



Extreme Networks – portfolio

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Extreme Networks

Customer-Driven Networking Solutions from the Enterprise Edge to the Cloud

20+ YEAR
Pioneer in Networking



NASDAQ: \$EXTR

1 BILLION
REVENUE

CUSTOMERS
30,000+
6,000+ PARTNERS

INDUSTRY'S
FIRST
Gig-E / 10 Gig-E
SWITCH
Extensive Patent Portfolio

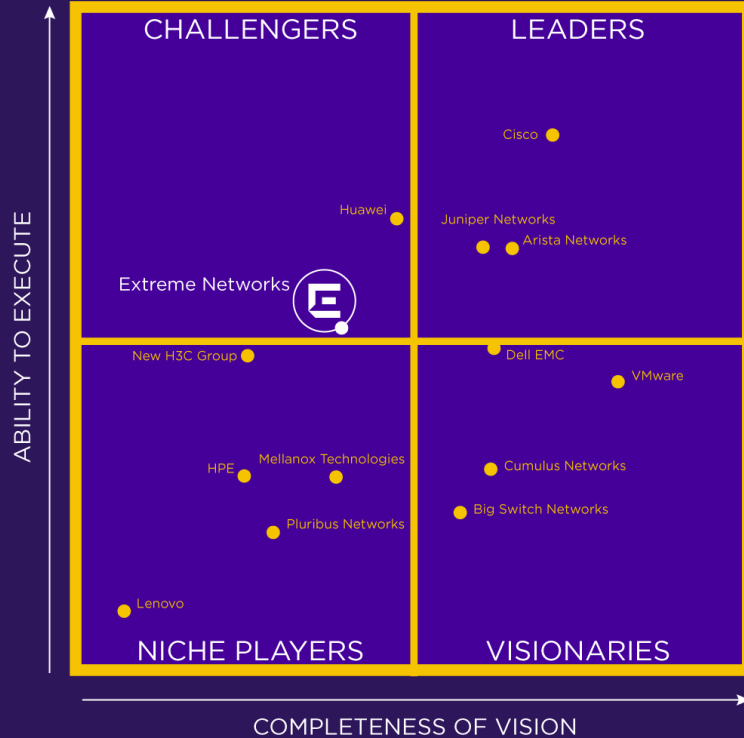
#1
RANKED
100% INSOURCED
SERVICE & SUPPORT

3,000+ EMPLOYEES
HQ: SAN JOSE, CA
Business in 80+ Countries

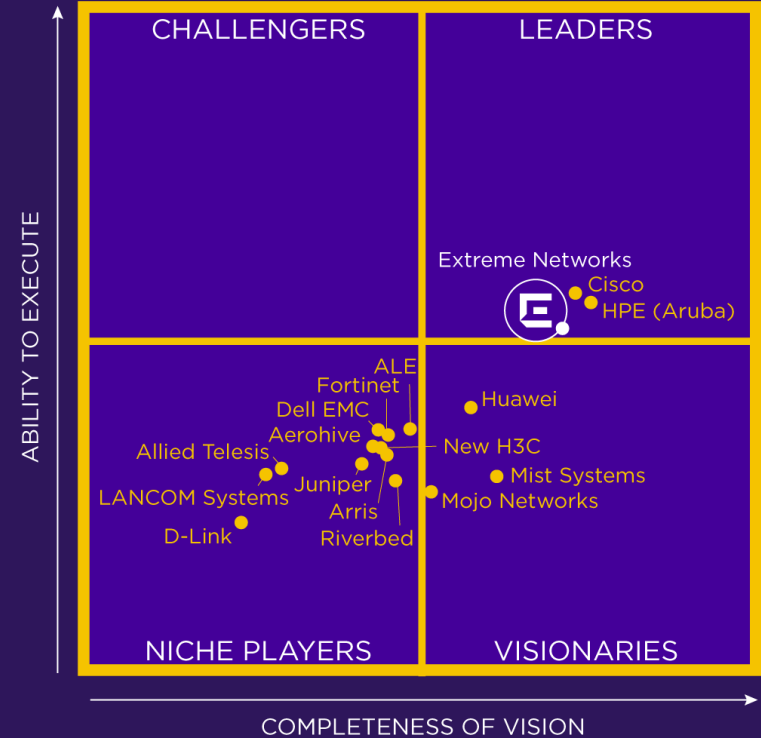


Results

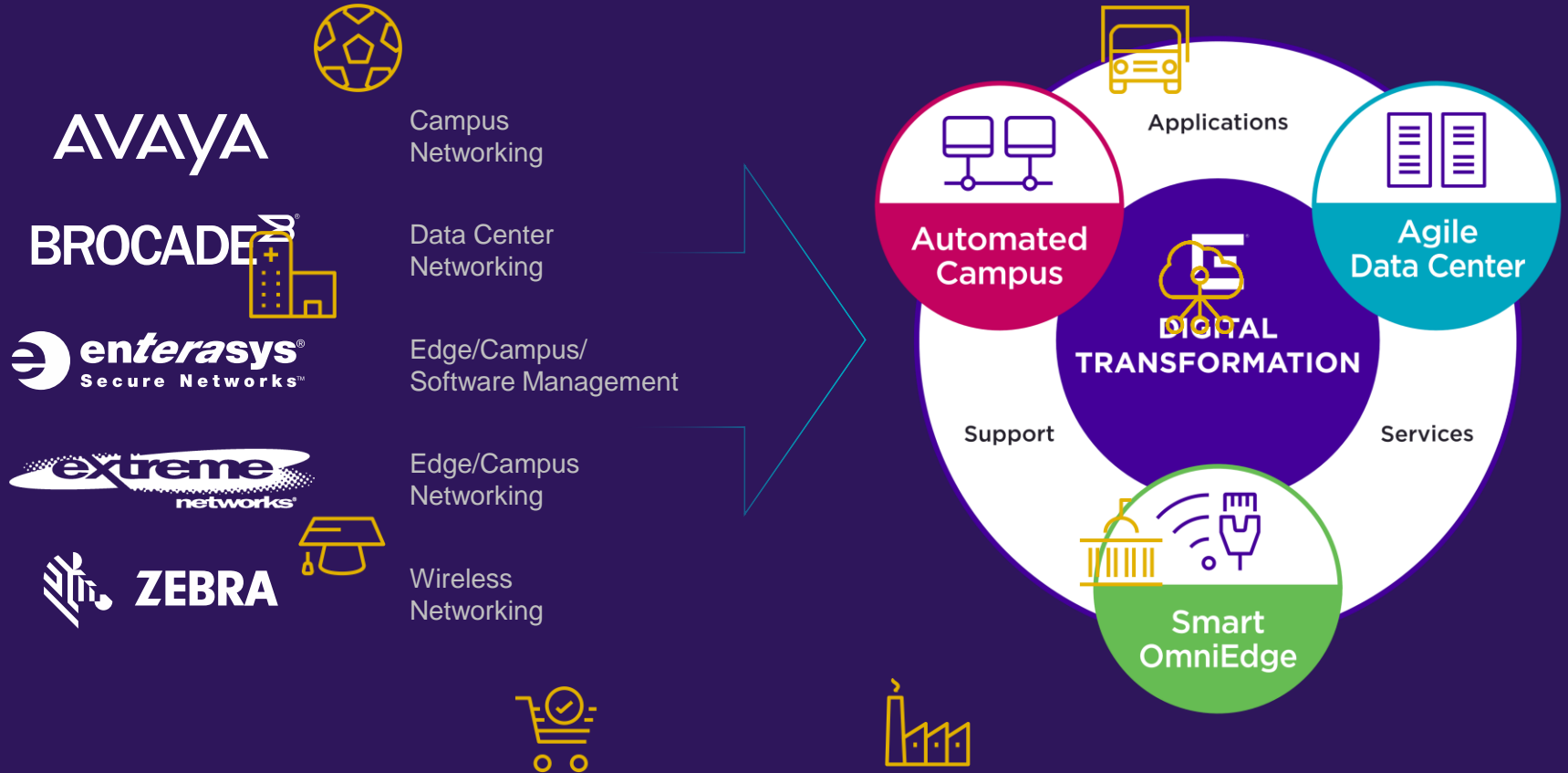
2018 Data Center Magic Quadrant



2018 LAN/WLAN Magic Quadrant



Customer-Driven Networking



THE AEROHIVE STACK



A³
SAM

Network-wide Protection
Onboarding & Provisioning
Adaptive Safeguards

HIVEMANAGER CLOUD MANAGEMENT

Public, Private, Local
Multi-tenant, Multi-org
Scalable, Micro-services-based
Full API Suite

SD-WAN ANYTIME, ANYWHERE ACCESS

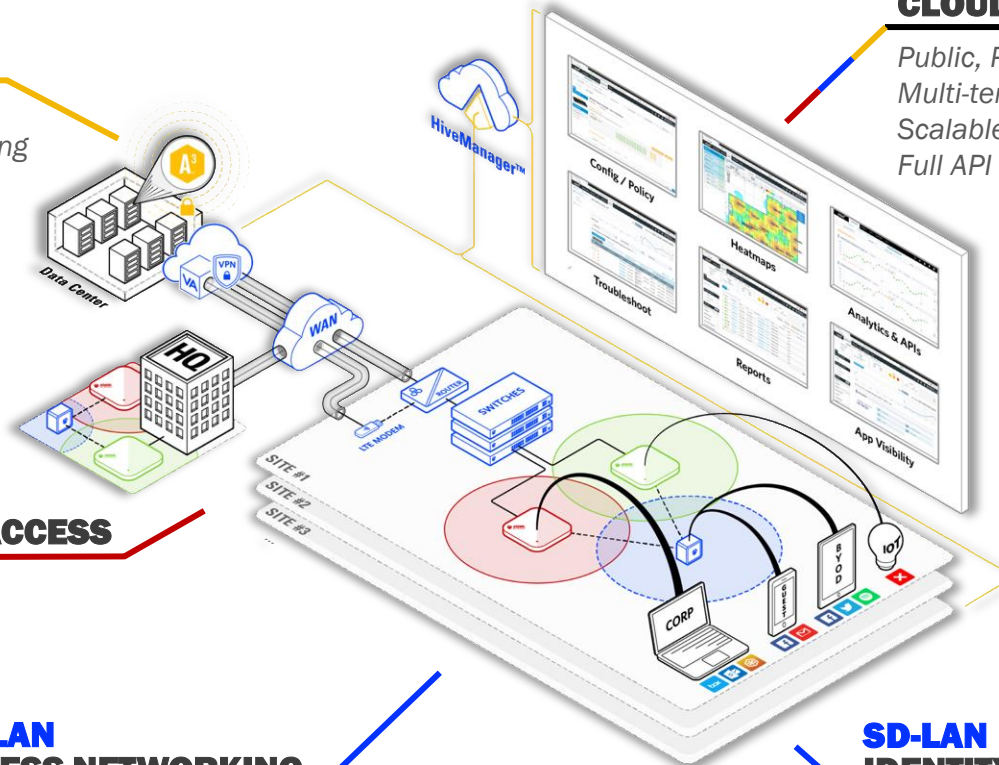
Consistent Experience
Policy Enforcement
Reliable & Optimized

