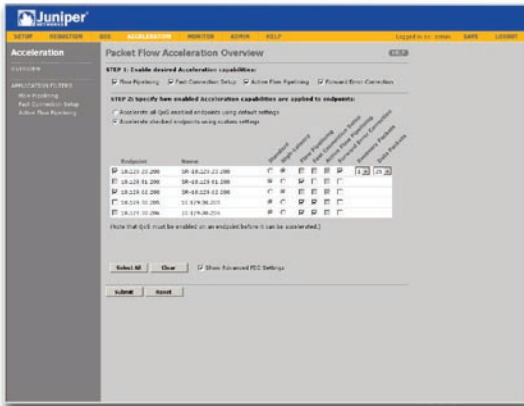


Juniper Networks **WX Operating System (WXOS) Software**



The WX Operating System (WXOS™) software is the foundation of the Juniper Networks WX™ and WXC™ application acceleration platforms. Supporting the interdependent technologies of the WX Framework™ that provide powerful compression, caching, acceleration, application control, and visibility for the WX and WXC products, the WXOS software enables LAN-like application delivery across the WAN.

WXOS: The heart of the Juniper WX and WXC application acceleration platforms.

The breadth of features within the WXOS software enables IT to meet the widest range of WAN optimization challenges. The integrated nature of the WX Framework allows the various WXOS features to interact and tune themselves, increasing their capabilities and improving the benefits IT derives from the software.

Compression and Caching

The WXOS software increases available WAN bandwidth through its Molecular Sequence Reduction™ (MSR™) compression and Network Sequence Caching technologies.

The patented MSR technology helps enterprises realize up to a 10-fold increase in WAN capacity, providing immediate congestion relief, improving application performance, and allowing businesses to avoid costly WAN upgrades. The MSR algorithm, which has its roots in DNA pattern matching, recognizes repeated data patterns and replaces them with labels, dramatically reducing WAN transmissions. Operating in memory, the MSR dictionary can store hundreds of megabytes of patterns for a broad cross-section of application types, from short chatty ones to those with longer patterns.

The Sequence Caching capability is a patent-pending technology that, like the MSR technique, looks for repeated data patterns and replaces them with a label to reduce WAN traffic. However, the Sequence Caching technology uses hard drives rather than memory for storage and therefore can record very large data patterns and store them for a much longer period of time, enabling the detection and elimination of patterns seen days or even weeks earlier.

The Juniper WX application acceleration platforms support MSR while the WXC platforms feature both the Sequence Caching and MSR technologies, providing the greatest reduction across the widest range of application types.

Acceleration

The WXOS software's acceleration features improve application performance across the WAN.

Packet Flow Acceleration™ (PFA™) technology improves performance for TCP-based applications. The Fast Connection Setup™ technique accelerates short-lived connections by eliminating one round-trip time from connection setup, speeding applications such as HTTP. The Active Flow Pipelining™ technique provides even more dramatic acceleration by terminating TCP and using a more efficient transport protocol between WX and WXC devices, significantly speeding applications on high-bandwidth or high-latency connections. Forward Error Correction, which can be used with the TCP termination technology, limits the need for retransmissions on “lossy” networks by making use of recovery packets to reconstruct lost transmissions.

Application Flow Acceleration™ (AppFlow™) technology improves the performance of specific applications such as Exchange, Windows file services, and web-based programs. The underlying protocols for these applications send data in small blocks and require an acknowledgement for each, resulting in hundreds or even thousands of round trip times (RTTs) to complete a transaction. The AppFlow technology pipelines these data blocks, sending as many in quick succession as possible to fill the available WAN capacity. As a result, these applications gain up to a 20-fold improvement in performance.

Application Control

Various bandwidth- and application-management techniques in the WXOS software further improve application performance.

Quality of Service (QoS) capabilities, combined with bandwidth-allocation techniques, allow IT to assign priority and set bandwidth levels for business-critical and latency-sensitive applications. The easy-to-use Juniper QoS implementation preserves QoS markings applied by other devices as needed and transparently map traffic onto carrier classes of service.

