



Product Overview

Juniper's Application Acceleration Service for Juniper Networks Junos Pulse is an integrated, application acceleration software solution for mobile and small office/home office end users. Junos Pulse improves application response times by providing LAN-like performance for applications regardless of end user location. The Application Acceleration Service is seamlessly integrated into Junos Pulse, working in conjunction with other Junos Pulse capabilities such as Network Connect and network access control, and delivering a single, easy to use and manage PC client for mobile users.

Product Description

Juniper Networks® Junos® Pulse Application Acceleration Service represents the next generation in enterprise application acceleration because enterprises can now enable cost-effective, dynamically provisioned, pervasive application acceleration that is location agnostic. Employees who travel outside the branch or the head office can be assured of accelerated access to their applications in real time. The Pulse client also provides an easy to use, affordable solution for small offices where a dedicated application acceleration appliance may not be economically feasible. Home offices and small branch offices need fast response times for critical applications traversing long distances back to the central site. External contractors and partners who need access to the enterprise extranet are also assured fast, reliable, and secure connections to enterprise applications, enhancing collaboration.

The Junos Pulse Application Acceleration Service works by automatically detecting and establishing a communication with a Juniper Networks WXC Series Application Accelerations Platforms appliance located in the corporate data center. Once that connection is made, it optimizes application traffic using compression and protocol acceleration techniques which are described below. The WXC Series appliance monitors and manages remote Pulse clients that are distributed across the enterprise on end user laptops and PCs. There is no additional hardware or software needed to manage Application Acceleration Service licensing, as this capability is provided in the WXC Series appliance itself. The Junos Pulse Application Acceleration Service can be installed on the end user's PC individually or with other Pulse features. The service works transparently to improve application response times by applying compression and protocol acceleration techniques to data traffic. End users are not required to make any changes to their Windows environment or processes and can continue working as before, while enjoying much faster access to applications.

