



# New Features in Cisco IOS Release 12.3

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[0-9](#) [A](#) [B](#) [C](#) [D](#) [E](#) [F](#) [G](#) [H](#) [I](#) [L](#) [M](#) [N](#) [O](#) [P](#) [Q](#) [R](#) [S](#) [T](#) [U](#) [V](#) [W](#) [X](#)

## 0-9

1-Port ADSL WAN Interface Card

1-Port ADSL WAN Interface Card for Cisco 2600 Series and Cisco 3600 Series Routers

1-Port ADSL WAN Interface for the Cisco IAD2420 Series

1-Port G.SHDSL WAN Interface Card for Cisco 2600 Series and Cisco 3600 Series Routers

1- and 2-Port V.90 Modem WICs for Cisco 2600 and Cisco 3600 Series Multiservice Platforms

16- and 36-Port Ethernet Switch Module for Cisco 2600 Series, Cisco 3600 Series, and Cisco 3700 Series

56K CSU Support for the Cisco Signaling Link Terminal

## A

Ability to Disable Xauth for Static IPSec Peers

ACL Authentication of Incoming rsh and rcp Requests

ACL Default Direction

Adaptive Frame Relay Traffic Shaping for Interface Congestion

Advanced Encryption Standard (AES)

Advanced Voice Busyout

AIM-ATM, AIM-VOICE-30, and AIM-ATM-VOICE-30 on the Cisco 2600 Series, Cisco 3660, and Cisco 3700 Series

Analog Centralized Automatic Message Accounting E911 Trunk

Analog DID for Cisco 2600 and 3600 Series Routers

Any Transport over MPLS (AToM)

ARP Optimization

Asynchronous Call Queueing by Role

Asynchronous Line Monitoring

ATM Multilink PPP Support on Multiple VCs

ATM OAM Ping

ATM OAM Support for F5 Continuity Check

ATM Policing by Service Category for SVC/SoftPVC  
 ATM SNMP Trap and OAM Enhancements  
 ATM PVC Bundle Enhancement - MPLS EXP-Based PVC Selection  
 ATM Software Segmentation and Reassembly (SAR)  
 ATM SVC Troubleshooting Enhancements  
 Authentication Proxy for FTP and Telnet Sessions  
 AutoInstall over Frame Relay-ATM Interworking Connections  
 AutoQos -- VoIP  
 AutoSecure

## B

Basic Service Relationships (H.225 Annex-G)  
 BGP 4 MIB Support for per-Peer Received Routes  
 BGP Conditional Route Injection  
 BGP Hide Local-Autonomous System  
 BGP Hybrid CLI  
 BGP Increased Support of Numbered AS-path Access Lists to 500  
 BGP Link Bandwidth  
 BGP Multipath Load Sharing for Both eBGP and iBGP in an MPLS-VPN  
 BGP Named Community Lists  
 BGP Nonstop Forwarding (NSF) Awareness  
 BGP Policy Accounting  
 BGP Prefix-Based Outbound Route Filtering  
 BGP Restart Session After Max-Prefix Limit  
 BGP Route-Map Policy List Support  
 Bisync-to-IP Conversion for Automated Teller Machines

## C

Call Admission Control for H.323 VoIP Gateways  
 Call Release Source Reporting in Gateway-Generated Call Accounting Records  
 Call Status Tracking Optimization  
 Call Tracker show Commands Extensions  
 Call Transfer Capabilities Using the Refer Method  
 CEF-Switched Multipoint GRE Tunnels  
 Certificate Autoenrollment  
 Certificate Enrollment Enhancements  
 Certificate Security Attribute-Based Access Control  
 Cisco 2600 and 3600 Routers MGCP Voice Gateway Interoperability with Cisco CallManager  
 Cisco Conferencing and Transcoding for Voice Gateway Routers

