Cisco BTS 10200 Softswitch Billing Interface Guide

Release 4.4

Corporate Headquarters
Cisco Systems, Inc.
170 West Tasman Drive
San Jose, CA 95134-1706
USA
http://www.cisco.com
Tel: 408 526-4000
800 553-NETS (6387)
Fax: 408 526-4100

Text Part Number: OL-5809-02

Preface

The purpose of the *Cisco BTS 10200 Softswitch Billing Interface Guide* is to provide the necessary background information to properly and efficiently manage the Cisco BTS 10200 Softswitch accounting subsystem. This information is applicable to Release 4.4. This document describes both the format of the accounting data generated by the system and the standard operational practices for managing that data.

The Cisco BTS 10200 Softswitch serves as a class-independent switching network element. The solutions in which it is employed also take into account the need to support both traditional PSTN billing needs as well as additional requirements necessitated by the IP, ATM, and PacketCable backbones. Many of the informational elements within the accounting data find their basis in the traditional Bellcore AMA format with modifications and additions to account for the expanded needs and capabilities of the converged network environment.

The Cisco BTS 10200 Softswitch accounting information includes details of service quality and feature invocations within the call context, which are a departure from traditional billing records. The mechanisms used to manage the data generated by and transported from the Cisco BTS 10200 Softswitch follows legacy-type procedures and is documented in the following sections.

The Cisco BTS 10200 Softswitch provides the following billing functions:

- Provides batch record transmission using standard FTP for the transfer of call detail records (CDRs) to a remote billing server or third-party billing mediation device.

Note The Cisco BTS 10200 does not currently support the transmission of CDRs to redundant or multiple external billing mediation systems or billing servers.

- Issues events as appropriate, including potential billing data overwrites.
- Saves billing records based on allocated disk storage.
- Minor, major, and critical alarms.
- Supports user-provisionable billing subsystem parameters.
- Supports on-demand call detail block (CDB) queries based on ranges of timestamps, an originating number, a terminating number, last record written, or other fields in the call detail block.

The Bulk Data Management System (BDMS) application in the Cisco BTS 10200 Softswitch gathers all billing-related call events from call processing, formats them into a standard format, and transmits the billing records using FTP to an external billing collection and mediation device that is part of the service provider's billing system. The FTP transfer occurs automatically every *n* minutes, where *n* is a number from 1 to 60 that the service provider can provision in the Cisco BTS 10200 Softswitch. The default value is 15 minutes. The interface to the external billing mediation device can vary from carrier to

carrier, so the BDMS supports a flexible profiling system. This profiling system allows the Cisco BTS 10200 Softswitch to adapt quickly to any variation of the interface to the external billing mediation device, or to variations in the service provider's record keeping system.

Note For information on Billing-related Packet Cable Event Messages, refer to the *Cisco BTS 10200 Softswitch Release 4.4 PacketCable Feature Module*.

Document Objective

This guide provides billing interface information for the Cisco BTS 10200 Softswitch software Release 4.4. You should read the other documentation supplied with your system before using this guide. A complete list of these documents is included in the *Cisco BTS 10200 Softswitch Release 4.4 Application Installation Guide* which was shipped with your system.

Audience

This guide is intended for network operators and administrators who have experience with telecommunications networks, protocols, and equipment and who have familiarity with data communications networks, protocols, and equipment.

Document Change History

Table 1 lists the changes to this document for Release 4.4.

Table 1 Document Change History

Subject	Change Date	Change Summary
Chapter 1	December 14, 2006	Added billing file example with state values.
Appendix A, Call Detail Block Fields	October 2006	Corrected the information for fields 150 and 151. (Reference for this change is CSCsf19345.)
Chapter 1	January 2005	Moved Secured FTP Support for Billing Interface from 4.4. Release notes to Chapter 1, "Operational Procedures."
	October 2004	Added Release 4.4 updates. • Added new Result values to Chapter 2, "Feature Server Derived Call Data." • Added new values to the Automatic Recall field in Chapter 2, "Feature Server Derived Call Data," Table 2-1. • Added new time zone values, CET and CEST, to Originating POP Time Zone and Terminating POP Time Zone in Appendix A "Call Detail Block File Fields." • Added and updated Appendix B, "Call Termination Cause Codes" back into the book.

