The Future of Application Acceleration

Juniper Networks WX/WXC Application Acceleration Platforms

Business Objectives
- Reduce costs
- Increase productivity
- Ensure regulatory compliance

IT Objectives
- Consolidate servers, data centers
- Simplify administration, backup, and recovery
- Reduce branch office equipment and staff

User Objectives
- Get instant response times
- Collaborate easily and readily
- Avoid complexity

Conflict in the Distributed Enterprise
The Impact of the WAN on Applications

Inability to understand application and WAN performance

Lower-priority apps slow down critical ones

Protocol chattiness

More rich content

Limited Bandwidth

Latency

The WAN Pipe

Manageability

Application Contention

SAP

Oracle

Web

VoIP

Compress, Caching

Acceleration

Application Control

Visibility and Reporting
Key Business Initiatives:
Cut Costs; Improve Productivity

- Avoid WAN upgrade
- Increase access to shared resources
- Improve disaster recovery
- Enable new application rollout
- Reduce time to troubleshoot
- Automate remote device deployment
- Manage remote sites with no local IT staff

- Improve user productivity
- Centralize servers
- Consolidate data centers
- Achieve regulatory compliance
- Enable VoIP, other money-saving apps
- Ensure critical apps get priority service
- Make use of cheaper secondary links

WX/WXC Application Acceleration Platforms

Leading WAN Optimization and Acceleration Solutions

- Compression & caching techniques increase WAN throughput 10-50x
- Acceleration technologies speed response times via broad TCP and protocol-specific support
- Application control features prioritize traffic & optimize application delivery over multiple links
- Visibility tools provide detailed insight into application performance over the WAN
Compression & Sequence Caching

- Low latency & highly scalable
- Application & protocol independent
- Compresses large & small data patterns

Molecular Sequence Reduction
- Patented memory-based compression for 2x to 10x gains
- Centralized dictionary speeds learning
- Eliminate patterns across any application type

Network Sequence Caching
- Disk-based pattern compression delivers 10x to 100x gains
- Compresses even under simultaneous downloads
- Supports unidirectional learning
- Proactively pushes new content to warm dictionaries

Application Acceleration

- Reduces impact of latency on slow apps
- Scales the flow & fills the pipe
- Overcomes impact of chatty protocols

Packet Flow Acceleration
- Increases TCP throughput
- FEC recovers dropped packets

Application Flow Acceleration
- Big gains even on low latency links (30 ms)—File services (CIFS), Exchange (MAPI)
Application Acceleration Results

<table>
<thead>
<tr>
<th>Application</th>
<th>ClearCase</th>
<th>CVS</th>
<th>WebDAV</th>
<th>HTTP</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
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<table>
<thead>
<tr>
<th>Protocol</th>
<th>CIFS</th>
<th>MAPI</th>
<th>FTP</th>
<th>TSM Backup</th>
<th>Sybase</th>
<th>SAP</th>
<th>Oracle</th>
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Maximum Improvement
Minimum Improvement

**4x to 14x Improvement**

**8x to 30x Improvement**

**2x to 5x Improvement**
Application Control

- Integrated QoS manages newly created bandwidth
- Effectively responds to packet loss
- Use redundant links to improve availability

Quality of Service

- Application-based policies
- Easy to use, with templates & wizards
- Designed to work with MPLS CoS

Policy-based Multipath

- For sites with multiple links
- Select path based on app
- Monitors performance
- Diverts traffic to alternate path if link fails or degrades

Visibility and Reporting

- WX CMS essential for large deployments
- Comprehensive reporting (36 different reports)
- Eliminates the need for on-site IT visits

Web View

- Device-based configuration & management
- Reports on applications & traffic
- Executive dashboards

WX CMS Software

- System-wide configuration & management
- Automated deployment & license management
- Global policies & monitoring
- Data collection for trending
Visibility: My WAN™ Portal

- User customizable WAN portal
- Provides an at-a-glance view of WAN performance & acceleration, including:
  - Highest reduction
  - Lowest availability
  - Highest time above latency threshold
  - Highest loss

Visibility: WAN Executive Reporting

Reduction Summary

<table>
<thead>
<tr>
<th></th>
<th>Reduction</th>
<th>Effective WAN Capacity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Peak Data Reduction</td>
<td>16.3 GB</td>
<td>3.47 X</td>
</tr>
<tr>
<td>Total Data Reduction</td>
<td>39.2 GB</td>
<td></td>
</tr>
<tr>
<td>Total Bytes Into Peribit</td>
<td>55.5 GB</td>
<td></td>
</tr>
<tr>
<td>Total Bytes Reduced</td>
<td>16.3 GB</td>
<td></td>
</tr>
<tr>
<td>Total Bytes Out of Peribit</td>
<td>39.2 GB</td>
<td></td>
</tr>
<tr>
<td>Total Data Reduced</td>
<td>71.2 %</td>
<td></td>
</tr>
<tr>
<td>Peak Data Reduced</td>
<td>78.9 %</td>
<td></td>
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</tbody>
</table>