Cisco Easy VPN Remote Enhancements  
Cisco Easy VPN Remote - Phase 1  
Cisco Fax Services over IP Application Guide  
Cisco H.235 Accounting and Security Enhancements for Cisco Gateways  
Cisco H.323 Multizone Enhancements  
Cisco H.323 Scalability and Interoperability Enhancements  
Cisco High Density Analog Voice and Fax Network Module  
Cisco High-Performance Gatekeeper  
Cisco Hoot and Holler over IP  
Cisco IOS Firewall Performance Enhancements  
Cisco IOS Software Feature Removal  
Cisco IOS TCL and VoiceXML Application Guide  
Cisco IOS Telephony Service Version 2.01  
Cisco IOS Telephony Service, Version 2.02  
Cisco IOS Telephony Services Version 2.1  
Cisco IOS Voice Features on IGX 8400 Series Universal Router Module  
Cisco Mobile Networks  
Cisco Mobile Networks - Asymmetric Link  
Cisco Mobile Networks - Priority HA Assignment  
Cisco Mobile Networks - Static Collocated Care-of Address  
Cisco Mobile Networks - Tunnel Templates for Multicast  
Cisco Modem User Interface  
Cisco Multiservice IP-to-IP Gateway  
Cisco Signaling Link Terminal  
Cisco Signaling Link Terminal Dual Ethernet  
Cisco Signaling Link Terminal G.732 Support  
Cisco Survivable Remote Site Telephony Version 2.02  
Cisco Survivable Remote Site Telephony (SRST) Version 2.1  
Cisco VCWare Version Checker  
Class-Based Marking  
Class-Based RTP and TCP Header Compression  
Classifying VoIP Signaling and Media with DSCP for QoS  
Clear Channel T3/E3 with Integrated CSU/DSU  
Clearable SIP-UA Statistics  
Command Scheduler  
CNS Configuration Agent  
CNS Event Agent  
CNS Flow-Through Provisioning

CNS Image Agent  
 Configurable PSTN Cause Code to SIP Response Mapping  
 Configuration Enhancements for Broadband Scalability  
 Configuring a Gatekeeper to Provide Nonavailability Information for Terminating Endpoints  
 Configuring AAL2 and AAL5 for the High-Performance ATM Advanced Integration Module on the Cisco 2600 series  
 Configuring Dynamic Prompts, Customizing Accounting Templates, and Directing AAA Requests for Voice Gateways  
 Configuring T1 CAS for Voice over IP on the Cisco AS5800 and Cisco AS5850  
 Connect-Info RADIUS Attribute 77  
 Content Engine Network Module for Caching and Content Delivery  
 Control Plane DSCP Support for RSVP  
 Customer Profile Idle Timer Enhancements for Interesting Traffic

## D

Default VPDN Group Template  
 DES/3DES/AES VPN Encryption and Compression Module (AIM-VPN/EPII & AIM-VPN/HPPII)  
 DF Bit Override Functionality with IPSec Tunnels  
 DHCP Accounting  
 DHCP Client on WAN Interfaces  
 DHCP ODAP Server Support  
 DHCP Option 82 Support for Routed Bridge Encapsulation  
 DHCP Relay - MPLS VPN Support  
 DHCP Secured IP Address Assignment  
 DHCP Server - On-Demand Address Pool Manager  
 DHCP Server - Option to Ignore All BOOTP Requests  
 DHCP Server Options Import and Autoconfiguration  
 Dialer CEF  
 Dialer Map VRF-Aware for an MPLS VPN  
 Dial-Peer Support for Data Calls  
 Dialer Persistent  
 Dialer Watch Connect Delay  
 Dial-Peer Configuration Command Default Value Changes  
 Dialing Number Enhancement  
 Diff-Serv-aware MPLS Traffic Engineering  
 Digital J1 Interface Card  
 Direct Inward Dialing for Cisco IAD2420 Series Integrated Access Devices  
 Displaying Alarm Settings on the Cisco AS5800  
 Distinguished Name Based Crypto Maps

DistributedDirector Enhancements for Cisco IOS Release 12.2(4)T  
DistributedDirector Boomerang Support  
DistributedDirector Cache Auto Refresh  
DistributedDirector Configurable Cache  
DistributedDirector MIB Support  
Distributed Link Fragmentation and Interleaving for Frame Relay and ATM Subinterfaces  
Distributed Link Fragmentation and Interleaving over Leased Lines  
Distributed Management Event and Expression MIB Persistence  
Distributed Multilink Point-to-Point Protocol for Cisco 7500 Series Routers  
Distributed Time-Based Access Lists  
Distributed Traffic Shaping  
DNS Server Support for NS Records  
DRP Agent - Boomerang Support  
DTMF Events Through SIP Signaling  
Dual Tone Multifrequency Relay for SIP Calls Using Named Telephone Events  
Dynamic Multipoint VPN (DMVPN)  
Dynamic Subscriber Bandwidth Selection

