



## Data Center Consolidation

## Executive Summary

As both technology and government agency management systems improve, so too does the viability of enterprise-level Data Center Consolidation (DCC). The significant and short-term cost savings, as well as the resulting improvements in information security and cross-agency collaboration, make DCC more attractive than ever. Looking at the major trends in the Federal agency IT environment, it is clear that DCC is at a tipping point, with widespread action imminent in all sectors of government.

Although given little attention by most consolidation strategies and enterprise architectures, securely delivering applications and information to users is one of the most critical issues affecting the decision to consolidate. In most cases, the ultimate enabler of success is not developing a Common Management Infrastructure (CMI) for the diverse applications and operating platforms, but rather delivering those diverse applications to diverse client populations in remote locations over network connections of varying quality. In short, it is a problem of linking end users who need to access applications (demand) with IT administrators who control these applications (supply).

To link information demand to information supply efficiently and cost-effectively, consolidation architects should craft an application delivery strategy leveraging *application delivery infrastructure* solutions. Application delivery infrastructure meets the strategic need of government agencies to securely deliver applications to users at any location, in any access scenario, as well as monitor the ongoing application access experience.

Citrix application delivery infrastructure solutions include products and services that deliver applications on demand with the best performance, security and Total Cost of Ownership (TCO). Citrix offers a comprehensive approach that enables government employees to easily and securely access an agency's IT assets – on demand – while empowering IT planners to centrally manage heterogeneous IT environments – the basis for DCC. Currently, more than 180,000 organizations worldwide rely on Citrix to deliver any application to users – regardless of geographic location, client device/platform, or network connection.

For DCC, Citrix enables:

- Significantly lower TCO based upon:
  - Centralized management that reduces IT administration costs
  - Software upgrades deployed on the server, not each desktop
  - Extended life of desktop hardware investments
  - Decreased network expense through bandwidth optimization
- Support for diverse applications and platforms
- Data security and regulatory compliance
- An enhanced user experience

## Tipping Point: The Right Time is Now

Data Center Consolidation (DCC) is neither a new term nor a new concept in IT management. The core idea – that it is cheaper and easier to manage fewer, centralized systems than a larger number of geographically distributed systems – has been around for as long as network routers. Despite the simplicity of the idea, however, organizational resistance and technology limitations have largely stymied DCC initiatives, particularly within the public sector.

Government agency IT systems – which vary widely by agency role, size, and budget – typically provide unique functionality enabling staff to execute the specific agency mission. Such systems often feature custom-built applications and on-site management to ensure efficiency and access. Consequently, agencies are very reluctant to cede control of core IT assets for fear of losing the unique features of custom systems (homogenization), or for fear of losing access to the system (service level).

At the same time, the network, processing, and storage technologies required to centrally maintain multiple enterprise-wide information systems have only recently come of age. Prior to the widespread adoption of high-bandwidth networks and the advent of commodity processing, large consolidation efforts often foundered in the data center. Applications and data were either processed too slowly to facilitate speedy delivery, or uneven network connections left users unable to access the necessary information.

As both technology and government agency management systems improve, however, so too does the viability of enterprise-level DCC. The significant and immediate cost savings, as well as the resulting improvements in information security and cross-agency collaboration, make DCC more attractive than ever. Looking at the major trends in the public-sector IT environment, it is clear that DCC is at a tipping point, with widespread action imminent at all levels of government.

### **REQUIREMENT FOR IMPROVED FINANCIAL PERFORMANCE**

Government agencies at all levels, pushed by budget-conscious executives and legislatures, are intently focused on the business value and financial impact of IT investments. At the Federal level, the Clinger-Cohen Act (CCA) demands a clear and detailed Return on Investment (ROI) analysis for every significant IT expenditure. At the same time, the recent delineation of Line of Business (LOB) centers underscores the cost efficiencies associated with a centralized infrastructure for each function of government.

