# Cisco Application Networking for Siebel 8.0

## High Availability and Security for Global Deployments, and Optimized Response Times and Bandwidth Utilization for Branch Users

### HIGHLIGHTS

**Business Benefits**

– High Availability

– Optimize Performance

– Minimize Risk

– Reduce Total Cost of Ownership

**Why Cisco?**

– Complete integrated network architecture: application and Ethernet switching, security, WAN optimization, network management

– Market leading products: Cisco ACE Application Control Engine, Cisco Wide Area Application Services, Cisco Catalyst 6500 Series Switches

– Global lifecycle services leader: certified by J.D. Power & Associates Certified Technology Service & Support Program

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### Overview

To address challenges associated with today's mission-critical enterprise application deployments, Cisco®, in collaboration with Oracle, offers Cisco Application Networking for Siebel 8.0, an enterprise network architecture, with best practices and implementation guidance that optimizes application availability, performance, and security and lowers application ownership costs (see Figure 1).

This document shows how the solution addresses the following business challenges for Siebel deployments serving global users across challenging WAN links, through data center and WAN application optimization services from the Cisco Application Control Engine (ACE) and Wide Area Application Services (WAAS) Software products:

- Enterprise class high availability for mission critical applications
- Application response time over limited WAN connections
- Application, server, network, and service-oriented architecture (SOA) security
- Reduced capital and operational costs for applications, servers, and networking

Tests of this solution showed up to 3.2 times faster site navigation, 33.3 times faster file attachment transfers, and 90 percent reduction in bandwidth usage for Siebel deployments when paired with Cisco application networking solutions for specific deployment scenarios. Additional solution benefits include increased application security and availability and reduced server processing usage.

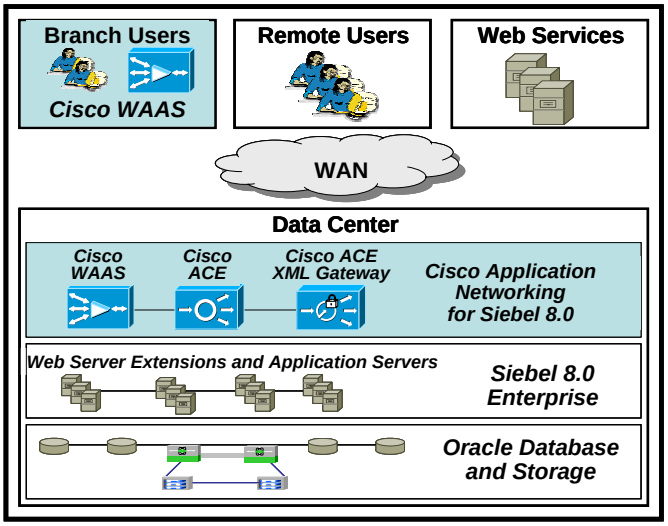
### Business Challenge

In today's globally networked economy, where enterprise application availability, performance, and security are tightly linked to customer success and profits, application stakeholders are faced with new challenges.

As applications expand to handle new business processes and serve more geographically and organizationally dispersed user populations, service levels and costs are increasingly scrutinized. Further, increased complexity and stifled innovation can affect productivity and disappoint primary constituents.

To achieve expected service levels and costs in this demanding environment, enterprise applica-

**Fig 1 Cisco Application Networking for Siebel 8.0**



tion deployments are converging and are more likely to run in one location isolated from a second standby site, serve global users through Web browsers and standard Internet protocols, and use a SOA platform.

This new business environment and associated application architecture intensifies four major IT challenges, each of which can be addressed by a strong enterprise network architecture using Cisco Application Networking for Siebel 8.0:

- Application availability challenges: Increasing business dependence on fewer but larger applications deployed in a central location requires a more careful examination of application architecture, including single points of failure and product stability, to achieve recovery time objectives and recovery point objectives.
- Application performance challenges: Limited WAN links and inefficient Internet standard protocols such as HTTP and Extensible Markup Language (XML) result in poor application performance and bandwidth utilization for global users. Further, increased demand on large applications in centralized data centers results in overload on servers that slows application response time.
- Application security challenges: Business risk due to application security breaches from malicious or innocent end users or SOA Web service requests that attack application, server, or operating system vulnerabilities is significantly increased.
- Application ownership cost challenges: The increasing scope of application business logic and geographically and organizationally dispersed users, coupled with higher availability, performance, and security needs, requires a new approach to application support to keep costs in line with diminishing budgets.

