

ExtremeCloud™
Cloud Managed Networks

Key Take-Aways

- **SIMPLICITY**

- Target limited IT staff

- **Protects Future Investments**

- ‘Flex-Premise’ Same Hardware & Same Firmware – works with cloud or on-premise management

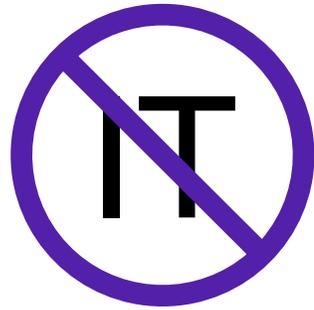
- **Completes the Portfolio**

- Offer a Unified Wired/Wireless Cloud Management Solution

ExtremeCloud Objectives

- **SIMPLE** to understand, order, fulfill, deploy, use, and renew
- **ALIGNED** with our Partners monetization objectives
- **ELASTIC** for customers to support their own business changes
- **LOW TOUCH** for our Partners and Sellers
- **INNOVATIVE**
- **SOFTWARE FOCUSED**

Why Cloud Management?



IT Resources

- The network is the platform of engagement
- Drives constant increase in workload and infrastructure complexity
- Network must be pervasive, including distributed locations with no IT



IT Budget

- Budgets not keeping pace with constant change in business requirements
- Applications and end-user experience are driving investment in the network



Move to the Cloud

- Increasing Reliance on Cloud Applications & Services
- Includes Mission Critical Applications
- Hybrid (Cloud and On-Premise) IT Stack brings necessary scale and adaptability without upfront cost



What is ExtremeCloud™?

Devin Akin, Principal Wi-Fi Architect, Divergent Dynamics Inc.

"Extreme Networks' entry into Wi-Fi cloud management offers a clean, intuitive user experience that is ready for production networks. I readily recommend ExtremeCloud to mid-market and distributed enterprises."

Unified Wired/Wireless Cloud Managed Networks

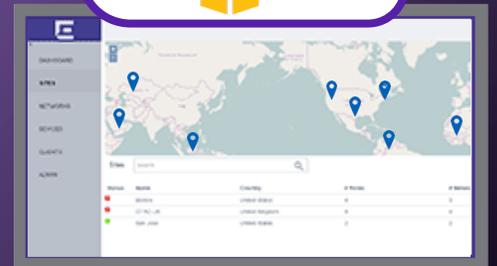
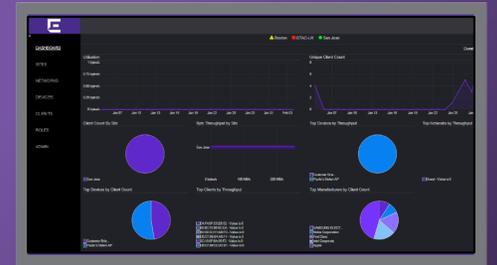
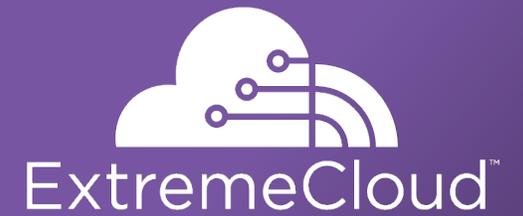
- Protects your Investment
 - Same HW & FW on premise & cloud
 - 802.11ac wave 1 & 2 (indoor/outdoor)
 - X440-G2 & X620
- Delivers a business-Adaptive Network
 - Application Visibility & Control
- Simple, Simple, Simple
 - Zero-Touch Provisioning
 - Quick Start
 - Switch auto-setup to support WLAN



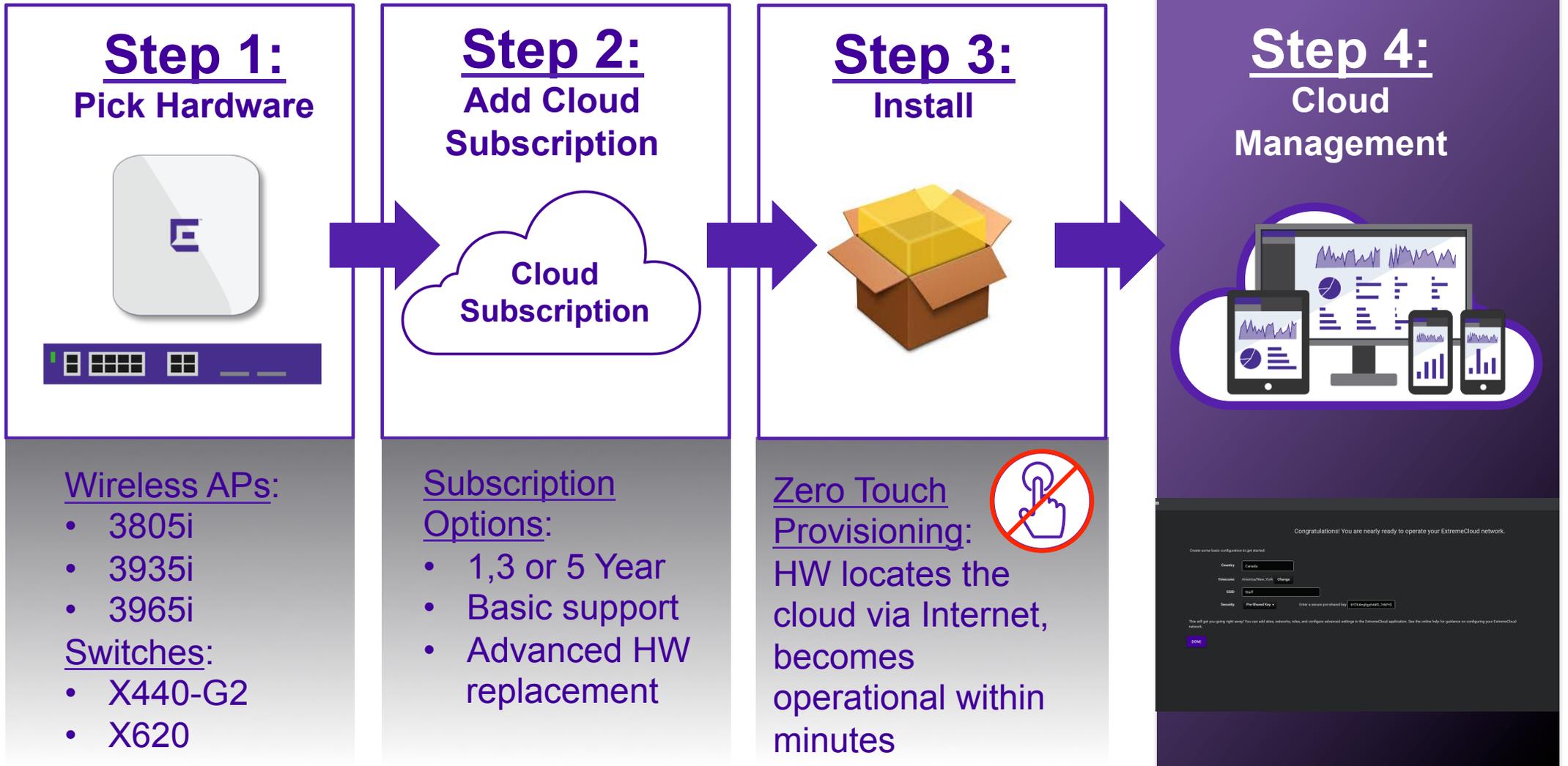
ExtremeCloud Wired/Wireless Management – Key Benefits

Cloud managed network hosted on Amazon Web Services (AWS)

- **ExtremeCloud** – Built from the ground up, easy to use – application visibility and control
- **Pay-as-you grow** – Purchase only what you need, expand as your business grows
- **Zero touch provisioning (ZTP)** – HW locates ExtremeCloud and is operational within minutes
- **Investment protection** - Flexibility to Manage Same Hardware & Firmware in Cloud or On-Premise
- **Simple** - Designed to help organizations that lack the resources to implement and manage network devices
- **World Class Support** – ExtremeCloud backed by the industry's only 100% insourced service and support



How Does ExtremeCloud Work?

