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ExtremeCloud™ IQ – Quick Look

Extreme Networks uses Cloud Management, Machine Learning, and Artificial Intelligence to radically simplify and secure the Access Network. Our Cloud Managed Wireless, Switching, Routing, and Security technologies provide unrivalled flexibility in deployment, management, and licensing. Credited with pioneering Controller-less Wi-Fi and Cloud Management, Extreme Networks delivers **continuous innovation at Cloud-speed** that constantly challenges the industry norm, allowing customers to rethink what's possible. Our innovations and global cloud footprint radically simplify Access Network operation for 95,000+ customers (VIQ accounts) and 10+ million daily users.

Benefits for Your Business and IT Operations

Cloud-Management Architecture

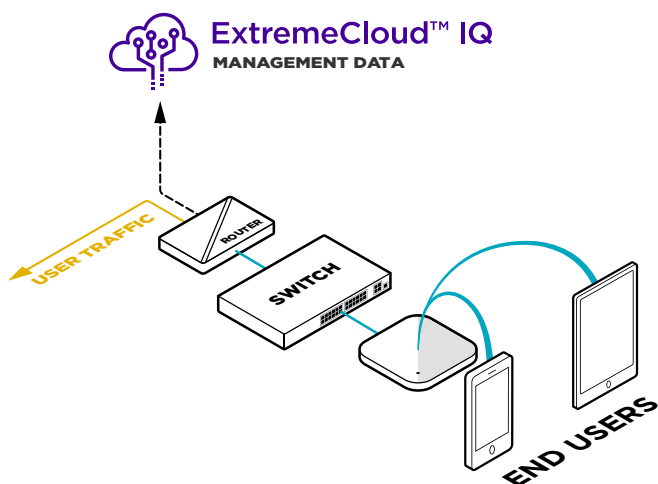
Extreme's Cloud-Management architecture uses the latest set of Cloud development and execution tools. We are a Modern Cloud or what is increasingly referred to as a 4th Generation Cloud that is API-driven and microservices/container based solving for scalability, reliability, programmability, and security (ISO 27001, GDPR, PCI) with native Machine Learning and Artificial Intelligence. We are proven at executing at Cloud-speed delivering high velocity innovation using the Continuous Deployment delivery model and have achieved and maintained Continuous Operation status of our global footprint of Cloud instantiations in USA, Brazil, Ireland, Netherlands, Germany, Sweden, Japan, South Korea, India, Australia, and New Zealand.

	Cloud Networking TODAY	ExtremeCloud™ TODAY	ExtremeCloud™ June 2020
CUSTOMER BENEFITS	Flexibility Scalability Cost Savings	Real-time Innovation Artificial Intelligence Machine Learning	Dynamic Segmentation Dynamic Licensing Dynamic Capacity
	1 st Gen	3 rd Gen	4 th Gen
CLOUD EVOLUTION	Continuous Integration Single-tenant Virtualized	Continuous Deployment Continuous Operation Serverless Computing	Containerized Microservices Dynamic Resource Pool 11 9's Data Durability

Accelerating at Cloud Speed
*for our competitors

Cloud-Networking Architecture

Extreme's Cloud Networking architecture uses a unique Centralized Management Plane and Distributed Control and Data Plane approach that eliminates aggregation/chokepoints and any single point of failure. Eliminating aggregation/chokepoints means that customer realize 100% of the value from every networking device they attach to the Extreme Networks architecture, unlike other competitors. Firmware updates are never forced from Extreme Networks. Our Cloud-Management architecture provides complete flexibility for and IT Administrator to decide which locations receive updates and the ability to deploy the updates on their schedule, not a schedule set by Extreme Networks.



ISO 27001 Certification

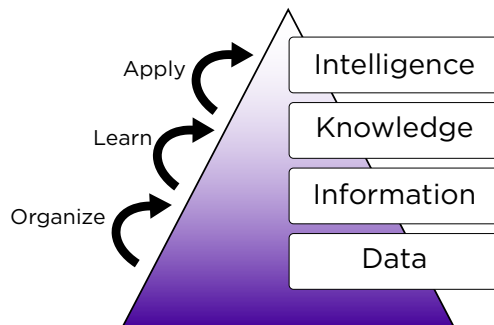
Extreme Networks has achieved the industry's first ISO 27001 Certification for Cloud Networking. ISO 27001 certifies that our information Security Management Systems implement best practices around our products, our cloud operations and the key parts of the company that interface to our cloud services. Our competitors HAVE NOT achieved ISO 27001 certification and they often mislead customers by stating their clouds "run in ISO 27001" certified data centers", but this is NOT the same thing as being ISO certified.



