

# Intro

A 은행의 고민

: 어떻게 하면 더 많은 고객이 예금하게 할 수 있을까?

직원 건의

: 더 쉽게 출금할 수 있도록 합시다

쉽게 출금할 수 있다면, 더 쉽게 예금할 수 있습니다

# Intro



생각의 전환

*Innovation*

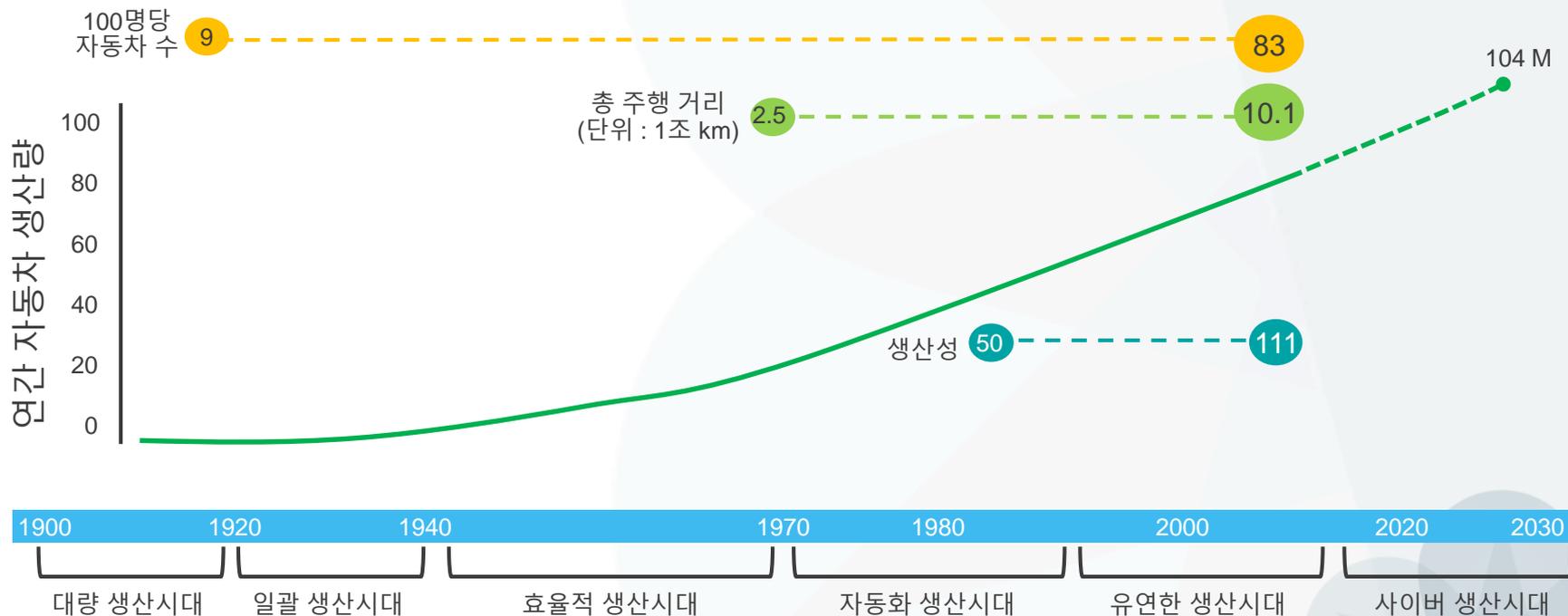
# Innovation by Automation

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Campus & Branch Automation

신성오 차장 | 한국주니퍼네트웍스

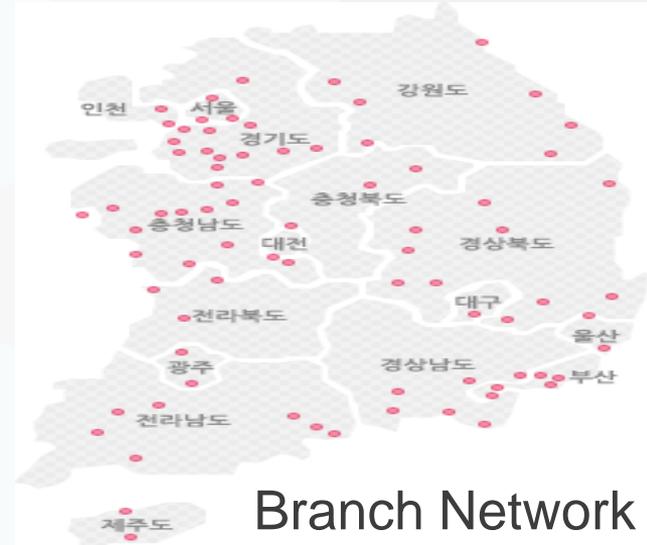
# Automation (자동화)



