



# Nexus 7000 Update

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# Nexus 7000 and NX-OS

## Flagship Switching Platform for Next Generation Data Centers

### Value of Modular



- Platform flexibility and [investment protection](#)
- Highest availability, including ISSU with [Zero Packet Loss](#)
- Maintains [architectural consistency](#) with Catalyst 6500 (M Series)

### Highest Scale



- [Highest 10GE density](#): F2 768 ports, FEX 2000+ ports
- [40/100G Leadership](#) with M2 modules
- Industry leading Fabric Scale with [Cisco FabricPath](#)

### Feature Richness



- Enabling virtualized services with [MPLS](#), [LISP](#) and [OTV](#)
- Device Segmentation and consolidation with [Virtual Device Contexts](#)
- Leadership in [Multicast](#) and [ACL](#) capabilities
- [Services integration](#)

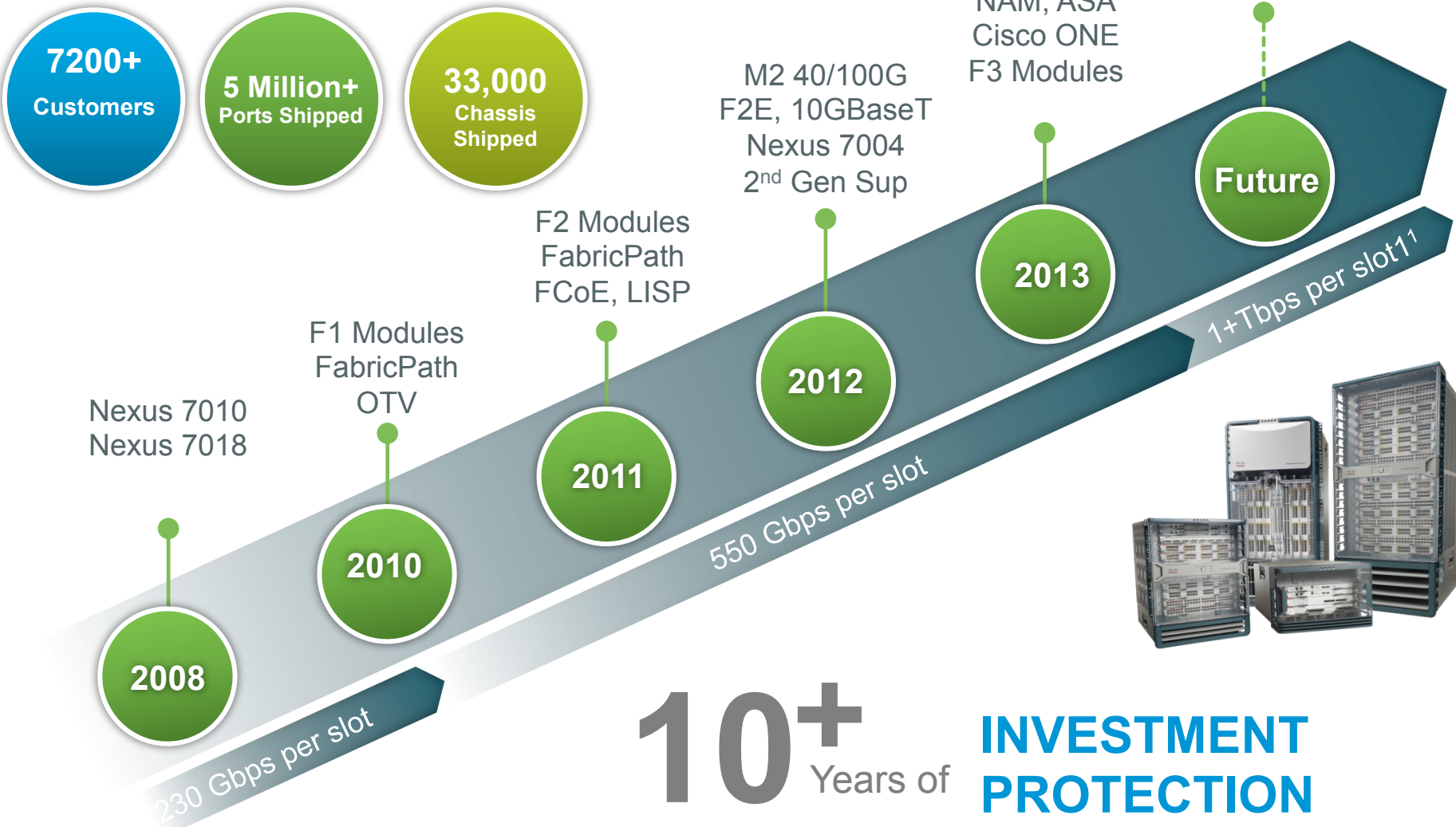
### Simplified Operations



- [SDN Ready](#): APIs, including XML, Cisco OnePK and Openflow
- Hardened platform: CoPP, Advanced Netflow and SPAN/ERSPAN
- Operational tools: LED Beacons, Config Sessions, Wireshark