Machine Learning and Artificial Intelligence

4th Generation Cloud is intrinsically connected with ML services to provide data assurance, unlimited data retention, and 100% up time. Extreme Networks ML implementation does not rely on cloud hosting provider implementations so we can provide an unified experience and portability across all providers. Extreme Network Support leverages ML to proactively identify and predict potential customer network issues. In XIQ UI, ML is being used to quickly provide actionable insights, not only on device level but across entire network deployments.

ML/AI Paradigm

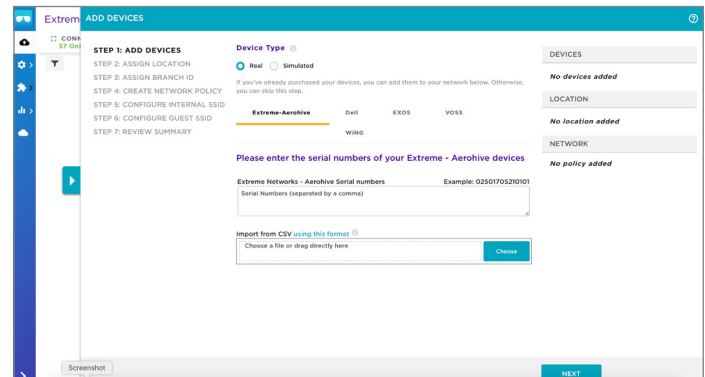


Simplifying Wired and Wireless Deployments at Scale

Intuitive Workflows

Extreme Networks delivers Intuitive workflows that make day-to-day tasks easier and more efficient. For example, our simple 7-step onboarding wizard, guided workflows (such as a guest SSID wizard), and shortcut configurations. radically streamline processes, freeing up valuable time and resources.

From adding new devices, to assigning locations and branch IDs, to creating network policies, and configuring internal and guest SSIDs, Extreme Networks simplifies the way networks are deployed and managed.

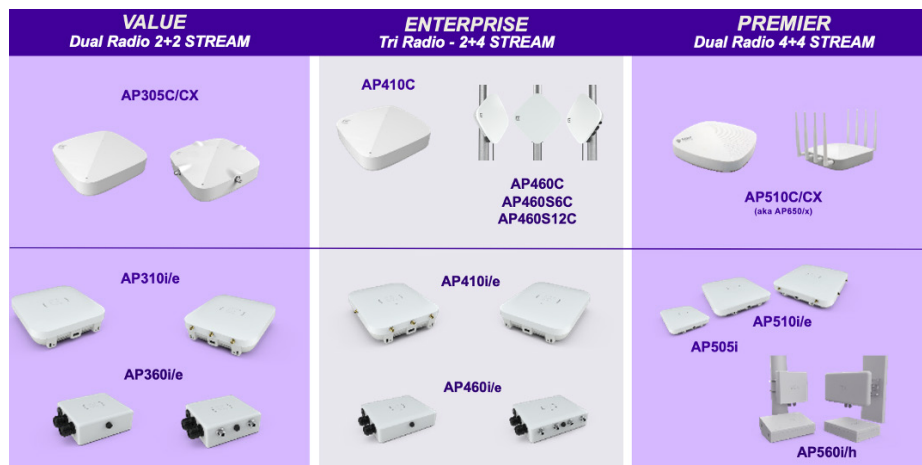


End to End Networking

ExtremeCloud IQ supports a broader range of end-to-end wired and wireless networking infrastructure. In the last year alone, ExtremeCloud IQ has added nearly 50 new devices to its management and reporting capabilities, including wireless access points and appliances, and enterprise edge, campus, and data center switches and routers to accommodate all of your networking needs.

Cloud-Managed 802.11ax/Wi-Fi 6 Access Points

Wi-Fi 6 is the latest Wi-Fi technology and was designed to address some of today's biggest performance challenges – increasing capacity by up to 4x but more importantly improving efficiency to benefit both 2.4 GHz and 5 GHz bands in a variety of environments like colleges, public Wi-Fi venues and many others. It is the first technology to improve traffic management and user experience by coordinating simultaneous multi-user communication to eliminate network congestion.



