Building network core with Cisco Nexus 7700

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Agenda

• Transitioning to Policy driven architecture in Campus
• Nexus 7K in Modular Campus Core
• Nexus 7700 Overview
• Why Nexus 7700 M3 I/O module in Campus Core
• Nexus 7K Hardware & Software Roadmap
Enterprise IT Today

VLAN Based | Disparate Networks | Complex Provisioning | Not Scalable
SD-Access: Campus fabric that extends from edge to cloud

- Users & Devices
- Building Devices
- Private & Public Cloud Resources
- Agile Fabric Services
- Analytics
- APP
- Lighting
- BMS
- WAN
- Remote
SD-Access Automation

DNA Dashboard

- Identity, Context & Security Policy
- Network Service Provisioning
- Network & Security Analytics Applications

DNA Automation

PROVISION
- Wireless
- LAN

MONITOR
- WAN
- Cloud

TROUBLESHOOT
- Remote Access

Cisco Connect
Portorož, Slovenija

15. – 16. marec 2017
SD-Access Under The Hood

- Identity and Security Policy
- Fabric Overlay (VXLAN)
- Network Controller
- Data-Platform
- Control-Plane (LISP)
- Fabric Underlay

Additional Technologies:
- APIC-EM
- Host DB
- Analytics

Key Concepts:
- Standards-Based Technologies
- Technology Convergence
- End-end Architecture
Simplified Campus Positioning for FY17

Lead with Catalyst 3K for Campus Access

Lead with Catalyst 3K for Campus Aggregation and Fixed Core

Lead with Nexus 7K for SD-Access, MPLS, Deep buffers
Lead with N9K for Packet Pushing Core
Fabric border-node

Fabric Core Intermediate-nodes

Fabric Aggregation Intermediate-node

Fabric edge-node:

Fabric border-nodes Options:
- Nexus 7700 with M3 + 7.3 NX-OS

Fabric Core/Agg Options:
- CAT3K

Fabric edge-nodes Options:
- CAT3K
Why N7K in Campus Core?

**Highly Scalable Architecture**
- High Port Density
- Redundant Fabric Architecture
- Up to 83 Tbps of Switching Capacity

**N7K Technologies**
- Flexible pipeline capabilities
- Virtualization (VDC & VPC)
- High Availability (ISSU, GIR)

**Better Design Options**
- SD-Access Border
- Collapsed Core & Aggregation
- Common Core for DC & Campus

11K+ customers and 71K+ chassis shipped
Cisco Nexus® 7700
10- Slot
Cisco Nexus® 7700
18-Slot
Cisco Nexus® 7700
6-Slot
Cisco Nexus® 7700
2-Slot

Universal Core Platform supporting multiple fabric technologies

**Hardware**
- Multiple Form factors
- Highly Available Architecture
- Fabric, Sup & Power
- Redundancy
- Online Insertion & Removal
- Best in Class Scale & Performance
- Dense 10G/40G/100G Densities
- 1.32Tbps per LC slot
- M & F Series of LCs
- Front to Back Airflow
- FIPS & Common Criteria certified

**Advanced NX-OS**
- Modular OS Architecture
- 64-bit kernel
- Support for ISSU
- Graceful Insertion & Removal
- Support for Patching individual Modules
- Up to 8 Virtual Switches per H/w with Virtual Device Context (VDC)
- Multicast, VRF, WCCP, PBR, MPLS, VPLS, LISP, IPv6, SGT/TrustSec, Buffering, TCAM Scale