## E

Easy VPN Server  
EIGRP Nonstop Forwarding (NSF) Awareness  
Enable Multilink PPP via RADIUS for Preauthentication User  
Enabling Fax Rate on POTS to POTS Fax Calls  
Encrypted Vendor-Specific Attributes  
Enhanced Billing Support for SIP Gateways  
Enhanced Codec Support for SIP Using Dynamic Payloads  
Enhanced Debug Capabilities for Cisco Voice Gateways  
Enhanced Features for Local and Advanced Voice Busyout  
Enhanced ITU-T G.168 Echo Cancellation  
Enhanced Multi-Language Support for Cisco IOS Interactive Voice Response  
Enhanced Object Tracking  
Enhanced Packet Marking  
Enhanced Password Security  
Enhanced Test Command  
Enhanced Voice and QoS for ADSL and G.SHDSL on Cisco 1700 Series, Cisco 2600 Series, and Cisco 3600 Series Routers  
Enhancements to H.323 Call Statistics  
Enhancements to the Session Initiation Protocol for VoIP on Cisco Access Platforms

Enhancing Raw Buffer Management: Audit and Prepopulation for Channel-Associated Signaling  
 Error Log Count Enhancement  
 Event Tracer  
 EXEC Commands in Configuration Mode  
 Expanded Scope for Cause-Code-Initiated Call Establishment Retries  
 Exporting and Importing RSA Keys

## F

Fax Detection for Cisco 2600 Series and Cisco 3600 Series Routers  
 Fax Detection (Single-number Voice and Fax)  
 Fax Relay Packet Loss Concealment  
 Features for Japan on Cisco 800 Series Routers, Phase 2  
 Featurettes and Supplementary Voice Services for the Cisco 800 Series Routers  
 File System Check and Repair for PCMCIA ATA Disks  
 Fine-Grain Address Segmentation in Dial Peers  
 Firewall Intrusion Detection System Signature Enhancements  
 Firewall N2H2 Support  
 Firewall Stateful Inspection of ICMP  
 Firewall Support for SIP  
 Firewall Support of Skinny Client Control Protocol (SCCP)  
 Firewall Support of HTTPS Authentication Proxy  
 Firewall Websense URL Filtering  
 Frame Relay 64-Bit Counters  
 Frame Relay MIB Enhancements  
 Frame Relay Point-Multipoint Wireless  
 Frame Relay PVC Bundles with IP and MPLS QoS Support  
 Frame Relay Queueing and Fragmentation at the Interface  
 Frame Relay Voice-Adaptive Traffic Shaping  
 FXO Answer and Disconnect Supervision

## G

G.732 Support for the Integrated Signaling Link Terminal  
 Gatekeeper Alias Registration and Address Resolution Enhancements  
 Gatekeeper Endpoint Control Enhancements  
 Gatekeeper Enhancements for Managed Voice Services  
 Gatekeeper Management Statistics  
 Gatekeeper-to-Gatekeeper Authentication  
 Gatekeeper Transaction Message Protocol Interface Resiliency Enhancement  
 Gateway Codec Order Preservation and Shutdown Control

Generic Routing Encapsulation (GRE) Tunnel Keepalive  
GLBP - Gateway Load Balancing Protocol  
Globalized Cadence and Tone for Cisco IOS Gateways  
G.SHDSL Symmetric DSL Support for Cisco IAD2420 Series IAD  
GTD for GKTMP Using SS7 Interconnect for Voice Gatekeeper Version 2.0

## H

H.323 Call Redirection Enhancements  
H.323 Dual Tone Multifrequency Relay Using Named Telephone Events  
H.323 Version 2 Support  
H.323v4 Gateway Zone Prefix Registration Enhancements  
HTTP 1.1 Web Server and Client  
HTTPS - HTTP Server and Client with SSL 3.0