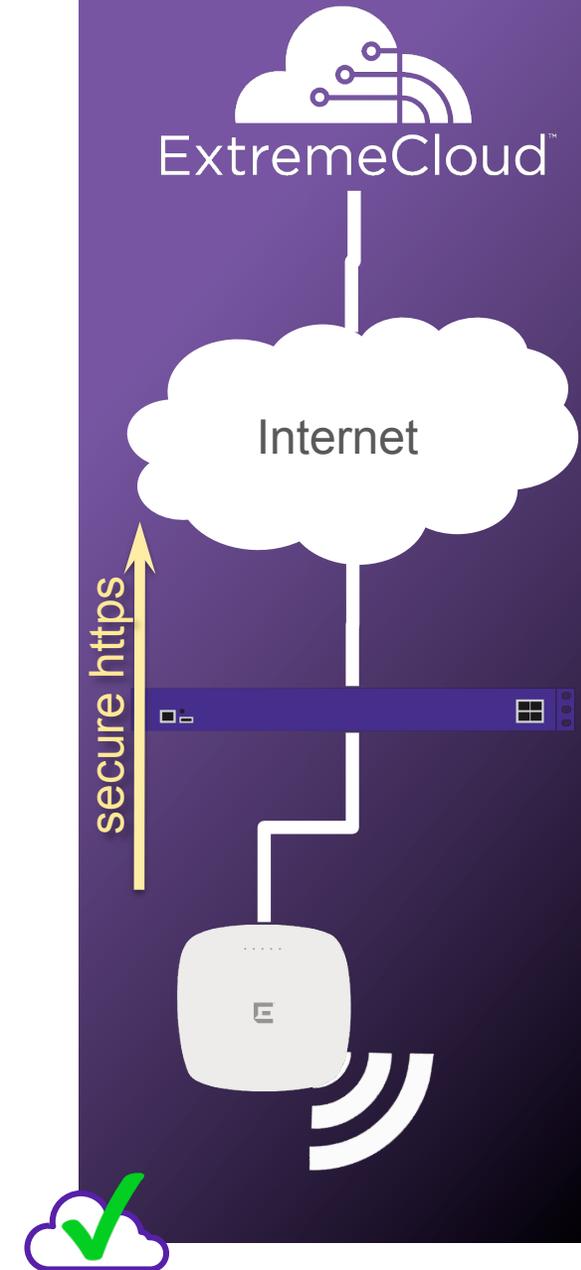


Pay as you Grow

- Allows organization to quickly adapt to a rapidly changing business environment without a high upfront management spent
- Highly scalable – Resides securely in the publicly-accessible cloud
- Empowers to deliver more services more efficiently, and contribute savings to the bottom line.

Zero-Touch Provisioning

- No networking skills required to enable a remote location – just plug the device
- No change required to local firewall configuration with firewall-friendly deployment
- Secure – Switches & Wireless Access Points use secure https to connect to ExtremeCloud



ExtremeCloud - ExtremeWireless Feature Overview

Application visibility – fingerprint, DPI & enforcement

Secure - Customer data is never sent to the cloud. Management and control traffic is secured via HTTPS/SSL, which also uses TCP port 443 which is usually open on existing firewall and NAT implementations

Sites (AP clustering) – 100 APs per site allows seamless roaming within a site with up to 2,000 sessions and support for multiple sites for distributed or larger installations

BYOD phase 1 – just reporting

Guest portal redirection

Single pane of glass – wired/wireless cloud based management

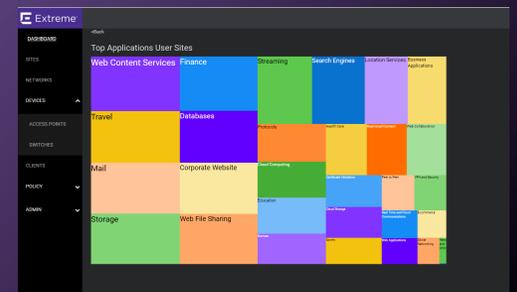
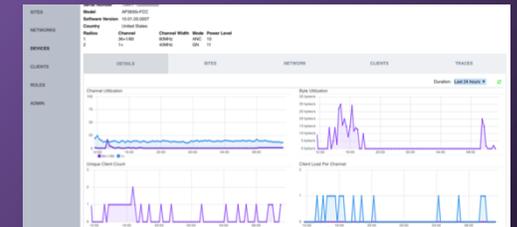
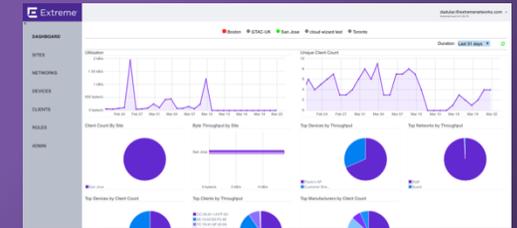
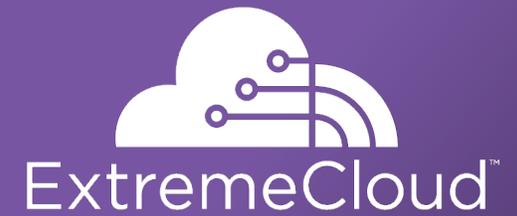
Policy - role-based access control of users, devices, and applications to deliver priority, QoS, and security

Zero-touch, automated provisioning of managed network devices

Fast/secure roaming – end-to-end QoS and seamless roaming

Software updates pushed from the cloud

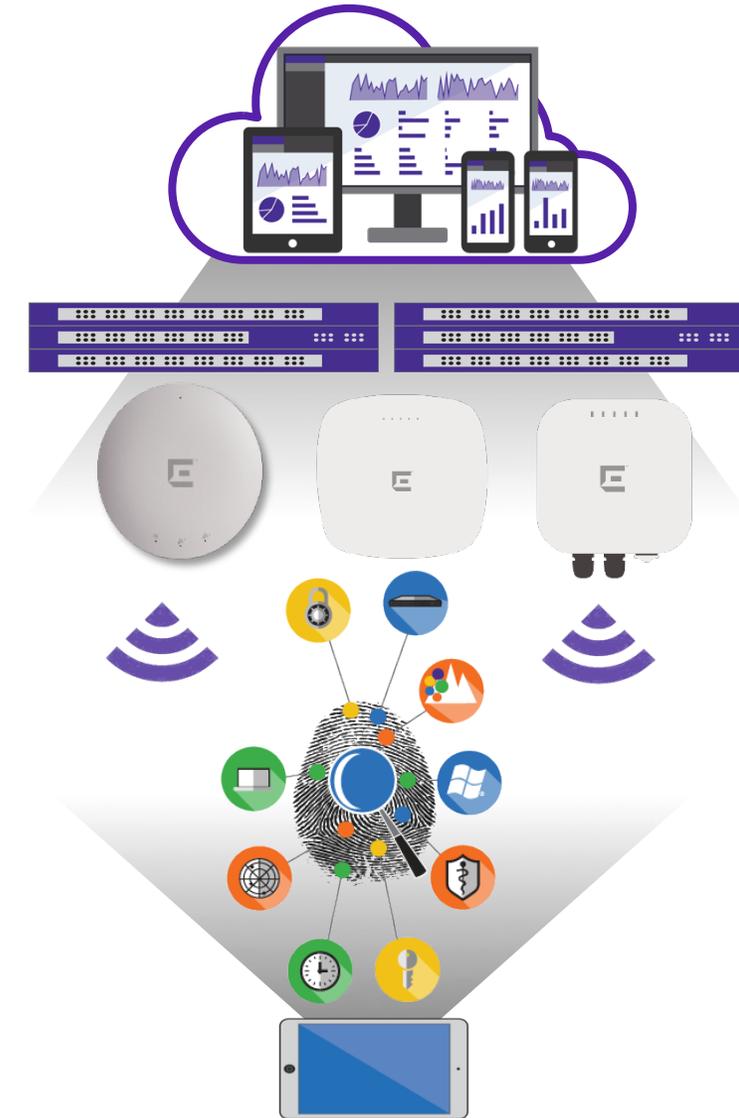
Dynamic Radio Management (DRM) - enables the wireless network to automatically adapt to changes in the RF



