

Cisco IOS XR Software Perpetual Licensing Model



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Cisco IOS XR Software overview

At Cisco, we know that our customers demand the best, which is why we're proud to offer our industry-leading Cisco IOS® XR routing products. Cisco's 64-bit IOS XR Software is designed to provide you with the operational efficiency, optimized utilization, and service agility you need to succeed in today's fast-paced business environment. Discover the benefits of our customer-focused approach, which includes rich features like iPXE boot, seamless auto-provisioning, native support for third-party application hosting, seamless machine-to-machine interface, real-time telemetry, and software package delivery using Cisco's Perpetual Licensing Model. With this licensing model, you can choose the relevant software licenses to match your requirements, helping you succeed in the most efficient manner possible without the hassle of renewals.

Product overview: Cisco IOS XR Perpetual Licensing Model

The Cisco IOS XR Perpetual Licensing Model can be used with the Cisco® 8000 Series Routers and the Cisco Network Convergence System (NCS) 540 and 560 Routers. This model introduces a new level of consumption for IOS XR customers while maintaining a focus on operational simplicity. By paying up front, customers can avoid the hassle of recurring renewals. For the product families mentioned above, each device requires only one perpetual license, which means the customer gets a fully loaded device and can use as many ports as needed under just one license. This helps to simplify deployments, as the perpetual licenses are per device instead of per port, thus avoiding cumbersome management. Furthermore, customers are free to choose the level of service with a 3-tier software model.

Key features

Offer structure

The Cisco IOS XR Perpetual Licensing Model consists of two main parts: hardware and software. The hardware is the first part of the model. The other part is the perpetual software component.

Perpetual software licenses involve three software tiers: Essentials, Advantage, and Premier. The Essentials software license includes the IOS XR comprehensive suite of routing and management services. The Advantage software license is an extension of the Essentials software license and includes all of the Essentials features with additional advanced routing and management services. The Premium software license includes all the Essentials and Advantage features plus scaling and high-performance features. Some product families may have additional and optional a-la-carte software perpetual licenses for specialized platform-specific features.

