Q & A

CISCO 10720 INTERNET ROUTER

POSITIONING

Q. What is the Cisco® 10720 Internet Router?

A. The Cisco 10720 is a high-performance IP+Optical access router and a principle building block in next-generation metro IP/Ethernet networks. The Cisco 10720 enables service providers to offer innovative and differentiated IP services to their customers at optical speeds. Equipped with Ethernet technology for customer access and the innovative Resilient Packet Ring (RPR) technology for metro optical connectivity, the Cisco 10720 allows service providers to offer IP services closer to the user, enabling them to better control admission to network resources. Powered by Cisco IOS® Software and the Parallel eXpress Forwarding (PXF) architecture, the Cisco 10720 is a cost-effective, reliable high-performance platform that not only supports the full suite of IP routing protocols such as IS-IS, OSPF and BGP, but also allows advanced IP features to be introduced efficiently, without compromising performance.

Q. Where is the Cisco 10720 installed in the Internet service provider's (ISP's) network?

A. The Cisco 10720 was designed to aggregate high-speed customer Ethernet connections at the access or edge of the ISP's network while maintaining high throughput with software services turned on. Intended primarily for multitenant and in-building applications, the Cisco 10720 Internet Router applies services (such as quality of service [QoS], access lists, and so on) and hands off traffic to the ISP's core router.

Q. What are some examples of Cisco 10720 solutions?

A. The Cisco 10720 provides the following solutions:

- High-speed multitenant Internet access
- Business park Internet access
- Transparent LAN services (TLS)
- IP virtual private network (VPN)
- Voice/video over IP transport

Q. Does the Cisco 10720 interoperate with the Cisco 12000 Series Internet Routers as an end-to-end solution?

A. Absolutely. The Cisco 12000 is the premier core Internet router that supports unparalleled performance and capacity. The Cisco 12000 aggregates Cisco 10720 traffic using OC-48/STM-16 RPR technology. The Cisco 10720 complements the Cisco 12000 strengths by providing high-performance IP/Ethernet services along with the ability to apply important services (QoS, access lists) to every packet before handing off the packet to the Cisco 12000 core router. By specializing in IP/Ethernet services deployment, the Cisco 10720 allows the Cisco 12000 to focus on its primary task of backbone or core routing.

Q. How does the Cisco 10720 relate to other Cisco platforms?

A. The Cisco 10720 is a small form factor, high performance with features and relatively low cost router targeted for business-class IP services for deployment in the metro access and edge of service provider networks. The Cisco 10720 supports advanced high-touch IP services designed to service-enable the metropolitan-area network (MAN) edge.

INTERFACE MODULES

Q. Which interface cards does the Cisco 10720 support?

A. Cisco 10720 supports the following modules in the top slot:

- 2-port OC48/STM16 pre-standard RPR (DPT) in 4 fixed optics versions—SR (2KM), IR (15KM), LR1 (40KM), and LR2 (80KM)
- 2-port OC-48/STM16 802.17 RPR with small form factor pluggable optics—SR (2KM), IR1 (15KM), and LR2 (80KM)
- CON-AUX module—console and Aux ports only

The following modules are supported in the bottom slot

- 24-port FE module
- 4-port GE + 8-port FE module

Q. What is the purpose of the CON-AUX module in the upper slot?

A. With this module, the Cisco 10720 can be used as an 'Ethernet' Router, where one or more of the Ethernet ports on the access card can be used as network uplink.

Q. What optics are supported on the GE ports on the access card?

A. SX (500M), LH (10KM), and ZX (70KM) optics are supported currently; planning to support Copper and CWDM optics in the near future.

Q. Is the standard RPR module backward compatible with the existing DPT cards?

A. Yes. The standard-compliant RPR module can be configured in SRP mode. In SRP mode, it supports all features and functions of the DPT uplink cards. So a new node can be added to an existing ring with this new card configured in SRP mode.

Q. What are the advantages of using the new standard-compliant RPR card?

A. The new RPR card when configured in SRP mode is identical to the existing DPT modules. It provides an additional advantage of 'pluggable OC48/STM16 optics'. With the pluggable optics, each side of the RPR ring could be equipped with a different Optics—SR on East side and LR2 on the West side, for example.

Q. Can I use Cisco 10000 cards in the Cisco 10720?

A. No, the cards are physically different in size and are not compatible.

Q. Are the uplink and access modules hot swappable?

A. No, turn off the power to change cards.

HARDWARE

Q. What interfaces does the Cisco 10720 support?

A. The Cisco 10720 supports FE, GE, pre-standard RPR (DPT), and IEEE 802.17 standard-compliant RPR interfaces.

Q. Does the Cisco 10720 meet Network Equipment Building Systems (NEBS) compliance?

A. Yes, NEBS III. The Cisco 10720 is specifically designed to meet Telcordia (Bellcore) GR-1089-CORE and GR-63-CORE specifications for products to be installed in a Telco transmission equipment facility.

Q. What are the physical characteristics of the Cisco 10720?

A. The key features of the Cisco 10720 chassis and the power subsystem include:

- Front accessibility of all serviceable components
- 19-, 23-, and 24-inch rack-mount options, 18.25 inches deep, 3.5 inches high (2RU)
- Two slots overall, one for a DPT uplink module and the other for an Ethernet access module
- Dual redundant AC or DC power supplies (only one is required to power unit)
- Redundancy in fans-single failure will not interrupt service

Q. What is the performance of the Cisco 10720?

A. ~2.0 MPPS on fast path through dual-PXF, ~50,000 PPS on route process through RISC 5000.

PARALLEL EXPRESS FORWARDING

Q. What are the benefits of the PXF technology?

A. The Cisco 10720 uses PXF technology to deliver extremely high throughput for ~2MPPS, with IP features such as CAR, modular QoS CLI (MQC), and access control lists (ACL) enabled. The Cisco 10720 provides multiple-column processing of packets through a complex, dual PXF 4x4 array of CPUs. Each column of CPUs has a different task or feature.

