

Powering Hybrid Work with Catalyst 9K 'X'

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Cisco Systems Korea

2022. 3. 4.

The future of work is hybrid

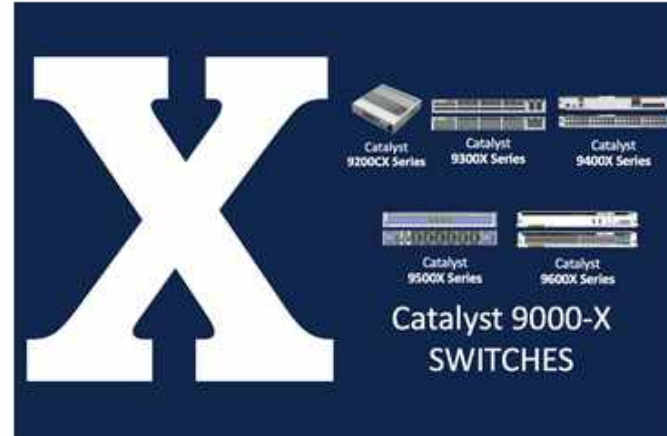


...and it's here today

“Powering Hybrid Work with Networking” – 4가지 주제



업계 최초 High-End Wi-Fi 6E AP 발표
Catalyst 9136 & MR57



Catalyst9K 스위치의 새로운 가족!
X 시리즈 발표

1. WI-FI 6E

2. Catalyst 9K 'X' Series

3. Private 5G offering

4. CX cloud



Private 5G 를 위한 새로운 Offering 발표
Partner 를 통한 Managed Service Offering



Cisco Platform Suite 업데이트
CX Cloud 를 통해 여러 솔루션을 통합 관리

Wi-Fi 6E: The New Chapter of an Incredible Story...

\$3.3 trillion

\$4.9 trillion

48%

Wi-Fi 6E

Contribution will be key

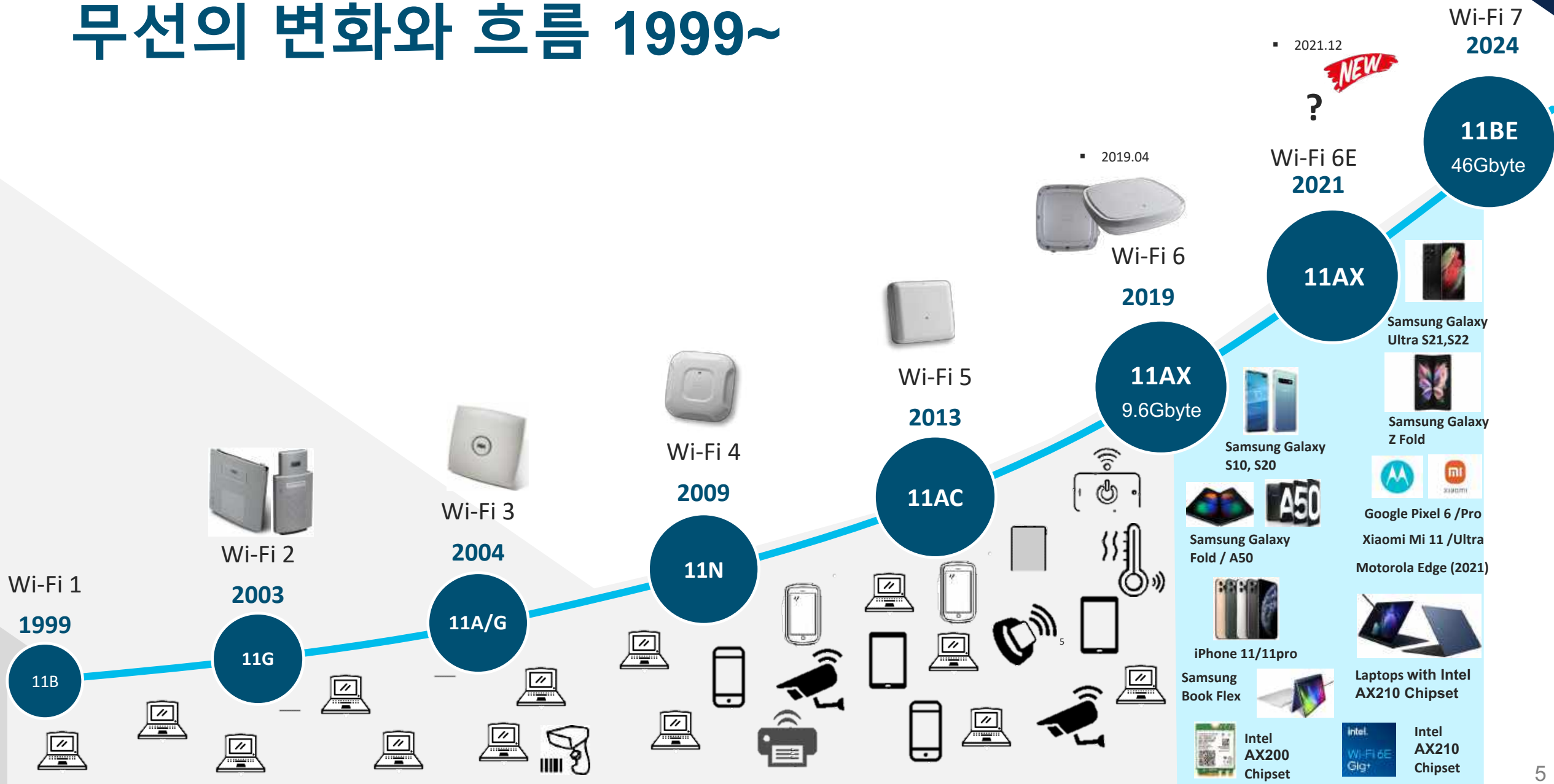
2021

2025

Telecom Advisory Services, Wi-Fi Alliance®

무선은 모든 네트워크 기기의 51%를 차지하며, 대다수는 무선으로 연결될 것입니다.
향후 비즈니스 요구 사항에 미치게 될 영향을 고려하여 그에 따른 무선 전략을 수립해야...글로벌 네트워킹 트렌드 보고서

무선의 변화와 흐름 1999~



국내 무선랜 시장 점유율



국내 무선랜 시장 점유율
1위 43.6% (▲ 7.6%)
(Aruba : 16.4% ▼ 7.6%)

44%

Wireless LAN

56%

Campus Switching
(managed)

51%

LAN Switching
(managed)

44%

DC Switching
(managed)

