

Citrix® NetScaler® Solutions for Hyperion®

Application Overview

Hyperion Solutions Corporation is the global leader in Business Performance Management (BPM) software and offers a comprehensive set of modular BPM solutions in one system—Hyperion® System™ 9. Hyperion solutions can help organizations drive performance improvements by better aligning goals with metrics, increasing operational efficiency and enabling companies to be more comfortable with the integrity of their numbers.

BENEFITS TO DEPLOYING HYPERION WITH CITRIX NETSCALER

Hyperion and Citrix collaborate continually on testing Citrix NetScaler with web-enabled Hyperion applications to deliver the benefits of a comprehensive application delivery strategy:

- WAN-based users of Hyperion applications can experience up to a five times improvement in productivity with Citrix NetScaler features such as HTTP compression provided by Citrix AppCompress.™
- Users of Hyperion BI+ Financial Reporting can experience up to a 32 times improvement in productivity with Citrix AppCache.™
- Deployment and administration of Hyperion applications can be faster and less expensive with Citrix NetScaler offload technologies such as TCP and SSL offload and TCP WAN optimizations.
- The potential for data loss can be largely mitigated with Citrix Application Firewall.™

WEB APPLICATION DELIVERY CHALLENGES

Enterprise-class applications such as Hyperion's demand a carefully considered Application Delivery strategy. A good strategy helps to ensure that the application will fulfill availability, scalability, performance, and security goals while delivering applications to increasingly global work forces. Web-based applications challenge some of those goals:

- Web content connections can be short lived and large in number. This can cause data center server sprawl, since most operating systems don't scale well with a large number of short-lived TCP connections.
- Web-based applications enable higher security with SSL encryption, which can drive additional server farm expansion and higher operational expenses.
- Rich media and dense text content such as JavaScript can demand many round-trips across a global enterprise network, potentially compromising application response time for remote users.
- The increasing trend of the perforated enterprise security perimeter may expose web servers and web-based applications to unknown attacks.

CITRIX NETSCALER SOLUTIONS FOR HYPERION USERS AND ADMINISTRATORS

Enterprise Web Applications such as Hyperion's suite of business intelligence applications delivered to a globally distributed workforce can be enhanced by Citrix NetScaler technology.

The following Hyperion Applications are web-enabled:

- Hyperion BI+ Financial Reporting, BI+ Web Analysis, and BI Workspace
- Hyperion BPM Architect
- Hyperion Financial Data Quality Management
- Hyperion Financial Management
- Hyperion MDM
- Hyperion Planning

For the very best-written enterprise applications, Citrix NetScaler can:

- Increase the productivity of users of the application, by overcoming WAN bandwidth delays with HTTP compression and TCP optimizations, and bypassing content-generation steps on the servers by serving cached content.
- Enhance the overall availability of the application with comprehensive load-balancing and content switching of redundant servers, including server health checking which can proactively remove a failing server from the available pool.
- Dramatically enhance the scalability of the application infrastructure with TCP and SSL offload, and caching for both static and dynamic content.
- Protect web servers, web applications, and the enterprise-critical data behind them, from known and unknown attacks.

INCREASING USER PRODUCTIVITY BY LOWERING APPLICATION RESPONSE TIME

When your enterprise depends on line-of-business and other critical web-based applications such as Hyperion Financial Management, Hyperion BI+ Financial Reporting and Hyperion Planning, application user productivity must take the highest priority. Citrix NetScaler technologies can enhance productivity as follows:

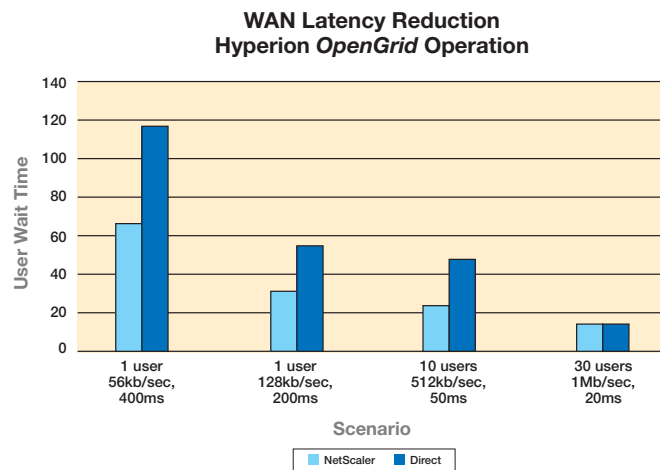
Content Delivery Enhancements with Citrix AppCache.™ Citrix AppCache provides static and dynamic content caching. Testing with Hyperion BI+ Financial Reporting indicated a 32 times improvement in response time for reports with cached content, offering the potential for a significant increase in productivity.

