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# Automated Campus – elastyczne i bezpieczne sieci kampusowe

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## Extreme End-to-end Networking



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## SHOULD JETSON TECHNOLOGY

#### - REALLY BE RUNNING ON FLINTSTONE NETWORKING?

#### TECHNOLOGY

Smart Phones Artificial Intelligence Connected Edge Devices (IoT) Augmented & Virtual Reality Sensors, Beacons and Robotics



#### **NETWORK**

Dated Protocols Dated Network Designs Architectures built for static environments

LACK OF EVOLUTION

#### TODAY'S REALITY

**DYNAMIC – MOBILE – REAL-TIME** 



Read the Blog

## The Solution: Address the Root Cause of the Issue





Only Technology jointly standardized by IEEE (802.1Q) and IETF (RFC 6329)

2012

- Origins in Service Provider Space
- MPLS like functionality without complexity



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## How Fabric Connect Works...

#### It's a Network Virtualization Technology

- Delivers complete separation of control and services planes
- User traffic invisible to network core
- Services invisible to each other



#### Data plane is Ethernet Switched Paths

- SPB defines a next generation VLAN called an ISID (Independent Service Identifier)
- Scales to 16 million service instances
- Inherently secure

#### IS-IS as the L2/3 control plane

No flooding and learning



## Fabric Connect is Simple: From 4-10 Protocols to 1

#### Traditional



Extreme Fabric Connect

1 Protocol (IEEE/ IETF Shortest Path Bridging)

## Fabric Connect Benefits:

- Faster to Deploy
- Increased Stability
- Easier Troubleshooting
- Faster Resiliency
- Lower Costs



## **Fabric Connect is Field Proven**

Thousands of Deployments

Fabric deployments on every continent and industry

Largest customer network ~ 600 virtualized nodes

OFFICIAL SUPPLIER Olympic Grade

First Fabric Olympics

7 secure zones over one converged network Breaches in Public Hackathons

Hyper Segmentation

Stealth

Service Elasticity

Party Validated Customer Experience

11x faster time to service

7x faster mean time to repair

100% reduction in outage due to human error

28x higher multicast scaling

#### *"Fabric Connect is the networking industry's best kept secret"* Zeus Kerravala



## Complex Protocol Stack vs Ethernet Fabric Simplicity

#### **Traditional Protocol Stack**



#### **Fabric Connect simplicity**

Connectivity Services independent from Infrastructure



## Fabric Connect Overview

## Fabric Connect: The Value Proposition



- 11x Faster Time to Service; provision at the "edge"
- 7x Faster Mean Time to Repair
- 2500x Faster Reconvergence

- Extend services anywhere seamlessly
- 4-10 protocols to 1; L2, L3, VRFs...
- 28X better multicast scaling

- Isolates traffic end to end with ease and scale
- Contains breaches; prevents lateral movements.
- Network Invisibility to users

# 11x Faster time to Service with Simple Edge Provisioning



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#### **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

Automated <u>C</u>ampus

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

Video

Surveillance Servers

# Elastic Service Extension Accelerates TTS & Eliminates Back Door Entry Points





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## Enhanced Security with Hyper-Segmentation Prevents Lateral Movements Creating Dead Ends for Hackers



Automated

Campus

## Fabric Connect is Resilient

Delivering 2500X Faster Network Recovery (from mins to milliseconds)





- Load balanced, active/ active network
- Full network recovery in milliseconds (L2/3, even multicast)
- Eliminates the domino effect of protocol overlays
- Recovers so quick that upper layer communications protocols are unaffected



## Extending the Value of Fabric Connect



**Fabric Extend** to extend Fabric Connect Fabric and Services over an IP network or 3<sup>rd</sup> party enterprise core to enable a unified fabric.

#### Fabric Connect (SPB) the

foundational technology for the core/ aggregation; extending to the edge

- Fast
- Flexible
- Secure

**Fabric Attach** at the edge enabling non-fabric devices to participate in the fabric in order to auto-attach users and devices to Fabric services.

## **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 nonfabric 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



## Path Visualization in XMC Fabric Manager



## **VSP Campus Switching Positioning (CY19)**



## Introducing the ExtremeAccess Platform

- New WAN Access devices
  for distributed enterprises
- Enables flexible WAN connectivity (MPLS, Ethernet, DSL, LTE\*)
- Subscription licensing
  model
- Enabled with the VOSS operating system initially (called Fabric Connect VPN application)



#### Small Branch Appliance: XA 1440

- 4 core Intel Denverton, 8GB RAM, 32GB SSD
- 6 copper RJ45 ports and 2 SFP+
  ports
- 1 Console RJ45, 1 Micro USB Console
- 2 USB ports
- 44mm X 250mm X 252mm

#### Mid Sized Branch or Head-End Appliance : XA 1480

- 8 core Intel Denverton, 8GB RAM, 64GB SSD
- 6 copper RJ45 ports and 2 SFP+
  ports
- 1 Console RJ45, 1 Micro USB Console
- 2 USB ports
- 44mm X 250mm X 252mm

Additional models to be added in future releases

## **Extends Fabric Connect Seamlessly into Remote Locations**



#### **Unified Architecture with Single Pane of Glass Management**

- Seamlessly extend campus fabric Services from LAN/WLAN into WAN
- Maintain security and segmentation end to end.
- Simplify provisioning, zero touch fabric.
- Enable end-to-end visibility, insight and control of LAN and WAN networks
- Unified reporting and troubleshooting for entire campus & branch network

## Recap: Fabric Connect – Networking for the Digital Era

#### A new simplified way to design, build and manage networks

- All the network services you need with just a single technology
- Multiple independent L2/3 cloud-based networks deployed with ease and scale
- Field proven across the globe, in every vertical industry



## Extreme Fabric Connect

11x	7x	7x	2,553x	100%
FASTER	FASTER	FASTER	FASTER	IMPROVEMENT
Implementation	Configuration	Troubleshooting	Failover	Outages Due
Time	Time	Time	Time	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







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