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**Features & Scale**

<table>
<thead>
<tr>
<th>Feature</th>
<th>Nexus N7700</th>
<th>Catalyst 6800</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bandwidth per slot</td>
<td>1.32T</td>
<td>880G</td>
</tr>
<tr>
<td>MAC Address Table</td>
<td>128K (M3)</td>
<td>128K</td>
</tr>
<tr>
<td>IPv4 FIB TCAM</td>
<td>2M (M3)</td>
<td>1M (XL) / 256K</td>
</tr>
<tr>
<td>IPv6 FIB TCAM</td>
<td>1M (M3)</td>
<td>512K (XL) / 128K</td>
</tr>
<tr>
<td>IPv4 MFIB TCAM</td>
<td>64K (M3)</td>
<td>128K (XL) / 64K</td>
</tr>
<tr>
<td>QoS / Security ACL TCAM</td>
<td>128K (M3)</td>
<td>128K (XL) / 64K</td>
</tr>
<tr>
<td>IPv4 FIB TCAM</td>
<td>1M (XL) / 512K (per)</td>
<td></td>
</tr>
<tr>
<td>IPv6 FIB TCAM</td>
<td>512K (XL) / 128K (per)</td>
<td></td>
</tr>
<tr>
<td>IPv4 MFIB TCAM</td>
<td>128K (XL) / 64K</td>
<td></td>
</tr>
<tr>
<td>Flexible NetFlow (FnF)</td>
<td>Sampled only</td>
<td>512K (per)</td>
</tr>
<tr>
<td>40G Buffer Capacity</td>
<td>M3: 125MB / 2MB</td>
<td>5MB / 1GB (2X in Perf. Mode)</td>
</tr>
<tr>
<td>100G Buffer Capacity</td>
<td>M3: 375MB / 4MB</td>
<td>N/A</td>
</tr>
<tr>
<td>LISP – L2/L3</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Cross Domain Connectivity</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>VRF-Aware LISP</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>VXLAN</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Scalable Group Tag</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>ACL based on SGT (SGACL)</td>
<td>16K</td>
<td>32K</td>
</tr>
<tr>
<td>SGT Exchange (SXP)</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>MACSEC Encryption</td>
<td>Yes</td>
<td>Yes</td>
</tr>
</tbody>
</table>
Nexus 7700 Platform Overview
Enterprise class Ethernet switches designed to deliver high performance, high availability, system scale, and investment protection.

Designed for wide range of deployments, focused on feature-rich 10G/40G/100G density, scale and performance.
Nexus 7700 Chassis Family

True Front to back Air-flow for CampusDeployments

Nexus 7718

Nexus 7710

Nexus 7706

Nexus 7702

N77-C7718

N77-C7710

N77-C7706

N77-C7702
Supervisor Engine 2E

- System supervisor engines providing control plane and management functions
- **High performance**, Two quad-core 2.1GHz CPU with 32GB DRAM
- Connects to fabric via 1G inband interface. *The switching fabric does not reside on the CPU, hence providing true data plane and control plane separation.*
- Interfaces with I/O modules via 1G switched EOBC. Every I/O module has a dedicated link to the SUP.
- Onboard central arbiter ASIC Controls access to fabric bandwidth via dedicated arbitration path to I/O modules
Crossbar Switch Fabric Modules

- Provide interconnection of I/O modules
- Nexus 7700 fabrics based on Fabric 2 ASIC
- Each installed fabric increases available per-payload slot bandwidth

<table>
<thead>
<tr>
<th>Fabric Module</th>
<th>Supported Chassis</th>
<th>Per-fabric module bandwidth</th>
<th>Max fabric modules</th>
<th>Total bandwidth per slot</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nexus <strong>7700</strong> Fabric 2</td>
<td>7706 / 7710 / 7718</td>
<td>220Gbps per slot</td>
<td>6</td>
<td>1.32Tbps per slot</td>
</tr>
</tbody>
</table>

- Different I/O modules leverage different amount of available fabric bandwidth
- Access to fabric bandwidth controlled using QOS-aware central arbitration with VOQ
**I/O Module Capacity – Nexus 7700**

**1320Gbps**

One fabric:
- *Any port* can pass traffic to *any other port* in VDC

Three fabrics:
- 480G M3 10G module has maximum bandwidth

Five fabrics:
- 960G M3 40G module has maximum bandwidth

Six fabrics: 1.2T M3 100G module has maximum bandwidth
All M3 modules based on these hardware components:

- 1G/10G/40G/100G SOC-based forwarding engine ASIC
- External FIB TCAM memory ASIC
- External ACL TCAM memory ASIC
- External packet buffer memory ASIC
- Third-generation crossbar fabric ASIC
- Arbiter ASIC
- 10G Fabric Services Accelerator (FSA) CPU
Cisco Nexus 7000 M3 Series Modules