SD-LAN ACCESS NETWORKING

Self-organizing, Self-optimizing, Self-healing

SD-LAN

User, Device, Application Security



Trusted by Over 50% of the Fortune 50



Healthcare



Government



Education



Hospitality



Manufacturing



Transportation
and Logistics



Retail



Service Provider



Customer Validation

Data Center



Wired & Wireless LAN



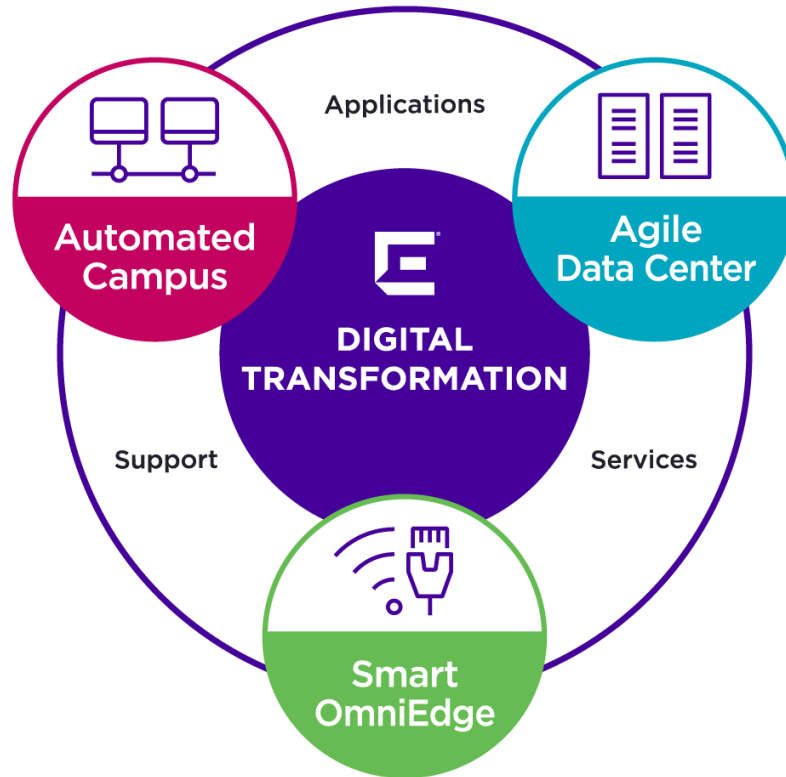
	Overall Peer Rating	Willingness to recommend
 Extreme®	4.8 ★★★★★	97% Yes 
 CISCO	4.5 ★★★★★☆	81% Yes 
 JUNIPER NETWORKS	4.6 ★★★★★☆	93% Yes 

	Overall Peer Rating	Willingness to recommend
 Extreme®	4.7 ★★★★★	92% Yes 
 CISCO	4.5 ★★★★★☆	85% Yes 
 Hewlett Packard Enterprise	4.4 ★★★★★☆	83% Yes 

“Solid alternative to Cisco – advanced features at a value price”
CIO in Healthcare Industry



Extreme Networks: Enabling Digital Transformation

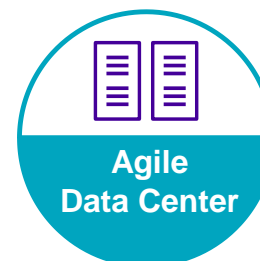
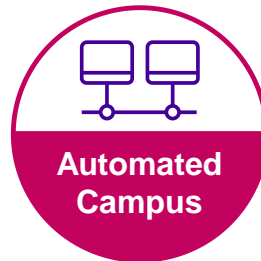
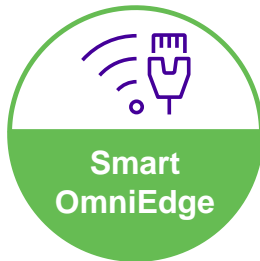


End-to-End Visibility and Control

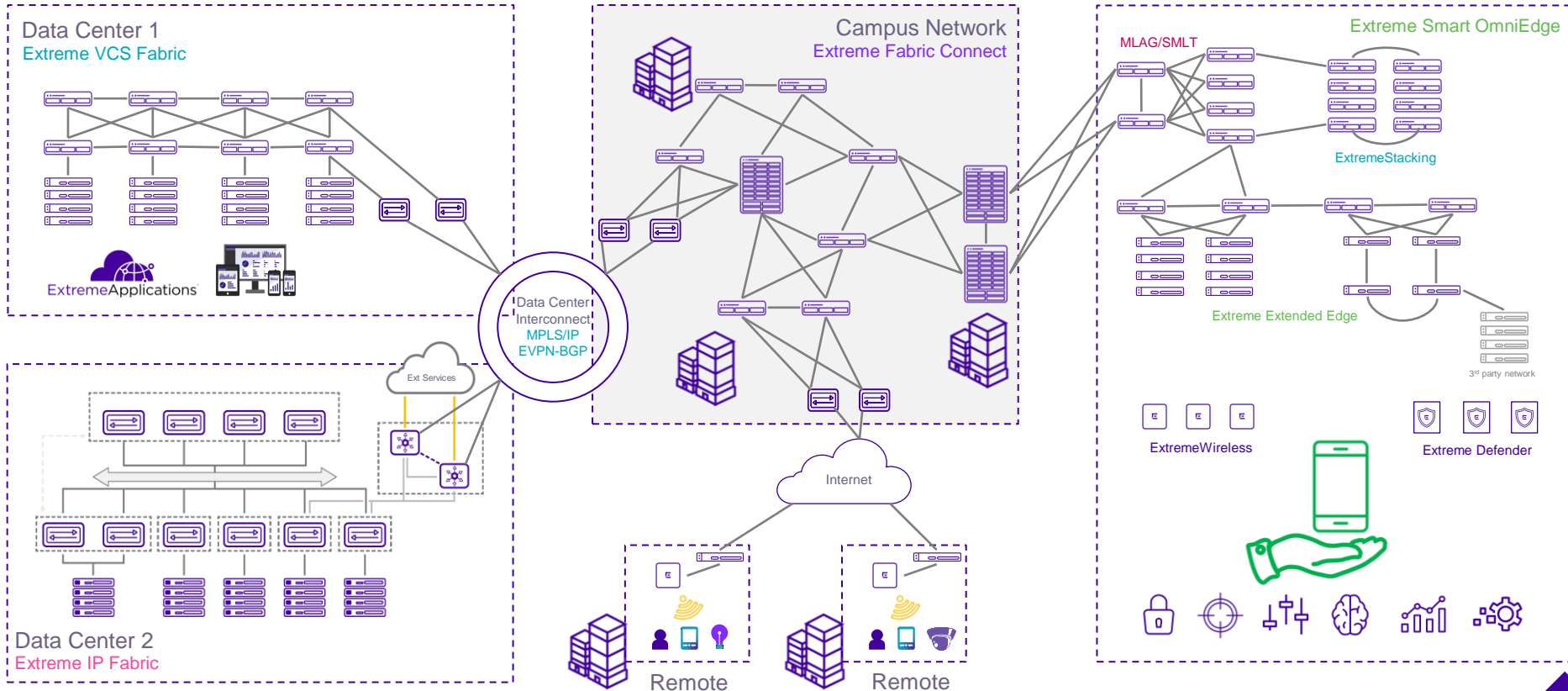


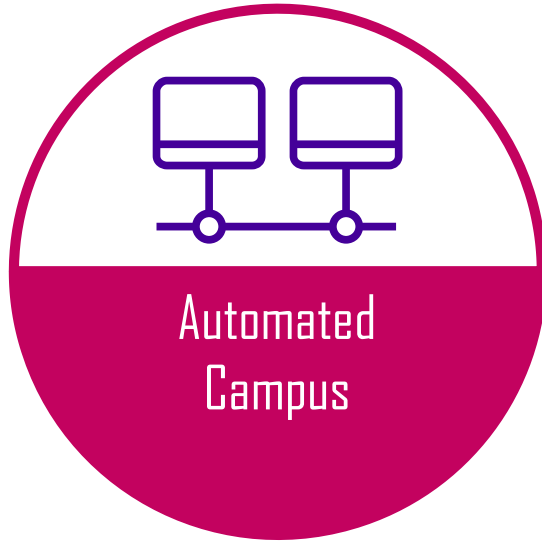
Extreme Management Center

Network Asset Management, Inventory, Monitoring, Fault Management
Network Automation, Workflow Automation, Configuration Management,
Access Control and Policy, Analytics (Network, Device, Application,
Security), Compliance and Auditing, Ecosystem Integration



Extreme End-to-end Networking





Automated Campus Solution At a Glance

Extreme's Automated Campus uses **simple policy-driven automation** to enable networking teams to be more responsive, reduce operations costs and increase their ability to innovate.

Consists of: Fabric Connect (and Fabric Attach) with NAC/Policy/Application Analytics and Management

Products: VSP, ERS and EXOS switches with Extreme Wireless Solutions and Extreme Management Center (ExtremeControl, ExtremeAnalytics, ExtremeManagement and IGE)

Relevant Personas: CIO, CSO/CISO, Network Manager/Engineer or Architect

Primary Competition: Cisco DNA, Aruba SecureFabric, Arista Cognitive Cloud



Extreme Fabric Connect

**11x
FASTER**
Implementation
Time

**7x
FASTER**
Configuration
Time

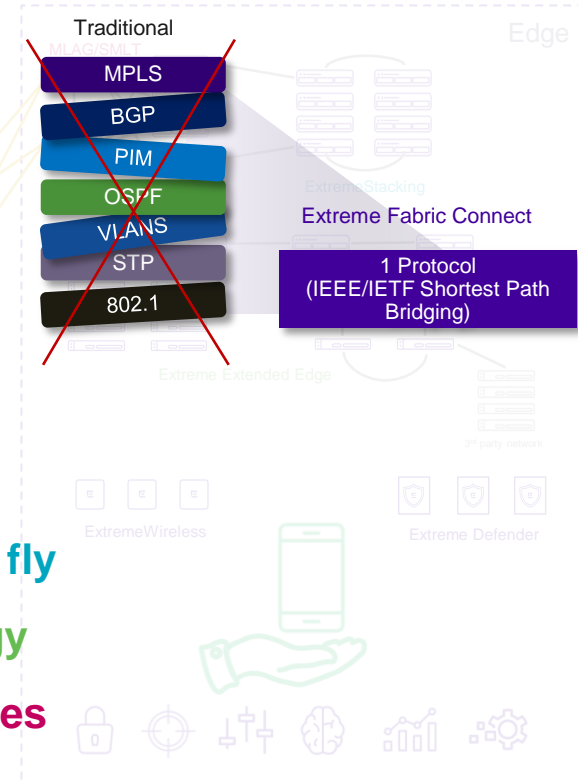
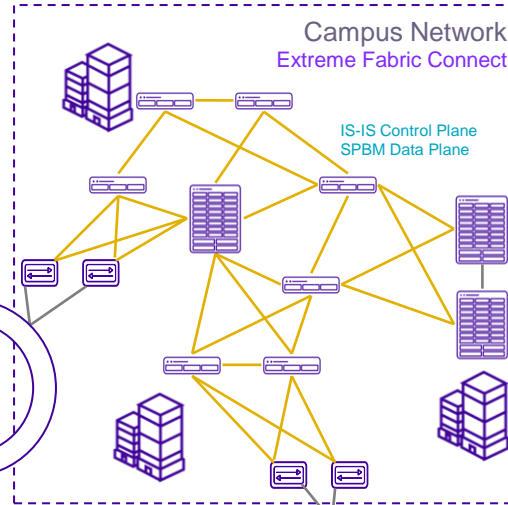
**7x
FASTER**
Troubleshooting
Time

