

ExtremeWireless™



Experience Matters



Extreme Networks has over 10 years' experience delivering enterprise grade wireless Experience Matters

ExtremeWireless Indoor and Outdoor 802.11ac Wi-Fi delivers unmatched scale and density

ExtremeWireless is proven to be the most scalable Wireless solution on the market. This didn't happen overnight; ExtremeWireless technology has grown and evolved for over a decade with an extensive and diversified customer base. Extreme Networks is a pioneer in the Wireless industry, as well as in Unified Access for network infrastructure. Our experience matters.

ExtremeWireless delivers an exceptional user experience at unmatched scale and density. People regardless of who they are, what business they happen to be in, or what applications they are using do not care about what goes on behind the scene. We live in an Experience Economy where we expect our mobile lives must be supported everywhere we go. We expect Wireless to be simple, fast, and smart when we are on the go, regardless of what devices or applications we use. If we have a bad experience in one of these areas (simple, fast, and smart) our expectation will not be met. We are likely to leave with a negative feeling and possibly never come back. This is true in almost every aspect of life: Fans in a stadium, guests in a hotel, patrons in a coffee shop, students in an education environment, patients in a healthcare environment. Think about what makes you happy when connecting with your own device and then think about what makes you really upset when it doesn't work. User Experience Matters.

ExtremeWireless is the leader in high-density, highly scalable wireless deployments as proven with our success in venues that include:

- Gillette Stadium (New England Patriots)
- Lincoln Financial Field (Philadelphia Eagles)

Now you may say what does that have to do with healthcare, K-12, higher-Ed or other verticals that we play in? The answer is simple: our experiences with large venues have proven that we can solve density and scale in any network. Make no mistake – this experience matters!



Wireless is the access method of choice and every vertical must deal with scale and density challenges. Consider device proliferation beyond smartphones, tablets and laptops – the Internet of Things is coming and wearable devices like watches and glasses are going to further expand these challenges. To that end, many devices only come with a wireless interface and no longer have physical Ethernet connections. These wireless devices drive the demand for high-density, highly scalable wireless networks and ExtremeWireless is the most effective wireless solution proven to address this demand in the most difficult Wireless scenario that exists – the stadium venue.

ExtremeWireless scales beyond the crowd. ExtremeWireless stands on its own and represents a complete line of 802.11ac and 802.11a/b/g/n access points and appliances designed and manufactured by Extreme Networks. ExtremeWireless is available in various price ranges and configurations to meet any network requirement.

ExtremeWireless – Simple, Fast, Smart:

ExtremeWireless – provides Simple installation, user onboarding, and IT management

SIMPLE

- Expedite implementation with zero-touch AP initialization
- Deliver new applications and services with a single click
- Manage the network effortlessly through intuitive dashboard

FAST

- Deliver more applications and throughput with fewer APs
- Enable seamless mobility with fast roaming
- Achieve rapid troubleshooting and time to resolution

SMART

- Deliver business agility through advanced architecture
- Assure security with unique enforcement and segmentation
- Measure user experience through unprecedented analytics

ExtremeWireless - provides Fast throughput, roaming for seamless mobility, and tools for quickly troubleshooting user issues

Simple

ExtremeWireless is simple to deploy. The access points (AP) can configure and initialize themselves from a centralized appliance without the need to touch each AP. Once installed and powered up, ExtremeWireless access points will locate an appliance which will then push down the configuration. Once configured the access point can run independently of the appliance even in the event that it loses connectivity with the appliance. This provides a low touch installation reducing OPEX and providing network resiliency which decreases the possibility that a user cannot connect.

APs can also automatically configure the RF characteristics such as automatic power or automatic channel selection. RF algorithms such as band-steering and airtime fairness are controlled by each AP. Policy (security) and QoS are all performed by the AP, on the AP. Additionally wireless intrusion prevention (WIPS), additional security and interference detection can also be enabled to run on each AP using Radar (additional ExtremeWireless security product).

The ExtremeWireless solution simultaneously supports both centralized and distributed network architectures within a single SSID which improves overall wireless network performance, reduces the management complexity and user inconvenience associated with multiple SSIDs while providing a cleaner RF environment. Additionally, access points can be configured to manage traffic locally, centralize it through an appliance or do both simultaneously. This flexibility further reduces the Total Cost of Ownership.