### **BUSINESS-BASED FINANCIAL METRICS**

While IT budgets at the Federal level have grown during the recent recession, the importance of demonstrating financial return and system performance has grown as well. To manage requests for IT investment funding, the Office of Management and Budget (OMB) uses an extensive set of Capital Planning and Investment Controls (CPIC). Under this framework, each significant IT initiative requires the completion of an Exhibit 300 detailing the financial costs and returns associated with the effort. OMB then uses the business case laid out in the Exhibit 300 to validate or reject the funding request, explicitly linking budget dollars to projects that demonstrate strong financial returns.

More than just a paper tiger, the Exhibit 300 process has real teeth. In 2003 alone, OMB halted more than 700 IT projects for failing to complete the required business cases analysis or for failing to meet minimum ROI thresholds for approval. Simply put, OMB examines every IT investment request to compare, contrast, combine, compete – or simply to cut. Though the net result is an overall improvement in Federal government efficiency, the local result is budget cuts for agencies unable or unwilling to justify the financial return of IT investments.

Further complicating the 2007 budget cycle, every agency business case will have to align with the appropriate LOB center. As a result, each independent agency business case will have to describe what services they will receive from the LOB center, while each of the 28 LOB centers will have to delineate how they will support each activity. More than just servers, entire management processes are being consolidated into the LOB centers.

#### **SECURE INFORMATION ACCESS**

With the nation on continued heightened alert for terrorist activity, the requirement to harden IT systems against potential attack drives an increasing level of resources to information security. Moreover, the United States Computer Emergency Readiness Team (US-CERT) reports that the number of IT security vulnerabilities identified more than tripled from approximately 1,000 in 2000 to more than 3,500 in 2003. As IT managers focus on meeting increased security requirements – often without the assistance of a certified or academically trained information security expert – the value of a consolidated, centrally located architecture becomes readily apparent.

In addition, Federal government IT managers must satisfy the reporting requirements of the Federal Information Systems Management Act (FISMA), which sets strict guidelines for information security. The Certification and Accreditation (C&A) of information systems – especially across multiple agency components and geographic locations – is time- and resource-intensive. Maintaining the IT asset inventories stipulated by FISMA in the age of the government purchasing card also remains a key challenge for Chief Information Security Officers (CISOs).

#### **THE COMPLEXITY OF COLLABORATION**

Government directives from executive and legislative leadership are driving agencies to increased intra- and inter-agency collaboration. At the same time decentralized and broadly distributed information systems and resources add layers of complexity to collaborative efforts. Rather than connecting a discrete number of points, infrastructure architects must cope with connecting dozens – in some cases hundreds – of servers and networks in different locations. Multiplied by the importance of both horizontal (among agencies of the same government) and vertical (among agencies of different governments) collaborative efforts, the problem leaps in complexity by orders of magnitude.

It is important to consider that governments are attempting to make changes in their program structures through IT collaborative efforts that they were often unable to obtain through structural reorganization.

#### **POLITICAL REALITIES AND LEADERSHIP**

Finally, the rise of technology-savvy government executives who are able to link technology capability with political leadership further improves the outlook for DCC. While some level of IT resource rationalization has been possible and practical for some time, the political leadership required to overcome organizational obstacles and other barriers became sharply focused during the recent budget crises. Spurred by budget requirements and legislative mandates, government executives are now positioned to drive enterprise-level change.

## Hurdles: Barriers to Successful Execution

The size, complexity, and culture of government agencies have resulted in a unique technology profile characterized by the large number and diversity of IT systems and management structures. Some agencies continue to employ legacy systems, often more than 30 years old, to meet their mission-critical objectives. In contrast, other agencies are able to leverage the latest technology, including wireless, Commercial-Off-The-Shelf (COTS) systems. Consequently, consolidation strategies must overcome the complexity of government IT resource systems and management structures, delivering solutions that require only minimal changes to government mission processes.