36%

SP Core + Edge
Routing

21%

Network
Security

52%

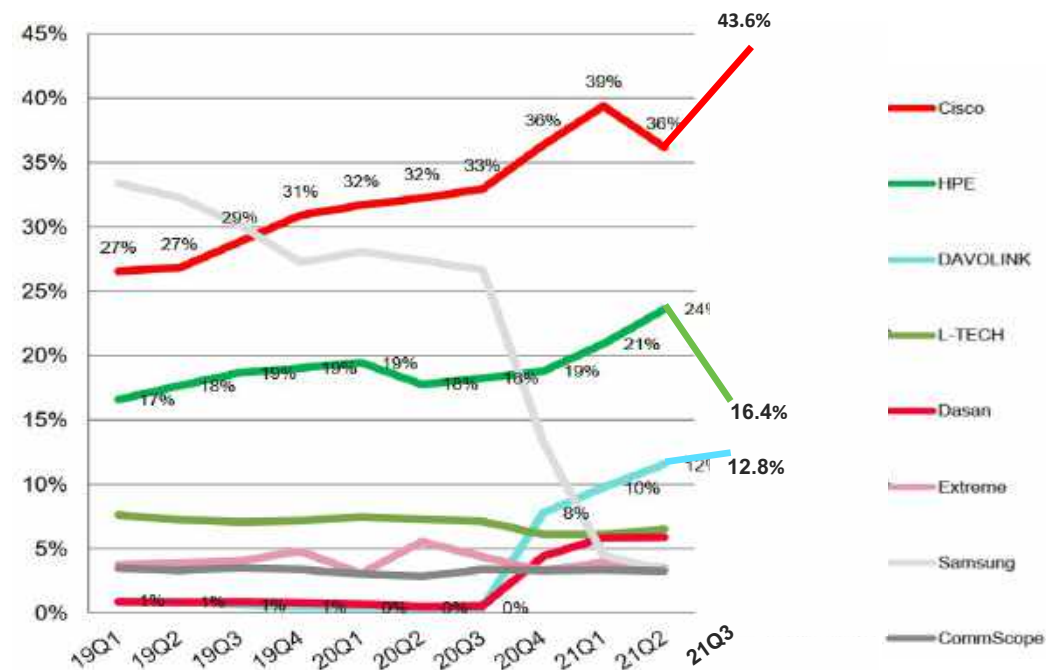
SD-Branch
Routing

48%

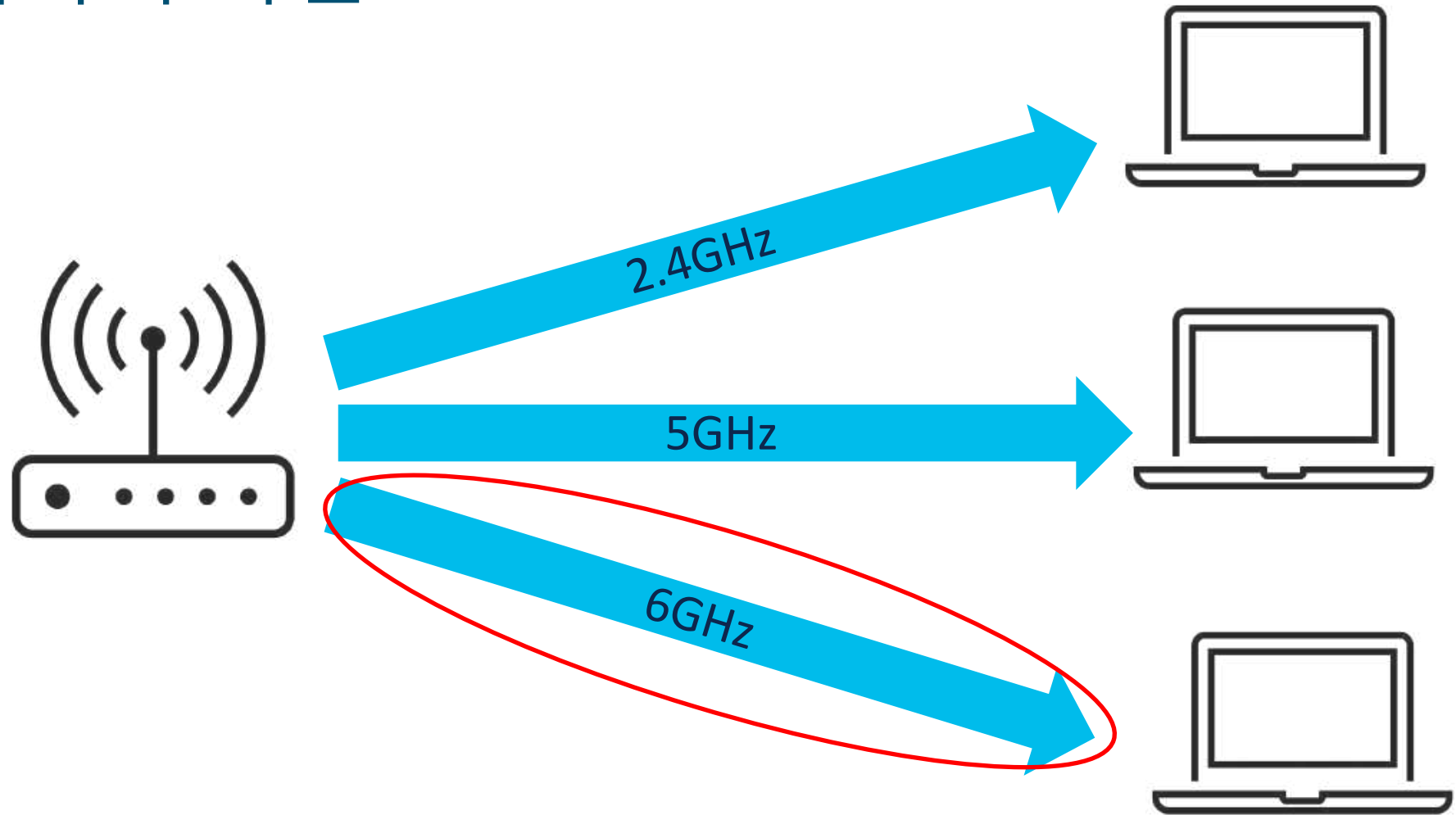
Voice

63%

TelePresence



Wi-Fi6E 에서 추가된 6GHz



6 GHz 한국 도입 현황

국내의 경우 6GHz 주파수 대역에 대한 비면허 주파수 기술 (Wi-Fi 6E, 5G NR-U 등) 을 사용할 수 있도록 하는 입법 행정 예고가 아래와 같이 지난 6/26일에 공고 되었습니다.

<https://msit.go.kr/web/msipContents/contentsView.do?catId=law4&artId=2942268>

3 추진

[전략 1]

비면허 주파수
⇒ 5G와 결합

주요 기능

데이터 분산소비

사물 연결(IoT)
센싱 등 감각 기능

가 5G+ 전략

① 스마트시티

☐ 국민은 저렴

- * 글로벌 모바일

☐ (기술 동향

- * 6GHz대역 Wi-Fi

☐ (산업계 수

- 진화 및 경쟁

② 스마트공장

☐ 제조 현장의

- (기술 동향
- * 이동통신 사물
- 저지연 Ims
- (산업계 수
- 하는 대형
- * 독일·일본

과학기술정보통신부

I-KOREA 4D

대한민국 정보통신산업 경쟁력 강화

7598 C97A, 6125-71100

방송통신기자재등의 적합인증서

Certificate of Broadcasting and Communication Equipments

상호 또는 상품명 Trade Name or Appellation	CISCO SYSTEMS, INC.
기자재명칭 Equipment Name	특정소출력 무선기기(무선데이터통신시스템용 무선기기)
기본모델명 Basic Model Number	C9136I-ROW
기기부호/추가기기부호 Equipment code Additional Equipment code	LARN8 / LARN5B, LARN5
파생모델명 Series Model Number	
인증번호 Certification No.	R-C-TNY-C9136I
제조자/제조국가 Manufacturer A country of Origin	CISCO SYSTEMS, INC. / 중국, 멕시코
인증연월일 Date of Certification	2021-12-24
기타 Others	

위 기사재는 「전파법」 제58조의2 제2항에 따라 인증되었음을 증명합니다.

It is verified that foregoing equipment has been certificated under the Clause 2, Article 58-2 of Radio Waves Act.

2021년(Year) 12월(Month) 24일(Day)

국립전파연구원장

Director General of National Radio Research Agency

* 원본 인증서 양용통신기자재는 반드시 「적합성평가표시」를 부착하여 유통하여야 합니다.
위반 시 제재조치 및 인증이 취소될 수 있습니다.

