# JUNIPER NETWORKS

# BUILD THE BEST UC&C NETWORK FOR AN OPTIMIZED MICROSOFT LYNC DEPLOYMENT

The only Microsoft-certified Unified Communications and Collaboration (UC&C) choice for wired and wireless network access service across the enterprise

## Challenge

Delivering a consistent and reliable user experience requires an intelligent and secure converged IP network, one that supports a wide range of service/hosted UC&C applications, security, and mobility across a variety of devices to enable bring your own device (BYOD), and high system-level performance regardless of wired or wireless access.

## Solution

Juniper's new UC&C solution provides a highly resilient and secure IP network to support a wide variety of UC&C applications. It is the first and only Microsoft certified solution to deliver a quality end-user UC&C experience over both wired and wireless network infrastructures.

## Benefits

- **Reliable**—Improved experience across high bandwidth and latency-sensitive applications
- **Open**—Built for any application or service
- **Secure**—Security with low performance impact and full visibility into user and application usage
- **Simple**—Simplified architecture with fewer devices and reduced dependency on public switched telephone network (PSTN) for reduced TCO
- **Accessible**—Infrastructure optimized to provide high quality system-level performance regardless of wired or wireless access

Enterprise telephony has come a long way. Analog phones, legacy Private Branch Exchanges (PBXs), and time-division multiplexing (TDM) trunks have given way to fully converged IP networks with diverse IP phones, soft phones, centralized IP PBXs or UC&C servers, and Session Initiation Protocol (SIP) trunks for telecom network termination. New and rich services like presence, video, instant messaging (IM), and file sharing have optimized the way members of an organization collaborate anywhere, anytime. Furthermore, new market players have entered the traditional enterprise telephony space now redefined as enterprise unified communications and collaboration.

UC&C technology—which combines voice, video, presence, messaging, conferencing, and other collaboration applications—is becoming an essential way of conducting business. This is not surprising since IP-based UC&C brings indisputable advantages to the enterprise—enhancing productivity, providing new ways for users to collaborate, boosting corporate responsiveness, and reducing overall total cost of ownership. These important business benefits stem from:

- Single converged and agile IP infrastructure for data, voice, and video
- Rich collaboration features (presence, IM, file sharing)
- Diverse endpoints (IP phones, soft clients on PCs, smartphones, tablets, and other communication devices)
- Diversity of applications (including cloud-based, on-premise, and over-the-top (OTT) that provide service to fixed and mobile endpoints virtually anywhere

## The Challenge

Successful deployments of UC&C platforms such as Microsoft Lync rely on a powerful network infrastructure to meet the stringent requirements presented by UC&C. For example, UC&C applications have real-time latency, jitter, and bandwidth requirements that are not necessary for most data applications. With the widespread adoption of UC&C in the workplace, the demand for real-time voice and video communications places additional demands on all parts of the enterprise IP network infrastructure. Users now expect to connect seamlessly to UC&C services—whether through wired or wireless access, from a variety of locations on the enterprise network, and from a variety of devices (the result of the growing BYOD trend in U.S. companies). The network needs to be high performing, resilient and secure, open and flexible to support ever-changing behavior by UC&C users and hosted applications.

A converged IP network represents an extremely dynamic foundation that requires close attention to realize the enhanced collaboration and productivity benefits, combined with the reduced costs of UC&C deployments. These challenges include:

- **Security**—Critical communications, privacy, and regulatory compliance make securing the UC&C infrastructure and traffic flows a key challenge.
- **Openness**—As enterprise UC&C applications evolve quickly, it is imperative that the network conforms to open standards and is flexible enough to give enterprises the agility they need to quickly adapt without "rip-and-replace" upgrades.