HTTP Compression with Citrix AppCompress.™ Citrix AppCompress compresses HTML content such as HTML text, XML, and JavaScript that is typically neither stored compressed nor compressed by the web or application servers. Decompression is provided in every web browser, offering ubiquitous support for Citrix AppCompress. Compression reduces the total number of data round trips, which is the biggest contributor to the latency. Testing with Hyperion Financial Management demonstrated up to 80% reduction (from 50sec to 10sec) in latency for simulated WAN users on individual links.

The compression and TCP optimizations provided by Citrix NetScaler tend to benefit remote users suffering from one or both of the following:

- Congested links that occur when many users are sharing a low-speed link. Congested links induce queuing delays, which contribute to latency, and congestion may be relieved by increasing link speed, which can be expensive, or using Citrix NetScaler to compress the data, reducing contention for the link.
- Distance-induced bandwidth delays, which can occur on any link speed based on time-on-the-wire and latency in intermediate devices. Compression and TCP optimizations provided by Citrix NetScaler can reduce the number of round-trips required to complete a transaction, in effect reducing latency.

The following graph illustrates the trend of benefits provided by Citrix NetScaler for a specific Hyperion activity performed over different conditions.



While the benefit in the 1Mb/sec, 20ms case is small, a 1Mb/sec link with more link latency might demonstrate a more significant benefit.

Another test with Hyperion SmartView simulated a branch office with a higher-speed, shared link. The simulation resulted in an 80% reduction in latency and a 75% reduction in bandwidth consumption, demonstrating that in a real-world situation, more users would experience better performance without a need to increase branch-office bandwidth links.

Latency Reduction with TCP Optimizations. Citrix NetScaler TCP optimizations can also increase user productivity by lowering wait times with TCP connection keep-alive, TCP window scaling, and TCP selective ACK. Citrix NetScaler delivers a combination of TCP optimizations that is specifically designed to maximize Web Application efficiency.

Assuring Productivity. Citrix EdgeSight™ for NetScaler offers proactive reporting of web application response time and performance, enabling IT managers to spot application delivery problems before the help desk calls come in.

ENHANCING WEB APPLICATION AVAILABILITY

Load Balancing. Redundancy enhances application availability. Enterprise web-based applications such as Hyperion BI+ Financial Reporting often depend on redundant web servers. Citrix NetScaler load balancing ensures that each web server gets the right share of the application load, and offer the industry's widest range of load balancing algorithms. An example is using SNMP to monitor a server for load and use the server's responses to tune the load balancing algorithm. Fully engineered, SNMP monitors for load balancing are in contrast to other products in the industry that require complex user-based programming mechanisms to deliver advanced load-balancing mechanisms.

Load-balanced servers and applications may be grouped by servers, services, or service groups. Service groups allow different classes of Hyperion applications to be identified with a specific server or servers, and treated as a logical entity by the Citrix NetScaler System. This allows different applications to be separately maintained, ensuring that users of applications not facing maintenance can continue to work.

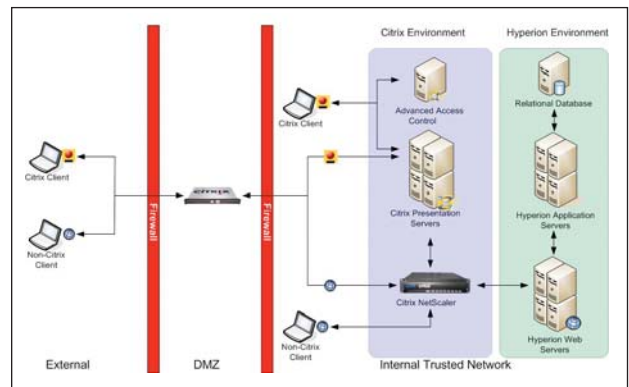
Advanced Traffic Management. The ultimate in intelligent traffic management enables an administrator to direct traffic to an appropriate server based on any combination of content in a request,

whether in a header or payload. Citrix NetScaler offers the ability to switch or rewrite requests and rewrite responses on both header and payload data to enable highly granular traffic management.