Wi-Fi6 vs 6E : 속도비교



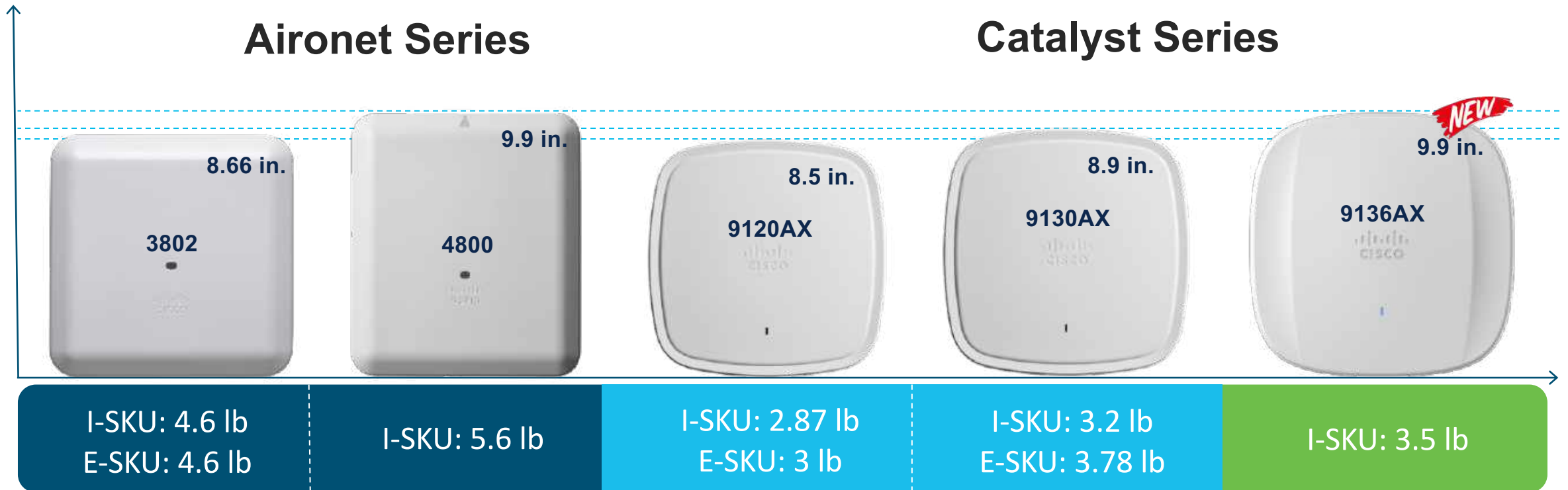
삼성전자 협업을 통해 공동 기술 개발 및 양사 제품 출시 전
Wi-Fi 6/6E 신규 대한 호환성 테스트 진행



새롭게 출시하는
Wi-Fi6E 모델을
소개합니다.

Indoor Catalyst and Aironet Access Point Dimensions

Catalyst 9136 is Similar in Size but Significantly More Capable



*Wi-Fi6E 의 새로운 모델의 이름은 Catalyst 9136 입니다.
PID : C9136I-ROW*

Catalyst 9136I mechanical design

Platform hardware enhanced with practicality

Brand new design



Enlarged recessed area



Compatible with standard mounts:
AIR-AP-BRACKET-1 and AIR-AP-BRACKET-2

- 5 Multigigabit (mGig) PoE 포트 2개 제공 (최대 10 Gbps 가능)
- 온습도 센서, 공기 질 센서(CO₂, TVOC(휘발성 유기화합물), IAQ(미세먼지)) 탑재

Catalyst 9136I Series Power over Ethernet Default Configurations

Input Power	Number of Spatial Streams	2.4 GHz Radio (Slot 0)	Primary 5 GHz Radio (Slot 1)	Secondary 5 GHz Radio (Slot 2)	6 GHz Radio (Slot 3)	mGig PHY 0 Link Speed	mGig PHY 1 Link Speed	USB	AI/ML-Driven Scanning Radio	Max Power Draw
802.3bt (UPoE)	16	4x4	8x8 or Dual 4x4		4x4	5 Gig	5 Gig	Yes / 9W	Y	47.3W
802.3at (PoE+)	8	2x2	4x4	Disabled	2x2	2.5 Gig	Disabled	Disabled	Y	24.4W
802.3af (PoE)	0	Disabled	Disabled		Disabled	1 Gig	Disabled	Disabled	Y	14W

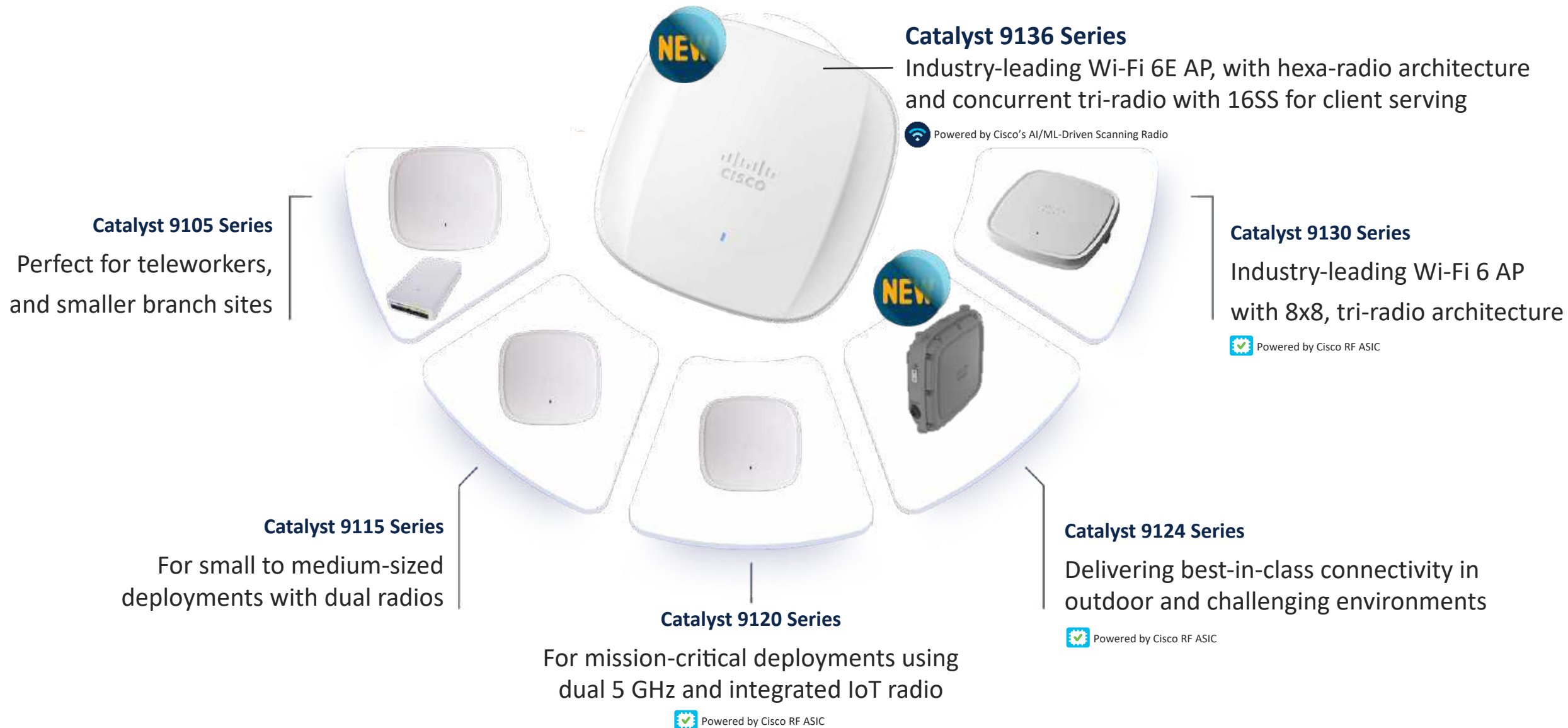
Note:

1. Slot 2 can only operate together with slot 1 in 8x8 mode. Independent Slot 2 operation is not supported until future SW release.
2. AIR-PWRINJ7 is C9136I's official 802.3bt Power Injector