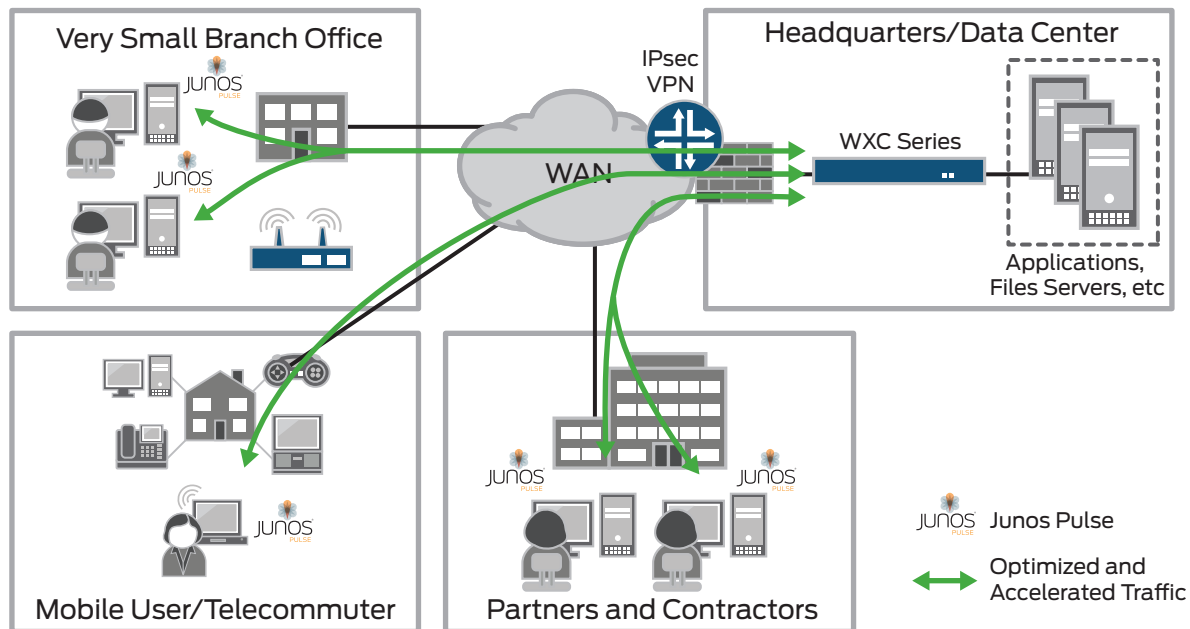


Figure 1: Junos Pulse client deployment scenarios

The Junos Pulse Application Acceleration Service is available as a concurrent user license on WXC Series appliances, and it communicates with these appliances to optimize traffic using a peer-to-peer model. IT administrators have a variety of options available to download and install the Application Acceleration Service to end user machines. End users can securely download the Pulse client from the WXC Series appliance using password-protected access (Web download), or IT administrators can push it to end user machines using existing distribution tools such as Microsoft Systems Management Server (SMS) via a preconfigured Microsoft Installer (MSI) package. A third option that transparently deploys and starts the Application Acceleration Service is available when the Pulse client is deployed in conjunction with Juniper Networks SA Series SSL VPN Appliances.

The Pulse Application Acceleration Service is also compatible with a wide variety of third-party VPN solutions, software, and accessories (such as 3G/wireless cards and USB modems) that reside on end user machines. Juniper has tested and validated interoperability with VPN solutions and wireless cards from multiple vendors.

Secure, Accelerated Remote Access—Auto Deployment of Junos Pulse Application Acceleration Service from the SA Series Appliances

Unlike other solutions in the industry where application acceleration, remote access, LAN access, and wired/wireless access are separate and discrete products that reside on the end user's desktop creating complexity, the Junos Pulse client combines these separate functions into a single, integrated solution with a single user interface (UI) and a single tray icon, delivering simplicity, power, and ease of use.

The Junos Pulse Application Acceleration Service is unique in the industry because of its integration with Juniper's secure remote access appliance. When Application Acceleration Service is deployed in conjunction with the SA Series SSL VPN appliance, it can dynamically download these features to end users and provision secure, accelerated remote access for employees, partners, and contractors.

A key challenge for IT administrators in deploying software on hundreds or thousands of end user machines is managing the distribution of that software and maintaining software version control. Juniper solves this problem by automating the deployment of the Application Acceleration Service from the SA Series when the user first connects to the SA Series device to establish a secure remote access connection. Thereafter, automatic configuration synchronizations between the Pulse client and the backend WXC Series server ensures that end user traffic is secure and is being accelerated based on policies defined in the WXC Series device. This minimizes the deployment complexity associated with managing the distribution of software and configuration to end user machines on an ongoing basis.

Most software clients must be manually started to accelerate traffic, which in turn requires that the end user remember to start their software client when they are remote. With Juniper's Pulse Application Acceleration Service, acceleration can be automatically started once the end user's Pulse VPN connection is established. This ensures that the end user always has Application Acceleration Service running when they are working remotely in low bandwidth or high latency environments.

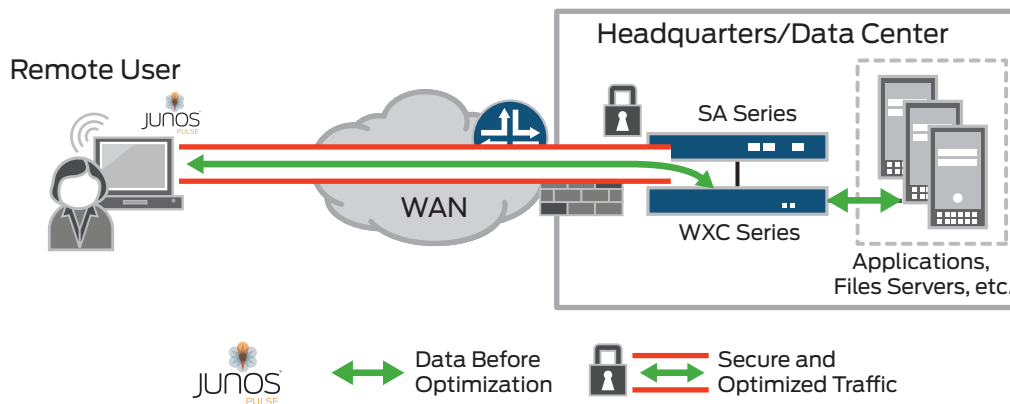


Figure 2: Juniper's integrated secure and optimized remote access solution

Integrating Application Acceleration Service into the Junos Pulse client provides automated download and management via a feature rich authentication, acceleration, and policy platform, providing IT administrators with a simple way to ensure that all remote end user traffic is both secure and accelerated.

