Cisco IOS XR Software Flexible Consumption Model

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Cisco IOS XR Software overview

Cisco IOS® XR Routing products are powered by our industry-leading, carrier-class, 64-bit version of Cisco® IOS XR Software, designed for operational efficiency, optimized utilization, and service agility (Cisco Evolved Programmable Network). Cisco IOS XR is a carrier-class operating system that offers rich features such as Pre-boot eXecution Environment (iPXE) boot, auto provisioning, native support for third-party application hosting, machine-to-machine interface, telemetry, and flexible software package delivery.

Cisco IOS XR Flexible Consumption Model

In today's world, customers desire a simple and flexible consumption model that gives them the capability and flexibility to purchase software capacity as and when needed. When installing high-density line cards or high-capacity fixed chassis, customers usually do not need the full capacity of the hardware from day one. Customers prefer strategic partners who can provide commercial offers permitting them to pay incrementally to expand capacity as demand for their consumer and business services rises. They want investment protection with portability of software across hardware resources to meet demand across any one of their markets. Customers also want a software license management experience that enables porting of licenses across the corporation to shift capacity to markets in demand. Pay-as-you-grow commercial offers permit service providers to pool software licenses by lowering initial investments required to incubate new services, and then invest in the network capacity as demand grows. Having this ability to add capacity as and when needed helps customers with their network and capacity planning.

Customer value proposition

Cisco designed the new Cisco IOS XR Flexible Consumption Model to specifically address customer outcomes and help customers rapidly deploy innovative new network solutions. The IOS XR Flexible Consumption Model leverages the carrier-class Cisco IOS XR Software to offer customers the ability to:

- **Reduce upfront capital**. The IOS XR Flexible Consumption Model offers a built-in "pay-as-you-grow" structure that lowers initial start-up costs with the ability to add more capacity overtime as needed. Software subscription provides feature upgrades and helps defer the payment of software value for the initial purchase.
- **Utilize capital efficiently**. Customers can efficiently share licenses network-wide with license pooling. This solution eliminates "stranded capacity" as a customer can use any available capacity wherever needed in the IOS XR Flexible Consumption Model network. Customers can potentially utilize their capital budgets to consume software innovations in IOS XR.
- **Simplify operations**. Two software suites, Essentials Software and Advantage Software, simplify license management while still providing the carrier-class Cisco IOS XR Software feature set.
- **Protect investment**. Software portability provides investment protection by enabling porting of licenses to next-generation hardware when a customer is ready. During decommissioning of hardware and transitioning to next generation hardware the customer retains the ability to not decommission the investment in the software, and instead, port it to a newer hardware provided all necessary conditions are met.

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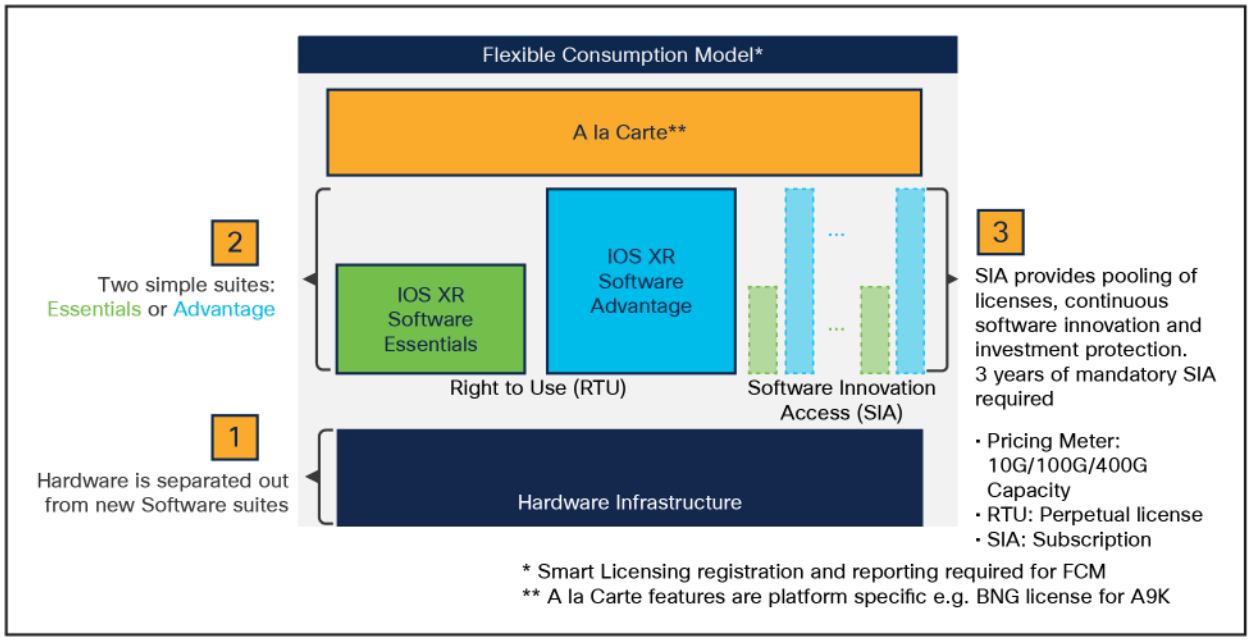


Figure 1.
Cisco IOS XR Flexible Consumption Model

Offer structure

The Cisco IOS XR Flexible Consumption Model (FCM) is comprised of three main parts, as shown in Figure 1. The hardware is the first part in the model. The two other parts are components of the software and are defined by the: 1) perpetual software component, also known as Right To Use (RTU); and 2) the ongoing, recurring software component, also known as Software Innovation Access (SIA).

