



# JUNOS PULSE APPLICATION ACCELERATION SERVICE

## Product Overview

As today's workforce has become more mobile and remote, productivity continues to be hampered by applications which are information laden, cumbersome and time-consuming to access remotely and download.

Juniper's Junos Pulse Application Acceleration Service improves remote, mobile and branch user productivity by providing LAN-like access to and performance for applications regardless of user location. Users can now enjoy a similar level of access speed and maneuverability from their mobile, remote Microsoft Windows-based devices as they enjoy from their network tethered devices. The Application Acceleration Service is seamlessly integrated into Junos Pulse, working in conjunction with other Junos Pulse services such as the Junos Pulse Secure Access Service to provide role- and location-based accelerated, secure remote and mobile network and application access, saving enterprises time and cost, while increasing remote user productivity.

## Product Description

With Juniper Networks® Junos® Pulse Application Acceleration Service, enterprises can now enable cost-effective, dynamically provisioned, pervasive application acceleration in concert with secure, remote access that is identity-based and location agnostic for their remote, mobile, branch and home office users, and teleworkers, delivering automated, accelerated, role-based network and application access. Employees who work or travel outside the corporate office can be assured of accelerated access to robust applications in real time. The Junos Pulse Application Acceleration Service also provides an easy to use, affordable application acceleration solution for SMBs. Mobile and remote users, home offices and small branch offices need fast response times for and secure access to critical applications traversing long distances back to a central site. External contractors and partners who need remote 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 communication with a Juniper Networks MAG Series Junos Pulse Gateways device located in a corporate data center. Once a connection has been established, traffic for applications including EMC Documentum, Microsoft Exchange applications including SharePoint and others, as well as Microsoft Outlook is optimized using proven and innovative compression and protocol acceleration techniques. The MAG Series gateways and service modules monitor and manage remote instances of the Junos Pulse Application Acceleration Service distributed across Windows-based laptops and PCs. There is no additional hardware or software needed to manage the Application Acceleration Service licensing, as this capability is provided in the MAG Series gateways and service modules. The Junos Pulse Application Acceleration Service can be installed on an end user's Windows device individually or with other Junos Pulse services, such as Juniper Networks Junos Pulse Secure Access Service, delivering secure, role-based remote access over Juniper's market-leading SSL VPN. The Junos Pulse Application Acceleration 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. Junos Pulse Application Acceleration Service also enhances usability and reduces help desk calls by automating many mundane or potentially confusing tasks, such as installation,