## I

iBGP Multipath Load Sharing  
IGMP State Limit  
IGMP Version 3 - Explicit Tracking of Hosts, Groups, and Channels  
IKE: Initiate Aggressive Mode  
Integrated IS-IS Nonstop Forwarding (NSF) Awareness  
Integrated IS-IS Point-to-Point Adjacency Over Broadcast Media  
Integrated Signaling Link Terminal  
Integrated Voice and Data WAN on T1/E1 Interfaces Using the AIM-ATM-VOICE-30 Module  
Inter-Domain Gatekeeper Security Enhancement  
Interactive Voice Response Version 2.0 on VoIP  
Interface Index Display and Interface Alias Long Name Support for SNMP  
Internal Cause Code Consistency Between SIP and H.323  
Internetworking of Cisco MGCP Voice Gateways and Cisco CallManager Version 3.2  
IP Access List Entry Sequence Numbering  
ip rtp coalesce Command  
IP to ATM Class of Service Mapping for SVC Bundles  
IP Event Dampening  
IP Overlapping Address Pools  
IPSec NAT Transparency  
IPSec Passive Mode  
IPSec Security Association Idle Timers  
IPSec - SNMP Support  
IPSec VPN Accounting  
IPSec VPN High Availability Enhancements

IPv6 for Cisco IOS Software  
 IPv6 for Cisco IOS Software Command Reference  
 ISDN BCAC and Round-Robin Channel Selection Enhancements  
 ISDN Generic Transparency Descriptor (GTD) for Setup Message  
 ISDN PRI-SLT  
 IS-IS HMAC-MD5 Authentication and Enhanced Clear Text Authentication

## L

L2TP Dial-Out Load Balancing and Redundancy  
 L2TP Extended Failover  
 L2TP Large-Scale Dial-Out  
 L2TP Large-Scale Dial-Out Per-User Attribute via AAA  
 L2TP Redirect  
 L2TP Security  
 Large-Scale Dial-Out (LSDO) VRF Aware  
 Leased and Switched BRI Interface for ETSI NET3  
 Location Confirmation Enhancements for Alternate Endpoints  
 Loopback Command for the PA-MC-8TE1+  
 Low Latency Queueing (LLQ) for IPSec Encryption Engines  
 Low Latency Queueing with Priority Percentage Support

## M

Malicious Caller Identification Invocation Support for Enterprise Networks  
 Managing Port Services on the Cisco AS5350, Cisco AS5400, and Cisco AS5800  
 Manual Certification Enrollment (TFTP and Cut-and-Paste)  
 MD5 File Validation  
 Measurement-Based Call Admission Control for SIP  
 MGCP 1.0 Including NCS 1.0 and TGCP 1.0 Profiles  
 MGCP Based Fax (T.38) and DTMF Relay  
 MGCP Basic CLASS and Operator Services  
 MGCP CAS PBX and AAL2 PVC  
 MGCP CAS PBX and PRI Backhaul on Cisco 7200 Routers  
 MGCP Gateway Support for the Bind Command  
 MGCP Voice on Cisco AS5850 Universal Gateway  
 MGCP VoIP Call Admission Control  
 MICA and NextPort Modem Tech-Support Commands  
 Mobile IP - Challenge/Response Extensions  
 Mobile IP - Generic NAI Support and Home Address Allocation  
 Mobile IP - Home Agent Accounting



