

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.

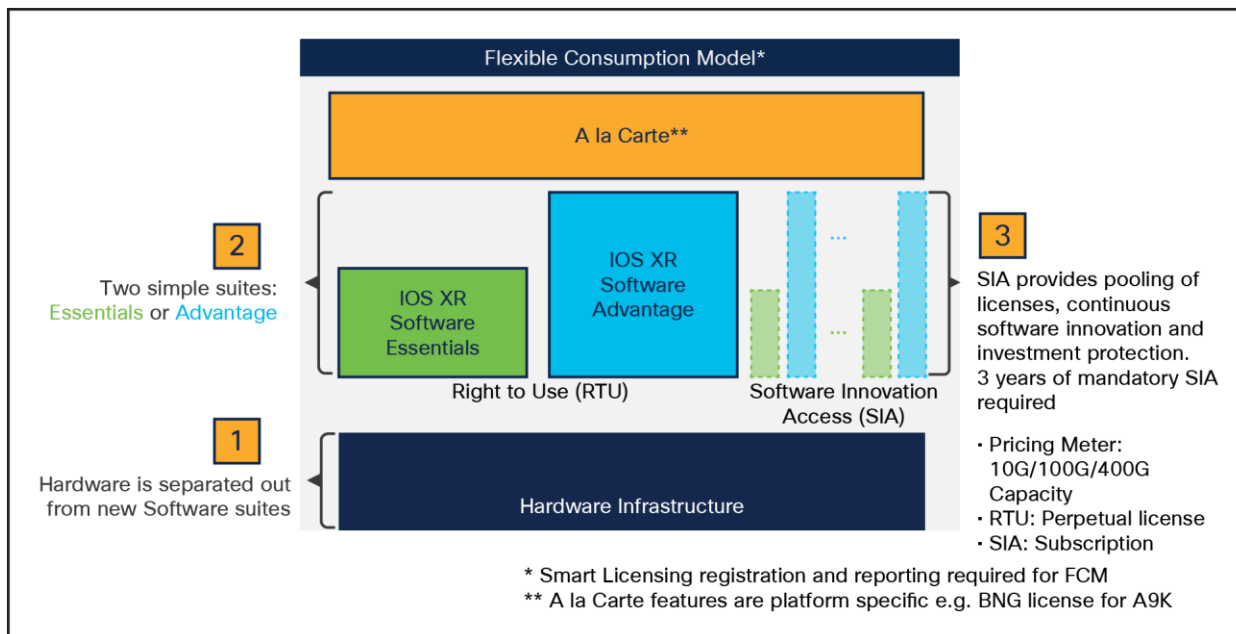


Figure 1.
Cisco IOS XR Flexible Consumption Model

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.

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.

For a more detailed overview of Cisco Smart Licensing, go to cisco.com/go/licensingguide.

Customers can manage and organize their smart licenses using the My Cisco Entitlements (MCE) platform. The MCE platform provides a consolidated view of all assets and entitlements, including services, subscriptions, licenses, and devices in the Smart Account. For more information on how to set up your MCE account visit [My Cisco Entitlements](#).

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 Programming Interface (SL-API), and Broadband Networking Gateway (BNG, supported only on the Cisco ASR 9000 Series) enablement.

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.