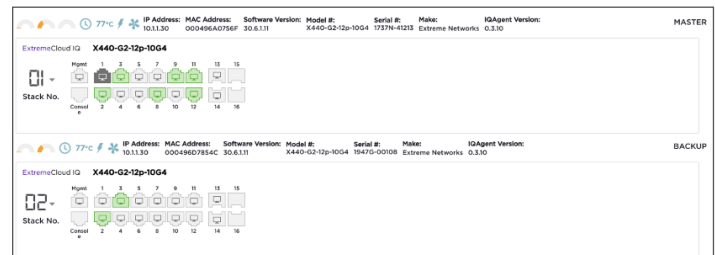
Extreme Networks AP Portfolio: Wi-Fi6

Cloud-Managed Enterprise-grade Pluggable Access Point

Extreme Networks offers the industry's first Enterprise-grade Pluggable Access Point with advanced Mesh capability. The Atom AP30 revolutionizes the way Wi-Fi is designed, deployed and Re-deployed, providing enterprise access, monitoring, and analytics in a new compact form factor. With a simple and intuitive design coupled with pain-free installation and automated over-the-air setup, Atom AP30 is the ideal choice for a variety of dynamic use cases including delivering instant network access, plugging RF hole, providing security and analytics, and VPN access.

Cloud-Managed Access Switching

Standalone Access Switching and Access Switch Stacking for Extreme Networks' SR2300 series are optimized for the Distributed Enterprise. Extreme Networks' SR2300 series cloud-managed switches provide fast, reliable, and secure wired connectivity. Providing energy-efficient gigabit Layer 3-Lite capabilities with flexible PoE options, as well as a wealth of port density options, Critical capabilities, such as zero-touch provisioning, switch stacking, unified policies, and a powerful QoS engine make these switches a perfect complement to any enterprise network.



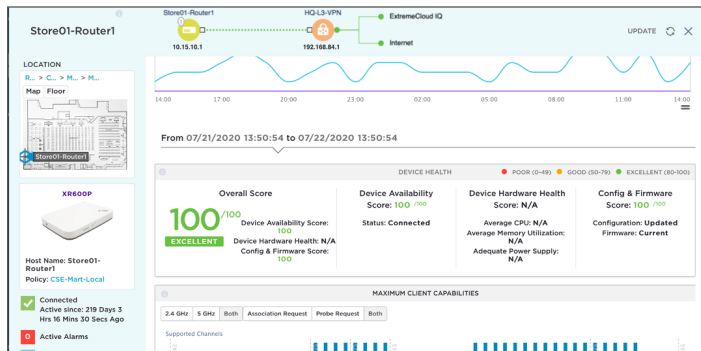
Likewise, ExtremeCloud XIQ is adding support for onboarding and remote management of Extreme Networks' full family of switches. Onboarding and monitoring are currently supported and adding full configuration from the cloud in the 2nd half of 2020



Cloud-Managed Branch Routing and SD-WAN

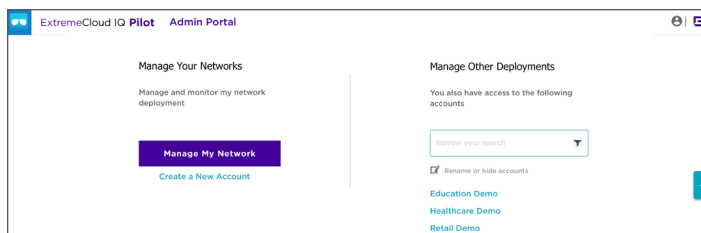
Extreme Networks offers a full suite of Branch Routing features and functionality with SD-WAN capabilities optimized for the Distributed Enterprise.

Extreme's Branch Routing solutions build on a state-of-the-art cloud networking platform to deliver a secure, reliable and cost-effective HQ-like network experience to every user, regardless of location or device. This cutting-edge solution can help reduce costs, increase performance, enhance security, simplify management and improve user experience. The XR-600 now includes URL filtering as well as Virtual Routing Redundancy Protocol (VRRP).