# Continued Nexus 7000 Innovations

## Industry Leadership—Investment Protection



# Modular Switching Benefits

Cisco Nexus 7000

## HIGH AVAILABILITY

Dual Supervisor Capability

HA with **HITLESS ISSU**

**Director Class FCoE**

Redundant Connectivity



## FEATURE RICHNESS

FEX, 10GBase-T

FabricPath, vPC

Feature Rich L3, MPLS

OTV, LISP, VPLS\*

## INVESTMENT PROTECTION

**10+ year** Investment Cycles

Single platform to support **10Mb to 100G**

Pay as you grow model

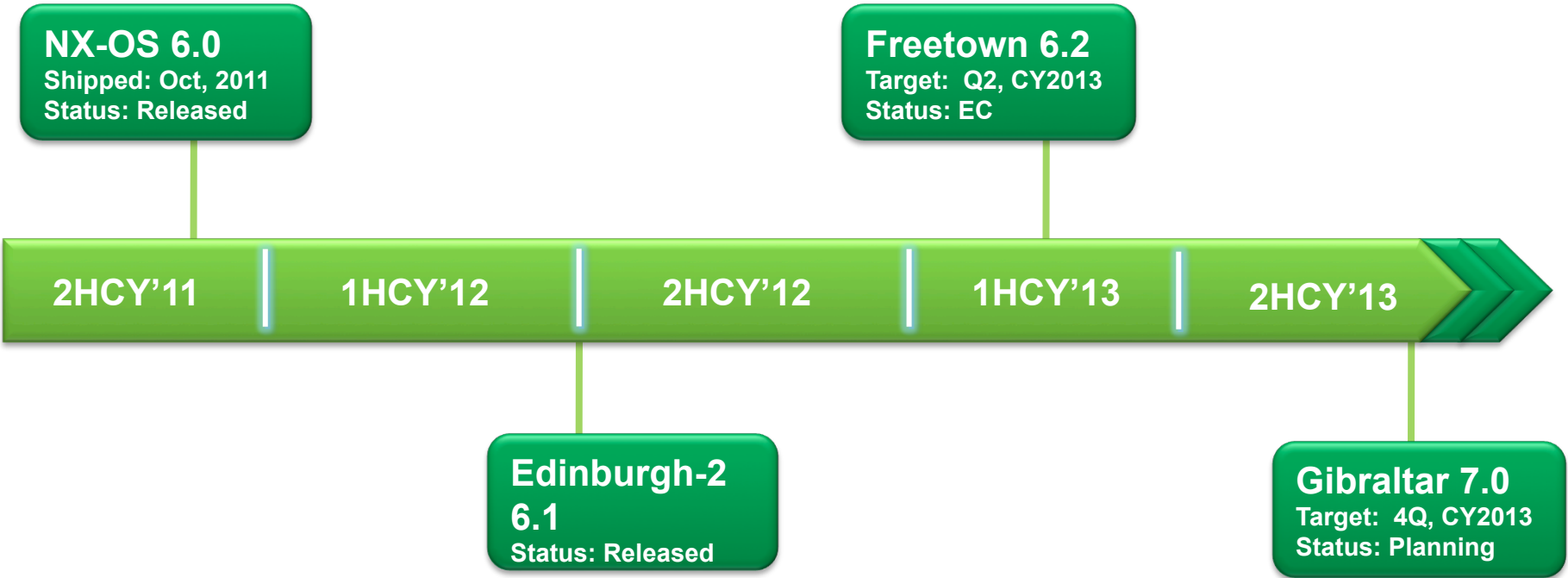
