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Release Notes for Cisco MC3810 for Cisco IOS Release 12.0(1)XA

November 2, 1998

These release notes describe new features for the Cisco MC3810 multiservice access concentrator that support Cisco IOS Release 12.0(1)XA. Cisco IOS Release 12.0(1)XA is based on Cisco IOS Release 12.0.

Use these release notes in conjunction with the cross-platform *Release Notes for Cisco IOS Release 12.0* located on Cisco Connection Online (CCO) and the Documentation CD-ROM.

For a list of software caveats that apply to Release 12.0(1)XA, refer to the “Caveats” section on page 16.

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System Requirements

This section describes the system requirements for Release 12.0(1)XA and includes the following sections:

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Memory Requirements

Table 1 lists the software product numbers and minimum memory requirements for the Cisco MC3810 multiservice access concentrator using Cisco IOS Release 12.0(1)XA.

Table 1 Memory Requirements

Feature Set	Image Name	Required Flash Memory	Required DRAM Memory	Runs From
Cisco MC3810 IOS IP Plus	mc3810-is-mz	8 MB	32 MB	RAM
Cisco MC3810 IOS IP/ATM Plus	mc3810-a2is-mz	8 MB	32 MB	RAM
Cisco MC3810 IOS Enterprise Plus	mc3810-js-mz	8 MB	32 MB	RAM
Cisco MC3810 Enterprise/ATM Plus	mc3810-a2js-mz	8 MB	32 MB	RAM

Hardware Supported

Cisco IOS Release 12.0(1)XA supports the following platform:

- Cisco MC3810 multiservice access concentrator

Determining Your Cisco IOS Software Release

To determine the version of Cisco IOS software currently running on the Cisco MC3810 multiservice access concentrator, log into the platform and use the **show version EXEC** command. The following is sample output from the **show version** command. The version number is indicated on the second line as shown below:

```
Cisco Internetwork Operating System Software
IOS (tm) MC3810 Software (mc3810-js-mz), Version 12.0(1), RELEASE SOFTWARE
```

Additional command output lines include more information such as processor revision numbers, memory amounts, hardware IDs, and partition information.

Feature Set Table

To determine what features are available with each feature set, see Table 2. The table summarizes what features you can use when running a specific feature set on the Cisco MC3810 for Cisco IOS Release 12.0(1)XA. The feature set tables use the following terms to identify features:

- Yes—The feature is offered in the feature set
- No—The feature is not offered in the feature set

Note This feature set table contains only a selected list of features. This table is not a cumulative or complete list of all the features in each image.

Table 2 Feature Sets Supported by the Cisco MC3810

Features	Feature Set			
	IP Plus	Enterprise Plus	IP/ATM Plus	Enterprise/ATM Plus
New Cisco MC3810 Features in Cisco IOS Release 12.0(1)XA				
Call Detail Records (CDR)	Yes	Yes	Yes	Yes
Facility Data Link Capabilities on Multiflex Trunk	Yes	Yes	Yes	Yes
G.726 (ADPCM)	Yes	Yes	Yes	Yes
Cisco MC3810 – IGX 8400 Interworking	Yes	Yes	Yes	Yes
Integrated BRI Backup ¹	Yes	Yes	Yes	Yes
ISDN PRI QSIG Voice Signaling	Yes	Yes	Yes	Yes
Multi-length Dial Patterns	Yes	Yes	Yes	Yes
OPX Ring-Through	Yes	Yes	Yes	Yes
Permanent Connection	Yes	Yes	Yes	Yes
Preference-based Hunt Groups	Yes	Yes	Yes	Yes
Transparent CCS	Yes	Yes	Yes	Yes
ATM Access				
Frame Relay–ATM Interworking	No	No	Yes	Yes
RFC 1483	No	No	Yes	Yes
rtVBR, nrtVBR, CBR, UBR	No	No	Yes	Yes
Structured CES ²	No	No	Yes	Yes
Traffic Shaping	No	No	Yes	Yes
UNI 3.1 ³	No	No	Yes	Yes
IBM Support				
APPN	No	No	No	No

Table 2 Feature Sets Supported by the Cisco MC3810 (Continued)

Features	Feature Set			
	IP Plus	Enterprise Plus	IP/ATM Plus	Enterprise/ATM Plus
APPN High-Performance Routing	No	No	No	No
APPN MIB Enhancements	No	No	No	No
APPN over Ethernet LAN Emulation	No	No	No	No
APPN Scalability Enhancements	No	No	No	No
BAN for SNA Frame Relay Support	Yes	Yes	Yes	Yes
Bridging Code Rework	Yes	Yes	Yes	Yes
Caching and Filtering	Yes	Yes	Yes	Yes
DLSw+	Yes	Yes	Yes	Yes
DLSw (RFC 1795)	Yes	Yes	Yes	Yes
DLSw Version 2 (RFC 1266)	Yes	Yes	Yes	Yes
Downstream PU Concentration (DSPU)	Yes	Yes	Yes	Yes
Frame Relay SNA Support (RFC 1490)	Yes	Yes	Yes	Yes
NCIA	Yes	Yes	Yes	Yes
NetView Native Service Point	Yes	Yes	Yes	Yes
QLLC	Yes	Yes	Yes	Yes
Response Time Reporter	Yes	Yes	Yes	Yes
RIF Passthru in DLSw+	Yes	Yes	Yes	Yes
SDLC Integration	Yes	Yes	Yes	Yes
SDLC Transport (STUN)	Yes	Yes	Yes	Yes
SDLC-to-LAN Conversion (SDLLC)	Yes	Yes	Yes	Yes
SNA and NetBIOS WAN Optimization	Yes	Yes	Yes	Yes
SRB/RSRB	Yes	Yes	Yes	Yes
SRT	No	No	No	No
SRTL B	Yes	Yes	Yes	Yes
TG/COS	No	No	No	No
TN3270	No	Yes	No	Yes
TN3270 LU Nailing	Yes	No	Yes	No
TN3270 Server Enhancements	Yes	No	Yes	No
IP Routing				
BGP	Yes	Yes	Yes	Yes
BGP4	Yes	Yes	Yes	Yes

Table 2 Feature Sets Supported by the Cisco MC3810 (Continued)