**2,553x
FASTER**
Failover
Time

**100%
IMPROVEMENT**
Outages Due
to Human Error

Network Fabric Redefined:

- Any topology
- Single protocol – SPBM
- No controllers needed
- No IP underlay required
- No overlay networking
- Fast deployment
- Stable and resilient
- Multipath-enabled
- Scalable yet simple



Moves, adds and changes on the fly

Services abstracted from topology

Auto-edge provisioning via policies

Core is hands off

Data Center 2
Extreme IP Fabric

Remote

Remote

ExtremeWireless

Extreme Defender



Extreme Fabric Connect - Services

Service Features:

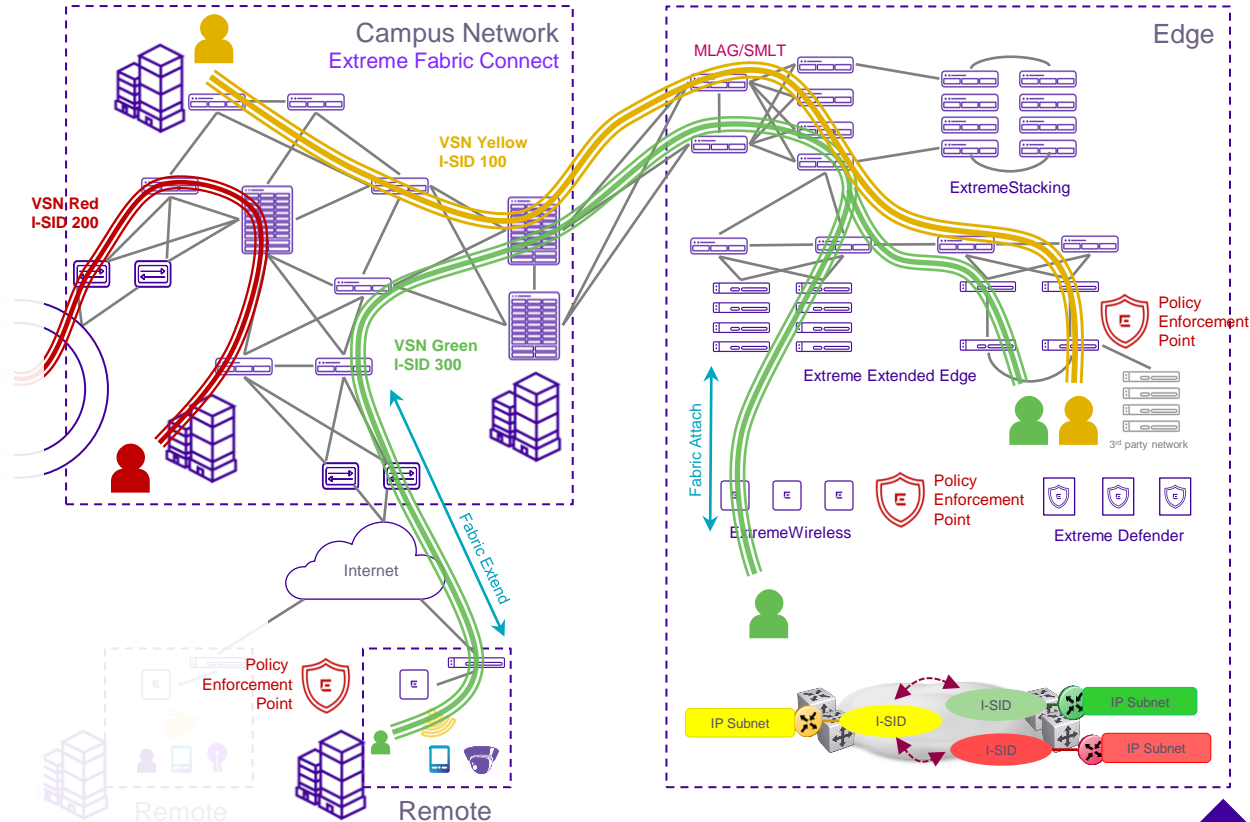
- L2 and L3 VPN services
- Mixed L2/L3
- Inter-VSN Routing
- Native multicast support
- Integrated OAM/CFM
- Fabric extension over IP

Security:

- Hyper-segmentation (zoning)
- Stealth infrastructure
- Policy-based dynamic profiles

Service Auto-Provisioning:

- Edge-only provisioning
- Network Access Control integration
- Service assignment on non-fabric devices (Fabric Attach)



Extreme Fabric Connect – Fabric Attach

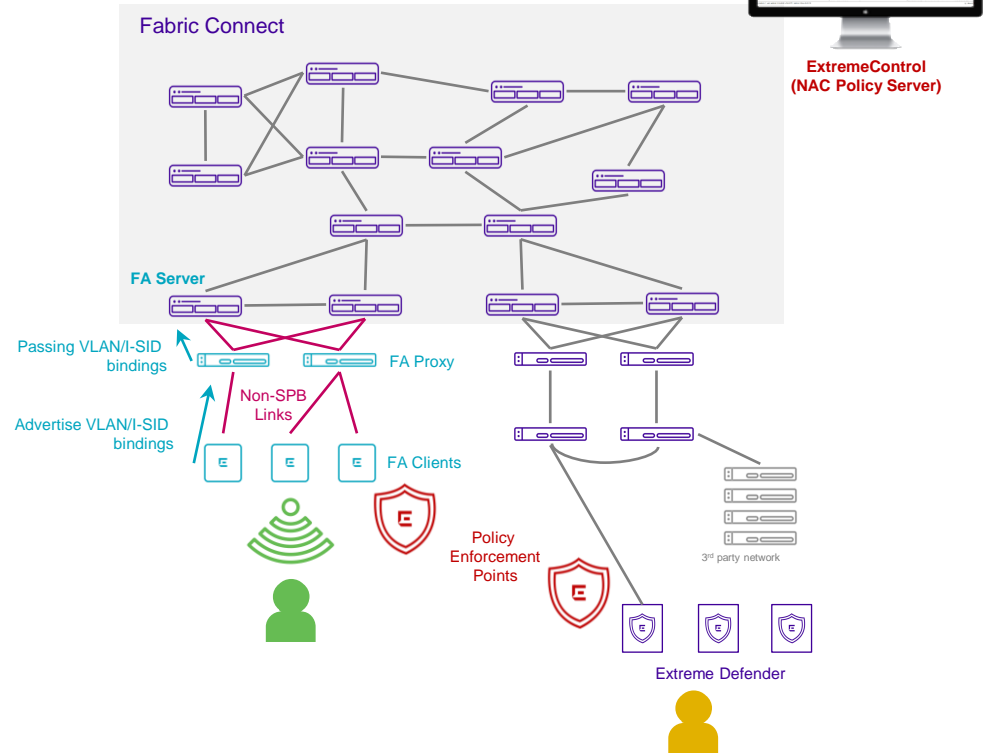
Fabric Attach extends Fabric benefits to non-SPB enabled devices with full features:

- Unicast + multicast
- Wiring closet, Wireless devices, Defender
- Same end-point provisioning as with SPB Fabric Connect

Fabric access authentication & authorization via ExtremeControl

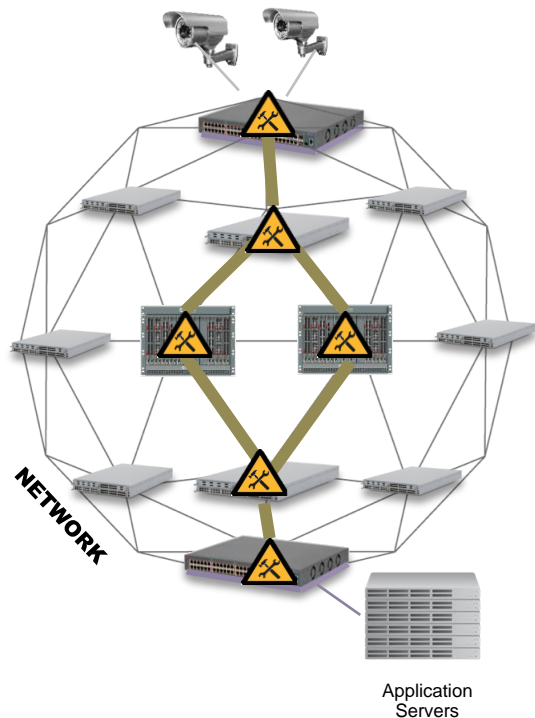
- Service end-point provisioning can be completely handled via Radius/EAP

Maintain reasonable SPB scaling numbers by SPB enabling only Core and Distribution layers



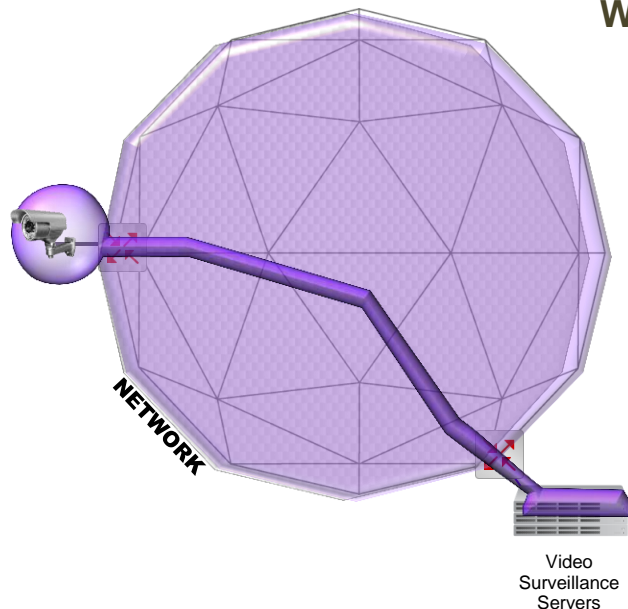


11x Faster time to Service with Simple Edge Provisioning



Status Quo

- Hop by hop provisioning
- Moves, adds and changes require core reconfiguration
- Vulnerable to human error during change
- Services coupled to physical topology