RTU perpetual software licenses involve two software suites, Essentials Software and Advantage Software. The Essential Software licenses include the IOS XR comprehensive suite of routing and management services. Advantage Software licenses are an extension of Essential Software licenses and include all features of Essentials Software licenses with additional advanced routing and management services. Some product families may have additional, optional, a-la-carte software perpetual licenses for specialized platform-specific features. The IOS XR Flexible Consumption Model thus enables the software solution at the overall network level as opposed to just a single router.

A valid and compliant SIA for the entire FCM network entitles the customer to access software feature upgrades. It also allows organizations to share RTU software licenses across the entire Flexible Consumption Model network for a given Smart Account from a common license pool. Customers can port their RTU licenses to a permissible next-generation router. SIA is available in two terms: xxx-SIA-3 (with a selectable range of 36 to 59 months) and xxx-SIA-5 (with a selectable range of 60 to 120 months), where “xxx” is the platform product identifier. For example, if you would like 48 months of Essentials SIA coverage for the Cisco Network Convergence System (NCS) 5500 Series Router, then choose the ESS-100G-SIA-3 product ID and select 48 months when ordering in CCW.

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Cisco Smart Licensing

The IOS XR Flexible Consumption Model requires Cisco Smart Licensing registration and license usage reporting. A customer network under IOS XR FCM is considered compliant if the FCM-enabled devices in the customer's network are registered to Smart Licensing and are reporting the usage.

Smart Licensing greatly simplifies the operational overhead associated with license and device experience management for customers.

A successful registration and reporting to Smart Licensing is essential to avail all the benefits of Software Innovation Access in FCM. All customers that are upgrading to IOS XR 7.4.x from 7.3.x will lose the right to software innovation and upgrades if the FCM device installation base does not register to a Smart Account and report usage.

Some additional benefits of Smart Licensing are:

- **Real-time visibility**. Get a current view and immediate insights about your software licenses, entitlements, and users across the organization.
- **Centralized management**. Enjoy a single location for all your Cisco software assets (including PAK licenses and Enterprise Agreements) and the ability to freely move licenses around your network.
- **Telemetry**. Download reports on purchased, in-use, and available software to improve software utilization, efficiency, and budget planning.
- **Better organization**. Flexibly organize licenses by department, product, geography, or other designation.
- **Speed and ease**. A Smart Account is simple to use and takes only a few minutes to set up.
- **Unified Management:** Cisco License Central (CLC) provides a complete view into all of your Cisco products and services in an easy-to-use portal, so you always know what you have and what you are using.

To use Smart Licensing, you must first set up a Smart Account on Cisco License Central.

For a more detailed overview on Cisco Licensing, visit the Licensing Hub.

Software suites in IOS XR FCM

The IOS XR Flexible Consumption Model comprises two software suites, as shown in Figure 2. The Essentials software suite is for basic transport applications, while the Advantage software suite is for enhanced applications and network resiliency. The Advantage software suite includes all the features in the Essential Software suite, in addition to advanced features.

The Essentials software suite is required for active ports in the system and is a per-400-Gb and per-100-Gb capacity licenses (e.g., for the Cisco 8000 Series), per-100-Gb capacity license (e.g., for the Cisco Network Convergence System (NCS) 5500 Series, Cisco NCS 560 Series, and Cisco Aggregation Services Router (ASR) 9000 Series 3rd/4th/5th Generation Line Cards) and per-10-Gb capacity license (e.g., Cisco NCS 540 Series).

On top of the Essentials software suite license, customers may also require the Advantage software suite when one or more of the features in the Advantage software suite are used (e.g., layer 2 Advanced services, layer 3 VPN services, and Peering). Advantage software also includes Traffic Engineering, Media Access Control Security (MACsec), Service-layer Application Programing Interface (SL-API), and Broadband Networking Gateway (BNG, supported only on the Cisco ASR 9000 Series) enablement.

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The a-la-carte software licenses provide specialized platform specific features (i.e., BNG on the Cisco ASR 9000 Series and Dense Wave Division Multiplexing (DWDM) on the Cisco NCS 5500 Series). The Advantage Software suite is available starting with IOS XR 7.4.1 for Cisco ASR 9000 Series third-, fourth-, and fifth-generation line cards, Cisco NCS 5500 core and aggregation platforms, and NCS 540 and NCS 560 access platforms. For the Cisco 8000 Series, the Advantage Software Suite is available starting with IOS XR 7.5.1.