Features	Feature Set			
	IP Plus	Enterprise Plus	IP/ATM Plus	Enterprise/ATM Plus
EGP	Yes	Yes	Yes	Yes
Enhanced IGRP	Yes	Yes	Yes	Yes
Enhanced IGRP Optimizations	Yes	Yes	Yes	Yes
ES-IS	No	Yes	No	Yes
GRE VPN	No	Yes	No	Yes
IGRP	Yes	Yes	Yes	Yes
IS-IS	No	Yes	No	Yes
Named IP Access Control List	Yes	Yes	Yes	Yes
Network Address Translation (NAT)	Yes	Yes	Yes	Yes
NHRP	Yes	Yes	Yes	Yes
On Demand Routing	Yes	Yes	Yes	Yes
OSPF	Yes	Yes	Yes	Yes
OSPF Not-So-Stubby-Areas (NSSA)	Yes	Yes	Yes	Yes
OSPF On Demand Circuit (RFC 1793)	Yes	Yes	Yes	Yes
Protocol-Independent Multicast (PIM)	Yes	Yes	Yes	Yes
PIM Version 2	Yes	Yes	Yes	Yes
Policy-Based Routing	Yes	Yes	Yes	Yes
RIP	Yes	Yes	Yes	Yes
RIP Version 2	Yes	Yes	Yes	Yes
LAN Support				
Apollo Domain	No	Yes	No	Yes
AppleTalk Phase 2	No	Yes	No	Yes
Banyan VINES	No	Yes	No	Yes
Concurrent Routing and Bridging	Yes	Yes	Yes	Yes
DECnet IV	No	Yes	No	Yes
DECnet V	No	Yes	No	Yes
GRE	No	Yes	No	Yes
Integrated Routing and Bridging (IRB)	Yes	Yes	Yes	Yes
IP	Yes	Yes	Yes	Yes
LAN Extension Host	Yes	Yes	Yes	Yes
Multiring	Yes	Yes	Yes	Yes
Novell IPX	No	Yes	No	Yes

Table 2 Feature Sets Supported by the Cisco MC3810 (Continued)

Features	Feature Set			
	IP Plus	Enterprise Plus	IP/ATM Plus	Enterprise/ATM Plus
OSI	No	Yes	No	Yes
Source-Route Bridging	Yes	Yes	Yes	Yes
Transparent and Translational Bridging	Yes	Yes	Yes	Yes
VLANs (ISL & IEEE 802.10)	No	Yes	No	Yes
XNS	No	Yes	No	Yes
Management				
AutoInstall	Yes	Yes	Yes	Yes
Automatic Modem Configuration	Yes	Yes	Yes	Yes
HTTP Server	Yes	Yes	Yes	Yes
Cisco IOS File System	Yes	Yes	Yes	Yes
RMON Events and Alarms	Yes	Yes	Yes	Yes
RMON Full	Yes	Yes	Yes	Yes
SNMP	Yes	Yes	Yes	Yes
SNMP Inform Request	Yes	Yes	Yes	Yes
Telnet	Yes	Yes	Yes	Yes
VPDN MIB Feature	Yes	Yes	Yes	Yes
Multimedia and Quality of Service				
Generic Traffic Shaping	Yes	Yes	Yes	Yes
Random Early Detection (RED)	Yes	Yes	Yes	Yes
RSVP	Yes	Yes	Yes	Yes
Other Routing				
AURP	No	Yes	No	Yes
IPX RIP	No	Yes	No	Yes
NLSP	No	Yes	No	Yes
RTMP	No	Yes	No	Yes
SMRP	No	Yes	No	Yes
SRTP	No	Yes	No	Yes
Protocol Translation				
LAT	No	Yes	No	Yes
PPP	Yes	Yes	Yes	Yes
Rlogin	Yes	Yes	Yes	Yes
Telnet	Yes	Yes	Yes	Yes
TN3270	No	Yes	No	Yes
X.25	Yes	Yes	Yes	Yes

Table 2 Feature Sets Supported by the Cisco MC3810 (Continued)

Features	Feature Set			
	IP Plus	Enterprise Plus	IP/ATM Plus	Enterprise/ATM Plus
Remote Node				
ARAP 1.0/2.0	No	Yes	No	Yes
Asynchronous Master Interfaces	Yes	Yes	Yes	Yes
ATCP	No	Yes	No	Yes
CPPP	Yes	Yes	Yes	Yes
CSLIP	Yes	Yes	Yes	Yes
DHCP	Yes	Yes	Yes	Yes
IP Pooling	Yes	Yes	Yes	Yes
IPX and ARAP on Virtual Async Interfaces	No	Yes	No	Yes
IPXCP	No	Yes	No	Yes
MacIP	No	Yes	No	Yes
NASI	No	Yes	No	Yes
NetBEUI over PPP	No	Yes	No	Yes
PPP	Yes	Yes	Yes	Yes
SLIP	Yes	Yes	Yes	Yes
Scalability				
Airline Product Set (ALPS)	No	No	No	No
Cisco IOS File System	Yes	Yes	Yes	Yes
Entity MIB	Yes	Yes	Yes	Yes
Expression MIB	Yes	Yes	Yes	Yes
OSPF Point to Multipoint	Yes	Yes	Yes	Yes
Per Port Debugging (Conditionally Triggered Debugging)	Yes	Yes	Yes	Yes
SNMP Manager	Yes	Yes	Yes	Yes
Security				
Access Lists	Yes	Yes	Yes	Yes
Access Security	Yes	Yes	Yes	Yes
Additional Vendor-Proprietary RADIUS Attributes	Yes	Yes	Yes	Yes
Authenticating ACLs	No	No	No	No
Automated Double Authentication	No	Yes	No	Yes
Certificate Authority Interoperability	No	No	No	No
Context-Based Access Control (CBAC)	No	No	No	No
Extended Access Lists	Yes	Yes	Yes	Yes

Table 2 Feature Sets Supported by the Cisco MC3810 (Continued)