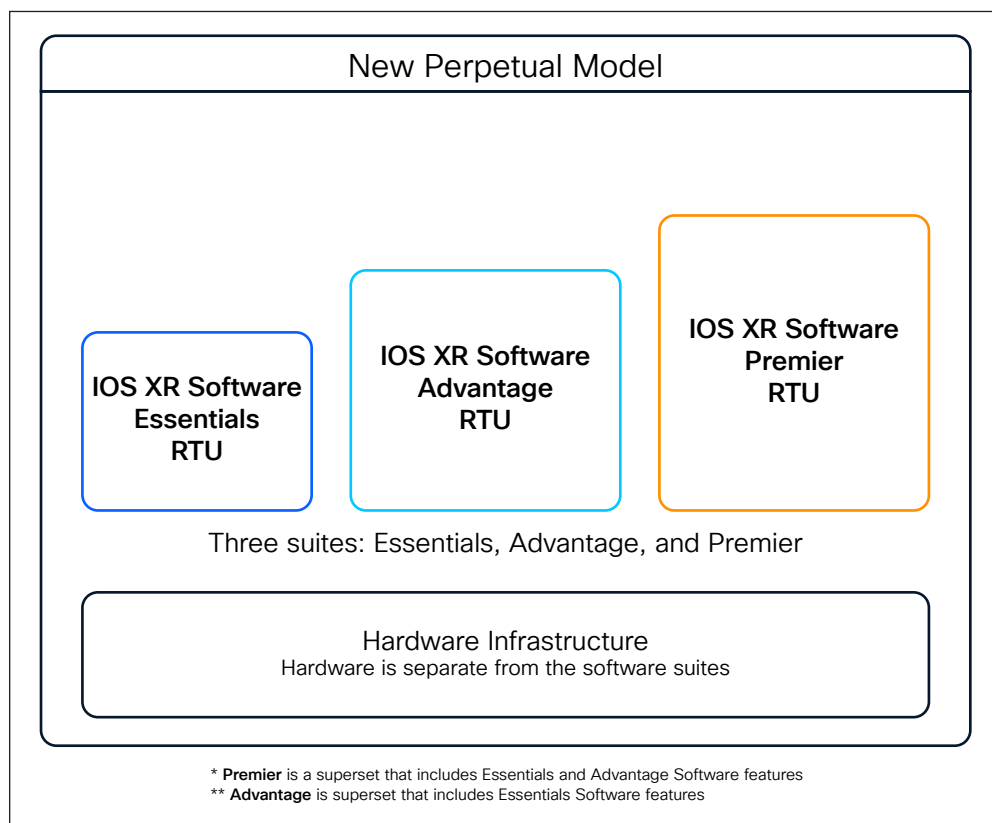


Figure 1. Perpetual licensing software offer structure

Cisco Smart Licensing

Cisco Smart Licensing is a secure licensing model that provides an easier, faster, and more consistent way to purchase, activate, manage, renew, and upgrade software products across your organization. And it's secure – you control what users can access. With Smart Licensing you get:

- **Unified management.** A complete view into all your Cisco products and services is available in an easy-to-use portal, so you always know what you have and what you are using.
- **Easy activation.** Smart Licensing establishes a pool of software licenses that can be used across the entire organization – no more Product Activation Keys (PAKs).
- **License flexibility.** Your software is not node-locked to your hardware, so you can easily use and transfer licenses as needed.

In order to retrieve your Smart Licenses, you will first need to set up a Smart Account on Cisco Software Central (software.cisco.com). To receive perpetual licenses, customers are required to provide their Cisco Smart Account when booking. However, no registration or Smart Licensing reporting is required.

Some additional benefits of Smart Licensing are:

- **Real-time visibility.** Get a current view of and immediate insights into 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.

Perpetual licensing doesn't mandate Smart License enforcement in IOS XR. These enforcements are removed from IOS XR Release 25.4.1 and later for the Perpetual Licensing Model. Perpetual licensing will not be supported on older versions of IOS XR.

Software suites in the IOS XR Perpetual Licensing Model

The three tiers of the IOS XR Perpetual Licensing Model are targeted for different types of networks. The Essentials tier is designed for fundamental transport applications, while the Advantage tier caters to enhanced applications and network resiliency. Lastly, the Premier tier offers scaling capabilities specifically tailored for larger networks. The software tiers are structured in a nested manner, with each higher tier encompassing the features of the lower tier or tiers.

Perpetual license types

Perpetual licenses provide customers the ability to access and use specific perpetual software functionalities without the requirement to purchase the complete software package.

A DCO optics license is required when the router port is configured to operate in Digital Coherent Optical (DCO) mode. A DCO license is needed for support of any coherent optics in a Quad Small Form-Factor Pluggable (QSFP) or Octal SFP (OSFP) form factor. These licenses are consumed per 100 Gbps for any ZR and ZRP optics, and there is no minimum fill rate. Customers should order the quantity of optics to be deployed.

The three license types mentioned above (Essentials, Advantage, and Premier) are available for each product classification, which can be either A, B, C, or D or Extra Small, Small, Medium, or Large, depending on the product family.

The following tables show the product IDs for the Perpetual Licensing Model software licenses.