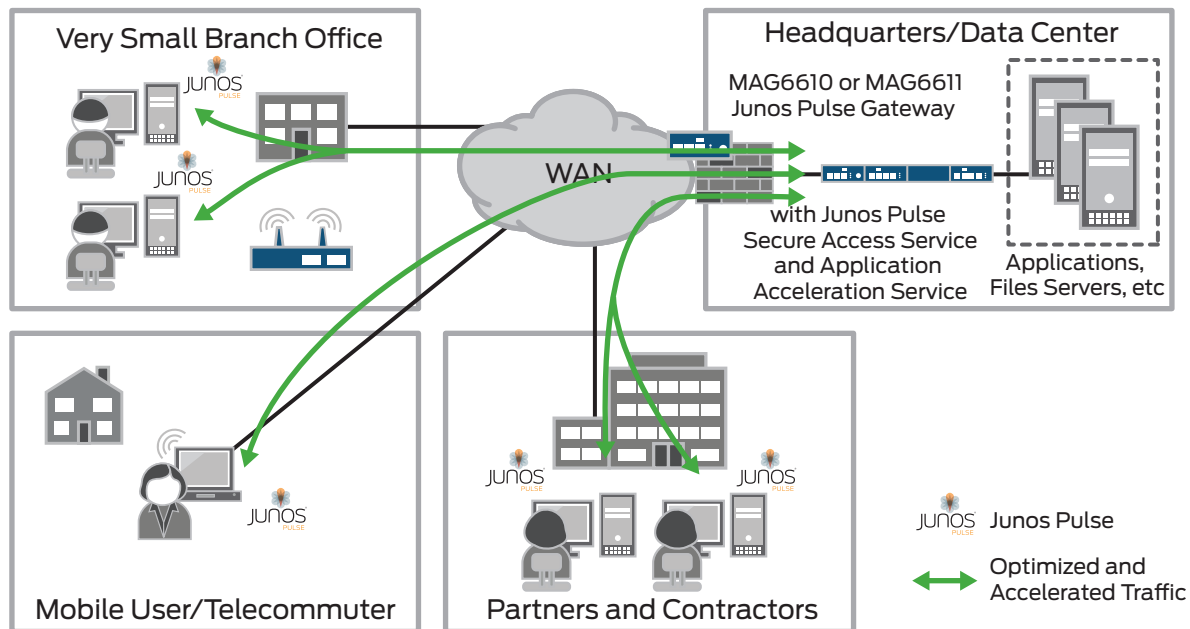


Figure 1: Junos Pulse Application Acceleration Service deployment scenarios

configuration, client upgrades, application updates, appliance discovery and interaction, and back version compatibility. It also provides localized acceleration, optimization and error messages, enabling enterprises to deploy the Junos Pulse Application Acceleration Service worldwide.

The Junos Pulse Application Acceleration Service is available as a concurrent user license on MAG Series gateways and service modules enabled for application acceleration—specifically Juniper Networks MAG4611 Junos Pulse Gateway, and MAG-SM161 and MAG-SM361 service modules. It communicates with these gateways and service modules to optimize traffic. IT administrators have a variety of options available to download and install the Junos Pulse Application Acceleration Service to end user devices. End users can securely download the Junos Pulse client from the appropriate MAG4611 Junos Pulse Gateways device using password-protected access (Web download), or IT administrators can push the client to end user devices 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 Junos Pulse Application Acceleration Service is available when the Junos Pulse client is deployed in conjunction with existing, updated Juniper Networks SSL VPN appliances and gateways, including the MAG Series gateways running Junos Pulse Secure Access Service, or legacy Juniper Network SA Series SSL VPN Appliances.

The Junos Pulse Application Acceleration Service is also compatible with a wide variety of third-party VPN solutions, software, and accessories (such as 3G/4G wireless cards and USB modems) that reside on end user devices. Juniper has tested and validated interoperability with VPN solutions and wireless cards from multiple vendors.

## Secure, Accelerated Remote Access

Unlike other solutions where application acceleration, secure remote access, network access control, and wired/wireless access are separate and discrete products that reside on an end user's desktop creating confusion and complexity, the Junos Pulse client combines these separate functions into an integrated solution with a single user interface 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 Junos Pulse Secure Access Service, which provides secure, remote access. When Junos Pulse Application Acceleration Service is deployed in conjunction with the Juniper Networks SSL VPN products—the MAG Series Junos Pulse Gateways running Junos Pulse Secure Access Service, or the SA Series SSL VPN appliances—it can dynamically download application acceleration capabilities to end users, based on their role, and provision secure, accelerated remote access for employees, partners, and contractors, if their role allows it.

A key challenge for IT administrators in deploying software on end user devices 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 MAG Series gateways when the user first connects to the appropriate gateway. Thereafter, automatic configuration synchronization between the Junos Pulse client and the backend MAG Series gateway ensures that end user traffic is secure and accelerated based on policies defined in the Junos Pulse gateways and services. This minimizes the deployment complexity associated with managing the distribution of software

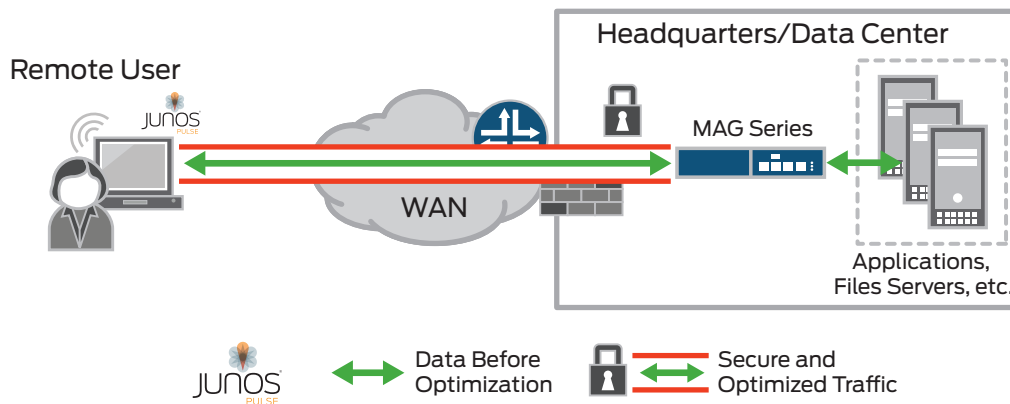


Figure 2: Juniper's integrated secure, accelerated remote access solution

and configuration to end user devices 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 Junos Pulse Application Acceleration Service, acceleration can be automatically started once the end user's Juniper Networks SSL VPN connection is established. This ensures that the end user always has the Application Acceleration Service running when they are working remotely in low bandwidth or high latency environments.

