



The bridge to possible

# NCS 5500 / 5700

High Scale Aggregation Routers for Today's Critical Communication Networks

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MIG Product Management

May 10, 2022

Tejas Lad



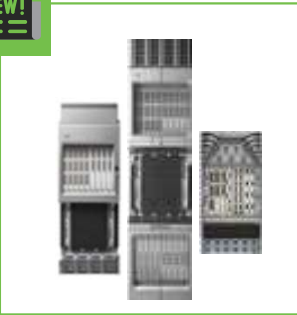

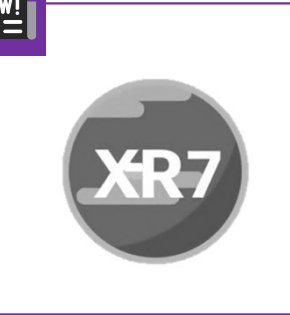
MIG Technical Marketing



# Agenda

- 1 MIG Portfolio Overview
- 2 New Hardware Introduction
- 3 Use Cases
- 4 Summary

# MIG Portfolio Overview

# MIG Routing & Optical Portfolio

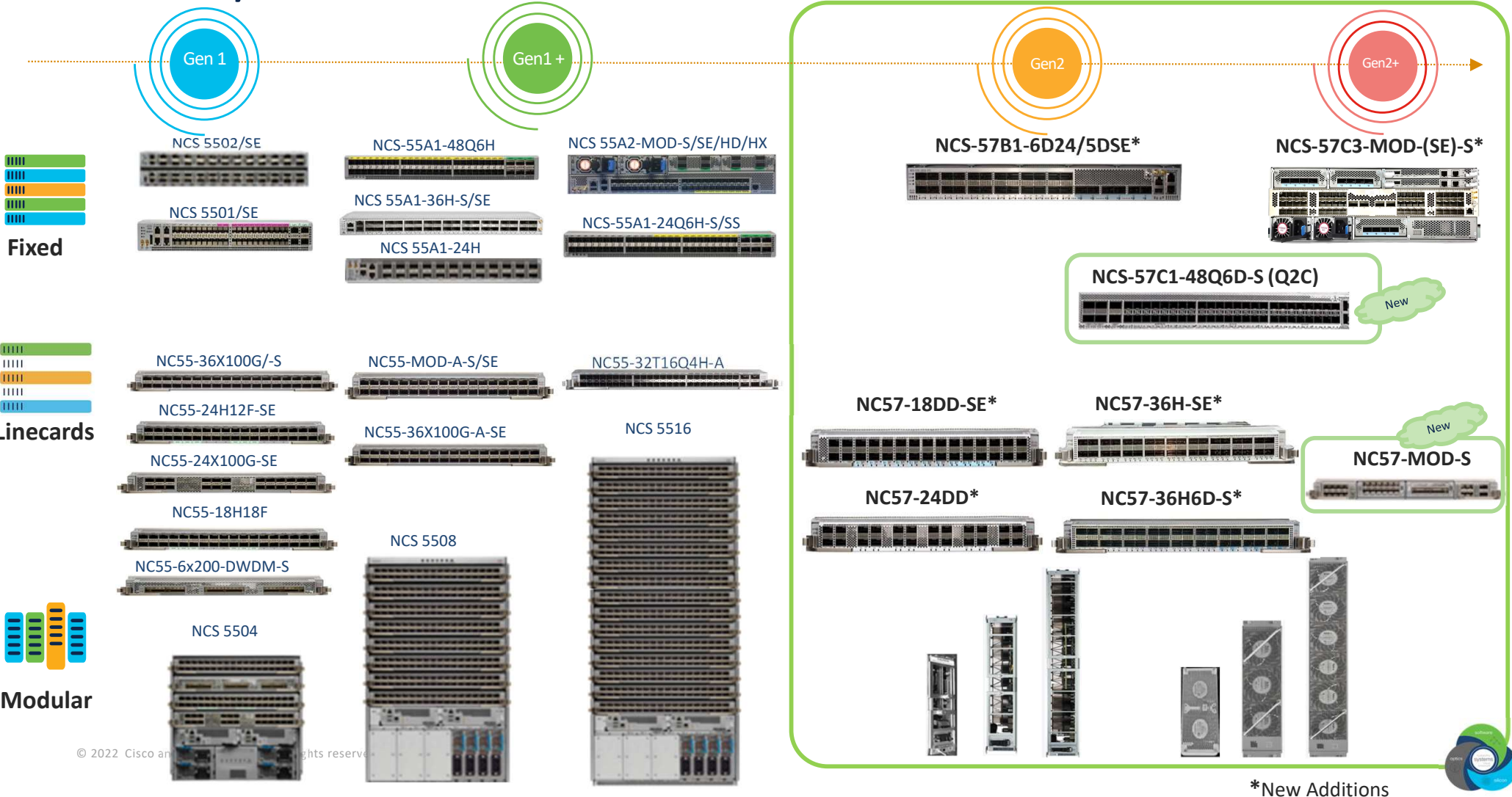
<p><b>Cisco 8000</b></p> 	<p><b>NCS 5500/5700</b></p> 	<p><b>ASR 9000</b></p> 	<p><b>NCS 500</b></p> 	<p><b>IOS XR</b></p> 
<p>400 GE 260Tb System 14.4T per Slot</p>	<p>400 GE 153.6Tb System 9.6T per Slot</p>	<p>400 GE 80Tb System 4.0T per Slot</p>	<p>400 GE 800GB System</p>	<p>SR EVPN</p>