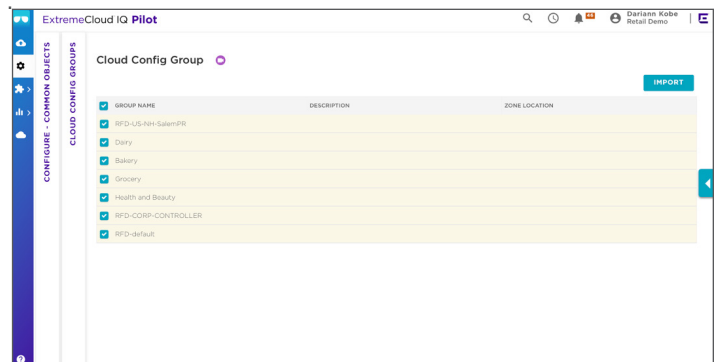
VIQ Switching and RBAC capability

An ExtremeCloud IQ Admin can grant access to an external user using the built-in RBAC (Role-Based Access Control) capabilities. Once another user is granted access, the account will appear under their ExtremeCloud IQ Admin Portal.



Cloud Config Groups

Cloud Config Groups (CCG) enables IT Admin's to define a rules-based approach to device provisioning within Network Policy. Within a single policy, administrators can use IP subnet, IP range, device name, physical location, as well as logical device groups to deterministically apply configuration elements to a device. Items like SSID's, RADIUS servers, VLANs and more can be applied using CCG. Rules can also use negation, allowing administrators to reverse logic and ease implementation for even the most complex and diverse environments



Multi-Language Support

ExtremeCloud IQ can render all elements throughout the interface in multiple languages (configurable within ExtremeCloud IQ). The list of supported languages currently includes:

- English
- German
- Spanish
- French
- Italian
- Japanese
- Korean
- Portuguese
- Chinese

Multi-Interface Support

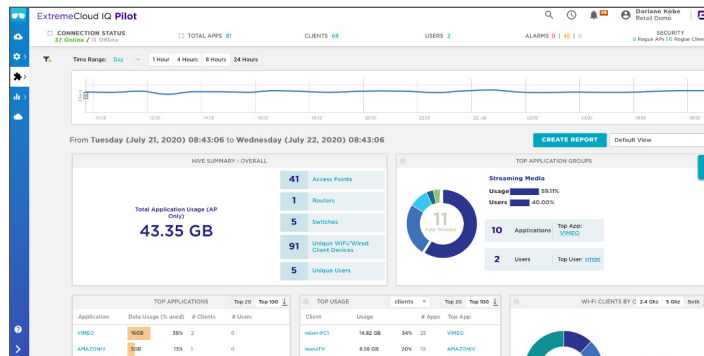
Extreme Networks offers the unique ability for IT administrators and their departments to interface with our ExtremeCloud IQ application and the devices and clients under management using multiple user interfaces. We design, build, and constantly improve the following interfaces:

- HTML
- CLI
- sCLI
- Alexa
- API
- Mobile Application

Actionable Insights

Extensible Day Retention Options

ExtremeCloud IQ – offers rich data metrics for IT administration and business operations as well as providing the most extensive retention of data analytics in the industry.



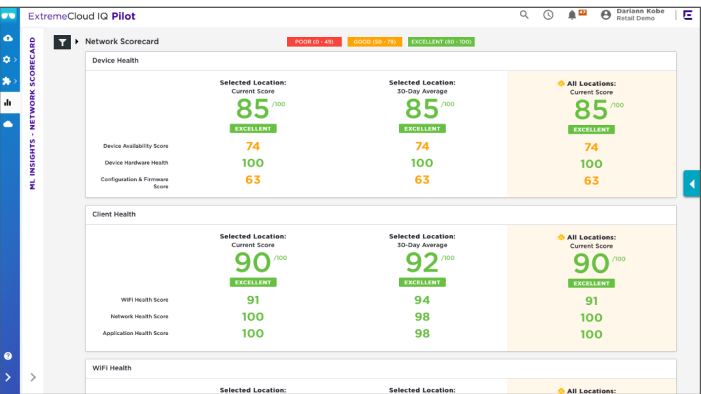
- Connect Customers get 30 days of data retention
- Public Cloud customers have access to their entire data set for the full duration of service; starting July 2020.
- **Historical Data Analytics** - provides the highest level of actionable insights into users, devices, services, performance, security and network behavior.
- **Diagnostics** – ability troubleshoot network/client issues and look back to determine when issue first detected.
- **Regulatory Requirements** – such as PCI, HIPAA, GLBA, Sarbanes-Oxley, etc.
- **ML/AI Analytics** – compare individual device experiences against historical trends to predict expected behavior, Reporting –In-depth manual and scheduled reporting based historical data and events.

