

Cisco IOS 12.0(18)SL Release on Cisco 10000 Series

Product Description

The Cisco IOS[®] 12.0(18)SL Software release for the Cisco 10000 Series adds another set of PXF accelerated features. This continues to demonstrate the flexibility of the PXF architecture and its advantages for provider edge applications.

Cisco IOS 12.0(18)SL builds on the traffic-shaping and quality-of-service enhancements that were introduced in Release 12.0(17)SL and adds differentiated charging based on NetFlow accounting, policy-based routing (PBR), per-packet load balancing, and multilink Frame Relay to enable service providers to grow their networks efficiently. Other features such as generic-routing-encapsulation (GRE) tunneling enable service providers to offer value-added services such as IP virtual private networks (VPNs).

Key Features

With Release 12.0(18)SL, the following features are added:

- NetFlow accounting
- GRE tunneling
- Policy-based routing
- Multilink Frame Relay
- Per-packet load balancing
- Turbo QoS—QoS performance enhancements

Key Benefits

NetFlow Accounting

Cisco IOS 12.0(18)SL adds NetFlow Accounting for the Cisco 10000 Series. NetFlow provides basic metering for a key set of applications, including

network traffic accounting, usage-based network billing, network planning, and network monitoring capabilities. Some service providers use the data gathered to demonstrate network characteristics to their customers in support of service-level agreements. NetFlow Accounting on the Cisco 10000 Series will support gathering and exporting Version 8 record types to NetFlow FlowCollectors.

GRE Tunneling

This release introduces support for tunneling protocols on the Cisco 10000 Series. Tunneling is typically used by service providers for two purposes; first, to transport otherwise un-routable packets across the IP network and second, to provide data separation for VPN services. Specifically, the Cisco 10000 Series now supports GRE IP and DVMRP multicast tunnel modes.

Policy-Based Routing

This release introduces support for policy-based routing (PBR) on the Cisco 10000 Series. PBR provides a tool for expressing and implementing forwarding/routing of data packets based on the policies defined by network administrators. In effect, PBR is a way to have policy override routing protocol decisions. PBR includes a mechanism for selectively applying policies based on access list and/or packet size. The actions taken can include routing packets on user-defined routes and/or setting the precedence and type-of-service (ToS) bits. One application for PBR is enabling “equal access.” In that case one access provider might have customers desiring connections to different ISPs and the routing choice needs to be

based on the ISP choice, not the ultimate destination. Due to the fact that it is implemented in the PXF, and thus hardware-switched, packets to which PBR is applied will in most cases be forwarded at wire rate.¹

1. Exceptions to this are cases in which PBR is applied in conjunction with QoS Policy Maps.

Multilink Frame Relay

Support for the UNI portion of “Multilink Frame Relay UNI/ NNI Implementation Agreement” (FRF.16) is introduced.

Analogous to MLPPP, MLFR enables service providers to bond multiple Frame Relay DLCIs into a single logical link. Like MLPPP, MLFR is used by service providers to provide some service option granularity between low speed (T1/E1) services and higher speed T3/E3 services. Customers can increase bandwidth in smaller, more cost-effective increments. In addition to providing incremental bandwidth, bonding multiple DLCIs can add a level of fault tolerance to a customer’s dedicated access service, as bonding can be implemented across multiple cards, protecting against the failure of any single card.

Per-Packet Load Balancing

Load balancing deals with the capability to divide data traffic over multiple equal-cost connections. Load balancing can be supported in several ways. The Cisco 10000 Series currently

supports “per-destination” load balancing where path choice is made based on the destination address. Cisco IOS 12.0(18)SL adds “per-packet” load balancing. Per-packet load balancing is a simple to configure alternative that uses round-robin techniques to select the output path without basing the choice on the packet content. Per-packet load balancing is already optimized on the Cisco 12000 Series so PXF accelerating this feature on the Cisco 10000 Series is an important interoperability step, enabling network operators to implement the load balancing option of their choice between their core and edge routers.

Turbo QoS

Turbo QoS is another example of the flexibility and scalability accruing to the PXF architecture on the Cisco 10000 Series. The software-based algorithms in this case provided a means of upgrading processing performance without requiring a hardware change. Specifically, this release supports more efficient handling of QoS policy maps. The result is quicker packet classification and a QoS solution that scales. For network operators that means more flexibility in implementing QoS solutions.

Ordering Information

Platform	Product Description	Product Code	Image	Flash	DRAM
Cisco 10000	Cisco 10000 Series IOS service provider/ secured shell 56	S10K3Z-12.0.18SL	c10k-k3p6-mz	40 MB	512 MB
Cisco 10000	Cisco 10000 Series IOS service provider/ secured shell 3DES	S10K4Z-12.0.18SL	c10k-k4p6-mz	40 MB	512 MB
Cisco 10000	Cisco 10000 Series IOS (p6)	S10KIP-12.0.18SL	c10k-p6-mz	40 MB	512 MB



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