Application Visibility And Control

Enabling better business decisions and application performance

- Market-unique application visibility and control without sacrificing performance (Flow-based architecture)
- Seamlessly identify applications running on your network
 - Over 3,000 active fingerprints;
 - Built-into the wireless access points
- Enforce Policies right where your Users Connect
 - Prioritize traffic your business depends upon;
 - Eliminate unwanted traffic and applications;
 - Rate-limit, rate shape, prioritize, prioritize and deny applications



Wireless Planning Tool

Prior planning prevents poor performance

First release available to partners only

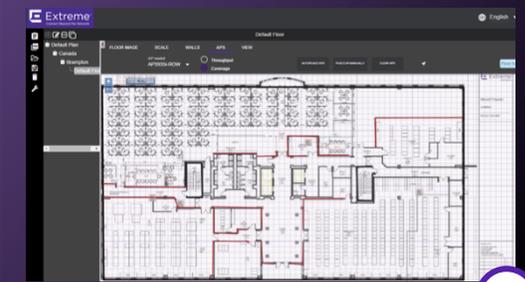
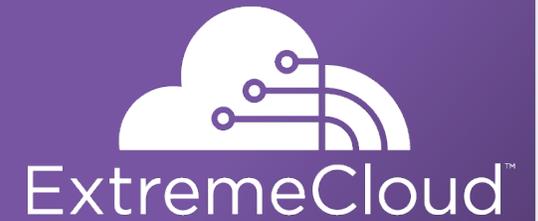
Import floor plans set up scale, walls, doors and select materials

AP auto-placement for fast Wi-Fi designs

Locate APs, visualize coverage and channel plans

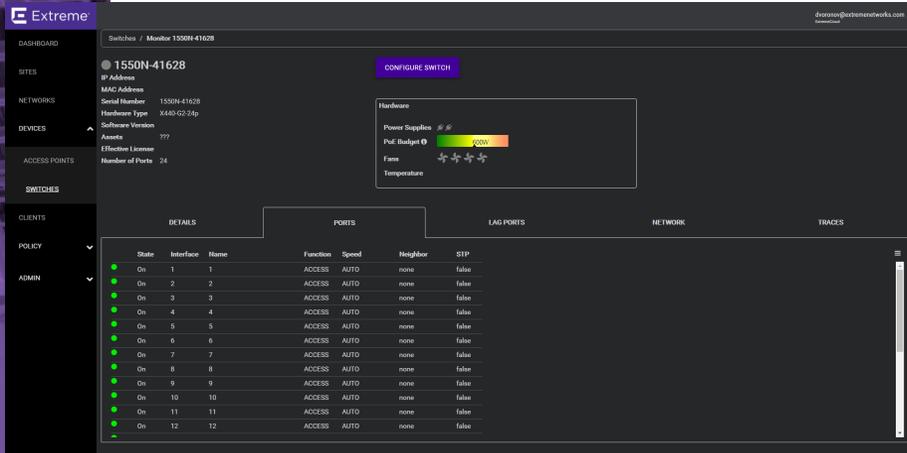
Generate a bill of materials

Export Wi-Fi deployment plan to PDF



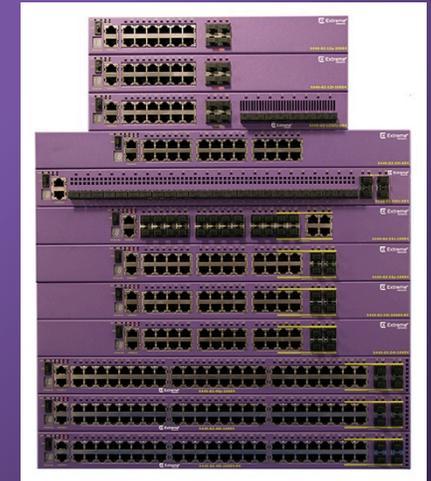
Cloud Managed LAN Switches – Overview

Feature rich, PoE+ switching technology for fast Wi-Fi backhaul



- Zero-touch-provisioning [ZTP+]
- Comprehensive security and policy enforcements features
- Scalable, cost-effective
- L3 IPv4/IPv6 edge routing

- X440-G2 – Fixed, stackable edge switch family
 - PoE+ enabled switches
 - 10/100/1000BASE-T access with 10Gb capable uplinks
 - Gigabit fiber aggregation
- X620 – Fixed, stackable 10Gb switch family
 - High performance 10Gb connectivity
 - Advanced enterprise capabilities



X440-G2



X620



ExtremeWorks – A Suite of Service Offerings

100% Insourced service and support, professional services, training

Extreme Networks award winning customer support is 100% insourced

Solution level support for our customers, to exceed expectations – customer satisfaction

Average tenure of support engineers - 10 years

97% first call resolution

Solution level support – customer will not get bounced around

Thousands of happy customers

30 years building and support enterprise class networks around the world, in almost every vertical