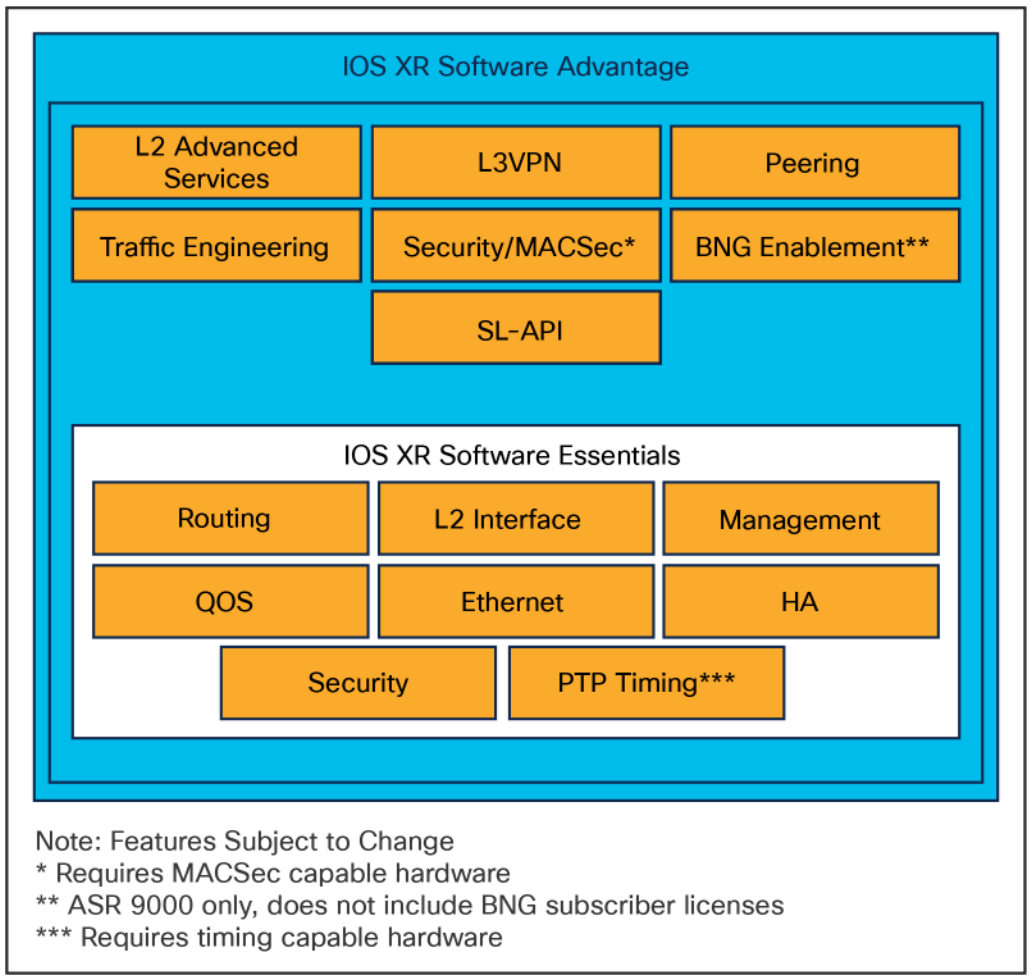


Figure 2.
IOS XR Flexible Consumption Model

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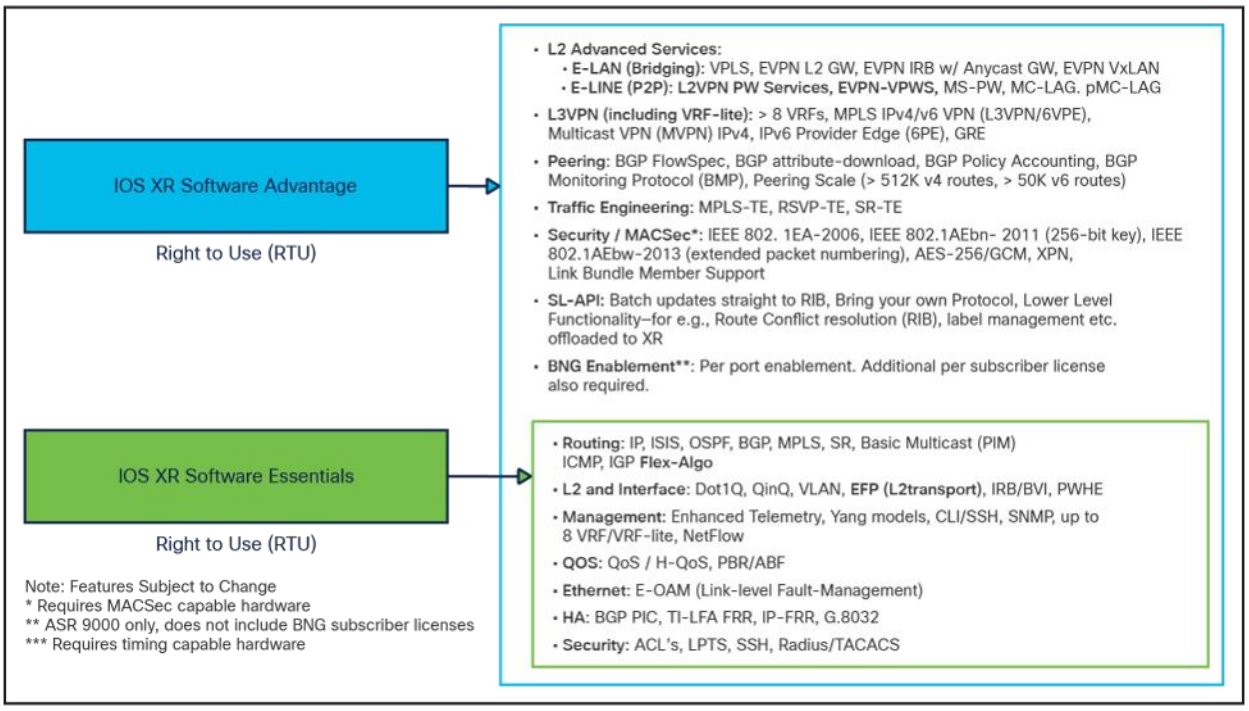


Figure 3.
Simple and flexible software suites

Ordering information

The IOS XR Flexible Consumption Model is available on the following platforms: Cisco 8000 Series, Cisco ASR 9000 Series third-, fourth, and fifth-generation line cards, NCS 5500 core and aggregation platforms, and NCS 540 and NCS 560 access platforms. The term ranges for the SIA product IDs are xxx-SIA-3 (36 to 59 months) and xxx-SIA-5 (60 to 120 months), where xxx is the platform product identifier. The following tables show the product IDs for the Flexible Consumption Model versions of the software licenses, systems, and line cards.