<p><b>NCS 1000</b></p> 	<p><b>Optical Switches</b></p>	<p><b>NCS 4000 &amp; 2000</b></p> 
<p><b>Pluggable Optics</b></p>		
<p><b>Management &amp; Orchestration</b></p>		
<p><b>Traditional and Flexible Consumption Models</b></p>		
<p><b>Software Innovation</b></p>		

# The NCS 5500/5700 Success Stories



# NCS 5500/5700 Portfolio Evolution



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\*New Additions



# NCS 5700 Fixed Routers Growing Family with new Capabilities



# Naming Logic



**NCS-57C1-48Q6D-S**

NCS55 → Gen1 DNX  
NCS57 → Gen2 DNX

0 → Gen1  
A → Gen1  
B → Gen2  
C → Gen2

#RU

48x1/10/25G + 6x400G

S = MACSEC





# NCS 5700 Fixed Systems



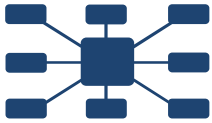
	Base NCS-57B1-6D24H-S (1RU)	Scale NCS-57B1-5D24H- SE (1RU)	Base NCS-57C3-MOD-S (3RU)	Scale NCS-57C3-MOD-SE-S (3RU)	Base NCS-57C1-48Q6D-S (1RU)*
SW at FCS	7.3.1	7.3.1	7.4.1	7.4.1	7.5.2
Chip/BW	Gen2 x 1	Gen2 x 1	Gen2 x 1	Gen2 x 1	Gen2 x 1
Capacity	4.8T	4.4T	4.0T*	3.6T*	4.0T*
10G Count (Native/ Max with breakout)	0/72	0/68	48 Fixed + MPA (128 max)	48 Fixed + MPA (112 max)	48/72
100G Count (Native/ Max with breakout )	30/48	29/44	8 Fixed + MPA (28 max)	4 Fixed + MPA (24 max)	6/24
400G Count (Native)	6	5	4 + 1 (4X100)	4 + 1 (4X100G)	4 + 2 (4X100)
Port Density	24x100G + 6x400G	24x100G+ 5x400G	Fixed: 48x1/10/25G + 8x100G QSFP28 3 x MPA: 2x800G + 1x 400G	Fixed: 48x1/10/25G + 4x100G QSFP28 3 x MPA: 2x800G + 1x 400G	32x1/10/25G + 16x1/10/25/50G + 6x400G
Power (w/o optics)	610W	630W	975W (with 3XMPA)	1035W (with 3XMPA)	340W
MACSEC Capable	Y	Y	Y	Y	Y

\*Oversubscribed


# Future Ready Use cases!




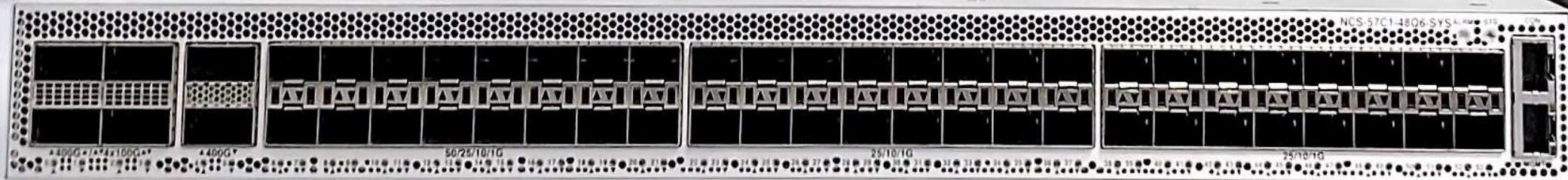
**5G Mobile x-Haul**  
*Class C, 1G to 400G*