Server Health Checking. Availability increases with Citrix NetScaler server health checking. Proactive assessment of any server's health is provided with the industry's widest range of health-check mechanisms, including customized (for example, with Extended Content Verification (ECV) facilities) and script-based checks. All health-check mechanisms are easy to use with the Citrix AppExpert™ policy framework builder. Hyperion application availability is enhanced as failing servers are removed from the load balancing pool if a health check fails, before users experience failed service.

Session Persistence. Citrix NetScaler load balancing includes the most flexible session persistence mechanisms available. Session persistence features in Citrix NetScaler ensure that a user of a Hyperion Application remains bound to the correct server for the duration of a data-set analysis session, subject to the application's session management features. Other industry solutions require administrators to write complex scripts to be fed to the traffic management system. In contrast, the Citrix AppExpert policy builder allows for granular session persistence policies on a per-application, per server, per service, or service group basis.

Hyperion and Citrix Application Delivery Infrastructure Integration



ENHANCING WEB INFRASTRUCTURE SCALABILITY

Even well designed web applications can present a heavy load on mainstream operating systems due to the potential, based on the HTTP protocol, for rapid-fire TCP processing. Deployment of enterprise-critical applications like Hyperion Financial Management

demands a solution to problems posed by HTTP. Citrix NetScaler includes the following features that dramatically reduce load on web and application servers:

Full Proxy Architecture with TCP Offload. Citrix NetScaler's full proxy architecture provides full processing for all traffic streams without any performance degradation, standing in stark contrast to alternative architectures that only provide full proxy processing with a significant performance penalty. The overarching benefits of the full proxy architecture are:

- Independent client- and server-side TCP session processing with full TCP offload, to be described below.
- TCP buffering mechanisms. LAN and WAN clients communicate at lower speeds than servers. Servers can hand off large amounts of data to Citrix NetScaler, which buffers and feeds the data at lower speeds and packet sizes to clients. This reduces hundreds or thousands of transactions by one or more orders of magnitude.
- Full TCP connection offload. Citrix NetScaler maintains a small number of long-lived server-side TCP connections, that remove from the server the arduous task of establishing, tracking, timing, closing, and sometimes abandoning, thousand of TCP connections. On the client side, Citrix NetScaler handles all of the TCP connection management for up to five million concurrent connections.

Hardware-based SSL Offload. All Citrix NetScaler hardware platforms include dedicated SSL hardware enabling full offload for encrypted HTTP sessions for all sensitive data carried by web-based applications. Financial and Planning applications like Hyperion's contain data that should be seen only by authorized users and remain encrypted while on the wire. Citrix NetScaler prevents costly encryption and decryption cycles from overwhelming servers, saving both capital and expense costs.

Content Caching. Citrix NetScaler systems offload from web servers the potentially time-consuming task of content generation for frequently-requested objects with Citrix AppCache.™ When servers don't have to regenerate content, they can serve more data to more users as the enterprise grows, reducing the potential for server sprawl.

Many solutions provide only static content caching. Citrix has verified for the Hyperion BI+ Financial Reporting and Hyperion Planning applications that Citrix AppCache support for dynamic content caching can dramatically expand the pool of cache-able objects, offloading servers, without any risk of serving stale content or incorrect report content. Citrix AppCache combined with Citrix AppExpert Visual Policy Builder permits easy configuration of both static and dynamic content caching policies.



About Citrix NetScaler: Citrix Systems Inc. is the global leader and the most trusted name in Application Delivery Infrastructure. Citrix NetScaler optimizes the delivery of web applications—improving performance up to 5x, increasing security, and potentially doubling web server capacity at half the cost—ensuring the best total cost of ownership (TCO), security, availability, and performance for web applications. Citrix NetScaler combines high-speed load balancing and content switching with state-of-the-art application acceleration, layer 4-7 traffic management, data compression, static and dynamic content caching, SSL acceleration, network optimizations, and robust application security into a single, tightly integrated solution. Citrix NetScaler significantly reduces processing overhead on application and database servers, reducing hardware and bandwidth costs.

About Hyperion Systems: (Courtesy Hyperion Solutions Corporation) Hyperion Solutions Corporation is the global leader in Business Performance Management software. Hyperion enables users to collect, organize and analyze data—then distribute it throughout the enterprise using a rich, unified workspace that makes business performance management easier and more powerful than ever before. A wide range of Hyperion Solutions' products are enabled for web-based presentation and manipulation of data.

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