경쟁사 현황 for 6 GHz Access Points

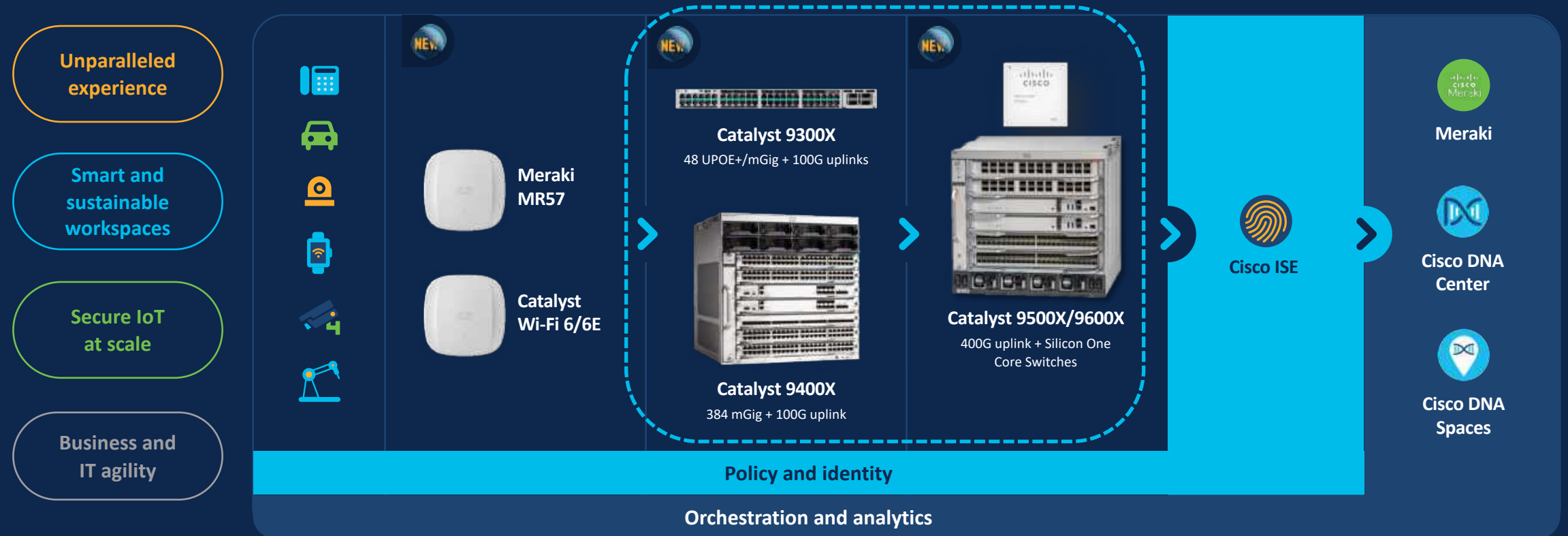
시스코는 이미 차세대 IOS-XE 기반의 C9800 컨트롤러 보유

시스코 와이파이 제품 라인업 Wi-Fi 6/6E



Cisco Wi-Fi 6E and Catalyst 9000X

Enabling better business outcomes end-to-end with simplicity and choice



Cisco access networking stack

Catalyst 'X' Series with New ASIC : 더 빠르게 !



