



Product Bulletin No. 3249

Cisco IOS Software Release 12.2(28)SB for Cisco 10000 Series Routers

Product Overview

Cisco® IOS® Software Release 12.2(28)SB supports Multiprotocol Label Switching (MPLS) provider-edge and leased-line applications for the Cisco 10000 Series Performance Routing Engine 2 (PRE-2). In addition, this release introduces support for the Cisco 10008 Internet Services Gateway suite of features for Point-to-Point Protocol (PPP) connections. It does not support Cisco PRE or PRE-1 routing engines.

New Features

The following new features and enhancements are available in Cisco IOS Software Release 12.2(28)SB for the Cisco 10000 Series PRE-2.

Double the Performance

- The Cisco 10000 Series PRE-2 offers nearly twice the packets-per-second performance of the PRE-1
- This release introduces support for MPLS provider-edge and leased-line applications on the Cisco 10000 Series PRE-2

Support for New Channelized T3 Line Card

- New 4-port half-height channelized T3 card (part number ESR-HH-4CT3) improves T3 density to 8 ports per slot
- The T3 card supports Y cables for 1:1 redundancy and automatic line-card failover, to prevent disruption to higher-layer protocols and minimize disruption to traffic forwarding
- Enhanced BERT diagnostics, including new BERT patterns and **show BERT** Cisco IOS Software command

High-Availability Features for Minimizing Downtime

- In-Service Software Upgrades – Comprehensive, easy software-upgrade capability for the IP/MPLS edge router, supporting the entire range of software-upgrade needs from applying bug-fixes to deploying new features and services.
- MPLS Nonstop Forwarding with Stateful Switchover (NSF/SSO) – Extends proven NSF/SSO high-availability technology to MPLS forwarding, MPLS Label Distribution Protocol (LDP), Layer 3 VPN (including Inter-AS and Carrier Supporting Carrier [CSC]), and MPLS quality of service (QoS). Mitigates service disruptions, reduces downtime costs, and increases operational efficiency.
- Label Switched Path (LSP) Ping and Traceroute – Enables MPLS operations, administration, and maintenance (OAM) for detecting and diagnosing failures in the MPLS network.
- RADIUS Load Balancing – Shares traffic across multiple RADIUS servers to increase performance and help ensure uptime.

Features for Prioritizing Traffic and Guaranteeing Low Latency

- Multilink PPP with Link Fragmentation and Interleaving (LFI)
 - Multilink PPP bundles multiple PPP connections on T1/E1 connections on channelized line cards, or PPP-over-ATM connections on ATM line cards, to optimize bandwidth.
 - LFI breaks up large packets to help ensure that priority traffic (such as voice) is forwarded with minimal latency.
- Two-Rate Three-Color Policer

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- Uses Committed Information Rate (CIR) and Peak Information Rate (PIR) to guarantee priority traffic at the CIR while allowing bursts up to but not exceeding the PIR.
- Marks traffic as Violate, Exceed, or Conform and marks QoS on traffic accordingly.
- Used to prioritize voice traffic while marking other traffic (such as video) for better QoS or for best effort (such as Internet traffic).
- Hierarchical Input Policer
 - Supports up to three levels of hierarchy in the policer.
 - Enables limiting all traffic to a customer and limiting the voice, video, or data traffic as a subset of the total allowed bandwidth. This is used when oversubscribing all traffic while still guaranteeing minimum bandwidth for critical traffic.
- Frame Relay Fragmentation (FRF) 12
 - Frame Relay fragmentation allows real-time and non-real-time data to share a link.

Layer 2 MPLS VPNs

- Connects disparate Layer 2 encapsulations across a homogenous IP/MPLS core
 - Supports ATM (AAL5), Ethernet (VLAN and Port Mode), High-Level Data Link Control (HDLC)/PPP, and Frame Relay.
 - ATM (AAL5) and Frame Relay local switching are also supported.

Advanced Features for Differentiating Business-Class Services

- IPv6
 - IPv6 in IPv4 enables deployment of IPv6 addressing in existing networks.
 - IPv6 forwarding is done in hardware for maximum performance.
- Multicast VPNs
 - Saves bandwidth over unicast distribution and extends rich-media communication by adding support for multicast across Layer 3 MPLS VPNs.
- MPLS Layer 3 VPN Support for CSC and Inter-AS
 - Allows MPLS Layer 3 VPNs to span across more than one Autonomous System (AS).
 - Supports wholesale and retail model for service providers to deliver MPLS Layer 3 VPNs.

Network Management and Security

- Access control list (ACL) templates
 - 50-percent increase in the number of rules supported per ACL for tens of thousands of broadband subscribers when configured by RADIUS Attribute 242.
- RADIUS-Configured Lawful Intercept
 - Allows undetectable copying of all traffic to or from a target session.

Broadband Features

- Internet Services Gateway for PPP sessions
 - Facilitates tracking, configuring, and applying services to PPP sessions.
 - Stringent and automatic identity management allows services and policies to be applied automatically to new subscribers as they come online.

- APIs enable GUIs and provisioning system for subscriber self-management (for example, you can click a button on a Web page to upgrade your bandwidth).

Availability

Cisco IOS Software Release 12.2(28)SB is available for general download from www.cisco.com in March 2006.

Ordering Information

Table 1. Ordering Information for 12.2(28)SB

Part Number	Description
S10KK91Z-12228SB	Cisco 10K Series IOS up to 8K Subscribers with 3DES
S10KK9ZU-12228SB	Cisco 10K Series IOS up to 8K Subscribers with Lawful Intercept 3DES
S10KZ11-12228SB	Cisco 10K Series IOS up to 8K Subscribers
S10KZ11U-12228SB	Cisco 10K Series IOS up to 8K Subscribers with Lawful Intercept

For More Information

For more information about the Cisco 10000 Series Routers, visit <http://www.cisco.com/en/US/products/hw/routers/ps133/index.html> or contact your local account representative.

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