The Junos Pulse Application Acceleration Service integrated with the Junos Pulse client delivers 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 user traffic is both secure and accelerated.

### Junos Pulse

Junos Pulse is an integrated, multiservice network client enabling anytime, anywhere connectivity, security, and acceleration with a simplified user experience that requires minimal user interaction. Standards-based Junos Pulse simplifies secure network and cloud access for virtually any device—mobile or non-mobile, Wi-Fi or 3G/4G-enabled, managed or unmanaged—over a broad array of computing and mobile operating systems.

Junos Pulse builds on and integrates with the multiservice, interoperable MAG Series Junos Pulse Gateways. The MAG Series gateways offer a number of services, including the Junos Pulse Secure Access Service, for secure, role-based remote and mobile access control via SSL VPN; the Junos Pulse Access Control Service, delivering identity, device and location based network and application access and control; and the Junos Pulse Application Acceleration Service, providing acceleration for mobile, remote and branch users.

The Junos Pulse solution delivers dynamic, identity-based cloud, network, and application access and security. With the Junos Pulse solution, enterprises can now know who is accessing their network and applications, when, how, from where, and via what device. Junos Pulse, in conjunction with the MAG Series Junos Pulse Gateways and Junos Pulse services, delivers granular, accelerated remote and local access control based on user identity and role, device type and integrity, and location. Plus, the Junos Pulse solution 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.

### Features and Benefits

The Junos Pulse Application Acceleration Service offers a full array of innovative technologies to accelerate application access and improve application response times for remote, mobile, branch and small office/home office users. The Junos Pulse 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 sizable increase in effective WAN capacity by rapidly and efficiently optimizing data patterns, and significantly reducing the amount of traffic that crosses the WAN.

The Junos Pulse Application Acceleration Service leverages this feature, known as Network Sequence Caching (NSC), which identifies and replaces redundant data patterns with labels before forwarding them across the WAN. NSC uses a disk-based cache on the remote laptop running Junos Pulse, and employs onboard hard drives on the MAG Series Junos Pulse Gateways for application acceleration to store large data patterns for extended time periods. The memory-based compression of NSC provides significant optimization for a majority of user applications on the first and consecutive passes of traffic.

## LZ Compression

The Lempel–Ziv (LZ) compression method is among one of the most popular compression methods available. LZ compression delivers first and repeated-pass optimization for new, “cold”, never seen before data patterns. LZ compression can deliver substantial performance improvements to applications and data accessed by remote and mobile users.

LZ compression is only applicable for TCP based applications, and supports generic TCP Acceleration. It also provides a simple, easy to comprehend interface.

## 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 Junos Pulse Application Acceleration Service more fully utilizes 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 user 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 Microsoft Sharepoint, EMC’s Documentum, Siebel, Oracle, and SAP.

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 such as FTP, backups, and large file downloads, to name just a few. This is done transparently to the applications and hosts involved.

## SSL Optimization

The Junos Pulse Application Acceleration Service can decrypt implicit SSL traffic, then apply data compression and acceleration techniques - such as LZ compression, NSC disk-based-caching and TCP acceleration - to improve the performance of encrypted applications. Among the encrypted applications on which Junos Pulse Application Acceleration Service can perform this optimization are Microsoft SharePoint and EMC Documentum, as well as Web encrypted applications such as Oracle or PeopleSoft, in addition to other applications.

The information in transit from the data center to the end user device can be secured through VPN. For example, the Junos Pulse Application Acceleration Service, working in conjunction with the Junos Pulse Secure Access Service on a MAG Series gateway, can deploy an encrypted VPN tunnel from the user’s device into the network, ensuring security for the data in transit. In this way, Junos Pulse Application Acceleration Service ensures and delivers secure, accelerated remote access to encrypted and Web encrypted applications.