Given these significant challenges, it is increasingly important to turn to application-savvy infrastructure vendors, such as Cisco, with solutions that cost-effectively address today's business-level application and IT challenges and a commitment to rigorous feature and system quality testing, global and local-language support 24 hours a day, and a strong history of security expertise (see Table 1).

Equally important is an application infrastructure vendor that partners with leading application vendors, such as Oracle, to yield tested, documented, and validated joint architectures that optimize application availability, performance, and security and lower application ownership costs.

**Table 1 Application-Savvy Infrastructure Vendor Requirements for Today's Enterprise Application Deployments**

| |
|---|
| • Strong application optimization solutions<br>• Lower application ownership costs<br>• Rigorous feature and system quality testing<br>• Global and local-language support 24 hours a day<br>• Exceptional security history and experience<br>• Strategic partnerships with application vendors |

## Business Benefits

Cisco Application Networking for Siebel 8.0 offers optimized application availability, performance, security, and costs by providing application optimization services as follows:

- Siebel 8.0 application availability: Cisco ACE product family application optimization services for high availability:
  - Cross-data center load balancing: Efficiently routes end-user and Web services requests to the best available data center
  - Application health monitoring: Continuously and intelligently monitors application and database availability
  - Server load balancing: Efficiently routes end-user and Web services requests to the best available server
  - Network platform health monitoring: Helps ensure continuity of business operations through mirroring end user transaction states across pairs of network devices
- Siebel 8.0 application performance: Cisco ACE and WAAS application optimization services for high performance:
  - WAN optimization: Provides intelligent caching, compression, and protocol optimization that yields as much as 3.2 times faster site navigation, 33.3 times faster file attachment transfers, and 90 percent reduction in bandwidth usage (see Figures 6 and 7 later in this document)
  - Server offloading: Provides specialized hardware that offers greater processing efficiency for the application optimization services listed in Table 2, freeing up to 50 percent of application server processing and memory to focus on business logic computations (based on independent tests run by Cisco)

**Table 2 Services Offloaded from Servers by the Solution**

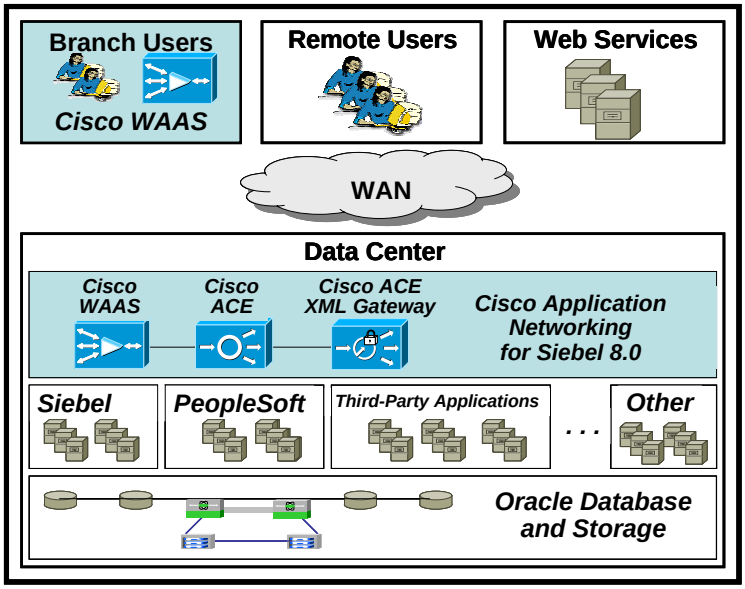
| Service | Description |
|---|---|
| Cross-data center load balancing | Replaces Domain Name System (DNS) server and helps ensure high availability |
| Server load balancing | Provides advanced load balancing methods |
| Secure Sockets Layer (SSL) termination | Terminates 15,000 connections per second |
| TCP connection management | Significantly reduces TCP connections to server |
| Application health monitoring | Improves availability |
| Traffic compression | Provides scalable GNU zip function and minimizes bandwidth |
| Object caching | Reduces requests to server |
| XML schema validation | Performs 30,000 schema validations per second and improves security |