Features	Feature Set			
	IP Plus	Enterprise Plus	IP/ATM Plus	Enterprise/ATM Plus
Internet Key Exchange Security Protocol	No	No	No	No
IPSec Network Security	No	No	No	No
Kerberized Login	No	Yes	No	Yes
Kerberos V Client Support	No	Yes	No	Yes
Lock and Key	Yes	Yes	Yes	Yes
Mac Security for Hubs	Yes	Yes	Yes	Yes
Md5 Routing Authentication	Yes	Yes	Yes	Yes
MS-CHAP Support	No	Yes	No	Yes
Named Method Lists for AAA Authentication & Accounting	Yes	Yes	Yes	Yes
Network Layer Encryption (40-bit or Export Controlled 56-bit DES)	No	No	No	No
RADIUS	Yes	Yes	Yes	Yes
Router Authentication	No	No	No	No
Subblock Phase 1	Yes	Yes	Yes	Yes
TACACS+	Yes	Yes	Yes	Yes
Switching				
Enhanced ATM VC Configuration and Management	No	No	Yes	Yes
Multiple ISDN Switch Types	Yes	Yes	Yes	Yes
Terminal Services				
LAT	No	Yes	No	Yes
Rlogin	Yes	Yes	Yes	Yes
Telnet	Yes	Yes	Yes	Yes
TN3270	No	Yes	No	Yes
X.25 Pad	Yes	Yes	Yes	Yes
Xremote	No	Yes	No	Yes
Voice/Multimedia				
Analog Signaling	Yes	Yes	Yes	Yes
E1 CAS Signaling ⁴	Yes	Yes	Yes	Yes
Gain Control	Yes	Yes	Yes	Yes
Local Dialing	Yes	Yes	Yes	Yes
Multiple Ring Tones	Yes	Yes	Yes	Yes
Multiflex Trunk	Yes	Yes	Yes	Yes
Off-Net Dialing	Yes	Yes	Yes	Yes

Table 2 Feature Sets Supported by the Cisco MC3810 (Continued)

Features	Feature Set			
	IP Plus	Enterprise Plus	IP/ATM Plus	Enterprise/ATM Plus
On-Net/Off-Net Call Rerouting	Yes	Yes	Yes	Yes
Pass-Through Voice	Yes	Yes	Yes	Yes
PLAR	Yes	Yes	Yes	Yes
Remote Dialing	Yes	Yes	Yes	Yes
T1 CAS Signaling	Yes	Yes	Yes	Yes
Voice Activity Detection	Yes	Yes	Yes	Yes
Voice over ATM	No	No	Yes	Yes
Voice over Frame Relay	Yes	Yes	Yes	Yes
Voice over HDLC	Yes	Yes	Yes	Yes
Voice over IP	No	No	No	No
Wan Optimization				
Bandwidth-on-Demand	Yes	Yes	Yes	Yes
Custom and Priority Queuing ⁵	Yes	Yes	Yes	Yes
Dial Backup	Yes	Yes	Yes	Yes
Dial-on-Demand	Yes	Yes	Yes	Yes
DRP Server Agent	Yes	Yes	Yes	Yes
Header, Link and Payload Compression	Yes	Yes	Yes	Yes
Snapshot Routing	Yes	Yes	Yes	Yes
Weighted Fair Queuing ⁶	Yes	Yes	Yes	Yes
Wan Services				
Always On/Direct ISDN	No	No	No	No
ATM LAN Emulation: Decnet Routing and Banyan Vines Support	No	No	Yes	Yes
ATM LAN Emulation: (HSRP and SSRP)	No	No	Yes	Yes
ATM: Rate Queues for SVC per Subinterface	No	No	Yes	Yes
ATM: UNI 3.1 Signaling for ATM	No	No	Yes	Yes
Combinet Packet Protocol (CPP)	No	No	No	No
Dialer Profiles	Yes	Yes	Yes	Yes
Dialer Watch	Yes	Yes	Yes	Yes
Frame Relay Compression (FRF.9)	Yes	Yes	Yes	Yes
Frame Relay SVCs Support (DTE)	No	No	No	No

Table 2 Feature Sets Supported by the Cisco MC3810 (Continued)

Features	Feature Set			
	IP Plus	Enterprise Plus	IP/ATM Plus	Enterprise/ATM Plus
Frame Relay Traffic Shaping	Yes	Yes	Yes	Yes
Frame Relay Switching	Yes	Yes	Yes	Yes
Frame Relay UNI	Yes	Yes	Yes	Yes
Frame Relay-ATM Interworking (FRF.5)	No	No	Yes	Yes
Half Bridge/Half Router For CPP And PPP	Yes	Yes	Yes	Yes
HDLC	Yes	Yes	Yes	Yes
IPXwan 2.0	No	Yes	No	Yes
ISDN	Yes	Yes	Yes	Yes
ISDN Advise of Charge	Yes	Yes	Yes	Yes
ISDN Caller ID Callback	Yes	Yes	Yes	Yes
ISDN NFAS	Yes	Yes	Yes	Yes
Leased Line ISDN at 128 kbps	No	No	No	No
MPPC-MS PPP Compression	Yes	Yes	Yes	Yes
MS Callback	No	No	No	No
Multichassis Multilink PPP (MMP)	No	Yes	No	Yes
National ISDN Switch Type	Yes	Yes	Yes	Yes
PPP	Yes	Yes	Yes	Yes
SMDS	Yes	Yes	Yes	Yes
Stackable Home Gateway	No	No	No	No
Switched 56	Yes	Yes	Yes	Yes
Virtual Private Dialup Network (VPDN)	No	Yes	No	Yes
X.25	Yes	Yes	Yes	Yes
X.25 Enhancements	Yes	Yes	Yes	Yes
X.25 on ISDN	Yes	Yes	Yes	Yes
X.25 Switching between PVCs and SVCs	Yes	Yes	Yes	Yes

1. When the older motherboard (SCB 6.06) is used with this feature, serial port 1 cannot be used. When the new motherboard (SCB 6.07) is used, serial port 1 can be used, clocked at speeds up to 192 kbps.
2. Voice signaling on CES is not available.
3. ATM PVCs only. SVCs are not supported.
4. Includes T1 CAS protocols, plus UK Standard CAS (Mercury protocol) and CEPT standard E&M.
5. Applicable to data-only interfaces.
6. Applicable to data-only interfaces.

Cisco IOS File System

To make file management easier, the Cisco MC3810 provides a complete file system for software images, message files and reports. The standard Flash memory size is 8 MB, and a 16-MB upgrade option is available. The 16-MB version can hold two code images simultaneously for fail-safe upgrades.