**Converged SDN**  
*MACSEC, 100G, 400G*  
*High Scale*



**DC ToR**  
*Distributed Telco*  
*datacenters*



**Business & Residential Ethernet Aggregation**  
*MACSEC, 10G, 25G, 100G*  
*Higher Aggregation Scale*



**Routed Optical**  
*400G ZR/ZRP*

# NCS-57C1-48Q6D-S

- Built for the evolving requirements of modern 5G xHaul networks to provide connectivity for RU and CU elements to a 400G spine
- 1RU, Depth ~500mm
- Flexible Port config that supports from 1G to 400G
- Ideal for network use cases like pre-Agg / Agg, vDU pooling, TOR, CIN / PON Agg
- Native 25G and 50G support required for 5G xHaul
- 4x100G/2x100G breakout support possible on all QSFP-DD 400G ports
- 400G ZR/ZRP support on 3X400G ports



## Quick Facts

Capacity	4.0 T (Oversubscribed)
Port Configuration	32x SFP28 + 16x SFP56 + 2x QSFP-DD(4x100G) + 4x QSFP-DD (400G)
Power (w/o optics)	Typical: 340W Max: 488W
Temperature Support (at 1800 m)	0-40°C
Planned Release(s)	7.5.2, Orderable Now!
Hardware capabilities	MACSEC, Class C Timing, Built-in GNSS receiver

For more information, please refer to the [datasheet](#)

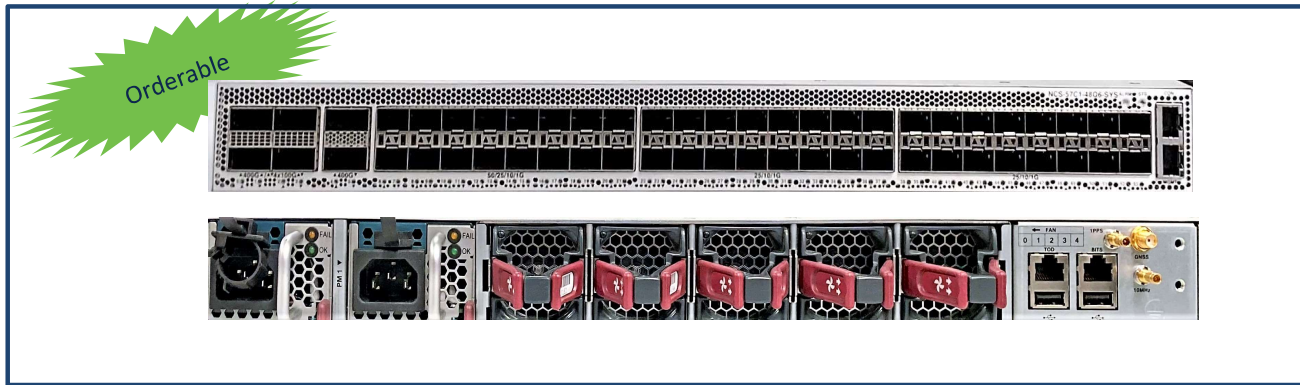
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# NCS-57C1 Ordering Information



