DOCULABS

Executive Brief:

Performance Validation of Citrix® MetaFrame® Access Suite

CITRIX®

Executive Summary

Organizations struggle to provide safe, secure access to information and business applications to their staff, partners, and the market. While a wide variety of access technologies are available, ranging from host access ("green screen") to web applications delivered through a browser, most of these technologies place a high burden on the end user. Most, for instance, require that end users learn the vagaries of each application, as well as different passwords for different applications because of the lack of synchronization between applications. The result, from the organization's standpoint, is higher support and management costs, as well lower user satisfaction.

Citrix has long focused on solving the application access problem. The company has now introduced its most comprehensive offering to date, Citrix MetaFrame Access Suite. The product provides a comprehensive suite of access solutions, including:

- MetaFrame Presentation Server for Windows®
- MetaFrame Presentation Server for UNIX®
- MetaFrame Conferencing Manager
- MetaFrame Password Manager
- MetaFrame Secure Access Manager

The combination of technologies allows users to access their applications in a secure manner from anywhere, using almost any device. It frees users from the need to remember multiple passwords and guarantees high server availability irrespective of a user's physical location.

Citrix recently conducted a series of performance tests of the MetaFrame Access Suite, and commissioned Doculabs, an independent consulting and research firm, to conduct an independent validation of the tests. This report presents Doculabs' findings.

Overall, Doculabs found the MetaFrame Access Suite to be a comprehensive and effective suite whose components will work well together in large complex environments. The product offers a combination of high scalability, security, and reliability – capabilities that will dramatically improve the value that customers can derive from Citrix MetaFrame-based solutions.

Test Approach, Methodology, and Environment

Doculabs visited Citrix's test facility to review the test methodology and environment, witness the testing, review the results, and provide commentary about how the test results compared with results from testing of previous versions of the product. The goals were to demonstrate that:

- The Citrix MetaFrame server farm could scale to more than 1,000 servers in an effective manner.
- A variety of complex enterprise applications could be run effectively in the environment (including productivity applications such as Microsoft Office 2003, collaborative applications, and on-demand video).
- The environment was manageable, secure, and reliable.
- Internal users, extranet partners, and other external parties could access information and applications effectively and securely.

The test environment was set up to simulate a large, complex enterprise deployment with two data centers that handled traffic in different geographic regions (U.S. east and west coasts). More than 1,000 MetaFrame Access Suite servers were installed and 1,000 clients, running a total of 10,000 sessions, were used to simulate usage of the environment. Citrix developed custom test scripts to exercise the server farm with a variety of client interactions. The administration tool was used to configure Zone Preference and Failover to set session affinity between clients and one of the two zones in the farm by filtering the connections based on the client's network ID.

Doculabs audited the test clients by viewing the real-time interactions on a series of client interaction monitors. Doculabs reviewed factors such as CPU and memory utilization, bandwidth usage, and other characteristics of the MetaFrame Access Suite components running in the test environment.

The following table lists the components of the test environment.

Components of the Citrix MetaFrame Access Suite Test Environment

Component	Details
MetaFrame Presentation Server	▪ Data Store ▪ Data Collector ▪ XML Relay Server ▪ Farm Metric Server ▪ Summary Database Server ▪ Database Connection Server ▪ License Server ▪ Hardware and Operating System: IBM XSeries 335, Dual Xeon 2.4GHz, 1GB RAM, Windows 2000 SP4
Secure Gateway 2.0 for MetaFrame	▪ Web Interface for MetaFrame Server ▪ Secure Ticket Authority Server ▪ Secure Gateway Gateway Server ▪ Secure Gateway Proxy Server ▪ MetaFrame Password Manager ▪ Hardware and Operating System: ▪ Dell PowerEdge 1655MC Blade Server, Dual Pentium 3 1.266GHz, 2GB RAM, Windows 2000 SP4
MetaFrame Secure Access Manager	▪ State Server ▪ Agent Server ▪ Web Server ▪ Hardware and Operating System: Compaq DL360, Single Xeon 2.8GHz, 1GB RAM, Windows 2000 SP4
MetaFrame Conferencing Manager	▪ Hardware and Operating System: IBM XSeries 335, Dual Xeon 2.4GHz, 1GB RAM, Windows 2000 SP4
Network Connections	▪ All connections were 100 Mbps to the concentration switches, which had 1 GBPS uplinks ▪ Each set of switches went into a Shunra Storm WAN emulator using a 100 Mbps connection (thus maximum bandwidth limited to 100 Mbps)