Upgrade components, not entire system

## **OPERATIONAL CONSISTENCY**

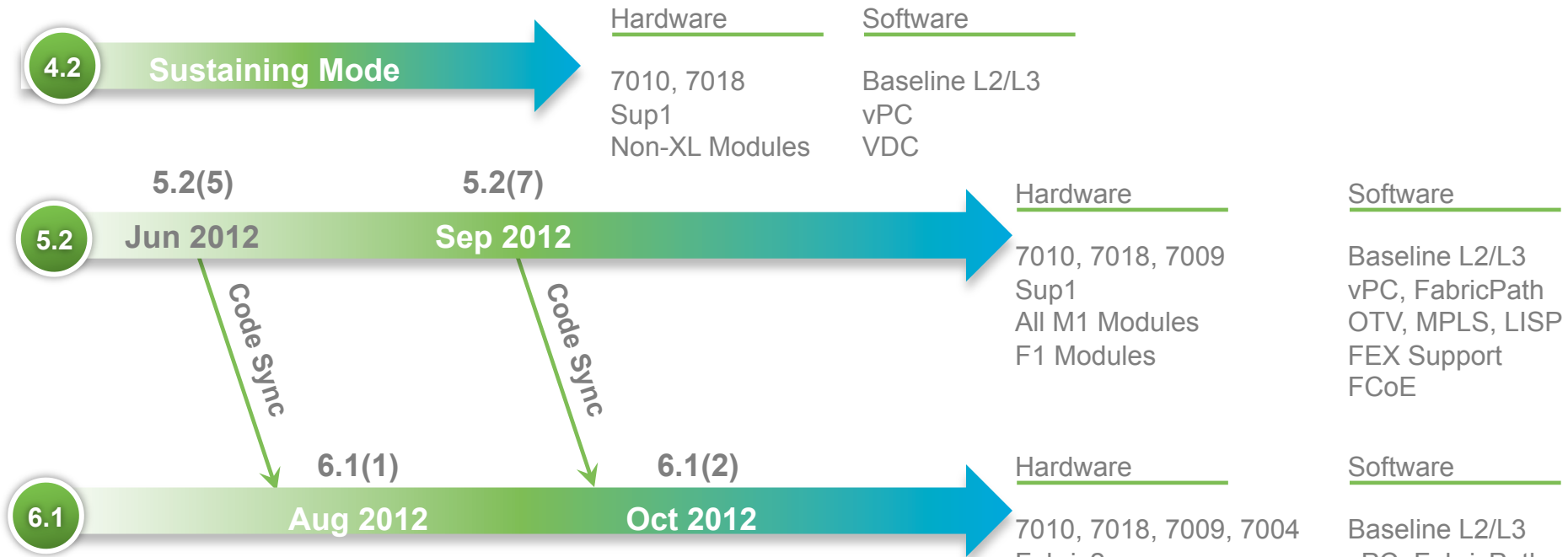
DC Core, Aggregation, Access, DCI, Edge



# Cisco Nexus 7000 NX-OS Software Release Planning



# NX-OS 6.1 – Ready for Adoption!

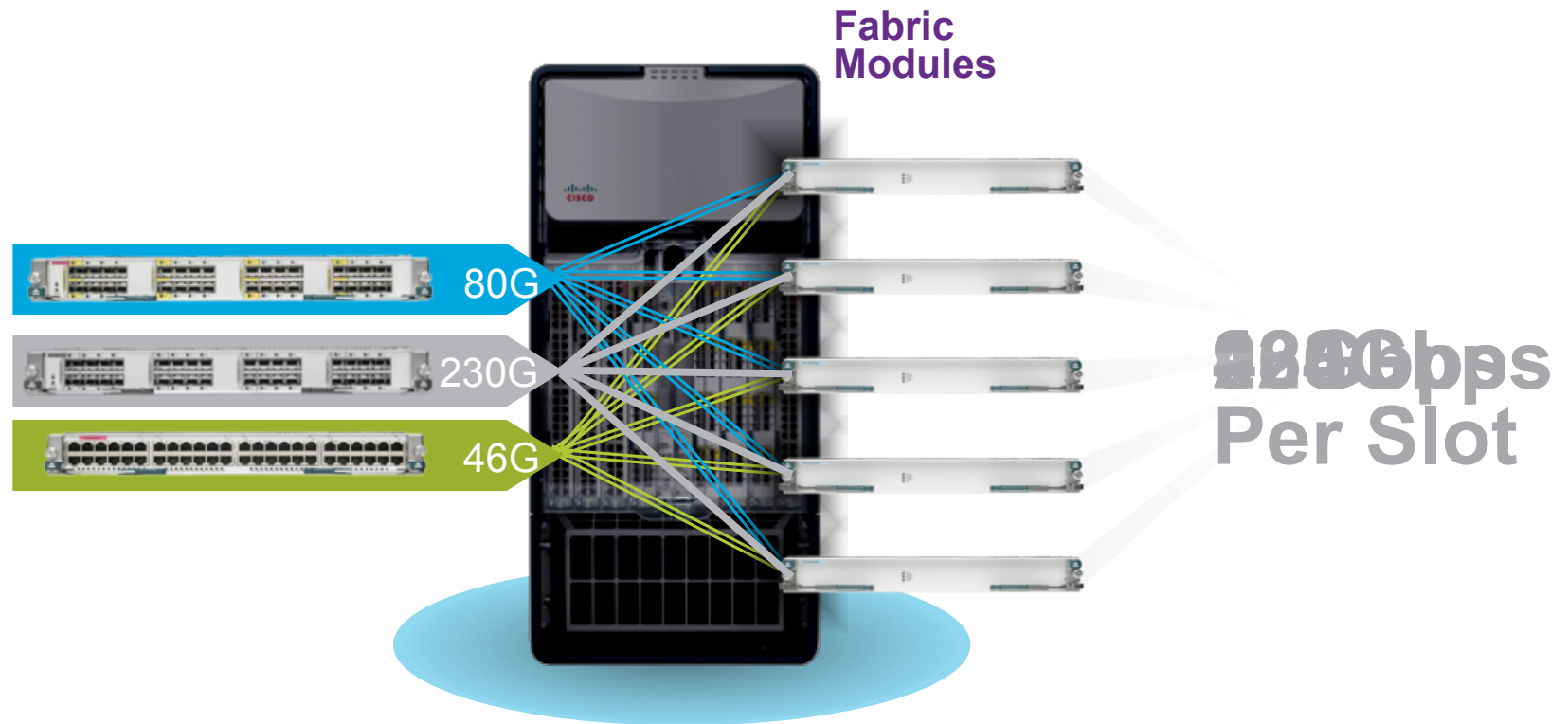


## NX-OS 6.1

Includes all fixes from 5.2 long-lived train + Supports new hardware

# 17Tb+ System Performance

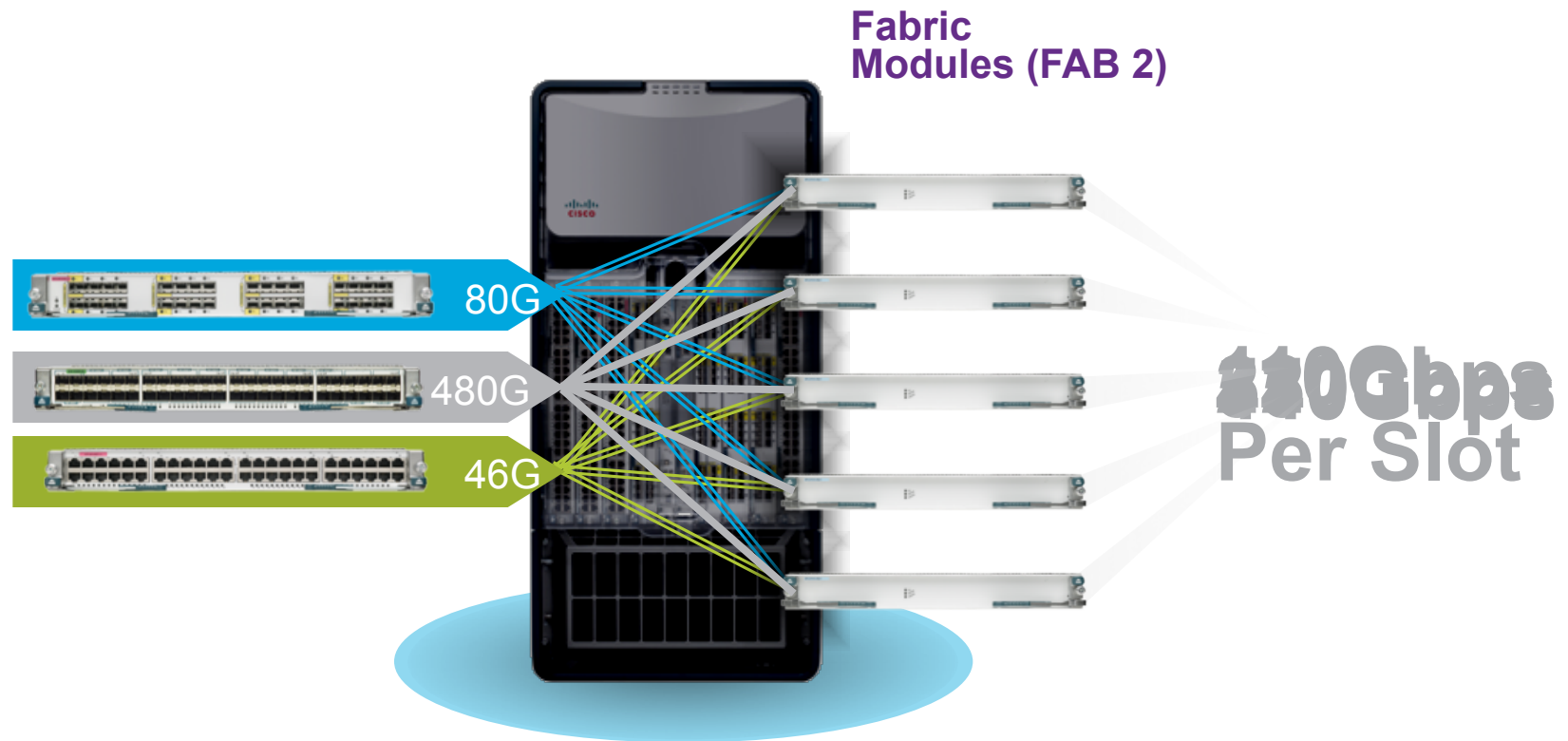
## Bandwidth Scales with Each Fabric Module