UADP 2.0
~7 Billion Transistors
28 nm

C9300



UADP 2.0XL
~7 Billion Transistors
28 nm

C9400



UADP 3.0XL
~20 Billion Transistors
16 nm

C9500,C9600



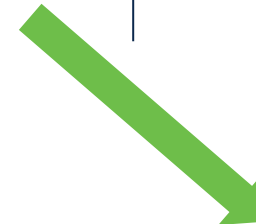
Q200 Silicon One



C9300X
<100G>

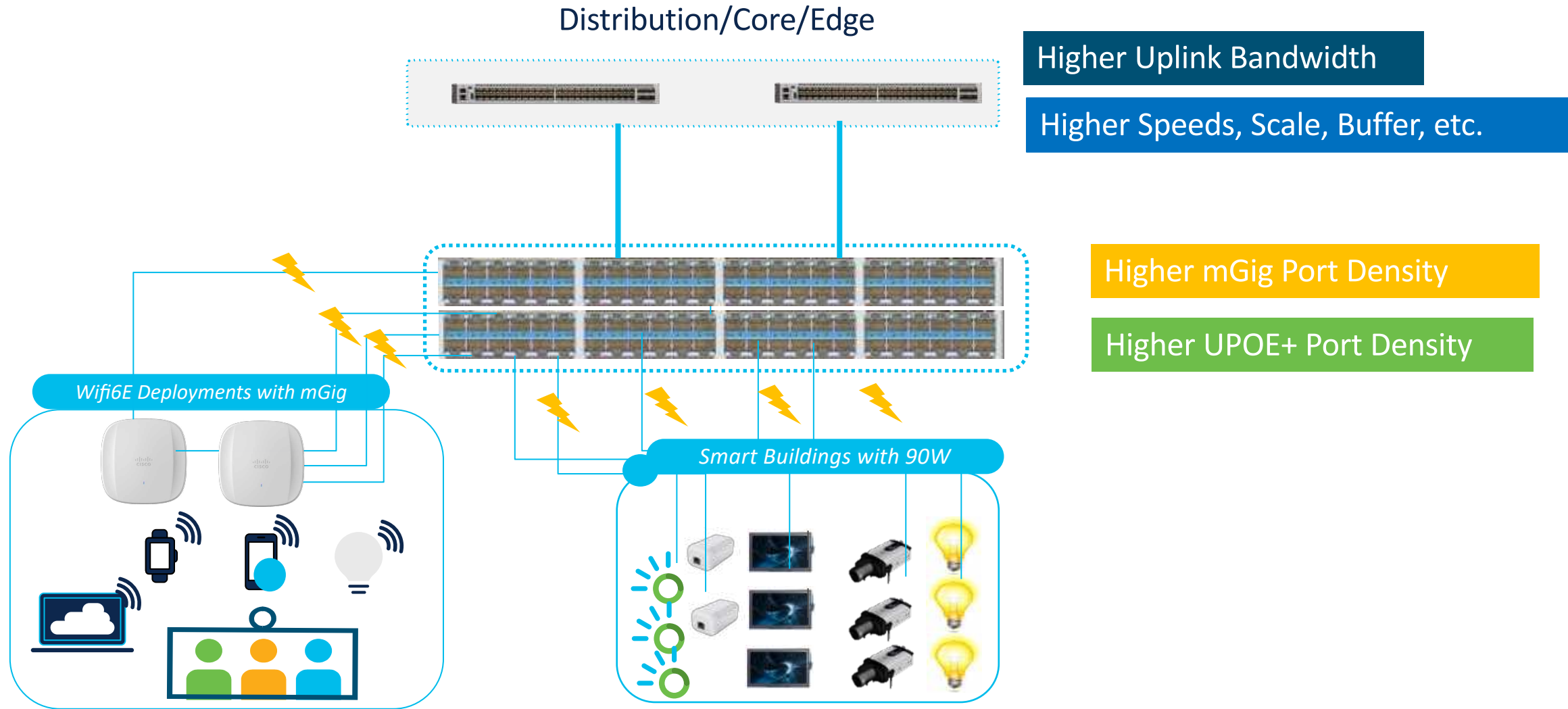


C9400X
<100G>



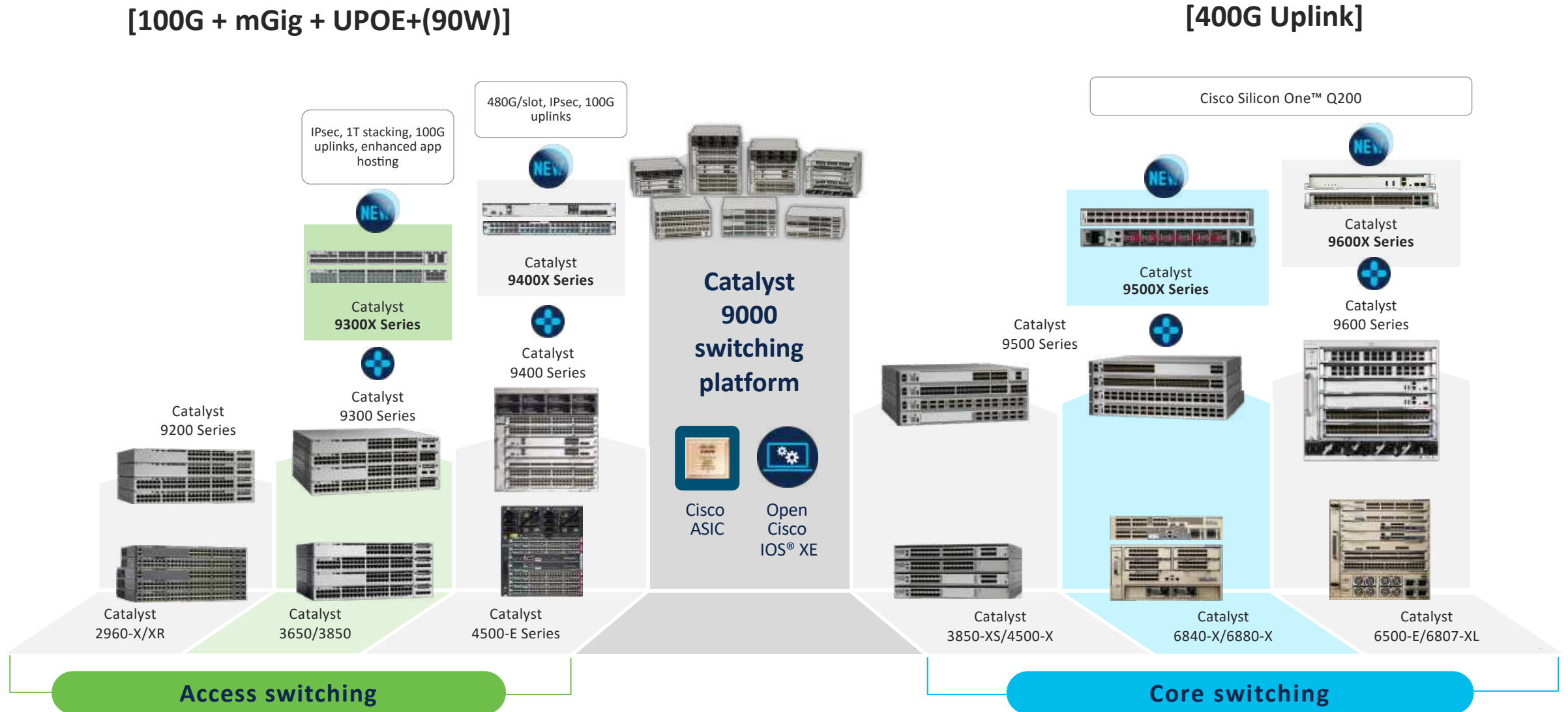
9500X, 9600X
<400G>

Catalyst 'X' Series with Full mGig and UPOE+ : 더 많이 !



Full mGig & Full UPOE+(90W) on every port

Catalyst 9000X – Expanding industry leadership



9400X, 9600X 샤시가 새로 나온 것이 아니고, 라인카드와 supervisor 모듈이 x 이름으로 출시

Catalyst 'X' Series with New ASIC : 더 빠르게 !



C9600X Series – Core 백본

Catalyst 6500 & C6800 후속모델



✓ Catalyst 9600 'X' 시리즈



C9600 PID List

구 분	SKU	Description	Comments
샤시 및 주요카드	C9606R	Cisco Catalyst 9600 Series 6 Slot Chassis	
	C9600-SUP-1	Supervisor 1 Module	UDAP 3.0 ASIC / 9.6Tbps / 2.4Tbps per slot
	NEW C9600X-SUP-2	(New) Gen2 Supervisor 2 Module	SiliconOne Q200 ASIC / 25.6Tbps / 6.4Tbps per Slot
	C9600-LC-48YL	48-Port 25GE/10GE/1GE	
	C9600-LC-48TX	48-Port Copper, UTP Card	1G/2.5G/5G/10G 지원 UTP 카드 (mgig 규격지원)
	NEW C9600-LC-40YL4CD	(New) Gen2 Combo Line-Card	• 40 ports of 50/25/10 Gig • 2 ports of 100/200 Gig • 2 ports of 400 Gig
	C9600-LC-48S	48-Port 1G SFP Fiber Card	
	C9600-LC-24C	24-Port 40GE/12-Port 100GE	



C9600X-SUP-2

오더가능



C9600-LC-40YL4CD

오더가능

✓ Catalyst 9600 'X' Series



차세대 Modular 집선용 Switch

[Keywords]

(무선)Wifi6 and 6E / (유선)10G 사용자의 고대역폭 집선 스위치

C6500 and C6800 시리즈의 후속 모델

[Cisco 차별화 포인트]

‘업계최초’ 400G 라인카드 지원 Enterprise급 스위치

25.6 Tbps with Silicon One

	C9600X-SUP-2 (NEW)	C9600-SUP-1
System Switching Capacity	Up to 25.6 Tbps ¹	Up to 9.6 Tbps ¹
Per-slot Switching Capacity	Up to 6.4 Tbps	Up to 2.4 Tbps
ASICs	1x Q200	3x UADP 3.0
Forwarding Rate	8 Bpps	3 Bpps
DRAM	32 GB	16 GB
Flash	16 GB	16 GB
SSD capacity	Up to 960 GB	Up to 960 GB
VLAN IDs	4,096	4,094
PVST Instances	4,096	1,000
Total number of IPv4 Routes	Up to 2,000,000 ^{2,3}	Up to 256,000
Total number of Ipv6 Routes	Up to 1,000,000 ^{2,3}	Up to 256,000 ^{2,3}

비고 : C9600 Line Card – Supervisor Support Matrix



	SUP 1	SUP 2
C9600-LC-24C	✓ 24x 40G or 12x 100G	✓ 24x 40G & 100G
C9600-LC-48YL	✓ 48x 1/10 & 25G	✓ 48x 10/25 & 50G* (No 1G)
C9600-LC-48TX	✓ 48x 1/2.5/5 & 10G (mGig)	✓ 48x 10G (No 1/2.5/5G)
C9600-LC-48S	✓ 48x 1G SFP	X
C9600-LC-40YL4CD	✓ 40x 1/10 & 25G + 2x 40 & 100G	✓ 40x 10/25 & 50G* + 2x 40/100 & 200G* + 2x 40/100/ 200* & 400G MACsec & WAN-MACsec (No 1G)



**SUP2 does not support
1GE or below speeds**

If 1GE downlinks are
required, position SUP1



C9500X Series – Fiber

Fixed Type 코어/집선용, SFP/SFP+ 향 스위치
(Stacking 모델은 C9300X 참고)



✓ Catalyst 9500 Series



// C9500 PID List

Switch Model	Spec Description	Comments
NEW C9500X-28C8D-E/A	Gen2 Fixed 1RU QSFP 36x 100G / 28x 100G + 8x 400G	28x QSFP28 + 8x QSFPDD 28 ports - 40/100GE 8 ports - 100/200/400G
C9500-16X-E/A	16-port 1/10 Gigabit Ethernet switch with SFP/SFP+	2x40G or 8x10G 업링크 선택 가능
C9500-24X-E/A	24-port 1/10 Gigabit Ethernet switch with SFP/SFP+	10G SFP+ 집선 스위치 모델로도 적합
C9500-40X-E/A	40-port 1/10 Gigabit Ethernet Switch with SFP/SFP+	2x40G or 8x10G 업링크 선택 가능
C9500-48X-E/A	48-port 1/10 Gigabit Ethernet Switch with SFP/SFP+	10G SFP+ 집선 스위치 모델로도 적합
Catalyst 9500 C9500-24Y4C-E/A	24-port 1/10/25G Gigabit Ethernet switch with SFP28 + 4 port 40/100G	
C9500-32C-E/A	32-port 100 Gigabit Ethernet switch with QSFP28	
C9500-32QC-E/A	32-port 40 Gigabit Ethernet switch with QSFP+ (100G로 사용시 16 Port)	
C9500-48Y4C-E/A	48-port 1/10/25G Gigabit Ethernet switch with SFP28 + 4 port 40/100G	10G SFP+ 집선 스위치 모델로도 적합
C9500-24Q-E/A	24-port 40 Gigabit Ethernet switch with QSFP+	
C9500-12Q-E/A	12-port 40 Gigabit Ethernet switch with QSFP+	

✓ Catalyst 9500 'X' Series



C9500X-28C8D-E/A

형식승인중



[Keywords]

(무선)Wifi6 and 6E / (유선)10G 사용자의 고대역폭 집선 스위치

[Cisco 차별화 포인트]

‘업계최초’ 400G 급 Enterprise 스위치

12 Tbps Capacity with Silicon One

	(NEW) C9500X-28C8D	C9500-32C
ASIC	Q200	UADP 3.0
Switching capacity	Up to 12 Tbps	Up to 6.4 Tbps**
Forwarding rate	8 Bpps	Up to 2 Bpps
Total number of MAC	Up to 256,000 ¹	Up to 82,000 ¹
Total number of IPv4 Route	Up to 2,000,000	Up to 256,000

Access Switching

Catalyst 'X' Series with Full mGig and UPOE+ : 더 많이 !