Table 1 Document Change History

Subject	Change Date	Change Summary
	April 2004	Made updates and added new information throughout this document for Release 4.4
Chapter 2 Chapter 3 Appendix B Appendix C	January 2004	New chapters created from information in Chapter 1 and Appendix A.
Preface Chapter 1 Chapter 2 Appendix A	November 2003	Removed information from this chapter and made a note to reference the *Cisco BTS 10200 Softswitch Release 4.1PacketCable Feature Module* for information. Made editorial corrections and updated Call Type list.
Appendix A	October 2003	Added OriginatingPopId, TerminatingPopId, DialPlanId, and Terminating PopTimeZone fields to the CDB record; PopTimezone CDB field changed to OriginatingPopTimeZone; added new values to the CallType field; updated descriptions for OriginatingH323VoiceQuality and TerminatingH323VoiceQuality fields; values for OrigType and TermType fields reversed.
Chapter 1	October 2003	Updated command examples;
	December 3, 2002	Initial online publication (Release 3.2/3.3)

Document Organization

This document is organized as follows:

- Chapter 1, “Call Detail Block Transport”
- Chapter 1, “Operational Procedures”
- Chapter 2, “Feature Server Derived Call Data”
- Appendix A, “Call Detail Block File Fields”
- Appendix B, “Call Termination Cause Codes”
- Appendix C, “Example Call Detail Block File”

Document Conventions

This document uses the following conventions:

Note Refer to the *Cisco BTS 10200 Softswitch Command Line Interface Reference Guide* for a detailed description of all commands and tokens discussed in this document.

Typographic conventions used in this guide are shown in Table 2.

Table 2 Conventions Used in this Guide

Convention	Meaning	Description / Comments
Boldface	Commands and keywords you enter as shown.	**offset-list**
Italics	Variables for which you supply values.	**command** *type interface* You replace the variable with specific information. In contexts that do not allow italics, such as online help, arguments are enclosed in angle brackets (< >).
Square brackets ([ ])	Optional elements.	**command** [abc] abc is optional (not required), but you can choose it.
Vertical bars (|)	Separated alternative elements.	**command** [abc | def] You can choose either abc or def, or neither, but not both.
Braces ({ })	Required choices.	**command** { abc | def } You **must** choose either abc **or** def, but not both.
Braces and vertical bars within square brackets ([{ | }])	A required choice within an optional element.	**command** [abc { def | ghi }] You have three options: nothing abc def abc ghi
Caret character (^)	Control key.	The key combinations ^D and Ctrl-D are equivalent: Both mean “hold down the Control key while you press the D key.” Keys are indicated in capital letters and are not case sensitive.
A non-quoted set of characters	A string.	For example, when setting an SNMP community string to *public*, do not use quotation marks around the string; otherwise, the string will include the quotation marks.
`System prompts`	Denotes interactive sessions, indicates that the user enters commands at the prompt.	The system prompt indicates the current command mode. For example, the prompt `Router (config) #` indicates global configuration mode.
`Screen` font	Terminal sessions and information the system displays.	

Table 2 Conventions Used in this Guide (continued)

Convention	Meaning	Description / Comments
Angle brackets (< >)	Non-printing characters such as passwords.	
Exclamation point (!) at the beginning of a line	A comment line.	Comments are sometimes displayed by the Cisco IOS software.

Caution Means *reader be careful*. In this situation, you might do something that could result in equipment damage or loss of data.

Timesaver Means *reader may be able to save some time.* Taking the action described could achieve a result in less time than might be achieved otherwise.

Note Means *reader take note*. Notes contain helpful suggestions or references to material not covered in the manual.

Conventions used in the Cisco BTS 10200 Softswitch software are shown in Table 3.

Table 3 Data Type Conventions

Data Type	Definition	Example

Integer	A series of decimal digits from the set of 0 through 9 that represents a positive integer. An integer may have one or more leading zero digits (0) added to the left side to align the columns. Leading zeros are always valid as long as the number of digits is less than or equal to ten digits. Values of this type have a range of zero through 4294967295.	`123`
		`000123`
		`4200000000`

Signed integer	The same basic format as the integer but can be either positive or negative. When negative, it is preceded by the sign character (-). As with the integer data type, this data type can be as many as ten digits in length, not including the sign character. The value of this type has a range of minus 2147483647 through 2147483647.	`123`
		`-000123`
		`-21000000001`

Hexadecimal	A series of 16-based digits from the set of 0 through 9, a through f, or A through F. The hexadecimal number may have one or more leading zeros (0) added to the left side. For all hexadecimal values, the maximum size is 0xffffffff (eight hexadecimal digits).	`1f3` `01f3000`