Q. Do feature modifications require hardware changes?

A. No. Unlike hardware- or application-specific integrated circuit (ASIC)-based switching models, the PXF is microcode-based and programmable. Adding new services or enhancing existing services is done through a software download. This ensures minimal cost and turnaround time for technology improvements or enhancements.

POWER SUPPLIES

Q. Are AC and DC power supported?

A. Yes, both dual AC and dual DC load balancing are supported. Only one connected power supply is required to operate the router, although connecting both is recommended.

SOFTWARE

Q. Which version of Cisco IOS Software runs on the Cisco 10720?

A. The Cisco 10720 Internet Router is based on standard Cisco IOS Software Release 12.0S optimized for high availability and the high-capacity scaling and edge services functionality required in the ISP market. The first release of software on the Cisco 10720 is Release 12.0(19)ST.

Q. What types of IP services are optimized for performance in the Cisco 10720?

A. Performance-optimized IP services in the Cisco 10720 include:

- QoS for differentiating between business-class and economy-class data service and prioritizing VoIP
- Multicast services
- Network security features such as ACL, Reverse Path Forwarding (RPF)
- Full Border Gateway Protocol (BGP) routes
- L2VPN features based on EoMPLS or L2TPv3
- L3VPN features based on MPLS

Q. Which routing protocols are supported in the Cisco 10720?

A. All Cisco IOS Software routing protocols are supported, including:

- Open Shortest Path First (OSPF)
- Intermediate System-to-Intermediate System (IS-IS)
- Internal Border Gateway Protocol (iBGP)
- External Border Gateway Protocol (eBGP)
- Interior Gateway Message Protocol (IGMP v2)
- Protocol Independent Multicast Sparse Mode (PIM-SM)
- Protocol Independent Multicast Dense Mode (PIM-DM)
- Multicast Border Gateway Protocol (MBGP)

Q. Is IPv6 supported on 10720?

A. Yes, IPv6 ACLs, QoS and Multicast features are supported on the Cisco 10720.

Q. Does the Cisco 10720 support access lists?

A. Yes, extended and standard access lists are supported. Turbo ACLs support up to 400 lines per port with no performance penalty.

Q. How are the QoS features implemented in the Cisco 10720?

A. Modular QoS CLI supporting bandwidth rate limiting and prioritization supports up to eight levels of configurable queues offering eight different levels of service.

Q. What SRP features are supported on the pre-standard RPR card?

A. The pre-standard SRP card supports all SRP features as outlined in the RFC-2892, including Topology, 2 levels of priority, IPS (Intelligent Protection Switching) using wrapping and Fairness.

Q. What IEEE 802.17 RPR features are supported on the RPR module?

A. All mandatory features specified in the standard are supported on the Cisco 10720. This includes enhanced Topology, IPS (Intelligent protection switching) using Wrapping or Steering mechanism, Enhanced Fairness support in aggressive or conservative mode, weighted fairness and 3 levels of priority for ring transit traffic.

Q. Are all software features that are supported in the pre-standard RPR card also supported in the standard-RPR card?

A. In SRP mode, the standard RPR card supports all features supported in the pre-standard card with no exceptions. In RPR mode, with the exception of IPv6 QoS and IPv6 Multicast, all other features are supported.

Q. Is IP over data communication channel (DCC) supported?

A. Yes, IP over DCC works in conjunction with the Cisco ONS 15104 Optical Regenerator and the Cisco 12000 Series Internet Router.

RELIABILITY, AVAILABILITY AND REDUNDANCY

Q. Describe redundancy on the Cisco 10720.

A. The Cisco 10720 availability features begin with a new hardware architecture optimized for redundancy and designed to maximize network uptime. The entire system architecture and the serviceable assemblies that connect to it employ redundancy and high-reliability features. These features include:

- Redundant fans—failure of one fan does not interrupt service
- Redundant power-entry modules (AC or DC)
- System availability of 99.99838 percent

MANAGEMENT

Q. What methods can we use to manage the Cisco 10720?

A. You can use the popular Cisco IOS CLI and Simple Network Management Protocol (SNMP) to manage the Cisco 10720. Using SNMP, you can manage the Cisco 10720 through standard network management systems such as HP OpenView, Sun Solstice Manager, or IBM NetView.

Q. What troubleshooting features does the Cisco 10720 support?

A. Optical Power monitoring on the DPT uplink and Time Domain Reflectometer (TDR) on the TX Ethernet.

Q. What Management Information Bases (MIBs) does the Cisco 10720 support?

A. To get a complete listing of all MIBs supported on the Cisco 10720, please select Cisco 10720 from the pull down menu under Cisco Access Products at: http://www.cisco.com/public/sw-center/netmgmt/cmtk/mibs.shtml

ORDERING INFORMATION

For the most current ordering information, please refer to the Cisco 10720 Internet Router datasheet at:
http://www.cisco.com/en/US/prod/collateral/routers/ps147/ps148/product_data_sheet09186a0080091b6b.html

Q. Where can I get more information about the Cisco 10720?

A. http://www.cisco.com/en/US/products/hw/routers/ps147/ps148/index.html

Q. Where can I get more information about DPT/SRP?

A. More information about DPT/SRP technology can be found at:
http://www.cisco.com/en/US/tech/tk482/tk611/tech_protocol_family_home.html

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