With Extreme

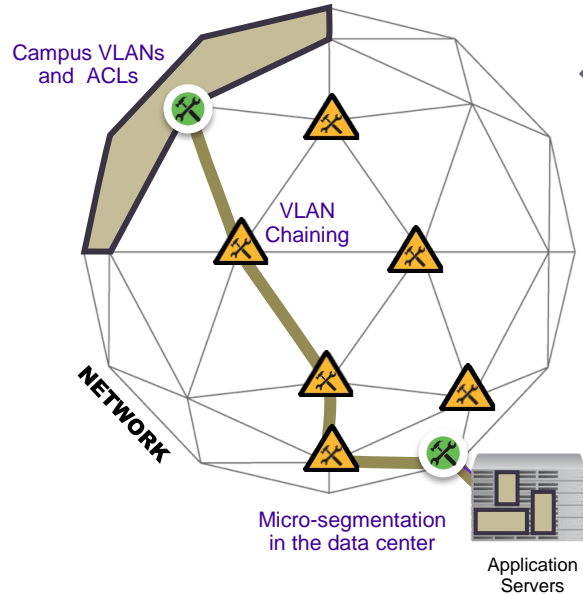
- Edge Provisioning only
- Core is hands-off
- Moves, adds, and changes on the fly (no more maintenance windows)
- Services abstracted from topology





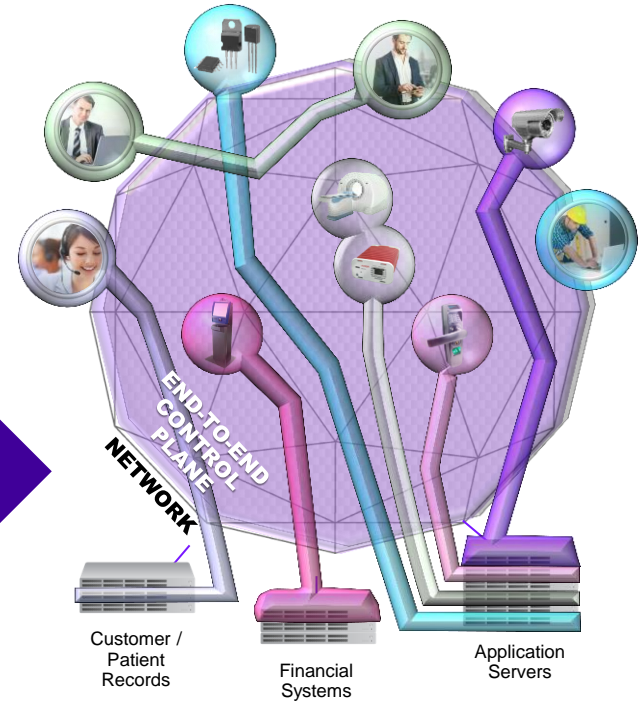
Enhanced Security with Hyper-Segmentation

Prevents Lateral Movements Creating Dead Ends for Hackers



Without Hyper-Segmentation
Isolation is fragmented and
limited in scale

With Hyper-Segmentation
Zones effortlessly reach
across entire network



Automated Campus Benefits and Outcomes

Benefits

“Multicast w/o the complexity – 28x faster”



Simple



Outcomes

“31x faster ramp to Digital Transformation”

“Reduce human error”



Secure



“A network that isolates security breaches automatically”

“Troubleshoot 7x faster”



Intelligent



“Network adapts to changing business needs”

Source: Fabric Connect – The Quiet Revolution – White Paper



Automated Campus - Summary

Simple



**One Protocol, Simple Multicast,
ZTP+, Unified Wired & Wireless,
Single Pane of Glass**

Secure

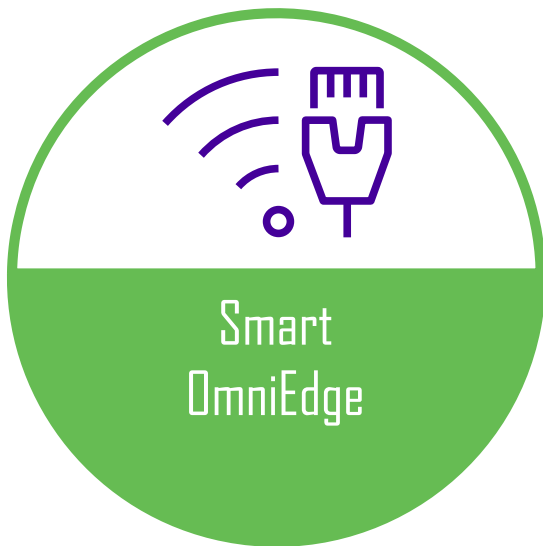


**Hyper-Segmentation,
Elasticity, Stealth, NAC,
Policy, IGE, Defender**

Intelligent



**Fabric, Edge-only
Provisioning, ASAP, Profiling,
Workflows, Analytics**



Introducing Extreme Smart OmniEdge

Pervasive Intelligence



AI/ML
Extensive APIs
Actionable Analytics

Business Adaptive



Consistent experience
Hybrid-cloud flexibility
Investment protection

Intrinsically Secure



User security
Device security
Application security

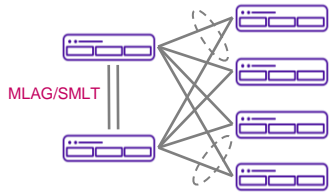
Transforming the **Edge Experience**



Extreme Smart OmniEdge

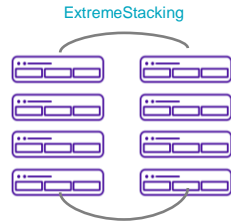


Extreme Wired Architectures



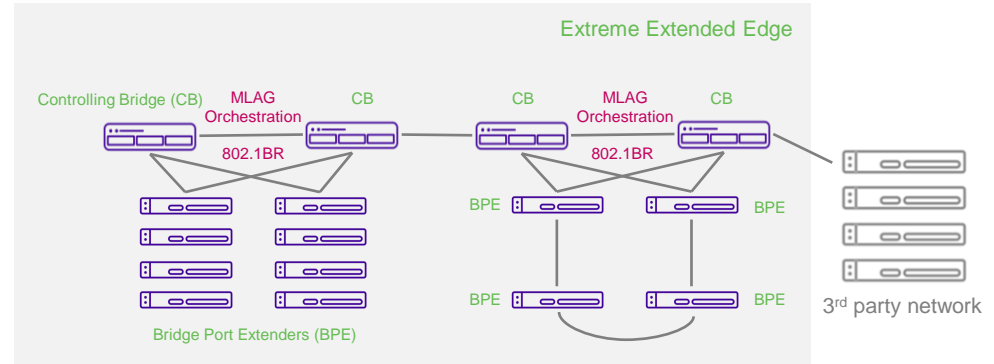
Traditional Topologies

- MLAG/SMLT
- EAPS/ERPS rings
- Multipath
- LAG
- L2/L3 Support
- RIP/OSPF/IS-IS/BGP
- IPv4/IPv6
- VXLAN/VTEP
- MPLS
- Selective QinQ
- AVB/SyncE



ExtremeStacking

- Up to 8 nodes
- 40/80/160/320/400Gbps
- Model mix
- Stack over fiber
- Full feature set
- Single mgmt IP
- Single config
- Redundant



Extreme Extended Edge

- Up to 48 nodes
- Distributed chassis
- PoE/PoE+ support
- Optimal for North/South
- Daisy chaining
- Stars and rings
- 24/48 ports BPEs
- Up to 2300 ports per CB
- Single mgmt IP
- Single config (on CBs)

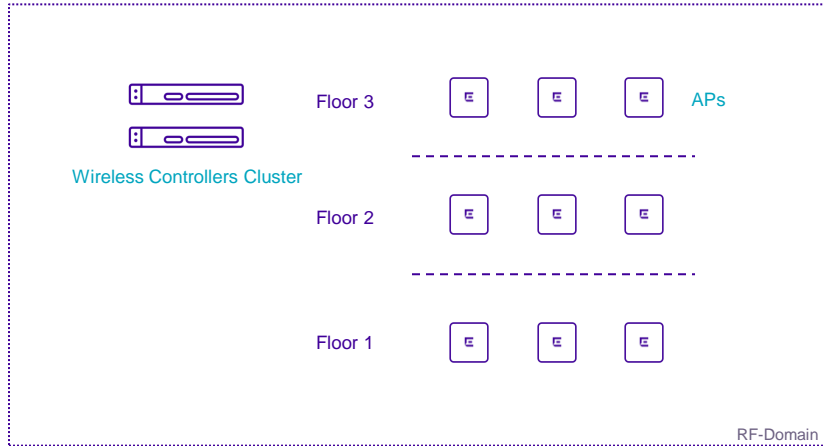
3rd Party Networks

- Standards-based protocols
- CDPv1/v2
- RPVST+ support
- Fully compatible
- Device management
- Configuration management
- Policy enforcement



ExtremeWireless Solutions

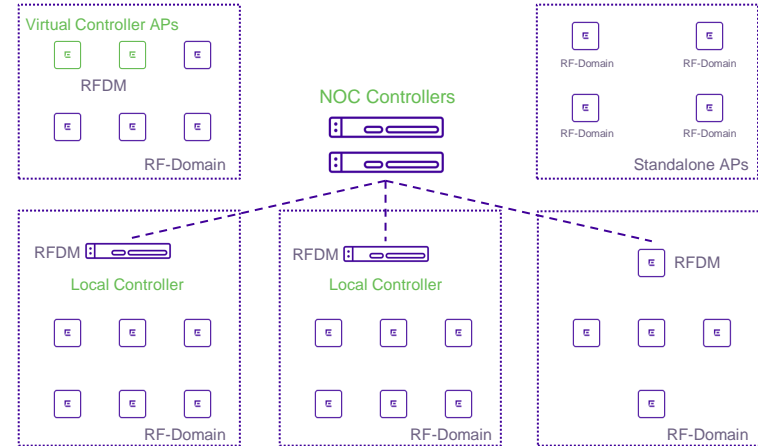
ExtremeWireless



ExtremeWireless Features:

- Campus and centralized architectures
- Controller-based
- High-density environments
- Granular policy support
- L7 application analytics and control
- ExtremeCloud Support

ExtremeWireless WiNG



ExtremeWireless WiNG Features:

- Optimized for distributed architectures
- RF-Domain abstraction from controllers
- Hierarchical policy-based configuration
- Single OS on APs and controllers
- Feature-rich OS: RADIUS/NAT/FW/VPN/DPI
- ExtremeCloud Support