- Siebel 8.0 application security: Cisco ACE application optimization services for optimized data security:
  - SSL termination (also known as SSL Acceleration): Efficiently encrypts and decrypts SSL-enabled traffic, facilitating the use of intrusion detection and prevention solutions before traffic reaches the servers, reducing server CPU usage, and centralizing certificate management
  - End-user access control: Provides access control lists (ACLs) to protect client-to-server traffic from worms and intruders that attack vulnerable open server ports not used by the application
  - XML firewall: Examines SOA Web services requests for compliance with schemas and protects against identity, message-format, and denial-of-service (DoS) attacks
- Siebel 8.0 application ownership cost: Cisco Application Networking for Siebel 8.0 reduces application capital and operational costs:
  - Server cost reduction: Offloading of the application optimization services listed in Table 2 from servers to cost-effective network devices frees up to 50 percent of server processing and memory needs to focus on business logic computation.
  - Networking cost reduction: Virtualized application optimization services can be applied to multiple Oracle applications, including E-Business Suite, Siebel, PeopleSoft, and Fusion Portal, as well to as other enterprise applications (see Figure 2).
  - Operating cost reduction: Application optimization services reduce operating costs as shown in Table 3.

**Table 3 Operating Cost Reductions from Application Optimization Services**

| Cost Reduction | Description |
|---|---|
| WAN bandwidth usage | Up to 90% bandwidth cost savings |
| Server power, cooling, space, and administration | Up to 50% operational cost savings |
| Application deployment administration | Virtualization of application services |

**Figure 2 Virtualization of Application Optimization Services**



## Solutions

Cisco Application Networking for Siebel 8.0 combines the Cisco ACE and WAAS platforms with the Siebel 8.0 architecture to provide optimized availability, performance, security, and cost of ownership, while complimenting the existing features of Siebel that ensure availability, performance and security.

### Siebel 8.0 with Cisco ACE

The Siebel 8.0 architecture provides horizontal scalability by adding additional Siebel application and web server instances as needed, which in turn creates the need for load balancing (see Figure 3). Although Siebel provides native server load balancing and web server SSL termination, Cisco ACE offers higher performance and availability for these two application optimization services in addition to access control security, server health monitoring, and TCP connection management.

Virtualization within Cisco ACE allows a single active-active pair of Cisco ACE products to serve multiple Oracle applications such E-Business Suite, Siebel, PeopleSoft, and Portal as well as other enterprise applications.  Further, if Cisco ACE is already deployed in the data center, additional virtualized contexts can be added to accommodate new Oracle applications without the need to order and configure additional equipment.

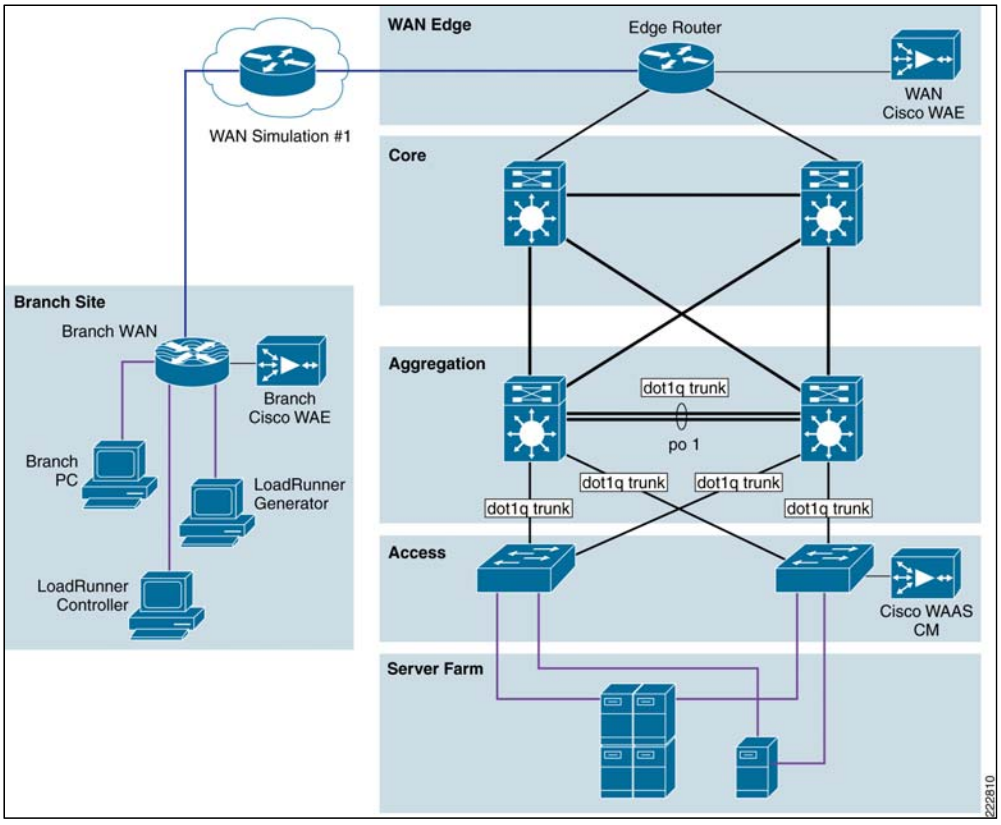
Additionally, Cisco ACE virtualized contexts can be created using Cisco ACE role-based access control (RBAC), which constrains the commands and actions for each context for unique application, database, security, and systems management administrators .Cisco ACE comes prepackaged with a number of predefined roles, but others can be customized as needed.