ExtremeWorks™

Service Levels

TAC & OS

NBD AHR

4H AHR

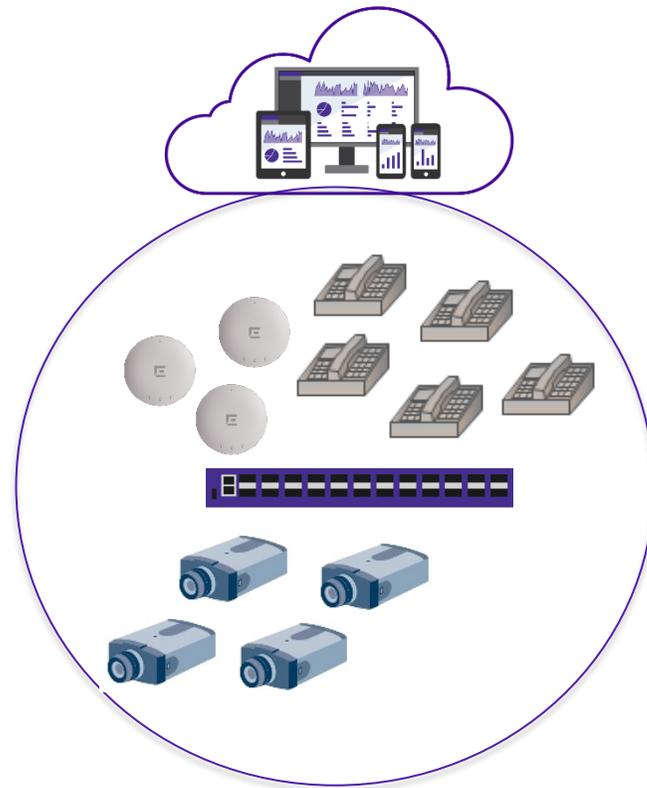
NBD On-Site

4H On-Site



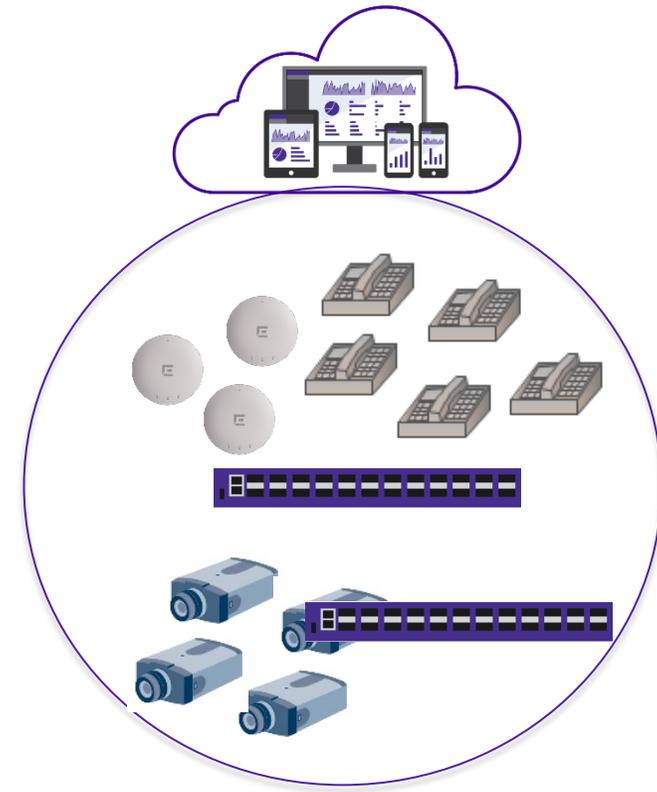
The Complete Business, Clinic, Retail, Hospitality, School or Branch Solution

Smaller installations



12 port X440-G2 with PoE+
PoE+ for APs, cameras, IP phones

AP3805 AP



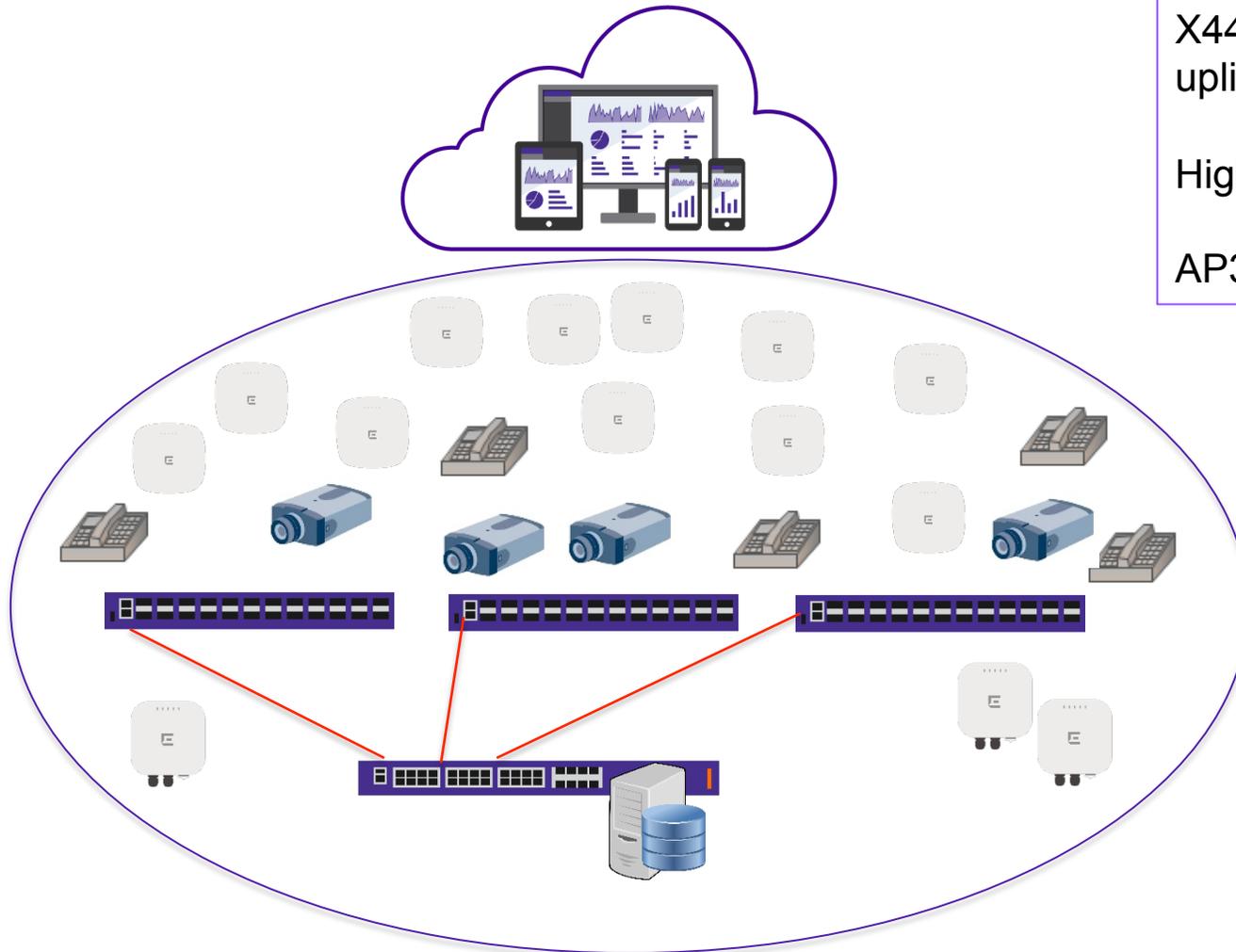
12 port X440-G2 with PoE+

AP3805 AP

Add second switch for redundancy

The Complete Business, Clinic, Retail, Hospitality, School or Branch Solution

Medium sized installations



3 x 24 port X440-G2 with PoE+

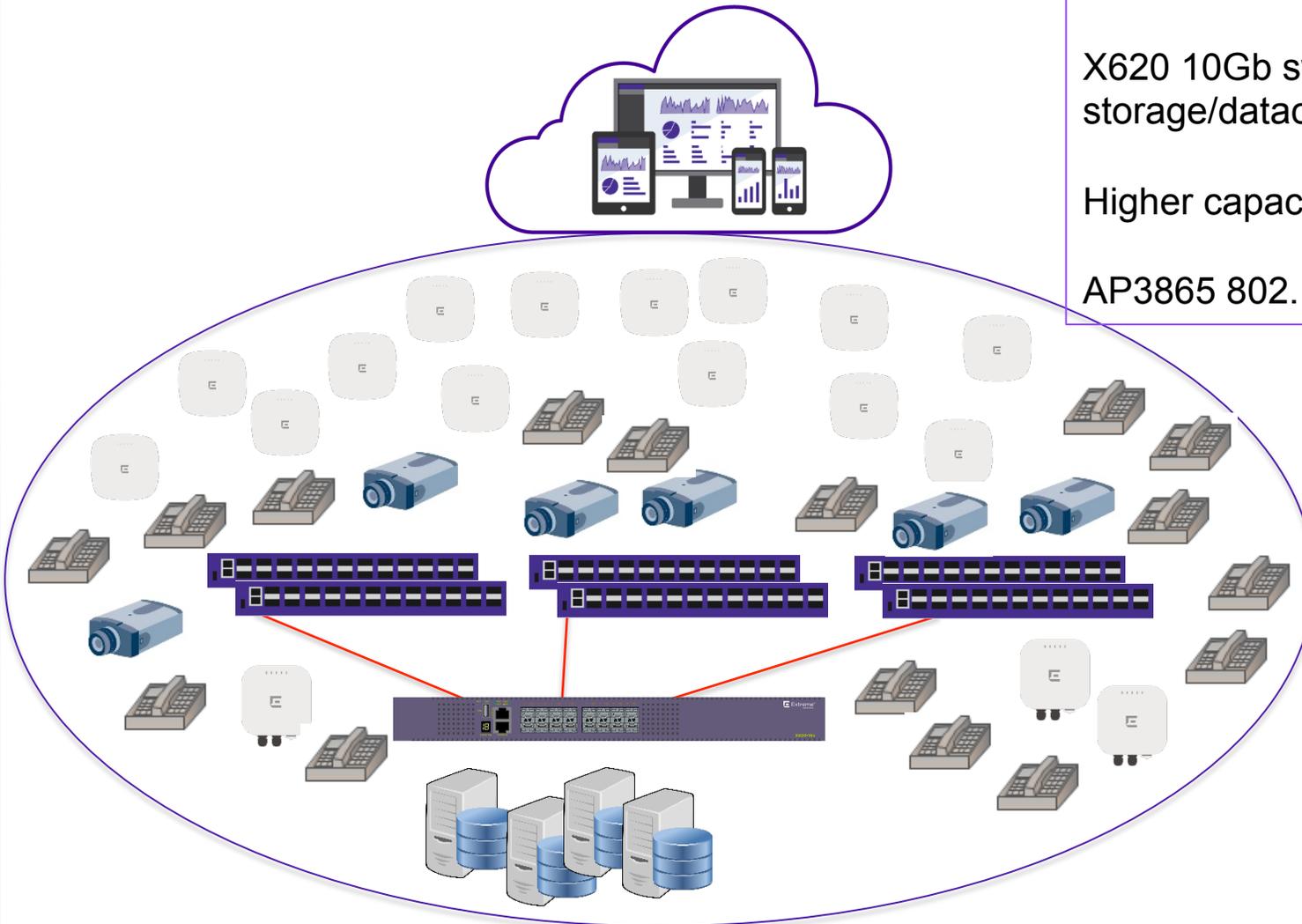
X440-G2 24 non-PoE switch with quad 1Gb uplinks for aggregation and or small datacenter