SHIPPING

May 2022  
IOS-XR 7.5.2



Business Model	Product ID
FCM	NCS-57C1-48Q6-SYS
BAU	NCS-57C1-48Q6D-S

# NCS 5700 Modular Linecards



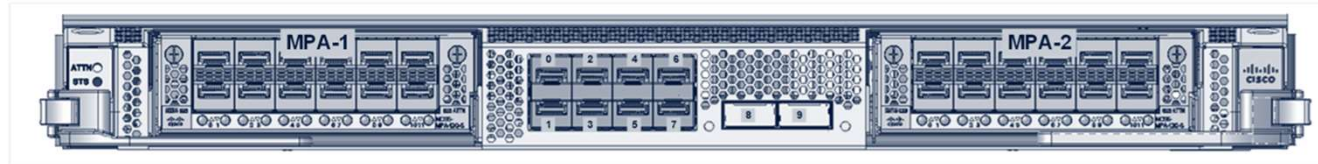
New



# NCS 5700 Line Cards

	Scale NC57-18DD-SE	Base NC57-24DD	Scale NC57-36H-SE	Base NC57-36H6D-S	Base NC57-MOD-S
SW at FCS	7.0.2	7.0.2	7.3.1	7.4.1	7.6.1 (May 2022)
Chip	Gen2 x 2	Gen2 x 2	Gen2 x 1	Gen2 x 1	Gen2 x 1
Capacity	7.2T	9.6T	3.6T	4.8T	2.8T
10G Count (Native/ breakout)	0/120	0/96	0/72	0/96	8/16 Fixed + MPA
100G Count (Native/ breakout)	30/72	24/96	36	36/48	2/8 Fixed + MPA
400G Count (Native)	18	24	0	6	2 Fixed + MPA
Port Density	18X400G 30X200/100G	24X400G/ 96X100G	36X100G	24x100G + 12 flex ports (6x400GE or 12x 200GE/100GE)	<u>Fixed:</u> 2x400G QSFPDD+ 8x10/25/50G SFP56 <u>2X MPA:</u> 2x400G or 12x 50G
Power (w/o optics)	1140W	1210W	713W	897W (Non-MACSEC) 908W (MACSec)	715W (with MPAs)
MACSEC Capable	N	N	N	Y	Y

# NC57-MOD-S



- Gen2 successor of famous NC55-MOD-A-S line card
- To support network use cases like xHaul, Aggregation, IPoEoF, Metro DCI and Longhaul DWDM applications
- Native 25G and 50G support required for 5G xHaul
- Class C timing is new de facto standard to support 5G xHaul
- 400G-ZR/ZRP supported on both QDD ports

## Quick Facts

Capacity	4.8Tbs Full-Duplex
NPU	1x Gen2
Port Configuration	2x MPAs (800G) + 8x SFP56 + 2x QSFP-DD
Power (Worst case)	580 W (without MPAs)
Planned Release(s)	7.6.1
Hardware capabilities @ FCS	MACSEC, Class C Timing Supports all available MPAs , but no 1G support QDD-400G-ZR/ZRP support

## Business Model

## Product ID

FCM	NC-57-MOD-S
BAU	NC57-MOD-BM

# Modular Port Adapters



**NC55-MPA-12T-S**

12x 10G SFP+ ports



**NC55-MPA-1TH2H-S**

1x 200G/100G CFP2 + 2x  
100G QSFP28 ports



**NC55-MPA-4H-S**

4x 100G QSFP28 ports



**NC55-MPA-2TH-S**

2x 200G/100G CFP2 ports

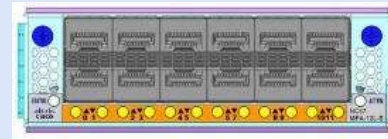


# Modular Port Adapters



**NC57-MPA-2D4H-S**

- 4x QSFP-DD ports
- Supports operable modes of 400G, 100G and breakouts of 25G, 10G
- QSFP DD ZR/ZRP support in 7.5.1