# Juniper Automation



Junos Fusion



Universal CPE

# Innovation with Juniper 1<sup>st</sup> Step

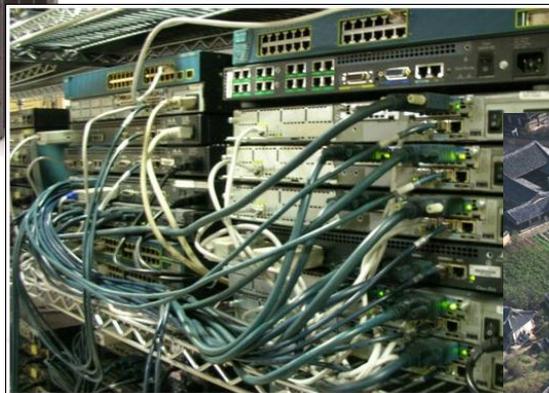
## Campus Automation - Junos Fusion



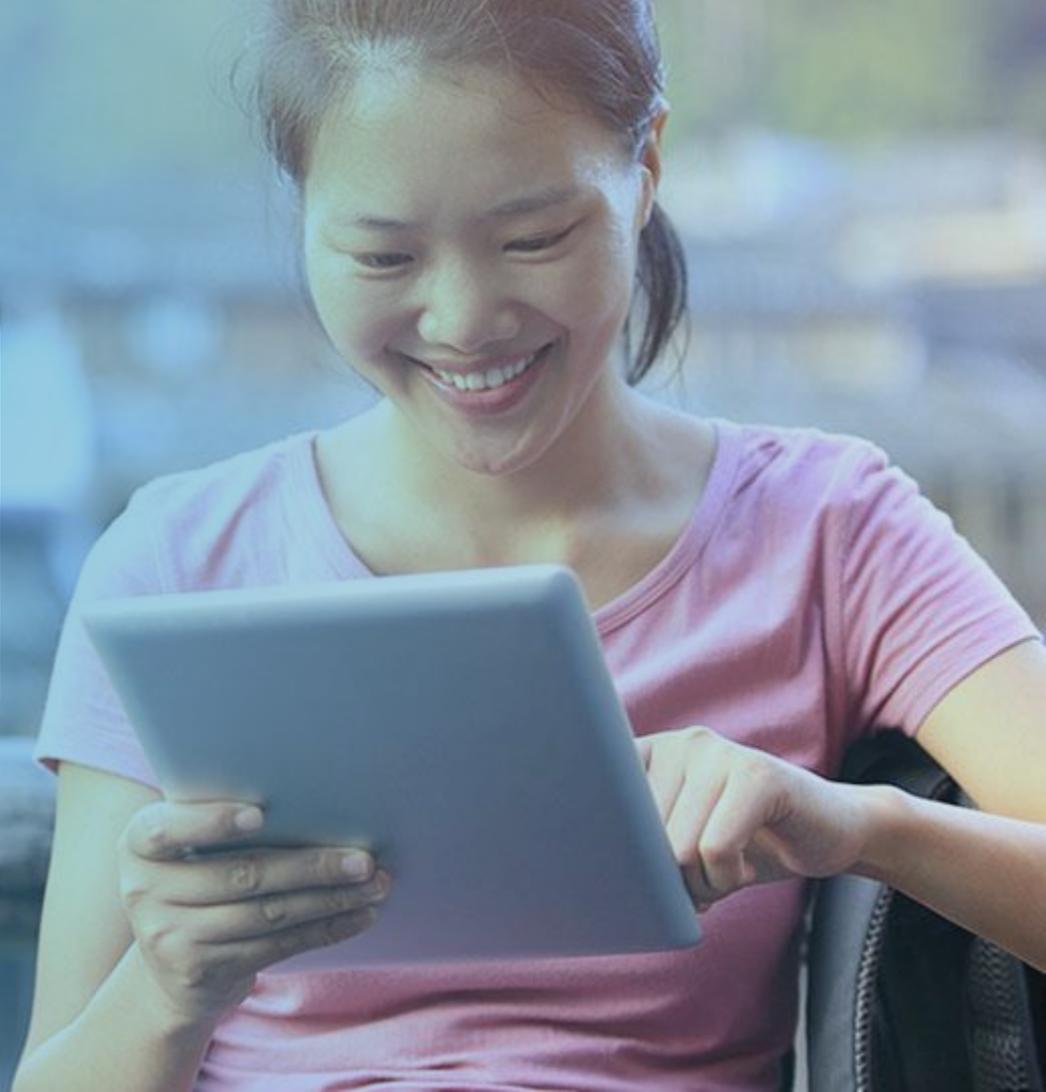
Why Changed?