Table 1. Cisco 8000 Series Flexible Consumption Model software licenses

Product ID (PID)	Description
ESS-CA-100G-RTU-2	Core and Agg Essential Right-to-Use 100G for Cisco 8000 Series
ESS-CA-100G-SIA-3	Core/Aggr Essential SIA 3 yr term/100G for Cisco 8000 Series
ESS-CA-100G-SIA-5	Core/Aggr Essential SIA 5 yr term/100G for Cisco 8000 Series
ADV-CA-100G-RTU-2	Core and Agg Advanced Right-to-Use 100G for Cisco 8000 Series
ADV-CA-100G-SIA-3	Core/Aggr Advance SIA 3 yr term/100G for Cisco 8000 Series
ADV-CA-100G-SIA-5	Core/Aggr Advance SIA 5 yr term/100G for Cisco 8000 Series
ESS-CA-400G-RTU-2	Core and Agg Essential Right-to-Use 400G for Cisco 8000 Series
ESS-CA-400G-SIA-3	Core/Aggr Essential SIA 3 yr term/400G for Cisco 8000 Series
ESS-CA-400G-SIA-5	Core/Aggr Essential SIA 5 yr term/400G for Cisco 8000 Series

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Product ID (PID)	Description
ADV-CA-400G-RTU-2	Core and Agg Advanced Right-to-Use 400G for Cisco 8000 Series
ADV-CA-400G-SIA-3	Core/Aggr Advance SIA 3 yr term/400G for Cisco 8000 Series
ADV-CA-400G-SIA-5	Core/Aggr Advance SIA 5 yr term/400G for Cisco 8000 Series
8000-SW-LICENSE	Cisco 8000 Series additional Software Licenses (RTU, SIA)

Table 2. Cisco 8000 Series Flexible Consumption Model systems and line cards

Product ID (PID)	Description	100G or 400G Essentials Licenses to start
8201-SYS	Cisco 8201 1RU System w/ 24x400GE QSFP56-DD&12x100GE QSFP28	5.4T out of 10.8T
8202-SYS	Cisco 8202 2RU System w/ 12x400GE QSFP56-DD&60x100GE QSFP28	5.4T out of 10.8T
8808-SYS	Cisco 8808 8-slot System	Based on line cards
8812-SYS	Cisco 8812 12-slot System	Based on line cards
8818-SYS	Cisco 8818 18-slot System	Based on line cards
Line cards		
8800-LC-48H	Cisco 8800 48x100GE QSFP28 Line Card	2.4T out of 4.8T
8800-LC-36FH	Cisco 8800 36x400GE QSFP56-DD Line Card	7.2T out of 14.4T

Additional product information is available in the Cisco 8000 Series data sheet.

Table 3. ASR 9000 Series Flexible Consumption Model software licenses

Product ID (PID)	Description
ESS-ED-100G-RTU1	Edge Essentials Software RTU License per 100G
ESS-ED-400G-RTU1	Edge Essentials Software RTU License per 400G
ADV-ED-100G-RTU1	Edge Advantage w/o Essentials Software RTU License per 100G
ADV-ED-400G-RTU1	Edge Advantage w/o Essentials Software RTU License per 400G
ADN-ED-100G-RTU1	Edge Advantage w/ Essentials Software RTU License per 100G
ADN-ED-400G-RTU1	Edge Advantage w/ Essentials Software RTU License per 400G
ESS-ED-100G-SIA3	Edge Essentials SIA per 100G 36-59 months
ESS-ED-100G-SIA5	Edge Essentials SIA per 100G 60-120 months
ADV-ED-100G-SIA3	Edge Advantage w/o Essentials SIA per 100G for 36-59 months

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Product ID (PID)	Description
ADV-ED-100G-SIA5	Edge Advantage w/o Essentials SIA per 100G for 60-120 months
ADN-ED-100G-SIA3	Edge Advantage w/ Essentials SIA per 100G for 36-59 months
ADN-ED-100G-SIA5	Edge Advantage w/ Essentials SIA per 100G for 60-120 months
ESS-ED-400G-SIA3	Edge Essentials SIA per 400G 36-59 months
ESS-ED-400G-SIA5	Edge Essentials SIA per 400G 60-120 months
ADV-ED-400G-SIA3	Edge Advantage w/o Essentials SIA per 400G for 36-59 months
ADV-ED-400G-SIA5	Edge Advantage w/o Essentials SIA per 400G for 60-120 months
ADN-ED-400G-SIA3	Edge Advantage w/ Essentials SIA per 400G for 36-59 months
ADN-ED-400G-SIA5	Edge Advantage w/ Essentials SIA per 400G for 60-120 months
ESS-ADN-ED-100G	Edge Essentials to Advantage Upgrade RTU per 100G
ESS-ADN-ED-400G	Edge Essentials to Advantage Upgrade RTU per 400G
ESS-ADN-ED-100G-S3	Edge Essentials -Advantage Upgrade SIA per 100G 36-59 months
ESS-ADN-ED-100G-S5	Edge Essentials-Advantage Upgrade SIA per 100G 60-120 months
ESS-ADN-ED-400G-S3	Edge Essentials -Advantage Upgrade SIA per 400G 36-59 months
ESS-ADN-ED-400G-S5	Edge Essentials -Advantage Upgrade SIA per 400G 60-120 months
ASR9K-SW-FC	ASR 9000 Series additional Software Licenses (RTU, SIA)

Table 4. ASR 9000 Series Flexible Consumption Model systems and line cards

Product ID (PID)	Description	Minimum Capacity Requirement of Essentials Licenses
Hardware: ASR 9000 Series Chassis PIDs		
ASR-9922	ASR 9922 20 Line Card Slot Chassis	Based on line cards
ASR-9912	ASR 9912 10 Line Card Slot Chassis	Based on line cards
ASR-9910	ASR 9910 8 Line Card Slot Chassis	Based on line cards
ASR-9906	ASR 9906 4 Line Card Slot Chassis	Based on line cards
ASR-9904	ASR-9904 2 Line Card Slot Chassis	Based on line cards
ASR-9010-SYS	ASR 9010 8 Line Card Slot Chassis	Based on line cards
ASR-9006-SYS	ASR 9006 4 Line Card Slot Chassis	Based on line cards
ASR-9903-FC	ASR 9903 Flexible Consumption Compact Chassis, 3RU	600G out of 1.6T