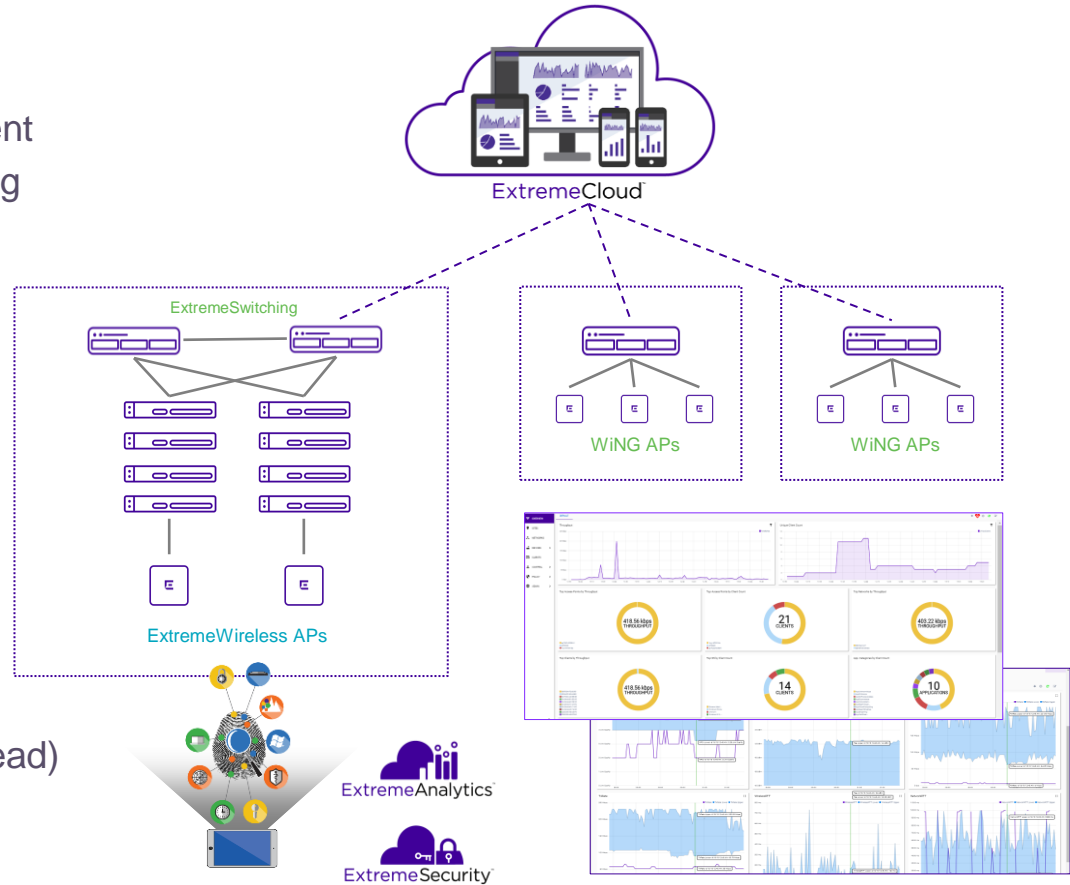
ExtremeWireless Common Features

- Variety of APs
 - IEEE 802.11abgn-ac-ax(coming)
 - Indoor and Outdoor
 - Internal and External Antennas
 - From 1x1:1 up to 4x4:4
 - Value-tier and High-end
 - Mesh Support
- Application Analytics
 - Flow-based APs
 - L7-based Profiling and Enforcement
- Onboarding
 - Built-in and external captive portals
 - External authentication
 - Secure Guest Access
- Security
 - Built-in WIPS/WIDS
 - AirDefense Platform Integration
 - ExtremeControl Integration for RBAC
- Wireless Services
 - Smart RF Management
 - Location-Based Services
 - Beacons and IoT Device Support



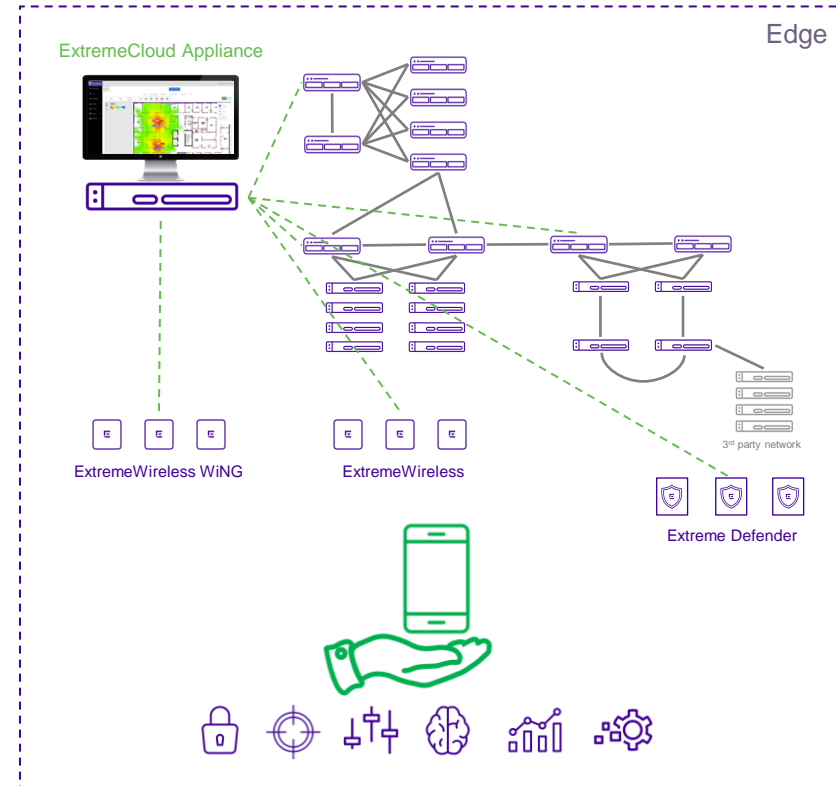
ExtremeCloud

- Secure out-of-band cloud management
- Zero-touch AP and switch provisioning
- Central configuration, management, troubleshooting
- Subscription-based OPEX model
- Automatic role-based VLAN configuration on switches and APs
- Virtual Stacking
- Site Floorplan Management
- Historical and real-time reporting
- Location-Based Services
- Intelligent onboarding
- IoT support (iBeacon/Eddystone/Thread)
- BLE and Push notifications
- Troubleshooting tools



ExtremeCloud Appliance – NextGen Orchestration

- On premise Cloud-like solution
- Single management point for wired and wireless
- Simple all-in-1 solution with cloud based UI and workflows
- Integrated rules engine, onboarding, locationing and analytics
- Subscription licensing with SW updates and TAC support
- Certified with many advanced applications
- Can migrate to ExtremeCloud

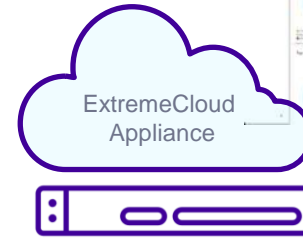
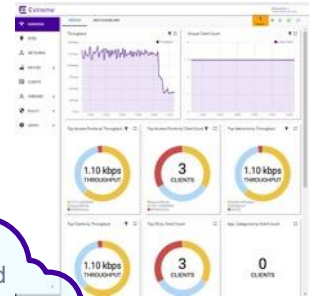
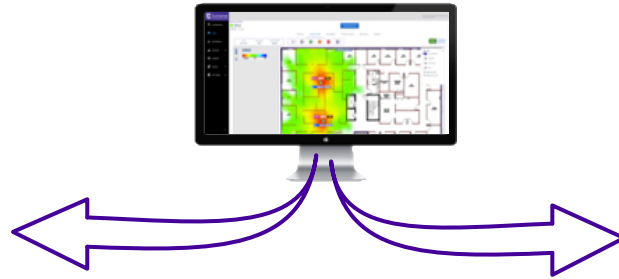


Unifies The Experience

As-a-Service

**Consistent Experience
Common UI and Workflow**

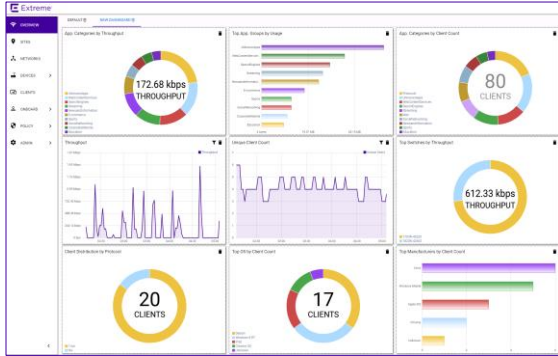
As-an-Appliance



Common Visibility, Policy, and Authentication Services



ExtremeCloud Appliance



Cloud UI Experience

- Simple and feature rich UI
- Easy configuration and device adoption
- Role-based onboarding
- Various authentication methods
- Captive portals
- Troubleshooting tools



Enhanced Reporting

- RF Expert View
- Per site and overall stats
- Customizable dashboards
- Client quality experience
- Application analytics
- Device type/OS stats



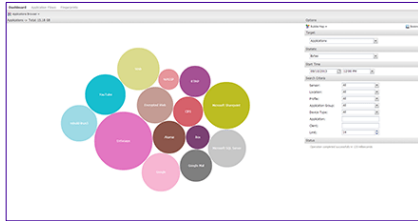
Integrated Locationing

- Advanced floorplans
- Device location
- Client density
- Triangulation
- Client path analysis
- Dwell-time

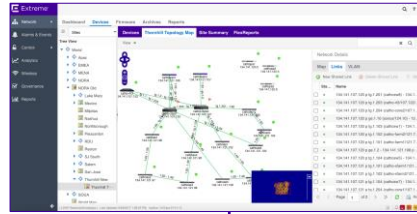


Smart OmniEdge: Certified Advanced Applications

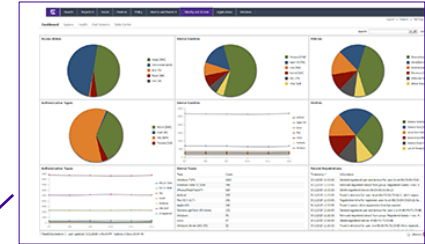
ExtremeAnalytics Extensive Application and Analytics



ExtremeManagement End-to-End Management



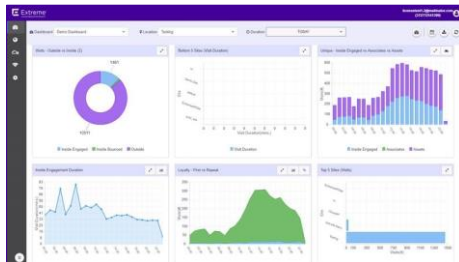
ExtremeControl Secure BYOD and IoT Onboarding



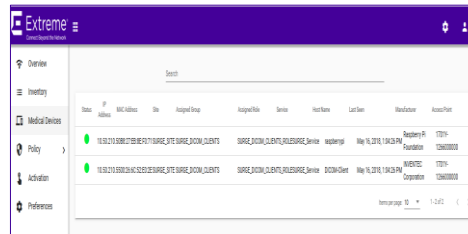
ExtremeCloud Appliance



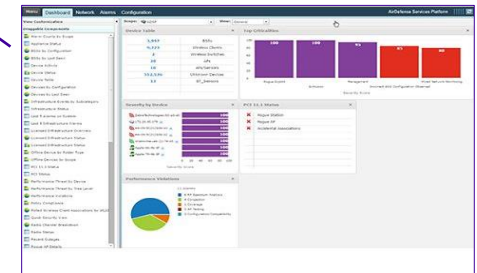
ExtremeLocation Granular Locationing and Analytics



