Datasheet

Juniper Networks WXC Application Acceleration Platforms

The Juniper Networks WXC™ application acceleration platforms provide distributed enterprises with a scalable approach to accelerating the delivery of client-server and web-based business applications and services – including ERP, CRM, e-mail and file services as well as voice, video and terminal services such as Citrix® – over the WAN. Based on the comprehensive WX Framework™, which delivers the elements needed to accelerate applications over wide-area links and optimize WAN performance, the WXC products help businesses make the most efficient use of their existing WAN resources and improve application response times by providing a more LAN-like experience for branch office users accessing centralized applications.

Product Description

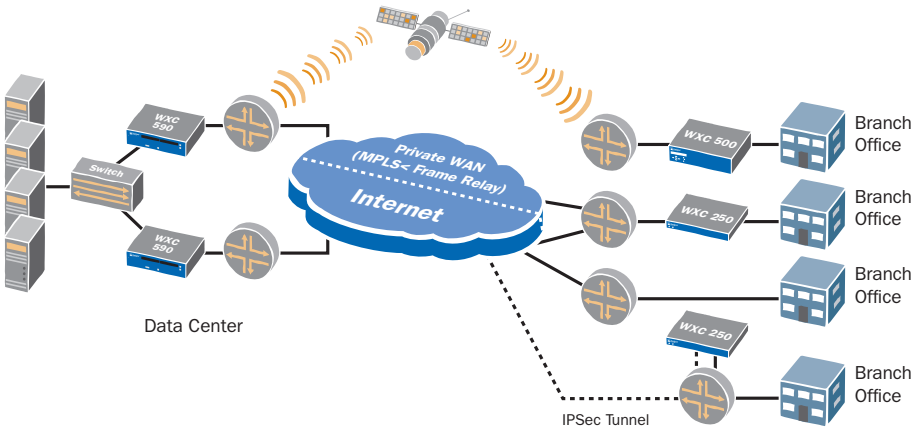
The WXC application acceleration platforms, members of a larger family of WAN optimization solutions from Juniper Networks, provide distributed enterprises with a cost-effective solution for accelerating mission-critical business applications, as well as voice, video and terminal services, over wide-area networks, maximizing WAN investments and improving application response times for branch office users.

The WXC platforms improve application performance over the WAN by recognizing and eliminating redundant transmissions, accelerating TCP and application-specific protocols, prioritizing and allocating access to bandwidth, and ensuring high application availability at sites with multiple WAN links. On-board hard drives that provide the foundation for the Network Sequence Caching feature enable the WXC devices to store particularly large data patterns over long periods of time, allowing the devices to identify and remove repetitive traffic separated by gigabytes of data or last seen days or even weeks earlier, producing up to a 100-fold increase in effective WAN capacity.

The TCP-, application- and protocol-specific acceleration features help overcome the impacts of latency, dramatically improving response times for remote and branch-office users accessing centralized applications over the WAN. Quality of Service (QoS) and bandwidth management tools allow IT to prioritize application traffic, ensuring mission-critical transactions always have sufficient bandwidth while preventing less important applications from consuming an inordinate amount of valuable WAN resources.

Integrated WebView device management software provides unprecedented visibility into WAN performance, enabling managers to identify top talkers, monitor application throughput, performance and packet distribution across the WAN, review acceleration statistics, and create Executive Summary reports that provide a high-level overview of important performance characteristics.

The WXC products communicate constantly to provide distributed stateful intelligence about the entire network, exchanging vital information such as topology, reachability, and path-performance metrics to ensure maximum efficiency. The WXC devices also interoperate with the Juniper Networks WX application acceleration platforms, contributing to a complete, integrated WAN optimization solution.



The WXC platforms support both inline and off-path configurations, as well as multipath environments, asymmetric deployments and secure IPSec configurations over public networks.

The WXC product family consists of four members: the WXC 250, the WXC 500, the WXC 590 and the WXC Stack.

WXC 250: The WXC 250 application acceleration platform features a 40 GB internal hard drive, offers two copper 10/100 Ethernet ports, and supports total reduction throughput speeds ranging from 128 Kbps to 2 Mbps. Designed for small to medium-sized branch office applications, the WXC 250 platform supports up to 10 connections to other branch office or data center WX or WXC devices.

WXC 500: The WXC 500 application acceleration platform includes redundant 250 GB internal hard drives (for a total of 500 GB of storage), two copper 10/100/1000 Ethernet ports, and support for total reduction throughput speeds ranging from 512 Kbps to 20 Mbps. Designed for large branch office and small data center applications, the WXC 500 platform supports up to 50 connections to other branch office or data center WX or WXC devices.