Table 1. Cisco 8000/8000E product family Perpetual Licensing Model software licenses

PID	Description
8KSW-ESS-A-P	Essentials Perpetual SW for 8000 Type A Device
8KSW-ESS-B-P	Essentials Perpetual SW for 8000 Type B Device
8KSW-ESS-C-P	Essentials Perpetual SW for 8000 Type C Device
8KSW-ESS-D-P	Essentials Perpetual SW for 8000 Type D Device
8KSW-ADN-A-P	Advantage Perpetual SW for 8000 Type A Device
8KSW-ADN-B-P	Advantage Perpetual SW for 8000 Type B Device
8KSW-ADN-C-P	Advantage Perpetual SW for 8000 Type C Device
8KSW-ADN-D-P	Advantage Perpetual SW for 8000 Type D Device
8KSW-PRM-A-P	Premier Perpetual SW for 8000 Type A Device

PID	Description
8KSW-PRM-B-P	Premier Perpetual SW for 8000 Type B Device
8KSW-PRM-C-P	Premier Perpetual SW for 8000 Type C Device
8KSW-PRM-D-P	Premier Perpetual SW for 8000 Type D Device
8KSW-ESS-ADN-A-P	ESS to ADN Perpetual SW for 8000 Type A Device
8KSW-ADN-PRM-A-P	ADN to PRM Perpetual SW for 8000 Type A Device
8KSW-ESS-ADN-B-P	ESS to ADN Perpetual SW for 8000 Type B Device
8KSW-ADN-PRM-B-P	ADN to PRM Perpetual SW for 8000 Type B Device
8KSW-ESS-ADN-C-P	ESS to ADN Perpetual SW for 8000 Type C Device
8KSW-ADN-PRM-C-P	ADN to PRM Perpetual SW for 8000 Type C Device
8KSW-ESS-ADN-D-P	ESS to ADN Perpetual SW for 8000 Type D Device
8KSW-ADN-PRM-D-P	ADN to PRM Perpetual SW for 8000 Type D Device

Table 2. Cisco 8010 product family Perpetual Licensing Model software licenses

PID	Description
NGA-ESS-L-RTU-P	8010-Large Essentials SW RTU Perpetual
NGA-ESS-M-RTU-P	8010-Medium Essentials SW RTU Perpetual
NGA-ADN-L-RTU-P	8010-Large Advantage SW RTU Perpetual
NGA-ADN-M-RTU-P	8010-Medium Advantage SW RTU Perpetual
NGA-PRM-L-RTU-P	8010-Large Premier SW RTU Perpetual
NGA-PRM-M-RTU-P	8010-Medium Premier SW RTU Perpetual
NGA-ADN-PRM-L-P	ADN to PRM Perpetual SW for 8010 Type L Device
NGA-ESS-ADN-L-P	ESS to ADN Perpetual SW for 8010 Type L Device
NGA-ADN-PRM-M-P	ADN to PRM Perpetual SW for 8010 Type M Device
NGA-ESS-ADN-M-P	ESS to ADN Perpetual SW for 8010 Type M Device

Table 3. Cisco NCS 540 product family Perpetual Licensing Model software licenses

PID	Description
540-ESS-L-RTU-P	Access Essentials SW Perpetual NCS 540 Large
540-ESS-M-RTU-P	Access Essentials SW Perpetual NCS 540 Medium
540-ESS-S-RTU-P	Access Essentials SW Perpetual NCS 540 Small
540-ESS-XS-RTU-P	Access Essentials SW Perpetual NCS 540 X-Small
540-ADN-L-RTU-P	Access Advantage SW Perpetual NCS 540 Large
540-ADN-M-RTU-P	Access Advantage SW Perpetual NCS 540 Medium
540-ADN-S-RTU-P	Access Advantage SW Perpetual NCS 540 Small
540-ADN-XS-RTU-P	Access Advantage SW Perpetual NCS 540 X-Small
540-UPG-L-RTU-P	Access Upgrade SW Perpetual NCS 540 Large
540-UPG-M-RTU-P	Access Upgrade SW Perpetual NCS 540 Medium
540-UPG-S-RTU-P	Access Upgrade SW Perpetual NCS 540 Small
540-UPG-XS-RTU-P	Access Upgrade SW Perpetual NCS 540 X-Small

Table 4. Cisco NCS 560 product family Perpetual Licensing Model software licenses