- **Reliability**—As a business-critical service, IP-based UC&C must satisfy stringent reliability requirements.
- **Performance**—The ability to provide all of the above for high volumes of real-time communications is critical for large-scale deployments.
- **Quality of service (QoS)**—As IP communications are built around a packet-based architecture, special care must be taken to achieve a level of QoS comparable or superior to legacy circuit-switched telephony services. With the widespread adoption of video calls and conferencing, QoS becomes even more critical in providing enhanced quality of experience when using these applications. High quality, system-level performance and accessibility are required on both wired and wireless network infrastructures to maximize user productivity.

## The Juniper Networks UC&C Solution

As the first and only network vendor to achieve wired and wireless infrastructure qualification with Microsoft Lync, Juniper delivers networking products that provide the necessary security, reliability, and system-level performance required by UC&C deployments. This new UC&C solution for Microsoft Lync begins with Juniper's "Simply Connected Enterprise Architecture," which provides a high-performance, resilient, open, and secure IP network that is fully converged to support real-time UC&C applications. Validated by Microsoft on both wired and wireless networks, Juniper networking products exceeded the end-to-end requirements for Lync application traffic and deliver a quality end-user experience for UC&C applications.

Juniper's solution includes a fully tested and supported network architecture for branch offices and campus networks to support a variety of Microsoft Lync endpoints that include both wireless-enabled UC&C devices (Wi-Fi phones, smartphones, and tablets)
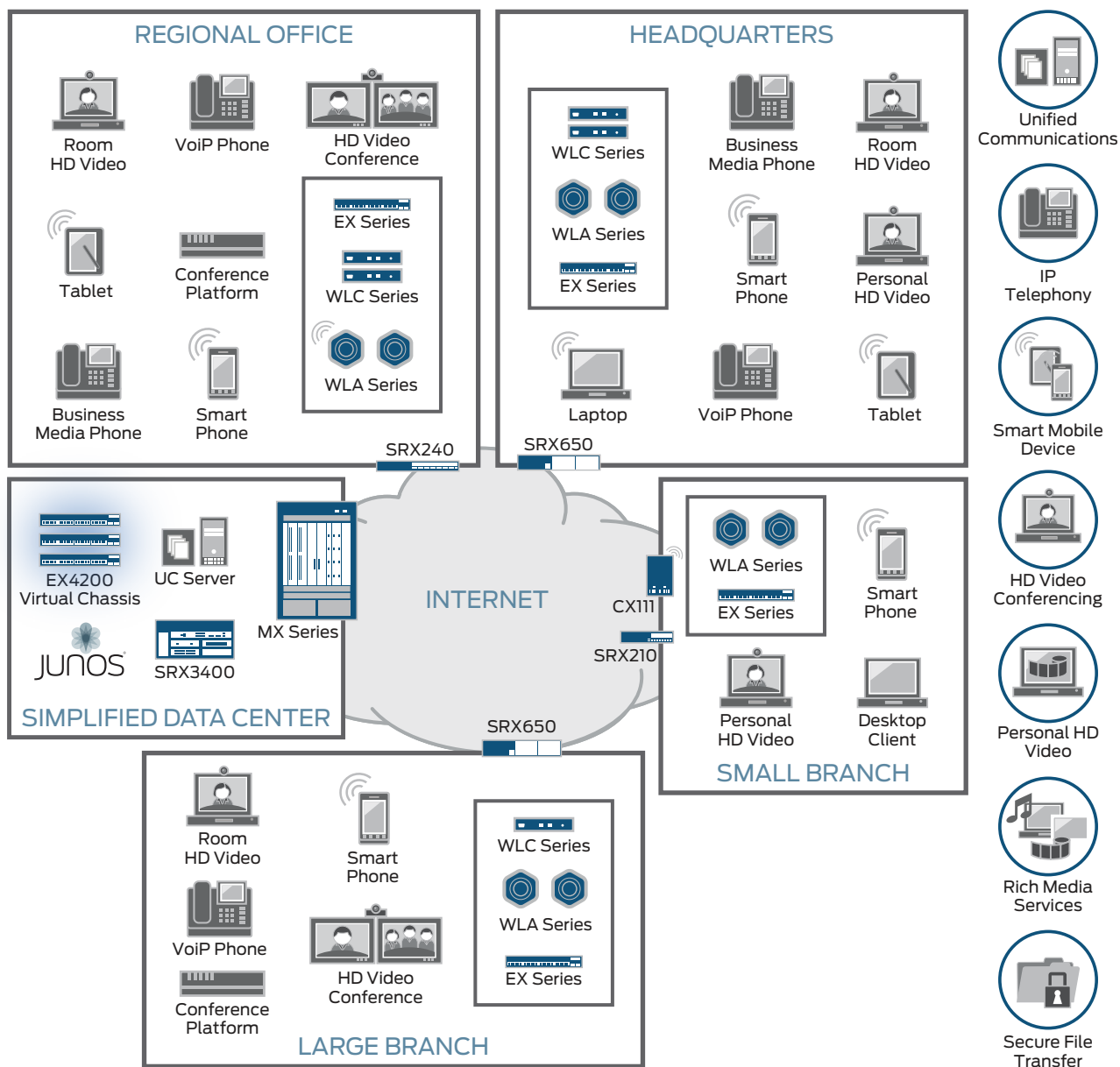