Table 3 Data Type Conventions (continued)

Data Type	Definition	Example
Text	A series of alphanumeric characters from the ASCII character set, where defined. Tab, space, and double quote (“ ”) characters cannot be used. Text can be as many as 255 characters; however, it is recommended that you limit the text to no more than 32 characters for readability.	`EntityID LineSES_Threshold999`
String	A series of alphanumeric characters and white-space characters. A string is surrounded by double quotes (“ “). Strings can be as many as 255 characters; however, it is recommended that you limit the strings to no more than 80 characters for readability.	`“This is a descriptive string.”`

Note Hexadecimal and integer fields in files may have different widths (numbers of characters) for column alignment.

Documentation Suite

The documents that make up the Cisco BTS 10200 Softswitch documentation set are listed in Table 3.

Table 4 Cisco BTS 10200 Softswitch Documentation

Functional Area	Publication	Description and Audience
Hardware Installation	*Cisco BTS 10200Cisco BTS 10200 Softswitch Site Surveys and Cabling Procedures*	Describes the hardware components of the Cisco BTS 10200 Softswitch. Includes detailed information on the environmental requirements for all the components. Also provides a checklist of the hardware you should have before starting the installation and a checklist of all the connections for the components. The audience for these publications is the engineering personnel responsible for installing the components and verifying the hardware installation.
Software Release Notes	*Cisco BTS 10200 Softswitch Software Release Notes for Release 4.4*	Provides information that is specific to a particular release of the Cisco BTS 10200 Softswitch software. The audience for these publications is the engineering personnel responsible for installing, configuring, and upgrading software for the respective solutions.
Software Installation	*Cisco BTS 10200 Softswitch Release 4.4 Application Installation Procedures*	Describes the steps necessary to install the software components of the Cisco BTS 10200 Softswitch. The audience for this publication is the engineering personnel responsible for installing and configuring software for the Cisco BTS 10200 Softswitch.

Table 4 Cisco BTS 10200 Softswitch Documentation (continued)

Functional Area	Publication	Description and Audience
Software Upgrade	*Cisco BTS 10200 Softswitch Release 4.4 Software Upgrade Procedures*	Describes the steps necessary to ugpgrade the software components of the Cisco BTS 10200 Softswitch from any previous release to Release 4.4. The audience for this publication is the engineering personnel responsible for upgrading and configuring software for the Cisco BTS 10200 Softswitch.
Operations, Maintenance, and Provisioning	*Cisco BTS 10200 Softswitch Release 4.4 Operations Guide*	Describes the procedures necessary to conduct day-to-day operations, to perform preventive and corrective maintenance, and to provision the Cisco BTS 10200 Softswitch. The audience for these publications is the engineering personnel responsible for operating, maintaining, and servicing the components of the system.
Reference	*Cisco BTS 10200 Softswitch Release 4.4 Command Line Interface Reference Guide*	Provide reference information for the hardware and software of the Cisco BTS 10200 Softswitch. The audience for these publications is the engineering personnel responsible for installing, configuring, operating, and upgrading the software for the respective components of the system.

Related Documentation

Other useful reference publications include:

- Overviews of the related telephony solutions—Describe the Cisco telephony solutions with which the Cisco BTS 10200 Softswitch is associated.
- Gateway installation and configuration guides—Describe how to install and configure the media gateways (MGW) for a particular Cisco telephony solution.

Obtaining Documentation

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  http://www.cisco.com/go/subscription

- Nonregistered Cisco.com users can order documentation through a local account representative by calling Cisco corporate headquarters (California, USA) at 408 526-7208 or, in North America, by calling 800 553-NETS(6387).

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The Cisco TAC website is available to all customers who need technical assistance with a Cisco product or technology that is under warranty or covered by a maintenance contract.

Contacting TAC by Using the Cisco TAC Website

If you have a priority level 3 (P3) or level 4 (P4) problem, contact TAC by going to the TAC website:

http://www.cisco.com/tac

P3 and P4 level problems are defined as follows:

- P3—Your network performance is degraded. Network functionality is noticeably impaired, but most business operations continue.
- P4—You need information or assistance on Cisco product capabilities, product installation, or basic product configuration.

In each of the above cases, use the Cisco TAC website to quickly find answers to your questions.