PID	Description
560-ESS-L-RTU-P	Access Essentials SW RTU Perpetual
560-ADN-L-RTU-P	Access Advantage w/ Essentials SW RTU Perpetual
560-UPG-L-RTU-P	Access Advantage upgrade SW RTU Perpetual

Table 5. Cisco 8000/8000E product categorization

Product category	PID
A	8404-SYS-D 8711-48Z-M
B	8201-24H8FH 88-LC0-34H14FH 88-LC1-52Y8H-EM 8712-MOD-M 8711-32FH-M 8608-SYS-R, 8608-SYS-NR
C	88-LC1-12TH24FH-E 8212-48FH-M 8201-32FH 8202-32FH-M 88-LC0-36FH= 88-LC0-36FH-M=
D	88-LC1-36EH

Table 6. Cisco 8010 product categorization

Product category	PID
L	8011-4G24Y4H-I 8011-32Y8L2H2FH
M	8011-12G12X4Y-A/D

Table 7. Cisco NCS 540 product categorization

Product category	PID
XS	N540X-4Z14G2Q
	N540X-8Z16G-SYS
	N540X-6Z18G-SYS
	N540-6Z18G-SYS
	N540-6Z14S-SYS
S	N540X-12Z16G-SYS
	N540-12Z20G-SYS
M	N540-ACC-SYS
	N540X-ACC-SYS
	N540-24Z8Q2C-SYS
	N540X-16Z4G8Q2C
	N540X-16Z8Q2C
	N540-28Z4C-SYS
L	N540-24Q8L2DD-SYS
	N540-24Q2C2DD-SYS

Table 8. Cisco NCS 560 product categorization

Product category	PID
L	N560-7-SYS
	N560-7-SYS-E
	N560-4-SYS
	N560-4-SYS-E

Table 9. DCO optics license

PID	Description
DCO-100G-RTU	100G Digital Coherent Optics RTU – for product families: Cisco 8000, ASR 9000, NCS 5500/5700, NCS 560, and NCS 540

IOS XR Software Premier	
• L2 Services: • >= *1K (Attachment Circuit + PW) • L3 Services: • VRFs : >128 VRFs*	• Premium Service*: PWHE, EVPN HE, Egress NetFlow/sFlow, Satellite functionality • Subscriber Management: AGF-UP, Subscriber Session Steering, Integrated NAT • Security*: IPSec, TunnelSec • SaaS Integration: Cisco SW Integration, Advance API • TDM (along with smart SFP)* • Max Scale supported for all features by the HW
IOS XR Software Advantage	
• L2 Services: • E-LAN (Bridging): L2VPN VPLS, EVPN-VPLS • EVPN IRB w/ Anycast GW, EVPN VxLAN • E-LINE (P2P): L2VPN VPWS, EVPN-VPWS, Multi Segment -PW • Up to 1K (Attachment Circuit + PW) • L3 Services: • MPLS IPv4/v6, VPN (L3VPN/6VPE) • IPv4, IPv6 Provider Edge (6PE), GRE • Multicast VPN (MVPN) • >16 & <=128 VRFs • FIB Scale:> 512k & <=2M	• Peering: BGP FlowSpec, BGP attribute-download, BGP Policy Accounting, BGP Monitoring Protocol (BMP) • Traffic Engineering: MPLS TE, RSVP-TE, SR-TE, SRv6-TE, P2MP RSVP TE, TreeSID • Security*: MacSec • Subscriber Management: Cloud Native BNG-User Plane, User Plane Geo Redundancy, IPoE, PPPoE, LAC, LNS • RON - PLE • Advanced Timing*: Virtual Port, A-PTS, GNSS, Timing support on breakout Cables**
IOS XR Software Essentials	
• L2 Transport: • Dot1Q, QinQ • VLAN, EFP (L2transport), IRB/BVI • Static Tunnels: GRE/VxLAN/PnIP • L3 Transport: • IGP Flex Algo, IP, ISIS, OSPF, BGP, MPLS • SR transport, SRv6 transport • Basic Multicast (PIM & ICMP, MLD), MLDP • FIB Scale: <512k (v4 + v6 routes)	• Management*: Enhanced Telemetry, Yang models, CLI/SSH, SNMP, NetFlow, SL API • Infra: QoS, HQoS, PBR, ABF, E-OAM (Link-level Fault-Management), CFM and Y.1731, SR-PM, BFD • HA*: BGP PIC, TI-LFA FRR, IP-FRR, G.8032 • Security: ACL's LPTS, SSH, Radius/TACACS • Timing*: G.8273.1, G.8275.2, 1PPS, ToD, 10Mhz
*Subject to Platform Capability **Please check Release Notes and HW Config for Supported Platforms	
Cisco 8000 Series Hardware	