C9400X Series - Small Core/집선

Catalyst 4500 차세대 모델

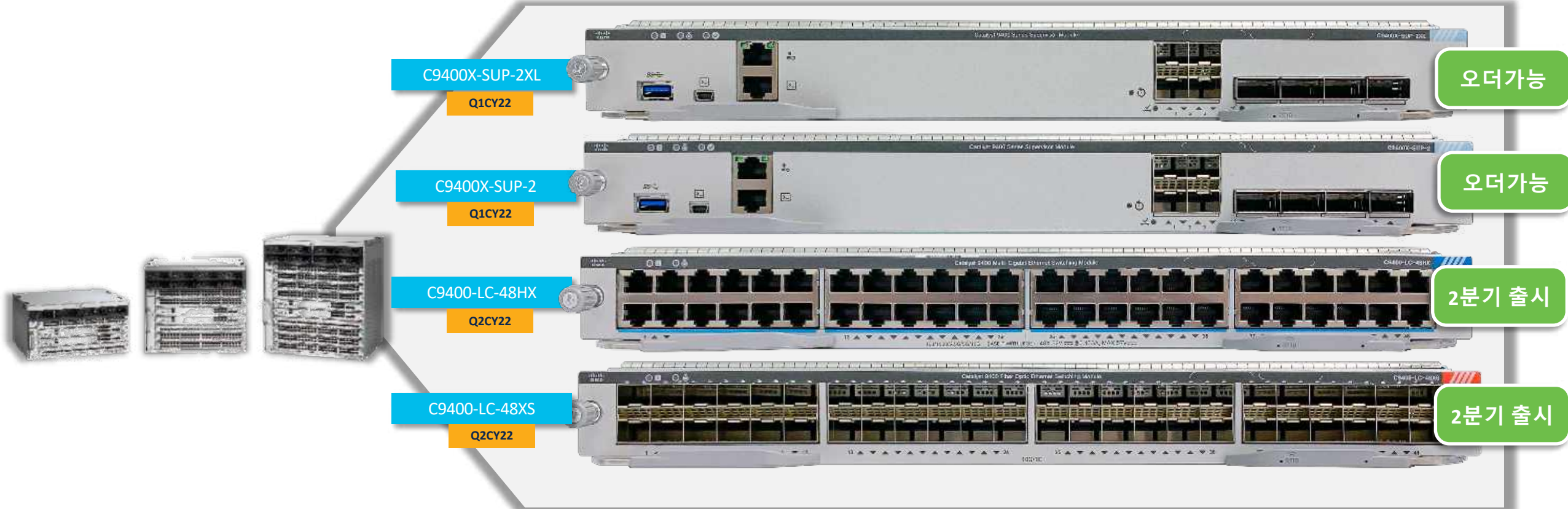
✓ Catalyst 9400 Series



C9400 PID List

구 분	SKU	Description	Comments
샤시	C9404R	Cisco Catalyst 9400 Series 4 Slot Chassis	C4503 (EoS) 모델 대체
	C9407R	Cisco Catalyst 9400 Series 7 Slot Chassis	C4507 (EoS) 모델 대체
	C9410R	Cisco Catalyst 9400 Series 10 Slot Chassis	C4510 (EoS) 모델 대체
Supervisor	C9400-SUP-1	Supervisor-Sup-1	40G Uplink port 제공
	C9400-SUP-1XL	Supervisor Engine C9400-SUP-1XL	40G Uplink port 제공
	C9400-SUP-1XL-Y	Supervisor Engine C9400-SUP-1XL-Y	25/40G Uplink port 제공
	NEW C9400X-SUP-2	Supervisor-2 (240Gbps/Slot)	SFP28(1/10/25G)and QSPF28(40/100G) Uplink
	NEW C9400X-SUP-2XL	Supervisor- 2XL (480Gbps/Slot)	SFP28(1/10/25G)and QSPF28(40/100G) Uplink
라인카드	C9400-LC-48T	48-Port 10/100/1000 (RJ-45)	유저 수용용도 (AP, PoE+ 등 높은 집선율 제공)
	C9400-LC-48P	48-Port POE+ 10/100/1000 (RJ-45)	
	C9400-LC-48U	48-Port UPOE 10/100/1000 (RJ-45)	
	C9400-LC-48UX	48Port UPOE w/ 24p mGig 24p RJ-45	
	NEW C9400-LC-48HX	48 x 10G UTP line card - mGig w/ UPOE+	
	C9400-LC-48H	48-Port UPOE+ 10/100/1000 (RJ-45)	1G/10G 집선용도 라인카드
	C9400-LC-48HN	48-Port 5 Gigabit w/ full 90W UPOE+	
	C9400-LC-24XS	24-Port 10 Gigabit Ethernet (SFP+)	
	C9400-LC-48S	48-Port Gigabit Ethernet(SFP)	
	NEW C9400-LC-48XS	48-Port 10 Gigabit Ethernet (SFP+)	
파워	C9400-LC-24S	24-Port Gigabit Ethernet(SFP)	
	C9400-PWR-2100AC	2100W AC	N+N or N+1 Redundant 모드제공
	C9400-PWR-3200AC	3200W AC	N+N or N+1 Redundant 모드제공

Same Chassis with New Supervisors and Line cards



NOTE: Same Supervisor model required in Dual SUP/SSO configuration

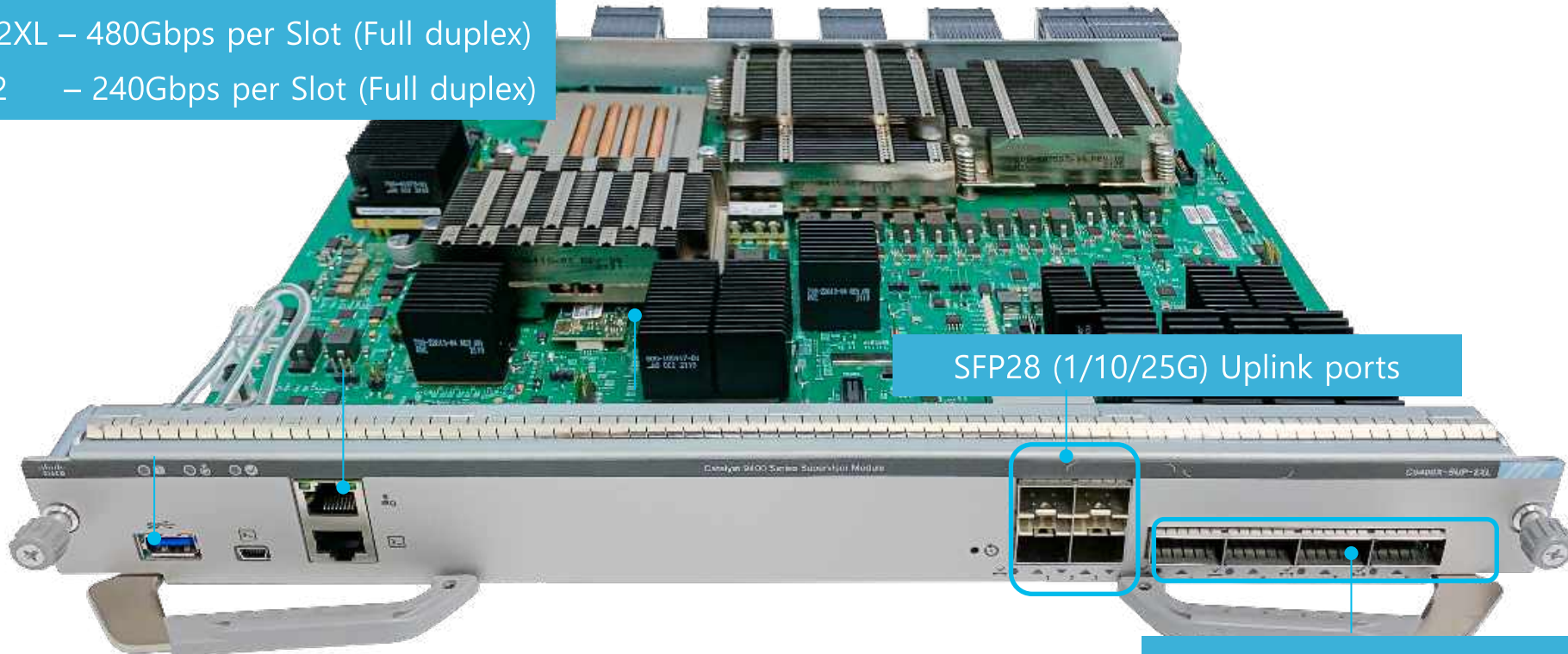
C9400X-SUP-2 / 2XL

오더가능

3x UADP 3.0sec ASIC

Sup 2XL – 480Gbps per Slot (Full duplex)