Mobile IP Home Agent Policy Routing  
Mobile IP MIB Support for SNMP  
Mobile IP - NAT Detect  
Mobile IP - Support for Foreign Agent Reverse Tunneling  
Modem Relay Support on VoIP Platforms  
Modem Script and System Script Support in Large-Scale Dial-Out  
Modular QoS CLI (MQC) Three-Level Hierarchical Policer  
Module QoS CLI (MQC) Unconditional Packet Discard  
Monitoring Voice and Fax Services on the Cisco AS5350 and Cisco AS5400 Universal Gateways  
MPLS Diff-Serv Aware Traffic Engineering over ATM  
MPLS DiffServ Tunneling Modes  
MPLS Label Distribution Protocol (LDP)  
MPLS Label Distribution Protocol (LDP) MIB  
MPLS Label Switch Controller and Enhancements  
MPLS Label Switching Router MIB  
MPLS LDP - SNMP Notifications  
MPLS QoS Multi-VC Mode for PA-A3  
MPLS Traffic Engineering (TE) -- Automatic Bandwidth Adjustments for TE Tunnels  
MPLS Traffic Engineering (TE) -- IP Explicit Address Exclusion  
MPLS Traffic Engineering (TE) MIB  
MPLS Virtual Private Networks (VPNs)  
MPLS VPN Carrier Supporting Carrier  
MPLS VPN -- Carrier Supporting Carrier -- IPv4 BGP Label Distribution  
MPLS VPN ID  
MPLS VPN -- Inter-AS -- IPv4 BGP Label Distribution  
MPLS VPN -- MIB Support  
MPLS VPN - SNMP Notifications  
MPLS VPN Support for EIGRP Between Provider Edge (PE) and Customer Edge (CE)  
MQC-Based Frame Relay Traffic Shaping  
MS CHAP V2  
Multicast Subsecond Convergence  
Multicast VPN-SNMP Notifications  
Multichannel STM-1 Port Adapter  
Multiclass Multilink PPP  
Multilink Frame Relay (FRF.16)  
Multiple OPC Support for the Cisco Signaling Link Terminal  
Multiple RSA Key Pair Support  
Multiprotocol BGP (MP-BGP) Support for CLNS

Multiservice Interchange (MIX) for Cisco 2600 and 3600 Series Modular Access Routers

## N

NAT - Ability to Use Route Maps with Static Translations

NAT Default Inside Server

NAT Integration with MPLS VPNs

NAT - Static Mapping Support with HSRP for High Availability

NAT Stateful Failover of Network Address Translation

NAT Support for IPSec ESP - Phase II

NAT - Translation of External IP Addresses Only

NAT Support for SIP

NAT Support of H.323 v2 RAS

NetFlow BGP Next Hop Support

NetFlow Multicast Support

NetFlow Multiple Export Destinations

NetFlow Subinterface Support

NetFlow ToS-Based Router Aggregation

NetFlow v9 Export Format

Network Access Server Package for Media Gateway Control Protocol

Network-Based Application Recognition

Network-Based Application Recognition Protocol Discovery Management Information Base

Network Side ISDN PRI Signaling, Trunking, and Switching

NFAS with D Channel Backup on the Cisco AS5800 and Cisco AS5850

NM-AIC-64, Contact Closure Network Module

Nonstop Forwarding Enhanced FIB Refresh

## O

Offload Server Accounting Enhancement

Optimized PPP Negotiation

OSP Debug Enhancement

OSP URL Command Change

OSPF ABR Type 3 LSA Filtering

OSPF Forwarding Address Suppression in Translated Type-5 LSAs

OSPF Inbound Filtering Using Route Maps with a Distribute List

OSPF Nonstop Forwarding (NSF) Awareness

OSPF Retransmissions Limit

OSPF Sham-Link Support for MPLS VPN

OSPF Shortest Path First Throttling

OSPF Stub Router Advertisement

OSPF Support for Fast Hellos  
OSPF Support for Multi-VRF on CE Routers  
OSPF Update Packet-Pacing Configurable Timers

**P**

Packet Classification Based on Layer 3 Packet Length  
Packet Classification Using the Frame Relay DLCI Number  
PA-MC-2T3+ Phase-II (T3 subrate)  
Percentage-Based Policing and Shaping  
Per-User QoS via AAA Policy Name  
Per VRF AAA  
PIAFS Wireless Data Protocol Version 2.1 for Cisco MICA Modems  
PIM MIB Extension for IP Multicast  
PKI Integration with AAA Server  
Policer Enhancement - Multiple Actions  
PPP over Ethernet Client  
PPPoA/PPPoE Autosense for ATM PVCs  
PPPoE Client DDR Idle-Timer  
PPPoE Connection Throttling  
PPPoE Profiles  
PPPoE Session-Count MIB  
PPPoE Session Limit  
Pre-fragmentation for IPSec VPNs  
PRI Backhaul Using the Stream Control Transmission Protocol and the ISDN Q.921 User Adaption Layer  
PRI/Q.931 Signaling Backhaul for Call Agent Applications  
Privilege Command Enhancement  
PSTN Fallback for Cisco 7200 and 7500 Series Routers