Application Summary

<table>
<thead>
<tr>
<th>Application</th>
<th>Percent of Traffic To and From WAN by application</th>
</tr>
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<tbody>
<tr>
<td>Web</td>
<td>16%</td>
</tr>
<tr>
<td>SAP R/3</td>
<td>24%</td>
</tr>
<tr>
<td>Email</td>
<td>13%</td>
</tr>
<tr>
<td>Lotus Notes</td>
<td>11%</td>
</tr>
<tr>
<td>Other</td>
<td>19%</td>
</tr>
<tr>
<td>FTP</td>
<td>13%</td>
</tr>
<tr>
<td>Telnet</td>
<td>16%</td>
</tr>
<tr>
<td>SNMP</td>
<td>13%</td>
</tr>
<tr>
<td>Remaining</td>
<td>19%</td>
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Path Latency Distribution

Path Loss Distribution
Automated Deployment
- Ideal for branch offices with no IT staff
- Create configurations centrally on WX CMS
- Just connect Ethernet and power

Driving Strategic Value

Purchasing Decision
- Strategic
  - Latency
  - Contention
  - Manageability
  - Bandwidth
- Tactical
  - Limited
  - Broad

Deployment
- WXOS 1.0
- WXOS 2/3
- WXOS 4.0
- WXOS 5.0
- WXOS 5.1

Driving Strategic Value
- QoS Prioritization
- QoS Wizard
- TCP Accel. (passive)
- TCP Accel. (active)
- Multipath
- Dynamic BW Detection
- WebView
- Traffic Analysis
- Central Configuration
- Advanced Monitoring
- Auto-deploy
- My WAN
- Dictionary Compression
- Header Compression
- Advanced Encoding
- Caching
- Refinements

Dictionary
- Compression
- Caching
- Traffic Analysis
- Central Configuration
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- Multipath
- Dynamic BW Detection
- WebView
- Dictionary Compression
- Header Compression
- Advanced Encoding
- Caching
- Refinements
Editor’s Choice: Two for Two

- **Best WAFS Product, April 2006**
  - "Juniper's WXC WAN Acceleration Appliance came out on top... when you add in-depth reporting, reliability and ease of use on the user end, it stands out as the clear winner."

- **Second Award in Two Years**
  - November 2004 Editor's Choice: Best WAN Accelerator
  - "World-class WAN accelerator, with superior performance and a solid feature set."

Juniper Enables Enterprise Objectives
IT streamlines ops while delivering LAN-like response times

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**User Objectives**
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Juniper Enables Enterprise Objectives
IT streamlines ops while delivering LAN-like response times

IT
- Data centers, servers consolidated
- Admin, backup, and recovery simplified
- Branch office simplified

Business
- Costs reduced
- Productivity increased
- Compliance ensured

Users
- LAN-like app response times
- Collaboration is easy and readily available
- No complexities introduced

Looking Ahead: The Juniper Networks Application Acceleration Strategy

A vision to solve important application performance issues and unique position to execute

New WX CMS software delivers key functionality for managed service providers and large Enterprises

Accelerate More Apps
- Accelerate SSL
- Cache Web content
- Enforce AppRules in the branch
- Enable content distribution
- Add more app-specific support

Leverage Visibility and Reporting
- Virtualized views
- Role-based views
- Segmented access
- Internet app classifications
- Trend Reports

Increase Reach and Scalability
- Deliver a WX agent
- Scale OC-3 and beyond
- Increase resiliency/HA
**Strategy - Accelerate More Apps**

**Customer Challenges**
- Accelerate SSL-encrypted applications
  - Improve the performance doubling of DX
  - Reduce round trips for rich content
  - Ensure security

**Juniper Strategy**
- WX accelerate SSL-encrypted flows
- Add Web content caching to WX
- Enforce DX AppRules at the branch

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**Strategy - Accelerate More Apps**

**Customer Challenges**
- Inconsistent user experience

**Juniper Strategy**
- Enable efficient and elegant content distribution
Strategy - Accelerate More Apps

Customer Challenges
- Inconsistent user experience

Juniper Strategy
- Enable efficient and elegant content distribution

Strategy - Accelerate More Apps

Customer Challenges
- User application performance suffers from multiple round trips

Juniper Strategy
- Broaden acceleration benefits to more apps
Strategy – Increase Reach & Scalability

Customer Challenges
- Branch solutions impractical for extended enterprise
  - Branch of one
  - Home and mobile workers
  - Partners and customers

Juniper Strategy
- Deliver a WX agent

Strategy – Leverage Visibility & Reporting

Customer Challenges
- Large pervasive deployments require a platform that integrates visibility, acceleration, and reporting
  - SPs: offer high value services
  - Ent: enables operationalization

Juniper Strategy
- Enhance visibility and reporting integrated with acceleration
Strategy - Leverage Visibility & Reporting

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WAN Optimization

TCP & CIFS
Compression/Caching
QoS & Multipath
Visibility & Reporting

Strategy - Leverage Visibility & Reporting

Customer Challenges
- SPs and large enterprises need to be able to do this at scale

Juniper Strategy
- Centralized multi-customer, multi-departmental management
  - Segment management access based on business policy

Business Executive
Application Manager
Capacity Planner
Network Manager
Network Operations Center/ Customer Care/Help Desk
Customer View into Service Levels

WX CMS
Strategy – Leverage Visibility & Reporting

Customer Challenges
- Lack of tools to identify and control Internet applications (e.g., Skype)
- Proactively manage WAN resources

Juniper Strategy
- Provide app classification for Internet/port hopping apps
- Report WAN Trends

Broad Portfolio for Enterprise
Global Support Services Ensure Success

- 12 JTAC centers worldwide
- Worldwide spares availability - 557 depots in 80+ countries
- Global professional service
- Global training available

Thank You!