Higher capacity AP3835 802.11ac Wave 2 APs

AP3865 802.11ac Wave 2 outdoor APs

The Complete Business, Clinic, Retail, Hospitality, School or Branch Solution

Larger installations



6 x 48 port X440-G2 with PoE+
PoE+ for APs, cameras, IP phones

X620 10Gb switch system for aggregation and storage/datacenter

Higher capacity AP3835 802.11ac Wave 2 APs

AP3865 802.11ac Wave 2 outdoor APs

ExtremeCloud or ExtremeWireless (On-Premise)

Your choice

ExtremeCloud

- ❑ Limited IT
- ❑ Distributed sites
- ❑ Optimized OPEX & CAPEX for small sites

Benefits:

- ✓ Ease of management
- ✓ Zero touch deployments
- ✓ Scalability on demand
- ✓ Single touch updates
- ✓ Focused on network edge

SMB/K-12/Retail/Branch offices

ExtremeWireless (On-Premise)

- ❑ Company wide IT support
- ❑ Seamless layer3 roaming
- ❑ Tighter integration with the Wired network, NAC, Analytics

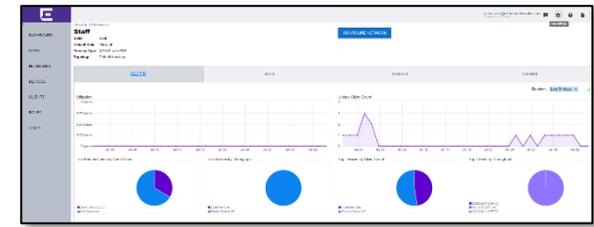
Benefits:

- ✓ Architecture flexibility
- ✓ Centralized or distributed
- ✓ Edge to datacenter focus
- ✓ Granular control
- ✓ 3rd party infrastructure support

Higher-Ed/Large Ent/Healthcare/Stadium

ExtremeCloud

Some of the many benefits, check it out for yourself



- **Reduces OPEX** – For constrained IT resources, management resides securely in publicly-accessible cloud
- **Reduces CAPEX** - Eliminates the need to purchase, deploy, maintain, power, secure, and locate network appliances on premise
- **Zero touch provisioning** - Install the AP, the AP finds the ExtremeCloud, gets a configuration and it comes up fully operational. Additionally software updates are pushed from ExtremeCloud
- **Pay as you go** - Network expansion, only buy what you need
- **Up to date technology** - Makes it easier and more affordable for businesses to upgrade and stay current with the newest Wi-Fi technologies (802.11ac Wave 2)

Extreme Overview

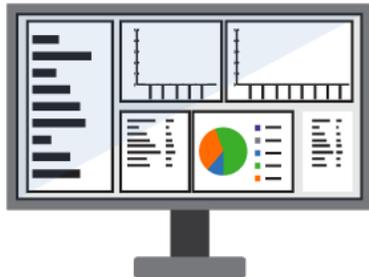
End-to-end, wired and wireless, software-driven networking solutions to enterprise campus customers worldwide

- Exclusive focus on mid-level enterprise campus
- 1 of 3 with end-to-end, wired & wireless
- Only multi-vendor management “single pane of glass”
- “Visionary” software-driven solutions:
 - Application-aware, QOS, Analytics
 - Built-in identity and access controls
 - EZ policy assignment and SDN
- Top ranked, 100% in-sourced tech support


ExtremeWireless™




ExtremeManagement™




ExtremeAnalytics™



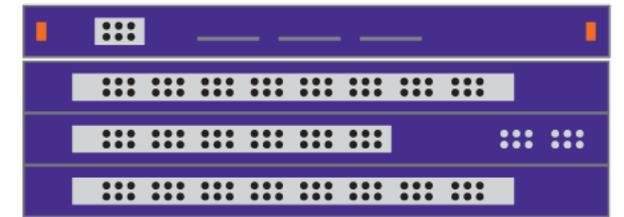

ExtremeControl™

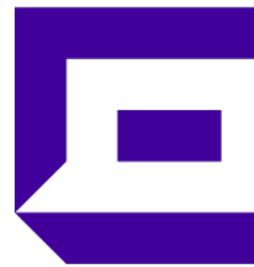



ExtremeCloud™




ExtremeSwitching™





Extreme[®]

Connect Beyond the Network

WWW.EXTREMENETWORKS.COM

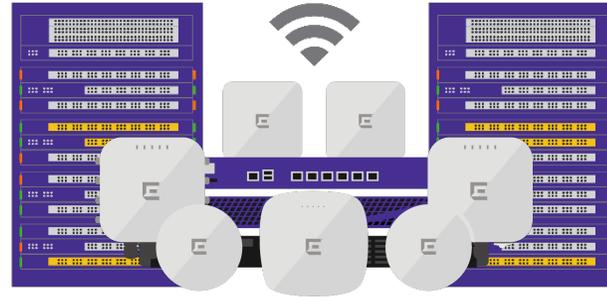


Extreme Managed Networks: Cloud or Premise

Extreme has you covered



ExtremeAnalytics™ ExtremeControl™



ExtremeWireless™ ExtremeSwitching™



ExtremeCloud™

ExtremeWireless 802.11ac Wave 2

For the digital enterprise - addressing the demands for increased density and bandwidth driven by IoT and mobility.

