



JUNIPER NETWORKS INNOVATES TO CONNECT EVERYONE TO THE GLOBAL COMMUNITY AND ENABLE A SUSTAINABLE ENERGY FUTURE

Juniper Networks®, the leader in high-performance networking, is committed to energy conservation and environmentally friendly business practices. Juniper is dedicated to doing its part to protect the environment, conserve energy and natural resources, and reduce pollution through the application of responsible business practices and energy-efficient technologies across the company's daily operations and product designs.

Juniper strives to set new energy efficiency standards in the networking industry, with environmental and energy conservation initiatives that strive to:

- Deliver high-performance network infrastructure that furthers the energy efficiency goals of Juniper's customers and is in compliance with the industry's strictest environmental regulations and directives
- Minimize the overall impact the company has on the environment

Energy Efficiencies Delivered by Juniper Networks High-Performance Network Infrastructure

Due to the pivotal role Juniper Networks high-performance networking solutions play in the underlying foundation of the Internet and worldwide communications infrastructure, Juniper is committed to pushing the envelope by delivering innovative products that work to solve its customers' most difficult problems. This translates to offering products, solutions, and services that meet not only high-performance (availability, reliability, security, management, etc.), but also operational (space, energy, management, etc.) requirements.

Juniper is dedicated to innovating to advance the fundamentals and economics of high-performance networking. The company is committed to enabling a sustainable energy future, striving to deliver efficiencies within its products to help customers meet their energy requirements now and in the future. Juniper currently helps customers maximize the utility of their infrastructure and minimize their energy consumption by delivering solutions that offer space, energy, and cooling savings, enable the reuse of hardware and offer anywhere, anytime secure remote access.

Juniper Delivers Space, Energy, and Cooling Savings Maximum Efficiencies

Juniper Networks invests significant engineering and financial resources into research and development of energy-efficient and responsible networking products and tools. Building on its innovative technological legacy, the company continues to deliver solutions that provide increased throughput using less energy than competing products on the market—giving customers the opportunity to reduce their space, energy, and cooling requirements, including:

- **Juniper Networks SRX Series Services Gateways** – The industry's first dynamic services gateway is a new category of devices that offers an extensible solution to scaling integrated services and networking capabilities on a single platform. The innovations delivered by this architecture will allow customers to accelerate new service deployments, while saving up to 75 percent on space and using up to 50 percent less power than alternative solutions.
- **Juniper Networks T1600 Core Router** - This multi-terabit capable core router consumes 40 percent less power, requires 40 percent less cooling, and takes up half the physical space of competitive platforms.
- **Juniper Networks JCS1200 Control System** – The industry's first high-performance control plane scaling system enables customers to implement service-specific network virtualization. In addition to the control and scale benefits, this virtualization reduces operational and capital costs by consolidating network equipment and functions, resulting in space and energy savings of up to 60 percent over traditional solutions.
- **Juniper Networks TX Matrix Plus** – This architecture is designed to support up to 25 Tbps of capacity by integrating up to 16 T1600 routers, and all the energy efficiencies they deliver, into a single multi-chassis routing node. This multi-chassis router can be managed as a single, unified router, or combined with the JCS1200 to enable the secure virtualization of core routers—which creates efficiencies by consolidating networks, services, and functionality.
- **Juniper Networks EX Series Ethernet Switches** – Using Juniper's Virtual Chassis technology, which enables up to 10 Juniper Networks EX4200 line of Ethernet switches to be interconnected and managed as a single logical device; the EX Series switches occupy up to 80 percent less space and consume up to 53 percent less power than competing solutions offering similar port densities. In addition, the Virtual Chassis technology enables customers to add capacity as needed, maximizing network utility while helping to eliminate unnecessary space, energy, and cooling consumption.
- **Juniper Networks MX Series 3D Universal Edge Routers** – These offer energy-efficient carrier Ethernet solutions that are 2.5 to 3 times more power efficient than competing products.

