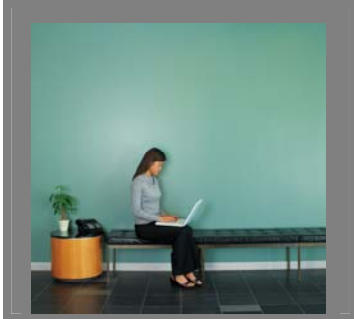




Cisco WAN Optimization Solution for Oracle Applications

Optimize Application Performance and Minimize WAN Bandwidth Utilization with the Cisco Wide Area Application Services Solution

HIGHLIGHTS

Business Benefits

- Optimize end user application performance, acceptance and productivity for Oracle applications
- Minimize WAN bandwidth utilization and reduce total cost of ownership

Why Cisco?

- Complete integrated network architecture: application and Ethernet switching, security, WAN optimization, and network management
- Market-leading products: Cisco Wide Area Application Engine (WAE) Appliance and Wide Area Application Services (WAAS) Software
- Global lifecycle services leader: certified by J.D. Power and Associates Certified Technology Service and Support Program



Overview

The Cisco® WAN Optimization Solution for Oracle Applications, a Cisco and Oracle jointly tested and validated solution, optimizes the application performance and minimizes the WAN bandwidth utilization of Oracle E-Business Suite and Fusion Middleware application deployments through the use of Cisco WAN optimization network technologies.

Including the Cisco Wide Area Application Engine (WAE) Appliances and Wide Area Application Services (WAAS) Software deployed symmetrically at the front end of the data center and in the remote-office branch, the solution improves user productivity and increases adoption of Oracle applications by providing LAN-like performance over the WAN.

Part of the Cisco Solutions for Oracle Deployments (Figure 1), a comprehensive network architecture to optimize Oracle implementations, this solution is complementary to two others:

- Cisco Data Center Solution for Oracle Applications: Optimizes Oracle application availability, performance, security, and cost; includes Cisco ACE Application Control Engine Module, Cisco Catalyst® 6500 Series Switches, and Cisco Catalyst 6500 Series Firewall Services Module
- Cisco Data Center Solution for Oracle Databases: Optimizes Oracle database deployments and includes Cisco MDS 9000 Series Multilayer Switches and Cisco SFS 7000 Series InfiniBand Server Switches

This comprehensive network architecture can also be applied to Siebel CRM, PeopleSoft, and JD Edwards applications with similar benefits.

The Challenge

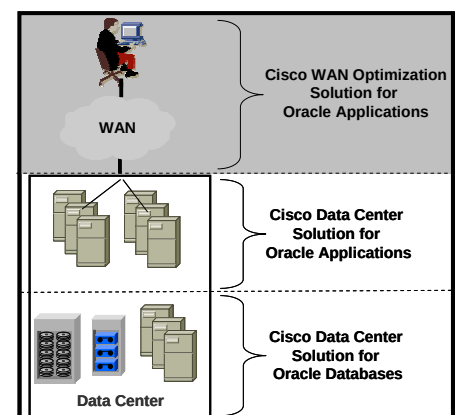
New business and IT trends have dramatically changed the way enterprise applications are deployed. Although new deployments can increase productivity and automate business processes, they place more stress on the WAN than ever before because of two factors: longer WAN links and inefficient Internet standards.

Longer WAN links:

Globalization through acquisitions, off-shoring, and hiring based on skills rather than location has spread the workforce across the world to serve new markets. At the same time, to reduce IT costs and complexity resulting from the proliferation of regional systems, companies are centralizing application and data center implementations.

The result of this combination of globalization and centralization is that the average distance from the end user to the application server is increasing.

Figure 1: Cisco Solutions for Oracle Deployments



Inefficient Internet standards:

Meanwhile, new applications deployments that use the Web browser as the client and use Internet standard protocols such as HTTP, Extensible Markup Language (XML), and Simple Object Access Protocol (SOAP) benefit from increased usability and decreased complexity. However, the inefficiencies of such protocols from rapidly growing user-to-server and server-to-server communications result in slower application performance to remote employees.

Given these two factors, maintaining acceptable end-user performance over long WAN links is a significant challenge for enterprise applications such as Oracle E-Business Suite and threatens corporate productivity and application adoption.

To address this challenge, Cisco and Oracle have partnered to provide the Cisco WAN Optimization Solution for Oracle Applications, a validated network architecture for optimizing Oracle applications for performance and bandwidth utilization across the WAN.