ExtremeCloud IQ captures and retains more granular data than any other competitor.

ML Insights

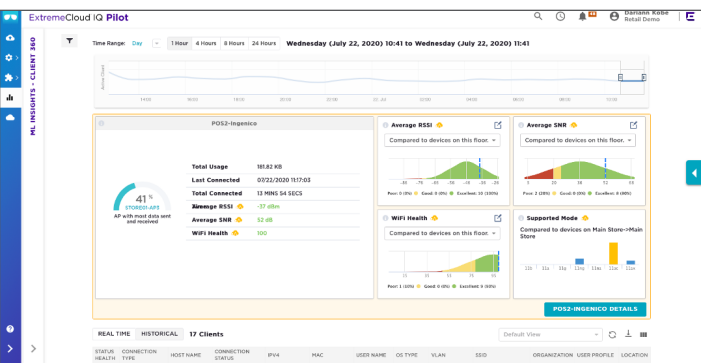
ML Insights is derived using Extreme’s true microservices Cloud architecture, API-driven Cloud-Management, and native machine learning capability to securely collect, process, and rapidly analyze vast amounts of data from a customer’s network to accurately depict the “network health” in both real-time and historical views. This AI-driven network monitoring tool uses an intuitive time-slider to adjust for day, week and month views of the key performance indicators for:

- Device Health
- Services Health
- Client Health
- Application Health
- Wi-Fi Health
- Security Health
- Network Health



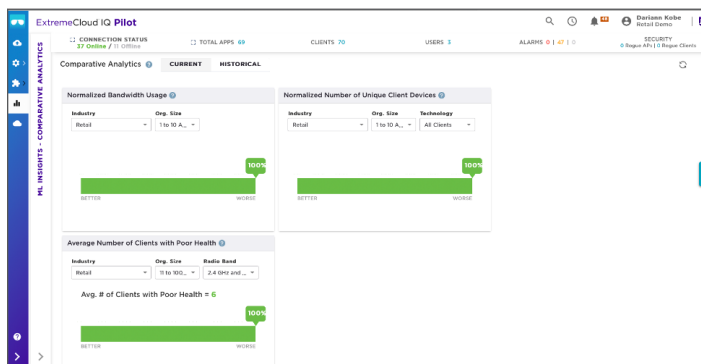
Client360

Client 360 securely collects, processes, and rapidly analyzes vast amounts of client data from a customer’s network to accurately depict the “total client experience” in both real-time and historical views.



Comparative Analytics

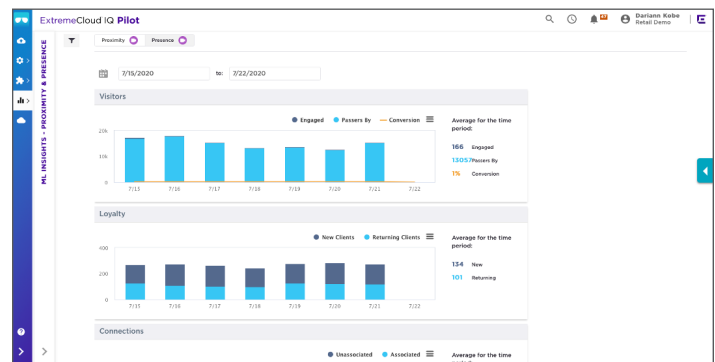
Comparative Analytics are derived using its global Cloud footprint of 30,000+ networks, to securely and anonymously collect, process, and rapidly analyze vast amounts of data to generate client and network operational comparisons. Organizations can assess the state of their network beyond the information presented by their own network management system, removing any ambiguity, offering organizations a broader scope of useful, objective, and actionable datasets that help them determine network correction or upgrade requirements.



Proximity and Presence Analytics

Extreme Networks offers proximity and presence capability to enable location-based services such as asset tracking, proximity marketing, and visitor engagement analysis. High-valued assets can be tracked over time to determine utilization as well as locate its current location. AP client associations can be mapped over time on a floor plan to examine points of congestion or key marketing zones. ExtremeCloud APIs can be leveraged to integrate with mobile applications to offer new services.