WXC 590: The WXC 590 application acceleration platform features redundant, field-serviceable 250 GB hard drives (for a total of 500 GB of storage), two copper 10/100/1000 Ethernet ports, and support for total reduction throughput speeds ranging from 2 Mbps to 45 Mbps. Designed for data center applications, the WXC 590 platform supports up to 140 connections to other branch office or data center WX or WXC devices.

WXC Stack: The WXC Stack pairs up to six WXC 500 and WXC 590 platforms with a WX 100 to extend support for the Network Sequence Caching function to 155 Mbps link speeds and up to 840 connected locations. In a full configuration, a WXC Stack can provide 3 TB of internal storage capacity.

Features and Benefits

Compression and Caching

The patented Molecular Sequence Reduction™ (MSR™) compression and Network Sequence Caching technologies enable WXC platforms to deliver up to a 100-fold increase in effective WAN capacity, providing immediate congestion relief for all IP-based traffic, including TCP- and UDP-based applications, while allowing businesses to avoid costly WAN upgrades.

The MSR algorithm recognizes repeated data patterns and replaces them with labels, dramatically reducing WAN transmissions and improving overall application performance. 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. By eliminating redundant traffic, the MSR compression technology delivers a 10-fold increase in effective WAN capacity.

Sequence Caching is similar to MSR in that it identifies and replaces redundant data patterns with labels before forwarding across the WAN. However, Sequence Caching utilizes hard drives only available on the WXC platforms to store larger data patterns over longer periods of time, enabling the devices to detect and eliminate repetitive traffic separated by gigabytes of data or last seen days or weeks earlier. As a result, the Sequence Caching feature enables the WXC platforms to produce up to a 100-fold increase in WAN capacity.

TCP Acceleration

The WXC platform's Packet Flow Acceleration (PFA) technology liberates data traffic from the limitations imposed by TCP, increasing throughput across the WAN and accelerating applications on low-bandwidth or high-latency connections between WX/WXC platforms. Forward Error Correction (FEC), a component of PFA, limits the need for retransmissions on "lossy" networks such as satellite links by making use of recovery packets to reconstruct lost transmissions.

SSL Optimization

The Juniper WXC SSL acceleration capabilities provide SSL encrypted applications like web-based (HTTPS), mail (imaps/pop3s/smtps), and directory services (ldaps) with the same performance benefits as unencrypted applications. Once the applications certificates and private keys are installed on the WXC, they learn on the fly the key used by the client/server. This allows the WXC to read the flow decrypted and apply all its different optimizations like compression and caching or application acceleration. To enhance security, the traffic moving between the WXC platforms is encrypted using an IPSec tunnel to ensure privacy is retained.

Application- and Protocol-specific Acceleration

The Application Flow Acceleration (AppFlow) technology improves the performance of specific applications and protocols – including Microsoft Exchange, Windows file services and web-based applications – over the WAN.

AppFlow for Microsoft Exchange and Windows and Linux file services improves application performance by accelerating their underlying protocols – MAPI and CIFS, respectively. These protocols send data in small blocks that must be received and acknowledged before the next block can be sent, requiring hundreds or even thousands of round trips to complete a single transaction. The AppFlow for Exchange and AppFlow for CIFS technology pipelines these data blocks in quick succession, delivering up to a 50-fold improvement in application performance, meeting the needs of remote and branch office users accessing centralized applications or Network Attached Storage (NAS) data over the WAN.

AppFlow for HTTP accelerates web-based applications over the WAN by enabling WXC platforms to learn and cache objects associated with URLs. Similar to MAPI and CIFS, HTTP submits a series of sequential requests for web objects, requiring tens or hundreds of round-trips between the client and server to build a web page. With AppFlow for HTTP, the WXC platform either confirms object freshness or pre-fetches updated objects in advance of the client's request, resulting in much faster pages loads.

Application Control

The WXC platform's Quality of Service (QoS) capabilities allow IT to assign priority and set bandwidth levels to ensure that business-critical and latency-sensitive applications such as Voice over IP (VoIP) always have sufficient bandwidth. 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.

In addition, a congestion control feature that tightly couples the WXC platform's QoS engine with the MSR compression technology allows QoS policies to dynamically detect changes in bandwidth availability and adjust allocation and prioritization schemes accordingly.