Cisco ACE provides server load balancing session persistence for Siebel 8.0 through the Cookie Sticky or source IP methods. Further, if the application architecture requires, Cisco ACE can decrypt SSL traffic for intrusion detection and prevention and then re-encrypt traffic to the server with the same server savings as if the SSL-enabled traffic were decrypted at the Cisco ACE. Because the database is typically a clustered single instance, Cisco ACE is not used at that part of the architecture.

### Siebel 8.0 with Cisco WAAS

Completing any Siebel solution business transac-

**Figure 3  Cisco Application Networking for Siebel 8.0 Architecture.**



tion involves numerous components of the application architecture, including the client, Web server with Siebel Web Server Extension, Siebel Application Servers, Oracle Database servers, storage, and networking.

Each transaction typically requires several operations that, when requested by a remote user, travel over the WAN and introduce network delay that slows end-user performance. When network delay is significant due to constrained or overburdened bandwidth, distance of users to servers, or a high number of operations to complete a transaction, end-user performance and bandwidth utilization improvements can be achieved through optimizations provided by Cisco WAAS such as data redundancy elimination (DRE), TCP flow optimization (TFO), and persistent LZ compression.

When Cisco WAAS is deployed with Siebel 8.0, tests show significant round-trip time and bandwidth reduction, as discussed in the "Testing" section later in this document.

**Solution Deployment**

Cisco ACE, ACE XML Gateway, and WAAS reside in the data center and are arranged to provide application optimization services for multiple Oracle application deployments as well as other enterprise applications.

Because of their unique location, these solutions can take intelligent action on end-user traffic before it is routed to the Siebel Application Servers, including load balancing, server health monitoring, SSL decryption, TCP connection management, and security access control (see Figure 4). Cisco Application Networking for Siebel 8.0 provides these services cost effectively, freeing up to 50 percent of server processing and memory needs.

Cisco WAAS also resides in the branch office and is arranged to provide virtualized application optimization services for all application users in that location. The Cisco WAAS data center and branch-office deployment together offer a WAN optimization service through the use of intelligent caching, compression, and protocol optimization.

When the Siebel application servers respond to end-user requests, the response is efficiently passed across the WAN, with minimal bandwidth usage and maximum throughput. Commonly accessed information is cached both at the Cisco WAAS solution in the branch and in the Cisco ACE solution in the data center, significantly reducing the burden on the servers and the WAN (see Figure 5).

The recommended best practices and implementation guidance for Cisco Application Networking for Siebel 8.0, including specific configurations for each Cisco network solution, can be found in the Cisco Application Networking for Siebel 8.0 Deployment Guide at Cisco.com.

The Cisco ACE solution can be deployed in the data center as a module in the Cisco Catalyst® 6500 Series Switches or as an appliance, and the Cisco WAAS can be deployed in the branch office as a module in a Cisco Integrated Services Router or as an appliance.