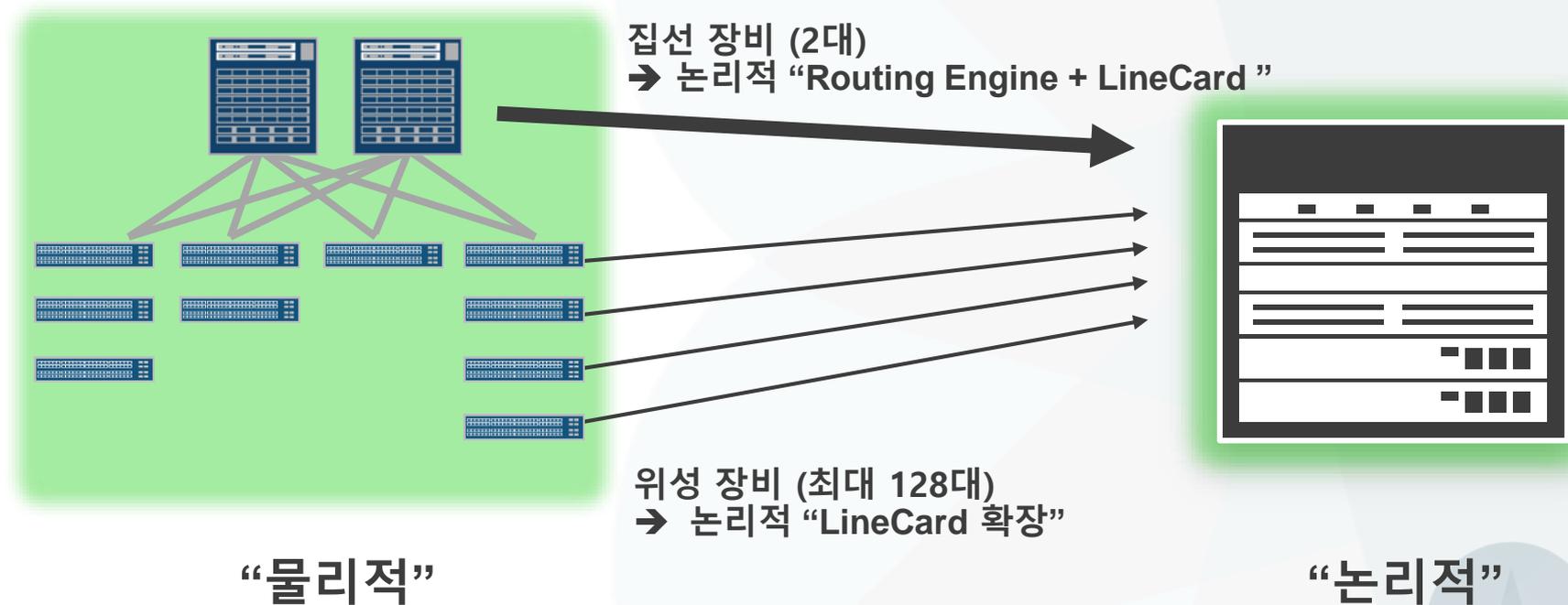
# Campus Network 고민



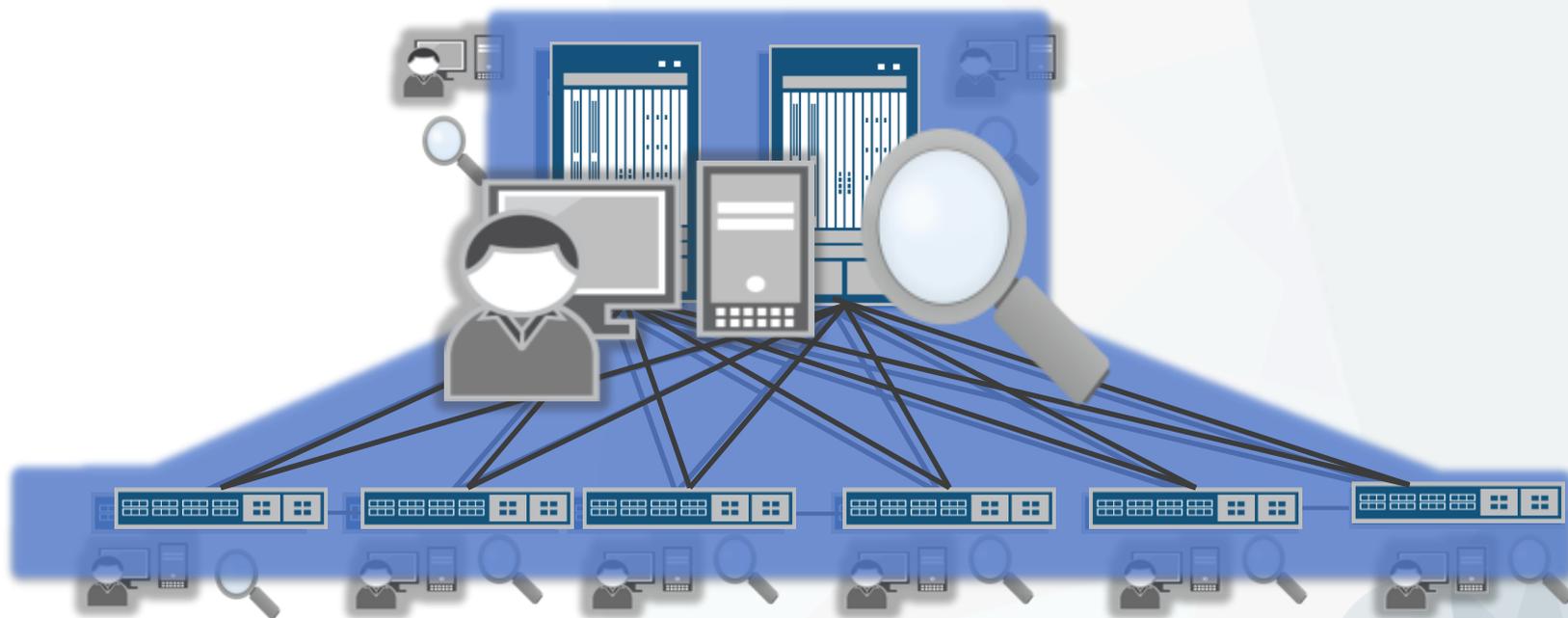
What Provided?



# Junos Fusion



# One Management, Analytics



# 가상화 Type

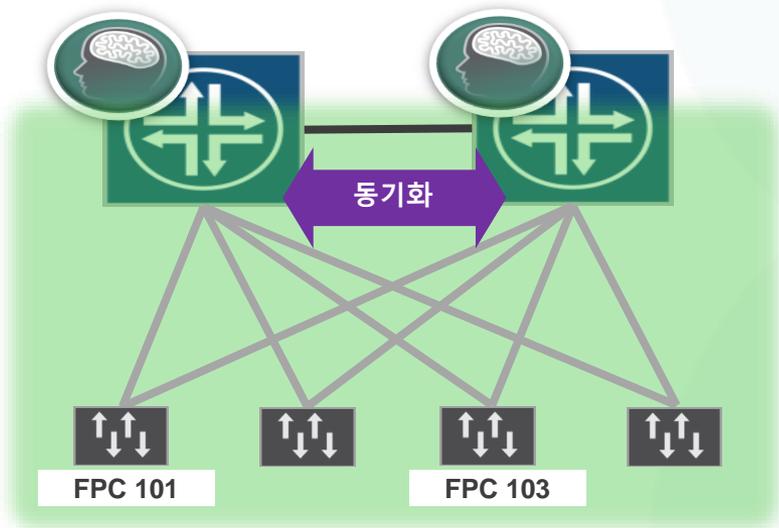


밀결합 (Tightly Coupled)



약결합 (Loosely Coupled)

# 집선 장비 Loosely Coupled 가상화



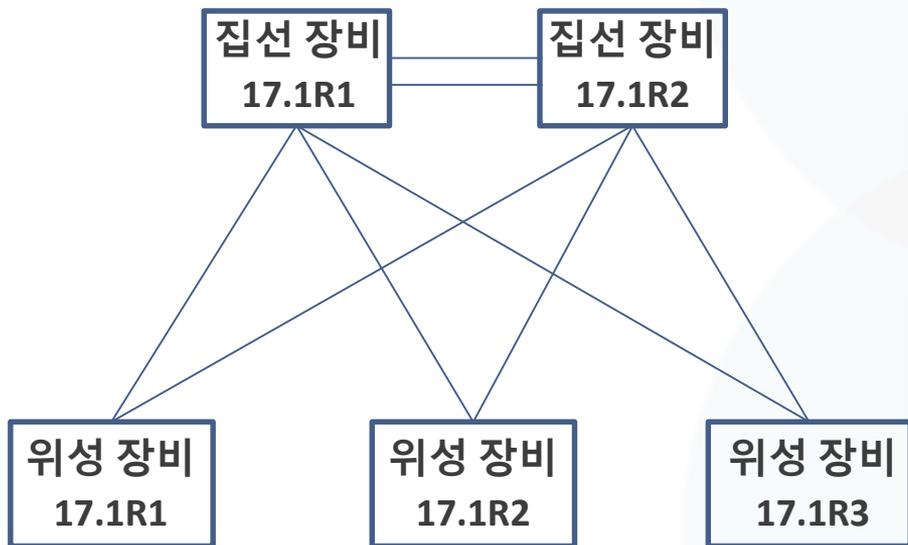
각 집선 장비는 개별적으로 Control Plane 을 가짐  
(예시 : VRRP)

집선 장비는 상호간 MC-LAG ICCP 를 통해  
설정 및 상태 정보를 실시간 동기화함.

