

HIGH-PERFORMANCE NETWORKS FOR SECURING AND DELIVERING SAP APPLICATIONS

Juniper Networks ensures a secure, high-performance SAP deployment in the distributed enterprise

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Executive Summary

SAP business applications empower more than 38,000 companies around the world to respond quickly and decisively to dynamic market conditions, helping them achieve and maintain a competitive advantage.

But in today's distributed enterprise where server centralization and data center consolidation are prevalent, SAP applications must contend with the physical limitations imposed by local and wide area network environments, including limited bandwidth, latency, contention for resources, security, and other limitations. Users who rely on SAP to do their jobs—local, remote, branch office, and mobile alike—find themselves waiting an inordinate amount of time for transactions to complete, which leads to plummeting productivity and endless frustration.

Juniper Networks® delivers a host of application acceleration and security solutions that accelerate SAP performance over the WAN, improve SAP response times for remote users, while providing anytime, anywhere access, and complete visibility in SAP performance on the network.

Introduction

Today, the vast majority of business operations—both internal and external—are conducted electronically over a corporate network or the Internet. SAP's mySAP Business Suite delivers a comprehensive set of solutions that allow businesses to compete in such an environment and address core business processes with customer relationship management (CRM), enterprise resource planning (ERP), supply chain management (SCM), human capital management, product lifecycle management, operations, finance, and more.

Built upon the NetWeaver platform and/or the enterprise service-oriented architecture (enterprise SOA), SAP software solutions link all areas of IT including legacy applications and third-party products, which merges information from throughout the organization to provide an integrated view of the business. This pinpoints inefficiencies, identifies new opportunities, and develops best practices that optimize business processes and ensure ongoing success.

With widely distributed workforces and a global value chain, most enterprises rely on Web-based versions of SAP to provide their users with universal anytime, anywhere access through a standard Web browser. Regardless whether they are working from corporate headquarters in Chicago or a branch office in Singapore, a user's location has essentially become irrelevant since the same application is merely a mouse-click away.

However, this trend toward globalization, which in many ways is enabled by SAP's unique software solutions, has also created problems impacting application performance over the network. That's because accompanying this trend is an equally ambitious effort among IT managers to consolidate and centralize their information technology operations. This is certainly a logical response, since it's difficult and expensive to maintain local IT staff in countless locations around the world. By consolidating network resources, including application servers, in a single data center, IT managers not only gain centralized control to simplify maintenance, management, and upgrades, but also dramatically reduce support and overhead costs while improving regulatory compliance.

As a result, users must access centralized business applications over limited capacity WAN links or the Internet. This means SAP is now competing for a limited amount of available bandwidth with other applications like email, file services, Web browsing, voice over IP (VoIP), and scores of other applications, as well as dealing with latency issues imposed by the distance between distributed users and centralized applications.

Compounding the problem is the fact that Web-enabled applications consume at least 10 times more bandwidth than their client/server counterparts, which seriously impacts performance, reliability, and availability. Performance plummets at remote and branch offices, leaving users frustrated and unproductive. While adding more bandwidth may provide temporary relief, it's not a viable long-term solution, since it imposes significant recurring capital costs and doesn't address the issue of latency.

To realize the full benefits of their SAP deployment, businesses must optimize the performance of their network. To overcome the obstacles posed by distributed and extended enterprises, IT organizations must neutralize the impact of latency and limited bandwidth on applications and reliably secure operations so that all users—local, remote, and mobile—can access centralized SAP applications with confidence.

Juniper Networks helps businesses achieve these objectives. Juniper delivers high-performance network solutions that provide SAP customers with a responsive and trusted infrastructure, creating competitive differentiation and improving overall business flexibility.

Joint testing conducted by Juniper and SAP in early 2007 at SAP's Enterprise Services Community Networking Lab (ENL) in Palo Alto, California, confirmed the performance benefits Juniper brings to an SAP environment. The tests, which involved a series of real-world business transactions requiring interaction between multiple application components and data from multiple sources, demonstrated how Juniper significantly enhanced the SAP environment in seven key areas:

- Accelerating performance over the WAN
- Improving response times for remote and mobile users
- Providing secure anytime, anywhere access
- Ensuring operational continuity in downtime situations
- Delivering complete visibility into SAP performance on the network. At the end of the tests, Juniper proudly received the SAP certification on 08/29/2007.

Accelerating SAP Performance over the WAN

For remote and branch office users, SAP application response times can be negatively impacted by fixed-capacity wide area links and the latency imposed by the distance between end users and centralized SAP application servers in the data center. Fixed-capacity WAN links (whether DSL, T1, or T3) can only accommodate a limited amount of traffic at a time, forcing SAP applications to compete for bandwidth with other applications like email and file sharing, which place a high load on the network. Once the traffic is on the WAN, latency (the length of time it takes for the data to actually traverse the link), compounded with the inefficiencies of application protocols, further slows performance and impedes end user productivity.