Figure 1: Major components in the Juniper Networks solution.

and traditional wired devices ((Power over Ethernet (PoE) voice and video phones, video conferencing phones, and PC with a soft phone)). With support for client devices through both wired and wireless network infrastructures, Juniper's solution enables widespread adoption of UC&C tools and bring-your-own-device (BYOD) programs across the distributed enterprise. The solution includes delivery of Internet Protocol Telephony (IPT) technology using Microsoft Lync endpoints, enables collaboration using Microsoft Lync, and provides assured video conferencing across the network. Juniper's collaboration solution also enables an enhanced user experience for hosted and over-the-top (OTT) UC&C applications such as Skype or Google Talk.

Juniper Networks has a long tradition of delivering high-performance, resilient, and secure products that have been validated through its solution testing. And these qualities play a paramount role in UC&C service deployment. Juniper strongly believes in standards-based open networks. As such, Juniper is a member of the Unified Communications Interoperability Forum (UCIF), ensuring that customers are free to build their UC&C networks using standards-based, interoperable building blocks.

## Features and Benefits

- Assured video conferencing provides dynamic bandwidth allocation across WAN links to meet service-level agreements (SLAs).
- Highly resilient IP networking supports redundant WAN connections to ensure availability of UC&C service.
- IP-based survivability reduces dependency on legacy public switched telephone network (PSTN) and reduces total cost of ownership (TCO).

- Application-agnostic approach supports UC&C applications of today and tomorrow, with a standards-based infrastructure to enable all types of voice, video, and data.
- Device-agnostic features support UC&C applications across a wide variety of devices, both wired and wireless. Support for identifying and securing mobile devices enables users to BYOD and allows all new devices to use the network safely. Also, the one-policy-per-use, rather than per-port approach, makes policy enforcement easier for IT to scale as demand grows.
- Security and scalability does not impact high-performance networking. Juniper offers optimized delivery of media using a dedicated, fast packet-forwarding plane that reduces network congestion and enhances throughput.
- Traffic forwarding on wireless local area network (WLAN) solutions can be configured to optimize traffic flow and radically reduce latency for UC&C applications.
- Band steering, client load balancing, dynamic authorization, QoS, and bandwidth controls all combine to ensure a more consistent user experience by distributing traffic more evenly across controllers, access points, and radios of enterprise WLANs.

