KEYS TO ACCELERATING WEB APPLICATION DELIVERY
# TABLE OF CONTENTS

<table>
<thead>
<tr>
<th>Section</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Government Applications Are Essential</td>
<td>2</td>
</tr>
<tr>
<td>Treat The Symptoms or Solve The Problem?</td>
<td>3</td>
</tr>
<tr>
<td>Application Delivery as a Strategy</td>
<td>4</td>
</tr>
<tr>
<td>Citrix NetScaler: A Unified Solution</td>
<td>5</td>
</tr>
<tr>
<td>SAP Web-Based Applications</td>
<td>6</td>
</tr>
<tr>
<td>Oracle Siebel CRM Web-Based Applications</td>
<td>9</td>
</tr>
<tr>
<td>Oracle E-Business Applications</td>
<td>11</td>
</tr>
<tr>
<td>Microsoft Outlook Web Access</td>
<td>13</td>
</tr>
<tr>
<td>Microsoft SharePoint Portal Server</td>
<td>15</td>
</tr>
<tr>
<td>NetScaler Technology: The Fast Facts</td>
<td>17</td>
</tr>
<tr>
<td>Conclusion: Why Your Business Needs Citrix NetScaler</td>
<td>20</td>
</tr>
</tbody>
</table>
GOVERNMENT APPLICATIONS ARE ESSENTIAL

No one has to remind you about the importance of your organization’s applications. Inventory, HR, procurement, accounting: the applications that handle these critical functions are a foundation of operations. Employees and telecommuters regardless of location require unimpeded “LAN-like” access. Constituents expect top-notch performance. And all parties need to know that the data being transmitted is safe from harm. From SAP and Siebel to Oracle and Microsoft, any shortcomings in the usability, availability, or security of these vital resources put a crimp in productivity—and usability.

Unfortunately, ensuring the delivery of applications is only getting harder. Data center consolidation puts distance between application servers and application users—which makes for longer round-trips and greater response times. Constituents and remote workers accessing applications via high-latency WAN links experience lengthy delays. Simultaneous requests from expanding user bases strain server resources and slow response times for everyone, while security gaps put applications at risk of being brought down altogether. Your business simply can’t afford to let these issues go unaddressed.
TREAT THE SYMPTOMS OR SOLVE THE PROBLEM?

Slowdowns, scalability issues and security gaps: organizations could treat each of these application issues individually by deploying single-function point products like load balancers or caching appliances. But that adds network complexity and administrative expense, and it may not lead to better application performance. To solve this dilemma, IT needs to take a comprehensive approach—one that unifies the various functions typically handled by single-purpose products.
APPLICATION DELIVERY AS A STRATEGY

It’s time to think about application delivery as an overall strategy—not as a tactical reaction to individual problems as they crop up. A successful strategy for Web enhancing application delivery can be built on these three key components:

- Application acceleration: ensure faster application response times by employing TCP optimization, application compression, content caching, TCP buffering, and other technologies.

- Application availability: ensure reliable access to applications with techniques like Layer 4 load balancing, Layer 7 content switching, global server load balancing, and cache redirection.

- Application protection: guard against theft and leakage of sensitive corporate and customer information. Utilizing firewalls at the application layer can help prevent such losses.

By deploying a single-platform system that addresses all of these components—even as it helps maximize IT resources like Web and application servers—your organization can successfully implement a comprehensive application delivery strategy.
CITRIX NETSCALER: A UNIFIED SOLUTION

Citrix® NetScaler® Application Delivery systems ensure the performance and availability of Web applications while optimizing network resources and securing data center assets. NetScaler combines multiple functions in a single platform, which helps enterprises reduce network complexity and operational costs.

Such applications cover all facets of your organization’s operations. Some of the leading government applications in use today include SAP, Oracle Siebel CRM, Oracle E-Business, Microsoft Outlook Web Access, and Microsoft SharePoint Portal Server. In fact, Citrix collaborates with each of these vendors in continuously testing NetScaler to make sure it optimizes the user experience.

The following outlines how NetScaler solves the application delivery problems facing today’s vital business software solutions.
SAP WEB-BASED APPLICATIONS

Overview: The SAP Business Suite from SAP AG comprises a comprehensive set of CRM, ERP, supply-chain management, and supplier-relationship management applications built on a Web-enabled architecture that enables collaborative use over the Internet.

Challenges: Data center consolidation, far-flung users, and the security concerns that come from running vital applications on public networks present challenges for companies relying on SAP to link employees, lines of business, and suppliers.

Because enterprises running SAP often have users located all over the world, latency and the resulting delayed responses needs to be addressed. Similarly, chatty network protocols can impose additional transmission delays. Enterprises also have to ensure server availability for all application users, which means redirecting requests to the resources best able to handle them.

There’s also security to consider: Anything traveling over the public network is at risk of compromise, and business application data is no different. Application vulnerabilities can also put an organization’s systems at risk.
Finally, enterprises running SAP need clear visibility into application performance; it’s essential for determining the source of current problems and for anticipating any future application delivery bottlenecks.

