

# Mobile Enterprise Solution

Make your network mobile, from the converged edge to the cloud



## The Era of New Mobility

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The advent and rapid proliferation of mobile edge devices like the iPad and the growth of cloud-based and virtual services have defined a new era of mobility. In new mobility, a diverse mix of people, devices, applications and virtual machines, all in constant motion, congregate and demand unique mixes of service from the network, that include quality, security, and performance.

For example, a single user may have a tablet, smartphone, laptop, VoIP phone, workstation, which they use interchangeably in the office, on the train, at home and on the road. This user in motion needs snap-fast and consistent access to data and applications, which are also virtualized and in continuous motion in the data center or cloud. Everything is moving—users, devices, applications and virtual machines.

The network requirements to serve the complexity of everything-in-motion are both time and expertise intensive, and often untenable for traditional networks that feature limited automation and mobility capabilities. To address new mobility from the converged edge to the data center, IT is looking for solutions that make adapting to new mobility easier, which improve the users' quality of experience and productivity of their organization.



*Make Your Network Mobile*

## Extreme Networks for Enterprise Mobility

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To help companies adapt their operations to the new mobility era, Extreme Networks offers the Mobile Enterprise Solution designed for the growing numbers of users, devices, and virtualized machines, all of them in constant motion. From devices accessing the network edge via wired, wireless and remote access to virtual machines moving in the data center, the Extreme Networks Mobile Enterprise Solution helps address many demanding IT tasks and complex architectural challenges with an automated network that:

- Follows each user or virtual machine on the network edge with secure personal virtual networks. Can automatically adapt to optimize the user experience - users can work efficiently anywhere, anytime.
- Follows virtual machines in the data center to provide an unimpeded, low-latency, and resilient Ethernet fabric while reducing network design complexity and operational challenges helping IT to provide users with always-on application and information services.
- Monitors traffic flows and threats in real time, adjusting network services to quickly adapt to traffic conditions. It modifies security, quality and performance to control, allow access, shun abuse or improve performance for bandwidth-hungry and latency sensitive applications so network performance is optimal.
- Flattens network tiers from as many as five layers to two layers, or even one layer, in the data center for faster, simpler and denser network architectures that cost far less to build and operate.
- Places control in the hands of IT to modify for unique user or application needs, so that technology integration or IT operational automation can be done quickly without appliances or waiting for new operating system version releases.
- Makes it easier for IT services to find moving users and applications, and to troubleshoot and solve network related problems.

## Personalizing the Network for Operations

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Within all industries, business or government entity, IT operations and users have unique needs. An infrastructure from Extreme Networks can be customized with partner technologies to enable enhanced services such as electronic and physical security, video, and automated power management features—the capabilities are almost endless. IT can also further automate to their specific needs by using a library of Extreme Networks modules and scripting tools to automate routine operations and personalize network operations.

## Personalizing the Network for Users

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Users are demanding that IT provide increased support for diverse devices, such as iPads, Android tablets and smartphones, in addition to supporting applets and applications that require real-time service from multiple data center application and data sources. Users expect instant network service to their applications with snap-fast response and service consistency regardless if they are wired, wireless or remote. An enterprise solution from Extreme Networks can authenticate each user regardless of the media or device, and create a personal virtual network for quality, thereby optimizing applications including voice, video or data, security and services and the subnets they are allowed to access. This makes it easier for IT or even HR to assign network or security policy to individuals or groups and get users up and running with the services they need to be productive. Also, visitors or contractors, are given Internet-only access, while an authenticated user will get full corporate use from the same port—it can all be automatic.



## Examples of Operational Personalization that Can be Enabled by Extreme Networks

- **Bring your own device:** Users can bring their own devices which can be quickly on-boarded and secured for use on the organization's network.
- **Power management:** Automatic power control of network and peripheral devices linked to physical security systems can ensure users have access when in the office and that unused systems hibernate to reduce non-essential power use.
- **On-boarding application:** HR can select and control specific security and access rules for each user or user group which are automatically assigned to both wired and wireless networks.
- **Self move:** Employees can move cubicles and offices without IT support—they just put everything in a box, move to the new office, plug in and their personalized access is restored so IT MAC support needs are cut to almost zero.
- **Flexible data:** Network attached storage is connected to Ethernet and guaranteed priority and lossless operation allowing for scalable storage without expensive SAN technology costs.
- **Network security:** The network can integrate with a universal threat manager/VPN to enable remote users access via VPN, shun perimeter threats and increase network-wide security visibility.
- **Physical security:** Video surveillance, motion detection, and property access can integrate on the network to increase employee and property protection.
- **Self-fix:** Users can run self-diagnosis programs to help identify potential root causes for IT or user remediation. This can reduce helpdesk costs and burden and ultimately keep users productive.
- **Scripting routine tasks:** IT administrators can create scripts to automate routine duties and procedures to save IT staff time and reduce errors.
- **Fast network problem solving:** Low-cost level one technicians can resolve many user problems quickly, reducing help desk and field service costs which can help get workers back to work faster.
- **Student mobility:** Schools can implement automated mobile student networks which can include administration and physical security to improve student satisfaction, reducing administration overhead and make the campus safer for students.