256-bit AES MACsec
- 48 1/10 GE Ports (SFP+)
- 24 40 GE Ports (QSFP)
- 12 100 GE Ports (QSFP28)
On all ports/speeds

Deeper Buffers
- 31.25MB per 10GE Port
- 125MB per 40GE Port
- 350MB per 100GE Port

Larger Tables
- 2M* FIB Entries
- 384K* MAC Entries
- 128K ACL/QOS Entries

New Cisco M3 ASIC
- VXLAN, OTV, LISP*, MPLS
- FabricPath*, Classic L2/L3
- Cisco TrustSec – SGT, SXP, SGACLs

Advanced Parser
- Layer 2 to Layer 2 Gateway
- GTP Hashing

Multi-Core Fabric Services Accelerator (FSA)
Enhanced Performance for BFD, Netflow, and Other Distributed Fabric Services

Compatible with Supervisor 2/2E and Fabric 2 Modules | VDC Interoperability with F3 or M2 I/O Modules
M3 ASIC – Proudly Designed at Cisco
ASIC Engineering at its best

- M3 ASIC brings higher port density:
  - 24 x 10G ports/ASIC
  - 6 x 40G ports/ASIC
  - 2 x 100G ports/ASIC

<table>
<thead>
<tr>
<th></th>
<th>M3-Series</th>
<th>Improvement over F3</th>
<th>Improvement over M2</th>
</tr>
</thead>
<tbody>
<tr>
<td>MAC Table</td>
<td>384K</td>
<td>600%</td>
<td>300%</td>
</tr>
<tr>
<td>FIB Table</td>
<td>2M for IPv4 or 1M for IPv6</td>
<td>3000%</td>
<td>100%</td>
</tr>
<tr>
<td>Adjacency Table</td>
<td>2M</td>
<td>3000%</td>
<td>100%</td>
</tr>
<tr>
<td>ACL Table</td>
<td>128K</td>
<td>400%</td>
<td>Same</td>
</tr>
<tr>
<td>Buffers / ASIC</td>
<td>750MB</td>
<td>Bigger Buffers</td>
<td>Bigger Buffers</td>
</tr>
</tbody>
</table>
Nexus 7700 M3 24-Port 40G Module Architecture

Front Panel Ports (QSFP+)

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24

10G FSA
CPU

to SoC 4
to SOC 3
to ARB

Fabric ASIC

6 X 40G
SoC 1

6 X 40G
SoC 2

Fabric ASIC

6 X 40G
SoC 3

6 X 40G
SoC 4

Arbitration
Aggregator

to SoC 1
x4

to FSA
CPU

to FSA
CPU

TCAM
Buffer

TCAM
Buffer

TCAM
Buffer

TCAM
Buffer

To Fabric Modules

To Central Arbiters
Nexus 7700 M3 I/O Modules

N77-M348PX-23L / N77-M324FQ-25L/N77-M312CQ-26L

- 10G / 40G / 100G M3 I/O modules
- Share common hardware architecture
- SD-Access Border Capability (SGT-EPG Translation*)
- Layer 2/Layer 3 forwarding with L3/L4 services (ACL/QOS) and advanced features (MPLS/LISP/SGT/GRE/VXLAN etc.)

<table>
<thead>
<tr>
<th>Module</th>
<th>Port Density</th>
<th>Optics</th>
<th>Bandwidth</th>
</tr>
</thead>
<tbody>
<tr>
<td>M3 10G</td>
<td>48 x 1/10G</td>
<td>SFP+</td>
<td>480G</td>
</tr>
<tr>
<td>M3 40G</td>
<td>24 x 40G (or up to 76 x 10G + 5 x 40G via breakout)</td>
<td>QSFP+</td>
<td>960G</td>
</tr>
<tr>
<td>M3 100G</td>
<td>12 x 100G (FCS Dec 2016)</td>
<td>QSFP28</td>
<td>1.2T</td>
</tr>
</tbody>
</table>
Nexus 7700 M3 48-Port 1G/10G Module

- 48-port 1G/10G SFP/SFP+ module
- Wire-rate L2/L3 IPv4/IPv6
  - 480G/slot
  - 6µsec latency cross-fabric
- Buffering: 31.25MB VOQ/port