Multi-Gig ExtremeSwitching	Extreme Control Center	Extreme Identity and Access	Extreme Application Analytics	ExtremeSecurity
Required for PoE+ to support the higher power requirements for 802.11ac Wave 2 and 10 GbE or 40GbE uplinks to offload the AP traffic to the wire.	To provide centralized wired/wireless management, reporting, context-driven mobility, reporting, auditing and API for easy integration of third party management tools.	To provide AAA, Context Driven Mobility - policy, centrally managed and pushed out into the network, follows the user/device and transparently changes as mobile location changes.	Extreme wireless performs application flow mirroring to Extreme Application Analytics providing application visibility at the Edge. Control Center provides additional analytics.	In addition to the security provided in the other products, include: <ul style="list-style-type: none"> - Extreme SIEM/IPS - Partners firewall - Partners MDM - etc...
SDN for Centralized Orchestration and Control				

AP3935i and AP3965i – Details

Cloud or on-premise managed: same AP – same firmware – you choose

AP3935i indoor, AP3965i outdoor 802.11ac Wave 2 access points

Flow based architecture - Faster data processing and increased content filtering

Fully featured 4x4:4 Dual radio 802.11ac Wave2 AP – 90,000pps, 480 users

1,733 Mbps (5GHz), 800 Mbps (2.4GHz)

2 x Gigabit Ethernet Ports – Link Aggregation (LACP)

High Availability - Seamless Ethernet port failover

MU-MIMO (Up to 3 concurrent conversations)

802.3at (PoE+) – The AP3935i also runs on PoE as a 2x2:2

80MHz channelization, 256-QAM modulation

Transmit Beamforming

Flex-Premise deployment support: cloud to on-premise migration flexibility without rip/replace hardware



AP3935i



AP3965i



AP3805i Access Point – Details

Cloud or on-premise managed: same AP – same firmware – you choose

AP3805i indoor 802.11ac Wave 1 access point

Enterprise Grade AP for price sensitive installations – designed to blend in

Fully featured 2x2:2 Dual radio 802.11ac Wave1 AP – 40,000pps, 312 users

1.3Gbps (5Ghz), 450Mbps (2.4GHz)

1 x 10/100/1000 Base T Ethernet autosensing link

MIMO implementation for high performance 11ac and 11n throughputs

Flex-Premise deployment support: cloud to on-premise migration flexibility without rip/
replace hardware



AP3805i



ExtremeSwitching X440-G2 Family - Details

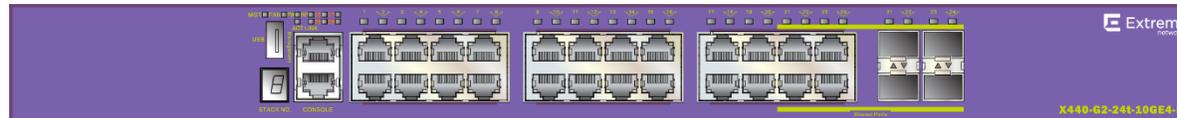
6 Cloud Managed Models



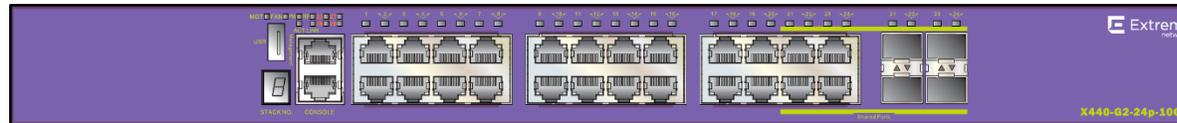
X440-G2-12t-10GE4
12 x 10/100/1000
4 x 10GbE SFP+



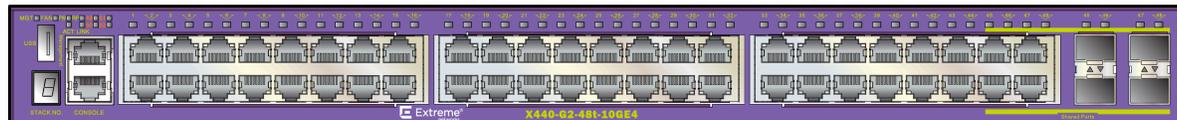
X440-G2-12p-10GE4
12 x 10/100/1000 PoE+
4 x 10GbE SFP+



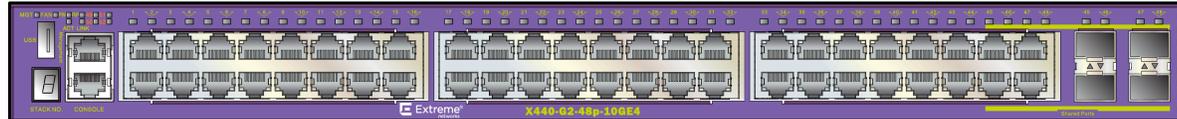
X440-G2-24t-10GE4
24 x 10/100/1000
4 x 10GbE SFP+



X440-G2-24p-10GE4
24 x 10/100/1000 PoE+
4 x 10GbE SFP+



X440-G2-48t-10GE4
48 x 10/100/1000
4 x 10GbE SFP+



X440-G2-48p-10GE4
48 x 10/100/1000 PoE+
4 x 10GbE SFP+

12, 24 and 48 port PoE and non-PoE with quad 1Gb Ethernet uplinks upgradable to 10Gb Ethernet

Energy Efficient Ethernet (EEE) supported on all copper Base-T ports

Simultaneous support for stacking and 10GE uplinks

Dynamic role-based policy support

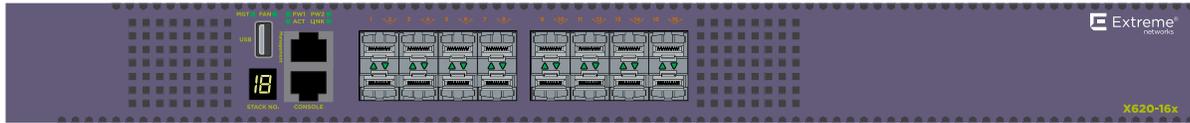


X440-G2



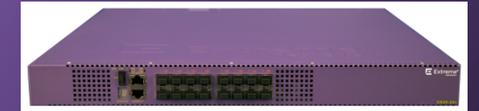
ExtremeSwitching X620 Family - Details

1 Cloud Managed Model



X620-16x - Base
16 x 100Mb/1Gb/10Gb
SFP+

- X620 16 100Mb/1Gb/10GBASE-X SFP+ ports, 2 unpopulated power supply slots, 1 unpopulated Fan Module slot, ExtremeXOS Edge license
- Hot swappable redundant modular power supplies and fans
- AC and DC power options
- Front-back or back-front air flow options

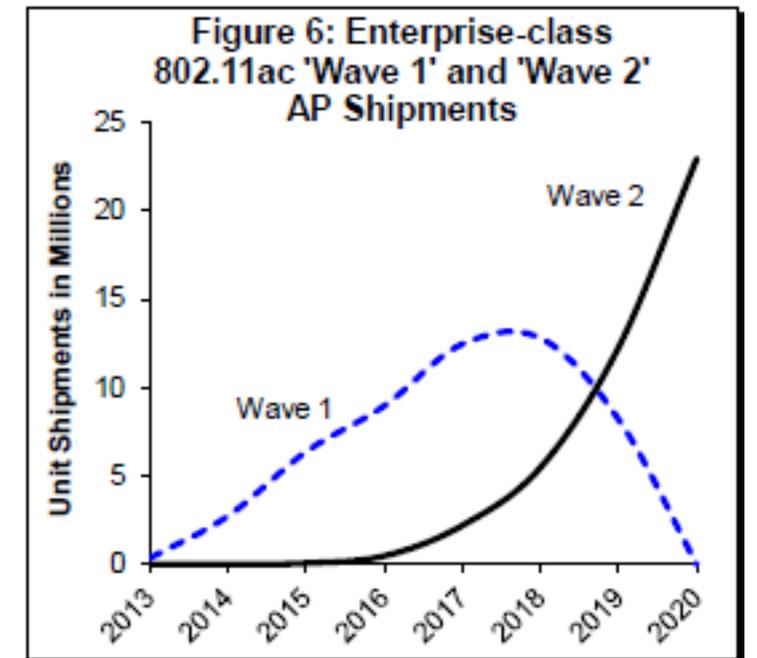
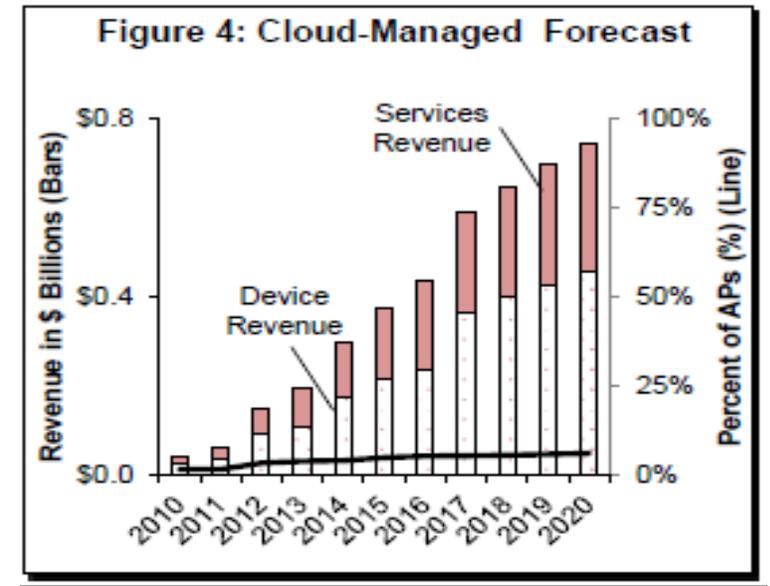