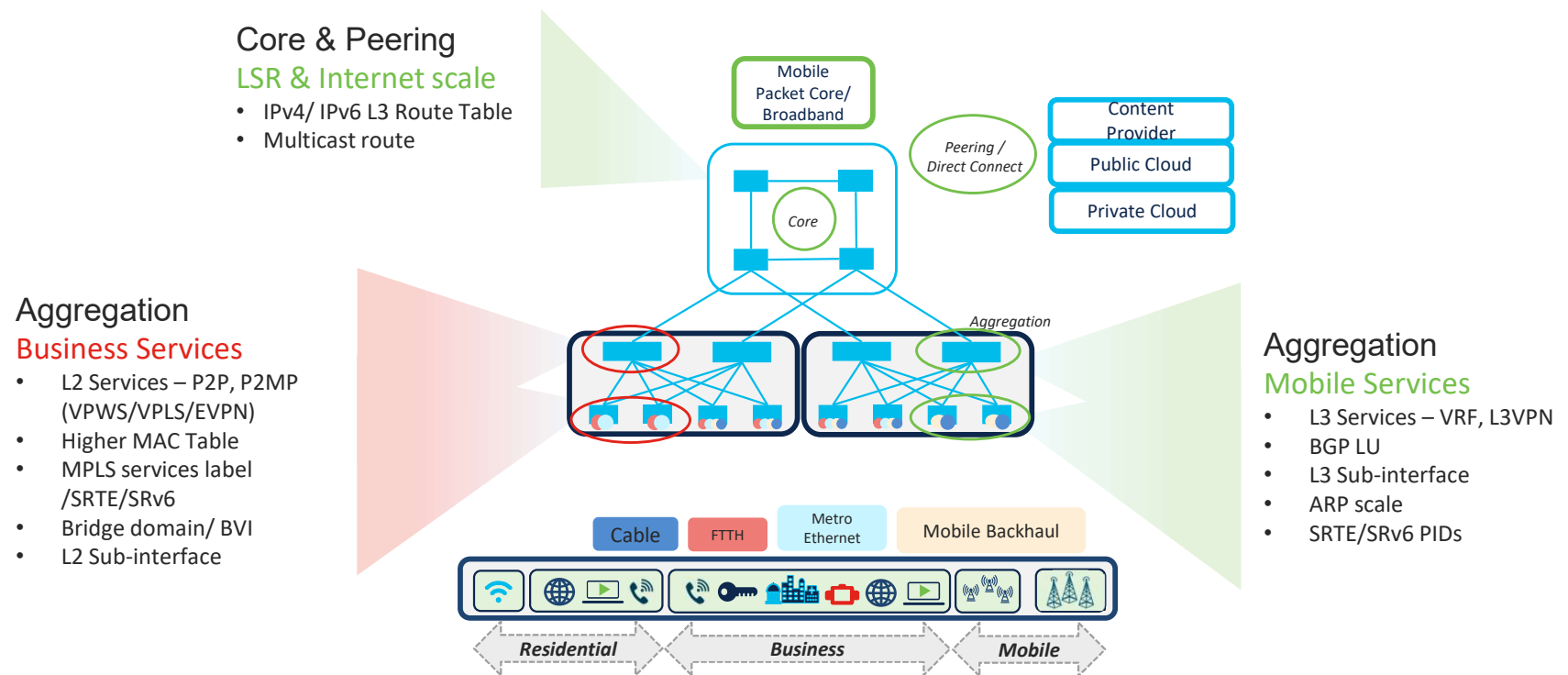
**NC57-MPA-12L-S**

- 12 SFP56 (10G/25G/50G)
- Class C and MACSec capable
- Class B and limited to 400G when used on NCS-55A2 & NC55-MOD
- Target release 7.6.1



# Use cases and Enhancements

# Services scale requirements



## Core & Peering

### LSR & Internet scale

- IPv4/ IPv6 L3 Route Table
- Multicast route

## Aggregation

### Business Services

- L2 Services – P2P, P2MP (VPWS/VPLS/EVPN)
- Higher MAC Table
- MPLS services label /SRTE/SRv6
- Bridge domain/ BVI
- L2 Sub-interface

## Aggregation

### Mobile Services

- L3 Services – VRF, L3VPN
- BGP LU
- L3 Sub-interface
- ARP scale
- SRTE/SRv6 PIDs