Doculabs' Findings and Conclusions

CPU and memory utilization in each server in the farm was minimal, ranging from 1 to 20 percent CPU utilization, and memory utilization rarely exceeded 1GB on some systems and 200MB on most systems. The results clearly show that even with the modest hardware on hand, the solution provided plenty of room to grow. Likewise, Doculabs found that no more than 30 percent of total bandwidth was consumed over the WAN connection (which was only 100Mbps) – a finding that bodes well for large distributed environments with limited bandwidth between sites.

The environment ran as promised, with no apparent problems or errors in any part of the system. The two virtual data centers were effectively separated, and session affinity was maintained between the clients and their designated primary zones.

Doculabs believes that the test environment accurately depicted a real, enterprise-class application environment, such as those found in corporate data centers worldwide. The simulation of two zones provided a way to simulate high availability and location-based performance improvement techniques. The goals that were originally set forth were achieved:

- The Citrix MetaFrame server farm scaled to 1,006 servers and ran reliably and securely with the client traffic of the test scenario.
- Bandwidth, CPU, and memory utilization numbers showed very large room for growth of client requests. Results indicated that the environment could serve an extremely large number of real users; based on customer implementation experience, Doculabs estimates that the test environment could handle 75,000 to 150,000 users.
- The environment was manageable, secure, and reliable. Management was straightforward, and even advanced functionality (such as session affinity) was easy to configure and manage.
- The MetaFrame Access Suite effectively handled all users, including internal users, external partners or customers, and general access users.

Overall, Doculabs believes that Citrix MetaFrame Access Suite provides a comprehensive, end-to-end access solution – an easy and straightforward way for organizations to manage a large number of servers. Compared to previous releases, Citrix has now put together its most comprehensive and effective suite that works well in large complex environments. Organizations that are apprehensive about scaling their server farms to thousands of servers in a distributed environment can rest assured that Citrix is up to the task.

In the final analysis, Citrix offers a truly comprehensive suite of products – products that work in unison, even in large and complex environments. Organizations that may have been waiting for a more scalable, high-availability, performance-minded product should most certainly consider the new Citrix MetaFrame Access Suite.

About Doculabs

DOCULABS

120 South LaSalle Street
Suite 2300
Chicago, IL 60603
(312) 433-7793
www.doculabs.com

E-mail Doculabs at:
info@doculabs.com

Doculabs, Inc., is a technology consulting firm backed by research and extensive client experience. Our services lower the business risk of technology decisions through client-specific recommendations, objective analysis, and in-depth research. Founded in 1993, Chicago-based Doculabs provides consulting services that are based on our fundamental belief that in order to protect a client's long-term interest, technology advisors should not be implementers.

Doculabs helps clients deliver on their business objectives through customized services that address technology initiatives related to business challenges in areas such as strategy development, technology acquisition, and go-to-market initiatives. Doculabs' consulting services are completely objective because the firm does not sell software or integration services. For over 10 years, our research methodology has provided customers facing mission-critical challenges with the information and advice they need to make confident and well informed decisions.

Hundreds of leading organizations within the Fortune 1000 – from financial services companies to major technology software providers – have turned to Doculabs for assistance with their technology strategies.

For more information about Doculabs, visit the web site at www.doculabs.com or call (312) 433-7793.