Junos Pulse

Junos Pulse is an integrated, multiservice network client enabling anytime, anywhere connectivity, security, acceleration, and collaboration with a simplified user experience that requires minimal user interaction. Standards-based Junos Pulse makes secure network and cloud access easy through virtually any device—mobile or non-mobile, Wi-Fi or 3G-enabled, managed or unmanaged—over a broad array of computing and mobile operating systems.

Junos Pulse enables dynamic, identity-based cloud, network, and application access and security. Through Junos Pulse, enterprises can now know who is accessing their network and applications, when, how, from where, and via what device. Junos Pulse delivers granular, accelerated remote and local access control based on user identity and role, device type and integrity, and location. Plus, Junos Pulse provides robust endpoint malware and security checks—before and after authentication—ensuring that only authenticated and authorized users with healthy devices can access network and cloud-based resources.

Junos Pulse builds on and integrates with the multiservice, interoperable Juniper Pulse gateways. These are comprised of the Juniper Networks SA Series SSL VPN Appliances, Juniper Networks IC Series Unified Access Control Appliances, and/or Juniper Networks WXC Series Application Acceleration Appliances, delivering dynamic, granular identity- and role-based accelerated,

SSL-based remote access and local network access control (NAC). Easy to deploy and manage with virtual plug-and-play connectivity, the Junos Pulse solution delivers dynamic, secure network and cloud accessibility regardless of platform. Pulse enables safe, protected cloud and network access for a diverse user audience (employees, contractors, partners) over a variety of devices (managed notebook, home desktop PCs, netbooks, smartphones, kiosks), from different locations (office, home, airport, hotel, or almost any other location where Internet access is available). The intelligent features of Junos Pulse, particularly its location awareness and session migration features, ensure automatic, dynamic, “anytime anywhere” cloud and network access without user intervention, regardless of where that user might be.

By leveraging the market-leading SA Series SSL VPN Appliances, Junos Pulse delivers secure mobile network and application access to enterprises around the globe. It also enables service providers worldwide to deliver powerful secure remote access managed services for virtually any smartphone or other web-enabled mobile device. Junos Pulse, in conjunction with the SA Series appliances, delivers improved mobile productivity and security with ubiquitous mobile access to network and cloud-based resources, anytime and anywhere using any web-enabled mobile device.

Junos Pulse also serves as an integration platform for select third-party applications. An example of this is Juniper's OEM of the market-leading Webroot Spysweeper anti-spyware and anti-malware offering, which serves as Juniper's enhanced endpoint security feature within Junos Pulse when deployed and licensed with the SA Series and IC Series appliances.

Features and Benefits

The Junos Pulse Application Acceleration Service offers a full suite of application acceleration technology to accelerate WAN traffic and improve application response times for mobile and small office/home office users. Easy to install and requiring little to no end user intervention, the Pulse Application Acceleration Service is a Windows-based desktop application that works transparently in the background without interfering with other applications that may be installed on an end user's machine. The Application Acceleration Service improves application performance over the WAN by recognizing and eliminating redundant transmissions, and accelerating TCP and application-specific protocols.

Memory-Based Compression

Juniper's compression technologies enable the Application Acceleration Service to deliver a manyfold increase in effective WAN capacity by rapidly and efficiently optimizing data patterns, and significantly reducing the amount of traffic that crosses the WAN. Memory-based compression provides significant benefits for the majority of user applications on the first and consecutive passes of traffic.

TCP Acceleration

While compression effectively increases available bandwidth, TCP acceleration improves the performance of TCP applications where the use of available bandwidth is constrained by network latency. The Application Acceleration Service uses Packet Flow Acceleration (PFA™) technology to more fully utilize link bandwidth, increasing throughput across the WAN for TCP applications and accelerating applications on long haul network connections. The end result is that applications can run many times faster, improving worker productivity and enhancing business performance. TCP acceleration optimizes a broad range of TCP-based applications such as HTTP, FTP, and email, as well as Enterprise Resource Planning (ERP) applications such as Sharepoint, Documentum, Siebel, Oracle, and SAP.