Sup 2 – 240Gbps per Slot (Full duplex)



SFP28 (1/10/25G) Uplink ports

QSFP28(40/100G) Uplink Ports

✓ No oversubscription per slot on any chassis (w/ Sup 2XL)

C9400X-SUP-2 / 2XL

Supervisor-1/XL

Powered by UADP 2.0



Optimized for access/aggregation with up to **240 Gbps per slot**

Flexible 10/25/40G uplink connectivity

High-performance app hosting

1/10G port options with oversubscription

Optimized scale and buffer

Supervisor-2/XL

Powered by UADP 3.0sec



Industry-leading performance with up to **480 Gbps per slot**

Market-leading uplink density with support for **100G**

Line-rate 10G/Multigigabit density up to 384 ports

C9400-LC-48HX

48 x 10G mGig w/ UPOE+

- 480 / 240 Gbps bandwidth with C9400-SUP-2XL / 2
 - 48x RJ45 ports, 1/2/5/10Gbase-T (mGig)
 - 48x UPOE+(90W)



C9400-LC-48XS

48 x 10G Fiber

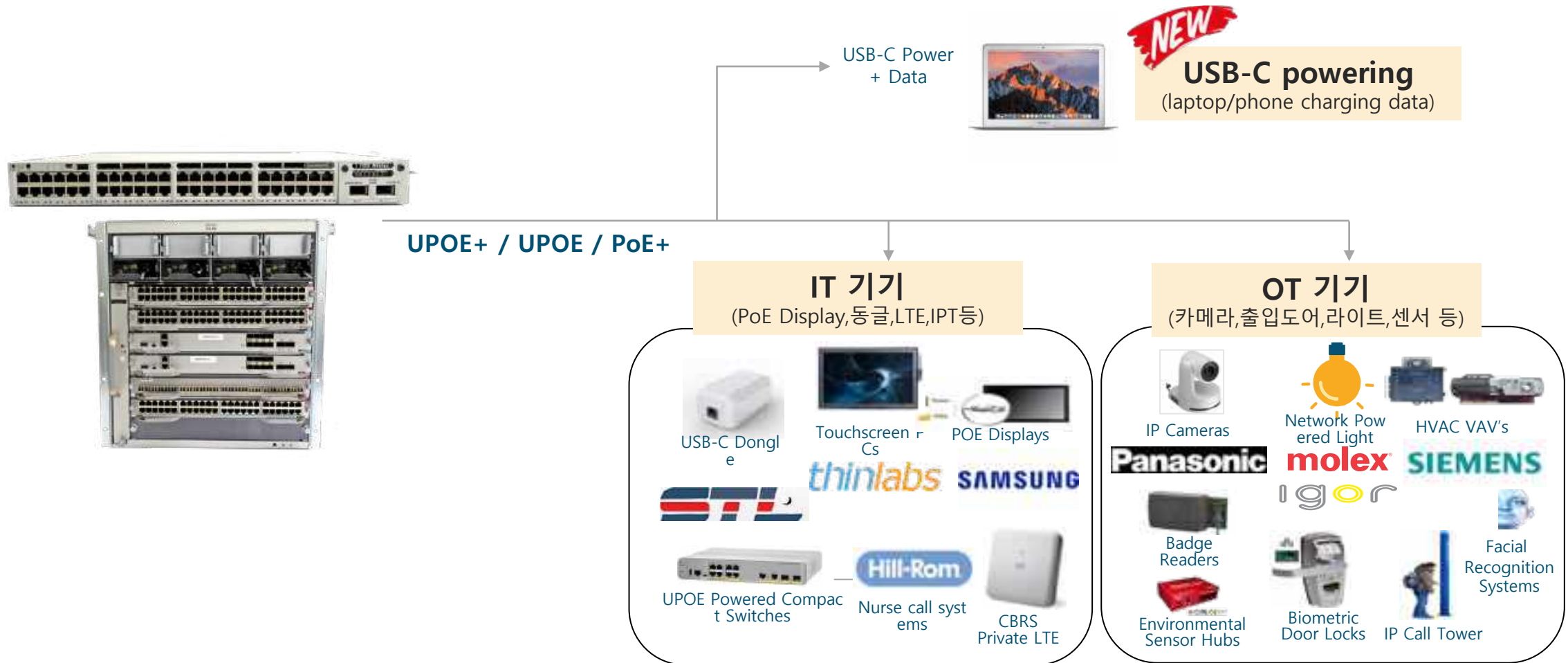
- 480 / 240 Gbps bandwidth with C9400-SUP-2XL / 2
 - 48x SFP+ ports, 1/10GE



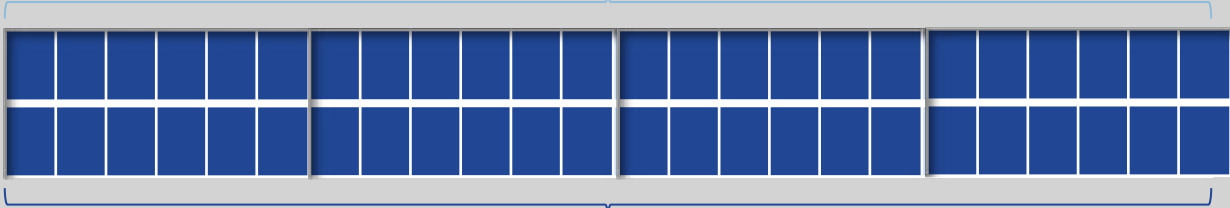
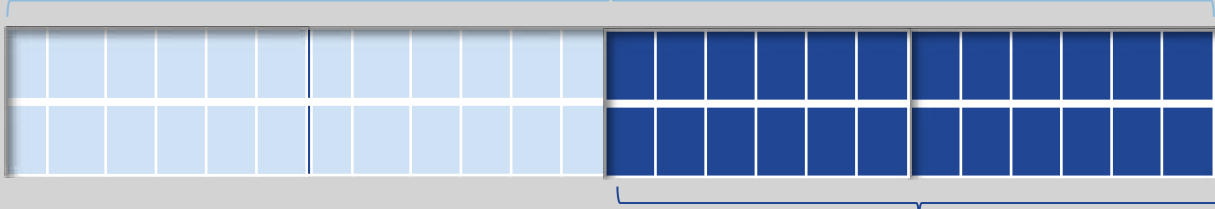
New Gen2 Line Cards are supported only on Supervisor-2/2XL

C9400-LC-48HX

- **UPoE+ 90W**(표준 : IEEE 802.3bt)으로 점차 대중화 되고 있는 **USB-C power 기기** 등 고용량 파워 Budget 제공. WiFi6 표준화와 함께 **All Cordless & Cableless** IT/OT 환경 구현가능



C9400-LC-48HX

Mode	Port Configuration
C9400-LC-48HN	UPOE+(90W)
	
C9400-LC-48UX	MultiGigabit up to 5G
C9400-LC-48UX	UPOE (60W)
	
C9400-LC-48UX	MultiGigabit up to 10G

- ✓ C9400-LC-48HX : 48Ports * 10G Mgig and 48Ports UPOE+
- ✓ No oversubscription per slot on any chassis (w/ Sup 2XL)