## MAPI Acceleration

Junos Pulse Application Acceleration Service delivers protocol specific to accelerating Microsoft Messaging Application Programming Interface (MAPI) transactions. Microsoft Exchange is a common MAPI application. Junos Pulse Application Acceleration Service delivers acceleration for Microsoft Exchange Server 2003, 2007 and 2010.

MAPI applications typically require a response to be sent before a request to send the next block of data can be made. This creates a “ping-pong” affect, and slows application data flow. The result is that application performance is constrained by WAN delays and chatty applications which constantly send small “chunks” of data.

Junos Pulse Application Acceleration Service reduces the total number of round trips data must make across the WAN, resulting in a significantly better—and faster—experience for the user.

## Application-Specific Protocol Acceleration

Application-specific protocol acceleration on the Junos Pulse client plays a key role in managing latency. The Junos Pulse Application Acceleration Service uses technology to provide transparent acceleration for the Microsoft Common Internet File System (CIFS) protocol. CIFS is commonly used to access remote data on Microsoft shared drives and by Microsoft Office to open documents for common applications such as Microsoft Word and PowerPoint. This form of application acceleration dramatically improves the end user’s experience with remote file server access and shared drives

Application-specific acceleration for CIFS transactions, in conjunction with the CIFS Object store, can deliver significant performance improvements. 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 Junos Pulse Application Acceleration Service pipelines these data blocks in quick succession, delivering significant improvements in application performance to meet the needs of remote, mobile, home/small office and branch office end users accessing centralized applications or network attached storage (NAS) data over the WAN.

## Ease of Configuration

There is no end user configuration required on the Junos Pulse client for application acceleration. All application acceleration policies and services such as compression, acceleration, and monitoring are configured on the MAG Series gateways using their Web GUI. Junos Pulse clients obtain their acceleration service policies “on the fly” from the MAG Series gateway, 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 MAG Series gateways running the Junos Pulse Secure Access Service for SSL VPN, the Junos Pulse Application Acceleration Service solves the problem of software distribution to end user devices, helping IT maintain control over versions and configuration policies. IT administrators can specify a deployment policy for the Junos Pulse Application Acceleration Service in MAG Series gateways that enables an automatic download and launch upon connection to the MAG Series gateways (or legacy SA Series SSL VPN appliances). This is transparent to the mobile or remote end user. Thereafter, every time the end user starts an SSL VPN session, an automatic check is performed to determine if the Junos 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 distribution.

## Low Total Cost of Ownership

The Junos Pulse Application Acceleration Service features are licensed and managed by the headend MAG Series Junos Pulse Gateways. By combining monitoring, management, and licensing functions in a single gateway, 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 application acceleration enabled. Enterprises and SMBs can thus distribute the Junos Pulse Application Acceleration Service capabilities for up to 1,000 authorized concurrent users and acquire a user license for a fraction of their work force, since not all employees will be connected remotely at the same time or require accelerated, secure remote access. Additionally, to ensure that application acceleration is appropriately allocated to those who need it most, the MAG Series Junos Pulse Gateways running the Junos Pulse Application Acceleration Service monitor concurrent application acceleration connections, putting active end users ahead of those who are idle.

## Troubleshooting

There is an advanced view available on an end user's device for troubleshooting, when that is needed. In the Junos 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 necessary for troubleshooting.

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

FEATURE	FEATURE DESCRIPTION	BENEFITS
Auto discovery	Junos Pulse Application Acceleration Service automatically discovers headend MAG Series gateways in the network path and dynamically negotiates optimization services based on the configuration policies set in the MAG Series gateway.	No upfront tunnel setup such as IP address configuration or hard coding is required, which minimizes configuration complexity.
LZ compression	Delivers first and repeated-pass optimization for new, "cold", never seen before data patterns.	Delivers substantial performance improvements for TCP-based applications.
Network Sequence Caching (NSC)	Identifies and replaces redundant data patterns with labels before forwarding them across the WAN, using disk-based cache on remote devices running Junos Pulse, and stores large data patterns on MAG Series drives.	Effectively and efficiently speeds application acceleration by eliminating redundant data patterns.
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	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	Improves application performance for Windows shared drives by accelerating the underlying protocol (CIFS). In addition, the object store selectively caches hot objects in the MAG Series cache to minimize the need to transport repetitive data over the WAN.	Significantly improves file transfer and sharing performance.
SSL optimization	Decrypts implicit SSL traffic, then applies data compression and acceleration techniques – such as LZ compression, NSC disk-based-caching and TCP acceleration.	Improves the performance of encrypted applications (such as Microsoft Sharepoint and EMC Documentum), as well as Web encrypted applications (such as Oracle).