Business Benefits

The Cisco WAN Optimization Solution for Oracle Applications provides the following benefits to Oracle customers through best-in-class network technologies:

LAN-like Oracle application performance across slow WAN links

- ✓ Up to 170 percent faster application performance for Oracle E-Business Suite transactions over typical *intercontinental* WAN links (for example, Chicago to Singapore, Dallas to Sao Paulo, or Milan to Bangalore)

- ✓ Up to 134 percent faster application performance for Oracle E-Business Suite transactions over typical *intracontinental* WAN links (for example, San Jose to Atlanta, London to Vienna, or Beijing to Hong Kong)

WAN bandwidth usage reduced without changes to client, server, management tools, or security infrastructure

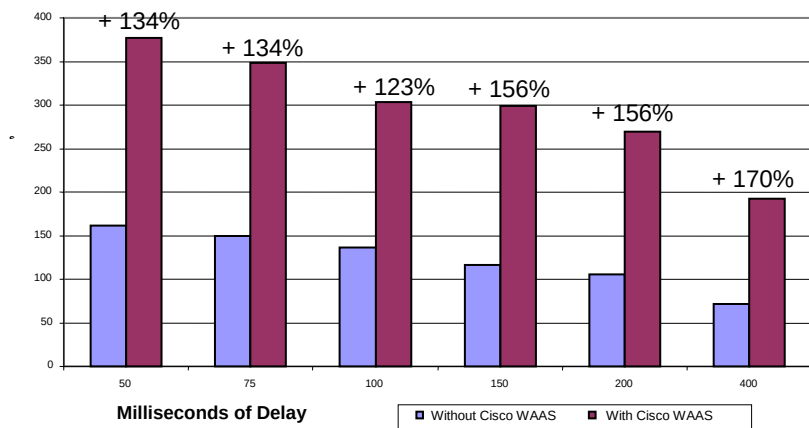
- ✓ Up to 90 percent decrease in bandwidth utilization for typical Oracle E-Business Suite transactions
- ✓ Preservation of network protocol information to support and maintain existing network security, quality of service (QoS), visibility, and monitoring

Given these benefits, customers can confidently deploy centralized applications and offer LAN-like performance over the WAN to remote users without risk of unacceptable employee experience or low productivity. In addition, lower total cost of ownership (TCO) can be achieved through decreased bandwidth needs to serve new applications.

To sustain such benefits, Cisco and Oracle product teams collaborate on solution testing and documentation and regularly discuss new joint solutions; interaction is supported by a global partnership wherein Cisco is an Oracle Global Platform Partner and Oracle is a Cisco strategic software partner.

Figure 2 shows how the Cisco WAN Optimization Solution for Oracle Applications increases the number of transactions completed in a five minute test for different simulated WAN links.

Figure 2: Oracle E-Business Suite iProcurement Transactions Completed



The Solution

The Cisco WAN Optimization Solution for Oracle Applications includes specific configurations and best practices for the Cisco WAE Appliance and Cisco WAAS and Oracle E-Business Suite 11i and Fusion Middleware (Figure 3).

Cisco WAAS uses advanced compression, data redundancy elimination, application specific protocol acceleration, transport optimizations, caching, and content distribution to help overcome the bandwidth, throughput, and latency limitations associated with TCP/IP and application protocols across the WAN.

Cisco WAAS achieves superior results over alternative offerings by applying optimization at three separate layers:

- ✓ Latency and bandwidth reduction at Layer 7 using application-specific optimizations that suppress unnecessary messages, batch messages and operations, and employ sophisticated caching techniques to minimize data transfers across the WAN
- ✓ Bandwidth and throughput improvement at Layer 4 using techniques such as Data Redundancy Elimination (DRE), Lempel-Ziv (LZ) Compression, and Transport Flow Optimization (TFO) based on extended TCP standards
- ✓ Transparent network integration at Layers 3 and 4, allowing Cisco WAAS to take advantage of traffic classification, QoS, policy-based routing, high availability, load balancing, and other network policies

Additionally, the solution requires no changes to the Oracle applications or to any Web or application servers, storage, or WAN connections. Further, end users will see performance benefits and IT departments will see bandwidth decreases for all applications traveling between

locations where Cisco WAAS is deployed.