Network Management

Management and configuration of the Cisco MC3810 should be familiar to the Cisco IOS user and compatible with existing management systems. As such, it provides a superset of the Cisco command-line interface (CLI). The Cisco MC3810 can be managed by standard Cisco management platforms and facilities. The Cisco MC3810 can be managed by CiscoView in addition to the native remote login facilities provided by Telnet and rlogin. Three types of configuration interfaces are provided:

- Cisco CLI
- HTTP-based configuration server
- SNMP-based MIB

The HTTP-based interface allows configuration from any Web browser such as Netscape Navigator or Microsoft Explorer. The SNMP MIB allows management of the Cisco MC3810 from SNMP managers (for example, HP OpenView).

New and Changed Information

The following section lists the new features supported by the Cisco MC3810 in Cisco IOS Release 12.0(1)XA.

New Features in Cisco IOS Release 12.0(1)XA

The following new features are supported on the Cisco MC3810 in Cisco IOS Release 12.0(1)XA:

- Call Detail Records
- Cisco MC3810 – IGX 8400 Interworking
- Common Channel Signaling Features
- Default Routes
- Facility Data Link (FDL) Capability on the Multiflex Trunk Module
- G.726 (ADPCM)
- Multiflex Trunk Module with integrated BRI interface
- Multi-length Dial Patterns
- OPX Ring-through
- Preference-based Hunt Group

Note Bisync is not supported on the Cisco MC3810 in this release.

Call Detail Records

The Call Detail Records (CDR) feature provides the ability to track records for calls being processed by the Cisco MC3810. CDR data is collected for all POTS call attempts, and the data is collected for each call leg and also by each Cisco MC3810 involved in the call session.

The call legs for which CDR data is collected for are:

- POTS lines if the call both originates and terminates on the same Cisco MC3810
- POTS line and the trunk for calls that either originate or terminate on another Cisco MC3810
- Two trunks in the case of a tandem call

CDR data is stored in an internal buffer on the Cisco MC3810 at call termination time, and becomes available to be polled periodically by the Cisco network management system (NMS) applications. The CDR/call history entries cannot be retrieved after a power loss or a software reload on the Cisco MC3810, so the Cisco NMS is considered the final destination for storing and tailoring the CDR call history table into report form.

Cisco MC3810 – IGX 8400 Interworking

For locations terminating a greater number of voice channels, the Cisco IGX provides scalability that allows a network design in which connections can be made between remote Cisco MC3810 concentrators.

Cisco MC3810 –IGX 8400 Interworking allows the Cisco IGX 8400 to be used as a larger, central site access device that can do the following:

- Support greater numbers of voice channels.
- Connect PBXs and larger routers.
- Provide Quality of Service.
- Provide an integrated network topology view via StrataView+.
- Extend the segmented connection type to the Cisco MC3810. There are two connection segment types:
 - A connection within the IGX cloud.
 - A connection segment on the Cisco MC3810 from the concentrator's network port to the concentrator's user port. This segmented connection applies to both data and voice.

Common Channel Signaling Features

Cisco IOS Release 12.0(1)XA introduces support for three new Common Channel Signaling (CCS) features that are described in the sections below:

- QSIG PRI Voice Switching
- CCS Frame Forwarding
- CCS Transparent Signaling

QSIG PRI Voice Switching

This release adds support for QSIG, which is an inter-PINX (Private Integrated services Network Exchange) signaling protocol that provides connectivity between PINXs in a corporate environment. Using the ISDN PRI QSIG Voice Signaling feature, the Cisco MC3810 can be used as an access device to allow corporate PINX networks at remote sites to be interconnected via a data network (WAN). The Cisco MC3810 QSIG software allows incoming voice calls from a PINX to be routed across the WAN to a destination PINX. The Cisco MC3810 is responsible for establishing the necessary connection to the peer Cisco MC3810 across the WAN where both signaling and voice packets can be transported on behalf of the PINXs.

The Cisco MC3810 also performs intelligent functions such as call routing to other Cisco MC3810 concentrators in the WAN (for example, tandem switching) and interworking with other types of signaling already supported on the Cisco MC3810. Transport of Supplementary Services transparent through the network is also supported.

CCS Frame Forwarding

This release adds support for CCS frame forwarding, which enables the Cisco MC3810 Digital Voice Module (DVM) to connect two CCS Private Integrated services Network Exchanges (PINXs) without having to interpret CCS signaling information for call processing. This feature provides transparent CCS frame forwarding for PBXs that use proprietary forms of CCS. CCS frame forwarding forwards CCS messages by encapsulating them in either Frame Relay or ATM.

With CCS frame forwarding, the voice connections between PBXs over the network are configured as point-to-point links. Voice Activity Detection (VAD) is used to detect when a call is in progress.

CCS Transparent Signaling

This release adds support for transparent Common Channel Signaling (CCS), which provides point-to-point PINX connection capability to Cisco MC3810 digital voice module (DVM) interfaces when the PINX does not support QSIG, or when the PINX has a proprietary solution.

Default Routes

The default routes feature can be used to reduce the number of dial peers to be configured. It is designed for situations where, for example, the ports on a Cisco MC3810 have extension numbers, but all calls not terminating on those extensions should be sent to a central Cisco MC3810, usually for forwarding to a PBX. Instead of defining all the number blocks that can be called, the default route is a dial peer that automatically matches any call not terminated by other dial peers on the Cisco MC3810.

Facility Data Link (FDL) Capability on the Multiflex Trunk Module

This release adds support for Facility Data Link (FDL) on the Multiflex Trunk module. You can specify the FDL format to use either the ANSI T1.403 standard, or the AT&T TR54016 standard, or both.

G.726 (ADPCM)

This newly supported vocoder provides higher reliability for digit transport in networks with greater hop counts and can be used to support lower speed modems (up to 9.6 kbps).

Important Notes

Multiflex Trunk Module with integrated BRI interface

This module provides all the same functionality as the existing MultiFlex Trunk module but now provides an additional interface for BRI data backup. The BRI module provides an S/T interface only, which can be used for European deployment. An inexpensive NT1 can be used to provide connectivity to ISDN services in the United States.

Multi-length Dial Patterns

Dial strings of multiple lengths can now be supported in the same network and on the same Cisco MC3810.