**How NetScaler Helps:** NetScaler enhances the delivery of SAP applications for employees, partners, suppliers, and telecommuters around the world. In fact, it’s been demonstrated at SAP testing facilities to improve SAP application response by up to five times.

What makes that possible? Advanced WAN-side TCP optimization, as well as data compression and data caching techniques that keep application traffic moving. What’s more, NetScaler ensures the availability of SAP Business Suite applications, thanks to Layer 4-7 load balancing that directs application requests to the servers best able to handle them. And with its server offload and application caching capabilities, NetScaler also helps companies maximize SAP server resources, which leads to greater scalability and reduced operational expense. Server CPU utilization was further shown to drop over 60 percent.
On the security front, NetScaler employs firewalls, DoS/DDoS defense, and content filtering at the application layer. That helps safeguard both applications and systems from the application-layer attacks that network firewalls typically can’t stop. Finally, NetScaler provides extensive, transaction-level visibility into application performance, so that enterprises running SAP can monitor performance proactively—without impacting users in any way.
ORACLE SIEBEL CRM WEB-BASED APPLICATIONS

Overview: Oracle’s Siebel CRM Suite comprises a number of customer relationship applications that demand tight integration, extensive scalability, and unquestioned performance for all employees and customers—no matter where they’re located.

Challenges: With a Web-based architecture, Oracle’s Siebel CRM is designed for use in collaboration over the Internet. This theoretically allows anyone, anywhere with a Web browser to use Siebel. But it also presents enterprises with a number of challenges.

Latency issues faced by any organization delivering business applications to a global workforce lead to slower response times and reduced productivity. Application availability is also a concern, as are delays that can be traced to inefficient protocols. Siebel customers must also confront the security issues that arise when running a vital Web-based business application.

How NetScaler Helps: NetScaler addresses the challenges faced by enterprises running Oracle’s Siebel CRM Suite. Start with latency reduction: NetScaler’s data compression capabilities have been shown to reduce
latency for Siebel by as much as 300 percent, which translates into quicker application response times.

Siebel application availability is never in question, since NetScaler implements Layer 4-7 load balancing to automatically route client requests to proper back-end application, database, or Web servers. And by offloading the most processing-intensive tasks from those servers, NetScaler extends their scalability.

Full protection from Layer 7 exploits comes courtesy of an application firewall, advanced content filtering, and DoS/DDoS defense. “Day-zero” attacks are recognized and blocked automatically.
ORACLE E-BUSINESS APPLICATIONS

Overview: Oracle’s E-Business Suite is a complete offering of enterprise applications covering a wide array of business needs, including procurement, manufacturing, finance, marketing, and sales.

Challenges: Many users of Oracle’s E-Business Suite are Fortune 1000 organizations with locations and data centers around the world. Consequently, end-users require the same levels of high performance and availability—no matter where they’re located.

But distance results in latency—and the potential for unacceptable response times which, in turn, can cut productivity. If requests can’t be directed to the closest servers or the servers that can handle them best, application availability is put at risk.

Enterprises running Oracle E-Business also have to be on guard against application-layer attacks. And as with other critical applications, proactive monitoring of performance is critical.

How NetScaler Helps: NetScaler’s integrated approach to enhancing application delivery ensures that employees, partners and suppliers around the world
all experience maximum performance, availability, and security of their Oracle E-Business applications.

NetScaler’s compression, data caching, and TCP optimization have been shown to improve response of Oracle E-Business applications by up to five times. NetScaler also makes use of a variety of load balancing, content switching, and session persistence methods to make sure that application requests are handled as efficiently as possible—thus enhancing application availability for users on a global basis.

Further, NetScaler’s full proxy architecture allows it to offload the processing burdens from Oracle E-Business application servers—dramatically extending both their scalability and lifecycle. And while network firewalls are generally powerless against the application-layer threats that can pose a danger for Oracle E-Business Suite, NetScaler stops them cold, thanks to advanced content filtering and Layer 7 firewall.

NetScaler also comes with management functions that allow enterprises to track and report on a variety of performance parameters and compare them against historical trends. This enables intelligent capacity planning.
MICROSOFT OUTLOOK WEB ACCESS

Overview: Microsoft Outlook Web Access (OWA) is a popular part of Microsoft Exchange that enables Web-based access to e-mail, calendar, database, voice, and fax resources.

Challenges: Web-based applications like OWA demand a comprehensive approach to application delivery in order to meet availability, scalability, performance, and security requirements.

Using HTTP to handle voice mail and other dense content served by OWA results in numerous round trips, slowing application response times and reducing productivity. Further, many operating systems can’t scale to handle the numerous, short-lived requests and responses associated with OWA. SSL-encrypted access also presents problems, since it’s a resource-intensive task and can lead to server farm expansion and higher operational expense.

Meanwhile, Web-based access to Exchange via OWA poses inherent risks to Web servers and enterprise data—a situation no organization can afford to ignore.