### Investment Protection and Unified Fabric

# 17Tb+ System Performance

## Bandwidth Scales with Each Fabric Module



## Investment Protection and Unified Fabric

# Introducing the Nexus 7004

For “Small” yet “Mission-Critical” Data Center

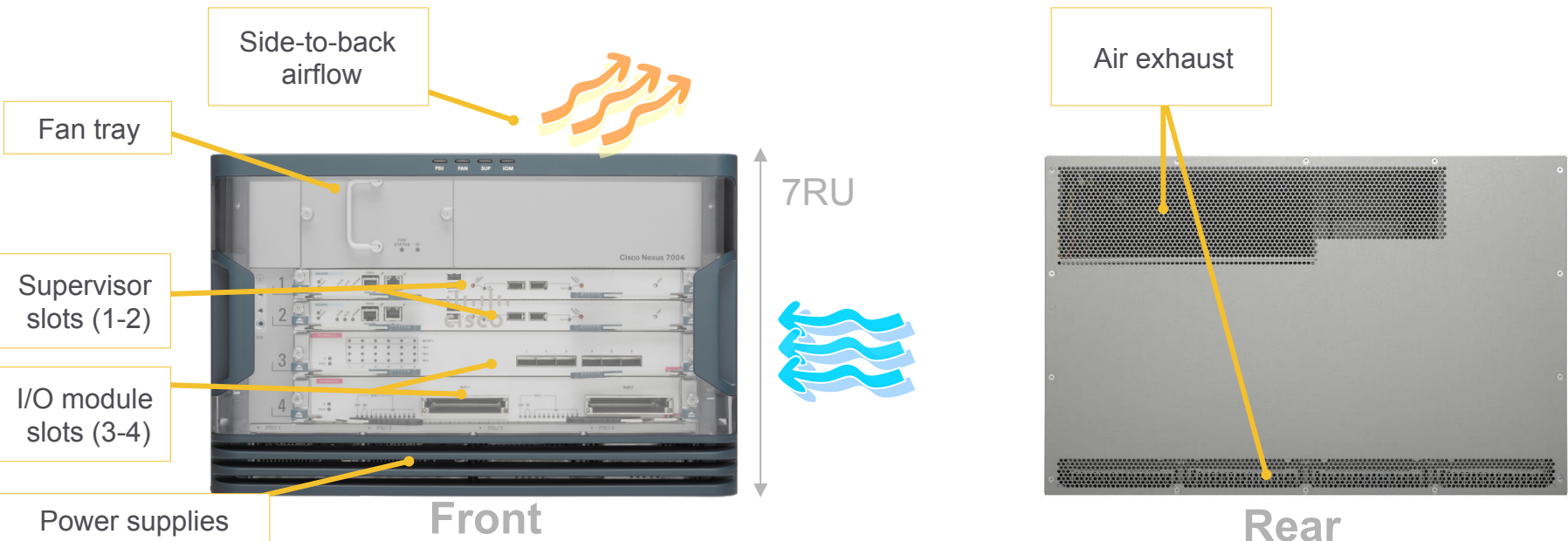


*Nexus*  
*7004*

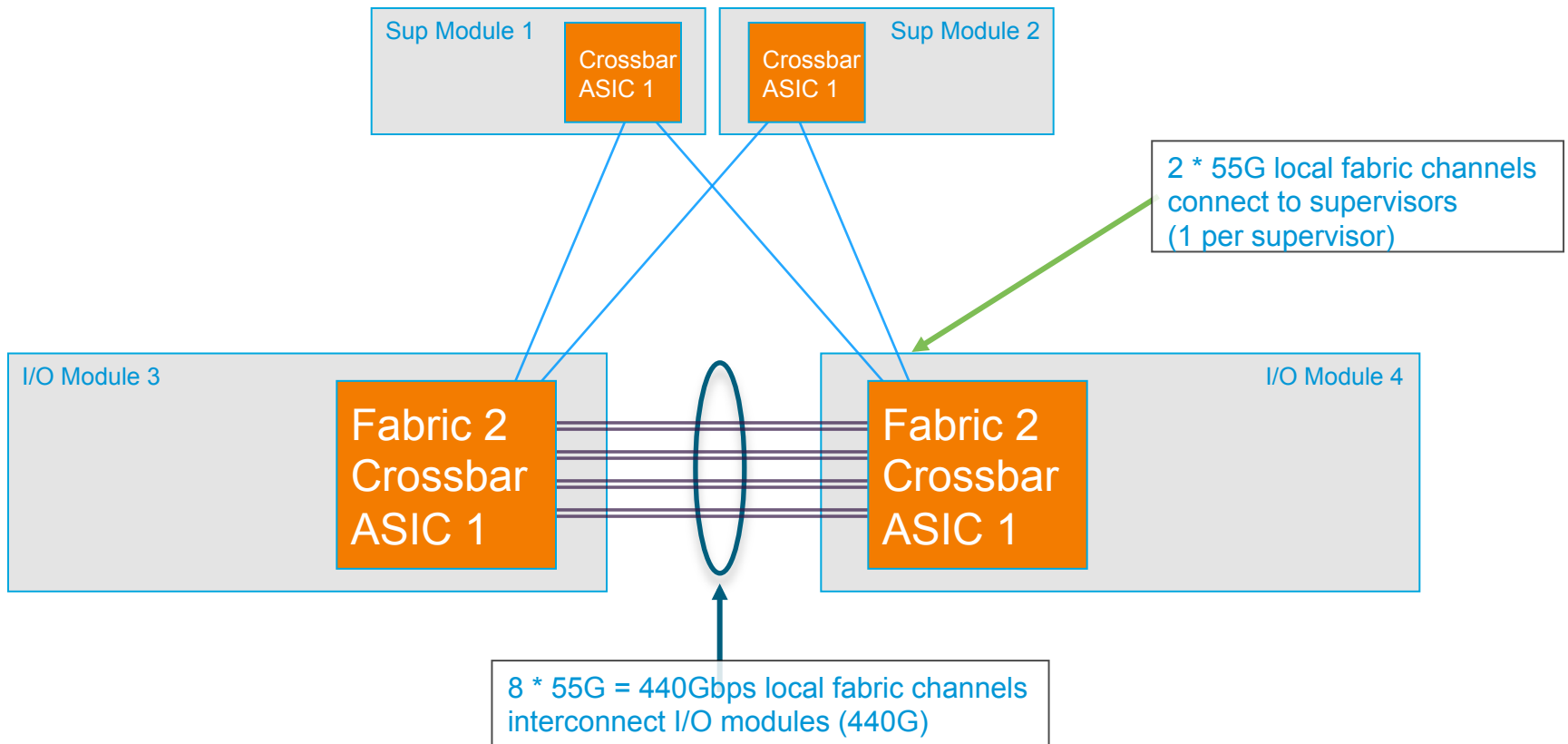


# Nexus 7004 Specifications

- 2 Supervisors
- 2 Modules
- No Fabric Modules Required
- Up to 4 3kW Power Supply AC or DC
- Air Flow: Side to Rear
- Dimensions: 12.2”H x 17.4”W x 24.5”D
- 2 Post Rack Mount - front, center and rear



# 7004 Chassis – No Fabric Required



Max 440Gbps of bandwidth available across modules  
M2 and M1 will still work at 240Gbps and 80Gbps respectively

# Nexus 7004 Supported Modules

## Supported Modules

- **F2-Series:**
  - N7K-F248XP-25
  - N7K-F248XP-25E
  - N7K-F248XT-25E
- **M2-Series:**
  - N7K-M2224XP-23L
  - N7K-M206FQ-23L
  - N7K- M202CF-22L
- **M1-Series (XL-Only)**
  - N7K-M108X2-12L
  - N7K-M132XP-12L
  - N7K-M148GS-11L
  - N7K-M148GT-11L
- **Supervisors:**
  - N7K-SUP2
  - N7K-SUP2E

## No Plans to Support

- **F1-Series:**
  - N7K-F132XP-15
- **M1-Series (non-XL)**
  - N7K-M132XP-12
  - N7K-M148GS-11
  - N7K-M148GT-11
- **Supervisors:**
  - N7K-SUP1

# Nexus 7004 Pricing

## A La Carte Prices

| PID        | Description                 | List Price |
|------------|-----------------------------|------------|
| N7K-C7004  | 7004 Chassis, Includes Fans | \$10,000   |
| N7K-AC-3KW | Nexus 7000 3KW AC PS        | \$3,000    |
| N7K-DC-3KW | Nexus 7000 3KW DC PS        | \$8,000    |

## Common Equipment Bundles

| PID             | Description                                   | List Price |
|-----------------|---|------------|
| N7K-C7004-S2    | 7004 Chassis + [1] Sup2<br>(No Power Supply)  | \$32,000   |
| N7K-C7004-S2-R  | 7004 Chassis + [2] Sup2<br>(No Power Supply)  | \$52,000   |
| N7K-C7004-S2E   | 7004 Chassis + [1] Sup2E<br>(No Power Supply) | \$42,000   |
| N7K-C7004-S2E-R | 7004 Chassis + [2] Sup2E<br>(No Power Supply) | \$82,000   |

Add for Full Redundancy

Now Fully Orderable

# New Nexus 7004 SBUNs Licenses

## New SBUN with 5 License:

LAN, ADV, EL2, TRS, DCNM-LAN

| Nexus 7004 Chassis                 | N7K-C7004-5LSB-P1 |
|------------------------------------|-------------------|
| Existing Nexus 7000 Bundle Price   | \$50,000          |
| <b>New Nexus 7004 Bundle Price</b> | <b>\$24,000</b>   |
| Savings (\$)                       | \$26,000          |
| Savings (%)                        | 52%               |

## All Inclusive SBUN:

LAN, ADV, EL2, TRS, DCNM-LAN, DCNM-SAN, XL, MPLS, SAN

| Nexus 7004 Chassis                 | N7K-C7004-5LSB-P1 |
|------------------------------------|-------------------|
| Existing Nexus 7000 Bundle Price   | \$75,000          |
| <b>New Nexus 7004 Bundle Price</b> | <b>\$34,000</b>   |
| Savings (\$)                       | \$41,000          |
| Savings (%)                        | 55%               |