With ExtremeWireless a new application or service can be implemented for users or devices with a single click. New policies can be created centrally and enforced out to the AP with a single click. This eliminates the need to touch every AP and greatly simplifies configuration for adds, moves or changes for new or existing users, devices, applications or services.

ExtremeWireless is a standalone wireless solution that can be installed into any network with centralized management, visibility and control via a centralized appliance for all APs distributed throughout the network. Additional benefits are gained by adding the Extreme Networks network management solutions such as Extreme Management Center, Extreme Access Control, and ExtremeAnalytics™. These products will not only provide additional management, application visibility and device/user control for ExtremeWireless but can also provide this for the rest of the network - unifying the wired/wireless network under a single centralized management console for the entire network. The choice is yours, managing the network has never been easier.

Fast

ExtremeWireless is optimized to meet the high expectations of BYOD and mobile users, accommodating device density as well as scale with high-bandwidth per device. By leveraging technology such as dual core CPUs (with additional network processor), dual Ethernet ports and optimizing packet processing the AP3800 series of 802.11ac access points process 75,000pps and has a total wireless link rate of 1.75Mbps (3 times faster than 802.11n).

ExtremeWireless access points are custom-designed and utilize advanced RF management techniques between neighboring access points to distribute the client device load across multiple access points and allow for fast and seamless mobility between APs.

By adding Management Center troubleshooting becomes a snap. By centralizing and unifying wireless/wired management Management Center provides the tools necessary to quickly locate and resolve network issues. This makes the IT person's job easier, the users experience better and allows the business to run at maximum efficiency.

Smart

The ExtremeWireless system architecture is the most advanced and flexible solution on the market today. ExtremeWireless APs can operate independent of the wireless appliance (controller) and have the unique ability to offer traffic engineering agility through centralized and distributed forwarding at the same time! This adaptable architecture allows the business to use the combination of traffic engineering that best meets their needs. For example critical, time sensitive applications such as voice and video can be bridged at the AP eliminating the unnecessary latency and wasteful traffic engineering introduced by tunneling all traffic centrally, while guest traffic might be forwarded to the appliance for additional security measures.

Additionally the intelligence of the AP allows Extreme to eliminate the massive traffic overhead introduced by noisy protocols such as Bonjour. Intelligent forwarding and filtering of multicast traffic for protocols such as Bonjour allows the right devices to advertise their services across the entire network with the massive broadcast storms typical of the protocol.

Security is always top of mind, especially for BYOD and guest access. With ExtremeWireless multiple users can be associated on a single SSID each having a different policy. This includes simultaneous bridging at AP for some users and tunneling traffic back to the controller for other users. Many competitive products need to have separate VLANs, for users to connect to in order to get different security policies. Additionally competitive products require a separate SSID to bridge at AP or tunnel to controller.

Visibility and control are critical for today's complex networks. By adding the intelligence of Management Center, Access Control, and Application Analytics network management becomes automated and smart. Management Center provides centralized wired/wireless management for the entire network infrastructure. Mobile IAM provides advanced contextual control for users and devices based on location, time of day, and application. These policies are associated with the user/device and are automatically adaptable so that they can change as the user situation changes. Application Analytics provides visibility into application layer traffic providing network-Based Business Intelligence Solution that captures and analyzes application traffic, providing context for better decisions and increased revenue, at unprecedented scale and performance.

ExtremeWireless - delivers Smart analytics for the business, operational intelligence and contextual automation



ExtremeWireless scales beyond the crowd, supporting growing mobility demands everywhere

ExtremeWireless – strong encryption to protect data, authentication to validate users, policy to define user actions, WIPS/WIDS to reduce exposure and comprehensive data collection for forensics

Density and Scalability

Scalability is defined as the maximum number of devices wirelessly connected to an AP with active data, voice or video sessions. Density is defined as the maximum number of devices per surface area. There are many factors that determine the scalability and density of Wi-Fi solution. These include the architecture of the AP, how it passes traffic to the wired network and how it manages RF signals to/from the wireless devices.

Extreme is the leader in ultra-high-density and high-scalability APs.

ExtremeWireless access points are custom-designed and utilize advanced RF management techniques between neighboring access points to distribute the client device load across multiple access points, as well as across multiple channels within each access point. Combining RF management techniques with Quality of Service (QoS) capabilities, ExtremeWireless delivers high performance for critical applications while supporting large numbers of devices.