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Product ID (PID)	Description	Minimum Capacity Requirement of Essentials Licenses
ASR-9902-FC	ASR 9902 Flexible Consumption Compact Chassis, 2RU	400G out of 800G
ASR-9901-FC	ASR 9901 Flexible Consumption Compact Chassis, 2RU	100G out of 456G
Hardware: ASR 9000 Series 5th Generation line card/port expansion card PIDs		
A99-4T-FC	ASR 9000 4T Flexible Consumption Line Card	1.6T out of 4T
A99-32HG-FC	ASR 9900 3.2T Flexible Consumption Line Card	1.3T out of 3.2T
A9K-20HG-FLEX-FC	ASR 9000 2T Flexible Consumption Combo Line Card	800G out of 2T
A9K-8HG-FLEX-FC	ASR 9000 800G Flexible Consumption Combo Line Card	300G out of 800G
A99-4HG-FLEX-FC	ASR 9000 400G Flexible Consumption Combo Line Card	200G out of 400G
A9K-4HG-FLEX-FC	ASR 9000 400G Flexible Consumption Combo Line Card	200G out of 400G
A9903-20HG-PEC-FC	ASR 9903 2T Flexible Consumption Port Expansion Card	800G out of 2T
A9903-8HG-PEC-FC	ASR 9903 800G Flexible Consumption Port Expansion Card	300G out of 800G
Hardware: ASR 9000 Series 4th Generation line card PIDs		
A99-32X100GE-FC	ASR 9900 32X100GE Flexible Consumption Line Card	1.3T out of 3.2T
A99-16X100GE-X-FC	ASR 9900 16-port 100GE Flexible Consumption Line Card	600G out of 1.6T
A9K-16X100GE-FC	ASR 9000 16-port 100GE Flexible Consumption Line Card	600G out of 1.6T
Hardware: ASR 9000 Series 3rd Generation line card PIDs		
A99-12X100GE-FC	ASR 9900 12x100GE Flexible Consumption Line Card	500G out of 1.2T
A99-8X100GE-FC	ASR 9900 8-port 100GE Flexible Consumption Model Line Card	300G out of 800G
A9K-8X100GE-FC	ASR 9000 8-port 100GE Flexible Consumption Model Line Card	300G out of 800G
A9K-4X100GE-FC	ASR 9000 4-port 100GE Flexible Consumption Model Line Card	200G out of 400G
A9K-400GE-LAN-FC	ASR 9000 4x100GE QSFP28 Flexible Consumption Model LAN Line Card	200G out of 400G
A99-48X10GE-1G-FC	ASR 9900 48-port 10G and 1G Flexible Consumption model Line Card	200G out of 480G
A9K-48X10GE-1G-FC	ASR 9000 48-port 10G and 1G Flexible Consumption model Line Card	200G out of 480G

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Product ID (PID)	Description	Minimum Capacity Requirement of Essentials Licenses
A9K-24X10GE-1G-FC	ASR 9000 24-port 10GE and 1GE Flexible Consumption Model Line Card	100G out of 240G
A9K-MOD400-FC	ASR 9000 Modular 400GE Flexible Consumption Model Line Card	200G out of 400G
A9K-MOD200-FC	ASR 9000 Modular 200G Flexible Consumption Model Line Card	100G out of 200G

Additional product information is available in the Cisco ASR 9000 Series data sheets.

Table 5. NCS 5500 Series Flexible Consumption Model software licenses

Product ID (PID)	Description
NCS 5500 Series	
ESS-100G-RTU-1	Core and Aggregation Essentials SW Right-to-Use v1.0 100G
ADV-100G-RTU-1	Core and Aggregation Advantage w/o Essentials SW RTU v1.0 100G
ADN-100G-RTU-1	Core and Aggregation Advantage w/ Essentials SW RTU v1.0 100G
ESS-100G-SIA-3	Core and Aggr Essentials SIA v1.0 100G 3-5 year term
ESS-100G-SIA-5	Core and Aggr Essentials SIA v1.0 100G 5-10 year term
ADV-100G-SIA-3	Core and Aggr Advantage w/o Essentials SIA v1.0 100G 3-5 year term
ADV-100G-SIA-5	Core and Aggr Advantage w/o Essentials SIA v1.0 100G 5-10 year term
ADN-100G-SIA-3	Core and Aggr Advantage w/ Essentials SIA v1.0 100G 3-5 year term
ADN-100G-SIA-5	Core and Aggr Advantage w/ Essentials SIA v1.0 100G 5-10 year term
NCS 5700 Series	
ESS-100G-RTU-2	Core and Aggregation Essentials SW Right-to-Use v2.0 100G
ADN-100G-RTU-2	Core and Aggregation Advantage w/ Essentials SW RTU v2.0 100G
ESS2-100G-SIA-3	Core and Aggr Essentials SIA v2.0 100G 3-5 year term
ESS2-100G-SIA-5	Core and Aggr Essentials SIA v2.0 100G 5-10 year term
ADN2-100G-SIA-3	Core and Aggr Advantage w/ Essentials SIA v2.0 100G 3-5 year term
ADN2-100G-SIA-5	Core and Aggr Advantage w/ Essentials SIA v2.0 100G 5-10 year term
Capacity Upgrade and Model Migration	
NCS-5500-FC-SW	NCS 5500 Series additional Software Licenses (RTU, SIA)