# High Scale Converged SDN Network

**NCS 5504/08/16**  
Modular: up to 9.6T/slot  
153.6Tb System

NC57-24DD  
NC57-18DD-SE  
NC57-36H-SE  
NC57-36H6D-S  
NC57-MOD

**NCS 57B1**  
Fixed: Up to 4.8T

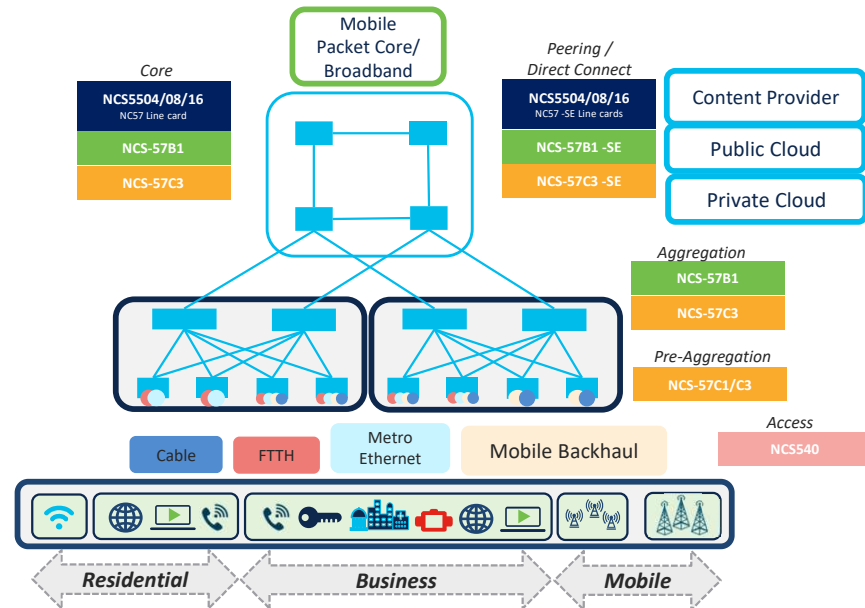
NCS-57B1-6D24H  
NCS-57B1-5D24H-SE

**NCS 57C3**  
Fixed: Up to 4T

NCS-57C3-MOD  
NCS-57C3-MOD-SE  
NCS57C1-48C6-SYS

**NCS 540**

N540-24Q8L2DD-SYS



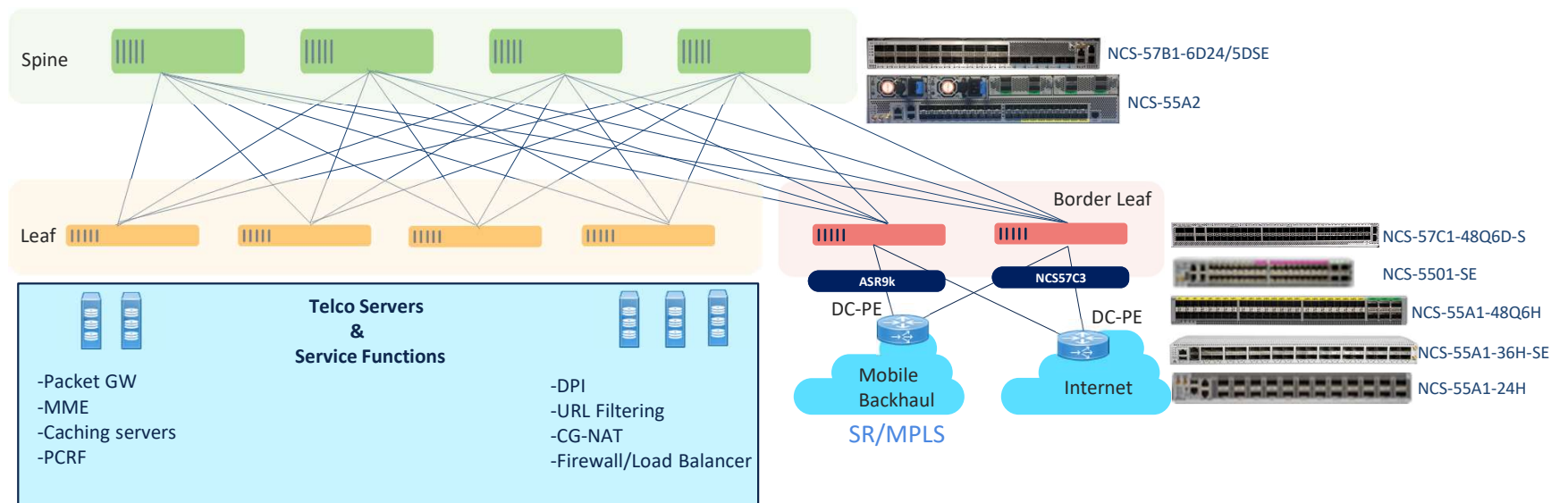
- Unique services / scale for different use cases