Defender for IoT Securing the Unsecured

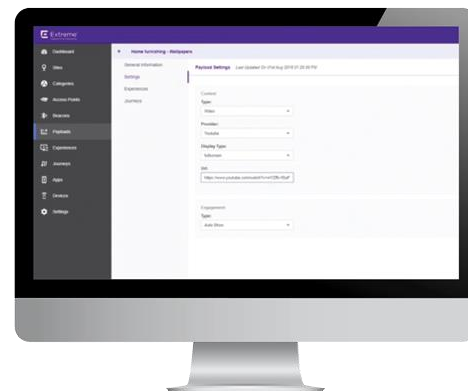
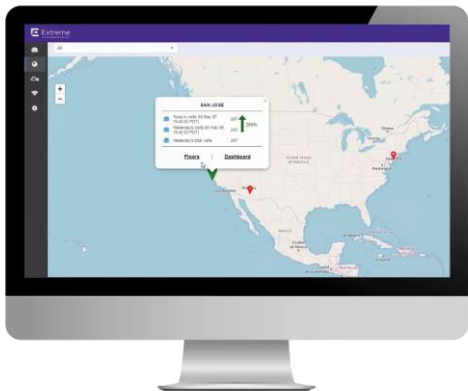


AirDefense Wireless Security WIPS/WIDS



ExtremeLocation

- Presence, Zone, and Position Analytics
- Footfall and Traffic Flow Pattern
- Shopper Engagement and Monetization
- Works with Integrated AP/BLE and Standalone
- Mobile/Loyalty App Integration



ExtremeGuest

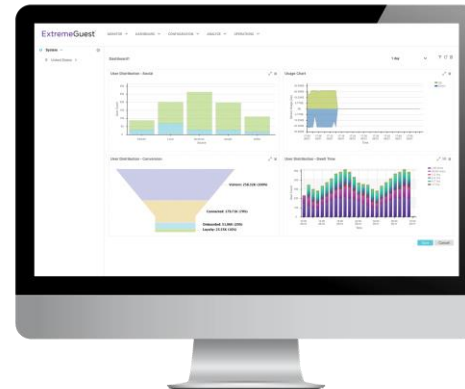
- Extensive Dashboard and Guest Analytics
- Customizable Rules and Policies for Guest on-boarding
- Out of the Box Templates
- REST APIs and Integration with Loyalty Apps

Time of Day,
Number of Shoppers,
and Duration



Dwell

Shoppers by Connection
Type, Age Range,
and Gender



Demographics



The End of Do-It-Yourself Wi-Fi

Today

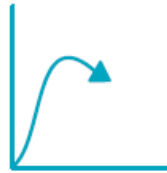


64%

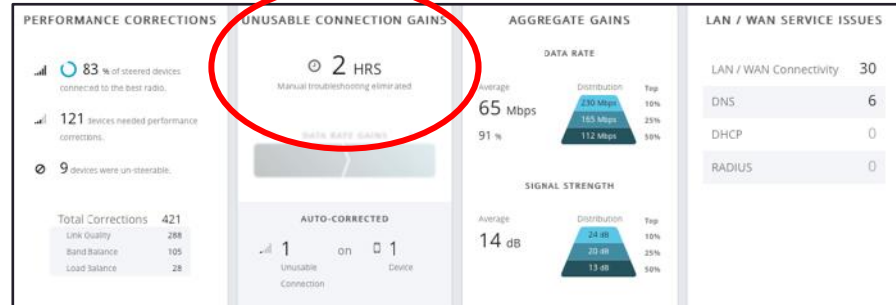
...of reported network issues are Wi-Fi issues.

23%

...of reported Wi-Fi issues are performance issues.



ExtremeAI for Smart OmniEdge



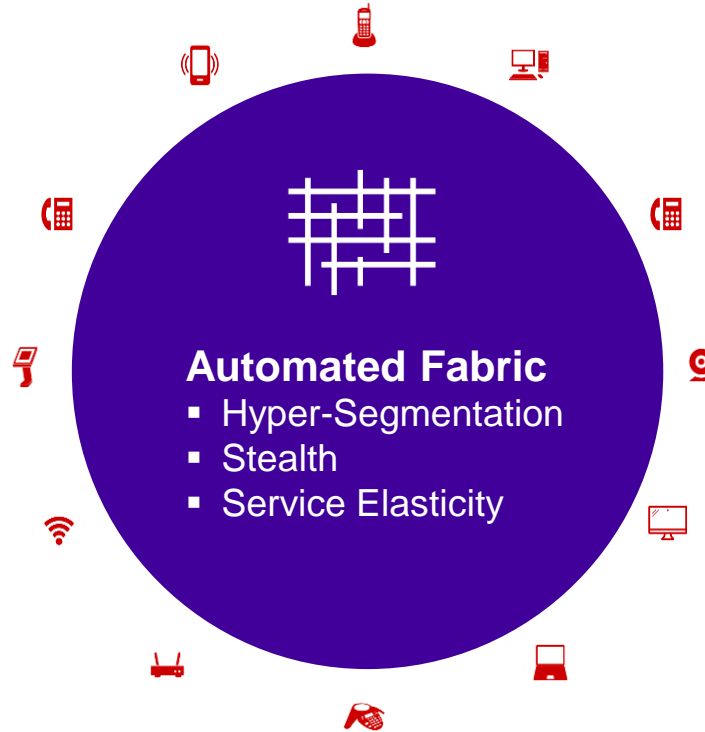
- Intelligent AI-Powered Wi-Fi
- 7/24 Auto Diagnostic / Mitigation / Optimization
- KPI's to validate and prove performance gains



End-to-End Network Security

Device and IoT Security

- Secure IoT onboarding
- Application of security profiles
- Monitor and Enforce traffic flows
- Segment, isolate, protect

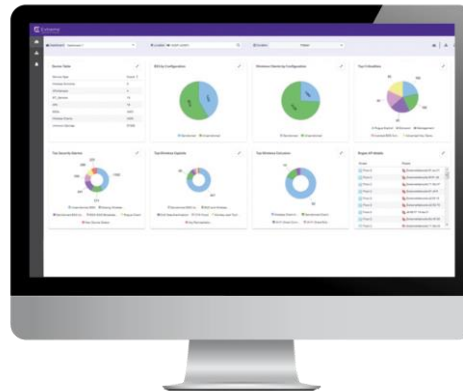
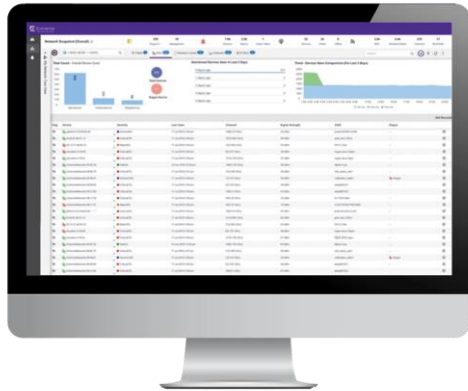


Over the Air Security

- Wireless Intrusion Prevention
- 2x Signatures vs WIP solutions
- BT 4.0/ BLE Security
- Cell phone hotspot detection

AirDefense

- Industry-Leading Over the Air Security
- The Highest Level of Protection Offered Through Signatures
- Simple Wireless Intrusion Prevention – Limited Tuning Required
- BT 4.0/ BLE and Cell Phone Detection



Extreme Defender for IoT



- Security applied at the device
- Personal device firewall
- Movable with the device



- Devices are profiled and grouped
- Traffic is monitored, anomalies blocked

Extreme Defender for IoT



Unique Solution:

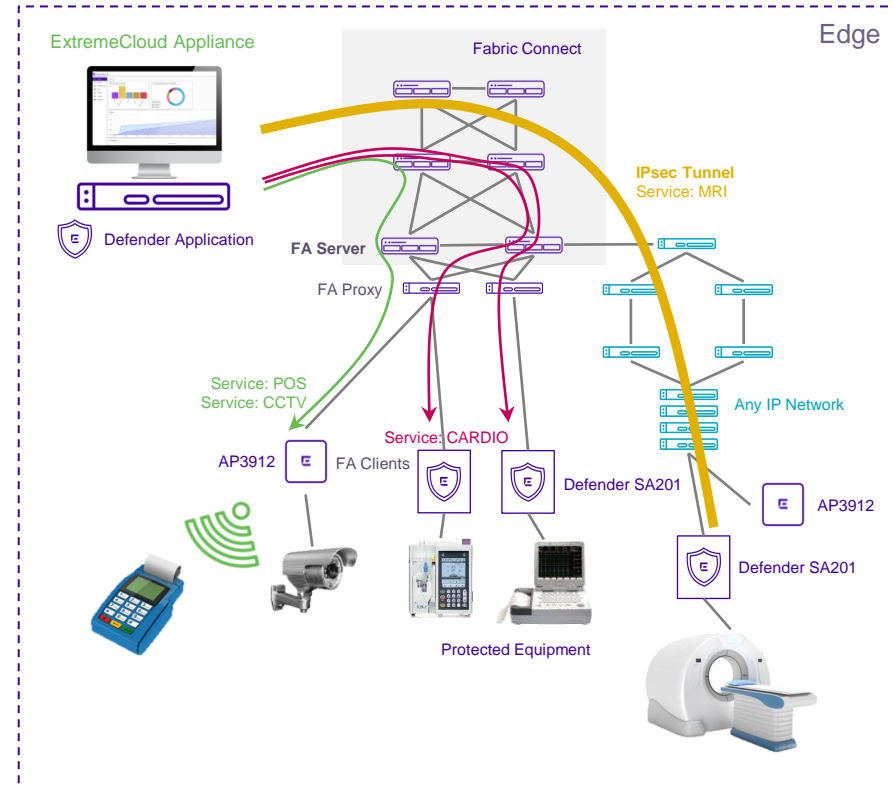
- Secure IoT onboarding – whitelist profiles with the insight up to L7
- Full device segmentation (zoning) with Fabric Connect or 3rd party networks over IPsec tunnels
- Paired 1:1 with IoT device or support multiple devices in a room
- Traffic is monitored; anomalies blocked
- Profiles are applied directly at the IoT device
- Learning mode to auto-generate policies