# Nexus 7004 Use Cases

1



Nexus 7004

Small and Medium  
DC

2



Nexus 7004

DC Edge  
DCI

3

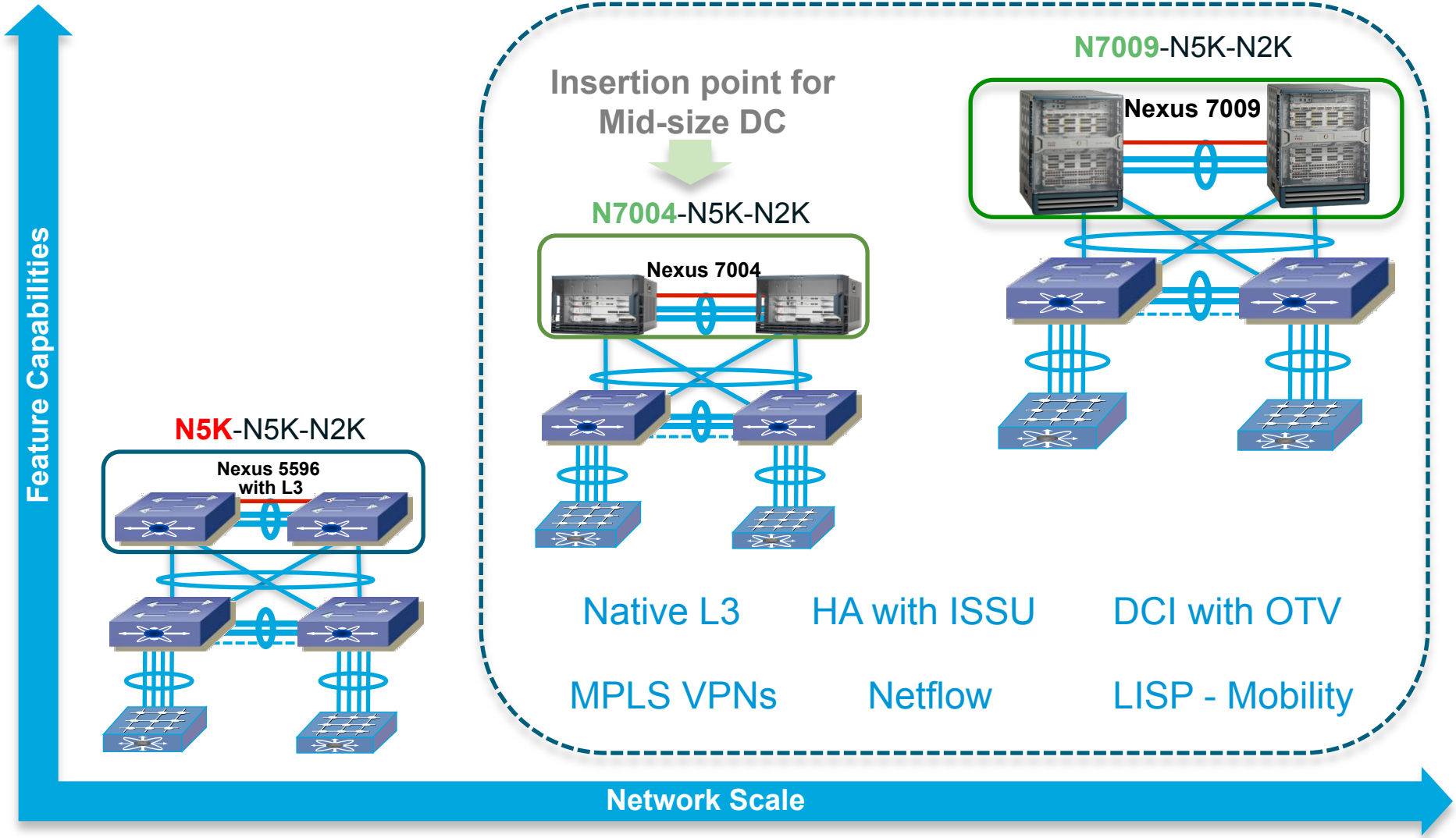


Nexus 7004

MPLS  
and Large Tables

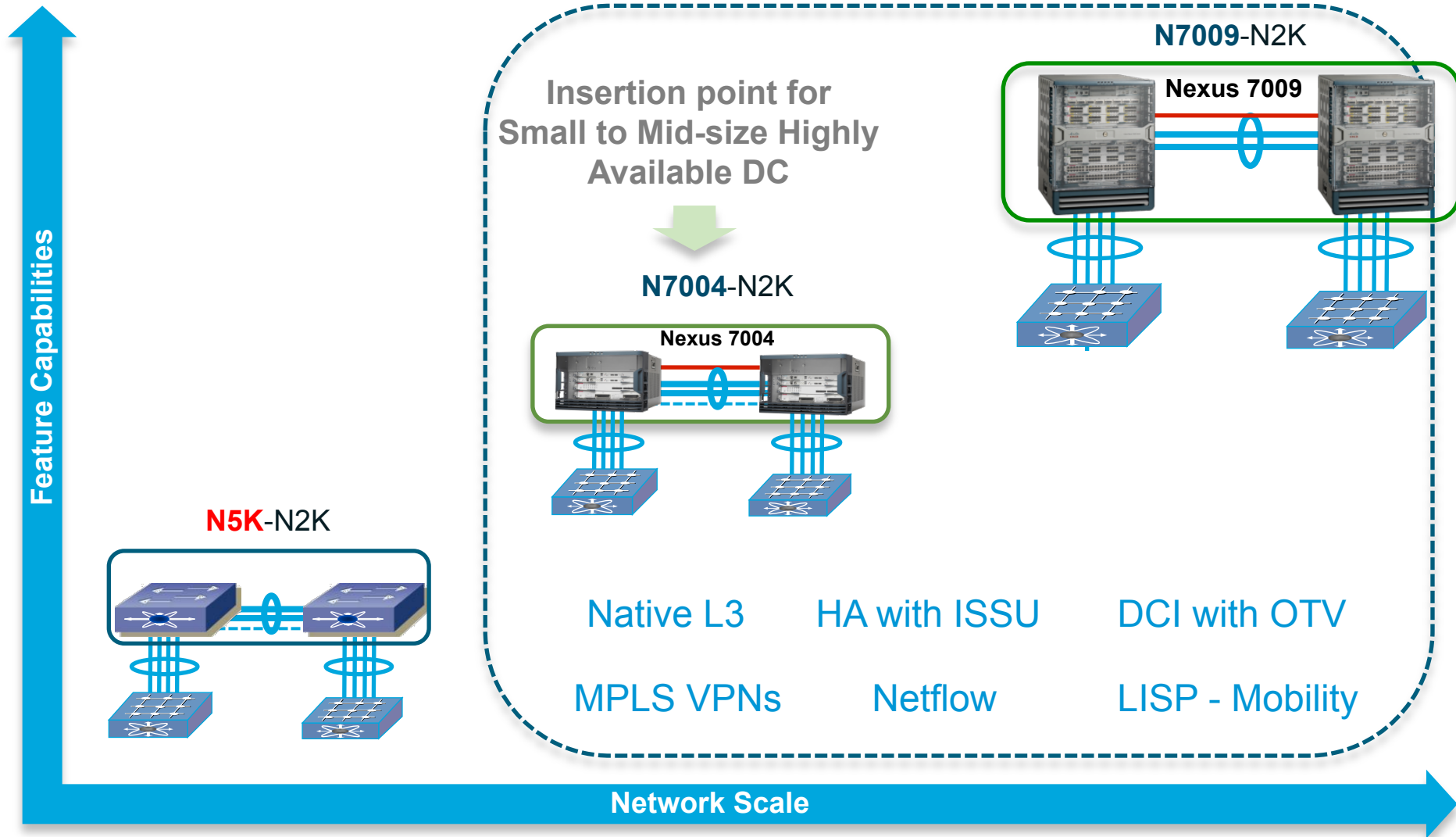
# Feature Rich Solution for SMB DCs

## Aggregation Layer Switching



# Collapsed SMB DC Designs

## Consolidation of Access and Aggregation Layer



# Enhancing the F2-Series Solution

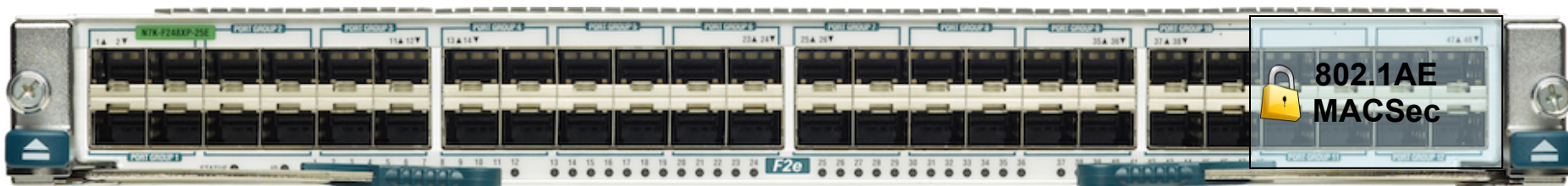
F2 Module Adoption has been very successful