## Solution Components

- **Juniper Networks® MX Series 3D Universal Edge Routers**—Provide high-performance WAN routing for IP or MPLS networks, with support for dynamic bandwidth allocation, mission-critical IPT, and video conferencing.
- **Juniper Networks EX Series Ethernet Switches**—Provide high-performance switching and PoE for UC&C endpoints with full support for automatic UC&C endpoint detection through Link Layer Discovery Protocol–Media Endpoint Discovery (LLDP-MED), and automated provisioning of endpoints through Dynamic Host Configuration Protocol (DHCP).
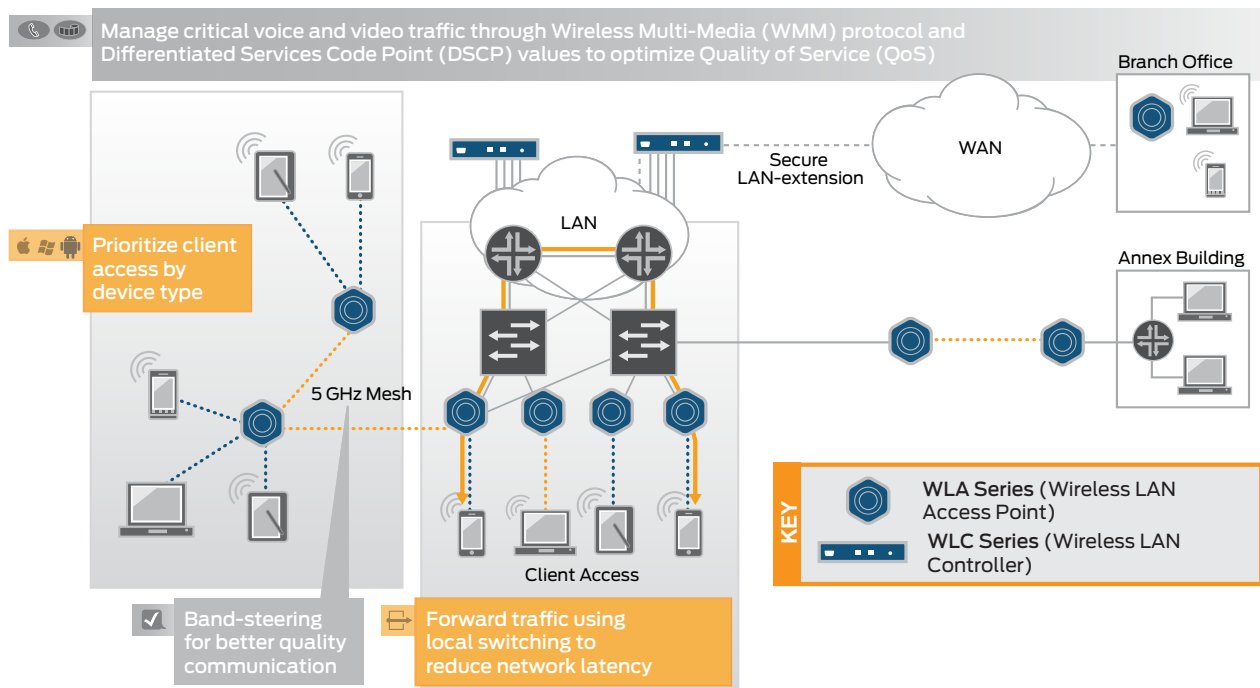


Figure 2: Juniper support for UC&C applications in a WLAN infrastructure.

- **Juniper Networks SRX Series Services Gateways**—Provide high-performance security and VPN transport for UC&C applications while enabling visibility into application and bandwidth usage, per user or per device.

- **Juniper Networks WLC Series Wireless LAN Controllers and WLA Series Wireless LAN Access Points**—Provide high-performance Wi-Fi access and security to support a wide variety of devices such as PCs, IP/video phones, smartphones, and other devices, while providing roaming between locations within the enterprise.

- **Juniper Networks Junos® Pulse**—Enables enterprises to secure and manage mobile, remote network and application access, and mobile devices at scale. The Junos Pulse Mobile Security Suite defends mobile devices from viruses, malware, and other threats.

- **Juniper Networks MAG Series Junos Pulse Gateways**—Provide secure remote network access (SSL VPN) and LAN access (UAC) in addition to managing Junos Pulse mobile clients.