OPX Ring-through

This feature allows a port on the Cisco MC3810 to act like an “Off-Premise Extension” to the PBX. When the PBX attempts to make a connection to the remote voice port on a Cisco MC3810, OPX Ring-through allows the PBX to reroute the call if there is no answer.

Preference-based Hunt Group

The Multi-chassis hunt group has been enhanced to allow the preference command to be used to select remote dial peers before local dial peers using the priority values. This greatly extends the capability to support on-net to off-net rerouting of calls and alternate call center applications.

Important Notes

This section contains important information about the use of your Cisco IOS Release 12.0 software.

Serial Interface Command Change in Release 12.0(1)XA

In Cisco IOS Release 11.3(1) MA, serial 2 was a valid port number. Beginning with Cisco IOS Release 12.0(1), the **interface serial 2** designation on the Cisco MC3810 is no longer valid. Depending on the application, you enter different designations for this interface as follows:

- If configuring Voice over Frame Relay or Voice over HDLC, enter **interface serial 0:x**, where *x* represents the channel group number configured with the **channel-group** controller configuration command.
- If configuring Voice over ATM, first enter the **mode atm** command in controller configuration mode, which creates logical interface ATM0. Then, enter **interface atm0** to configure the interface.

Deprecated MIBs

Because the older Cisco Management Information Bases (MIBs) do not scale well across Cisco products, they will be replaced in a future release. As an initial step toward this, the OLD-CISCO-* MIBs are being deprecated now. This has no immediate impact on any existing Cisco IOS product or network management system (NMS) application. Application developers need to be aware that the following MIBs are being discontinued and update their applications accordingly. Table 3 lists the deprecated MIBs.

Table 3 **Deprecated MIBs**

Deprecated MIB	Replacement
OLD-CISCO-APPLETALK-MIB	RFC1243-MIB
OLD-CISCO-CHASSIS-MIB	ENTITY-MIB
OLD-CISCO-CPUK-MIB	In Development
OLD-CISCO-DECNET-MIB	NA
OLD-CISCO-ENV-MIB	CISCO-ENVMON-MIB
OLD-CISCO-FLASH-MIB	CISCO-FLASH-MIB
OLD-CISCO-INTERFACES-MIB	IF-MIB CISCO-QUEUE-MIB
OLD-CISCO-IP-MIB	NA
OLD-CISCO-MEMORY-MIB	CISCO-MEMORY-POOL-MIB
OLD-CISCO-NOVELL-MIB	NOVELL-IPX-MIB
OLD-CISCO-SYS-MIB	(Compilation of other OLD* MIBS)
OLD-CISCO-SYSTEM-MIB	CISCO-CONFIG-COPY-MIB
OLD-CISCO-TCP-MIB	CISCO-TCP-MIB
OLD-CISCO-TS-MIB	NA
OLD-CISCO-VINES-MIB	CISCO-VINES-MIB
OLD-CISCO-XNS-MIB	NA

Using the Cisco MC3810 with the PSTN

This section describes important notes regarding use of the Cisco MC3810 with the Public Switched Telephone Network (PSTN).

Connections to a PSTN

Care should be exercised when connecting switched voice ports on the Cisco MC3810 directly to the PSTN because improper configurations can expose the corporate network to telephone fraud.

Switched Access from the PSTN

The Cisco MC3810 has the capability to connect a user from the PSTN directly to the corporate wide-area telephone network. As a phone switch, the Cisco MC3810 can be configured to switch the user to any location in that network, even remote locations that are connected again to another PSTN. However, the Cisco MC3810 does not provide any mechanism to restrict users from calling after they are connected. Without proper network design, this condition could result in the unauthorized use of the corporate network for making calls at the corporation's expense. To prevent this from occurring, Cisco does not recommend connecting a switched voice interface on the Cisco MC3810 directly to the PSTN. Instead, it should be connected to a PBX that implements a security scheme that prevents unauthorized use.

Non-Switched Calls

The same opportunity for illicit use does not exist for non-switched call types such as pass-through connections (although the possibility for fraud does exist at the direct contact point). Pass-through calls create a path to only a single location specified by the network administrator. For example, a pass-through connection might be used to pass a trunk from a PBX to the PSTN. In this case, the trunk on the PBX will always pass straight through the Cisco MC3810 to the PSTN. As a result, the necessary security is provided by the PBX.

Caveats

This section contains a detailed list of the open and resolved caveats affecting Cisco IOS Release 12.0(1)XA for the Cisco MC3810 only. For information on other caveats that also apply to this release, refer to the “Caveats” section in the *Cross-Platform Release Notes for Cisco IOS Release 12.0* document located on CCO and the Documentation CD-ROM. This section contains caveats affecting all maintenance releases.

Note If you have an account with CCO, you can use Bug Navigator II to find caveats of any severity for any release. Bug Navigator II can be found at <http://www.cisco.com/support/bugtools>, or from CCO, select **Software & Support: Tools: Bug Toolkit II**.

Open Caveats - Release 12.0(1)XA

This section describes possibly unexpected behavior by Release 12.0(1)XA for the Cisco MC3810. This section describes only severity 1, 2 and 3 caveats.

AppleTalk

- CSCdk14663
Slow switching fails in the inbound direction on Ethernet 0 to atm0 for Appletalk pings, where ethernet0 is configured for **no appletalk route-cache** and atm0 is configured for **appletalk route-cache**.

ATM

- CSCdk26597
When E1 0 is configured for **ATM**, the bandwidth is set to 1920 Kb but when the command **default bandwidth** is entered for interface ATM0, the bandwidth is changed to 1544 KB, which is correct for T1 but not for E1.
- CSCdk31116
If a PVC is created while ATM0 is shut down and then a **no shutdown** command is performed on ATM0, the PVC becomes active but does not increment the current VCC count. If the PVC is then deleted, the current VCC count goes to 4294967295 and an SNMP browser query on number-of-VCCs receives a value of -1.