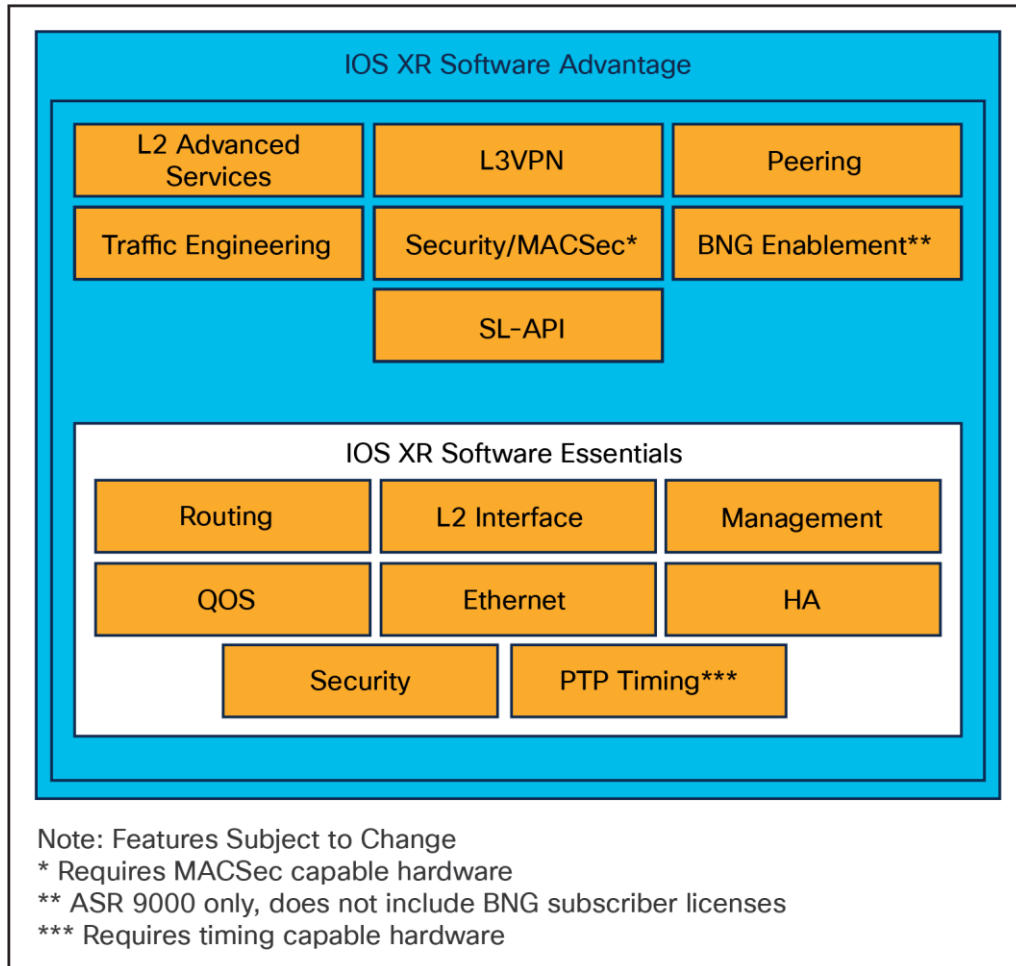


Figure 2.
IOS XR Flexible Consumption Model

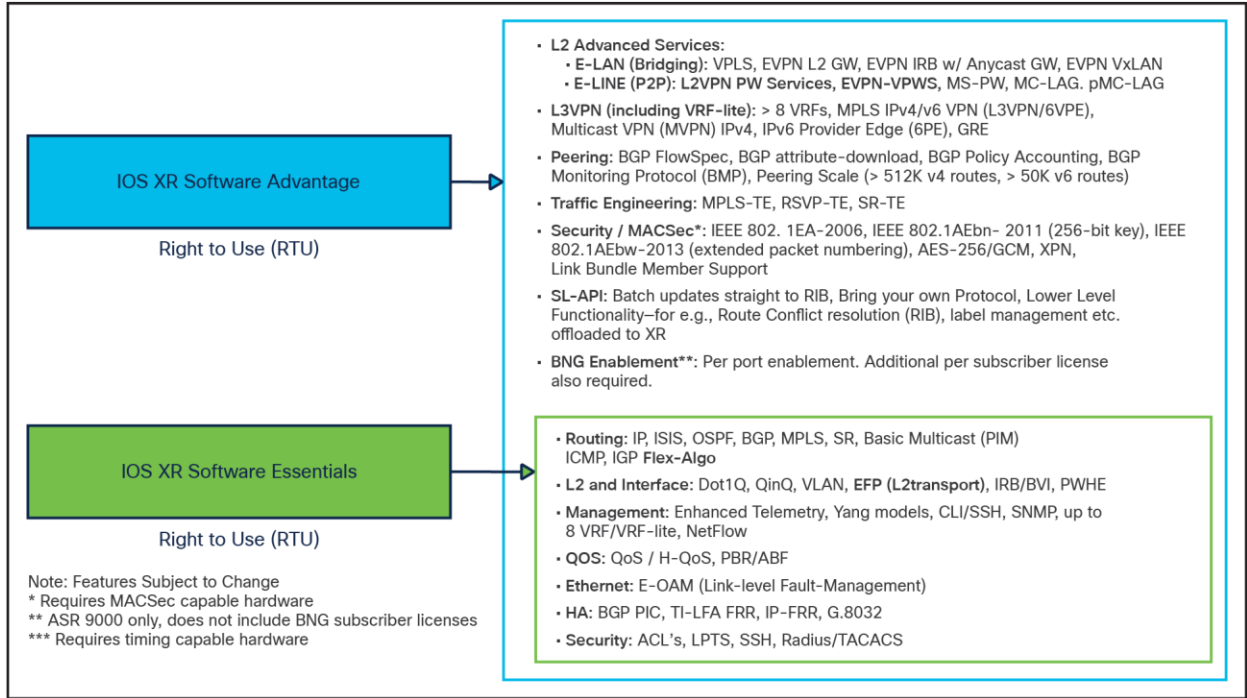


Figure 3.
Simple and flexible software suites

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 |

| 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 |

| 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 |

| 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 |

| 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) |

| 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 | |

| 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 |

| 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](#).

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 |

| 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) |

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).

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 |

Cisco makes the packaging data available for informational purposes only. It may not reflect the most current legal developments, and Cisco does not represent, warrant, or guarantee that it is complete, accurate, or up to date. This information is subject to change without notice.

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.

Cisco Advanced Services uses an architecture-led approach to help you align your data center infrastructure with your business goals and achieve long-term value.

Cisco Software Support offers award-winning technical support coverage and maintenance releases for the Essentials and Advantage Software Suites, helping to keep your systems and your business running smoothly. Software Support is a required purchase with the SIA feature upgrade licenses.

Cisco SP Base provides device-level support and helps reduce downtime with fast, expert technical support and flexible hardware coverage provided by the Cisco Technical Assistance Center (TAC). With this service, you can take advantage of the Cisco Smart Call Home service, which offers proactive diagnostics and real-time alerts on your Cisco NCS 5500 Series.

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.

For more information about the Cisco NCS 540 Series, visit the [Cisco NCS 540 Series](#) website.

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.

For information about Cisco Evolved Programmable Network Manager, visit [Cisco EPN Manager](#) website.

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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