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

FEATURE	FEATURE DESCRIPTION	BENEFITS
MAPI acceleration	MAPI applications typically require a response to be sent before a request to send the next block of data can be made, creating a “ping-pong” affect slowing application data flow. Junos Pulse Application Acceleration Service reduces the total number of round trips data must make across the WAN, resulting in a significantly better – and faster – experience for the user.	Significantly accelerates and optimizes Microsoft Exchange Server 2003, 2007 and 2010 application data.
Integration with Juniper SSL VPN secure remote access	Auto download and launch of Junos Pulse Application Acceleration Service upon starting a MAG Series session; application acceleration software and configuration policies can be updated transparently.	Delivers a simplified, transparent application acceleration feature for distribution and launch of accelerated, secure remote access, and ease of administration.
VPN compatibility	Compatible with Juniper SSL VPN solutions – both MAG Series gateways and legacy SA Series SSL VPN appliances - 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 existing investments.

## Specifications

### End User Software Requirements

- Windows XP Professional SP2 (32 bit versions only)
- Windows Vista (32 and 64 bit versions)
- Windows 7 (32 and 64 bit versions)
- Internet browsers supported: Internet Explorer 6.0, 7.0, Firefox 3.0+
- Internet browsers need to support Java and ActiveX to download the Junos Pulse Application Acceleration Service from the MAG Series gateway
- Administrator privileges are required to install the Junos Pulse Application Acceleration Service on a PC

### End User Hardware Requirements

- Intel Pentium M1400 or higher
- 512 MB RAM or higher
- 2 GB free disk space or higher

### MAG Series Gateway Hardware Requirements

The following MAG Series gateways and service modules support the Junos Pulse Application Acceleration Service:

- MAG4611 Junos Pulse Gateway
- MAG-SM161 and MAG-SM361 Service Modules for Application Acceleration (for MAG6610 Junos Pulse Gateway and MAG6611 Junos Pulse Gateway)

### Juniper Networks Services and Support

Juniper Networks is the leader in performance-enabling services that are designed to accelerate, extend, and optimize your high-performance network. Our services allow you to maximize operational efficiency while reducing costs and minimizing risk, achieving a faster time to value for your network. Juniper Networks ensures operational excellence by optimizing the network to maintain required levels of performance, reliability, and availability. For more details, please visit [www.juniper.net/us/en/products-services](http://www.juniper.net/us/en/products-services).

## Ordering Information

The Junos Pulse Application Acceleration Service is available as a concurrent user license option for the MAG4611 Junos Pulse Gateway, and the MAG-SM161 and MAG-SM361 Service Modules for Application Acceleration. The Junos Pulse Application Acceleration Service 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.

MAG4611 Junos Pulse Gateway, and the MAG-SM161 and MAG-SM361 Service Modules for Application Acceleration are required to deploy the Junos Pulse Application Acceleration user licenses. Please contact your Juniper Networks representative or reseller for details.

### Junos Pulse Application Acceleration Service License Options

MODEL NUMBER	DESCRIPTION
ACCEL-PULSE-25U	Junos Pulse Application Acceleration license for up to 25 concurrent users
ACCEL-PULSE-50U	Junos Pulse Application Acceleration license for up to 50 concurrent users
ACCEL-PULSE-100U	Junos Pulse Application Acceleration license for up to 100 concurrent users
ACCEL-PULSE-250U	Junos Pulse Application Acceleration license for up to 250 concurrent users
ACCEL-PULSE-500U	Junos Pulse Application Acceleration license for up to 500 concurrent users
ACCEL-PULSE-1KU	Junos Pulse Application Acceleration license for up to 1000 concurrent users

## About Juniper Networks

Juniper Networks is in the business of network innovation. From devices to data centers, from consumers to cloud providers, Juniper Networks delivers the software, silicon and systems that transform the experience and economics of networking. The company serves customers and partners worldwide. Additional information can be found at [www.juniper.net](http://www.juniper.net).



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