각 위성 장비는 집선 장비 어디에서나  
라인카드로서 관리 가능

ISSU 지원을 통해 고가용성 확보

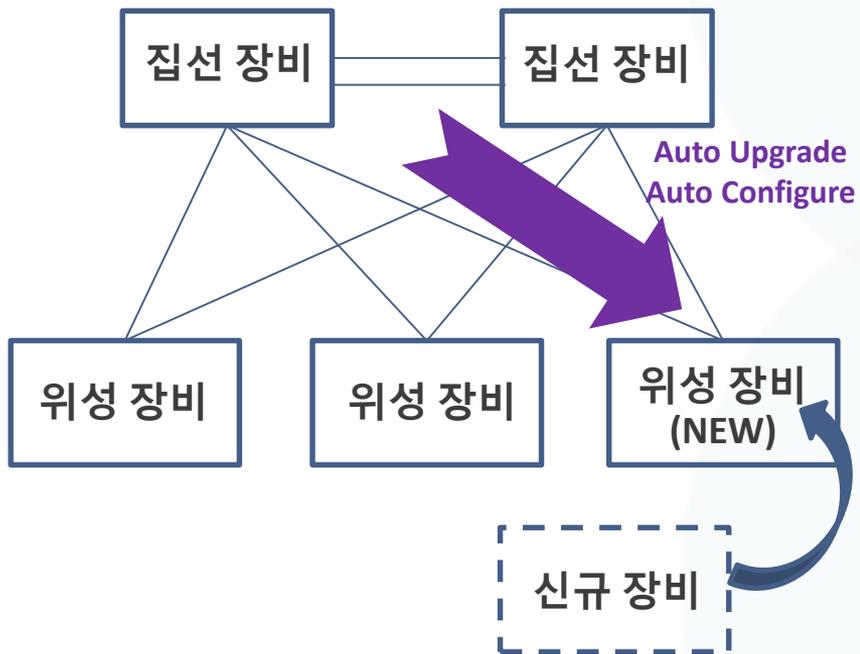
# Any Version, Anywhere



다양한 Version 혼용해서 운영 가능

Bug patch 등으로 Version 변경시  
별도 Test 환경이 아닌 운영 환경 일부 적용,  
사전 검토 가능

# Plug And Play

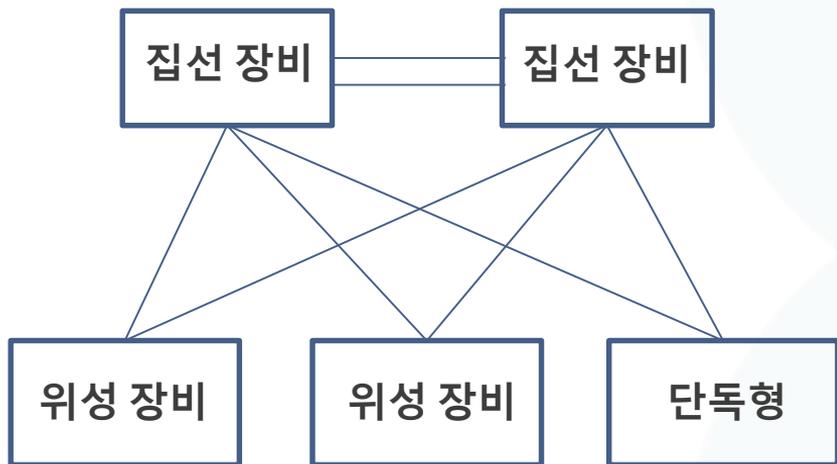


새로운 위성 장비 연결시 LLDP 로 대상 식별  
Version 확인 및 Auto Upgrade 수행

NetConf 를 통해 Auto Configuration 수행

운영 편의성 증가

# 유연한 위성 장비 활용



위성 장비는 단독형 or 가상화 선택 가능

단독형 / 가상화 혼용 가능

비용 효율 높음

# Innovation with Juniper 2<sup>nd</sup> Step

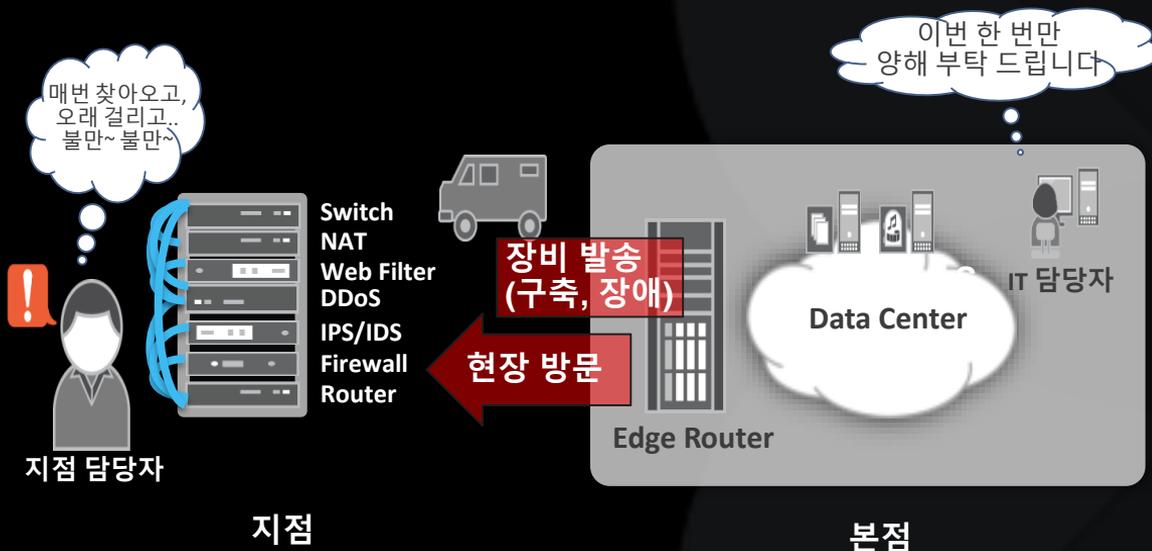
Branch Automation  
- Universal CPE



Why Changed?



# 오늘날까지 이어지고 있는 업무 환경

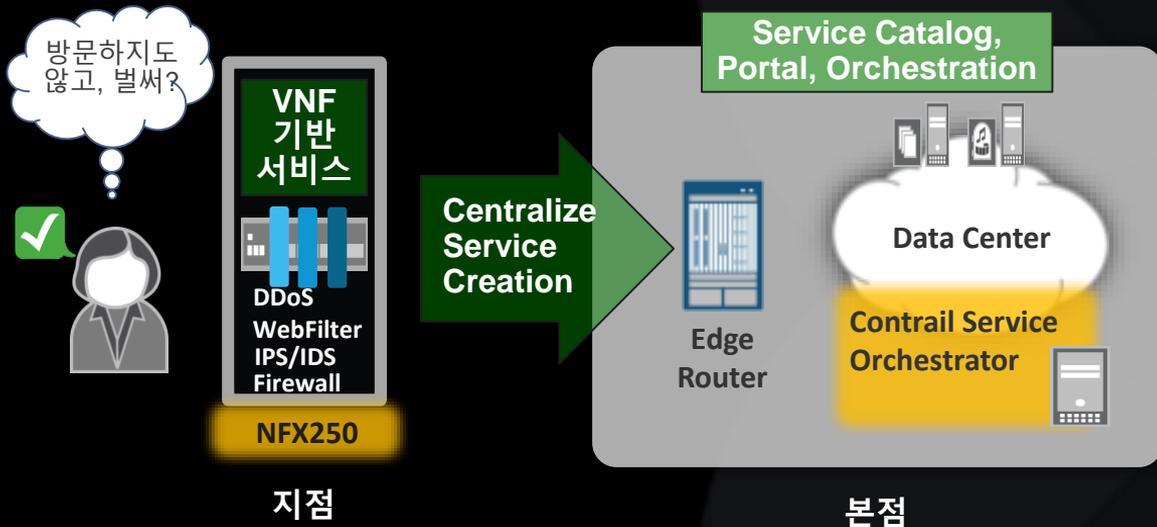


## 전통적인 본/지점 업무 환경

- **제한된 서비스**  
모든 장비를 지점에 설치 불가  
최소한의 보안과 VPN을 지점에!  
모든 Traffic 은 센터로!
- **지역적 한계**  
도서 산간, 해외 관리 불편
- **처리 시간 지연**  
현장 방문 필요시 장애 처리 지연

보다 좋은 서비스를 위해서  
보다 많은 불편함은 당연한 걸까요?