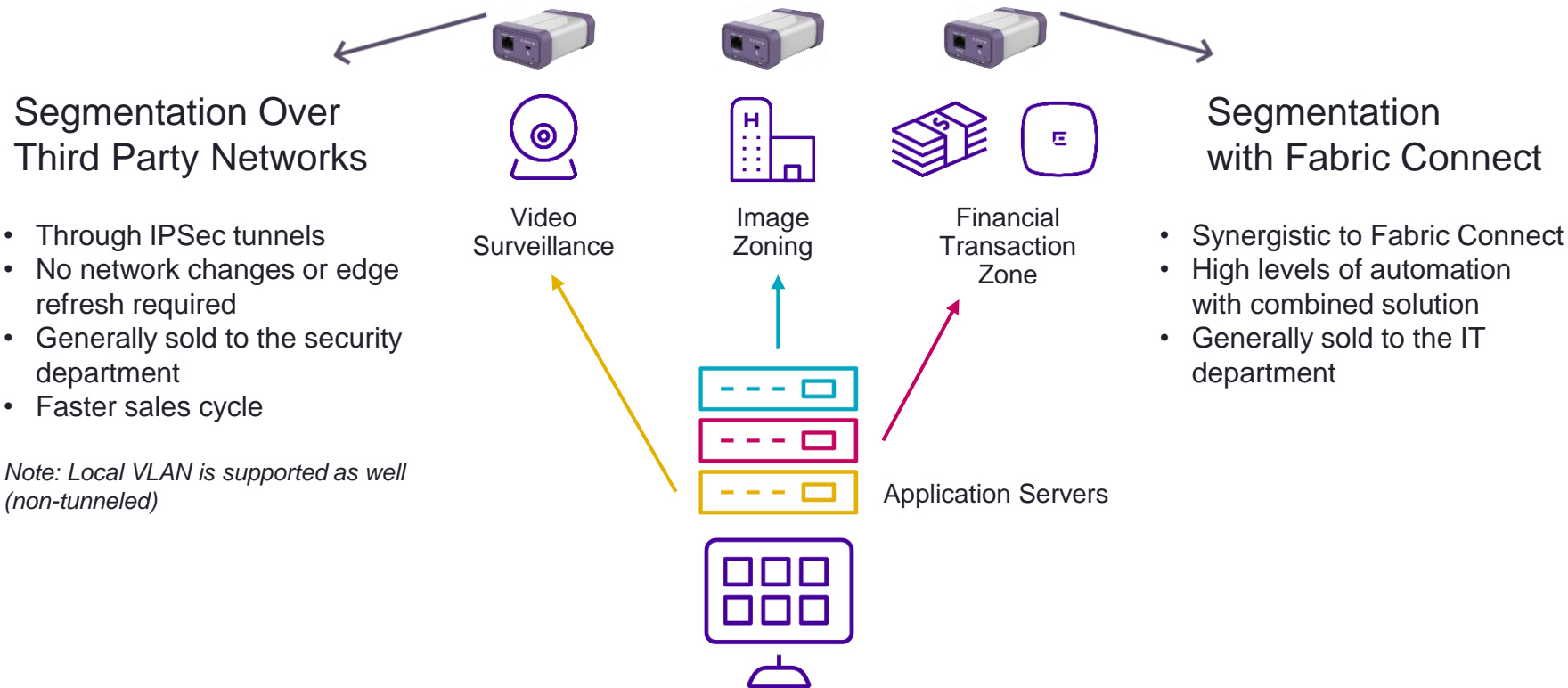
Extreme AP3912

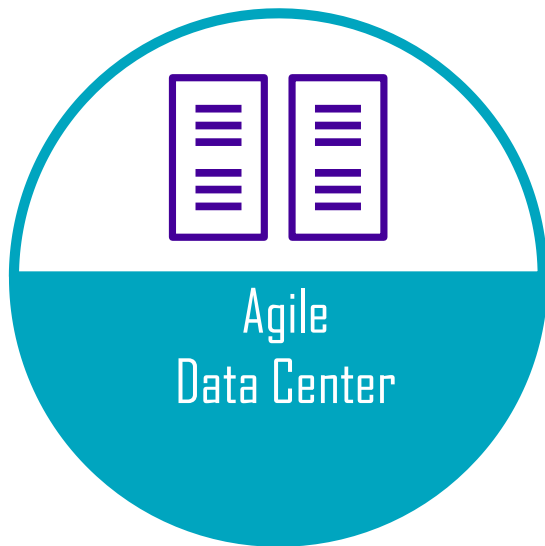


Extreme Defender SA201

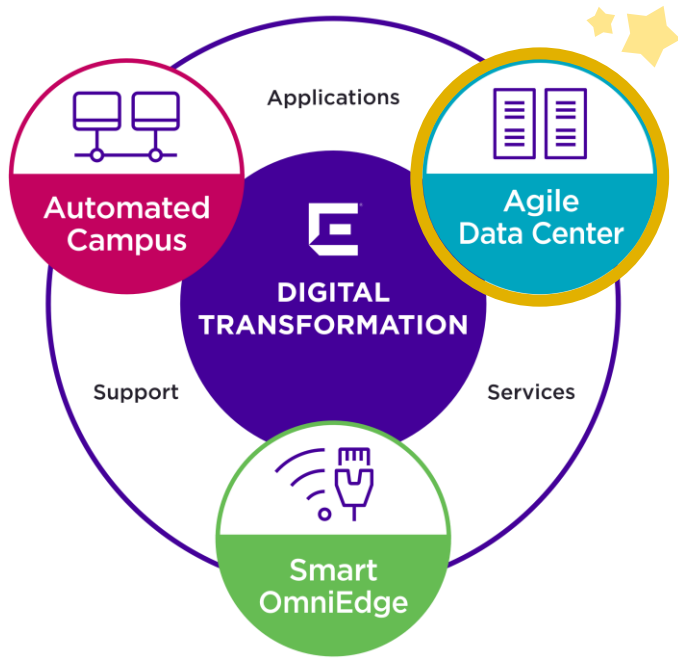


What is the Defender Use-Case?





Extreme Networks: Enabling Digital Transformation



Automation



Visibility and Analytics



Adaptability

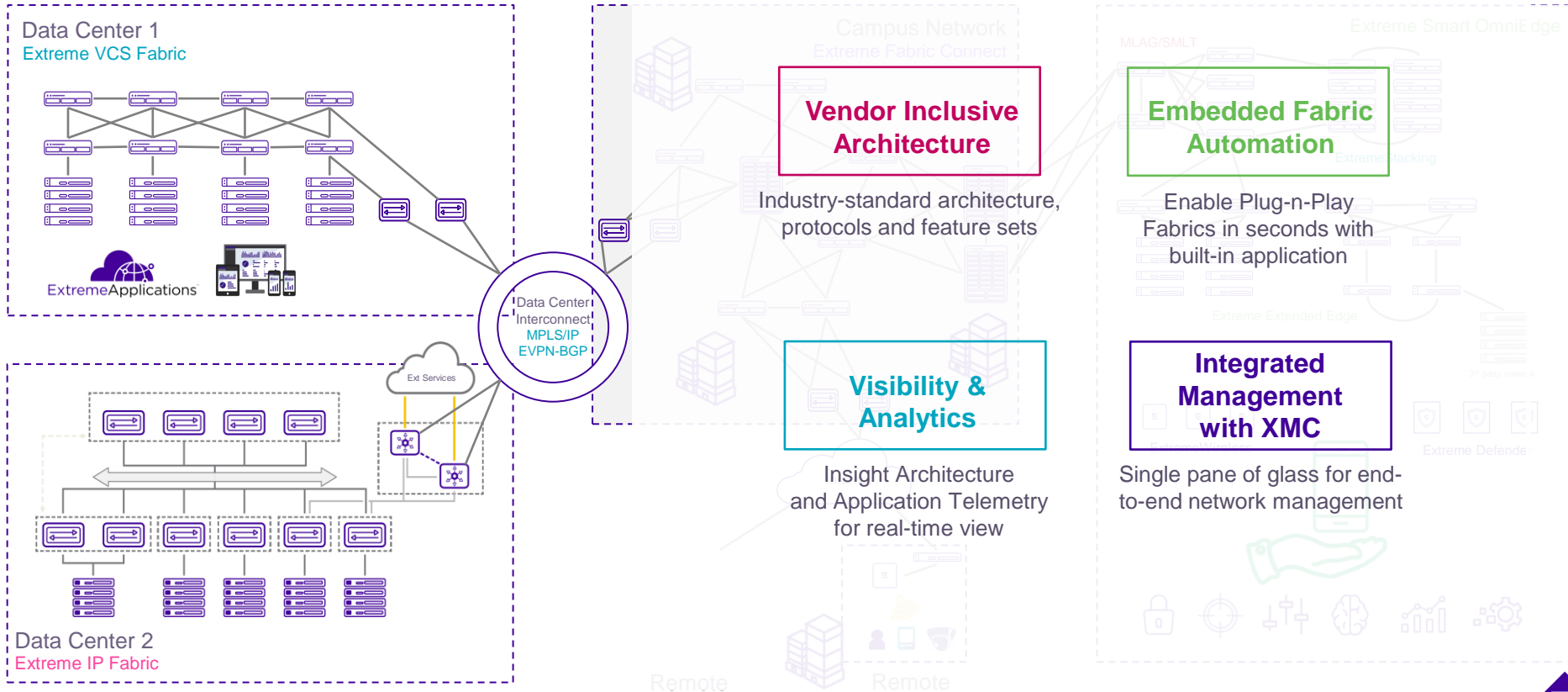


Data Center Fabric

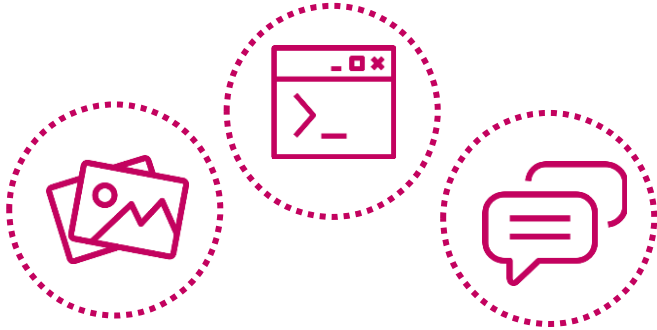
Intelligent and Adaptable Switching/Routing Infrastructure



Agile Data Center

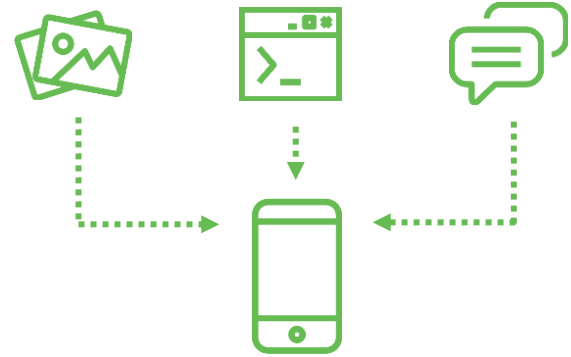


Why Do I Need A New Data Center?