- Presence analytics provides insights as to whether or not a visitor is new to the venue. It can also say how often they visit the venue, how long they stay at the venue, or even if they passed by without entering the venue.
- Proximity analytics is a newer addition to the analytics space and when combined with presence analytics, it allows for a more holistic and accurate view.



API-driven Cloud Networking Telemetry

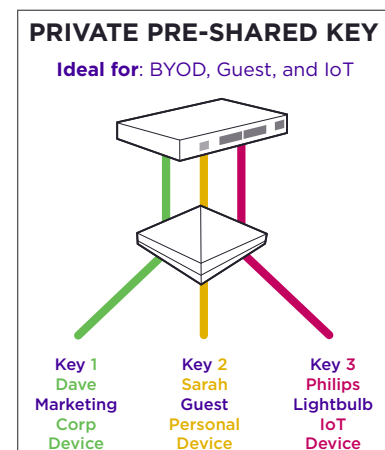
Your Data is Your Data. Extreme Networks Cloud Networking Telemetry leverages Extreme's true microservices Cloud architecture, API-driven Cloud-Management, and native machine learning capability to enable a customer to customize and receive the API-driven client and network telemetry that is most important to them.

Cloud Networking Telemetry is the ultimate in flexibility for those customers building their own API-driven applications to operate their network. They get only what they need, when they need it, and are in complete control of determining KPIs, setting thresholds, and data storage.

Context-Based Policy Enforcement

Private Pre-Shared Keys

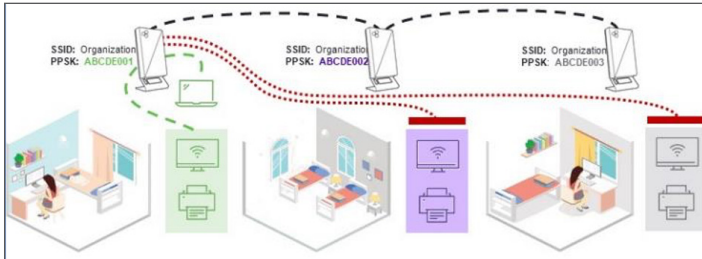
Extreme invented and patented Private Pre-Shared Key (PPSK) technology and has been improving upon it for 10+ years. Extreme's PPSK technology is compatible with any Wi-Fi client that supports PSK and enables IT to replicate 802.1X level security with less complexity and ongoing overhead.



Private Client Groups (PCG)

Private Client Groups (PCG) delivers a unique, secure, and simple to manage micro-segmentation networking capability for IoT, MDU, and Hospitality use cases.

PCG enables an IT administrator to set up “private groups” of wireless and/or wired client devices that an authorized PPSK user can seamlessly connect to as they roam across a common SSID/domain.

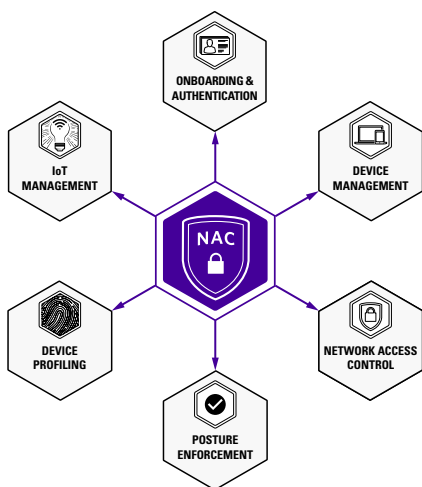


Cloud-Managed NAC

Extreme Networks A3 is the industry's first Cloud-Managed NAC solution that centrally monitors and manages your A3 instances from the Cloud. A3 secures, manages, and controls wireless and wired Corporate, BYOD, Guest, and IoT client devices. A3 supports:

- Self-service onboarding
- Guest and BYOD management
- Automated device provisioning
- Built-in RADIUS Server
- Device profiling
- Network Access Control (NAC)

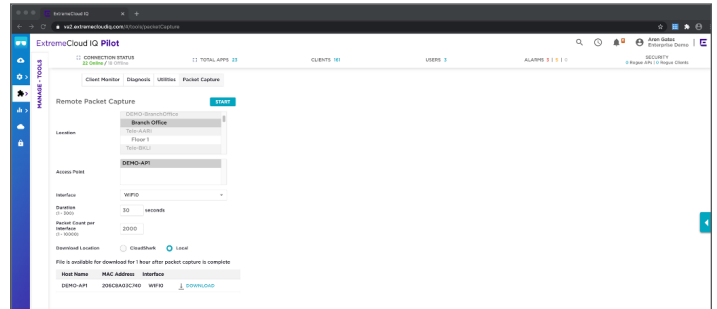
A3 is vendor-agnostic and is compatible with all major access networking and security vendors.