## Solutions Enabled by F2E Module

1. Tighter Integration of FabricPath with Mobility Technology (LISP) and Transport Technology (MPLS) **by leveraging M-Series (M-F2e VDC interop)** <sup>1</sup>
2. Going beyond 16K MAC addresses **by leveraging M-Series (M-F2e VDC interop)** <sup>1</sup>
3. Wire rate encryption with **MacSec** on a subset of ports<sup>1</sup>
4. 1G/10GBase-T Copper Option

<sup>1</sup>Hardware Capable -  
Requires NX-OS 6.2

**F2e 48 ports 1 and 10GE (SFP+)**  
**N7K-F248XP-25E** – List Price \$44,000



Orderability – Nov 5<sup>th</sup> 2012

# F2e Incremental Features

## Features Common to F2 and F2e:

- 48 port 1 and 10GE (SFP+)
- Layer 2 and Layer 3 forwarding
- 1G/10G dual-speed on each interface
- Low Latency
- Nexus 2000 Support
- FabricPath
- IEEE 1588 PTP

## Incremental Features in F2e:

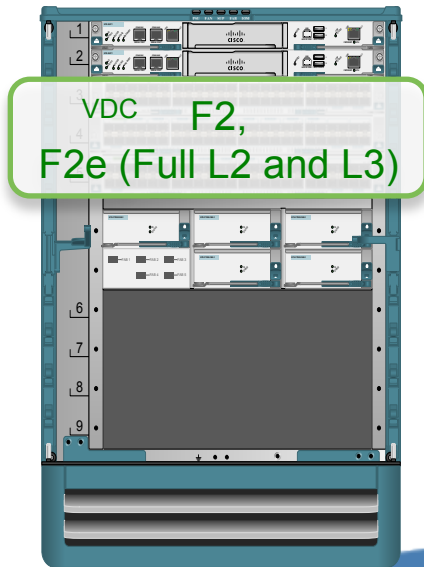
- Interoperability with M1XL/M2 (F1 Interop not planned)
- MACSec (802.1AE) \*
- Bidir PIM \*
- SVI stats \*
- IPv6 DSCP-to-Queue Mapping

\* Available in NX-OS 6.2



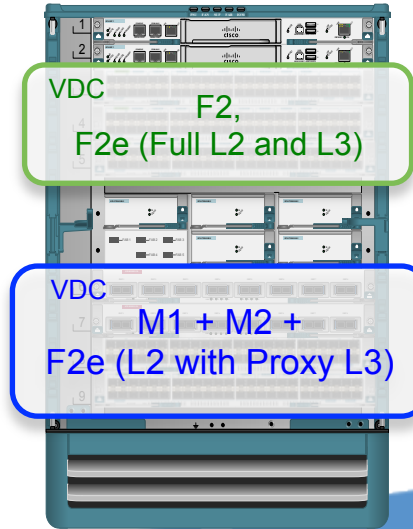
# F2e Module Interoperability

## Interoperability timeframe details



Nov 2012  
NX-OS 6.1 Edinburgh2

- F2e behaves as F2 with **Layer3 and Layer2 enabled**

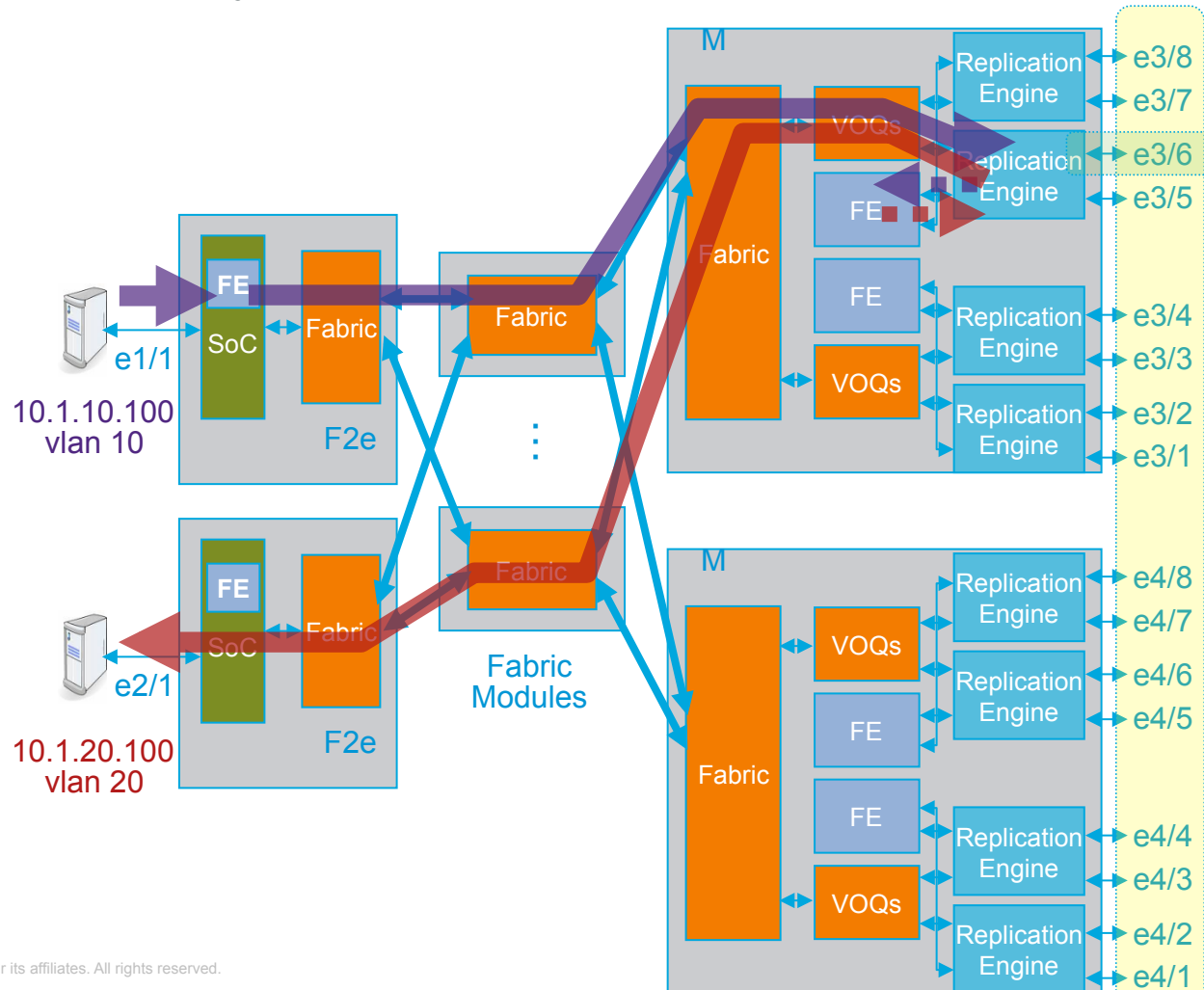


2Q CY2013  
NX-OS 6.2 Freetown

- M-Series Interoperability: **F2e in L2** mode
- M-Series provide **Proxy L3 Forwarding**
- FabricPath + LISP in same VDC
- FabricPath + MPLS in same VDC
- MacSec on F2e (8 ports)
- No F1 allowed with F2e