To register for Cisco.com, go to the following website:

http://www.cisco.com/register/

If you cannot resolve your technical issue by using the TAC online resources, Cisco.com registered users can open a case online by using the TAC Case Open tool at the following website:

http://www.cisco.com/tac/caseopen

Contacting TAC by Telephone

If you have a priority level 1(P1) or priority level 2 (P2) problem, contact TAC by telephone and immediately open a case. To obtain a directory of toll-free numbers for your country, go to the following website:

http://www.cisco.com/warp/public/687/Directory/DirTAC.shtml

P1 and P2 level problems are defined as follows:

- P1—Your production network is down, causing a critical impact to business operations if service is not restored quickly. No workaround is available.
- P2—Your production network is severely degraded, affecting significant aspects of your business operations. No workaround is available.

Operational Procedures

This chapter describes the Cisco BTS 10200 Softswitch billing operational procedures. The following sections provide detailed information on how to manage and control accounting information generated by the Cisco BTS 10200 Softswitch. Actual examples are provided with explanations to illustrate the operational mechanics. These and other commands are documented in the *Cisco BTS 10200 Softswitch Release 4.2 Command Line Interface Reference Guide* and the *Cisco BTS 10200 Softswitch Release 4.2 Operations, Maintenance, and Troubleshooting Guide*.

This chapter is organized as follows:

- Call Data Transport Management
- Call Data Alarm Management
- Call File Management
- Call Detail Data Queries
- Call Data Provisioning

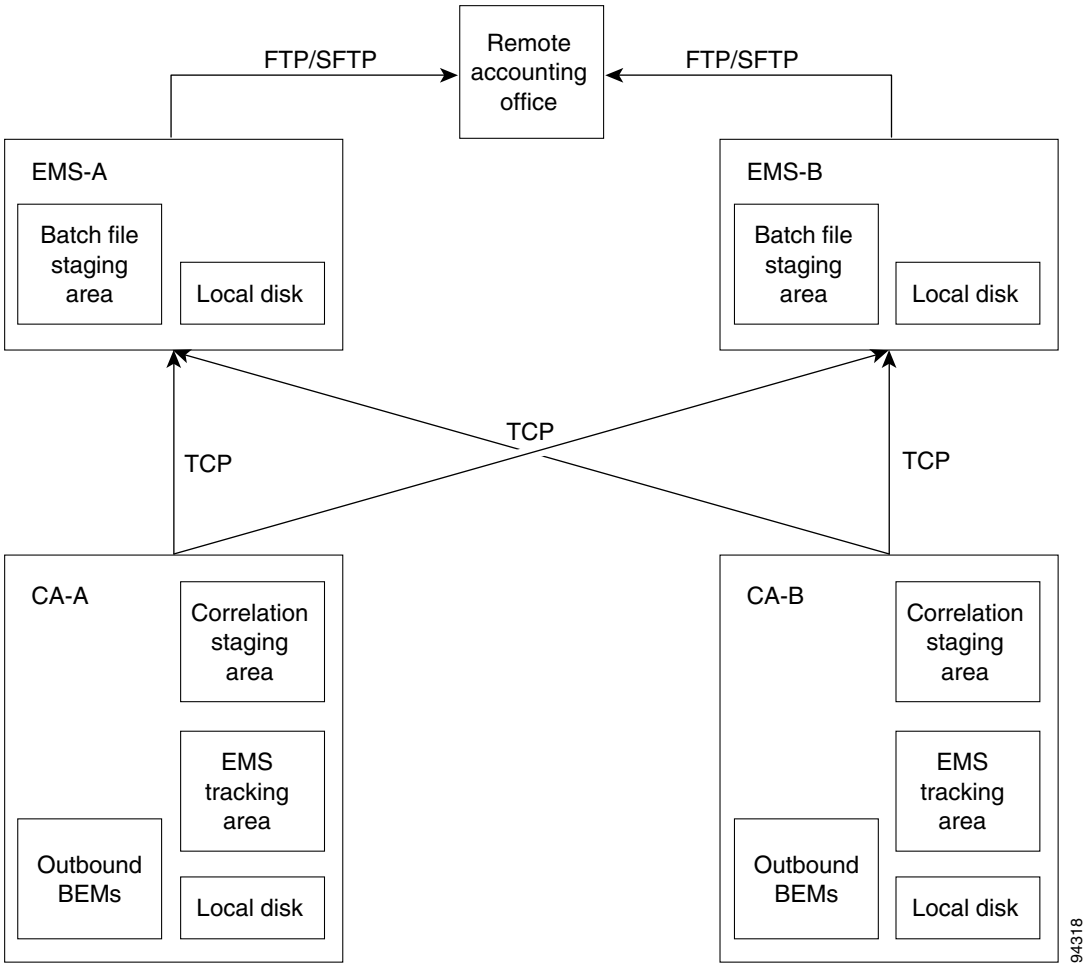
Note This guide deals exclusively with the call detail block (CDB) based billing subsystem. For information on the event message (EM) based billing system used in packet cable environments, please refer to the *Cisco BTS 10200 Softswitch Release 4.2 Packet Cable Feature Guide*.