The WXC platform also offers a Policy-based Multipath™ feature which enables IT to assign applications to a specific path in locations served by multiple WAN links. The WXC platform monitors loss and latency characteristics on each link and automatically diverts applications to the alternate path if performance falls below acceptable levels.

WebView and WX CMS Software

Visibility into and control over the WXC platform is provided via embedded WebView device management and the powerful WX Central Management System™ (WX CMS™) software. The WX CMS software provides visibility into application performance across multiple WXC and WX devices, enabling extensive configuration, monitoring and management capabilities. Individual device monitoring and configuration can be performed via WebView device management or a command line interface (CLI).

Content distribution

Content distribution and WAN optimization are now integrated on the WXC platforms. To further reduce the delay associated with first-time downloads, WXC platforms implement content distribution that automatically push all new content to WXC devices, proactively "warming" the cache and pre-populating the hard drive with data patterns to optimize every download. This content distribution can be managed in a single location with the WX CMS software, where the distribution can be pushed to multiple locations, scheduled in advance, executed once or repetitively to ensure that all branch-offices have the freshest data.

Easy Installation and Configuration

WXC platforms can be installed and configured in just 10 minutes using a web-based installation wizard. Configuration can also be fully automated using the WX CMS software. IT simply defines centralized configuration templates; when remote WXC devices boot up, they retrieve a network address, locate the WX CMS software server through the domain name service (DNS), download their configuration file, and begin operation.

The WXC platforms also support redundant configurations to ensure complete fail-safe operations. In the event of a failure, the WXC devices automatically convert to bypass mode, allowing traffic to pass through untouched.

Transparent to other network equipment, WXC devices can be installed directly inline between a LAN switch and WAN router, or they can be deployed offline by attaching to an available port on the switch or router. The WXC products also work effectively alongside VPN servers, firewalls, and other security devices, where they optimize traffic before it is encrypted.

WXC Application Acceleration Platform Functions

Product Features	
Traffic services	IP payload compression, protocol acceleration, QoS, traffic visibility, application identification, route optimization, IPSec encryption, packet aggregation
Protocols supported	Any IP-based traffic (TCP, UDP, GRE, etc.)
Network Integration	
Installation	Inline between aggregation switch and edge router, or off WAN router using route injection (RIP), WCCPv2, or policy-based routing
Auto-deployment	No-touch auto-configuration available out of the box through WX CMS software
Transparency	Transparent bridge mode operation, configurable DSCP and IP port transparency
Topology support	Point-to-point, hub-and-spoke, full mesh
Network discovery	Via RIP v1/v2, OSPF, and router polling
Tunnel creation	Automatic or manual
Asymmetric routing support	Supported for both inline and off-path
Load balancing	Active/active or active/passive, with passive in hot standby
Fault-tolerant non-stop operation	10/100/1000BaseT auto switch-to-wire on any power, hardware, or software failure condition
High availability	Backup device can support multiple primary devices: automatically fail-to-wire
Quality of Service	
Honor, preserve and/or set ToS/DSCP	Retain settings or prioritize using ToS/DiffServ values by application
Bandwidth allocation	Create traffic classes for bandwidth allocation with time of day option
Application identification	Automatic, based on source/destination IP address/port, ToS/DSCP, IP protocol, L7 identification for HTTP and Citrix; follows port hopping applications (FTP, Exchange)
Route optimization	Multipath: application level path selection based on link SLA
Traffic Acceleration	
Packet Flow Acceleration	TCP Acceleration, Fast Connection Setup, and Forward Error Correction
Application Flow Acceleration	Microsoft CIFS, Linux file services, Microsoft Exchange and HTTP
Device Management	
SNMP, Syslog	SNMPv2c, MIB II, WX Enterprise MIB and local Syslog
Secure remote access	SSHv1, SSHv2, and HTTPS (SSL)
Reports	26 device-level reports available through WebView; 36 network-wide reports available with WX CMS
Authentication, Authorization and Accounting	AAA local database, RADIUS support
Network upgradeable	Via FTP, HTTP and TFTP; dual software images and configurations
Monitoring	
Compression statistics	Per device, per application, and per destination; both real-time and historical
WAN performance statistics	Network latency, loss, and availability for SLA monitoring and enforcement
QoS, bandwidth management	Per destination, per traffic class, real-time and historical
Acceleration	TCP session time and throughput; both real-time and historical
Data export	CSV format and NetFlow version 5 records
Application reporting	Detail by IP addresses, and/or port numbers, and/or IP protocol, and/or DSCP/ToS value, with greater detail by URL element or application type
Event/performance monitoring	Generate automatic alerts (SNMP traps, e-mail, console) for up to 200 administrator definable performance or system events