Juniper Networks WX Series Application Acceleration Platforms/WXC Series Application Acceleration Platforms reduce the amount of traffic on the WAN link, help overcome the effects of latency, and give branch-office SAP users LAN-like performance and response times.

Compression and caching technologies prevent redundant traffic patterns from crossing the WAN, saving valuable bandwidth. Since more than 60 percent of all WAN traffic is repetitive, effective bandwidth capacity grows accordingly, providing sufficient space for all mission-critical application traffic without upgrading costly, wide area circuits.

Additionally, TCP and application protocol-specific acceleration reduces the impact of latency on business-critical SAP applications. By eliminating the back and forth, ping-pong behavior exhibited by TCP and HTTP, the WX Series/WXC Series significantly accelerate response times for Web-based SAP applications over long distance WAN links.

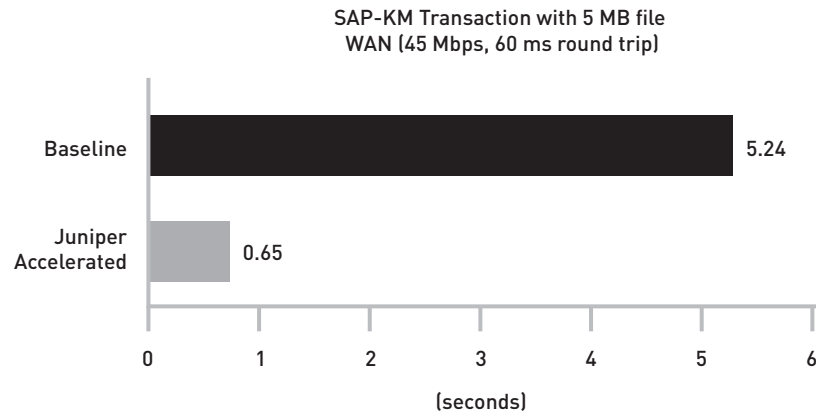
Thirdly, to mitigate the contention for WAN bandwidth that is typical for long distance wide area links, the WX Series/WXC Series Platforms offer rich quality of service (QoS) capabilities to enable IT administrators to prioritize mission-critical SAP traffic over other applications. An easy-to-use graphical user interface (GUI) enables administrators to prioritize SAP transactions without having to know detailed port addresses or other network information.

Recent tests conducted jointly by Juniper and SAP confirmed the impact that the WX Series/WXC Series have on the performance of SAP business applications in a wide area environment. The tests, conducted in SAP laboratories and designed to reflect real-world business scenarios, simulated a variety of different SAP operations.

Tests were run first without Juniper technologies to establish a baseline. The tests were then run again with Juniper features enabled to determine the overall benefit. The transactions involved multiple modules and data transfer activities ranging from a few clicks, to multiple megabyte documents (for example, the retrieval of a multiple megabyte document from the knowledge management module).

The test results displayed in Figure 1 show that for data-intensive operations requiring large files to be transferred over domestic and international WAN links, the WX Series/WXC Series produced dramatic improvements in SAP response times.

DOMESTIC WAN LINK



INTERNATIONAL WAN LINK

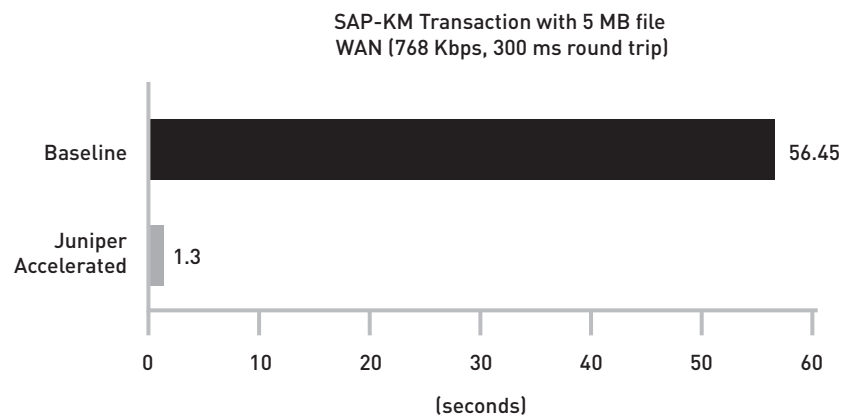


Figure 1: Joint tests between Juniper Networks and SAP proved that Juniper WAN acceleration technology dramatically improves SAP performance over wide area links.