Call Data Transport Management

Call detail blocks (CDBs) are produced from the current information sent from the billing generator in the Call Agent (CA) to the billing manager in the Element Management System (EMS). Each billing event message (BEM) that is issued by a call in progress is stored in a staging area in the billing generator, waiting for call completion. The Billing Generator determines that a call is in a completed state when a signal stop is detected for the call. After that, the system waits for Quality of Service (QoS) metrics , but it does not wait longer than five seconds. Once this has occurred, the billing generator is triggered to send all data associated with that call to the Billing manager.

The Cisco BTS 10200 Softswitch stores the raw CDBs in flat ASCII files on the persistent store associated with the Bulk Data Management System (BDMS). The Cisco BTS 10200 Softswitch stores from 10 megabytes to 5 gigabytes of billing records in a flat disk partition that is user-definable with respect to size, with the default set at 1 gigabyte. This data is subsequently sent to the specified remote accounting office or billing server or mediation device using the File Transfer Protocol (FTP), as shown in Figure 1-1.

Figure 1-1 Billing Database Redundancy Configuration



The Cisco BTS 10200 Softswitch provides command line interface (CLI) commands to manage the collection and delivery of the accounting information generated.

The user must first ensure that the call detail block (CDB) based billing subsystem is enabled in the call-agent-profile entry for that call agent. The following command enables CDB-based billing:

```
change call-agent-profile id=CA146; cdb-billing-supp=y;
```

The **billing-acct-address** command provides the ability to specify how the billing data files are named, where to the send the files to in the network, the directory to place the files into at the destination node, the username and password to use for access to the destination node, and the interval to send the data.

The **show** command displays the current settings for the billing-acct-address, as shown here:

```
CLI> show billing-acct-addr

BILLING_DIRECTORY = /opt/bms/ftp/billing
BILLING_FILE_PREFIX = bil
BILLING_SERVER_DIRECTORY = /dev/null
POLLING_INTERVAL = 15

Reply : Success: Request was successful.
```

The following is an example of the command used to modify the billing-acct-address parameters to setup the FTP transport parameters:

```
CLI> change billing-acct-addr billing-file-prefix=xxxx;
billing-server-directory=/import/billing/ftp/inbound;
billing-server-addr=rao.customer.com; user-name=customer001; password=test;
polling-interval=15;
```

The following is a list of the command line tokens associated with this command and the valid values and purpose of each:

- **billing-directory—**an optional ASCII string from 1 to 64 characters in length.

  This string specifies the directory path on the EMS where the accounting information is stored prior to being sent to the remote mediation system or accounting office via FTP. The default value for this token is "/opt/bms/ftp/billing."

- **billing-file-prefix**—an optional ASCII string from 1 to 20 characters in length that defaults to "bil."

  This string is appended to the front of each file sent to the remote mediation system or accounting office via FTP. The files are uniquely identified by appending a timestamp to the end of each filename.

  For example:

  ```
  bil-CA146-20060724-1041280-O bil- BILLING_FILE_PREFIX CA146- Call Agent ID
  20060724-1041280 20060724-104128 YearMonthDay-HourMinuteSecond
  ```

  The O is the sequence number, indicating that this is the first billing file created at that second. If the next billing file also is created at the same second, it will be 1. The third is 2.

  O is the state of the file, which can be:

  - O = OPEN—The file is currently being written to.
  - P = PRIMARY—The file has not been sent to and acknowledged by the external billing mediation system.
  - S= SECONDARY—The file has been sent to and acknowledged by the external billing mediation system.

The following is an example from a billing file with the state value at the end of the line.

-rw-r--r-- 1 root other 59 Nov 17 2007 bil-CA146-20071117-0310440-P

-rw-r--r-- 1 root other 59 Nov 17 2007 bil-CA146-20071117-0210440-P

-rw-r--r-- 1 root other 59 Nov 17 2007 bil-CA146-20071117-0110440-P

-rw-r--r-- 1 root other 59 Nov 17 2007 bil-CA146-20071117-0010440-P

- **billing-server-directory**—an optional ASCII character string from 1 to 64 characters in length.