# Proxy L3 Forwarding for F2e-M VDC ONLY

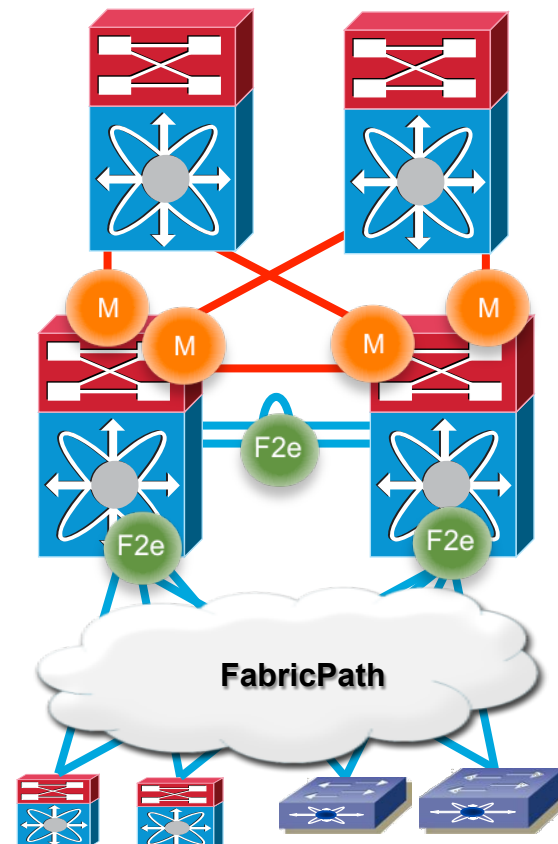
- F2e is a **fully functional L3 card**. When placed in a chassis with M-Series it operates in Layer 2 mode while leveraging the M-Series for Layer 3
- This functionality will be part of NX-OS 6.2 (a.k.a. Freetown) – Q2CY13



# F2e-M for FabricPath + LISP Designs

The only device on the market to enable this design

- F2e + M1-32XL at the aggregation in the same VDC \*
- Layer 3 Routing performed by the M-Series. F2e in Layer2 mode
- FabricPath towards the Access
- LISP to provide seamless workload mobility
- If M2 are present must be excluded from the Layer3 proxy

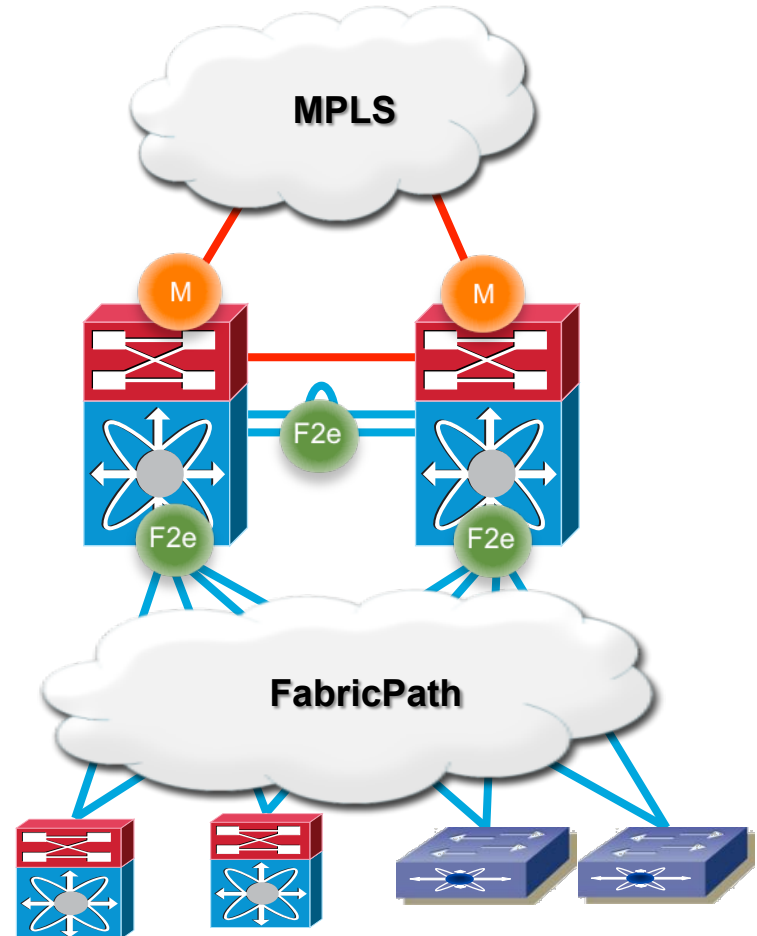


\* Requires NX-OS 6.2

# F2e-M for FabricPath + MPLS Designs

## The only device on the market to enable this design

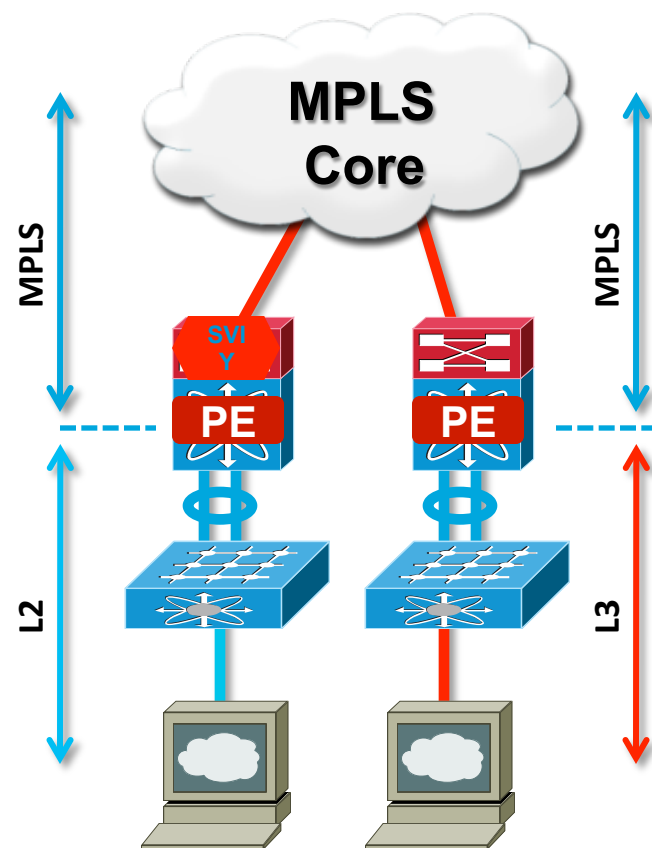
- F2e + M2 (or M1-XL) at the aggregation in the same VDC \*
- Layer 3 Routing performed by the M-Series. F2e in Layer2 mode
- FabricPath towards the Access
- MPLS towards the Core



\* Requires NX-OS 6.2

# MPLS Layer 3 VPNs and Nexus 2000 Fabric Extenders

- Large scale POD connected to MPLS
- Layer 3 port mode on FEX (default) from NX-OS 5.2
- FEX port options:
  - L2 interface / port-channel terminated by SVI in MPLS VPN
  - L3 interface / sub-interface / port-channel in MPLS VPN
- Connected routes in both cases
- Design supported today with M2 Modules (or M132) + N2K