- Feature Rich:
  - Multi-protocol – Classic Ethernet, FabricPath *, DCB*
  - OTV, MPLS, LISP*, GRE, VXLAN
  - 2M (1M@FCS) FIB TCAM/ 768K adjacency table
  - 384K (192K@FCS) MAC address table
  - Fabric Services Accelerator (FSA)
  - All 48 ports with 802.1AE LinkSec support
  - GTP hashing

*N* Not all the features will be available at FCS
Nexus 7700 M3 24-Port 40G Module

- Nexus 7700 24-port 40G QSFP+ module
- Wire-rate L2/L3 IPv4/IPv6
  - 960G / 480G per slot
  - ~6µsec latency cross-fabric
- Buffering: 125MB VOQ per 40G port
- Breakout cable support *

- Feature Rich:
  - Multi-protocol – Classic Ethernet, FabricPath *, DCB*
  - OTV, MPLS, LISP*, GRE, VXLAN
  - 2M (1M@FCS) FIB TCAM/ 768K adjacency table
  - 384K (192K@FCS) MAC address table
  - Fabric Services Accelerator (FSA)
  - All 24 ports with 802.1AE LinkSec support
  - GTP hashing

* Not all the features will be available at FCS
Nexus 7700 M3 12-Port 100G Module **

- Nexus 7700 12-port 100G QSFP28 module
- Wire-rate L2/L3 IPv4/IPv6
  - 1.2T / 600G per slot
  - ~6µsec latency cross-fabric
- Buffering: 375MB VOQ per 100G port
- Breakout cable support *

- Feature Rich:
  - Multi-protocol – Classic Ethernet, FabricPath *, DCB*
  - OTV, MPLS, LISP*, GRE, VXLAN
  - 2M (1M@FCS) FIB TCAM/ 768K adjacency table
  - 384K (192K@FCS) MAC address table
  - Fabric Services Accelerator (FSA)
  - All 12 ports with 802.1AE LinkSec support
  - GTP hashing

** Target FCS end of Dec 2016
*
Not all the features will be available at FCS
Nexus 7700 M3 12-Port 100G I/O Module

QSFP28 Optics for 100G connectivity
QSFP+ Optics for 40G connectivity
Approximately 6µsec cross-fabric latency
M3 Modules- 40G Breakout to 10G

- Also refers to physically separating 10G channels
  - Direct-attach copper breakout cables
  - Fiber breakout cables (not included with optics transceivers)

- Breakout per-port, not per linecard. No need to reload

Seamless 10G aggregation into dense 40G/100G ports
Nexus 7K with M3 in Campus Core - Key differentiators
What are Virtual Device Contexts (VDCs)?

What is a switch?

*Control plane, Data plane and Management plane*

VDCs enable the virtualization of these planes and hardware resources
Enables collapsing of multiple logical networks into single physical infrastructure
Helps scale physical resources of device
Appropriate for typical silo designs such as:

- Production, Dev, Test
- Intranet, DMZ, Extranet
- Organization A, B, C
- Application A, B, C
- Customer A, B, C
Virtual Device Contexts (VDCs)

- **VDC**—Virtual Device Context
  - Flexible separation/distribution of **Software Components**
  - Flexible separation/distribution of **Hardware Resources**
  - Securely delineated **Administrative Contexts**

- **VDCs are not**…
  - The ability to run different OS levels on the same box at the same time
  - based on a **hypervisor** model; there is a single 'infrastructure' layer that handles h/w programming…
MPLS and VDCs

Key considerations

- Secure and flexible way of software process partitioning
- All MPLS features are VDC aware
- Each VDC operates as separate MPLS router (LSR):
  - No internal communication between VDCs
  - Multiple logical P / PE routers can be configured
  - Each VDC has independent label space for prefix labels: LDP, VPN, TE
  - Note: per-VRF VPN labels - globally significant for whole chassis, all others are locally significant to VDC
Supervisor VDCs Limitations?