For example the 68000 fans that go to the Gillette Stadium (New England Patriots) are supported by about 350 ExtremeWireless APs, which translates to about 200 devices per AP. With competitive solutions in similar venues 2X or 3X the number of APs are required. This proven scalability is applicable in any industry and every environment. High-density support is important not only because of its economic value (fewer APs mean lower costs) but it's sometimes the only practical way to provide high-quality WiFi – the law of diminishing returns states that as you add more APs, with a constant number of wireless spectrum, you get lower per-AP returns (ie. less connections).

Security

Strong security (802.11i), spectrum analysis, remediation, location, authentication, authorization and accounting are table stakes in today's mission-critical Wi-Fi networks.

ExtremeWireless takes this one step further by providing role-based policy enforcement. Once a user/ device has authenticated a policy that has been centrally defined it is pushed to the ExtremeWireless access point and enforced locally, distributing intelligence to the network edge. A policy can provide very granular control over what that user/device has access to. The policy is not tied to a VLAN, it is associated with the user/device and will follow that user/device as they roam throughout the network. Additionally, a policy can change dynamically for the same user based on location, device type and/or time of day.

Once a policy is defined, it will operate seamlessly across both the Wi-Fi and wired network providing consistent security enforcement.

ExtremeWireless analytics provides statistical data to meet compliance requirements, generate various reports, track users/devices and gather forensic information in the event of a breach.

Radar RF Management, Analysis and Control

ExtremeWireless Radar is RF management and spectrum analysis that is built into the solution and is available with all 3700 and 3800 series access points.

EXTREMEWIRELESS RADAR RF MANAGEMENT INCLUDES:

- **Radar RF Security** - All ExtremeWireless 3700 and 3800 series access points support WIPS/ WIDS from the start. These access points access points provide in- channel scanning for the channels that are actively being used. In ExtremeWireless Guardian mode they can also be configured as dedicated security probes for all channel full time RF security.
- **Radar RF Fingerprinting** - The 3700 and 3800 series access points provide hardware-based spectrum fingerprinting which will detect and identify noise or interference on the channel from other RF emitting devices, such as microwave, Bluetooth, video bridges, etc. Once interference is detected an event can be triggered to notify the administrator and client connections can automatically be redirected to another interference free channel. Again, ExtremeWireless is always in place to maintain a quality user experience.
- **Radar Radio Management** - Dynamic Radio Management (DRM) operates independently on each radio, automatically adjusting radio power output and channel selection to accommodate changing RF environments to maintain a quality user experience.
- **Radar Performance** - Airtime fairness allows faster clients to have the same amount of airtime as slower clients. This means that faster client connections are not penalized by slower performing clients and can transfer greater levels of data in the same timeframe, also extending battery life.

Client session load balancing distributes client traffic across radios and the access point to insure that a single radio or channel is not overloaded while others go unused, while band steering distributes traffic across the 2.4GHz and 5GHz spectrums. Combined, these two capabilities maximize the efficiency and throughput that the access point can provide.

Lastly, band preference forces clients that support both 2.4Ghz and 5Ghz spectrum to the faster and cleaner 5Ghz spectrum.

- **Radar Location Aware** - Easily and quickly locate a user, device or asset using ExtremeWireless management tools. A network administrator can visually locate a device, user or asset down to the access point and/or switch port. Intelligent rogue access point detection - the ability to locate a rouge AP and over-the-air mitigation of the rogue AP.
- **Maps** - Using Management Center quickly locate where devices are located on the network. This cuts down the amount of time required in locating a device for troubleshooting or security concerns.

ExtremeWireless Radar – RF Management, available with all 3700 and 3800 series access points

ExtremeWireless access points for the all-wireless office

High Availability

The ExtremeWireless solution is designed to provide the same level of availability that businesses have come to expect from the wired network. Both virtual and physical controllers have resiliency built in from the start, there is no additional software to add or purchase. Running as active-active pairs if a controller happens to fail, the other controller is able to take over the full load while maintaining access point connectivity. If a failover occurs it is within milliseconds – access points will continue running without interruption to existing or new client connections.

Additionally, if there is a WAN failure between the ExtremeWireless access points and the controllers, the access points will continue running without interruption to existing or new client connections.

In the unlikely event of an access point failure, neighboring ExtremeWireless access points will automatically pick up the connections from the failed access point while maintaining user connectivity.