**Figure 4 Data Center Application Optimization Services**

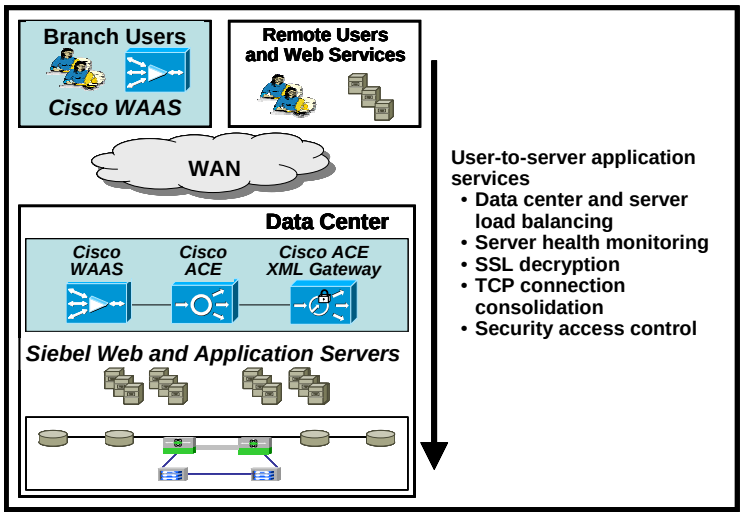
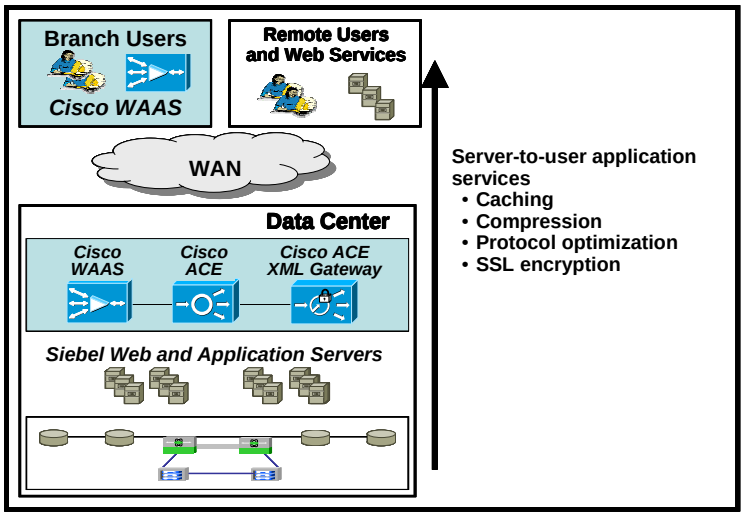



**Figure 5 WAN Application Optimization Services**



### Testing

Cisco, in collaboration with the Siebel product team at Oracle, conducted a series of function, load, and performance tests, which resulted in the Cisco Application Networking for Siebel 8.0 architecture, best practices, and implementation guidance.

#### WAAS Performance Testing

A total of 18 test sequences were performed: nine user scenarios across two WAN links (see Table 4), both with and without Cisco WAAS, with HP LoadRunner used to simulate end-user transactions. Within the nine scenarios were five site navigation tests, and four file attachment upload and download tests. Summaries of the test results are shown in Table 5 and Figures 6 and 7.

**Table 4 Performance Testing WAN Scenarios**

| Description | WAN Speed | Delay (in Ms) | Packet Loss |
|---|---|---|---|
| Intra-continental | 1.544 Mbps | 100 ms | 0.1% |
| Inter-continental | 512 Kbps | 200 ms | 0.2% |

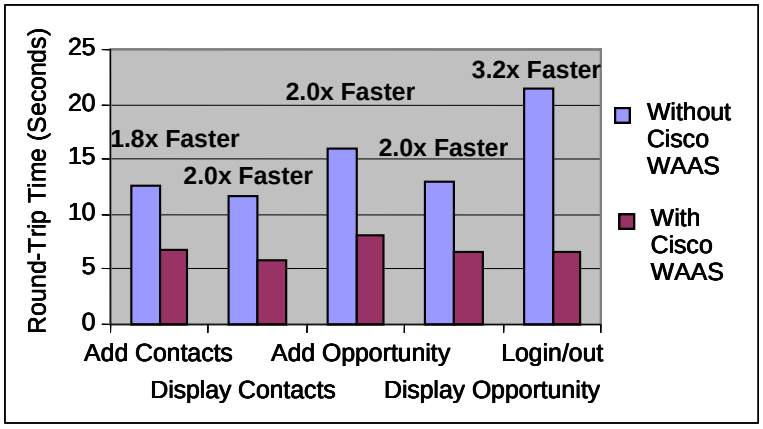
All the site navigation and file attachment transaction times as measured in seconds were higher for the intercontinental WAN link than the intracontinental link. This difference resulted not only from the increased latency and packet loss, but also because the pipe was completely utilized for this test; thus, traffic slowed because the WAN link was overburdened.

When the traffic traversing the intercontinental WAN link was optimized using Cisco WAAS, the transaction times fell to almost the same times as in the intracontinental WAN link tests. This drop resulted mainly from the Cisco WAAS optimization that unclogged the WAN link, allowing transactions to move without the WAN congestion delay previously experienced.