Basic System Services

- CSCdk19503

When loading an image from a TFTP server via the **copy tftp flash** command, if the line quality is bad and the copy encounters timeouts during transfers, the display might not indicate that the load had not transferred all data and the image is corrupt.
- CSCdk29227

Fast switching does not work properly on s0 and s0:0 interfaces for the Enterprise protocols: Decnet, CLNS, Vines, XNS, AT2-Phy, AT2-AT1.
- CSCdk30739

The state of s0:0 or atm0 interface is not reflected correctly after the interface goes down from a failure at the remote end or from a **shutdown** command. The CiscoView state indication does reflect UP and DOWN conditions correctly.
- CSCdk31289

Use of an invalid interface in a command such as:

connect sw 0 dlc1 200 s0:0 conn 150

will be accepted at the command line instead of rejected. This is not a valid combination, however, and will not work.
- CSCdk32734

If a clock rate is configured for interface serial 0 and the running configuration is copied to the startup configuration, then the Cisco MC3810 is reloaded. When it comes up the, the clock rate is not applied to interface serial 0.

The workaround is to manually configure the interface again, or the startup configuration must be copied again to the running configuration.
- CSCdk48035

Configuring **bsc primary** on serial1 causes an error message to be displayed:

ATM and Bisync cannot work together because of PQUICC limitation".
- CSCdk42623

A debug message might be displayed under certain circumstances:

"spi failed CPM init"

Normal operation is not affected.
- CSCdj77000

The **Lex** option is listed under help on a **config interface** command but is not currently supported and causes a syntax error when entered.

IP Routing

- CSCdk12576

The valid range for **mtu** on interface serial1 when configured for **clear-channel** is different based on the current setting of the MTU. The range shown is 64 to a maximum of (18000 + configured-value - 1500). The actual range is 64 to 18000.

- CSCdk12585

When an interface is set for **encap clear-channel** with an **mtu** setting, and the interface is then reconfigured to **no encap**, the previous setting for **mtu** is retained instead of being set to the default.

ISDN

- CSCdk18120

A **show isdn status** can give incorrect information if the controller is not receiving frames with correct clocking or other configuration. The controller should be configured completely and checked for valid operation before proceeding to configure layer 2 or layer 3 functions.

- CSCdk33763

If a serial interface configured for pri-group operation is configured for **isdn switch** operation before configuring the **isdn calling number**, an SNMP browser will receive error when querying for the value of the isdn-physical-address.

- CSCdk42583

Debug messages are displayed on an ISDN BRI0 interface when the cable is removed. Operation is not affected.

Network Management

- CSCdk24568

When an SNMP set to ifLinkUpDownTrapEnable with value “disabled” is received by the system for an analog voice port, the impedance of the voice port is also changed to UNKNOWN.

- CSCdk26588

CiscoView will display **N/A** for an interface that has been configured for E1 then reconfigured to atm0 or vice-versa. The workaround is to advance to the next index to see the new data.

- CSCdk30763

When a **shutdown** followed by a **no shutdown** is performed on S0 at the remote end, the syslog message LINK-UPDOWN indicating the link has come up is missing, only the LINEPROTO-UPDOWN message is logged.

Since some customers configure their network management stations to only display higher syslog severity messages, no indication of the interface state change might appear since the severity of the LINEPROTO-UPDOWN message is low (for example, severity 5 as opposed to the higher severity 3 of the LINK-UPDOWN message which would likely be displayed if it was generated.)

- CSCdk30818

An SNMP browser can receive data for a non-existent controller (T1 1 or E1 1) on Cisco MC3810 concentrators equipped with an AVM when querying the system.

- CSCdk30874

An SNMP browser query on FXO signal-type returns fxoLoopStart for voice ports of type EXT-SIGN-SLAVE. A query on FXS signal-type returns fxsLoopStart for voice ports of type EXT-SIGN-MASTER.

After a PRI group is configured, the resulting voice ports are of type FXO-NULL. A query on FXO signal-type returns fxoLoopStart for the voice port.

- CSCdk35024

Ciscoview does not display Configuration Status and Configuration History categories and associated data in the configuration device window that appears when the user double-clicks on the representation of the chassis.

- CSCdj77044

A shutdown on an interface dialer is invalid from the CLI but is accepted from an SNMP browser.

Voice Ports

- CSCdk33518

Voice ports remain configured after the voice-groups are deleted.

Voice Support

- CSCdk56829

The **num-exp** command does not operate correctly in configurations using either **PLAR** or **TIE** features on voice ports. Use of number-expansion in these cases might result in a crash due to memory allocation failure.

WAN Services

- CSCdk27900

If a trunk interface is configured for **ppp**, the line protocol will come up but the NCP will not open up. The workaround is to **shutdown** and then **no shutdown** the interface.

- CSCdk28383

There is a limit of 5 sessions supported for X.25 when tunneling PPP over an X.25 connection.

- CSCdk33112

If interface s0:0 is first configured for X25, or any other encapsulation and then the encapsulation is changed to bstun, a message is displayed indicating bstun is not allowed on the interface.

However, the encapsulation is then changed to no encapsulation in show run. Checking **show interface s0:0** the correct encapsulation (for example, X25) is indicated. The interface also goes down after this action, and it is necessary to reconfigure the original encapsulation then do a **shutdown** and **no shutdown** on s0:0 to get it to come up again.

Resolved Caveats - Release 12.0(1)XA

All the caveats listed in this section are resolved in Release 12.0(1)XA for the Cisco MC3810. This section describes only severity 1, 2 and 3 caveats.

- CSCdk29327

When a channel-group is deleted from the T1 0 controller, the associated sub-interface Serial 0:x is also deleted but it is not automatically shutdown. This can cause incorrect behavior of many types, including 100% CPU utilization under apparently light load, system crash and forced crashes and others.

You should always shut down an interface before deleting it from a configuration.

Related Documentation

The following sections describe the documentation available for the Cisco MC3810 multiservice access concentrator. Typically, these documents consist of hardware installation guides, software installation guides, Cisco IOS configuration and command references, system error messages, and feature modules. Feature modules are updates to the Cisco IOS documentation. Documentation is available as printed manuals or electronic documents. Feature modules are available online only.

The most up-to-date documentation can be found on the Web via Cisco Connection Online (CCO) and on the latest Documentation CD-ROM. These electronic documents might contain updates and modifications made after the paper documents were printed. For information on CCO, refer to the “Cisco Connection Online” section on page 25. For more information on the CD-ROM, refer to the “Documentation CD-ROM” section on page 26

Release-Specific Documents

Use these release notes with the *Release Notes for Cisco IOS Release 12.0* located on CCO and the Documentation CD-ROM.

Use these release notes in conjunction with the *Caveats for Cisco IOS Release 12.0* that accompanies these release notes, and is also located on CCO and the Documentation CD-ROM.