Further, virtual window expansion for flows of highly compressed traffic greatly increases the amount of data that can be sent each round-trip time (RTT), dramatically improving the performance of bulk traffic types like FTP, backups, and large file downloads, to name just a few. This is done in a way that is transparent to the applications and hosts involved.

Application-Specific Protocol Acceleration

Application-specific protocol acceleration on the Pulse client plays a key role in managing latency. Application Acceleration Service uses Application Flow Acceleration™ (AppFlow™) technology to provide transparent acceleration for the Microsoft Common Internet File System (CIFS) protocol, which is constrained by much smaller windows than TCP. This dramatically improves the end user's experience with remote file server access and file sharing. In addition, the object store selectively caches hot objects in the WXC Series cache to minimize the need to fetch repetitive data across the WAN.

AppFlow for CIFS Windows improves application performance for Windows file services by accelerating the underlying protocol (CIFS). The CIFS protocol sends data in small blocks that must be received and acknowledged before the next block can be sent. This requires hundreds or even thousands of round-trips to complete a single transaction. The AppFlow for CIFS technology pipelines these data blocks in quick succession, delivering in excess of a 50-fold improvement in application performance to meet the needs of remote and branch office end users accessing centralized applications or network attached storage (NAS) data over the WAN.

Ease of Configuration

To simplify configuration, the Application Acceleration Service uses a secured dynamic endpoint discovery mechanism to form adjacencies with the WXC Series appliance on the fly, thus eliminating the requirement for any upfront setup between the two endpoints. All traffic passing between the Pulse client and WXC Series appliance is flow-based, and all application flows that match the acceleration policies are optimized. This occurs in a way that is transparent to the end user and the application itself.

There is no end user configuration required on the Pulse client for application acceleration. All application acceleration policies and services such as compression, acceleration, and monitoring are configured on the WXC Series appliance using the Web GUI. Pulse clients obtain their acceleration service policies "on the fly" from the WXC Series appliance, and do not require a separate configuration. This enables extreme ease of use and transparency for end users who can then focus on getting their work done.

Ease of Deployment

By integrating with the SA Series SSL VPN appliance, the Junos Pulse Application Acceleration Service solves the problem of software distribution to thousands of end user machines, helping IT maintain control over versions and configuration policies. IT administrators can specify a deployment policy for the Application Acceleration Service in SA Series appliances that enables an automatic download and launch upon connection to the SA Series SSL VPN appliance. This is transparent to the mobile end user. Thereafter, every time the end user starts a VPN session, an automatic check is performed to determine if the Pulse client software needs to be upgraded to a newer version or configuration file. With this solution, IT administrators do not need to spend time enforcing upgrades or managing distributions.

Low Total Cost of Ownership

The Pulse Application Acceleration Service deployed at the small branch office does not require a separate WAN optimization device. This reduces the cost and management burden in a small branch office, while providing all of the benefits of the WXC Series solution. Pulse Application Acceleration Service features are licensed and managed by the headend WXC Series appliance. By combining monitoring, management, and licensing functions in a single appliance, customers benefit from reduced operating costs and the fact that they do not need to have a separate licensing server.

Simple and Economic Licensing Model

The Junos Pulse Application Acceleration Service licensing model is simple and economic. It is based on the number of concurrent end users connected with WAN acceleration enabled. Companies can thus distribute Application Acceleration Service capabilities to all of their employees and acquire a user license for a fraction of their work force, since not all employees will be connected remotely at the same time. Additionally, to ensure that acceleration is appropriately allocated to those who need it most, the WXC Series appliance monitors concurrent application acceleration connections, putting active end users ahead of those who are idle.

Troubleshooting

There is an advanced view available on the end user's machine for troubleshooting, when that is needed. In the Pulse advanced user interface, the application acceleration logging, configuration, and diagnostic information can be viewed and saved, or it can be emailed to Technical Support for analysis and diagnosis. The diagnostic file contains information on configuration files, diagnostics, log files, and other data needed for troubleshooting.