- Supervisor 1 – Four VDCs
  - May require 8GB of RAM
- Supervisor 2 – Four VDCs + 1 Admin VDC (4+1)*
- Supervisor 2E – Eight VDCs + 1 Admin VDC (8+1)*
  - VDCs beyond 4 require additional license
  - N7K-VDC1K9 (increments VDCs +4)

*SUP2 and SUP2E Require NX-OS 6.1
VDC Interface Allocation – M3 Modules

- Allocation on port-group boundaries – aligns ASIC resources to VDCs
- Port-group size varies depending on module type

M3 10G
24-port port-group

M3 40G
6-port port-group

M3 100G
2-port port-group

VDC 1
VDC 2
VDC 3
VDC 4
VDC 5
VDC 6
N7700 Device Virtualization with VDC’s
Use Case: Internet Edge/DMZ/Core

- Option to meet multiple needs – VDC with high routing scale (XL), DMZ and Core
- Maintains security model with logical separation
Virtual Port-Channel (vPC) on N7700

- vPC provides the same goals as VSS, but still **different** technologies.
- Utilizes all available uplink bandwidth
- Allows the creation of resilient Layer 2 topologies based on link aggregation
- Eliminates the dependence of Spanning Tree Protocol in Layer 2 access/distribution layer(s)
- Simplifies network design
- Improves convergence time when a single device fails
- Reduces Capex and Opex
## vPC and VSS

<table>
<thead>
<tr>
<th>Capability</th>
<th>vPC</th>
<th>VSS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Multi-Chassis Port-Channel</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Loop-free Topology (no blocking ports)</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>STP as a &quot;fail-safe&quot;protocol only</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td><strong>Control Plane</strong></td>
<td>Two Independent Nodes, both active</td>
<td>Single Logical Node</td>
</tr>
<tr>
<td>Support for Layer 3 Port-Channel</td>
<td>No</td>
<td>Yes</td>
</tr>
<tr>
<td>Switch Redundancy (SUP Failover)</td>
<td>Intra-chassis</td>
<td>Intra/Inter-Chassis</td>
</tr>
<tr>
<td>Control Plane Protocols</td>
<td>Instances per Node</td>
<td>Single instance</td>
</tr>
<tr>
<td>Switch Configuration</td>
<td>Common Specific Configs (w/ consistency checker)</td>
<td>Combined Configs</td>
</tr>
<tr>
<td>Maximum Physical Nodes</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>Non Disruptive ISSU Support</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>Inter-switch Link Hardware</td>
<td>All line cards*</td>
<td>Selected 10G Line Cards</td>
</tr>
</tbody>
</table>
N7700 with M3 in Software Defined Access (SDA) as Fabric Border

**FABRIC BORDER:**

- A Fabric Border Node in SDA connects traditional L3 networks and/or different Fabric domains to the local domain. It is where different domains exchange Endpoint reachability, context (VRF, SGT) and policy information.

**Design requirements:**

- High performance
- 10G and 40G Mix
- Full L3 Feature Set
- HA features (GIR, ISSU, SMU)

**Topology Description:**

- Mix of 10G and 40G southbound
- L3 Link’s Downstream and Upstream
- MPLS/IP Northbound
Design requirements:
- High performance
- 10G and 40G Mix
- Full L2 and L3 Feature Set
- HA features (GIR, ISSU)

Topology Description:
- Mix of 10G and 40G southbound
- L3 Link’s Downstream
- MPLS/IP Northbound

Scale Attributes:
- 2M FIB Table size
- 128K ACL Entries
- 64K SGT Entries
- 31.25MB of Buffer per port for 10G
- 125MB of Buffer per port for 40G
Design requirements:

- High performance
- 10G and 40G Mix
- Full L2 and L3 Feature Set
- HA features (GIR, ISSU)

Topology Description:

- Mix of 10G and 40G southbound
- L3 Link’s Downstream
- MPLS/IP Northbound
- vPC Southbound
- vPC Peer Link

Scale Attributes:

- 384K MAC Entries
- 128K ACL Entries
- 31.25MB of Buffer per port for 10G
- 125MB of Buffer per port for 40G
N7700 with M3 in Shared Core

Design requirements:
- High performance
- 10G and 40G Mix
- Full L3 Feature Set
- HA features (GIR, ISSU)

Topology Description:
- Mix of 10G and 40G southbound
- L3 Link’s Downstream and upstream
- MPLS/IP Northbound
- 40G to 10G Breakout