Feature Modules

Feature modules describe new features supported by Release 12.0, and are an update to the Cisco IOS documentation set. As updates, the feature modules are available online only. The feature module information is included in the next printing of the Cisco IOS documentation set. Each feature module consists of a brief overview of the feature, benefits, configuration tasks, and a command reference.

To access the feature modules on CCO, follow this path:

Products and Ordering: Cisco Documentation: Cisco IOS Software Configuration: Cisco IOS Release 12.0: Cisco IOS 12.0(1) New Features

To access the feature modules on the Documentation CD-ROM, follow this path:

Cisco Product Documentation: Cisco IOS Software Configuration: Cisco IOS Release 12.0: Cisco IOS 12.0(1) New Features

Platform Documents

Platform documentation for the Cisco MC3810 is listed in Table 4 and in Table 5. These documents ship with the Cisco MC3810.

To access platform documents on CCO, follow this path:

Products and Ordering: Cisco Documentation: Access Servers and Access Routers: Multiservice Access Concentrators

To access platform documents on the Documentation CD-ROM, follow this path:

Cisco Product Documentation: Access Servers and Access Routers: Multiservice Access Concentrators

Table 4 Hardware Documents for Cisco MC3810

Book	Part Number	Chapter Topics
<i>Cisco MC3810 Multiservice Access Concentrator Hardware Installation Guide</i>	78-4855-02	Overview of the Cisco MC3810 Planning Your Installation Installing the Cisco MC3810 Powering Up the Cisco MC3810 Opening and Closing the Chassis Cabling Specifications
<i>Quick Start Guide: Cisco MC3810 Multiservice Access Concentrator Installation and Startup</i>	78-4879-02	Obtain Tools and Equipment Install Chassis and Connect Cables Get Site Information Power Up the Cisco MC3810 Perform Initial Configuration
<i>Cisco MC3810 Multiservice Access Concentrator Regulatory Compliance and Safety Information</i>	78-4857-03	Installation Precautions Agency Approvals Directives Compliance FCC Part 15 Notice Compliance with FCC Part 68 Requirements Industry Canada Compliance European Directives User Guide statement Operating Conditions for Console and Auxiliary Ports Safety Information
<i>Installing and Removing Field-Replaceable Units in the Cisco MC3810 Multiservice Access Concentrator</i>	78-4903-03	Safety Recommendations Required Tools and Equipment Opening the Chassis Removing and Installing the Boot ROM Removing and Installing Main Memory
<i>Cisco Redundant Power System Hardware Installation Guide</i>	78-4097-02	Overview of the Cisco RPS Installing the Cisco RPS Connecting to External Devices Connecting Cables

Table 5 Software Document for Cisco MC3810

Book	Part Number	Chapter Topics
<i>Cisco MC3810 Multiservice Access Concentrator Software Configuration Guide</i>	78-4856-02	Cisco IOS Software Basic Skills Initial Configuration Serial Port and T1/E1 Trunk Configuration Synchronized Clock Configuration Voice over Frame Relay Configuration Voice over ATM Configuration Frame Relay–ATM Interworking Configuration Voice over HDLC Configuration PBX Signaling Format Configuration Dial Plan Considerations CDR Support Configuration Voice Port Configuration Video Support Configuration Cisco MC3810–IGX Interworking Configuration ROM Monitor Configuration Planning Forms

Cisco IOS Documentation

Cisco IOS software documentation is listed in Table 6. Software documentation consists of the Cisco IOS configuration guides and command references and also includes several supporting documents. These documents are shipped with the Cisco MC3810 in electronic form on the Documentation CD-ROM, unless you specifically ordered the printed version of the documents.

To access software documents on CCO, follow this path:

Products and Ordering: Cisco Documentation: Cisco IOS Software Configuration: Cisco IOS Release 12.0

To access software documentation on the Documentation CD-ROM, follow this path:

Cisco Product Documentation: Cisco IOS Software Configuration: Cisco IOS Release 12.0

Table 6 Cisco IOS Software release 12.0 Documentation Set

Books	Chapter Topics
<ul style="list-style-type: none"> • <i>Configuration Fundamentals Configuration Guide</i> • <i>Configuration Fundamentals Command Reference</i> 	Configuration Fundamentals Overview Cisco IOS User Interfaces File Management System Management
<ul style="list-style-type: none"> • <i>Network Protocols Configuration Guide, Part 1</i> • <i>Network Protocols Command Reference, Part 1</i> 	IP Addressing IP Services IP Routing Protocols
<ul style="list-style-type: none"> • <i>Network Protocols Configuration Guide, Part 2</i> • <i>Network Protocols Command Reference, Part 2</i> 	AppleTalk Novell IPX
<ul style="list-style-type: none"> • <i>Network Protocols Configuration Guide, Part 3</i> • <i>Network Protocols Command Reference, Part 3</i> 	Apollo Domain Banyan VINES DECnet ISO CLNS XNS

Table 6 Cisco IOS Software release 12.0 Documentation Set (Continued)

Books	Chapter Topics
<ul style="list-style-type: none"> • <i>Wide-Area Networking Configuration Guide</i> • <i>Wide-Area Networking Command Reference</i> 	ATM Frame Relay SMDS X.25 and LAPB
<ul style="list-style-type: none"> • <i>Security Configuration Guide</i> • <i>Security Command Reference</i> 	AAA Security Services Security Server Protocols Traffic Filtering and Firewalls IP Security and Encryption Passwords and Privileges Neighbor Router Authentication IP Security Options
<ul style="list-style-type: none"> • <i>Cisco IOS Interface Configuration Guide</i> • <i>Cisco IOS Interface Configuration Guide</i> 	Interface Configurations
<ul style="list-style-type: none"> • <i>Dial Solutions Configuration Guide</i> • <i>Dial Solutions Command Reference</i> 	Dial-In Port Setup Dial-In Terminal Services Dial-on-Demand Routing (DDR) Dial Backup Dial-Out Modem Pooling Large-Scale Dial Solutions Cost-Control Solutions ISDN X.25 over ISDN VPDN Dial Business Solutions and Examples
<ul style="list-style-type: none"> • <i>Cisco IOS Switching Services Configuration Guide</i> • <i>Cisco IOS Switching Services Command Reference</i> 	Switching Paths for IP Networks Virtual LAN (VLAN) Switching and Routing
<ul style="list-style-type: none"> • <i>Bridging and IBM Networking Configuration Guide</i> • <i>Bridging and IBM Networking Command Reference</i> 	Transparent Bridging Source-Route Bridging Token Ring Inter-Switch Link Remote Source-Route Bridging DLSw+ STUN and BSTUN LLC2 and SDLC IBM Network Media Translation DSPU and SNA Service Point SNA Frame Relay Access Support APPN Cisco Database Connection NCIA Client/Server Topologies Cisco Mainframe Channel Connection Airline Product Set
<ul style="list-style-type: none"> • <i>Voice, Video, and Home Applications Configuration Guide</i> • <i>Voice, Video, and Home Applications Command Reference</i> 	Voice over IP Voice over Frame Relay Voice over ATM Voice over HDLC Video Support Universal Broadband Features