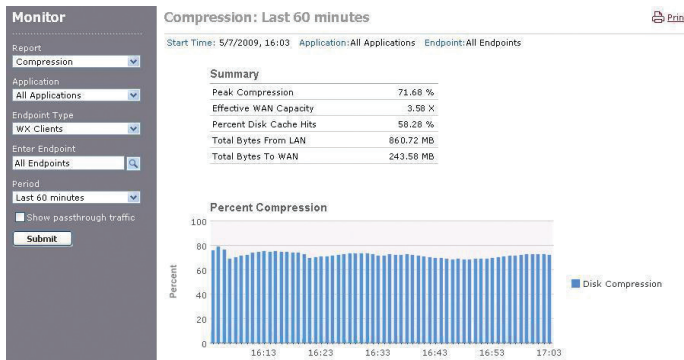
Table 1: Junos Pulse Application Acceleration Service—Features and Benefits

FEATURE	FEATURE DESCRIPTION	BENEFITS
Auto discovery	Application acceleration service automatically discovers headend WXC Series appliances in the network path and dynamically negotiates optimization services based on the configuration policies set in the WXC Series appliance.	No upfront tunnel setup such as IP address configuration or hard coding is required, which minimizes configuration complexity.
Memory-based compression	Memory-based compression feature rapidly and efficiently compresses data patterns to deliver a significant first pass performance boost for applications accessed over the WAN.	Effectively increases WAN capacity several fold.
TCP acceleration	Packet Flow Acceleration (PFA™) technology more fully utilizes link bandwidth by liberating data from the limitations imposed by TCP protocol.	Reduces latency caused by the application protocol and accelerates TCP-based applications on high latency networks, greatly improving end user response times
CIFS acceleration	AppFlow for CIFS Windows improves application performance for Windows file services by accelerating the underlying protocol (CIFS). In addition, the object store selectively caches hot objects in the WXC Series cache to minimize the need to transport repetitive data over the WAN.	Improves file transfer and sharing performance by up to 50 fold.
Automatic configuration synch ups	Upon the WAN acceleration feature establishing a connection to the headend server appliance, the configuration policies are automatically exchanged. This is completely transparent to the user, and does not require any intervention by the administrator.	There is no requirement to download updated configurations to end user machines or manage configuration synchronization among thousands of clients.
Integration with (non Pulse) SA Series appliance	Auto download and launch of Application Acceleration Service upon starting an SA Series session; application acceleration feature software and configuration policies can be updated in a way that is transparent to the end user.	Provides a simplified, transparent application acceleration feature for distribution and launch, and ease of administration.
VPN compatibility	Compatible with Juniper VPN solutions as well as VPN solutions from third-party vendors such as Cisco and Nortel.	Customers do not need to make any changes to their VPN infrastructure, and can preserve their existing investments.

Junos Pulse Application Acceleration Service—Monitoring and Management

Web UI Management Interface

The WXC Series appliance provides licensing, monitoring, and management of Application Acceleration Service on Pulse clients. The WebUI, a graphical user interface for IT administrators and managers, provides visibility into and control over deployment of Application Acceleration Service to end user machines. Global as well as individual Application Acceleration Service configuration policies can be set using simple point and click functions.



The WebUI also provides extensive monitoring and reporting capabilities. IT managers can obtain high-level and detailed views into application acceleration and compression statistics, and generate reports using a variety of filters depending upon their specific needs. They are able to analyze application performance and acceleration on the WAN. They can gain insights into how

the WAN is performing over different periods of time and which applications are benefiting most from optimization.

A variety of reports are available from the WebUI. Summary reports can be generated for WAN applications throughput, overall compression for all end users and applications, as well as compression by individual end user and application. IT managers can view compression ratios achieved, along with the number of accelerated connections established with the WXC Series appliance. Reports are available for granular time periods ranging from the last hour to the last week, enabling managers to see fluctuations in application acceleration performance based on time of day and week.

High Availability

The WXC Series appliances support high availability of remote user access to ensure complete fail-safe operations, and guarantee that end users will have application acceleration always available to them when they are working remotely. Two WXC Series appliances can be configured such that in the event of a failure, the healthy appliance continues the optimization of incoming traffic and end users can continue to enjoy faster application access.

If only a single WXC Series appliance is deployed, then in the event of a failure, the WXC Series appliance automatically fails-to-wire, converting to bypass mode and allowing traffic to pass through untouched. Using this approach, end user work is not disrupted.