  This string specifies the directory path on the remote mediation system or accounting office to which the accounting information is sent via FTP. The default value for this token is "/dev/null".

  If a **billing-server-directory** is specified, the following three tokens are mandatory. If not, then they are optional.

  - **billing-server-addr**—an ASCII character string from 1 to 64 characters in length.

    This string specifies the IP address or DNS domain name of the remote mediation system or accounting office to which the accounting information is sent via FTP.

  - **user-name**—an ASCII character string from 1 to 32 characters in length.

This string specifies the FTP login name to use to access the remote mediation system or accounting office.

  - **password**—an ASCII character string from 1 to 32 characters in length.

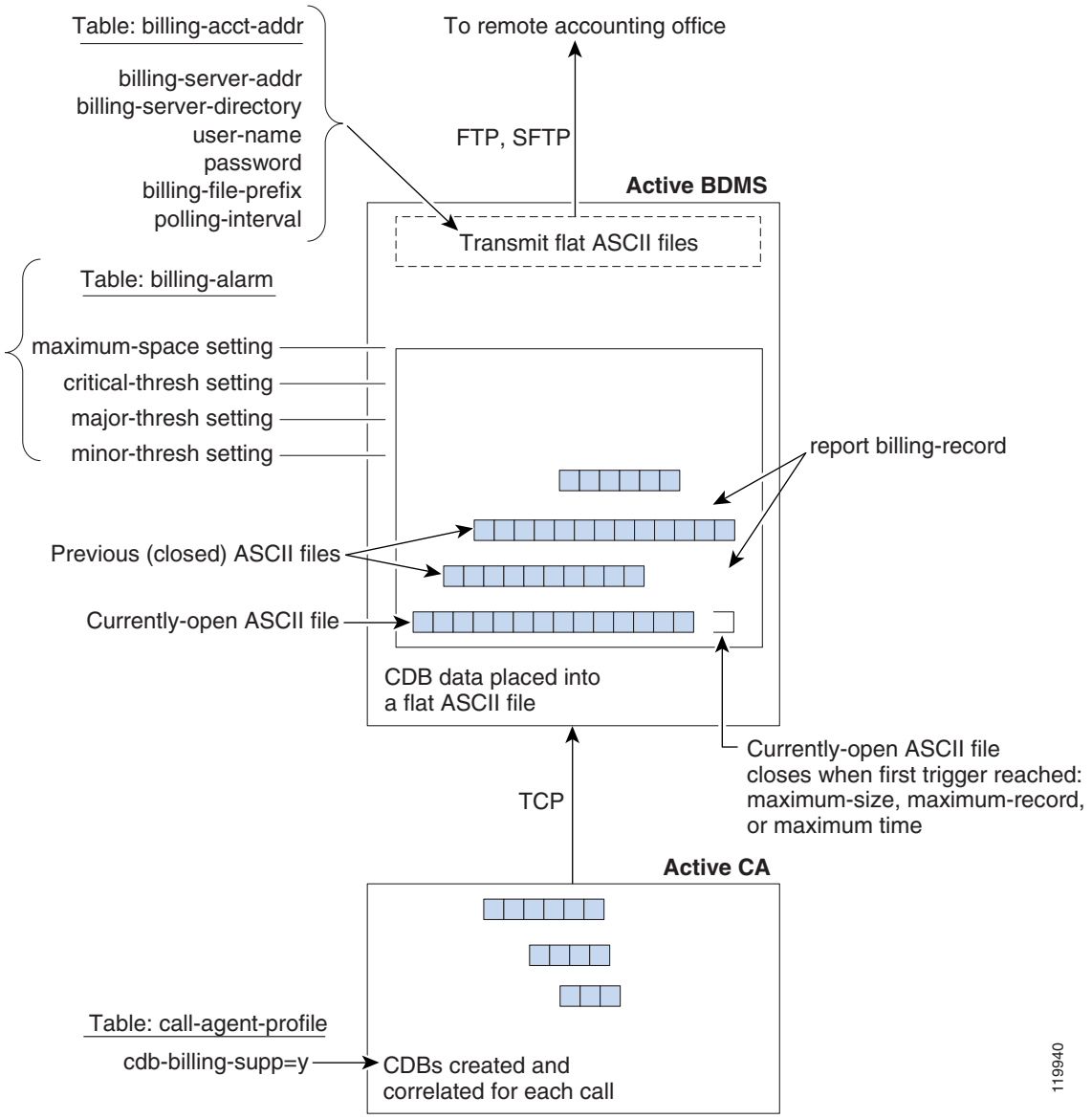
    This string specifies the FTP password to use to access the remote mediation system or accounting office.