Scale Attributes:
- 2M FIB Table size
- 128K ACL Entries
- 64K SGT Entries
- 31.25MB of Buffer per port for 10G
- 125MB of Buffer per port for 40G
Nexus 7K Roadmap
N7K FY’17 Investment Strategy

Data Center Interconnect
- ACI
- Programmable Fabric
- Traditonal

DC & Campus Core
- Wan
- VXLAN

Cross-Domain Policy Integration
- Campus/Branch Policy Domain
- User Group
- App Group
- Data Center Policy Domain

DNA Campus
Nexus 7000
ACI Data Center

Cross-Domain Policy Integration
- Nexus 7000
- Data Center
- WAN

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Nexus 7K Modular Series

Nexus 7700 M3 10G & 40G I/O Modules
- Large Table Size & Packet Buffers
- 2M FIB (1M @ FCS), 128K ACL/QoS
- 384K MAC (128K @ FCS)
- MACSEC 256-bit AES
- Superset of all Features on previous M & F Cards

- 24x 40G QSFP Ports
- 125MB Buffer per 40G/port

48x 1/10G SFP+ Ports
31.25MB Buffer per 10G port

Nexus 7700 & 7004
High Voltage AC/DC Power Supply
- AC Input: 110V to 305V
- DC Input: 192V to 400V
- Output: 3500W

Nexus 7700 M3 100G I/O Modules
- 12x 100G QSFP28 Ports
- 375MB per 100G port

Nexus 7700 M3 10G & 40G I/O Modules
- 24x 40G QSFP Ports
- 125MB Buffer per 40G/port

48x 1/10G SFP+ Ports
31.25MB Buffer per 10G port

Next Generation
- Nexus 7700 F4 I/O Modules
- 36-Port 40G
- 30-Port 100G
- Nexus 7700 Fabric-3 Modules
- Nexus 7700 Supervisor 3E Modules

* Concept Commit
### Campus Core – Speeds & Feeds/Scale

#### Platform Options

<table>
<thead>
<tr>
<th>10G Density (per LC Slot)</th>
<th>Catalyst 6800 - Non-XL</th>
<th>Nexus 7700 – F4**</th>
<th>Catalyst 6800 - XL</th>
<th>Nexus 7700 – M3</th>
</tr>
</thead>
<tbody>
<tr>
<td>32 (over-subscribed 1:2)</td>
<td>32</td>
<td>48</td>
<td>32</td>
<td>48</td>
</tr>
<tr>
<td>40G Density</td>
<td>24 (current) /44 (Future) per Chassis</td>
<td>36</td>
<td>24 (current) /44 (Future) per Chassis</td>
<td>24</td>
</tr>
<tr>
<td>100G Density</td>
<td>-</td>
<td>30</td>
<td>-</td>
<td>12</td>
</tr>
</tbody>
</table>

| MAC Address Table | 128K | 384K | 128K | 384K |
| IPv4 FIB TCAM     | 256K | 96K  | 1M   | 2M*  |
| IPv6 FIB TCAM     | 128K | 64K  | 512K | 1M*  |
| IPv4 MFIB TCAM    | 64K  | 64K  | 128K | 64K  |
| QoS / Security ACL TCAM | 64K/48K | 32K | 128K/192K | 128K |
| L3 Interfaces (SVI, Routed, Sub.Int) | 8K | 8K | 8K | 4K |
| Flexible NetFlow (FnF) | 512K | Sampled Netflow | 1M | Sampled Netflow |

- Based on trade-off between Port-density, & Resource Scale requirements, following options are available:
  - Cat6807- nonXL
  - N77xx-F4**
  - Cat6807-XL
  - N77xx-M3
NX-OS Software Roadmap
### Campus Core Features planned in Beverley Hills