Table 2: Junos Pulse Application Acceleration Service Monitoring and Management—Features and Benefits

FEATURE	FEATURE DESCRIPTION	BENEFITS
SNMP, system log	SNMPv2c, MIB II, WXC Series enterprise MIB, and local system logging.	Use of standard protocols for monitoring.
Secure remote access	SSHv1, SSHv2, and HTTPS (SSL).	Secure, authenticated access to the WXC Series device.
WAN performance statistics	High-level and detailed statistics on how much data is getting compressed and accelerated by endpoint and application.	Allows IT managers to see the benefits of WAN optimization that end users are getting.
Reporting	Executive and detailed reporting on compression and acceleration by individual and aggregate endpoints and applications.	Ability to make decisions based on performance metrics and how the WAN is being utilized.
Authentication, Authorization, and Accounting (AAA)	AAA local database support.	Leverages widely used standards for authentication.
High availability	Ensures fail-safe operation; fail-to-wire in the event of a failure.	End user work not disrupted in the event of a failure; network not affected.
Application Acceleration Service delivery—auto download	Application Acceleration Service can be configured to be automatically downloaded and launched upon starting the Juniper SA Series Network Connect VPN session.	Completely transparent install for the end user; easy to deploy for IT.
Application Acceleration Service delivery—Web download	End users can download the Junos Pulse client with Application Acceleration Service from a secure link specified by the administrator.	Easy to distribute software to a large number of end users by simply directing them to a secure link.
Application Acceleration Service delivery—MSI package installation	Administrators can choose to distribute the Application Acceleration Service as an MSI package using distribution tools such as Microsoft SMS.	Leverages commonly used distribution method.
Application definitions	50 applications are provided predefined and preconfigured for optimization; 512 applications can be defined for optimization; up to 100 applications can be monitored.	Allows IT administrators to take advantage of existing application definitions and also have the flexibility to define new applications used in their enterprise.

Specifications

PC Software Requirements for Installation of Application Acceleration Service

- Windows XP Professional SP2 (32 bit versions only)
- Windows Vista (32 and 64 bit support)
- Windows 7 (32 and 64 bit support)
- Internet browsers supported: Internet Explorer 6.0, 7.0, Firefox 3.0+
- Internet browsers need to support Java and ActiveX to download the Application Acceleration Service from the WXC Series appliance
- Administrator privileges are required to install the Application Acceleration Service on a PC
- Intel Pentium M1400 or higher
- 512 MB RAM or higher
- 2 GB free disk space or higher

WXC Series Appliance Hardware Requirements

The following WXC Series appliances are supported for Application Acceleration Service solution:

- Juniper Networks WXC2600 Application Acceleration Platform
- Juniper Networks WXC3400 Application Acceleration Platform
- Juniper Networks WXC590 Application Acceleration Platform

WXC Series Appliance Software Requirements:

- WXC Series appliances must be running JWOS 6.1 operating system.

Juniper Networks Services and Support

Juniper Networks is the leader in performance-enabling services and support, which are designed to accelerate, extend, and optimize your high-performance network. Our services allow you to bring revenue-generating capabilities online faster so you can realize bigger productivity gains and faster rollouts of new business models and ventures. At the same time, Juniper Networks ensures operational excellence by optimizing your network to maintain required levels of performance, reliability, and availability. For more details, please visit www.juniper.net/us/en/products-services/.

Ordering Information

The WAN acceleration feature is available as a concurrent user license upgrade option for the WXC2600, WXC3400, and WXC590 appliances. The WAN acceleration feature concurrent user licenses are shown in the table below.

Not all user licenses are available on all supported platforms. Please contact your Juniper Networks representative or reseller for details.

A WXC Series hardware appliance (WXC2600, WXC3400, or WXC590) is required to deploy the WAN acceleration feature user license. Please contact your Juniper Networks representative or reseller for details

WAN Acceleration Feature Concurrent User License Options

MODEL NUMBER	DESCRIPTION
WXOS-CLIENT-X-25	WAN acceleration feature license for up to 25 simultaneous users
WXOS-CLIENT-X-100	WAN acceleration feature license for up to 100 simultaneous users
WXOS-CLIENT-X-250	WAN acceleration feature license for up to 250 simultaneous users
WXOS-CLIENT-X-500	WAN acceleration feature license for up to 500 simultaneous users
WXOS-CLIENT-X-1000	WAN acceleration feature license for up to 1,000 simultaneous 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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