C9400-LC-48XS

C9400-LC-24XS

24 x 10G Fiber



C9400-LC-48XS

48 x 10G Fiber



✓ 48포트 10SFP+ with Full Line Rate



C9300X Series – Access&Fiber

Catalyst C3650 & C3850 차세대 모델

Stacking 지원 SFP/SPF+ 모델

✓ Catalyst 9300 Series



C9300L PID List – C3650/C3850, C3850 Fiber 대응 차세대 모델

	Switch Model	Spec Description	Uplink 모듈 옵션	Default	PoE Budget
Catalyst 9300	C9300-24T-E/A	24 Data	C9300-NM-4G (4x1G SFP)	350WAC	-
	C9300-48T-E/A	48 Data		350WAC	-
	C9300-24P-E/A	24 POE+		715WAC	Up to 720W
	C9300-48P-E/A	48 POE+	C9300-NM-4M (4port UTP 10G)	715WAC	Up to 1440W
	C9300-24U-E/A	24 Cisco UPOE		1100WAC	Up to 1440W
	C9300-48U-E/A	48 Cisco UPOE		1100WAC	Up to 1880W
	C9300-24UX-E/A	24 mig UPOE (100M, 1G, 2.5G, 5G, or 10 Gbps)	C9300-NM-8M (8port UTP 10G)	1100WAC	Up to 1440W
	C9300-48UXM-E/A	36x100 Mbps, 1G, 2.5G + 12x mgig(100M, 1G, 2.5G, 5G, or 10 Gbps)		1100WAC	Up to 1590W
	C9300-48UN-E/A	48x 5 Gbps UPOE ports (100M, 1G, 2.5G, 5G)		1100WAC	Up to 1745W
	C9300-24UB-E/A	24 Cisco UPOE	C9300-NM-2Q (2port x 40G)	1100WAC	Up to 1440W
	C9300-24UXB-E/A	24 Multigigabit Cisco UPOE (100M, 1G, 2.5G, 5G, or 10 Gbps)		1100WAC	Up to 1440W
	C9300-48UB-E/A	48 Cisco UPOE		1100WAC	Up to 1880W
	C9300-24H-E/A	24 Cisco UPOE+	C9300-NM-2Y (2port x 25G)	1900WAC	Up to 2722W
	C9300-48H-E/A	48 Cisco UPOE+		1900WAC	Up to 2880W
	C9300-24S-E/A	24x 1G SFP (Fiber 타입 포트)/Stacking		715WAC	-
	C9300-48S-E/A	48x 1G SFP (Fiber 타입 포트)/Stacking	C9300-NM-8Y (8port x 1/10/25G)	715WAC	-
	C9300X-12Y-E/A	12 Port 10G SFP+, Fiber 포트 타입 (1G/10G/25G SFP28)/Stacking		1900WAC	Up to 2722W
	C9300X-24Y-E/A	24 Port 10G SFP+, Fiber 포트 타입 (1G/10G/25G SFP28) /Stacking		1900WAC	Up to 2880W
	NEW C9300X-48HX-E/A	48x 100M/1G/2.5G/5G/10G ports with UPOE+	C9300-NM-2C (2port x 40/100G)	1900WAC	Up to 2722W
	NEW C9300X-48TX-E/A	48x 100M/1G/2.5G/5G/10G ports Data Only		1100WAC	-
	NEW C9300X-48HXN-E/A	36x 100M/1G/2.5G/5G with UPOE+ and 12x 100M/1G/2.5G/5G/10G		1900WAC	Up to 2722W
	NEW C9300X-24HX-E/A	24x 100M/1G/2.5G/5G/10G ports with UPOE+	C9300X-NM-4C (4port x 40/100G)	1100WAC	Up to 1440W

Catalyst 9300X Multigigabit Models

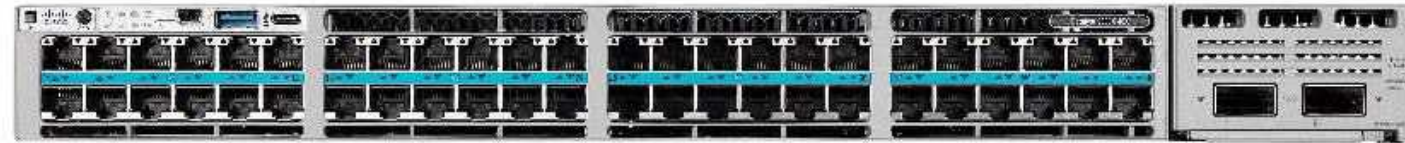
형식승인중



C9300X-48HX

48x 100M/1G/2.5G/5G/10G ports with UPOE+

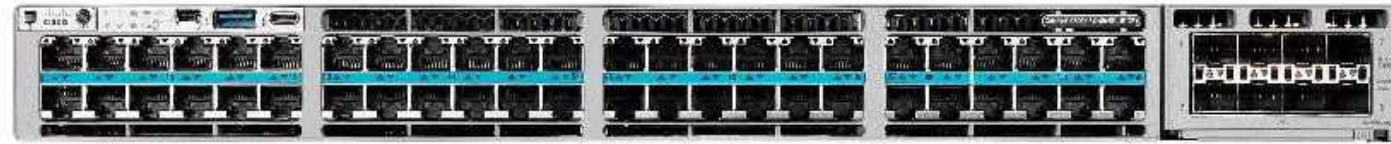
형식승인중



C9300X-48TX

48x 100M/1G/2.5G/5G/10G ports Data Only

2분기 출시



C9300X-48HXN

36x 100M/1G/2.5G/5G with UPOE+

12x 100M/1G/2.5G/5G/10G with UPOE+

2분기 출시



C9300X-24HX

24x 100M/1G/2.5G/5G/10G ports with UPOE+

형식승인중



C9300X-NM-4C

형식승인중



C9300X-NM-8M

8 x 10G-mGig

Highest Multigigabit Ports / UPOE+ / StackWise-1T

Catalyst 9300X – New High Performance Access Switch

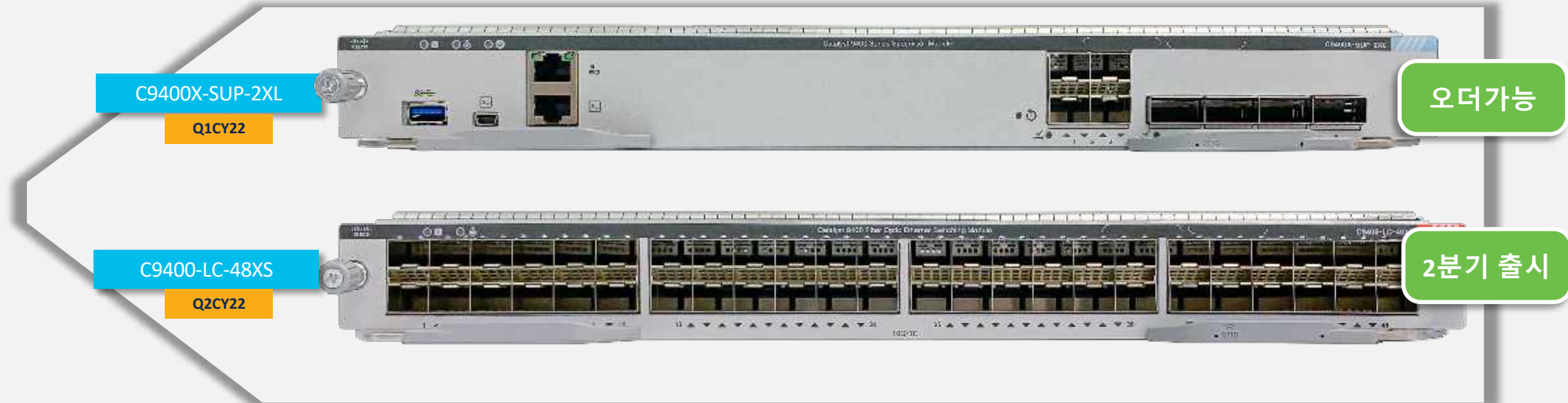
[Keywords]

Full M Gig / 90W

100G Uplink , 1Tbps stacking bandwidth



Cisco Catalyst 9400 Series



Key use cases:

- **Supporting hybrid work** needs for wired or Wi-Fi 6 and 6E bandwidth& density demands (more capacity & Multigigabitports).
- **More PoE power for smart workspaces** by powering Wi-Fi, lighting, endpoints, improving sustainability and energy efficiency in smart buildings