# 이젠 바뀌봅시다!



## Universal CPE (Customer Premises Equipment)

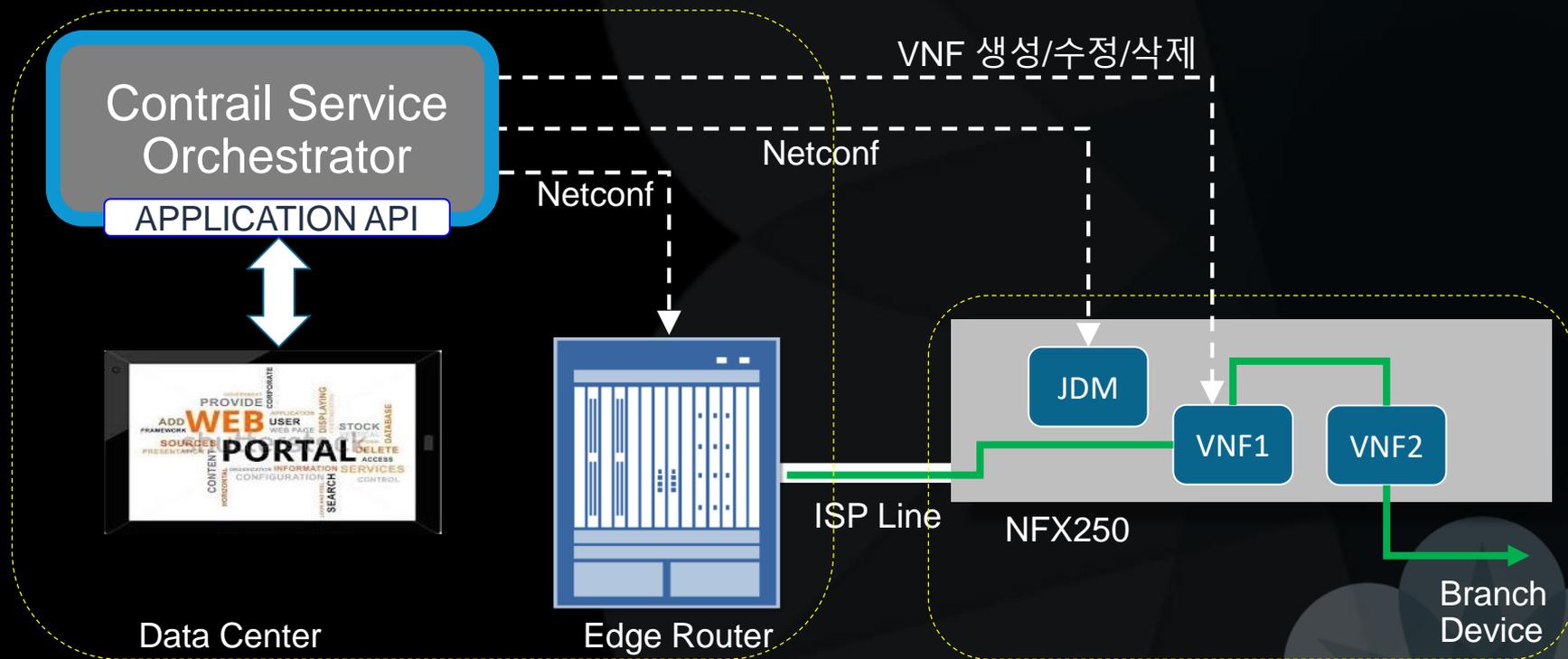
### uCPE 를 통한 혁신

- **폭넓은 서비스**  
NFX250 에 VM 형태로 서비스 제공  
방화벽, VPN, 해외의 경우 가속  
기능까지 제공
- **지역적 한계 극복**
- **처리 시간 단축**  
NFX250 만 설치하면 더 이상의 물리  
작업은 NO!!  
장비에 Lan Cable 만 연결하면 Auto  
setup 제공 (Zero Touch Deployment)

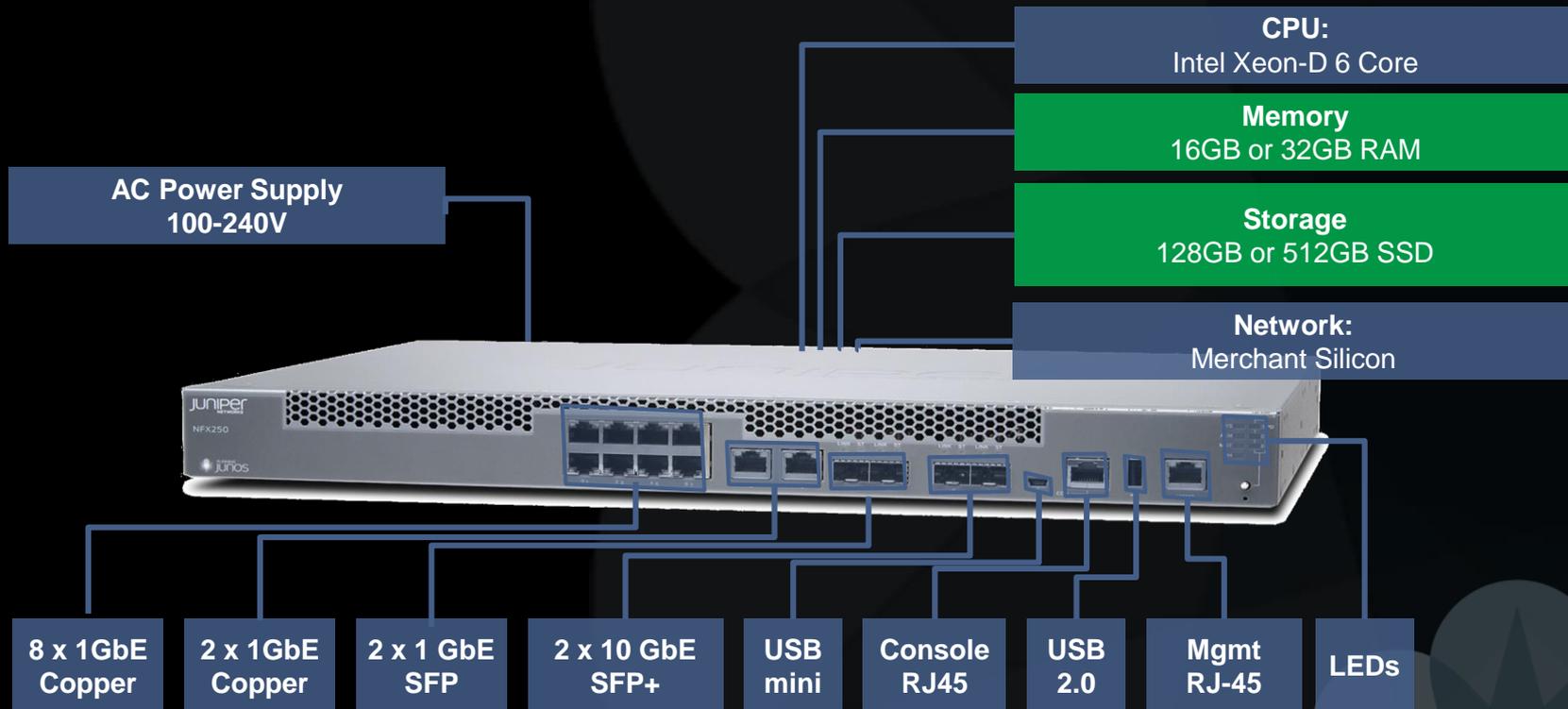
What Provided?