### LEGACY SYSTEMS

Without question, governments continue to rely on legacy systems for mission-critical elements of IT portfolios. These systems are mission-tested and operational, and received significant investment during Y2K mitigation. While it is likely that some systems will continue to phase out over the next decade, it is clear that wholesale elimination of legacy assets is neither financially possible nor practical, nor the likely outcome of DCC. Consequently, DCC strategies must encompass, enhance, and extend the usefulness of legacy systems in a model that enables broad access.

### PLATFORM DIVERSITY

The sheer size and complexity of government necessarily mandate that it utilize a broad array of server and client platforms. In many cases, agencies and programs must reflect the demands of legislative, regulatory, or Federal funding mandates for IT systems and platforms. The timing and vagaries of one- or two-year funding, in addition to a general inconsistency in the capabilities and powers of IT leadership, have also contributed to the diverse array of platforms and architectures.

This platform diversity is further complicated by the varying degrees of technology comfort within each agency. Although organizational culture often plays a role (i.e., agencies unwilling to learn new systems), certain agency missions and Federal funding requirements simply demand that different platforms be applied. DCC strategies that rely on acceptance or dominance of a single platform (server- and or client-side) will not provide an affordable or realistic solution.

### APPLICATION DIVERSITY

The government hosts an enormous number of government-proprietary, homegrown, and COTS software applications. During implementation of the Navy-Marine Corps Intranet, EDS discovered that the Navy employed as many as 100,000 applications throughout its infrastructure. Moreover, as EDS quickly learned, agencies proved hesitant to give up process-critical applications to migrate to a consolidated system. This is often characteristic of most governments and larger agencies. For instance, many state and large local governments have found that they have numerous email systems that are incompatible for cross-communication purposes. Consequently, DCC strategies must address the number and diversity of applications in an *inclusive* framework.

**REGULATORY REQUIREMENTS**

While commercial businesses wrangle with the Health Insurance Portability and Accountability Act (HIPAA) as well as Sarbanes-Oxley, public-sector IT leaders must manage to the strictures of these laws in addition to a host of other government-specific laws and regulations, including CCA, FISMA, the Government Paperwork Elimination Act, the Government Paperwork Reduction Act, and Section 508 of the Rehabilitation Act. Though improved regulatory compliance is a spur to consolidation, it is also a requirement that drives specific necessities within a DCC strategy. DCC strategies must ensure improved regulatory compliance and facilitate simplified, streamlined compliance reporting. They should also have the flexibility to easily accept and adopt evolving regulations in the future.

**SERVICE DELIVERY**

While IT administrators have become increasingly efficient at managing and maintaining applications and data within a data center, delivering information to staff with speed and accuracy remains the key challenge. In most cases, the ultimate enabler of success is not developing a Common Management Infrastructure (CMI) for the diverse applications and operating platforms, but rather delivering those diverse applications to diverse client populations in multiple locations over network connections of varying types and quality. In short, it is a problem of linking end users who need to access applications (demand) with IT administrators who control these applications (supply).

## Application Delivery Strategy

Given little attention by most consolidation strategies and enterprise architectures, the critical problem of securely delivering applications and information to users – and monitoring their access experience – is central to the decision to consolidate. Unsuccessful DCC initiatives fail in the data center, where applications and information become disconnected from the frontline government users who require on-demand access to carry out the programs of the government entity. Ensuring that users can access applications on demand and IT can deliver those applications with the best security, performance and cost-efficiency are key to the primary mission of government agencies and the success of a DCC project.

Short of an application delivery strategy, IT departments typically employ a broad variety of information access tactics such as:

- Web Services
- Local Area Networks (LANs)
- Wide Area Networks (WANs)
- Virtual Private Networks (VPNs)
- Dedicated, secure connections

Each access tactic interfaces with core IT assets in a different manner, often necessitating numerous patches and quick fixes to knit together on-demand access for users. In this type of environment, enabling rapid, fail-safe access to consolidated IT assets is both difficult and insecure, requiring connections into a data center at multiple points. Management is at best confused.