Streamlined troubleshooting tools

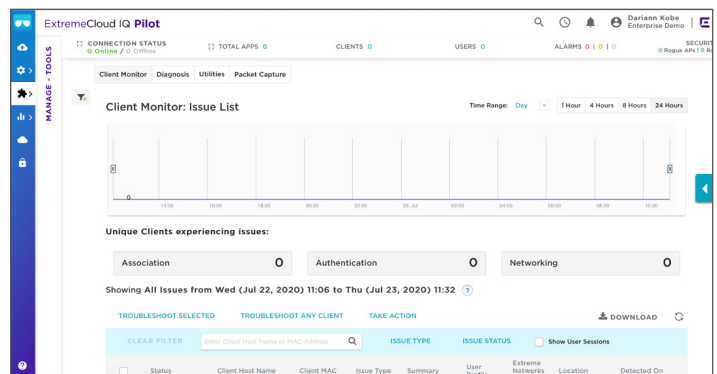
Remote Packet Capture

Remote CloudShark and Local Packet capture capability. By leveraging the power of ExtremeCloud IQ, you can conduct packet captures and save them right to CloudShark. If you need to deep-dive into problems, you can know what's happening at a glance; these tools can make that task easier



Client Monitor

Automatic troubleshooting and diagnosis to aid Admins in detecting and resolving network issues as quickly as possible. Client Monitor automatically monitors the network in the background and reports back any issues that are detected including failed authentication attempts and IP address misconfigurations.



Any corporation that facilitates financial transactions across their network must ensure (by law) that their network is PCI compliant. ExtremeCloud IQ features a PCI 3.2 Compliance Report (the latest standard) in which the network configuration is analyzed for compliance. If any violations are reported, remediation steps are provided.

GDPR-related tools to support right to request and be forgotten.

- Search, download, and delete user data by client MAC address.
- Search, download, and delete user data by username.
- Search, download, and delete admin data by admin name.

ExtremCode IQ Pilot

Darshan Kabe

Enterprise Demo

ACCOUNTS

Account Details

Credential Distribution Groups

Multi-Factor Authentication

AUDIT

Audit Logs

Device Management Settings

YIG Management

Email Notifications

API

API Token Management

API Data Management

3rd Party API Connections

LOGS

Audit Logs

GDPR Audit Logs

KDDB Logs

DOWNLOAD

ORGANIZATION	TIMESTAMP	CATEGORY	ADMIN USER	DESCRIPTION
Your Organization	2020-07-23 17:20:58	ADMIN	dmobile@extremenetworks.co	Logged in with privileges of admin group: General
Your Organization	2020-07-23 16:26:53	ADMIN	jdaniel@extremenetworks.co	Logged in with privileges of admin group: General
Your Organization	2020-07-23 13:18:05	ADMIN	dmobile@extremenetworks.co	Logged in with privileges of admin group: General
Your Organization	2020-07-23 11:06:14	ADMIN	dmobile@extremenetworks.co	Logged in with privileges of admin group: General
Your Organization	2020-07-23 09:48:38	ADMIN	lmarco21@extremenetworks.c	Logged in with privileges of admin group: General
Your Organization	2020-07-23 09:19:30	DEPLOYMENT	agates@extremenetworks.co	Removed SSH Tunnel 54.202.297.48:2020 from Remote Host: L3T5 with 3600 seconds timeout (Session ID: df1a4407c91e2b1e158190a
Your Organization	2020-07-23 09:19:04	DEPLOYMENT	agates@extremenetworks.co	Created SSH Tunnel 54.202.297.48:2020 on Remote Host: L3T5 with 3600 seconds timeout (Session ID: df1a4407c91e2b1e158190a
Your Organization	2020-07-23 09:15:43	ADMIN	lmarco21@extremenetworks.c	Logged in with privileges of admin group: Administrator
Your Organization	2020-07-23 09:15:28	ADMIN	agates@extremenetworks.co	Logged in with privileges of admin group: Operator
Your Organization	2020-07-23 09:04:39	ADMIN	agates@extremenetworks.co	Logged in with privileges of admin group: Operator

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