# Universal CPE Process



# Network Service Platform (NFX Series)



# NFX250 기본 제공

## IPv4/IPv6 Routing

- Static Routing
- RIP, OSPF
- BFD for RIP, OSPF

## L2 Switching

- Port based, MAC based VLAN
- Voice Vlan
- STP ( PVST+ 호환 )
- LLDP
- IEEE 802.1 Q
- Link Aggregation with LACP

## Quality of Service

- Classification, Queuing (L2, L3)
- Trusted 802.1p/DSCP/MF
- Policing

## Security

- MAC Limiting
- 802.1X
- Proxy ARP
- DHCP Snooping
- Control Plane DOS Protection

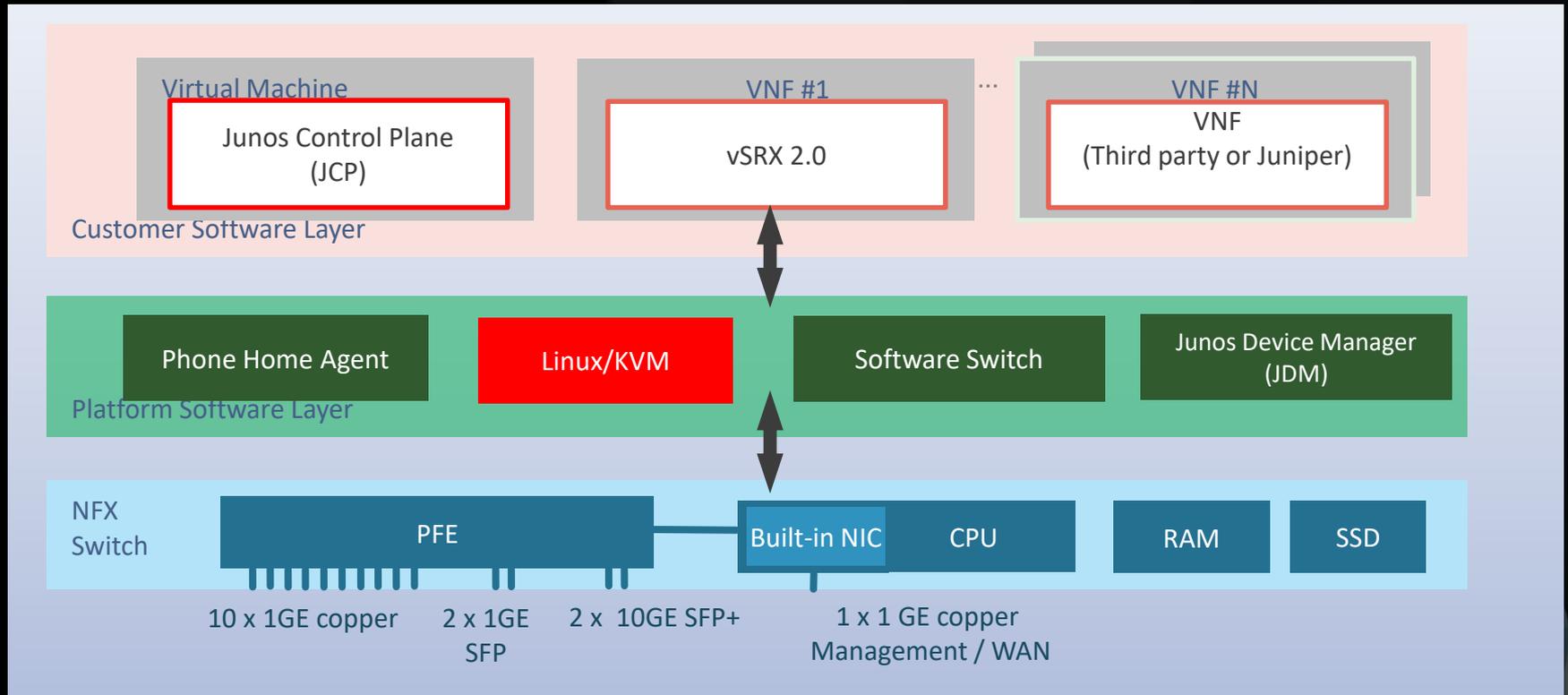
## Multicast

- IGMP v1, v2, v3
- IGMP Snooping
- PIM-DM
- PIM-SM
- PIM-SSM

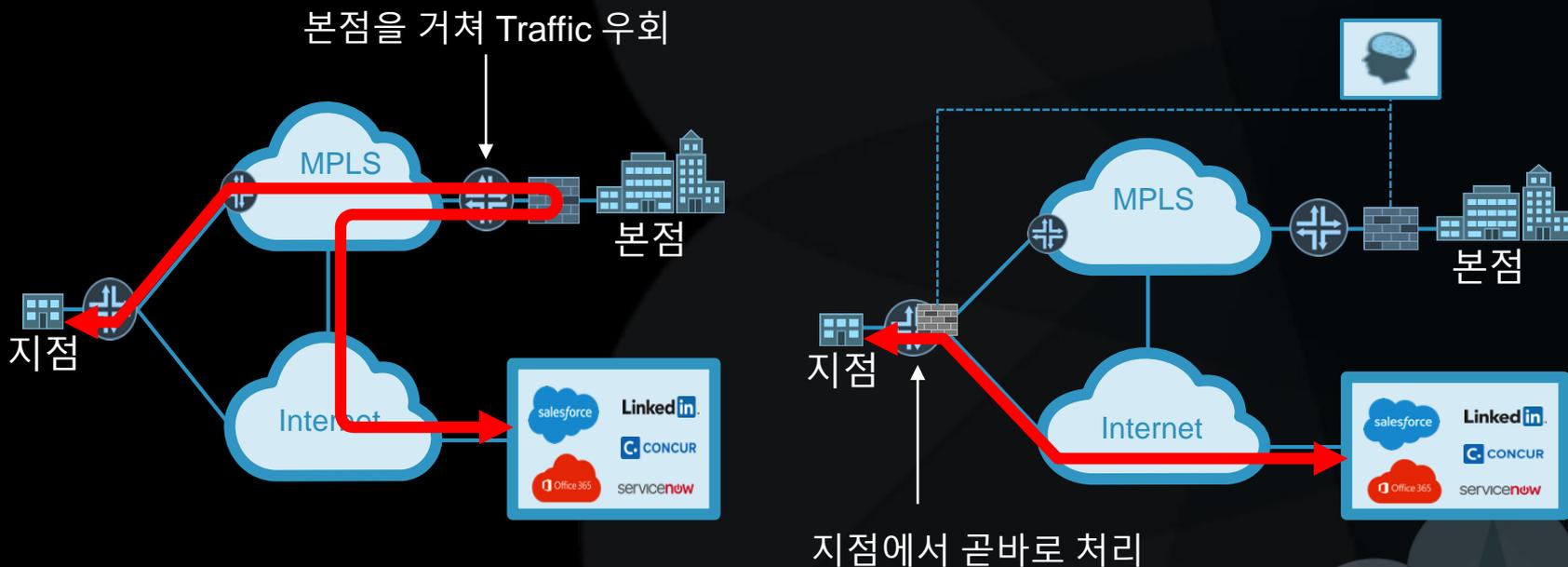
## Services and Manageability

- Configuration / Image rollback
- SNMP v1,v2,v3
- TACACS+ / RADIUS Auth.
- Logging
- DNS
- Mirroring
- Uplink failure detection

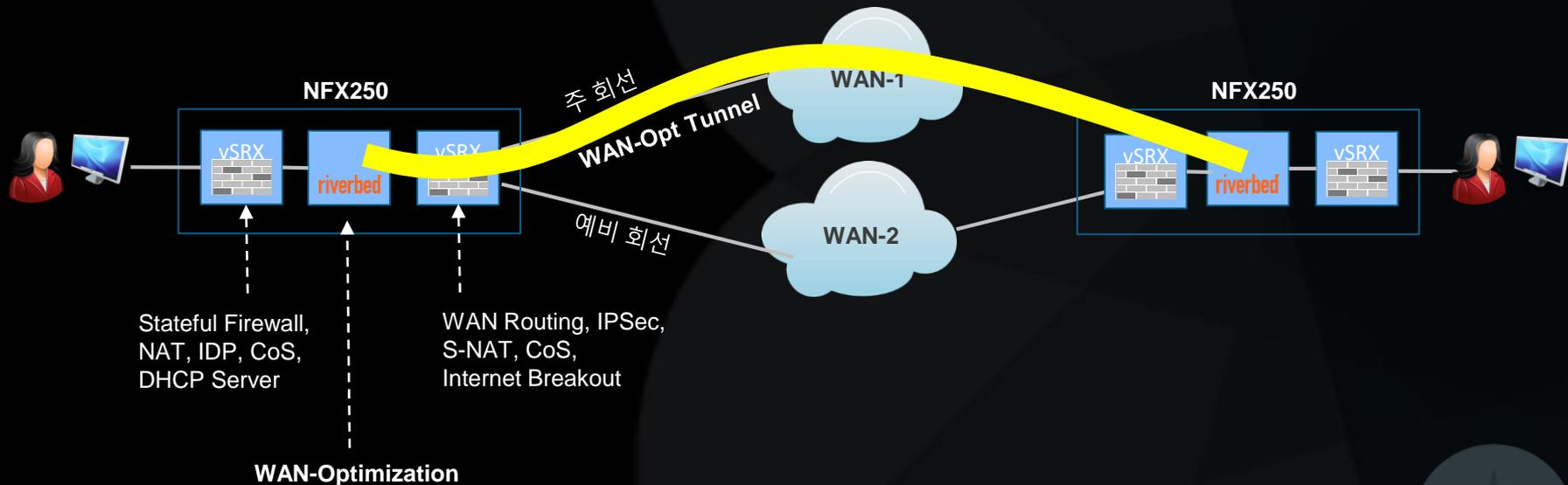
# NFX Architecture



# 강화된 보안 기반 Traffic Flow 개선



# WAN 가속 서비스 제공 with Riverbed



A close-up photograph of a person's hand holding a smartphone. The hand is positioned on the right side of the frame, with the thumb and index finger visible, suggesting interaction with the device. The smartphone is held at an angle, showing its screen and back. The background is a soft, out-of-focus bokeh of various colored lights, including blue, yellow, and white, creating a vibrant and modern atmosphere. A semi-transparent dark grey rectangular box is overlaid on the left side of the image, containing the word "DEMO" in white, bold, sans-serif capital letters.

DEMO

# Demo

The image displays four overlapping screenshots of the Juniper Administration Portal interface, illustrating different monitoring and management capabilities.