**Q**

Quality of Service for Virtual Private Networks  
QSIG Backhaul (RUDP based) for Cisco IOS Gateways  
QSIG for TCL IVR 2.0

**R**

R2 and ISUP Transparency for Voice Gateways Version 2.0  
RADIUS Attribute 8 (Framed-IP-Address) in Access Requests  
RADIUS Attribute 82: Tunnel Assignment ID  
RADIUS Attribute Screening  
RADIUS Centralized Filter Management

RADIUS Debug Enhancements  
 RADIUS EAP Support  
 RADIUS Interim Update at Call Connect  
 RADIUS Logical Line ID  
 RADIUS Packet of Disconnect  
 RADIUS Packet Suppression for VoIP Gateway Rotary Dial Peer Attempts  
 RADIUS Preauthentication for H.323 and SIP Voice Calls  
 RADIUS Progress Codes  
 RADIUS Route Download  
 RADIUS Server Reorder on Failure  
 RADIUS Support of 56-Bit Acct Session-Id  
 RADIUS Timeout Set During Pre-Authentication  
 RADIUS Tunnel Attribute Extensions  
 RADIUS Tunnel Preference for Load Balancing and Fail-Over  
 Redial Enhancements  
 Rotating Through Dial Strings  
 Router-Shelf Redundancy for the Cisco AS5800  
 Route-Switch-Controller Handover Redundancy on the Cisco AS5850  
 RSVP Local Policy Support  
 RSVP Message Authentication  
 RSVP Refresh Reduction and Reliable Messaging  
 RSVP Scalability Enhancements  
 RSVP Support for ATM/PVCs  
 RSVP Support for RTP Header Compression, Phase 1

**S**

SAA for Frame Relay Interfaces  
 Sequential Location Request Enhancement  
 Serial Link Parameter Monitoring and Control  
 Service Assurance Agent (SAA) Application Performance Monitor (APM)  
 Service Assurance Agent for ATM Interfaces  
 Service Assurance Agent (SAA) Support for Frame Relay, VoIP, and MPLS VPN Monitoring  
 Secure Copy  
 Service Selection Gateway  
 Service Selection Gateway (SSG) Features in Release 12.2(13)T  
 Session Initiation Protocol (SIP) for VoIP  
 Session Initiation Protocol for Voice over IP Feature for Cisco uBR925 Cable Access Router and Cisco CVA122 Cable Voice Adapter

Session Limit Per VRF  
SGCP RSIP and AUEP Enhancements  
Shell-Based Authentication of VPDN Users  
Show Command Output Reduction  
Simple Network-Enabled Auto-Provisioning for Cisco IAD2420 Series IADs  
SIP and H.323 Fax Enhancements  
SIP Call Transfer and Call Forwarding Supplementary Services  
SIP - Call Transfer Enhancements Using the Refer Method  
SIP Carrier Identification Code  
SIP: Connection-Oriented Media (Comedia) Enhancements for SIP  
SIP: Core SIP Technology Enhancements  
SIP Enhanced 180 Provisional Response Handling  
SIP Extensions for Caller Identity and Privacy  
SIP Gateway Support for the Bind Command  
SIP Gateway Support of RSVP and TEL URL  
SIP INFO Method for DTMF Tone Generation  
SIP INVITE Request with Malformed Via Header  
SIP: ISDN Suspend/Resume Support  
SIP Media Inactivity Timer  
SIP Redirect Processing Enhancements  
SIP Session Timer Support  
SIP Support for Media Forking  
SIP T.38 Fax Relay  
SNMP Notification Logging  
SNMP Support for VPNs  
SNMP Trap Support for the VSI Master MIB  
Software IPPCP (LZS) with Hardware Encryption  
Source Interface Selection for Outgoing Traffic with Certificate Authority  
SRP MIB for PA-SRP-OC12 and PA-SRPIP-OC12 Port Adapters  
SS7 Four-Link Support for Cisco Signaling Link Terminal  
SS7 Interconnect to Lucent 1AESS Switches  
SSH Terminal-Line Access  
Stream Control Transmission Protocol (SCTP), Release 1  
Stream Control Transmission Protocol (SCTP), Release 2  
Subscriber Service Switch (SSS)  
Support for IPSec ESP Through NAT  
Support for Bridged 1483 Encapsulated Traffic over ATM SVCs  
Support for IUA with SCTP for Cisco Access Servers