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Product ID (PID)	Description
Essentials To Advantage	
ESS-ADN-100G-RTU1	Core and Agg Essentials to Advantage Upgrade RTU v1.0 100G
ESS-ADN-100G-SIA3	Core and Agg Essentials to Advantage Upgrade SIA v1.0 100G 3-5 yrs
ESS-ADN-100G-SIA5	Core and Agg Essentials to Advantage Upgrade SIA v1.0 100G 5-10 yrs
ESS-ADN-100G-RTU2	Core and Agg Essentials to Advantage Upgrade RTU v2.0 100G
ESS-ADN2-100G-SIA3	Core and Agg Essentials to Advantage Upgrade SIA v2.0 100G 3-5 yrs
ESS-ADN2-100G-SIA5	Core and Agg Essentials to Advantage Upgrade SIA v2.0 100G 5-10 yrs

Table 6. NCS 5500 Series Flexible Consumption Model systems and line cards

Product ID (PID)	Description	100G Essentials Licenses to start
Fixed Platforms		
NCS-57D2-18DD-SYS	NCS57D2 7.2T Fixed Base Chassis 66 QSFP-DD flexible ports	28 out of 72
NCS-57C1-48Q6-SYS	NCS 57C1 Base Chassis, Flexible Consumption Need Smart Lic	12 out of 40
NCS-57B1-6D24-SYS	NCS57B1 Fixed Base HW Flexible Consumption Need Smart Lic	20 out of 48
NCS-57B1-5DSE-SYS	NCS57B1 Fixed Scale HW Flexible Consumption Need Smart Lic	18 out of 44
NCS-57C3-MOD-SYS	NCS 57C3 Base Chassis, Flexible Consumption Need Smart Lic	12 out of 40
NCS-57C3-MODS-SYS	NCS 57C3 Scale Chassis, Flexible Consumption Need Smart Lic	12 out of 36
NCS-55A2-MOD-SYS	24X10G + 16X25G Flexible Consumption Need Smart Lic	5 out of 14
NCS-55A2-MODH-SYS	24X10G+16X25G temperature hardened for Flexible Consumption	5 out of 14
NCS-55A2-MODX-SYS	24X10G+16X25G CC temperature hardened for Flexible Consumption	5 out of 14
NCS-55A2-MODS-SYS	Fixed 24X10G+16X25G and MPA NCS 55A2 SE Chassis for Flexible Consumption	5 out of 14
NCS-55A2MODSH-SYS	24X10G+16X25G 55A2-SE CC Flexible Consumption	5 out of 14
NCS-55A1-24Q6-SYS	NCS55A1 Fixed Base HW Flexible Consumption Need Smart Lic	5 out of 14
NCS-55A1-24QX-SYS	NCS55A1 Fixed MACSEC HW Flexible Consumption	

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Product ID (PID)	Description	100G Essentials Licenses to start
NCS-55A1-24H-SYS	NCS-55A1-24H-SYS Base System HW for Flexible Consumption	10 out of 24
NCS-55A1-36H-SYS	NCS-55A1-36H-SYS Base System HW for Flexible Consumption	15 out of 36
NCS-55A1-36HS-SYS	NCS-55A1-36HS-SYS SE System HW for Flexible Consumption	15 out of 36
NCS-55A1-48Q6-SYS	Bifrost Flexible Consumption Model 48X25G + 6x100G Chassis	7 out of 18
NCS-5501-SYS	NCS-5501 Base System HW for Flexible Consumption	3 out of 11
NCS-5501-SE-SYS	NCS-5501 SE System HW for Flexible Consumption	4 out of 8
Modular Platforms		
NCS-5504-SYS	NCS-5504 Base System HW for Flexible Consumption	Based on line cards
NCS-5508-SYS	NCS-5508 Base System HW for Flexible Consumption	Based on line cards
NCS-5516-SYS	NCS-5516 Base System HW for Flexible Consumption	Based on line cards
Line cards		
NC-57-48Q2D-S	NCS 5700 32X1/10/25G + 16x1/10/25/50G* + 2x400G Base LC	8 out of 24
NC-57-48Q2D-SE-S	NCS 5700 32X1/10/25G + 16x1/10/25/50G* + 2x400G Scale LC	8 out of 24
NC-57-MOD-S	NCS 5700 8x50GE, 2x400GE, 2xMPA Base Macsec Line Card FCM	5 out of 28; 1 MPA required
NC-57-36H6D-S	NCS 5700 24x100GE + (6x400GE or 12x100GE) Base Line Card FCM	16 out of 48
NC-57-36H-SE	NCS 5700 36x100G Scale Line Card FCM	12 out of 36
NC-57-24DD	NCS 5500 24x400G Base Line Card	32 out of 96
NC-57-18DD-SE	NCS 5500 18x400G or 30x200G Combo Scale Line Card	24 out of 72
NC-55-32T16Q4H-AT	NC55-32T16Q4H-AT Line Card Flexible Consumption (Smart Lic)	4 out of 11
NC-55-32T16Q4H-A	NC55-32T16Q4H-A Line Card Flexible Consumption (Smart Lic)	4 out of 11
NC-55-MOD-A	NC-55-MOD-A Flexible Consumption Model NCS 5500 Modular Base Line Card (requires minimum of 1 MPA)	5 out of 10
NC-55-MOD-A-SE	NC-55-MOD-A-SE Flexible Consumption Model NCS 5500 Modular “SE” Line Card (requires minimum of 1 MPA)	5 out of 10