Beyond the individual performance of the solutions in Juniper's portfolio, its high-performance networking enables customers to achieve maximum leverage from their network infrastructure, reducing complexity and delivering operational simplicity that can produce energy efficiency benefits. Some examples include:

- Juniper provides a broad range of integrated high-performance networking products, offering customers the simplicity and efficiencies associated with replacing a number of single, discrete devices with a single solution.
- Juniper offers a range of solutions in each product line, so that customers can choose the one that is most appropriate for their deployment. These right-sized solutions prevent overengineering, which can result in wasteful energy consumption. Juniper has brought many innovations to market to ensure customers can deploy only what they want and need to ensure maximum utility.
- Juniper's application acceleration technology drives maximum network utilization. By improving the performance of business-critical applications across the WAN, customers can achieve more efficient use of application servers, reducing the need to deploy more infrastructure and resulting in less energy and cooling consumption.
- Many Juniper solutions include virtualization features, which maximize the utility of the infrastructure by enabling multiple individual instances of a solution to run in a single physical device, to deliver efficiency gains. For example:
 - Juniper routers support virtual routers and its firewalls support virtual systems, enabling a single device to independently process and manage traffic from different customers (for example, in the case of a service provider) and different rule sets (such as, for different parts of the same enterprise network).
 - Juniper also has a carrier-class SSL VPN solution with end-to-end virtualization capabilities that enables service providers to offer remote and extranet access, disaster recovery and Intranet LAN security services (for example, wireless LAN, VoIP) to their enterprise customers worldwide. Being able to maintain the integrity of many independent systems within a single physical device means that multiple devices no longer need to be deployed in the network—saving space, energy, and cooling costs.
 - With the TX Matrix Plus and JCS1200, Juniper enables the hardware virtualization of the highly scalable, adaptable T1600 routers. These routers can be partitioned—on a per-slot basis—into multiple virtual routers, each of which might represent services or network element types, and which can share resources such as interconnecting links and uplinks. This unique ability ensures service providers can maintain the appropriate levels of administrative and service-specific separation, security, and management while still recognizing the significant efficiency and cost-savings benefits of virtualization.

Juniper Networks Enables Reuse of Hardware

Juniper strives to deliver solutions that have an extended life cycle to divert hardware from landfills and reduce overall waste. In addition to adhering to the strictest standards for reuse, recycling, and reclamation of information technology solutions, Juniper helps customers “future-proof” their network—to the extent possible—and extend the life of their infrastructure.

Juniper’s advantage is delivered via its single operating system—Juniper Networks Junos® operating system—and modular architecture. The singular OS across the portfolio enables Juniper to deliver new offerings to the market that are compatible with its previous high-performance networking infrastructure, maximizing the utility of the infrastructure and enabling customers to deploy new solutions with minimal architectural changes or disruption. Combined with the modular architecture, Juniper is also able to deliver solutions that allow for the reuse of existing hardware and line cards. For example:

- Juniper’s physical interface cards (PICs) can be reused across families of the network infrastructure solutions. This allows customers to take advantage of new technologies that address new requirements, while maintaining the value of their past investments by redeploying that functionality elsewhere in the network.
- Customers can use their existing Juniper Networks T640 Core Router to upgrade to a T1600. Juniper’s innovative approach allows customers to extend the life of their hardware and achieve the industry-leading 1.6 Tbps of throughput, without having to rip out and dispose of the chassis hardware.

Juniper Networks Offers Anytime, Anywhere Secure Remote Access

Juniper Networks offers a suite of remote access SSL VPN solutions to efficiently support an organization’s mobile and remote users. Juniper’s solutions facilitate telecommuting to reduce commute pollution and avoid the energy costs associated with operating very small offices. As a leader in SSL VPNs, Juniper empowers its customers to efficiently scale their networks and provide their increasingly mobile users with the critical access to resources they need to support and grow their businesses.