**Top Left Screenshot: Monitor / Overview**  
 This view shows a dashboard with a central gauge displaying '78 Alerts'. Below it are several charts: 'Alerts Time Series Chart' with a legend for Critical (red), Major (orange), and Minor (yellow) alerts; 'Top 5 Tenants with Alerts' table; and 'Alerts Donut Chart' showing a red segment. The 'Top 5 Tenants with Alerts' table is as follows:

Status	Name
critical	CITI
critical	Walmart
critical	Starbucks
critical	Home Goods
critical	General Motors

**Top Right Screenshot: Overview**  
 This view features a map of North America with a pop-up window for 'pop\_cnrd'. The pop-up shows utilization for CPU, Memory, and Storage (all at 0%), and lists alerts on this PoP (Critical, Major, Minor) and connected sites with alerts (Vilks, Routers, EMS).

**Bottom Left Screenshot: PoP Management**  
 This view provides detailed management for PoPs. It includes summary cards for 'Top PoPs by CPU Allocation', 'Top PoPs by Storage Allocation', 'Top PoPs by Memory Allocation', and 'Alerts Inside PoPs' (showing 11 alerts). Below these is a table of PoPs:

Name	Location	CPU Allocated	Memory Allocated	Storage Allocated	VMS	EMS	Routers	Tenants	Sites
dc2	Name	0 of 0 Cores	0 of 0 MB	0 of 0 GB	1		0		0
pop_pe	Sunnyvale, CA	0 of 0 Cores	0 of 0 MB	0 of 0 GB	0		1	ucpe-tenant	1

**Bottom Right Screenshot: TENANT SERVICES**  
 This view shows a list of tenant services with columns for Location, PoP Name, State, Type, and Services Activated. One entry is visible: 'site1 street01 city' at 'pop\_cnrd' in 'provisioned' state with 0 services activated.