## Extreme Values

The Extreme Networks Mobile Enterprise Solution is built on an intelligent switching architecture that features ExtremeXOS®, a modular operating system proven for performance, predictability, security, resilience, ease of use, scalability, and flexibility. The network components include switches, wireless LAN controllers and access points, and comprehensive management spanning the campus and data center. Extreme Networks solution makes it easy for IT to provide a seamless experience for the user and improve productivity for their business or operation from the converged network edge to the cloud.

Extreme Networks accomplishes this with automation and intelligence to reduce the time IT devotes to administration and keeping users on-net with the services they need. So hospitals can improve care, schools can improve learning, government can improve service, and businesses can improve profitability.

### Easier for IT

**The architecture is simple.** It starts with a single operating system, ExtremeXOS, that is so operations-friendly that operating, moving, changing, customizing, and upgrading is predictable, and often zero touch. ExtremeXOS includes a rich set of native, or embedded, features to automate the constant and unpredictable demands of mobile people and machines. It enables customization through partner technology integration and automation of routine procedures so IT administrators can craft the network to improve company and IT operations. It's quicker and easier to create a uniform network and cloud solution that's tailored to an organization's operations and best practices.

**Services are converged.** The Extreme Networks solution includes switches built with the capability to offer wireless control integration in addition to security, monitoring and data center virtualization. Servers, storage, and applications such as video, voice, and rich media can operate on a single network that's easier and uniform to manage, upgrade and change.



**Operations are automated:** Routine, complex and time-consuming procedures can be automated with native features that follow users and apply services, configure ports, and make changes to security and traffic flows to protect data. Resilience can be automated with on-board healing that is so fast that even time sensitive voice and video applications may be unaffected. Network administration tasks can be scripted, or IT administrators can use Extreme Networks rich library of task modules to minimize time and improve accuracy for routine processes, such as MACs or moves, adds and changes.

### Seamless Experience for the User

**Policy is personalized:** The network can create a personal virtual network for each user. It identifies who you are, where you are, when you are, and learns what you are allowed to do from the Active Directory. IT administrators can then enable seamless access to applications and services, whether on the wired or wireless network, with any device at anytime, so users can get full access to their critical applications and services.

**Service is consistent:** The network maintains service quality and security according to user and application needs, but it can also be programmed to prioritize specific traffic, such as high-performance iSCSI, for lossless connections to storage resources over Ethernet. Because Extreme Networks offers a range of modular switches supporting up to multiple 40 GbE ports and traffic grooming, congestion may not affect quality, while the native resilience features on the wired and wireless networks for consistent quality access to critical, and non-critical, services when they need them. If users have problems, the network makes it easier for IT administrators to quickly locate the user or data center application to troubleshoot and resolve.

**Security is pervasive, but not disruptive:** The native Identity Manager feature controls security policy of employees and other workers to secure from internal threats. Best-of-breed ecosystem technologies monitor and enforce behavior policy and defend the network perimeter. These

technologies can also provide secure remote and site-to-site connections for consistent, proactive, and non-disruptive security operation across the campus and data center.

### Productive for the Organization

**Enables workforce efficiency:** Users can choose the devices and applications that work best for them and access to the network and back-end data and applications anytime and anywhere. Also the IT administrator has the improved ability to help users when things go wrong, returning the user back work faster and better with less disruption to mitigate their performance.

**Organization can be more agile:** The network is designed to accommodate new devices, integrate third-party technologies, as well as virtualize and automate routine and time-consuming network management tasks. This frees up IT staff to be able to focus more efforts on creating solutions that can optimize the business or operation and offer new and enhanced services so the value of the network can increase the strategic value to the organization.

**Costs are more manageable:** Because less time is devoted to routine operations, more time can be devoted to adopting productivity enhancing technologies. IT effectiveness and strategic value can be quickly increased by providing applications and technologies to better suit the personal operations and objectives of each unit in the operation such as HR, supply chain management, product management, engineering, manufacturing, and more. Because the network is IPv6 ready, migrating to a multi-protocol v4 and v6 operation is simple and does not require additional network licensing or hardware costs. The network may cost less in terms of resources while the organization can be more productive.