Survivable Remote Site Telephony Version 1.0

Survivable Remote Site Telephony Version 2.01

## T

T.37/T.38 Fax Gateway

T.37/T.38 Fax Gateway and Fax Detection for Cisco 1751, Cisco 3725, and Cisco 3745

T.37/T.38 Fax Gateway for Cisco 2600 Series Routers and Cisco 3600 Series Routers

T.38 Fax for Cisco Universal Gateways

T.38 Fax Services for Cisco 1750 Access Routers

TCP Window Scaling

Telephony Gateway Registration Protocol on Cisco IOS Gateways

Terminal Line Security for PAD Connections

Timer and Retry Enhancements for L2TP and L2F

Tokenless Call Authorization

Traffic Policing

Trustpoint CLI

Tunnel ToS

Tunneled GR-303 Support for Cisco Cable Modems

Two-Rate Policer

## U

UDP Forwarding Support of IP Redundancy Virtual Router Group

Universal Port Resource Pooling for Voice and Data Services

Unspecified Bit Rate Plus and ATM Enhancements for Service Provider Integrated Access

Update to mgcp fax t38 Command

Update to playout-delay Command

Update to the Enhancements for the Cisco VG200 Voice Gateway Feature

Update to the Internetworking of Cisco MGCP Voice Gateways and Cisco CallManager Version 3.2 Feature

Update to the MGCP 1.0 Including NCS 1.0 and TGCP 1.0 Profiles Feature

Using 31-Bit Prefixes on IPv4 Point-to-Point Links

## V

V.44 LZJH Compression for Cisco AS5300 and Cisco AS5800 Universal Access Servers

V.44 LZJH Compression for Cisco AS5350, AS5400, AS5850 Universal Gateways and Cisco AS5800 Universal Access Servers

V.92 and V.44 Support for Digital Modems

V.92 Modem on Hold for Cisco AS5350, AS5400, and AS5850 Universal Gateways and Cisco AS5800 Universal Access Servers

V.92 Modem on Hold for Cisco AS5300 and Cisco AS5800 Universal Access Servers

V.92 Quick Connect for Cisco AS5300 and Cisco AS5800 Universal Access Servers  
V.92 Quick Connect for Cisco AS5350, AS5400, AS5850 Universal Gateways, and Cisco AS5800 Universal Access Servers  
V.92 Reporting Using RADIUS Attribute v.92-info  
Virtual Router Redundancy Protocol  
VLAN Range  
VoAAL2 Profile 9 Support for Broadband Loop Emulation Services Specification Interoperability  
Voice and Quality of Service Features for ADSL and G.SHDSL on Cisco 1700, Cisco 2600, and Cisco 3600 Series Routers  
Voice Call Tuning  
Voice DSP Control Message Logger  
Voice H.323/SS7 and SIP Features on Cisco AS5850 Universal Gateway  
Voice over ATM with AAL2 Trunking on the Cisco 7200 Series Routers  
VoIP Gatekeeper Trunk and Carrier Based Routing Enhancements  
VoIP Gateway Trunk and Carrier Based Routing Enhancements  
VoIP Interoperability with Cisco Express Forwarding and Policy Based Routing  
VoIP Outgoing Trunk Group ID and Carrier ID for Gateways and Gatekeepers  
VPDN-Group Session Limiting  
VPN Acceleration Module  
VPN Device Manager  
VPDN Multihop by DNIS  
VRF-Aware IPSec

## **W**

WRED - Explicit Congestion Notification (ECN)

## **X**

X.25 Annex G Session Status Change Reporting  
X.25 Dual Serial Line Management  
X.25 over TCP Profiles  
X.25 Record Boundary Preservation for Data Communications Networks  
X.25 Suppression of Security Signaling Facilities  
XML Interface to Syslog Messages