# Demo

ENTERPRISE1 CUSTOMER PORTAL

MONITOR

Admin1

VPN Services

Enterprise1

- SiteA
- SiteB
- SiteC
- SiteE
- SiteF
- SiteG

The diagram shows a central VPN hub connected to six sites: SiteA, SiteB, SiteC, SiteE, SiteF, and SiteG. SiteA is highlighted with a 'Security Active' status. A detailed view for SiteA is shown on the right.

Status: Platinum-Multivendor (SiteA)  
csr1000v

Uptime	Bandwidth	Sessions
100% 13 days, 14:05:00	L Input: 0 Mbps R Input: 0 Mbps Output: 0 Mbps	0 Current

vsrx

Uptime	Bandwidth	Sessions
100% 13 days, 13:57:07	L Input: 0 Mbps R Input: 0 Mbps Output: 0 Mbps	0 Current

lxcpitable

Uptime	Bandwidth	Sessions
99.2776% 13 days, 14:08:09	L Input: not available R Input: not available Output: not available	0 Current

Cancel

# Demo

The screenshot displays the Network Service Designer interface. At the top, the title bar reads "NETWORK SERVICE DESIGNER" with navigation tabs for "HOME", "BUILD", and "VALIDATE". The user "Stephen Flamm" is logged in. The main workspace is divided into two views: "Functional Service Design" and "Network Service Design".

**Functional Service Design:** Shows a high-level flow of services: NAT (blue box) connected to Firewall (green box), which is connected to IDP (light green box). All three boxes have a checkmark in the bottom-left corner.

**Network Service Design:** Shows a detailed view of two service instances: "Firefly" (Juniper) and "ASA-V" (Cisco). The Firefly instance contains a NAT service, and the ASA-V instance contains a Firewall service. They are connected by a blue line.

**Goals Panel (Left):**

- SESSIONS:** Goal 5000, Estimated 2500. Progress indicator shows 50% completion.
- BANDWIDTH:** Goal 600 Mbps, Estimated 400 Mbps. Progress indicator shows 67% completion.

**Right Panel (Vendors):** Lists various service components with their status:

- Load Balancer: Gold
- ASA-V: Silver
- VM-300: Silver
- Firefly: Gold
- VMX: Gold

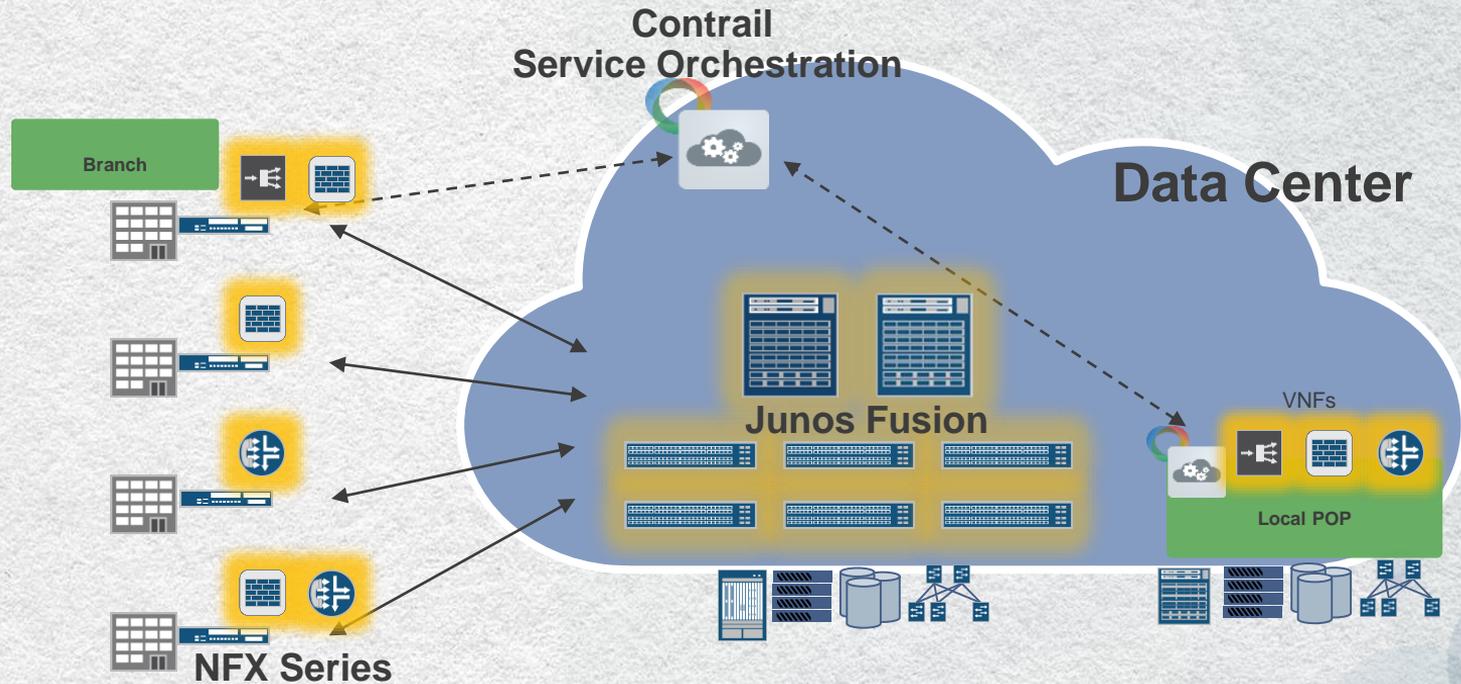
**Bottom Bar:** Includes tabs for "Data", "Control", and "Management". A toggle switch is set to "Single Service".

**Footer:** "Ogee Studio Inc. | Copyright © 2015 | All rights reserved" and "ogeestudio 2.0 For Networking".

# Summary



# Next Generation Network



*“Our DNA as a challenger in this industry applies so well. It is not just about challenging your competitors, it is challenging the status quo, it is **challenging yourself** and your assumptions about how to solve something. We’ve never been afraid to **try things differently**, to solve things differently.”*

*- Rami Rahim, Juniper Networks CEO*

The image features a blue-tinted background showing a crowd of people, likely at a public event or conference. The focus is on the back of a person's head in the foreground on the left, with other people blurred in the background. A white horizontal band is overlaid across the middle of the image, containing the text "Thank you" in a large, white, sans-serif font.

**Thank you**