Figure 2. Cisco 8000 Series software tiers

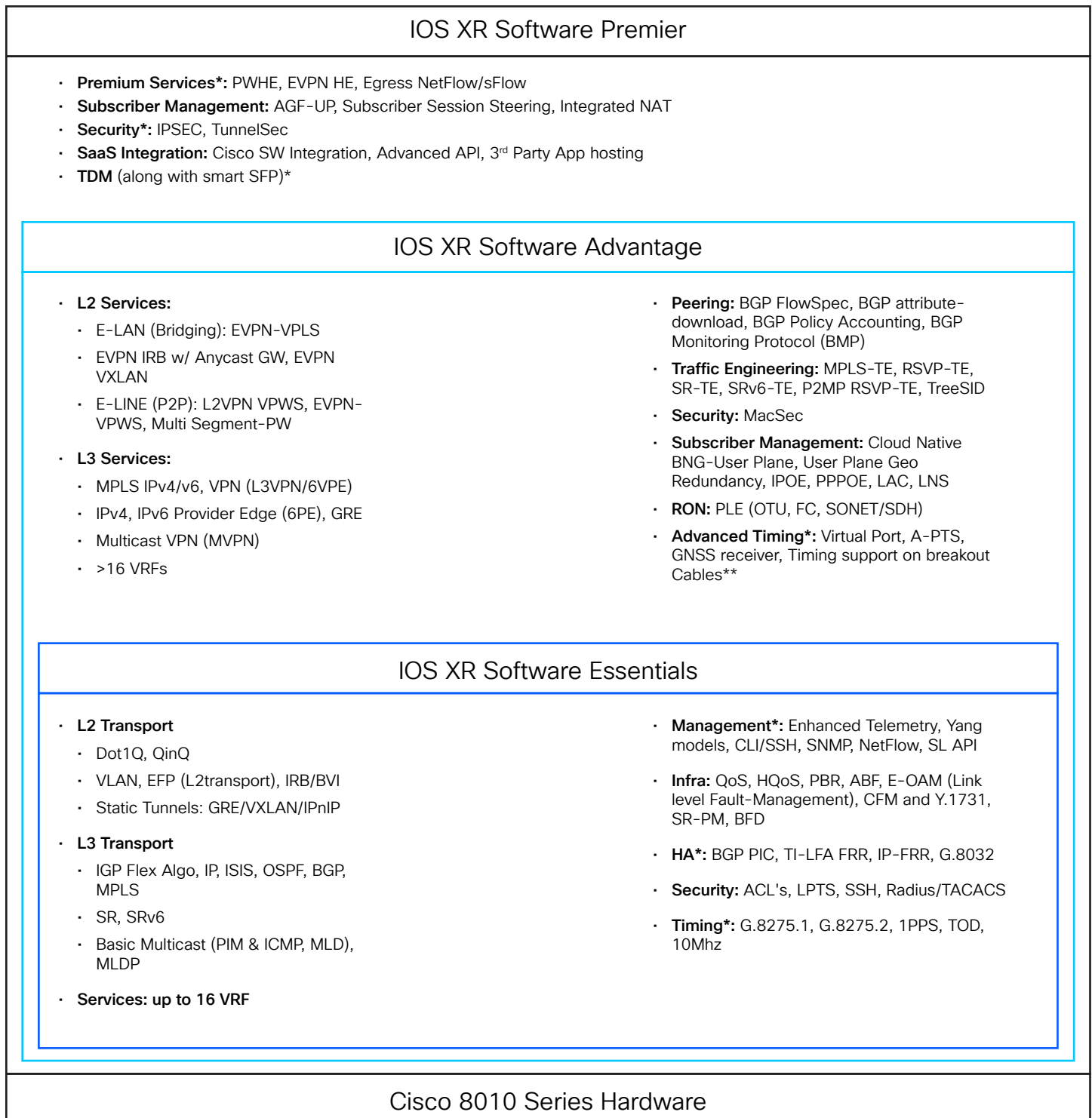


Figure 3. Cisco 8010 Series software tiers

Security

Security is a major concern for all Cisco customers. Attacks on networking equipment can have disastrous results. Network operators need assurance that the platform is secure against hardware and software breaches. The Cisco 8000 Series routers supports hardware root of trust based on the Trusted Computing Group (TCG) and IEEE 802.1 AR standards. The Cisco 8000 platforms are FIPS 140-2 Level 2 compliant and support advanced security features to help ensure platform and OS integrity.

- Cisco secures the supply chain of every system at manufacturing time. A technology called Chip Protection allows customers to be assured that the hardware they receive from Cisco has no counterfeit components. This is accomplished with the use of unique identifiers that are stored inside the Trust Anchor Module (TAM) device to identify and track components through the entire lifecycle of the Cisco 8000 platforms. The checks cover all major components, including network processors, CPUs, and Field-Programmable Gate Arrays (FPGAs).
- Every image that a customer downloads from the Cisco site is cryptographically signed using Cisco private keys. Each platform has a TAM (based on the TCG standard) that uses built-in cryptographic functions to validate the image signature. Once the signature is validated, the software is considered authentic and is ready to be installed.
- During normal operation, the JTAG (Joint Test Action Group – a method of chip testing and verification) ports on the chips are monitored. JTAG is one of the most common attack surfaces and therefore must be secured. Cisco uses a technology called Secure JTAG to monitor the port. If any illegal activity is detected, it is flagged and the system CPU is held in reset mode.
- The Secure Boot root of trust is anchored in the TAM. It establishes an authentication chain that validates the entire boot process.