Purpose-Built Hardware

Not all Wi-Fi solutions are created equal. Many products are built using off-the-shelf reference designs. These are not enterprise-grade products; they are basically the equivalent of a consumer-grade product. ExtremeWireless access points are purpose-built to meet the security, reliability, density and availability required by IT in order to support the high on-demand traffic of mobile and BYOD users. ExtremeWireless access points are easy to deploy, less costly than wired solutions and deliver wire-like capabilities for a great user experience.

ExtremeWireless access points will meet the demands of today and tomorrow. Radios, CPU, memory and antennas have been designed to operate at full power, run cooler and provide the cleanest signal of any access point available today.

Bonjour and Multicast Containment

The BYOD movement has brought a proliferation of smart mobile devices into the enterprise environment. While these consumer devices have enabled employees to become more mobile and productive, they have also added to the burden on the IT staff in terms of onboarding, securing and managing access to applications.

As an example Apple's Bonjour is a "zero configuration network" or Zeroconf protocol used by Apple devices to enable automatic and easy discovery of computers, devices and services on flat IP networks. Bonjour (and other multicast services like Microsoft's UPnP and LLmnr) uses industry standard IP protocols to allow devices to automatically discover each other without the need to enter IP addresses or configure DNS servers.

While this is great for consumers and small networks, it can cause numerous issues for larger enterprise networks. Bonjour is a very chatty protocol and can introduce heavy amounts of traffic onto the network. Additionally, Bonjour (and other multicast services) is not routable therefore the advertisements for services cannot go beyond the local subnet.

ExtremeWireless allows you to control your Bonjour and other multicast traffic



Quality User Experience

Centralize ExtremeWireless appliances and distribute APs to reduce cost and complexity

ExtremeWireless provides a quality user experience for bandwidth-intensive, low-latency voice and HD Video applications

Extreme Networks ExtremeWireless is designed to easily, securely and efficiently manage all devices, including finding and accessing network-attached devices on different subnets, using policy-based end user privileges and access. Other unique capabilities that ExtremeWireless offers to help control and manage multicast traffic include:

- Multicast to unicast translation – higher bandwidth clients are not penalized by the presence of lower bandwidth clients. With multicast to unicast translation the access point receives the multicast data and then converts it to multiple unicast streams sent to each client at the speeds they are connected at.
- Policy-based multicast filtering at the access point – this allows the administrators to block or filter multicast traffic at the access edge without requiring the controller to make these decisions – saving bandwidth resources.
- Classification and containment of multicast traffic to a separate, multicast-only VLAN ensures that Bonjour services are contained within physical or logical domains via integration with Extreme Networks S and K Series and Mobile IAM.

These ExtremeWireless multicast features allow IT to take control of multicast traffic on the network. Containing and controlling multicast traffic allows IT to maximize network performance while providing a consistent experience for clients.

Wireless Private Cloud

ExtremeWireless access points can be located remotely while ExtremeWireless appliances can be centrally-located. This distributes data decisions and data handling, while centralizing management and control.

Centrally locating appliances greatly reduces the cost and complexity associated with locating dedicated appliances at every location.

ExtremeWireless provides wire-rate performance to ensure that today's bandwidth-intensive and latency-sensitive business applications are reliably delivered in a consistent manner to mobile and BYOD users.

Robust ExtremeWireless QoS features:

- Utilizes hardware-based QoS queues and per client queuing to provide toll-quality voice and real-time HD video support for today's bandwidth intensive, latency-sensitive business applications
- ExtremeWireless provides a quality user experience for all forms of real-time traffic (HD video and voice) with minimal latency and jitter with industry leading throughput of 75,000 pps
- ExtremeWireless is certified with leading Voice over Wireless handset vendors, such as Ascom, Polycom, Vocera and Siemens

Support and Service

Extreme Networks Award
Winning Global Services:

2014 contact center of the year -
Gold Stevie award

100% insourced services, 97%
world-wide satisfaction

Experienced professional services
for all Wi-Fi deployments

Extreme Networks is a customer-centric company, committed to providing quality products and solutions backed by the best service and support in the industry.

The ExtremeWireless access points and controllers provide unparalleled value and the lowest Total Cost of Ownership during the life of the product.

Comprehensive service offerings include:

- Professional Services to design, deploy and optimize even the most complex networks
- Customized technical training
- Service and support tailored to individual customer needs

Please contact your Extreme Networks account executive for more information about Extreme Networks service and support options. For full warranty terms and conditions please visit www.extremenetworks.com.



<http://www.extremenetworks.com/contact> / Phone +1-408-579-2800

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