X620



Dell 'Oro

- Approximately one-third of access points expected to ship over the course of this forecast are to be shipped to small businesses and to remote branch offices of larger businesses
- We expect that many, but not all, of these *small business customers will use cloud-managed Access Points* and the corresponding cloud service (Figure 4).
- We expect that the uptake of this second wave of higher - performance 802.11ac will become significant starting in 2016
- Wave 2 will also catalyze a need for greater than 1 Gbps of Ethernet bandwidth from the Access Point connection



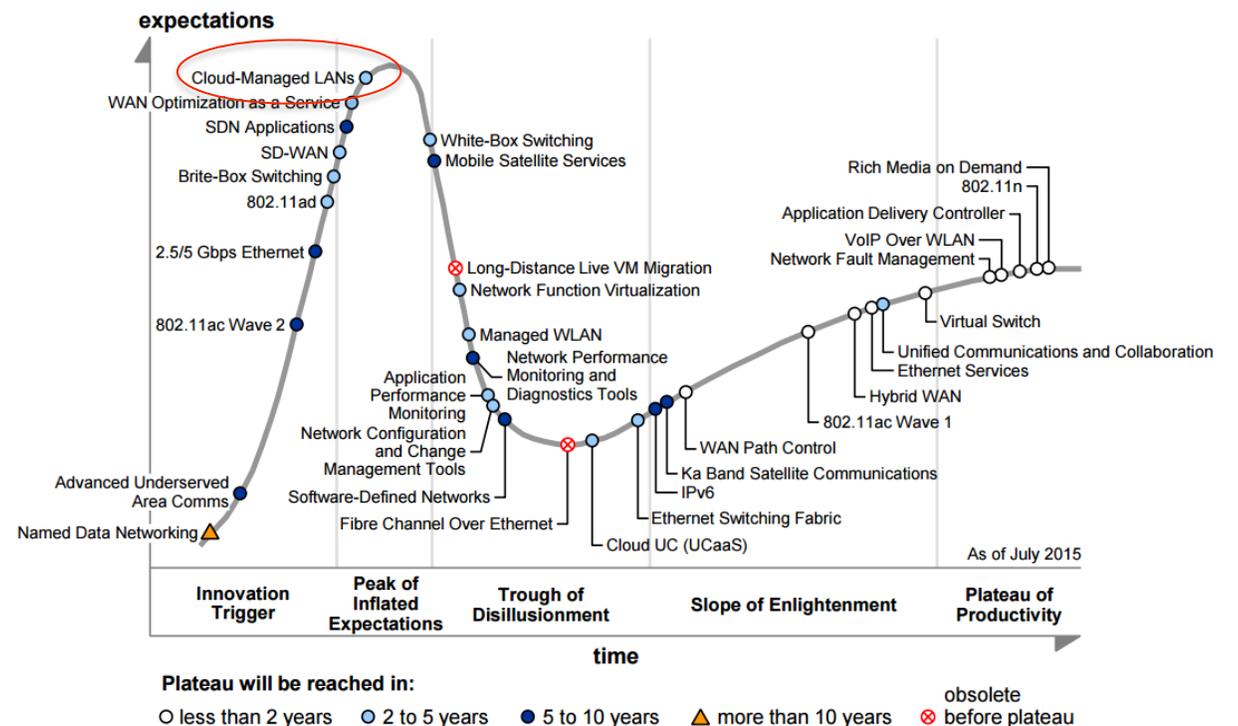
Gartner

Timing is Perfect to enter the Cloud Managed Networks Market – Going Mainstream

- Emerging alternative for deploying wired and wireless infrastructure in remote offices
- Solutions have been used by small or midsize business (SMB) organizations with limited IT staff who need to support WLAN in remote locations, like schools and retail stores
- Functionality has expanded to include wired connectivity and security appliances
- Initial investment per location is small, and ongoing costs are predictable, which makes it appealing to small business customers
- Long term, total cost of ownership (TCO) can exceed traditional deployments, making it less attractive for customers with sufficient scale (indicatively >100 devices)
- Growing three times faster than traditional offerings.

Retail stores, coffee shops and restaurants, small hotels, waiting rooms in healthcare facilities, schools, small businesses, and small remote offices in general are the ideal target for cloud managed networks.

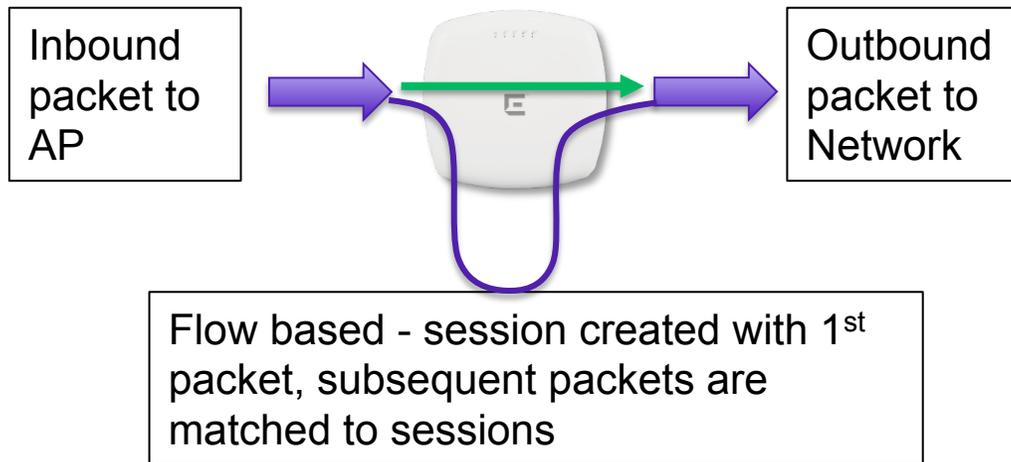
Figure 1. Hype Cycle for Networking and Communications, 2015



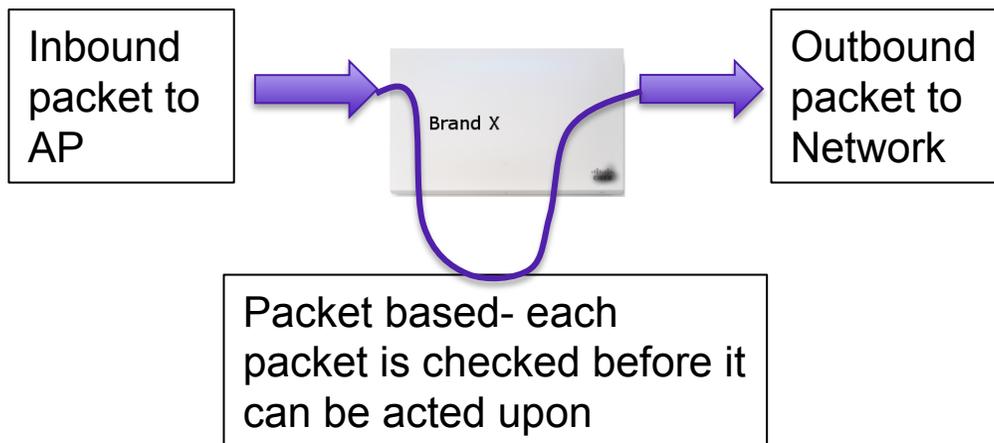
Source: Gartner (July 2015)