Warranty

Cisco hardware is backed by a limited warranty. For details, please visit the [Cisco Warranty Finder](#).



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 “Environmental Sustainability” section of Cisco’s [Corporate Social Responsibility](#) (CSR) Report.

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

Table 10. Links to sustainability topics

Sustainability topic		Reference
General	Information on product-material-content laws and regulations	Materials
	Information on electronic waste laws and regulations, including our products, batteries, and packaging	WEEE Compliance
	Information on product takeback and reuse program	Cisco Takeback and Reuse Program
	Sustainability inquiries	Contact: csr_inquiries@cisco.com
Material	Product packaging weight and materials	Contact: environment@cisco.com

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 8000 and 8000E 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 Professional Services uses an architecture-led approach to help you align your data center infrastructure with your business goals and achieve long-term value.

Cisco 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 Software Innovation Access (SIA) feature upgrade licenses.

Cisco Support also 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 hardware.

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](#).

Cisco Capital

Flexible payment solutions to help you achieve your objectives

Cisco Capital makes it easier to get the right technology to achieve your objectives, enable business transformation and help you stay competitive. We can help you reduce the total cost of ownership, conserve capital, and accelerate growth. In more than 100 countries, our flexible payment solutions can help you acquire hardware, software, services and complementary third-party equipment in easy, predictable payments. [Learn more.](#)

For more information

Learn more about the platforms in the [Cisco 8000 Series Routers - Data Sheets](#).