- **Juniper Networks SRC Series Session and Resource Control Modules**—Offer a comprehensive, customizable, and automated policy, subscriber, and bandwidth management and resource control solution.

- **Microsoft Survivable Branch Appliances (SBAs)**—Provide an additional level of resiliency for UC&C services in the event of a complete WAN failure for branch locations without reliable or backup WAN connectivity.

- **Media Gateways**—Provide access to the PSTN, analog devices, or Private Branch Exchange/Key Telephone System (PBX/KTS) systems as needed.

- **Microsoft Lync**—Provides a UC&C platform integrated into Microsoft Office, including IM, audio, video, Web conferencing, and presence.
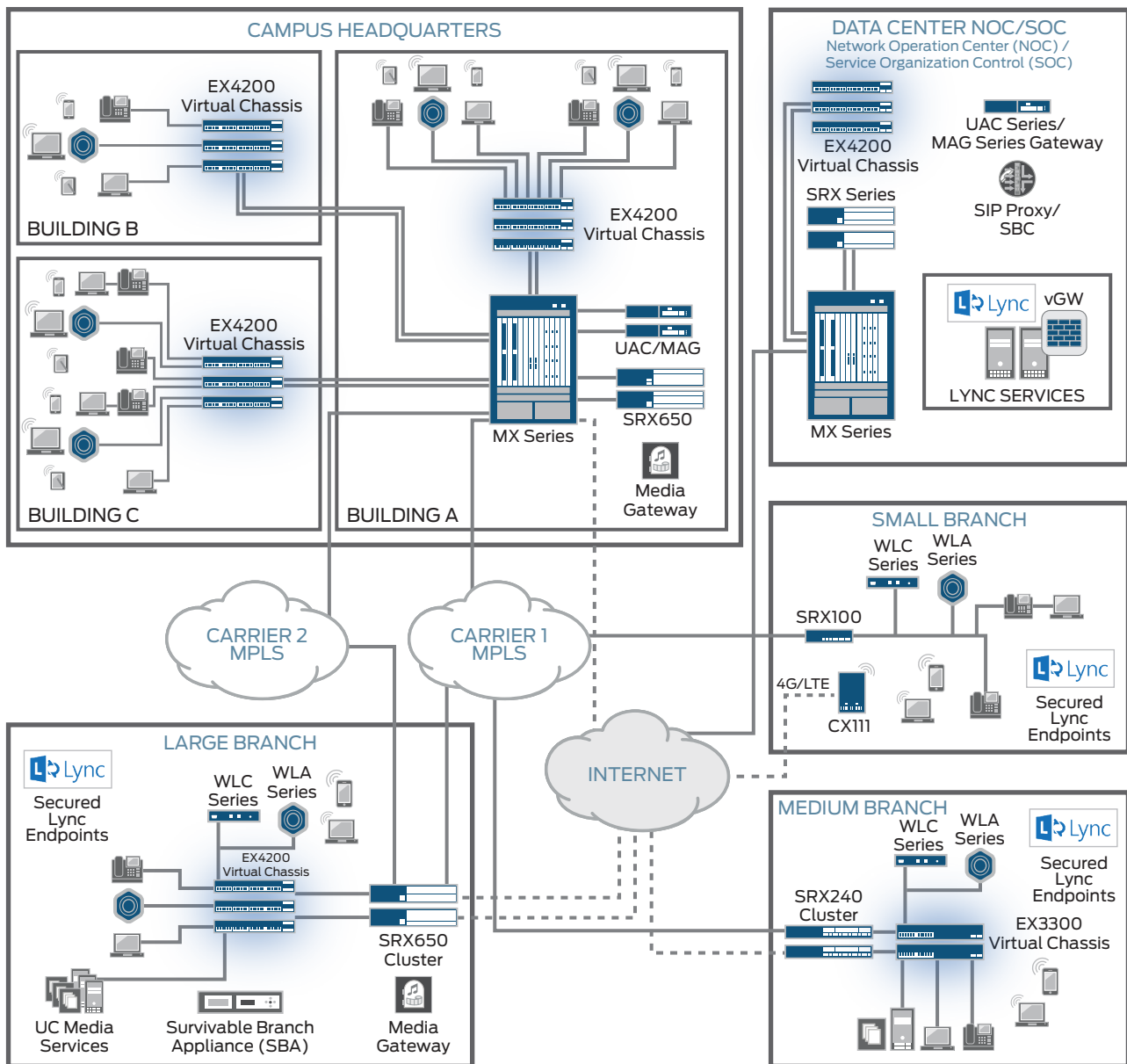


