PCs via Citrix Receiver.

#### *Benefits*

Wiha CAD developers were quick to embrace their virtual desktops, which provided high performance as well as allowing them to use the Connexion 3D Space Mouse as easily as they had on locally installed PCs. No longer bound to a specific workstation, they can now work with their CAD applications on a laptop from home or on the road. Citrix Access Gateway provides secure web access to virtual desktops, using encryption to protect Wiha's proprietary data in transit. The company can now recruit the professionals its work requires without being constrained by location. Freelancers and development sites abroad can also be connected simply and securely. From an IT perspective, centralized single-image management helps the company keep all of its virtual CAD workstations up-to-date and problem-free. The Wiha Citrix environment now plays a key role in the company's business growth. In recent years, Wiha has brought many new European subsidiaries onto its desktop virtualization platform.

"Citrix technology opens many new options for us," said Wiha IT Manager Siegfried Disch. "For example, we can recruit CAD construction specialists who live in a different city or who want to work from their home office. Freelancers and development sites abroad can also be connected simply and securely. Wherever our users work, our invaluable know-how always remains secure within our datacenter."

### Wiha Premium Tools

#### **Industry**

Manufacturing

#### **Challenges**

Provide CAD infrastructure quickly for a new facility

#### **Solution**

- XenDesktop with HDX 3D Pro
- XenServer
- Access Gateway (now CloudBridge)
- NVIDIA Quadro 2000 graphics cards
- Connexion 3D Space Mouse

#### **Benefits**

- Delivering high performance CAD applications over WAN
- Enabling telework and BYOD for CAD developers
- Accelerating business expansion

#### 4. A major European heavy vehicle manufacturer supports global design, manufacturing and support

Headquartered in Sweden, this large producer of heavy trucks and transport solutions has global design, manufacturing and support centers located across more than 140 countries. The producer needed to provide regional design and manufacturing centers located in countries such as Germany, Japan, Mexico and Brazil with real-time access to product design data scattered across all of these locations. Previously, the company had used various asynchronous methods to share product data across its global centers, including nightly bulk transfers of hundreds of gigabytes of files, an approach which led to increased bandwidth costs and IT headcount.

##### *Solution*

The company used XenDesktop with HDX 3D Pro to centralize its product design applications, including Dassault's ENOVIA PLM and CATIA product design application suites, in a single datacenter. This enables secure, real-time access to centrally managed data for CAD users in any location. The solution is hosted in Japan and Curitiba, Brazil, providing worldwide coverage.

##### *Benefits*

Today, XenDesktop provides secure, real time access to this producer's design applications and data hosted in Sweden from locations around the globe. The client application is hosted next to the database on a high-speed datacenter network, making it possible for users anywhere to quickly open and render very large models representing millions of vertices, such as for an entire truck model.

#### **Conclusion**

Citrix XenDesktop with HDX 3D Pro is already helping leading design and manufacturing companies realize the benefits of virtualization. By providing remote access to centrally hosted CAD data, desktops and apps, these organizations can accelerate time to market while improving security for intellectual property and customer information. Professionals can collaborate securely around real-time design data and model-based deliverables with team members in any location, and gain new flexibility to work anywhere, on any device they choose, over any network connection, with a high-performance experience. As seen in experiences of organizations such as ABB, Knightec, Wiha and the heavy vehicle manufacturer described above, this approach can have a truly transformative impact on business performance, growth and competitiveness. To learn more, please visit [www.citrix.com/xendesktop/3d](http://www.citrix.com/xendesktop/3d).

### **Major European heavy vehicle manufacturer**

#### **Industry**

Manufacturing

#### **Challenges**

Provide real-time global access to product design data

#### **Solution**

- XenDesktop with HDX 3D Pro
- XenServer
- Dassault ENOVIA, CATIA, DELMIA
- NVIDIA Quadro series graphics cards
- Connexion 3D Space Mouse

#### **Benefits**

- Enabling CAD users to access and share data from anywhere
- Reducing network bandwidth consumption and costs
- Ensuring data accuracy by replacing asynchronous sharing methods with centralized access and management



**Corporate Headquarters**  
Fort Lauderdale, FL, USA

**Silicon Valley Headquarters**  
Santa Clara, CA, USA

**EMEA Headquarters**  
Schaffhausen, Switzerland

**India Development Center**  
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**Latin America Headquarters**  
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**UK Development Center**  
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**About Citrix**

Citrix (NASDAQ:CTXS) is the cloud company that enables mobile workstyles—empowering people to work and collaborate from anywhere, easily and securely. With market-leading solutions for mobility, desktop virtualization, cloud networking, cloud platforms, collaboration and data sharing, Citrix helps organizations achieve the speed and agility necessary to succeed in a mobile and dynamic world. Citrix products are in use at more than 260,000 organizations and by over 100 million users globally. Annual revenue in 2012 was \$2.59 billion. Learn more at [www.citrix.com](http://www.citrix.com).

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