Juniper Networks Environmental Compliance

Because Juniper’s facilities and operations are located in over 50 countries around the world, there are many different standards and regulations to which the company must adhere. Juniper’s practice is to understand the most stringent requirements and then apply them globally. As a result, Juniper Networks is in compliance with some of the industry’s strictest environmental standards, meeting and often exceeding the requirements posed by local and international laws to maintain its status as a responsible corporate citizen in all locations in which the company operates. Some of the standards Juniper is working towards applying globally include:

- European Union’s (EU) *Waste Electrical and Electronic Equipment (WEEE)* Directive – Juniper provides recycling support for its equipment within the EU. Products returned through Juniper’s reclamation process will be recycled, recovered, or disposed of in a responsible manner utilizing an ISO 14001 compliant supplier. The company’s packaging is designed to be recycled and should be handled in accordance with the local, state, or country recycling policies and procedures.
- EU’s *Restriction of Hazardous Substances (RoHS)* Directive – Juniper has eliminated or reduced below legal limits its usage of the substances controlled under the directive, subject to limited exemptions available for its products. The company continues to improve its products’ designs to meet the changing environmental requirements through the implementation of Design for Environment (D4E) practices.
- Electronic Industry Code of Conduct (EICC) – Juniper is aggressively working towards the adoption of the EICC, which outlines standards to ensure that working conditions in the electronics industry supply chain are safe, that workers are treated with respect and dignity, and that manufacturing processes are environmentally responsible—by all of its suppliers.

Minimizing the Impact of Juniper Networks on the Environment

As a responsible corporate citizen, Juniper promotes environmentally friendly business practices to improve the workplace for its employees and the community at large. Recognized for its forward-thinking, Juniper has instituted many policies and programs aimed at both reducing the company’s carbon footprint, which can represent the embedded carbon in its high-performance networking solutions, and promoting an environmentally friendly lifestyle. In recognition of its efforts, Juniper was certified in May 2006 as a Green Business by Santa Clara County, which is where the company’s headquarters are located, and has been named one of the Best Workplaces for Commuters on an annual basis, from the inception of the program in 2003 until present, by the Best Workplaces for Commuters regional program (a program previously managed by the Environmental Protection Agency).

- *Juniper strives to be a zero-waste company through recycling or reuse.* Two years ago, Juniper switched to providing biodegradable cups in the breakrooms and is switching to bioware for its breakrooms and cafeterias. Juniper has a comprehensive recycling program for bottles, cans, paper, media, etc. and is looking at rolling out a program to recycle technology in-house, providing an inventory of all equipment not currently in use to all facilities worldwide to access.
- *Juniper is driving change within the communities it operates.* The company partners with other environmentally conscious companies, suppliers, vendors, etc. to take meaningful measures to try to change local practices or increase facilities that support environmentally friendly initiatives.

• *Juniper works to reduce commute pollution.* Juniper locates its offices, whenever possible, near mass transit solutions and either provides or subsidizes mass transit passes to its employees. While each facility is different, the company has a variety of programs to encourage alternative modes of transport. Juniper promotes a culture of telecommuting, leveraging its own technology to enable remote workers to always be connected to the resources they need to do their jobs wherever they are. The industry-leading Juniper Networks SA Series SSL VPN Appliances make it easy for employees to work from home or remotely and enabled the company to support home offices instead of having to open very small satellite offices. This not only reduces commute pollution, but also the recurring energy costs associated with operating office space.

• *Juniper is conscientious about reducing its energy consumption and carbon emissions.* Juniper has invested in the infrastructure and systems to be able to inventory and measure its carbon footprint on a global basis. Greater energy efficiency remains an ongoing effort since different regions of the world present diverse challenges, but Juniper's goal is to be able to credibly account for its emissions and continue to work significantly to reduce its carbon footprint over time. The company has many energy-saving initiatives well underway—including making changes to its physical sites—as well as leveraging virtualization software to reduce the energy, cooling, and space requirements of its global data centers.

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.

Corporate and Sales Headquarters

Juniper Networks, Inc.
1194 North Mathilda Avenue
Sunnyvale, CA 94089 USA
Phone: 888.JUNIPER (888.586.4737)
or 408.745.2000
Fax: 408.745.2100
www.juniper.net

APAC Headquarters

Juniper Networks (Hong Kong)
26/F, Cityplaza One
1111 King's Road
Taikoo Shing, Hong Kong
Phone: 852.2332.3636
Fax: 852.2574.7803

EMEA Headquarters

Juniper Networks Ireland
Airside Business Park
Swords, County Dublin, Ireland
Phone: 35.31.8903.600
EMEA Sales: 00800.4586.4737
Fax: 35.31.8903.601

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

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