- **polling-interval**—an optional token with a valid range from 1 minute to 60 minutes.

  This token specifies the time, in minutes, between the FTP file transfers from the Cisco BTS 10200 Element Management System and the remote mediation system or accounting office. The default value is 15 minutes.

If there is any problem transferring the accounting data to the remote mediation system or accounting office, the Element Management System (EMS) issues a BILLING 6 or BILLING 33 event report. This is an indication that billing data is available for transfer, but transport is unable to FTP the data to the proper destination. Use of the above commands is the correct place to start diagnosis of this situation.

Figure 1-2 The CDB Process



Secured FTP Support for Billing Interface

Release 4.4 allows for using secured FTP (sFTP) in billing traffic, and has a new flag, sftp-supp=n. Before you can enable SFTP, the Cisco BTS 10200 and BMS must be configured to allow non-interactive SSH login as described below; however, once non-interactive SSH login has been set up, you must enable SFTP (thereby disabling FTP) by executing the CLI command change billing-acct-addr sftp-supp=y.

The BILLING 6 and Billing 33 alarms also changed in Release 4.4. The BILLING 6 (Failed to make ftp transfer) and BILLING 33 (Billing FTP Parameters Invalid) alarm definitions have been modified to read *Failed to make FTP/SFTP transfer* and *Billing FTP/SFTP parameters invalid*, respectively.

Also worth noting in Release 4.4 is that during initial set up, the security keys must be manually built in. To set up the public and private keys for the connection between the Cisco BTS 10200 Softswitch and a mediation device, complete the following steps.

For sFTP to work, manually configure Cisco BTS 10200 and BMS to allow non-interactive SSH login.

Perform SFTP as root

Step 1 Log in to the Cisco BTS 10200 primary EMS as root.

Step 2 From the EMS, login to the BMS machine via **ssh** to get the BMS machine added to the /.ssh/known_hosts file.

Step 3 Log off from the BMS.

Step 4 While still logged in on the primary EMS as root, generate an ssh key.

- **a.** Execute **cd /opt/BTSossh/bin**.
- **b.** Execute **ssh-keygen –t rsa**.
- **c.** Hit enter to accept the default file name for the key (/.ssh/id_rsa).
- **d.** Enter **y** if prompted to choose whether to overwrite the existing file.
- **e.** Hit enter when prompted to enter a passphrase (no passphrase).
- **f.** Transfer the resulting file (/.ssh/id_rsa.pub) to a temporary location on the BMS.

Step 5 Set up the BMS with the key generated in Step 4.

- **a.** Login to the BMS as root.
- **b.** If a /.ssh/authorized_keys file does not exist on the BMS, rename the id_rsa.pub file (copied from the Cisco BTS 10200 EMS) to /.ssh/authorized_keys. If the file does exist, append the id_rsa.pub file to it.

Step 6 On the primary EMS, execute **ssh root@abcd**, where abcd is the IP address or fully-qualified domain name of the BMS.

Step 7 Verify that login to the BMS is successful and that no prompts for username or password are issued.

Step 8 Repeat Steps 1-7 for the secondary EMS.

To perform SFTP as BMS user ‘xyz’:

To perform SFTP as BMS user **xyz**:

Step 1 Login to the Cisco BTS 10200 primary EMS as root.

Step 2 If no user account for **xyz** exists on the EMS, create one.

- **a.** Run **useradd –m –s /usr/bin/ksh xyz**.
- **b.** Set the password for the user **xyz** using **passwd xyz**.
- **c.** Make user **xyz** the owner of his directory using **chown xyz /home/xyz**.

Step 3 If no user account for **xyz** exists on the BMS, create one by repeating steps 1 and 2 on the BMS.

Step 4 Login to the Cisco BTS 10200 primary EMS as xyz and do the following to initialize the known_hosts file.

a. Create a .ssh subdirectory in user xyz's home directory using **mkdir .ssh**.

b. While still logged in as xyz, login to the BMS machine via **ssh** to get the BMS machine added to the .ssh/known_hosts file.