The Existing Data Center

- Works, but not efficient
- Minimal amount of features
- Everything is manual



The New Data Center

- Built for speed & efficiency
- New features deployed as needed
- Automated functions

Extreme Data Center Fabric

Plug & Play Fabrics



Extreme
Fabric
Automation

Network Visibility



Extreme
Insight
Architecture

Cross Domain Automation



Extreme
Workflow
Composer

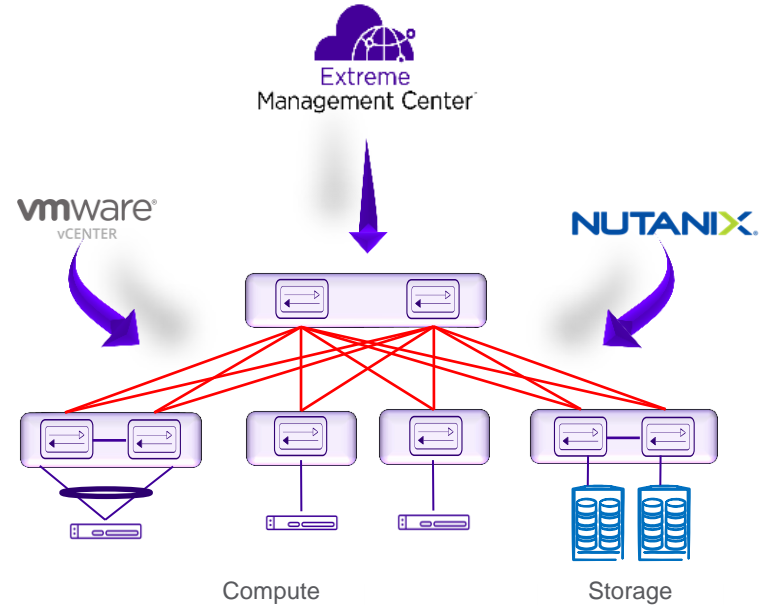
Powered By



Application Telemetry



Extreme
Analytics



Extreme Fabric Automation

■ Fabric-aware Unified Automation

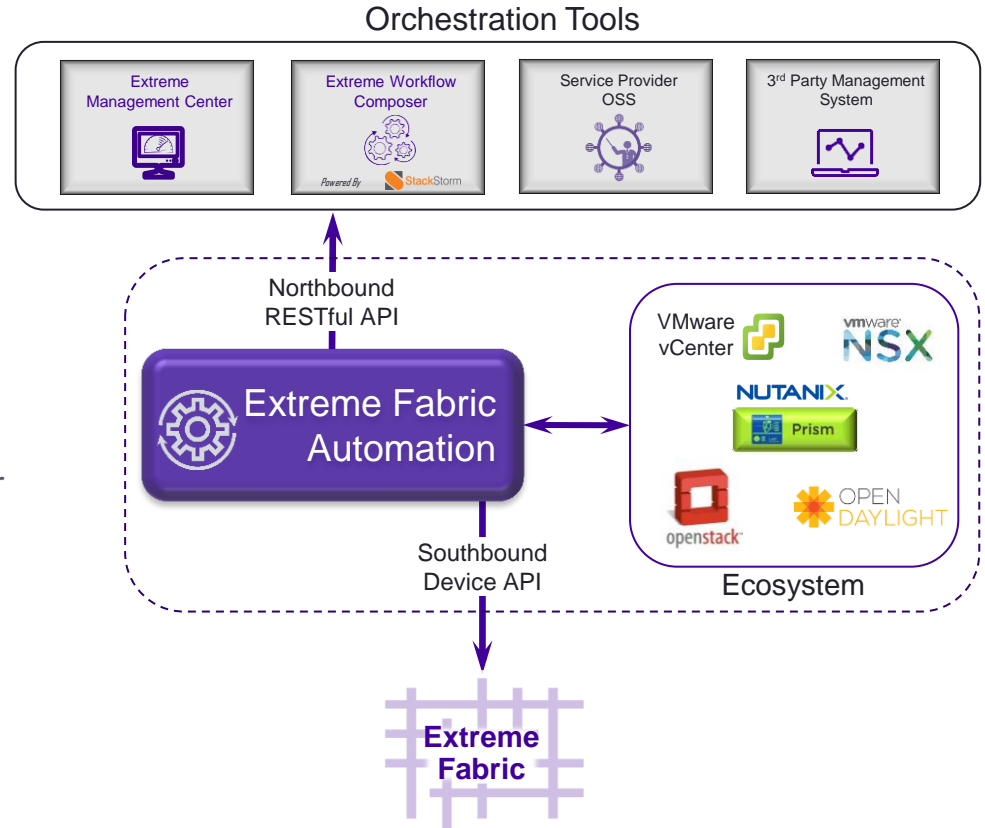
- Single Entry Point akin to Logical Chassis
- Multiple Topology Profiles
- Day 0 Infrastructure Provisioning
- Day 1 Tenant/Services Provisioning

■ Deployment Flexibility

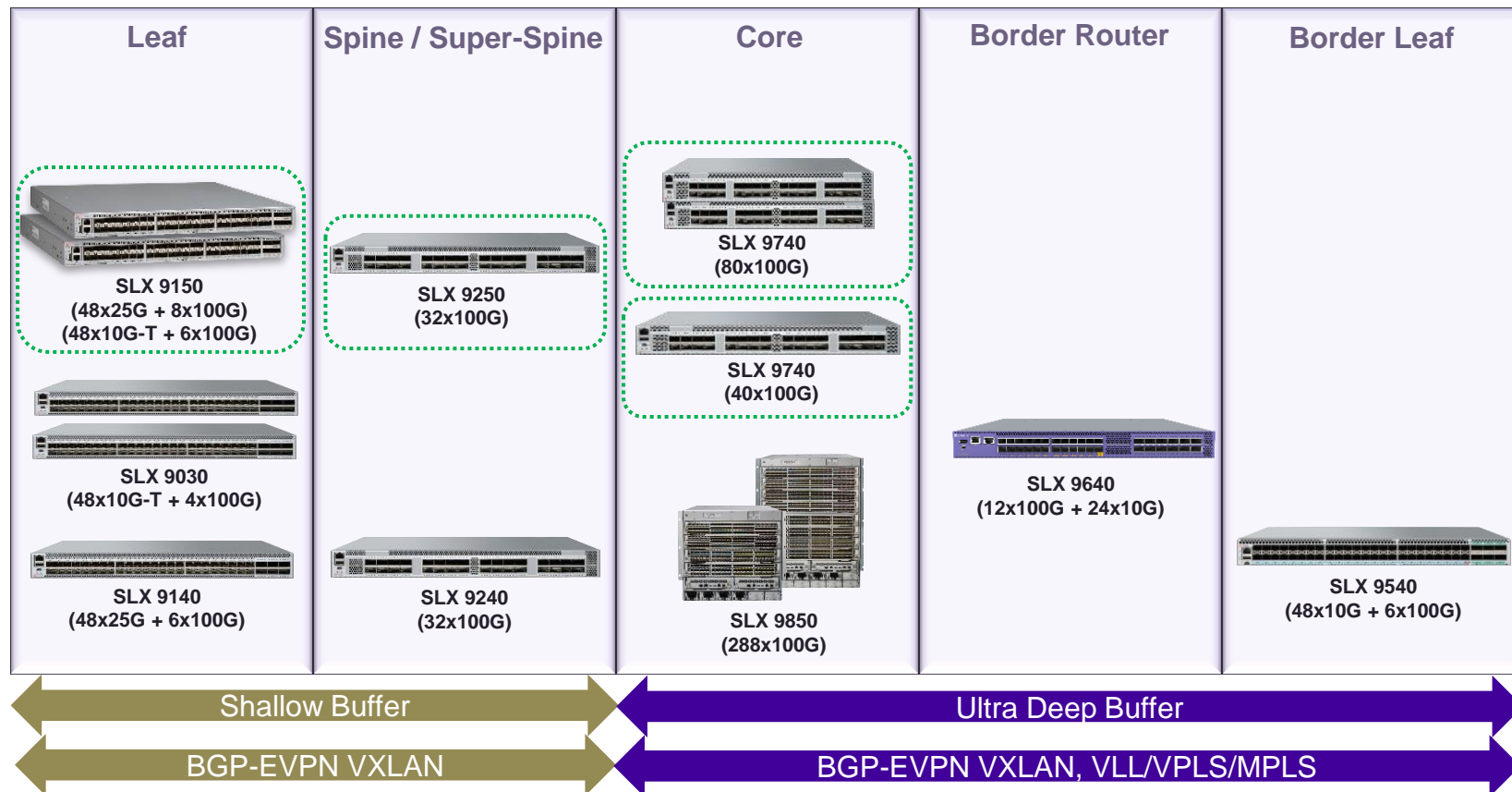
- On-box SLX Guest VM
- Off-box VM host for large scale networks
- HA & Federated Services via Kubernetes Cluster

■ Expand Capabilities for Fabric Functions

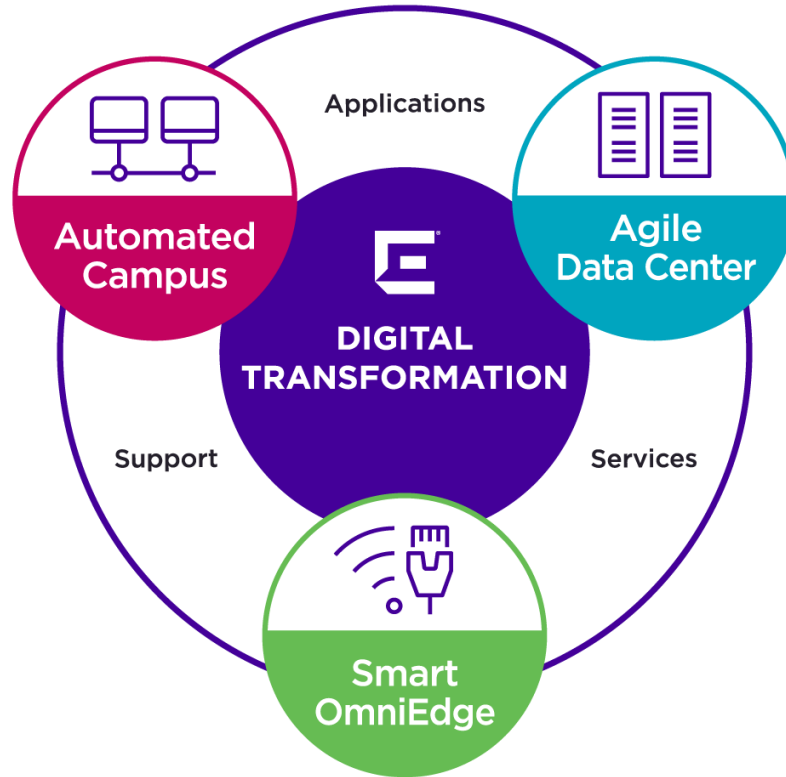
- Integration of Ecosystem partners
- Validation
- Security/Policy
- Lifecycle Management
- Intent-based Provisioning



SLX Switching and Routing Portfolio



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