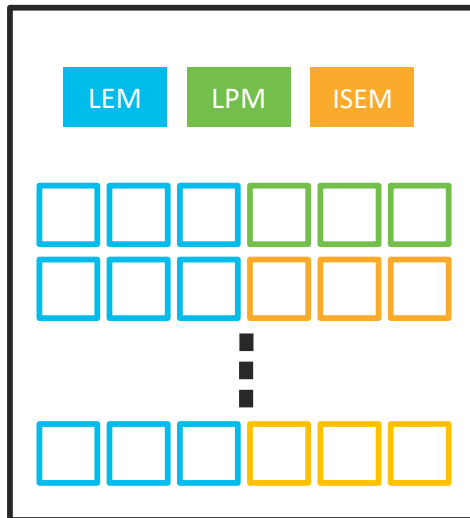
- Next-Gen ASIC



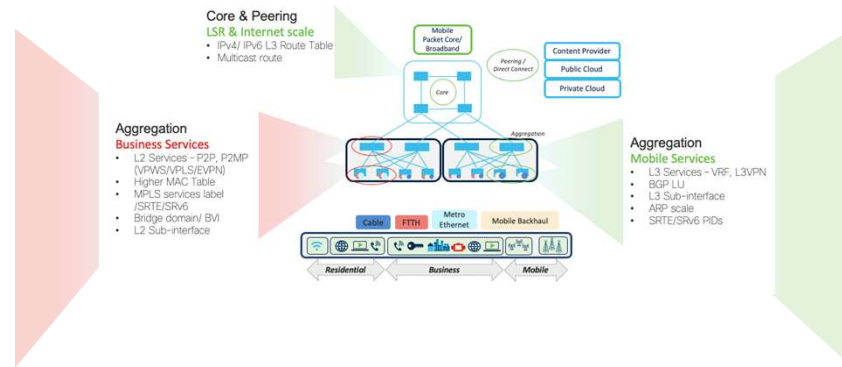
# Distributed Telco Datacenter



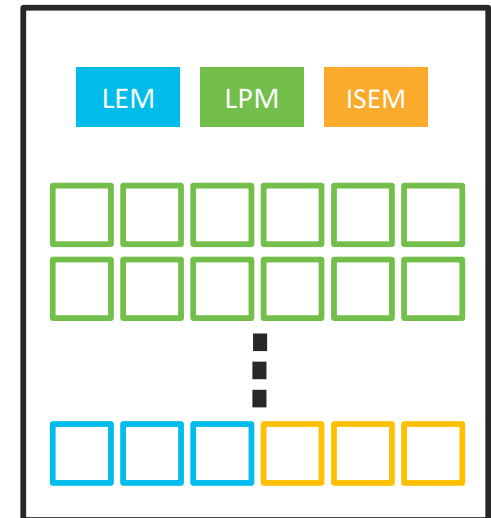
# MDB Profile resource carving



L2 Profile



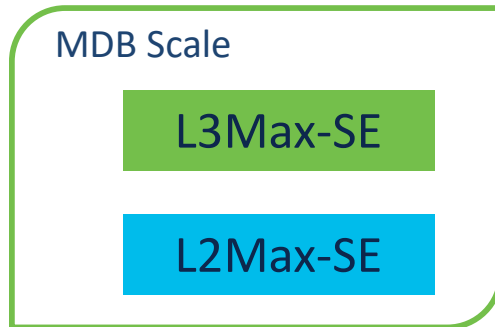
- Higher or Lower database based on use case
- Total Database is still same
- If LPM reduced by X amount, then LEM need not be increased same amount



L3 Profile

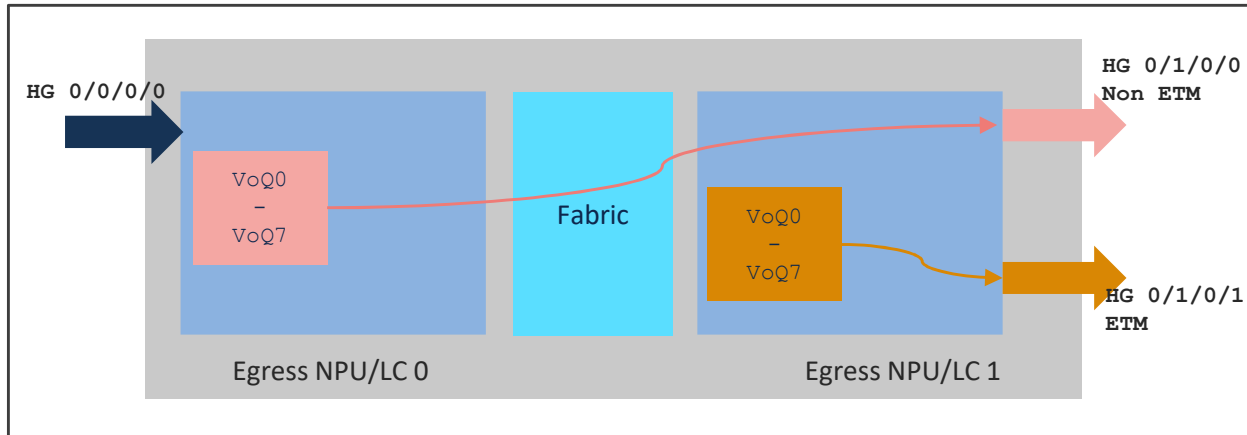
# MDB Profiles

Today we have planned 4 MDB Profiles



Fixed	Modular
NCS-57B1-SE	NC57-18DD-SE
NCS-57C3-SE	NC57-36H-SE
<i>Scale Platform can run MDB Base Profile also ( although not required)</i>	
Fixed	Modular
NCS-57B1	NC57-24DD
NCS-57C3	NC57-36H6D-S
NCS-57C1-48S6H	NC57-MOD-S

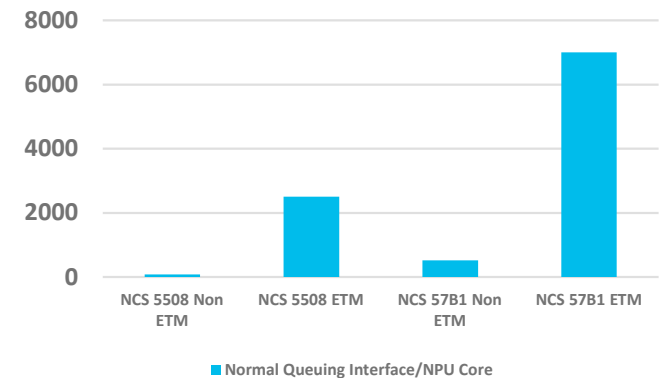
# Egress Traffic Manager (ETM) for QoS



- ✓ ETM Enabled Port VoQs are Localized
- ✓ Non ETM port follows previous distributed VoQ Model