The Policy-based Multipath™ feature enables IT to define which path applications use in locations served by multiple WAN links. The WXOS software monitors the links' loss and latency characteristics and automatically diverts applications to the alternate path if performance falls below acceptable levels.

Visibility

The WXOS software enables unprecedented visibility into and control over Juniper WX and WXC application acceleration platforms.

The integrated WebView software and the WX Central Management System™ (CMS™) software provide detailed visibility into application performance over the WAN, enabling IT to quickly identify, diagnose, and resolve problems, even in remote offices that lack any IT staff or management tools. WebView provides per-device management, while the WX CMS software allows IT to monitor multiple application acceleration platforms to obtain application-specific compression and acceleration data; view reports about time-of-day usage, top talkers and other historical data; and update and manage the devices.

Security, Integration, and Deployment Features

The WXOS software supports key security capabilities, including IPsec encryption that enterprises can use to secure branch offices that have not deployed a VPN strategy. The IPsec implementation supports AES and 3DES encryption, HMAC-SHA-1 and HMAC-MD5 packet authentication, and dynamic key exchange via IKE.

The WXOS software enables integration with a range of WAN transports, network topologies, and high-availability designs. The WX and WXC platforms can apply or preserve the needed prioritization markings to integrate with MPLS networks running QoS and can be installed between a LAN switch and WAN router or attach to either device. The platforms can also support redundant router topologies.

To simplify deployment of WX and WXC application acceleration platforms in highly distributed environments, the WXOS software works with the WX CMS software to enable an automated deployment feature. With automated deployment, IT defines configurations within the WX CMS software; remote devices simply boot up, automatically retrieve an address, locate the WX CMS server through the domain name service (DNS), request and download their configuration, and begin operating.

IT can also scale their deployments using the WXOS Tunnel Switching feature, which enables any-to-any communications between sites while minimizing the total tunnel count. The hierarchical application of tunnels allows IT to scale deployments with many regional sites or primary hub locations.



WX Operating System: The WXOS software delivers the core set of optimization features for the Juniper WX and WXC application acceleration platforms and enables the cross-platform communications that provide IT with key metrics about their distributed networks and applications.



CORPORATE HEADQUARTERS
AND SALES HEADQUARTERS
FOR NORTH AND SOUTH AMERICA
Juniper Networks, Inc.
1194 North Mathilda Avenue
Sunnyvale, CA 94089 USA
Phone: 888-JUNIPER (888-586-4737)
or 408-745-2000
Fax: 408-745-2100
www.juniper.net

EAST COAST OFFICE
Juniper Networks, Inc.
10 Technology Park Drive
Westford, MA 01886-3146 USA
Phone: 978-589-5800
Fax: 978-589-0800

ASIA PACIFIC REGIONAL
SALES HEADQUARTERS
Juniper Networks (Hong Kong) Ltd.
Suite 2507-11, Asia Pacific Finance Tower
Citibank Plaza, 3 Garden Road
Central, Hong Kong
Phone: 852-2332-3636
Fax: 852-2574-7803

EUROPE, MIDDLE EAST, AFRICA
REGIONAL SALES HEADQUARTERS
Juniper Networks (UK) Limited
Juniper House
Guildford Road
Leatherhead
Surrey, KT22 9JH, U. K.
Phone: 44(0)-1372-385500
Fax: 44(0)-1372-385501

Copyright 2005, Juniper Networks, Inc. All rights reserved.
Juniper Networks and the Juniper Networks logo are registered trademarks of Juniper Networks, Inc. in the United States and other countries. All other trademarks, service marks, registered trademarks, or registered service marks in this document are the property of Juniper Networks or their respective owners. All specifications are subject to change without notice. Juniper Networks assumes no responsibility for any inaccuracies in this document or for any obligation to update information in this document. Juniper Networks reserves the right to change, modify, transfer, or otherwise revise this publication without notice.