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Product ID (PID)	Description	100G Essentials Licenses to start
NC-55-6X2H-DWDM-S	NC55-6X2H-DWDM Line Card HW Flexible Consumption (minimum of 4 DWDM licenses)	4 out of 12
NC-55-18H18F	NC55-18x100G + 18x40G Base Line Card HW for Flexible Consumption	12 out of 25
NC-55-24X100G-SE	NC55-24X100G SE Line Card HW for Flexible Consumption	10 out of 24
NC-55-24H12F-SE	NC55-24x100G + 12x40G SE Line Card HW for Flexible Consumption	12 out of 29
NC-55-36X100G	NC55-36X100G Base Line Card HW for Flexible Consumption	15 out of 36
NC-55-36X100G-S	NC55-36X100G-S Base MACsec Line Card HW Flexible Consumption	15 out of 36
NC-55-36X100GA-SE	NC55-36X100G SE Line Card HW for Flexible Consumption	15 out of 36
Modular Port Adapters		
NC55-OIP-02-FC	NCS 5500, 8 ports OTU2/2e/OC192/OC48/FC MPA	
NC57-MPA-12L-S-FC	NCS 5700 - 12x10/25/50G MPA	
NC57-MPA-1FH1D-FC	NCS 5700 400G CFP2 DCO & 400G QSFP-DD MPA	
NC57-MPA-2D4H-FC	NCS 5700 QSFP-DD MPA	
NC55-MPA-12T-S-FC	NCS 5500 12X10G MPA	
NC55-MPA-1TH2H-FC	NCS 5500 1X200G CFP2 and 2X100G QSFP28 MPA	
NC55-MPA-2TH-S-FC	NCS 5500 2X200G CFP2 MPA	
NC55-MPA-4H-S-FC	NCS 5500 4X100G QSFP28 MPA	
NC55-MPA-4H-HD-FC	NCS 5500 4X100G QSFP28 Temp-hardened MPA FCM	

*SW support for 1GE on SFP56 ports will be available in a future IOS XR release.

Additional product information is available in the Cisco NCS 5500 Series data sheets.

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Table 7. NCS 540 Series Flexible Consumption Model software licenses

Product ID (PID)	Description
ESS-AC-10G-RTU-1	Access Essentials SW Right-to-Use v1.0 per 10G
ADV-AC-10G-RTU-1	Access Advantage w/o Essentials SW RTU v1.0 10G
ADN-AC-10G-RTU-1	Access Advantage w/ Essentials SW RTU v1.0 10G
ESS-ADN-AC-10G-RT	Access Essentials to Advantage Upgrade RTU per 10G
ESS-AC-10G-SIA-3	Access Essentials SIA 10G 3-5 year term
ESS-AC-10G-SIA-5	Access Essentials SIA 10G 5-10 year term
ADV-AC-10G-SIA-3	Access Advantage w/o Essentials SIA 10G 3-5 year term
ADV-AC-10G-SIA-5	Access Advantage w/o Essentials SIA 10G 5-10 year term
ADN-AC-10G-SIA-3	Access Advantage w/ Essentials SIA 10G 3-5 year term
ADN-AC-10G-SIA-5	Access Advantage w/ Essentials SIA 10G 5-10 year term
ESS-ADN-AC-10G-S3	Access Essentials to Advantage Upgrade SIA 10G 3-5 yrs
ESS-ADN-AC-10G-S5	Access Essentials to Advantage Upgrade SIA 10G 3-5 yrs
N540-24Z8Q2C-FC-SW	NCS 540 Series additional Software Licenses (RTU, SIA)

Table 8. NCS 540 Series Flexible Consumption Model systems

Product ID (PID)	Description	10G Essentials Licenses to start
N540X-12Z16G-SYS-A	NCS540 12x1G SFP + 4x1G Cu + 12x10G AC	6 out of 14
N540X-12Z16G-SYS-D	NCS540 12x1G SFP + 4x1G Cu + 12x10G DC	6 out of 14
N540-12Z20G-SYS-A	NCS540 20x1G+12x10G AC	6 out of 14
N540-12Z20G-SYS-D	NCS540 20x1G+12x10G DC	6 out of 14
N540X-16Z4G8Q2C-A	NCS 540 16x10G+4x1G Cu+8x25G+2x100G AC	9 out of 56
N540X-16Z4G8Q2C-D	NCS540 16x10G+4x1G Cu+8x25G+2x100G DC	9 out of 56
N540-ACC-SYS	NCS540 24x1/10G SFP+, 8x1/10/25G SFP+/SFP28, 2x100G QSFP28	9 out of 64
N540X-ACC-SYS	NCS540 CC 24x1/10G,8x1/10/25G SFP+/SFP28, 2x100G QSFP28	9 out of 64
N540-24Q8L2DD-SYS	NCS540-2x400G QSFP-DD+8x50G+24x25G	20 out of 100
N540-24Z8Q2C-SYS	NCS 540 System Flexible Consumption	16 out of 64

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Product ID (PID)	Description	10G Essentials Licenses to start
N540-28Z4C-SYS-A	NCS540 28x10G + 4x100G AC	12 out of 68
N540-28Z4C-SYS-D	NCS 540 28x10G + 4x100G DC	12 out of 68
N540X-4Z14G2Q-A	NCS540 14x1G + 4x1/10G + 2x10/25G Dual-AC iTEMP Conformal-Coated Chassis	4 out of 10
N540X-4Z14G2Q-D	NCS540 14x1G + 4x1/10G + 2x10/25G Dual-AC iTEMP Conformal-Coated Chassis	4 out of 10
N540X-8Z16G-SYS-A	N540 12/20(CSFP) x1G + 4x1GCu + 8x1/10G Dual-AC iTEMP Conformal-Coated Chassis	4 out of 10
N540X-8Z16G-SYS-D	N540 12/20(CSFP) x1G + 4x1GCu + 8x1/10G Dual-AC iTEMP Conformal-Coated Chassis	4 out of 10
N540X-6Z18G-SYS-A	NCS540 18x1G SFP + 6x1/10G SFP+ Dual-AC iTEMP Conformal-Coated Chassis	3 out of 8
N540X-6Z18G-SYS-D	NCS540 18x1G SFP + 6x1/10G SFP+ Dual-DC iTEMP Conformal-Coated Chassis	3 out of 8

Additional product information is available in the Cisco NCS 540 Series data sheets.