Specifications

	WXC 250	WXC 500	WXC 590	WXC Stack
Performance				
Total reduction throughput speed	128 Kbps to 2 Mbps	512 Kbps to 20 Mbps	2 Mbps to 45 Mbps	34 Mbps to 155 Mbps
Tunnels supported	Up to 10 with all features enabled	Up to 50 with all features enabled	Up to 140 with all features enabled	Up to 840 with all features enabled
Disk capacity	40 GB	500 GB (redundant 250 GB drives)	500 GB (redundant, field-serviceable 250 GB drives)	Up to 3 TB
Connections				
Network interfaces	Two copper 10/100 Ethernet ports	Two copper 10/100/1000 Ethernet ports	Two copper 10/100/1000 Ethernet ports	
Power				
Power requirement	100-240 VAC, 50-60 Hz, 150 Watts max or 510 BTU/hr	100-240 VAC, 50-60 Hz, 150 Watts max or 510 BTU/hr	Dual 100-240 VAC, 50-60 Hz, 300 Watts max or 1025 BTU/hr	
Dimensions and Weight				
(W x H x D)	17.1 x 1.8 x 14.3 in (43.4 x 4.5 x 36.3 cm) 1 rack unit	17.1 x 3.4 x 16.7 in (43.4 x 8.7 x 42.4 cm) 2 rack units	17.1 x 3.4 x 16.7 in (43.4 x 8.7 x 42.4 cm) 2 rack units	
Weight	21 lbs (9.5 kg)	25 lbs (11.3 kg)	25 lbs (11.3 kg)	
Operating Environment				
Temperature	41° to 104° F (5° to 40° C)	41° to 104° F (5° to 40° C)	41° to 104° F (5° to 40° C)	
Humidity	10% to 85%, noncondensing at 95° F (35° C)	10% to 85%, noncondensing at 95° F (35° C)	10% to 85%, noncondensing at 95° F (35° C)	WXC Stack includes 1 WX 100 and up to 6 WXC 500s or up to 6 WXC 590s
Maximum altitude	10,000 ft (3,048 m)	10,000 ft (3,048 m)	10,000 ft (3,048 m)	
Non-operating Environment				
Temperature	-40° to 158° F (-40° to 70° C)	-40° to 158° F (-40° to 70° C)	-40° to 158° F (-40° to 70° C)	
Humidity	5% to 95%, noncondensing at 95° F (35° C)	5% to 95%, noncondensing at 95° F (35° C)	5% to 95%, noncondensing at 95° F (35° C)	
Maximum altitude	40,000 ft (12,192 m)	40,000 ft (12,192 m)	40,000 ft (12,192 m)	
Regulations				
Emissions	FCC Class A, EN 55022 Class A, EN 55024 Immunity, EN 61000-3-2, VCCI Class A	FCC Class A, EN 55022 Class A, EN 55024 Immunity, EN 61000-3-2, VCCI Class A	FCC Class A, EN 55022 Class A, EN 55024 Immunity, EN 61000-3-2, VCCI Class A	
Safety	CAN/CSA-C22.2 No. 60950-1-03 - UL 60950-1 and EN 60950-1	CAN/CSA-C22.2 No. 60950-1-03 - UL 60950-1 and EN 60950-1	CAN/CSA-C22.2 No. 60950-1-03 - UL 60950-1 and EN 60950-1	
Acoustic noise	Maximum noise level is less than 70 dB	Maximum noise level is less than 70 dB	Maximum noise level is less than 70 dB	

Ordering Information

The table below reflects base models only. Bandwidth upgrades (up to 2 Mbps for the WXC 250, 20 Mbps for the WXC 500 and 45 Mbps for the WXC 590) and options such as encryption and redundant hard drives, power supplies and fans (WXC 590 only) are also available. Please contact your Juniper representative or reseller for details.

Model	Description
WXC-250	WXC 250, incl. RTU SW License to 128 Kbps
WXC-500	WXC 500, incl. RTU SW License to 512 Kbps
WXC-590	WXC 590, Dual Hard Drives, Redundant AC Power, incl. RTU SW License to 2 Mbps

About Juniper

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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To purchase Juniper Networks solutions, please contact your Juniper Networks sales representative at 1-866-298-6428 or authorized reseller.