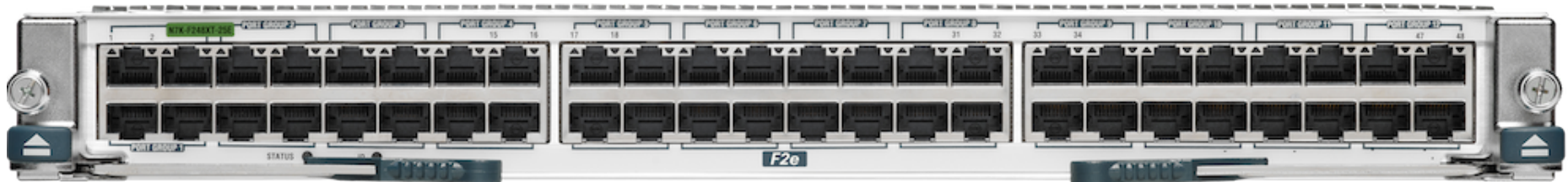
# F2e 1/10GBase-T

## Ideal Solution for EoR/MoR Design

- Density: 48x 1 and 10 Gigabit Ethernet Line Rate Ports
- Low Power Consumption: ~8W per Port
- Latency ~6usec
- Full Layer 2 and Layer 3 Support
- Energy Efficient Ethernet: ~18% additional power savings

- Ideal for EoR and MoR design
- Dual Speed for gradual migration to 10G Server Access
- FabricPath for next gen Layer 2 designs
- Flexible Layer 2 and Layer 3 Access
- Support for VDC

**F2e 48 ports 1 and 10GBaseT (RJ45)**  
**N7K-F248XT-25E** – List Price \$40,000



Orderability – Nov 5<sup>th</sup> 2012



# Scale Improvements

## With NX-OS 6.1(1)

- Improvements highlighted in red:

| Feature                                 | Supervisor 1         | Supervisor 2         | Supervisor 2E        |
|---|----------------------|----------------------|----------------------|
| VDCs                                    | 4                    | 4+1                  | 8+1                  |
| FEX                                     | 32 FEX / 1,536 Ports | 32 FEX / 1,536 Ports | 48 FEX / 2,048 Ports |
| # of OSPF v2 instances per VDC / system | 16 / 16              | 16 / 16              | 16 / 16              |
| # of OSPF v3 instances per VDC / system | 16 / 16              | 16 / 16              | 16 / 16              |
| # of EIGRP neighbors / routes           | 300 / 15,000         | 300 / 15,000         | 300 / 15,000         |

## [Refer to Nexus 7000 Scale Guide](#)

- Note:** 4+1 VDCs for Supervisor 1 is scheduled for NX-OS 6.2

# Scale Improvements

## With NX-OS 6.1(2)

- Additional scale tested FOR NX-OS 6.1(2):

Fabric Path:

| Parameter  | Supervisor 1 / 2 / 2E in 6.1 (1) | Supervisor 1/2/2e in 6.1(2) |
|------------|----------------------------------|-----------------------------|
| Switch IDs | 128                              | 256                         |
| VLANs      | 2,000                            | 4,000                       |

FHRPs:

| Parameter            | Supervisor 1 / 2 / 2E in 6.1 (1) | Supervisor 1/2 in 6.1(2) | Supervisor 2E in 6.1(2) |
|----------------------|----------------------------------|--------------------------|-------------------------|
| HSRP groups for IPv4 | 2,000                            | 2,000                    | 3,000                   |

[Refer to Nexus 7000 Scale Guide](#)

# New SBUN Promotional Bundles

SBUN  
5 Most Popular Licenses

Chassis SBUN  
All N7K Licenses  
(except FCoE)

|                 | N7K-SBUN-P1 | N7K-C70XX-SBUN-P1 |                   |                   |
|-----------------|-------------|-------------------|-------------------|-------------------|
| N7K-LAN1K9      | ✓           | ✓                 |                   |                   |
| N7K-ADV1K9      | ✓           | ✓                 |                   |                   |
| N7K-TRS1K9      | ✓           | ✓                 |                   |                   |
| N7K-EL21K9      | ✓           | ✓                 |                   |                   |
| DCNM-N7K-K9     | ✓           | ✓                 |                   |                   |
| N7K-MPLS1K9     |             | ✓                 |                   |                   |
| N7K-C701X-XL    |             | ✓                 |                   |                   |
| N7K-SAN1K9      |             | ✓                 |                   |                   |
| DCNM-SAN-N7K-K9 |             | ✓                 |                   |                   |
|                 | N7K-SBUN-P1 | N7K-C7009-SBUN-P1 | N7K-C7010-SBUN-P1 | N7K-C7018-SBUN-P1 |
| List Price      | \$80,000    | \$191,000         | \$191,000         | \$216,000         |
| Bundle Price    | \$50,000    | \$75,000          | \$75,000          | \$85,000          |
| Savings %       | 38%         | 61%               | 61%               | 61%               |

# Details for SBUN Promotional PIDs

|                     | N7K-SBUN-P1     | N7K-C7009-SBUN-P1 | N7K-C7010-SBUN-P1 | N7K-C7018-SBUN-P1 |
|---------------------|-----------------|-------------------|-------------------|-------------------|
| N7K-LAN1K9          | \$15,000        | \$15,000          | \$15,000          | \$15,000          |
| N7K-ADV1K9          | \$20,000        | \$20,000          | \$20,000          | \$20,000          |
| N7K-TRS1K9          | \$25,000        | \$25,000          | \$25,000          | \$25,000          |
| N7K-EL21K9          | \$25,000        | \$25,000          | \$25,000          | \$25,000          |
| DCNM-N7K-K9         | \$10,000        | \$10,000          | \$10,000          | \$10,000          |
| N7K-MPLS1K9         |                 | \$25,000          | \$25,000          | \$25,000          |
| N7K-C701?-XL        |                 | \$50,000          | \$50,000          | \$75,000          |
| N7K-SAN1K9          |                 | \$15,000          | \$15,000          | \$15,000          |
| DCNM-SAN-N7K-K9     |                 | \$21,000          | \$21,000          | \$21,000          |
| <b>List Price</b>   | <b>\$95,000</b> | <b>\$206,000</b>  | <b>\$206,000</b>  | <b>\$231,000</b>  |
| <b>Bundle Price</b> | <b>\$50,000</b> | <b>\$75,000</b>   | <b>\$75,000</b>   | <b>\$85,000</b>   |
| <b>Savings \$</b>   | <b>\$45,000</b> | <b>\$131,000</b>  | <b>\$131,000</b>  | <b>\$146,000</b>  |
| <b>Savings %</b>    | <b>47%</b>      | <b>64%</b>        | <b>64%</b>        | <b>63%</b>        |

# Promotional SBUN PIDs

For 7009, 7010, 7018 Chassis

| Part Number       | Description   | List Price |
|-------------------|---|------------|
| N7K-SBUN-P1       | N7K Software License Bundle – Limited Time Promotion. Includes (LAN, ADV, DCNM, EL2, TRS) licenses                          | \$50,000   |
| N7K-C7009-SBUN-P1 | N7K Software License Bundle – Limited Time Promotion. Includes (LAN, ADV, DCNM, EL2, TRS, MPLS, SAN, XL, DCNM-SAN) licenses | \$75,000   |
| N7K-C7010-SBUN-P1 | N7K Software License Bundle – Limited Time Promotion. Includes (LAN, ADV, DCNM, EL2, TRS, MPLS, SAN, XL, DCNM-SAN) licenses | \$75,000   |
| N7K-C7018-SBUN-P1 | N7K Software License Bundle – Limited Time Promotion. Includes (LAN, ADV, DCNM, EL2, TRS, MPLS, SAN, XL, DCNM-SAN) licenses | \$85,000   |

For 7004 Chassis

| Part Number       | Description   | List Price |
|-------------------|---|------------|
| N7K-C7004-5LSB-P1 | 7004 Software License Bundle – Limited Time Promotion. Includes (LAN, ADV, DCNM, EL2, TRS) licenses                         | \$24,000   |
| N7K-C7004-SBUN-P1 | N7K Software License Bundle – Limited Time Promotion. Includes (LAN, ADV, DCNM, EL2, TRS, MPLS, SAN, XL, DCNM-SAN) licenses | \$34,000   |