Table 6 Cisco IOS Software release 12.0 Documentation Set (Continued)

Books	Chapter Topics
<ul style="list-style-type: none">• <i>Quality of Service Solutions Configuration Guide</i>• <i>Quality of Service Solutions Command Reference</i>	Classification Scheduling Packet Drop Traffic Shaping ATM QoS SNA QoS Line Protocols
<ul style="list-style-type: none">• <i>Configuration Guide Master Index</i>• <i>Command Reference Master Index</i>	
<ul style="list-style-type: none">• <i>Cisco IOS Software Command Summary</i>• <i>Cisco IOS System Error Messages</i>• <i>Debug Command Reference</i>• <i>Dial Solutions Quick Configuration Guide</i>	

Note The *Cisco Management Information Base (MIB) User Quick Reference* publication is no longer being published. For the latest list of MIBs supported by Cisco, see the *Cisco Network Management Toolkit* on Cisco Connection Online. On CCO, use the following path: **Software and Support: Software Center: Network Management Products: Cisco Network Management Toolkit: Cisco MIBs**.

Service and Support

For service and support for a product purchased from a reseller, contact the reseller. Resellers offer a wide variety of Cisco service and support programs, which are described in the section “Service and Support” in the information packet that shipped with your product.

Note If you purchased your product from a reseller, you can access CCO as a guest. CCO is Cisco Systems’ primary real-time support channel. Your reseller offers programs that include direct access to CCO services.

For service and support for a product purchased directly from Cisco, use CCO.

Software Configuration Tips on the Cisco TAC Home Page

For helpful tips on configuring Cisco products, follow this path on CCO:

Software & Support: Technical Tips (button on left margin)

Hot Tips are popular tips and hints gathered from Cisco's Technical Assistance Center (TAC). Most of these documents are also available from the TAC's Fax-on-Demand service. To access Fax-on-Demand and receive documents at your fax machine, call 888-50-CISCO (888-502-4726). From international areas, call 415-596-4408.

The following sections are provided from the Technical Tips page:

- Field Notices—Designed to provide notification of critical issues regarding Cisco products. These include problem descriptions, safety or security issues, and hardware defects.
- Hardware—Technical Tips related to specific hardware platforms.
- Internetworking Features—Tips on using and deploying Cisco IOS software features and services.
- Sample Configurations—Actual configuration examples complete with topology and annotations.
- Software Products—MultiNet & Cisco Suite 100, Network Management, Cisco IOS Software Bulletins, CiscoPro Configurations.
- Special Collections—Other Helpful Documents: Frequently Asked Questions, Security Advisories, References & RFCs, Case Studies, CiscoPro Documentation CD-ROM.

Cisco Connection Online

Cisco Connection Online (CCO) is Cisco Systems' primary, real-time support channel. Maintenance customers and partners can self-register on CCO to obtain additional information and services.

Available 24 hours a day, 7 days a week, CCO provides a wealth of standard and value-added services to Cisco's customers and business partners. CCO services include product information, product documentation, software updates, release notes, technical tips, the Bug Navigator, configuration notes, brochures, descriptions of service offerings, and download access to public and authorized files.

CCO serves a wide variety of users through two interfaces that are updated and enhanced simultaneously: a character-based version and a multimedia version that resides on the World Wide Web (WWW). The character-based CCO supports Zmodem, Kermit, Xmodem, FTP, and Internet e-mail, and it is excellent for quick access to information over lower bandwidths. The WWW version of CCO provides richly formatted documents with photographs, figures, graphics, and video, as well as hyperlinks to related information.

You can access CCO in the following ways:

- WWW: <http://www.cisco.com>
- WWW: <http://www-europe.cisco.com>
- WWW: <http://www-china.cisco.com>
- Telnet: cco.cisco.com
- Modem: From North America, 408 526-8070; from Europe, 33 1 64 46 40 82. Use the following terminal settings: VT100 emulation; databits: 8; parity: none; stop bits: 1; and connection rates up to 28.8 kbps.

For a copy of CCO's Frequently Asked Questions (FAQ), contact cco-help@cisco.com. For additional information, contact cco-team@cisco.com.

Note If you are a network administrator and need personal technical assistance with a Cisco product that is under warranty or covered by a maintenance contract, contact Cisco's Technical Assistance Center (TAC) at 800 553-2447, 408 526-7209, or tac@cisco.com. To obtain general information about Cisco Systems, Cisco products, or upgrades, contact 800 553-6387, 408 526-7208, or cs-rep@cisco.com.

Documentation CD-ROM

Cisco documentation and additional literature are available in a CD-ROM package, which ships with your product. The Documentation CD-ROM, a member of the Cisco Connection Family, is updated monthly. Therefore, it might be more current than printed documentation. To order additional copies of the Documentation CD-ROM, contact your local sales representative or call customer service. The CD-ROM package is available as a single package or as an annual subscription. You can also access Cisco documentation on the World Wide Web at <http://www.cisco.com>, <http://www-china.cisco.com>, or <http://www-europe.cisco.com>.

If you are reading Cisco product documentation on the World Wide Web, you can submit comments electronically. Click **Feedback** in the toolbar and select **Documentation**. After you complete the form, click **Submit** to send it to Cisco. We appreciate your comments.

This document is to be used in conjunction with the *Cisco MC3810 Multiservice Access Concentrator Software Configuration Guide* publication and the documents referenced in the "Related Documentation" section.

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