As an alternative to the current scheme of access patches, DCC initiatives should employ a holistic application delivery strategy that addresses the heterogeneity of applications, platforms, network connections and devices, and *anticipates* the ever-present operational demand for information. Such a strategy enables application delivery to be optimized for any access scenario, no matter the type of application, the user's location and device, or the security of the network. An application delivery strategy overcomes the inherent disorganization of typical evolutionary IT investments by providing a flexible, dynamic approach to linking users with the information they need.

The foundation of an application delivery strategy is application delivery infrastructure. These solutions meet the strategic need of government agencies to provide seamless, secure, and cost-effective application access for all authorized users in a complex, heterogeneous environment.

Application delivery infrastructure has three components: application delivery; application security and application visibility. It provides a wide array of capabilities including:

- Device and network services to allow easy, secure access over virtually any trusted or non-trusted network or device
- Information aggregation and personalization to provide centralized control over the user access experience and ensure that the information accessed is organized, coherent and relevant
- Security and identity management to ensure that users are accurately identified and allowed access appropriate to their role
- Presentation services to enable virtualized access to any application
- User provisioning and usage measurement to allow the efficient provisioning of access to new users and measurement of system utilization
- Service-level management to provide the capabilities necessary to enable service at pre-determined or promised levels

Within the context of DCC and its component IT requirements, application delivery infrastructure enables consolidation architects to create a single, holistic IT strategy for securely delivering centralized information at an optimal Total Cost of Ownership (TCO) without embarking on high-risk and high-cost recapitalization of the government's IT resources.

## The Citrix Solution for DCC

Citrix application delivery infrastructure solutions offer a flexible yet integrated approach to securely delivering information resources from a consolidated data center to users in any access scenario – at remote branch offices, in the field, while traveling, or even from home. Citrix Systems, Inc., is the global leader in application delivery infrastructure: more than 180,000 organizations worldwide rely on Citrix solutions for delivery of any application to users anywhere – with the best performance, highest security and lowest cost.

Citrix offers a wide array of products and technologies that support the three components of application delivery infrastructure:

### Application Delivery

Application delivery technologies allow applications to be virtualized, optimized, or streamed over any network. Because of the diversity of application types and delivery challenges, Citrix has developed application delivery methods for each.

**- Application virtualization:** The best delivery method for client/server applications is a powerful concept known as application virtualization. Rather than deploying and managing multiple software clients on every desktop, all clients are deployed once on a dedicated server in the data center, directly in front of the application server. Instead of sending actual data over the network to each user, only the virtualized client interface (pixels, keystrokes, mouse movements, etc.) is actually transmitted and presented to the user's computer. This process is transparent to the user who experiences the app exactly the same as if the actual client software were running on his desktop. **Citrix Presentation Server™** is the standard for application virtualization.

**- Application optimization:** While virtualization makes perfect sense for client/server applications, it is not ideal for Web applications because every user already has a ubiquitous client on his desktop. For Web applications, it makes much more sense to deliver the actual application data all the way down to the user's device. To do this efficiently, however, that process must be optimized. Application optimization solves the issue of poor response times caused by complex, high-traffic Web applications running over inefficient networks. This approach offloads much of the delivery work from Web and application servers onto highly efficient appliances that sit directly in front of the applications. Using a combination of acceleration, caching, encryption and load-balancing technologies, **Citrix® NetScaler®** appliances can improve performance of Web applications by up to 15X.

Similarly, to optimize performance over the WAN for users at distant branch offices, **Citrix WANScaler™** delivers increased network throughput and improved response times for all applications. This product automatically and dynamically applies to each data flow the best combination of performance-boosting techniques depending on the application, the data, and the network conditions.