Table 9. NCS 560 Series Flexible Consumption Model software licenses

Product ID (PID)	Description
ESS-AC-100G-RTU-1	Access Essentials SW Right-to-Use v1.0 per 100G
ADV-AC-100G-RTU-1	Access Advantage w/o Essentials SW RTU v1.0 100G
ADN-AC-100G-RTU-1	Access Advantage w/ Essentials SW RTU v1.0 100G
ESS-ADN-AC-100G-RT	Access Essentials to Advantage Upgrade RTU per 100G
ESS-AC-100G-SIA-3	Access Essentials SIA 100G 3-5 year term
ESS-AC-100G-SIA-5	Access Essentials SIA 100G 5-10 year term
ADV-AC-100G-SIA-3	Access Advantage w/o Essentials SIA 100G 3-5 year term
ADV-AC-100G-SIA-5	Access Advantage w/o Essentials SIA 100G 5-10 year term
ADN-AC-100G-SIA-3	Access Advantage w/ Essentials SIA 100G 3-5 year term
ADN-AC-100G-SIA-5	Access Advantage w/ Essentials SIA 100G 5-10 year term
ESS-ADN-AC100G-S3	Access Essentials to Advantage Upgrade SIA 100G 3-5 yrs
ESS-ADN-AC100G-S5	Access Essentials to Advantage Upgrade SIA 100G 5-10 yrs
N560-FC-SW	NCS 560 Series additional Software Licenses (RTU, SIA)

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Table 10. NCS 560 Series Flexible Consumption Model systems and line cards

Product ID (PID)	Description	100G Essentials Licenses To Start
N560-4-SYS	N560 4RU HW. Flex. Consumption for RSP4.	2 out of 8
N560-4-SYS-E	N560 4RU HW. Flex. Consumption for RSP4-E.	2 out of 8
N560-7-SYS	N560 7RU HW. Flex. Consumption for RSP4.	4 out of 8
N560-7-SYS-E	N560 7RU HW. Flex. Consumption for RSP4-E.	4 out of 8
Line cards		
N560-IMA-2C	NCS 560 2x100G Interface Module, QSFP28	
A900-IMA-8Z	ASR 900 8x10G Interface Module, SFP+	
A900-IMA-8CS1Z	ASR 900 8/16 x 1G + 1 x 10G Interface Module, SFP/CSFP + SFP+	
N560-IMA-2C-DD	NCS560 2 x 100GE Interface Module - QSFPDD/ QSFP28	
N560-IMA-1W	NCS560 1 x 100G/200G CF2 DCO Module	
A900-IMA-8Z-L	ASR 900 8 x 10GE Interface Module, Lite	

Additional product information is available in the Cisco NCS 560 Series data sheets.

Note: All Cisco IOS XR Flexible Consumption Model products require Smart Licensing

Warranty

The hardware has a 1-year limited hardware warranty. The warranty includes hardware replacement with a 10-day turnaround from receipt of a Return Materials Authorization (RMA).

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Cisco environmental sustainability

Information about Cisco's environmental sustainability policies and initiatives for our products, solutions, operations, and extended operations or supply chain is provided in the "Environment Sustainability" section of Cisco's Corporate Social Responsibility (CSR) Report.

Reference links to information about key environmental sustainability topics (mentioned in the "Environment Sustainability" section of the CSR Report) are provided in the following table.

Table 11. Links to sustainability topics

Sustainability topic	Reference
Information on product material content laws and regulations	Materials
Information on electronic waste laws and regulations, including products, batteries, and packaging	WEEE compliance

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Service and support

Cisco offers a range of services to support the Flexible Consumption Model to help accelerate your success in deploying and optimizing the Cisco NCS 540 Series, NCS 560 Series, NCS 5500 Series, ASR 9000 Series, and 8000 Series. These innovative Cisco Services offerings are delivered through a unique combination of people, processes, tools, and partners, and they are focused on helping you increase operating efficiency and improve your data center network.

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Spanning the entire network lifecycle, Cisco Services offerings help increase investment protection, optimize network operations, support migration operations, and strengthen your IT expertise.

For information on services for the Flexible Consumption Model systems and software licenses, contact your Cisco sales representative. For an overview of all offers, visit Cisco Services for Service Providers.

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For more information

For more information about the Cisco 8000 Series, visit the Cisco 8000 Series website.

For more information about the Cisco ASR 9000 Series, visit the Cisco ASR 9000 Series website.

For more information about the Cisco NCS 5500 Series, visit the Cisco NCS 5500 Series website.

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For more information about the Cisco NCS 560 Series, visit the Cisco NCS 560 Series website.

For information about Cisco Crosswork™ Trust Insights, visit the Cisco Crosswork Network Automation website.

For information about Cisco Network Services Orchestrator, visit the Cisco NSO website.

For information about Cisco WAN Automation Engine (WAE), visit Cisco WAE website.

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Document history

New or Revised Topic	Described In	Date
Removal of SIA 4/7/10 year PIDs and addition of term ranges for SIA PIDs	Ordering Information	May 11, 2021
Addition of a paragraph on SIA and its terms	Benefits	May 19, 2021
Updated Figure 2	Benefits	June 1, 2021
Updated NCS 5700 PIDs	Table 6	July 5, 2023

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Printed in USA C78-741260-07 06/26

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