Hype Cycle for Networking and Communications, 2015 Published: 27 July 2015

Flow Based vs Packet Based Forwarding



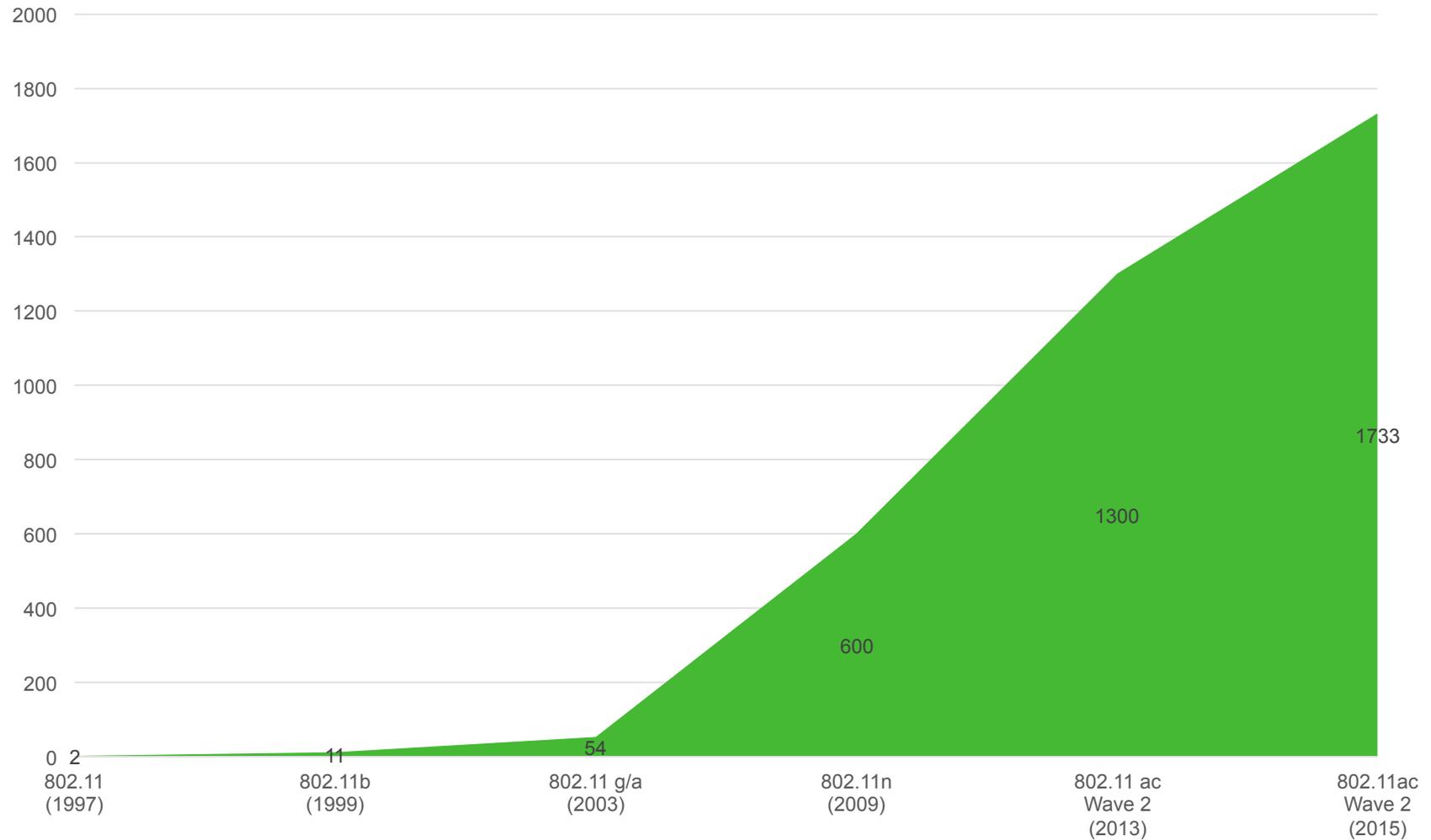
1. Flow-based (stateful) architecture creates sessions
2. Session is stored along with security information that are applied to the packets of the flow
3. Functionality such as DPI policy, and control are applied to the flow vs individual packets
4. Handling of packets in a flow are established with the 1st packet
5. Handling of subsequent packets are matched to existing session or new session created if new packet
6. This saves huge amount of time and processing verses processing every packet



1. Packet-based (stateless) forwarding is performed on each individual packet. Ignores flow and does not maintain state
2. Policies, QoS, etc are then applied to each packet
3. Route is looked up and packet is forwarded

Wireless Performance has Increased Rapidly With Each Release

Need for speed



ExtremeCloud Quotes

Gordon Martin, President, Peak Uptime

“Extreme has a longstanding history of providing secure, enterprise-class wireless and wired solutions to customers and partners around the world. With ExtremeCloud, our customers are able to easily adapt the newest Wi-Fi technologies and deliver services more efficiently, ultimately impacting the bottom line.”

Steve Thompson, Sales and Marketing Director, LAN3

“In today’s ever-changing technology landscape, ExtremeCloud is ideal for companies that require a flexible and adaptable solution. With ExtremeCloud, LAN3 is enabling our customers to operate at a much more efficient, agile pace, ensuring an optimal customer experience and improved networking capabilities.”

Approved – UK partner quote – will be used in UK version

Edwin Renkema , Sales Manager , Bossers & Cnossen

“We are transitioning our company to a fully cloud delivery business model, this new ExtremeCloud solution was exactly what we were looking for, a combination of an accessible and easy to use management interface with the impressive enterprise class 802.11ac Wave 2 APs. The access points were delivered with zero-touch provisioning, so we simply plugged them in and they were available for device connectivity within minutes. The ExtremeCloud user interface is available to IT staff from anywhere, allowing us to configure, monitor and troubleshoot without any onsite involvement.”



Large North American Hospital

802.11ac Wave 2

- Non Profit Teaching Hospital
 - 900-bed, regional referral and academic medical center
 - 6,000+ employees
 - Made up of four hospitals:
- Applications
 - Voice grade telephony app
 - Guest and patient access
 - Staff access
 - Connectivity for a wide variety of medical devices
 - Higher density deployment
- Why Extreme Networks
 - Excellent customer support
 - Well integrated wired and wireless solution
 - NMS – Analytics, OneView, NAC
 - Competitive pricing
 - Excellent performance

Extreme Solutions:

- 2500 802.11ac Wave 2 APs
- 6 wireless appliances paired for redundancy across 3 hospitals and cancer center
- K-Series switches
- S-Series switches
- ExtremeManagement and ExtremeAnalytics
- Professional Services
- Customer support



Benefits of ExtremeCloud

Single pane of glass wired+wireless cloud managed networks

- Secure out-of-band cloud management
- Application visibility and control
- Zero-touch AP and switch provisioning (ZTP)
 - Significantly reduces deployment time
- Investment protection – same HW / FW
- Central configuration, management, reporting and troubleshooting
- Pay-as you grow Subscription-based model
- Latest technology
- Perfect for sites with limited expertise