Accessing SAP Anytime, Anywhere

For most businesses, anytime, anywhere access to critical corporate information provided by SAP applications is absolutely essential. The challenge for IT administrators is balancing access for employees, partners, and customers, while maintaining a strong security posture around critical SAP assets.

Juniper Networks SA Series SSL VPN Appliances use SSL technology that provides secure anytime, anywhere access to SAP applications. These SSL VPN appliances can secure LAN, intranet, and extranet access for employees, business partners, and customers, mitigating the risks posed by unmanaged devices or untrusted networks by ensuring users see only what they are allowed to see. Users gain secure access to the SAP NetWeaver portal from a Web browser, eliminating the need for client software downloads, changes to internal servers, and costly ongoing maintenance and desktop support.

Three different access methods are supported. These methods are selected as part of the user’s role, so administrators can enable the appropriate access level on a per-session basis by user, device, and network attributes, in combination with enterprise security policies. When a user logs in, they pass through a pre-authentication assessment, then are dynamically mapped to the session role that combines established network, device, identity, and session policy settings. Granular SAP authorization policies further ensure exact compliance to security strictures, guaranteeing that each user gets the right level of access to specific SAP applications.

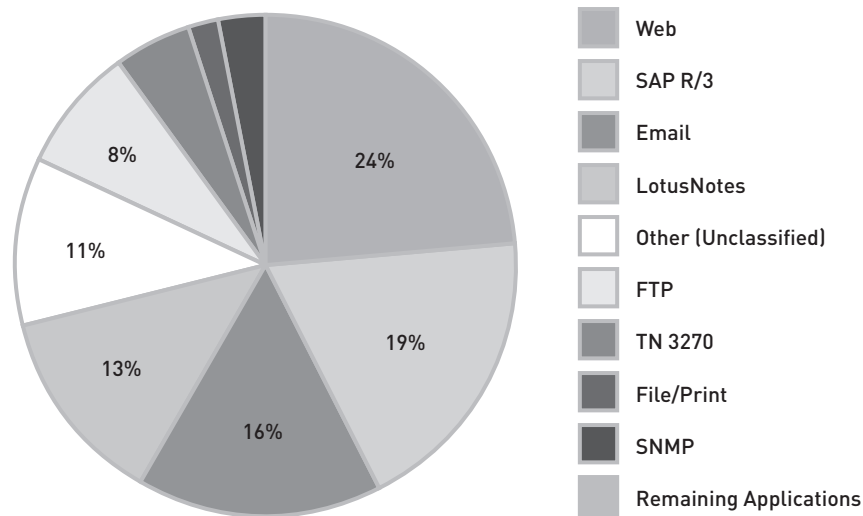
Best-in-class endpoint and host checking provides access only to users whose endpoints and networks meet certain preconditions. For example, the SA Series can check the requesting PC's network and device settings, including scanning for malware and verifying operation of endpoint security packages, such as personal firewalls and antivirus software. The requestor's IP address, browser type, and digital certificates can also be examined before login is allowed, and the results are used to grant or deny access to SAP applications.

The recent Juniper/SAP joint testing confirmed full remote access to SAP applications through the Juniper Networks SA platform, verifying complete compatibility with the rich set of SAP user interface tools such as Web Dynpro, as well as integrated technologies such as Adobe LiveCycle Forms ES and Adobe Flash. Editor's note: The only Adobe product I found associated with Forms was LiveCycle Forms ES, but this should be verified for accuracy.

Monitoring and Managing SAP Performance

You can't manage what you can't see. Juniper provides detailed visibility into SAP application performance, both in the data center and across the WAN, helping IT administrators understand precisely how SAP is performing and allowing them to make informed deployment, rollout, and troubleshooting decisions.

For application performance over the WAN, Juniper's sophisticated WAN management software provides reports on how much bandwidth SAP and other applications are consuming, which locations have the most active SAP users, and what compression levels are being achieved for SAP applications (see Figure 3). For IT administrators, such information is invaluable in setting QoS policies, reallocating bandwidth, and proactively identifying application performance issues before the help desk hears about them.



APPLICATION SUMMARY
Percent of traffic To and From WAN by application

Figure 2: Juniper Networks WAN management software provides detailed information about how SAP and other applications are performing over wide area links.

To maintain a clean and safe environment, Juniper's application awareness, identification, and profiling capabilities identify types and versions of applications and operating systems that may have been added to the network. Armed with this information, administrators can more easily enforce security policies and comply with corporate application usage policies while ensuring that business critical applications such as SAP receive a predictable QoS.