## Extreme Networks Mobile Enterprise Technologies



### ExtremeXOS Operating System

Feature-rich and modular network operating system that supports the Extreme Networks product portfolio. Makes it easy for IT to build, manage, customize and apply automation for a more consistent, highly available new mobility network.



### Converged Edge, Campus and Data Center Switching

Broad line of IPv6-ready 100 MbE to 40 GbE modular and chassis switches for network access, network aggregation and data center top-of-rack and end-of-row switching.



### Wireless LAN

Complete family of controllers and access points for scalable and seamless WLAN to wireless mobility.



### Management

Ridgeline® is a scalable, full-featured network management tool that simplifies , configuration troubleshooting and status monitoring of IP-based networks. Ridgeline offers a comprehensive set of features that enable the tight integration and with other platforms via an XML interface virtualization life cycle management on a network-wide basis.

Motorola ADSP integrates with Extreme Networks products and can provide multivendor management to provision, control, troubleshoot and secure the wireless LAN.



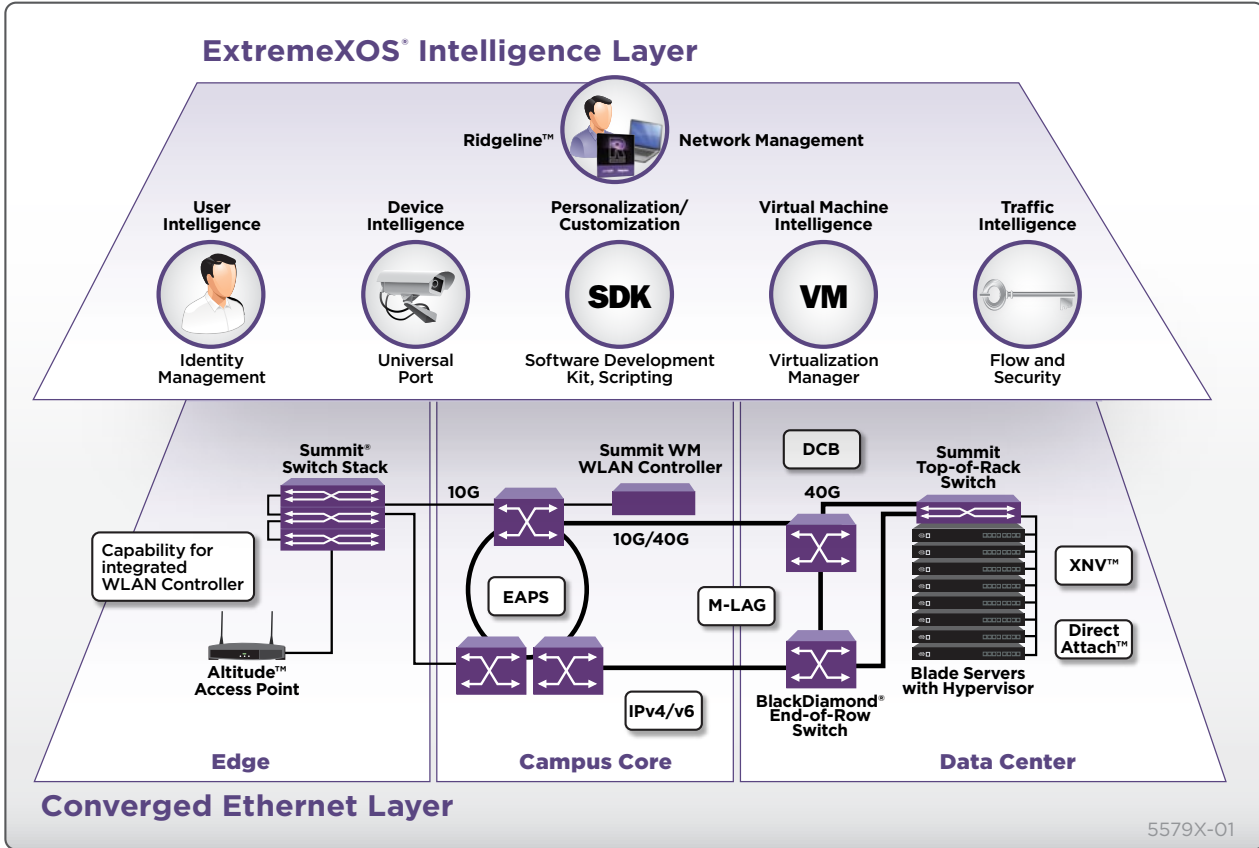
### Service and Support

Complete services from design, staging, integration, scripting, deployment, optimization, monitoring, and response.