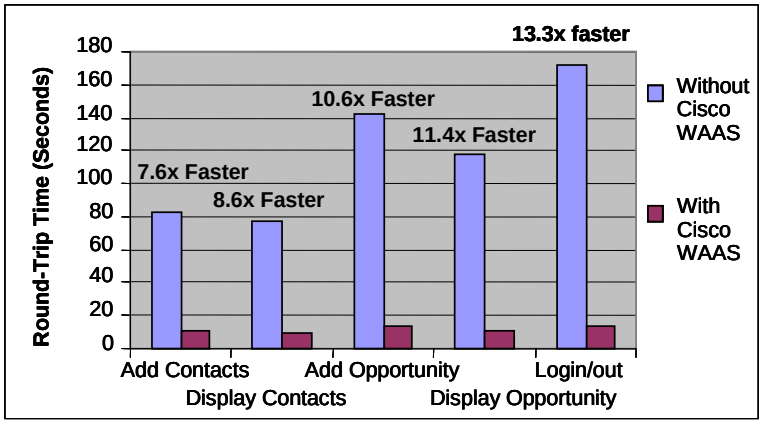
Cisco ACE Function and Performance Testing
Cisco ACE function tests succeeded and the deployed configurations were documented for such tests, which included the following features: server load balancing with persistence, virtualization contexts, server health monitoring, SSL encryption and decryption, TCP connection management, and end-user access control. Server offload was determined to save 50 percent of server CPU and memory usage in independent tests conducted at Cisco.

All testing data herein is from lab testing only. Actual performance may vary depending on usage patterns, network bandwidth, application configuration, and other variables.

**Figure 6 Average Transaction Times Intracontinental**




**Intercontinental**



## For More Information

***Cisco product and solution literature***

Cisco.com/go/applicationservices
Cisco.com/go/optimizemyapp
Cisco.com/go/ace
Cisco.com/go/waas

***Oracle product literature***

Oracle.com/applications/crm/siebel/index.html

Siebel Bookshelf under 'Siebel Deployment Planning Guide' as well as the Technical Note 540 (both are available on Siebel Support web).

***Cisco and Oracle partnership***

Cisco.com/go/oracle
Oracle.com/goto/cisco

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

solutionsfororacle@external.cisco.com



## Statement of Cooperation

Cisco and Oracle cooperated in all phases of this joint project, including lab setup, solution testing, and Solution Overview and Deployment Guide documentation. Cisco and Oracle jointly validate that the lab setup and solution testing represents best efforts in creating a realistic customer deployment and accurate documentation of such deployment.

**Table 5 Performance Testing User Scenarios and Summary Results**

| | |
|---|---|
| Site Navigation - Login and Logout | Without Cisco WAAS: User login time was more than 20 seconds over the intracontinental WAN link. |
| | With Cisco WAAS: User login time dropped to roughly 6 seconds, or 3.2 times faster than without Cisco WAAS, and bandwidth utilization dropped by 90%. |
| Site Navigation – Contacts and Opportunities | Without Cisco WAAS: Site navigation transactions such as add and display contacts and opportunities required 11 to 16 seconds for each transaction over the intracontinental WAN link. |
| | With Cisco WAAS: Site navigation transaction times dropped to roughly 6 to 8 seconds, or two times faster than without Cisco WAAS, and bandwidth utilization dropped by 40%. |
| File attachment Upload | Without Cisco WAAS: The 1-MB Microsoft Word document and 11-MB Microsoft PowerPoint file attachments took 25.2 and 218 seconds, respectively, to upload over the intracontinental WAN link. |
| | With Cisco WAAS: The 1-MB Microsoft Word document and 11-MB Microsoft PowerPoint file attachments upload times dropped to 1.1 and 7.1 seconds, respectively, a 96% decrease in transaction time, and bandwidth utilization dropped by 90%. |
| File attachment Download | Without Cisco WAAS: The 1-MB Microsoft Word document and 11-MB Microsoft PowerPoint file attachments took 25.2 and 218 seconds, respectively, to download over the intracontinental WAN link. |
| | With Cisco WAAS: The 1-MB Microsoft Word document and 11-MB Microsoft PowerPoint file attachments download times dropped to 0.57 and 3.29 seconds, respectively, a 88% decrease in transaction time, and bandwidth utilization dropped by 90%. |

## Figure 7 Performance Test Bandwidth Reduction