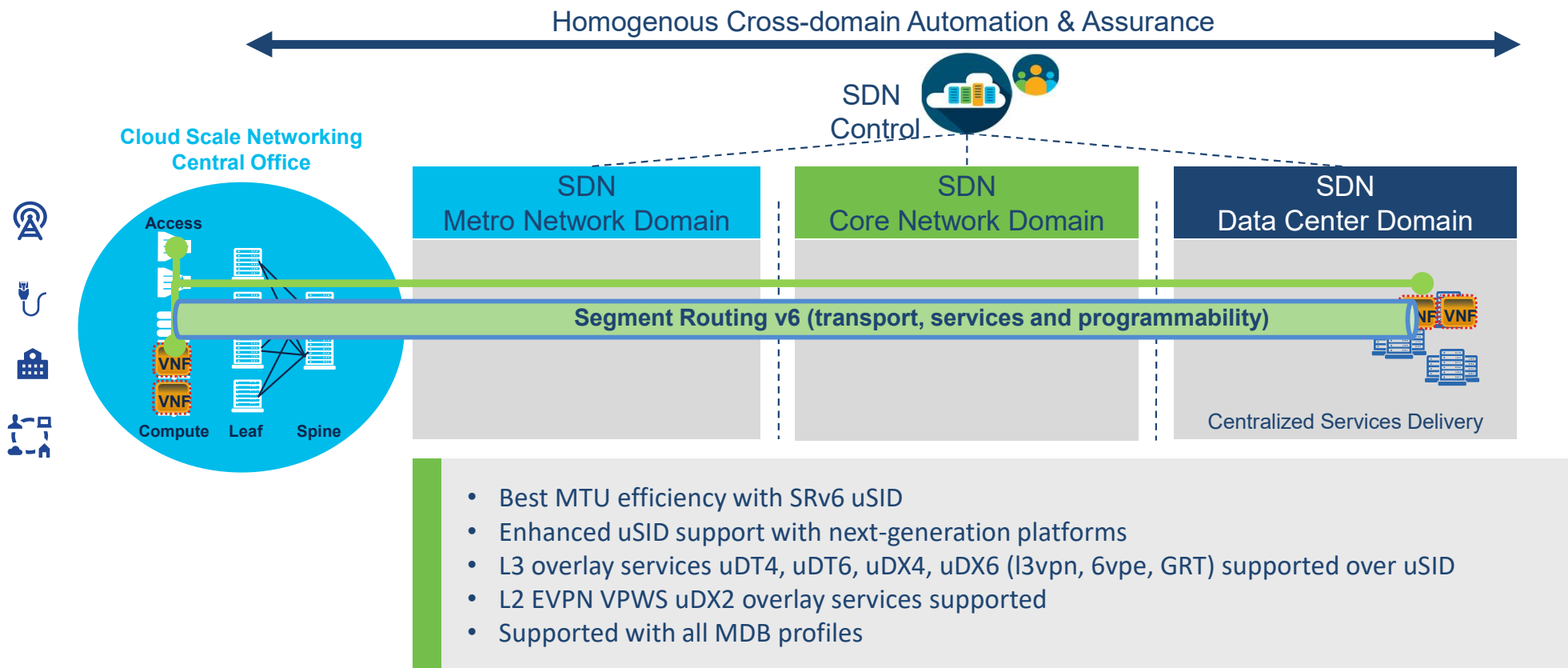
- Applicable from IOS XR 7.6.1 on the portfolio
- New Queuing Model to queue at Egress NPU
- Enabled at port level to offer flexibility
- Increases Egress Queuing Scale by localizing VoQs
- Better ways to plan Egress Policy
  - Match on DSCP/Precedence/EXP/IP ACL on egress
  - Multicast Scheduling
- More Granular shapers for low-rate services

Queuing interface Scale/NPU Core





# SRv6: Path to Simplicity and Innovations



# Summary

## Takeaways



Most Feature-rich + Dense 100G/400G Platform in the industry



Trusted Platform across many network types :  
*Converged Services, 5G and RON solutions*



Future Proof design with versatile Hardware and Flexible Pricing Models

## Resources:

- [NCS 5500 Web Page](#)
- [NCS 5700 Web Page](#)
- [NCS 57B1 Fixed Routers Datasheet](#)
- [NCS 57C3 Fixed Routers Datasheet](#)
- [NCS 57C1 Fixed Routers Datasheet](#)
- [NCS 5700 Line Cards Datasheet](#)
- [NCS 5500 Tutorials](#)
- [NCS 5500 and NCS 5700 White Paper](#)



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