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## Key Extreme Networks Features



### Mobility Automation

**Identity Manager:** Because people move, Identity Manager is able to identify and apply network policy to a user based on role, location, and device so security and role policy is applied wherever and whenever they access the network.

**Universal Port Manager:** Because devices move, Universal Port Manager applies personalized policy to any port in real time (data, voice, video) so IT does not have to preconfigure or change port configurations.

**Network Virtualization:** Because applications move, switch ports follow applications as they move around in a virtualized data center making it easier to create a network architecture for virtualization.

### Operational Services

**Single Operating System:** ExtremeXOS is designed for Ethernet and openness so IT administrators and users get a consistent, quality experience without

being locked into a single-vendor architecture. An Extreme Networks solution can be personalized for an organization and its operation.

**Resilience:** Ethernet Automatic Protection Switching (EAPS) is a simple-to-use feature for superior resilience with sub-second recovery so time sensitive and streaming applications are not affected by network changes or failures.

**Wireless LAN Integration:** Extreme Networks converged edge switches have the capability for wireless LAN controller integration so any switch port can support wireless LAN and users can receive the same policy on wired or wireless.

**SummitStack™:** Mix and match rack switches in a stack to personalize each rack. Stacking can be achieved horizontally or vertically and across long distances. This technology offers multi-platform stacking which allows up to eight individual switches together as a single logical unit. The compatibility allows IT to



repurpose switches to alternate locations for better utility of network assets and reduced costs of fixed switches.

**IPv6 Ready:** All Extreme Networks switching products shipping today support IPv6 in addition to IPv4 so customers are ready for transparent support of both protocols with a suite of IPv6 addressing, security, and management features.

**Frugal Power Consumption:** Our high-density, low profile switches and intelligent airflow design reduces power and cooling consumption. In addition to this, flat, reduced-tier data center architectures require fewer network elements.

**Scalability:** Our industry-leading 40 GbE enables enormous scale with high port density and reduces network complexity, wiring fan-out complexity and mess, and power consumption.

## Personalization Services

**CLEAR-Flow:** Dynamic identification and prioritization of traffic enables high-performance networks to provision and protect iSCSI traffic—even in highly congested environments. The monitor, analyze, react methodology of CLEAR-Flow creates a very extensible model, which allows users to bring technology to bear on the unique problems of their networks.

**Scripting:** A command line automation for intricate tasks can improve operational efficiency and accuracy for a multitude of IT network functions.

**XML APIs:** Integrate best-of-breed applications for security, VoIP and VoWLAN, into your network with an open and secure, XML-based application programming interface..

**SDK:** The software development kit makes it easy to integrate into the network infrastructure high-level application and business software.

**Personalization Modules:** Extreme Networks EtherNation website offers scripted modules and widgets to make it easier for IT to automate and improve accuracy of many operational tasks to deploy, monitor, operate and optimize the network.

## Data Center Features

**Direct Attach™:** Based on 802.1Qgb and the emerging VEPA standard, Direct Attach moves switching into the network and reduces switching tiers from five to two for flat architecture, management, lower cost, and wire-speed switching for lower latency and greater flexibility.

**XNV™ (ExtremeXOS Network Virtualization):** Tight integration between the virtualized server and the network enables the efficient management of highly virtualized network environments. This integrated approach facilitates mobility in the network, as well as provides network administrator-level insight and control into virtualization. XNV is designed to be an open architecture, supporting multiple hypervisors in a seamless manner enabling full virtualization lifecycle management.

**VPLS:** Cloud data centers are looking to connect multiple racks and/or data center sites as one Layer 2 domain across Layer 3 boundaries. By using VPLS in the data center, cloud service providers are able to deploy virtualization and scale across Layer 3 boundaries.

**Layer 2 Scalability:** A large MAC address table easily supports the explosive growth of MAC addresses in virtual environments so data centers can easily support private and public cloud environments.

**M-LAG:** Multi-system Link Aggregation enables simultaneous use of paths which can double link utilization and also provides for fast, sub-second failover.

**DCB:** Data Center Bridging enables lossless transport of Ethernet-based storage traffic and for high-performance iSCSI and FCoE. Also, see CLEAR-Flow for lossless, high performance iSCSI traffic flows.

**40 GbE:** Enterprise can build data centers with 40 GbE aggregation today and easily scale to 100 GbE when it becomes available in the market.

**MRJ21 Cabling:** High-density Gigabit Ethernet networks are common in the data center today. The Tyco MRJ21 cabling solution provides superior Gigabit Ethernet scale, 96 ports per blade and up to 796 gigabit connections per chassis, and reduces cabling complexity by bundling six Ethernet ports into a single cable – reducing cabling complexity by 83%.



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