**- Application streaming:** Application streaming delivers desktop applications on demand to end-point devices for local execution. As a "pull-based" delivery model, application streaming is an alternative to local desktop installation. In addition, it can complement electronic software distribution (ESD) products by allowing problem applications to be run in isolation so they don't conflict with previously installed applications or de-stabilize the operating system. Citrix Streaming Server™ gives users on-demand access and self-service to desktop

applications from anywhere, with the turbocharged local performance they're used to. In addition, for IT organizations, it provides the efficiency of centralized control and maintenance.

#### APPLICATION SECURITY

Application security ensures that there is only one password and one secure path to any application. Citrix offers a wide array of solutions that address complementary security challenges, providing an approach that is “secure by design.”

- **Universal SSL VPN protects data: Citrix Access Gateway™** encrypts the transmission of application data over the Internet from end to end.

- **Applications reside behind the firewall:** Virtualized application delivery using **Citrix Presentation Server** keeps sensitive information in the data center, rather than exposed on the client device.

- **Defense against Web attacks:** Citrix NetScaler protects Web applications from Denial of Service attacks, while the **Citrix Application Firewall™** protects them from the growing number of application-layer attacks.

- **Control over users' access and actions:** Citrix technologies give IT the ability to centrally control which users can access the network, and also to dynamically control what actions can be taken with an application – such as printing and downloading – based on the access scenario.

- **Centralized password management: Citrix Password Manager™** provides enterprise single sign-on access to password-protected applications, automates or centralizes many password functions, and supports regulatory compliance.

#### APPLICATION VISIBILITY

Citrix technologies enable IT staff to centrally monitor, measure and support the application access experience of all users across the agency. Citrix EdgeSight™ gives IT administrators real-time visibility into the end-user experience, empowering them to quickly identify, pre-empt, or resolve problems. This solution helps maximize application performance and availability throughout the agency so that workers are productive, efficient and satisfied.

## Benefits of Citrix Application Delivery Infrastructure

With Citrix application delivery infrastructure solutions, IT staff in a consolidated data center can deliver applications to all government workers, contractors, and even citizens visiting agency websites with speed, security and cost-effectiveness. Users enjoy optimal performance on any type of device or connection. Citrix solutions also address challenges of integrating legacy systems into the new DCC architecture and accommodating upcoming technological change, such as new devices and platforms.

## Lowering Total Cost of Ownership

When looking at ROI, total direct expenditures present only half of the picture. The total ROI of an IT investment is also a function of the value the investment provides in terms of mission performance and financial efficiencies. Looking specifically at returns, Citrix solutions provide substantial value in terms of flexibility, accessibility, and deployability – all of which track to improved performance against program objectives.

Citrix software also requires a substantially smaller up-front investment than other DCC approaches. Rather than requiring the replacement of legacy systems, Citrix facilitates integration of older platforms into more modern computing environments. In addition, with low bandwidth and processing power requirements, Citrix significantly extends the life of older networks and desktop clients. With the ability to support any client device, from a 286 mHz desktop to a Personal Digital Assistant (PDA) to a robust UNIX® workstation, Citrix solutions enable agencies to use their current hardware and operating platforms to access the latest applications.

According to industry analyst, IDC, as a percentage of TCO, hardware and software expenditures together comprise less than a third of total IT cost. In contrast, administration, operations, support, and training add up to twice the cost of software and hardware, consuming up to 70 percent of an information services budget.

Citrix application delivery infrastructure solutions directly address administration, support and operations -- the largest category of IT spending – by centralizing application installation, upgrades and execution on servers and enabling remote support, monitoring, and access control. Following are specific areas where Citrix reduces costs:

- Reduce staffing in multiple locations – Consolidating applications and information at central sites significantly reduces the staff required to maintain servers at satellite locations. Citrix allows a smaller IT staff to control and manage a larger, broader array of IT assets.
- Centralize patching and upgrading – System adjustments and software upgrades are done on a small number of servers rather than on every desktop in every office at every location. As a result, installations, application deployments, and changeovers that used to take months can now be completed in minutes. Moreover, management and control of versions, patches, and security features become significantly less expensive and more efficient.
- Centralize or automate support – Several Citrix technologies reduce the cost of on-site support. They enable IT to assist remote users from the data center by viewing or taking over their access session, allow users to complete certain functions themselves, such as password resets, or even automate common tasks.
- Optimize hardware investments – Hardware, storage, and network capacity are often linked in such a way that an investment in one component necessitates a scaled investment in the other two. Citrix's model breaks that link, enabling centralized upgrades to applications without demanding concurrent investments in the application delivery infrastructure.
- Reduce bandwidth demand – By transmitting just keystrokes, mouse-clicks and screen refreshes, rather than volumes of application data, between server and client, application virtualization significantly reduces bandwidth requirements for accessing applications from remote locations. Similarly, Citrix Web optimization technologies lower demands on the network. With Citrix, IT planners can slow or even eliminate the need to invest in additional bandwidth capacity.

### **Promoting Data Security and Regulatory Compliance**

Citrix offers a range of security provisions, beginning with centralized management that places access control in the hands of the IT staff. Citrix policy-based controls allow IT organizations to determine who gets access to what information and when. Information is only accessible to individuals who are given rights prior to use by a central policy-driven authority.

Citrix application virtualization transmits “information pictures” over the network rather than sending real critical asset information over potentially non-secure connections. Citrix technology scrambles and encodes the transmission, allowing secure use of the public Internet.

Citrix also provides a number of capabilities that support regulatory compliance, such as strong passwords, automated password changes, auditing, and support for third-party authentication solutions such as biometrics and smart cards.

### **Embracing Application and Platform Diversity**

Supporting any device or network connectivity, Citrix solutions transparently integrate diverse platforms and applications. Heterogeneous environments of legacy, Web, Windows®, UNIX and other applications can be delivered from a single server installation. Interfacing with a COBOL or FORTRAN application is no more difficult than opening the application on a Windows desktop.

In addition, Citrix enables users to access applications on standard Web browsers, or on cost-effective thin-client devices, with high performance and a consistent look and feel.

### **Improving the User Experience**

While Citrix application delivery solutions can provide measurable savings in IT expenditures, they can also lead to less tangible but equally important improvements: greater productivity, improved flexibility, and higher satisfaction for end users, whether they are agency employees or citizens using a government website. Following are specific ways in which Citrix solutions improve the user experience:

- Faster performance – Users enjoy high-performance access – even over bandwidth-constrained networks – to any type of application, thanks to such Citrix capabilities as Web application optimization with NetScaler and WANScaler, application virtualization with Presentation Server, and streaming to the desktop with Citrix Streaming Server.
- Greater access flexibility – Citrix application delivery infrastructure makes it simple to provide access to home-based, mobile and remote users, who can connect via the Web.
- End-point monitoring – Citrix EdgeSight gives IT the tools to continually monitor each user’s experience with applications so that problems can be quickly pinpointed and resolved before worker productivity is impacted.

## Conclusion: Think DCC – Think Citrix

As is always the case, true government DCC success will occur in as many ways as we have governments. In each individual case, leaders will work to improve the delivery of service for their community of stakeholders. Yet without question, the trends in the public sector IT market -- fiscal constraint, increased financial accountability, information security, multi-agency collaboration, and political critical mass -- favor DCC at every level of government. Achieving success and realizing the benefits of DCC require the implementation of a sound application delivery strategy and the executive commitment and will to overcome organizational inertia.

Citrix Systems, the leader in application delivery infrastructure, provides the proven and complete toolset to power an enterprise-level DCC strategy. Supporting thousands of organizations worldwide – including more than 200 agencies at every level of government – Citrix is a proven partner in delivering on-demand access to meet agency missions. Citrix is committed to empowering agency executives to realize the short- and long-term value of an application delivery strategy for DCC.

Overcoming organizational inertia is more difficult to achieve. Certainly the significant cost savings, as well as the resulting improvements in information security and user experience, make DCC more attractive to more stakeholders than ever. Making the case tangible to government executives and legislative leadership requires addressing many of the concepts described in this white paper, and involves much more than just broad promises of cost savings.