Figure 3: High-level view of the solution architecture.

## Use Cases

- As companies increasingly support BYOD policies to increase employee productivity, secure mobile collaboration enables users with various client devices to securely collaborate from any location either inside the enterprise network or from the external Internet, using either wired or wireless access.

- Collaboration within the enterprise network (IPT/HD video conferencing) provides a robust and reliable IP network that supports real-time unified communications applications and endpoints within the enterprise network,

- Enterprise-wide assured video conferencing provides assured service quality across the WAN/WLAN to support HD video conferencing, telemedicine, and other mission-critical conferencing applications between enterprise locations,

## Summary

Enterprises are moving from distributed PBX to centralized unified communications systems. These systems require a high-performance and robust IP network to provide real-time voice and video services. Concurrently, users are accessing these UC&C services from a variety of devices, both wired and wireless, and they expect the same user experience from each and every device. Juniper's new UC&C solution provides a simple and safe way to maintain high reliability and a high-quality experience across these applications and devices. In addition, enterprises can manage and secure data from any and all devices that connect to your network, as well as build in presence, chat, SharePoint, Web conferencing, and other collaboration services, while at the same time reducing TCO. As the first and only network vendor to have both wired and wireless access certified by Microsoft to meet Lync server requirements, Juniper Networks provides products that are optimized for UC&C traffic and deliver the security, reliability, quality of service, and performance necessary for UC&C deployments, regardless of access method.

The following table provides an at-a-glance value proposition that Juniper Networks infrastructure enables to optimize the delivery of UC&C.

Table 1: Juniper's UC&C Value Proposition

| Core Values | Description |
|---|---|
| AppSecure | Application visibility and control |
| Security | Ultrafast low latency IPsec, stateful firewalls, unified threat management (UTM), intrusion detection and prevention (IDP) with UC&C signatures |
| High performance | Purpose-built with hardware acceleration |
| QoS | Eight hardware queues, voice virtual local area network (VLAN), rate limiting, application-level gateway (ALG) for best QoS |
| Mobility | Highly reliable wireless network with local switching, hitless failover, in-service software upgrades, and identity-based user services |
| Powering endpoints | PoE/PoE+, LLDP-MED, DHCP server options, location services |
| Authenticating users | Role-based access control available with Juniper Networks Unified Access Control (UAC) per 802.X authentication |
| Open and interoperable | Best-in-class solutions using industry standards: Session Initiation Protocol (SIP), LLDP, 802.1X |
| UC&C agnostic | Flexibility to choose/change vendors, IP phones, UC&C servers anytime |
| Network resiliency | Assured high availability (HA), virtual controller clustering, chassis clustering, carrier-grade chassis components, WAN survivability, including redundant links and backup 3G/LTE for both data and voice services |

## Next Steps

For more information about the SRX Series Services Gateways, Junos Pulse, MAG Series gateways, WLC Series and WLA Series, MX Series, EX Series, Junos Space, SRC Series Session and Resource Control Modules, and Juniper's Simply Connected portfolio, please contact your Juniper representative. For information on Juniper partners for Unified Communications and Collaboration components, please refer to the Juniper Networks website at www.juniper.net/us/en/company/partners/technology-alliances/unified-communications.

## 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**.

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