Time Received	Src Addr	Dst Addr	Action	Protocol	Dst Port	Category	Subcategory	Severity	Device
SR5607 10:04:50 AM	172.24.76.76	200.100.100.4	Accepted	TCP	22	Traffic	Backdoor Detected	Info	EP200
SR5607 10:08:32 AM	200.100.100.4	200.100.100.250	Conn Dropped	UDP	137	Predefined	NETBIOS-AUDIT-NETNAME-RES-AD	Info	EP1102
SR5607 10:09:09 AM	172.24.76.76	200.100.100.4	Accepted	TCP	3389	Traffic	Backdoor Detected	Info	EP200
SR5607 10:15:20 AM	Webtrix	75.75.90.234	Accepted	TCP	40373	Traffic	Backdoor Detected	Info	EP200
SR5607 10:44:22 AM						Config	Policy Load	Info	EP200
SR5607 10:44:46 AM	172.24.76.76	200.100.100.4	Accepted	TCP	3389	Traffic	Backdoor Detected	Info	EP200
SR5607 10:56:44 AM	10.150.43.174	200.100.100.4	Accepted	TCP	22	Traffic	Backdoor Detected	Info	EP200
SR5607 11:14:53 AM	172.24.76.76	200.100.100.4	Accepted	TCP	22	Traffic	Backdoor Detected	Info	EP200
SR5607 11:15:12 AM	200.100.100.3	200.100.100.4	Conn Dropped	TCP	21	Predefined	PROTOCOLS-TRAFFIC-NOT-FTP	Info	EP1102

Summary	All Fields	Whole Lookup	Quick Report
Time Received	SR5607 11:15:12 AM		
Src Addr	200.100.100.3		
Dst Addr	200.100.100.4		
Action	Conn Dropped		
Protocol	TCP		
Dst Port	21		
Category	Predefined		
Subcategory	PROTOCOLS-TRAFFIC-NOT-FTP		
Severity	Info		
Device	EP1102		

Figure 3: Juniper Networks IDP Series Intrusion Detection and Prevention Appliances provide visibility into potential application breaches.

Juniper Networks High-Performance Network for Securing and Delivering SAP Applications

Optimize SAP Performance with Juniper Networks Platforms

Juniper Networks, an SAP software partner and charter member of SAP's Enterprise Services Community (ES Community), offers a full portfolio of products that ensure a successful and high-performance SAP deployment in a distributed enterprise.

IDP Series

Juniper Networks IDP Series Intrusion Detection and Prevention Appliances protect corporate information systems such as SAP against current and emerging threats in the data center at both the application and network layers. Using industry-leading application and user visibility techniques, the IDP Series appliances, which provide zero-hour protection against worms, trojans, spyware, keyloggers, and other malware, can be quickly and confidently deployed inline to effectively identify and stop attacks on SAP servers. The IDP Series also identifies rogue servers and applications that may have been unknowingly added to the network.

SA Series

The Juniper Networks SA Series SSL VPN Appliances provide privileged secure access to SAP applications for remote employees, partners, and customers. Based on SSL -- the security protocol found in all standard Web browsers -- the SA Series eliminates the need for client-software deployment, changes to internal servers, or costly ongoing maintenance and desktop support. Integrated endpoint malware protection dynamically disables threats such as trojan horses, keyloggers, remote controls, and monitoring applications. Full compatibility with the SAP Web Dynpro user interface, as well as technologies such as Adobe LiveCycle Forms ES and Adobe Flash, enables remote users to have the same SAP functionality on the road as they have in the office.

SSG Series

For regional and branch offices that require secure, high-speed LAN/WAN connectivity, the Juniper Networks SSG Series Secure Services Gateways platforms deliver a new class of converged branch networking platforms with the perfect mix of performance and security. The SSG Series protects SAP traffic flowing in and out of branch offices from worms, spyware, trojans, and malware, with a complete set of unified threat management (UTM) features that include stateful firewall, IPsec VPN, intrusion prevention, antivirus (including anti-spyware, anti-adware, anti-phishing), anti-spam, and Web filtering.

WX Series/WXC Series

To optimize the delivery of centralized SAP applications over the WAN, the WX Series and WXC Series provide a scalable approach to accelerating application performance, which increases WAN capacity, enables application prioritization, and provides application visibility. Using a combination of industry-leading compression, caching, TCP and protocol-specific acceleration, QoS, and traffic prioritization techniques, the WX Series and WXC Series deliver LAN-like SAP performance for branch office users.

About Juniper Networks

Juniper Networks, Inc. is the leader in high-performance networking. Juniper offers a high-performance network infrastructure that creates a responsive and trusted environment for accelerating the deployment of services and applications over a single network. This fuels high-performance businesses. Additional information can be found at www.juniper.net.

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