Citrix can help each government or agency pursue Data Center Consolidation by bringing to bear our experience, knowledge, resources and capabilities to work with the government and develop a government or agency-specific business case analysis for successful DCC.

For more information, contact (XXX) XXX-XXXX or e-mail XXXXXXX@citrix.com.

©2006 Citrix Systems, Inc. All rights reserved. Citrix®, NetScaler®, Citrix Presentation Server™, Citrix Password Manager™, Citrix Access Gateway™, Citrix Application Firewall™, Citrix EdgeSight™, and Citrix WANScaler are trademarks of Citrix Systems, Inc. and/or one or more of its subsidiaries, and may be registered in the United States Patent and Trademark Office and other countries. Microsoft®, Windows® and Outlook® are registered trademarks of Microsoft Corporation in the United States and/or other countries. UNIX® is a registered trademark of The Open Group in the United States and other countries. All other trademarks and registered trademarks are property of their respective owners.

## Notice

The information in this publication is subject to change without notice. THIS PUBLICATION IS PROVIDED "AS IS" WITHOUT WARRANTIES OF ANY KIND, EXPRESS OR IMPLIED, INCLUDING ANY WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE OR NON-INFRINGEMENT. CITRIX SYSTEMS, INC. ("CITRIX"), SHALL NOT BE LIABLE FOR TECHNICAL OR EDITORIAL ERRORS OR OMISSIONS CONTAINED HEREIN, NOR FOR DIRECT, INCIDENTAL, CONSEQUENTIAL OR ANY OTHER DAMAGES RESULTING FROM THE FURNISHING, PERFORMANCE, OR USE OF THIS PUBLICATION, EVEN IF CITRIX HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES IN ADVANCE.

This publication contains information protected by copyright. Except for internal distribution, no part of this publication may be photocopied or reproduced in any form without prior written consent from Citrix. The exclusive warranty for any Citrix products discussed in this publication, if any, is stated in the product documentation accompanying such products. Citrix does not warrant products other than its own. Product names mentioned herein may be trademarks and/or registered trademarks of their respective companies. © 2000-2003 Citrix Systems, Inc. All rights reserved.



**About Citrix:** Citrix Systems, Inc. (Nasdaq:CTXS) is the global leader in access infrastructure solutions and the most trusted name in secure access for enterprises and individuals. Nearly 50 million people in more than 120,000 organizations around the world use Citrix every day. Citrix software gives people secure and well-managed access to business information wherever it lives on demand. Citrix customers include 100% of the *Fortune* 100 companies, 99% of the *Fortune* 500, and 92% of the *Fortune* Global 500. Based in Fort Lauderdale, Florida, Citrix has offices in 22 countries, and more than 7,000 channel and alliance partners in more than 100 countries. For more information visit [www.citrix.com](http://www.citrix.com).

## Citrix Worldwide

### WORLDWIDE HEADQUARTERS

#### **Citrix Systems, Inc.**

851 West Cypress Creek Road  
Fort Lauderdale, FL 33309 USA  
Tel: +1 (800) 393 1888  
Tel: +1 (954) 267 3000

### EUROPEAN HEADQUARTERS

#### **Citrix Systems International GmbH**

Rheinweg 9  
8200 Schaffhausen  
Switzerland  
Tel: +41 (52) 635 7700

### ASIA PACIFIC HEADQUARTERS

#### **Citrix Systems Hong Kong Ltd.**

Suite 3201, 32nd Floor  
One International Finance Centre  
1 Harbour View Street  
Central  
Hong Kong  
Tel: +852 2100 5000

### CITRIX ONLINE DIVISION

5385 Hollister Avenue  
Santa Barbara, CA 93111  
Tel: +1 (805) 690 6400

**[www.citrix.com](http://www.citrix.com)**