<table>
<thead>
<tr>
<th>SD-Access</th>
<th>Campus Core</th>
</tr>
</thead>
<tbody>
<tr>
<td>• VRF Leaking (MSMR based)</td>
<td>• EoMPLS</td>
</tr>
<tr>
<td>• DHCP v4/v6 relay (inter and intra VRF)</td>
<td>• VPLS</td>
</tr>
<tr>
<td>• ACI Integration</td>
<td>• FnF export SGT &amp; VPN id</td>
</tr>
<tr>
<td>• PnP Support</td>
<td>• QoS based on SGT</td>
</tr>
<tr>
<td>• WCCP Support</td>
<td>• PBR based on SGT</td>
</tr>
<tr>
<td>• IPv6 EID support for unicast and multicast</td>
<td>• Multicast QoS</td>
</tr>
<tr>
<td>• Dual Homing PxTR with vPC</td>
<td>• Microflow policing</td>
</tr>
<tr>
<td></td>
<td>• Queueing</td>
</tr>
<tr>
<td></td>
<td>• IPFIX Export format</td>
</tr>
</tbody>
</table>
Minimum and Suggested Software for Nexus 7000


Minimum and Suggested Cisco NX-OS Releases for Cisco Nexus 7000 Series Switches

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Date: May 25, 2016

This document lists the minimum and suggested Cisco NX-OS software releases for use with Cisco Nexus 7000 Series switches. If you are running a release prior to the minimum suggested, Cisco advises upgrading the image to the suggested release. These suggestions are general and should not replace environment specific design review efforts and should not override Advanced Services suggested releases if employed.

General Suggestion for New Deployments
For new deployments Cisco suggests using Cisco NX-OS software release 6.2(16).

General Suggestion for Existing Deployments
For existing deployments, Cisco suggests using Cisco NX-OS software releases listed in the table below:

Table 1 Existing Deployments

<table>
<thead>
<tr>
<th>Release Train</th>
<th>Minimum Release</th>
<th>Suggested Release</th>
</tr>
</thead>
<tbody>
<tr>
<td>NX-OS 4.2</td>
<td>5.2(9a)(1)</td>
<td>6.2(16)</td>
</tr>
<tr>
<td>NX-OS 5.0, 5.1</td>
<td>5.2(9a)(1)</td>
<td>6.2(16)</td>
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</tr>
<tr>
<td>NX-OS 6.0, 6.1</td>
<td>6.1.5a(1)</td>
<td>6.2(16)</td>
</tr>
<tr>
<td>NX-OS 6.2</td>
<td>6.2.10</td>
<td>6.2(16)</td>
</tr>
</tbody>
</table>
Cisco Recommended Release – Nexus 7000

Download Software

Nexus 7700 10-Slot Switch

<table>
<thead>
<tr>
<th>Release</th>
<th>Release Date</th>
<th>Size</th>
</tr>
</thead>
<tbody>
<tr>
<td>6.2(16)</td>
<td>01-APR-2016</td>
<td>291.25 MB</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>No Payload Encryption (no CT8) Nexus 7700 Supervisor 2 System Software Image for 6.2(16) SUP2E-NPE n7700-s2-dk9-npe.6.2.16.bin</td>
<td>01-APR-2016</td>
<td>291.25 MB</td>
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<tr>
<td>Nexus 7700 Supervisor 2 System Software Image for 6.2(16) SUP2E n7700-s2-dk9.6.2.16.bin</td>
<td>01-APR-2016</td>
<td>291.25 MB</td>
</tr>
</tbody>
</table>

Recommended Release has a Star
Why N7700 with M3 in Campus Core

• Scale and Density Considerations
  • High Port Density
  • High Scale
  • Big Buffers
  • 40G to 10G Break-out
  • QSFP BiDir support

• Features Considerations
  • Device Virtualization with VDC’s
  • MPLS on N7700
  • Virtual port Channel (vPC- Multi-chassis Ether channel) on N7700
  • High Availability on N7700 (ISSU,GIR,Patching)

• Design Considerations
  • N7700 in SDA as Fabric Border
  • N7700 in Core layer
  • N7700 in Collapsed Core/Aggregation Layer
  • N7700 in Shared Core
The Key Takeaways of this presentation were:

- Nexus 7700 can deliver feature rich services with high system scale, performance, and investment protection.

- M3 is a powerful and compelling innovation for the Nexus 7700 family. M3 provides high speed, high port density options for next generation campus designs.

- Nexus 7700 with M3 supports existing Classical Ethernet, MPLS and fabric architectures today

- It provides a foundation for next-generation networking via Software Defined Access, VXLAN and CTS.