The Testing

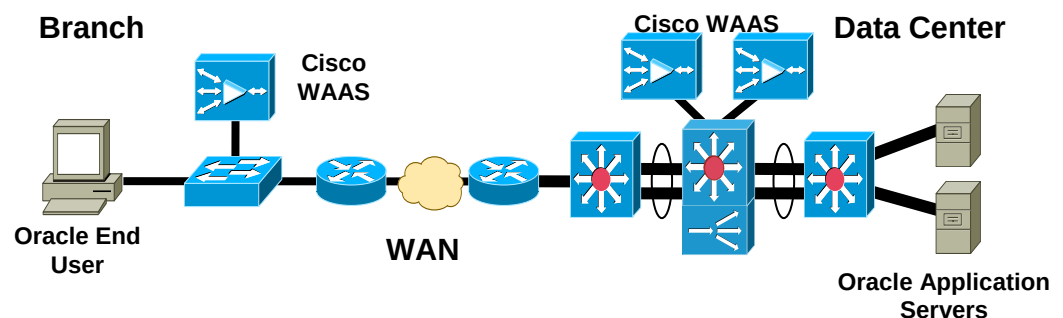
The Cisco WAN Optimization Solution for Oracle Applications tests were conducted at Cisco labs in North Carolina by Cisco engineers with the help of Oracle personnel. These tests were set up to closely represent real customer deployments.

For such testing, Oracle E-Business Suite 11i v 11.5.10.2 was deployed with HP servers housing Intel processors and Linux operating systems, EMC storage, and Cisco networking equipment. The Mercury LoadRunner testing suite was used to simulate end users conducting transactions with the Oracle E-Business Suite application.

One set of tests was conducted over a 5-minute period in which 20 users repeatedly performed a number of steps that represented single end-user transactions: accessing employee pay slips in one case and ordering an item in another. These tests were run both with and without the Cisco WAAS solution, and average time, total number of transactions, and bandwidth utilization were measured.

A second set of tests were conducted in which 100 users, divided into 10 groups, repeatedly performed a number of steps that represented a single transaction for each group in which a predetermined number of transactions were completed. These tests were run both with and without the Cisco WAAS solution, and total time to conduct such transactions was measured.

Figure 3: Cisco WAN Optimization Solution for Oracle Applications Architecture



For More Information

Cisco product and solution literature

www.cisco.com/go/waas
www.cisco.com/go/ace
www.cisco.com/go/fwsm
www.cisco.com/go/catalyst6500
www.cisco.com/go/srnd

Oracle product literature

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Cisco and Oracle partnership

www.cisco.com/go/oracle
www.oracle.com/goto/cisco

To contact a Cisco salesperson or to obtain additional information, please email:

solutionsfororacle@external.cisco.com

All simulated end users accessed the Oracle applications through a Web browser, and some transactions required access to the application server through the Forms Listener Servlet. The Web browser cache was cleared before the tests ran but not during the tests. And the servers and storage never reached maximum capacity utilization and therefore did not impact the test results.

The tests were conducted for a number of remote-office scenarios set up to represent typical intercontinental and intracontinental WAN links by inserting transaction delay times between 50 and 400 milliseconds (ms). The bandwidth was fixed at the maximum rate of 1.544 Mbps, and the WAN traffic was not Secure Shell (SSL) enabled.

Figure 4 shows that the Oracle E-Business Suite Pay Slip transaction performed 72 percent faster with Cisco WAAS than without it.

Figure 4: Oracle E-Business Suite Pay Slip Average Transaction Time

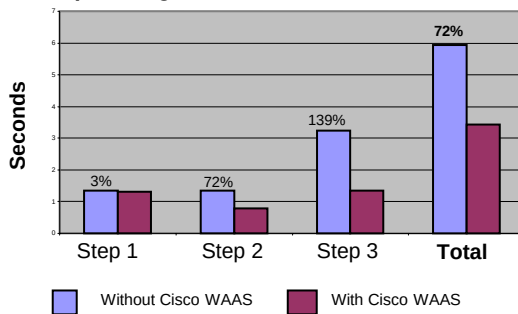


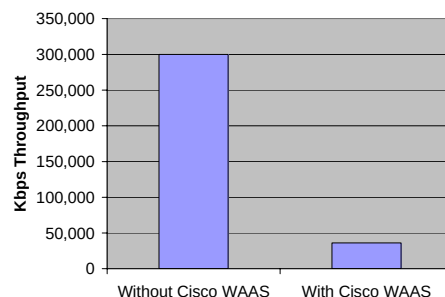
Figure 5 shows that the Oracle E-Business Suite iProcurement transaction required 90 percent less bandwidth with Cisco WAAS than without it.

Solution Flexibility

The Cisco WAN Optimization Solution for Oracle Applications offers flexibility in deployment with the option to deploy Cisco WAAS in module or appliance form, and with or without the Cisco ACE Module, Cisco Catalyst 6500 Series Switches, Cisco Catalyst 6500 Series Firewall Services Module, Cisco MDS 9000 Series Multilayer Switches, and Cisco SFS 7000 Series InfiniBand Server Switches

These deployment options are described at www.cisco.com/go/oracle and www.oracle.com/goto/cisco.

Figure 5: Oracle E-Business Suite iProcurement Bandwidth Reduction



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