How NetScaler Helps: When an enterprise deploys OWA in conjunction with NetScaler, they gain all the advantages of a
comprehensive application delivery strategy.

For starters, HTTP compression reduces the number of round trips, while TCP optimization furthers cuts wait time—resulting in greater productivity. In addition, TCP connection offload and TCP buffering dramatically reduce the load on OWA servers, helping companies eliminate server sprawl; in fact, one NetScaler customer has cut the projected number of servers for 10,000 OWA users by 80 percent.

NetScaler’s dedicated SSL offload, meanwhile, keeps encryption and decryption cycles from overwhelming servers, and content caching frees OWA servers from having to regenerate content—helping companies reduce sprawl and cut capital and operating costs. Finally, NetScaler’s integrated application security protects OWA from application-specific exploits and DoS/DDoS attacks.
MICROSOFT SHAREPOINT PORTAL SERVER

Overview: Microsoft SharePoint, accessed by users via a Web browser, is emerging as the information portal of choice in the enterprise.

Challenges: SharePoint demands a comprehensive application delivery strategy to help fulfill availability, scalability, performance, and security requirements for an increasingly globalized workforce. But it also presents a number of challenges.

For example, the high number of round trips required for handling dense content can cause application response times to suffer and lead to lower productivity. Numerous and short-lived Web content connections may result in server sprawl in the data center.

Additionally, SSL-encrypted access to SharePoint is resource-intensive, potentially leading to server farm expansion and higher operational costs. Also, Web-based access to SharePoint may expose servers and Web-based applications to attack.

How NetScaler Helps: Using NetScaler with SharePoint allows organizations to put a comprehensive application delivery strategy in place.
NetScaler’s HTTP compression and content caching capabilities improve SharePoint application response times and boost productivity; in fact, cooperative testing with Microsoft demonstrated 100 percent gains in application performance.

TCP and SSL offload, along with TCP WAN optimization, reduce the burden on SharePoint servers and help companies cut back on deployment and administrative costs. Some customers have noted 150:1 ratios of client-to-server connections with NetScaler in place. NetScaler Application Firewall protects against application-layer attacks and largely mitigates the risk to applications and data.
NetScaler addresses the biggest challenges affecting the applications enterprises rely on. What’s behind this demonstrated level of success? Citrix NetScaler technology that Gartner Research regards as visionary. Here are the specifics on how NetScaler helps companies enhance application delivery.

Optimization

- TCP Optimization: Reduces the number of client connections each application server needs to handle, which means those servers can accommodate more users. That improves application performance and even helps companies maximize the hardware investment.

- AppCompress for HTTP: Provides advanced HTTP compression to speed delivery of Web-based application data to all users; it also offloads computing-intensive compression from Web servers.

- Content Caching: Allows static and dynamic application content to be served directly from NetScaler instead of the server, reducing the latency associated with content re-creation and improving application performance.
Switching

- Load Balancing: Ensures even traffic distribution regardless of individual user demands.

- Layer 7 Switching: Provides content-based traffic distribution so that administrators can ensure specific resources handle specific types of content—for example, XML servers can be tuned to deliver only XML content.

- Global Server Load Balancing: Provides geographic and network proximity-based content distribution so that remote users can be transparently switched to the server best able to respond, or to content localized for their specific geographic region.

- Cache Redirection: Provides integration with existing cache systems by forwarding application content to preconfigured caches.
Security

- Web Application Firewall: Blocks Layer 7 attacks without the need for signatures or IT administrator efforts.

- DoS/DDoS Protection: Provides application infrastructures with complete protection from denial-of-service attacks, by going beyond the SYN cookie technologies used by other vendors.

- SSL (Secure Sockets Layer) Encryption: Allows application content to be encrypted on the fly, maximizing application throughput by offloading demanding encryption chores from application servers.

- Access Gateway Enterprise Edition: Provides comprehensive, secure remote access without the need for additional remote client software.
CONCLUSION: WHY YOUR BUSINESS NEEDS CITRIX NETSCALER

Simply treating the symptoms is no way to address the challenges confronting your mission critical applications. What’s needed is a comprehensive strategy for enhancing and ensuring application delivery.

Citrix NetScaler Application Delivery systems feature a range of functions that work in unison at wire speed in a single platform—to boost application response times, ensure application availability, improve application infrastructure scalability, and safeguard applications against security threats. It’s the first solution bridging the gap between network infrastructure and applications, enabling enterprises to enhance delivery of vital business applications for maximum productivity and profitability.

And it helps explain why Citrix is the global leader in application delivery infrastructure—serving 100 percent of federal agencies, Fortune 100 companies and 98 percent of the Fortune Global 500, as well as hundreds of thousands of small businesses and individuals in more than 100 countries.
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 FEDERAL DIVISION

7735 Old Georgetown Road
Suite 200
Bethesda, MD 20814 USA
Tel: +1 (301) 280 0800