Step 5 While still logged in on the primary EMS as xyz, generate an ssh key.

a. Execute **cd /opt/BTSossh/bin**.

b. Execute **ssh-keygen –t rsa**.

c. Hit enter to accept the default file name for the key (/home/xyz/.ssh/id_rsa).

d. Enter **y** if prompted to choose whether to overwrite the existing file.

e. Hit enter when prompted to enter a passphrase (no passphrase).

f. Transfer the resulting file (/home/xyz/.ssh/id_rsa.pub) to a temporary location on the BMS.

Step 6 Set up the BMS with the key generated in step 5.

a. Login to the BMS as xyz.

b. Check xyz's .ssh directory to see if a file named **authorized_keys** exists. If it does not, rename the id_rsa.pub file, transferred earlier, to authorized_keys. (The id_rsa.pub file was created on the BMS in step 5f.) If the file does exist, append the id_rsa.pub file to it.

Step 7 Install user xyz's key in the EMS root account.

a. Login to the primary EMS as root.

b. Execute **cd .ssh**.

c. Copy the user's key files by executing **cp /home/xyz/.ssh/id_rsa.pub .** and **cp /home/xyz/.ssh/id_rsa .**.

Step 8 While logged into the primary EMS as root, execute **ssh xyz@abcd**, where abcd is the IP address or fully-qualified domain name of the BMS.

Step 9 Verify that login to the BMS is successful and that no prompts for username or password are issued.

Step 10 Repeat Steps 1-9 for the secondary EMS.

Call Data Alarm Management

The Cisco BTS 10200 Softswitch billing manager (BMG) process in the EMS tracks the total number of records the billing database can store, the number of unacknowledged records, and the current percentage of the database that is occupied by unacknowledged records. This information is then compared against the threshold levels set in the billing alarm database. If the current amount of billing data in the database exceeds thresholds, then the billing manager issues alarms. The billing manager resets the alarms when the storage levels drop below the specified thresholds.

The Cisco BTS 10200 Softswitch provides CLI user commands to manage the thresholds at which alarms are issued pertaining to billing data overwrite scenarios. These commands provide the ability to specify to what levels the billing partition is filled before issuing an alarm of the appropriate level.

The following is an example of the **show billing-alarm** command and the response that displays the current settings for billing alarms:

```
CLI>show billing-alarm

MINOR_THRESH = 70
MAJOR_THRESH = 80
CRITICAL_THRESH = 90
MAXIMUM_SPACE = 1000
MAXIMUM_SIZE = 2
MAXIMUM_RECORD = 1000
MAXIMUM_TIME = 3600
REGULAR_SPACE = 60

Reply : Success: Request was successful.
```

The following is an example of the **change billing-alarm** command used to set the threshold levels at which billing alarms are issued:

```
change billing-alarm minor-thresh=75; major-thresh=85; critical-thresh=95;
maximum-space=2000; maximum-size=2; maximum-record=3000; maximum-time=30;
regular-space=70;
```

The following is a list of the command line tokens associated with this command and the valid values and purpose of each:

- **minor-thresh**—an optional percentage, from 2 percent to 97 percent, with a default value of 70 percent that represents an initial billing database usage threshold. When this specified percentage of the billing database is consumed by billing records that have not been written into ASCII batch files, a minor alarm is issued. The value of this token must be less than that of the **major-thresh** token.
- **major-thresh**—an optional percentage, from 3 percent to 98 percent, with a default value of 80 percent that represents an intermediate billing database usage threshold. When this specified percentage of the billing database is consumed by billing records that have not been written into ASCII batch files, a major alarm is issued. The value of this token must be less than that of the **critical-thresh** token.
- **critical-thresh**—an optional percentage, from 4 percent to 99 percent, with a default value of 90 percent that represents a final billing database usage threshold. When this specified percentage of the billing database is consumed by billing records that have not been written into ASCII batch files, a critical alarm is issued.
- **maximum-space**—an optional token that specifies the allocated storage capacity for billing data in megabytes. This token's value can range from 10 MB to 5 GB and has a default value of 1 GB.
- **maximum-size**—an optional token that specifies the maximum size of a CDB flat file in megabytes. This token's value can range from 1 MB to 10 MB and has a default value of 2 MB.

- **maximum-record**—an optional token that specifies the maximum number of records to be stored in a given flat file. This token's value can range from 500 records to 10,000 records and has a default value of 1,000 records.
- **maximum-time**—an optional token that specifies the maximum number of seconds a given flat file can remain open for addition of new records. This token's value can range from 10 seconds to 3600 seconds and has a default value of 3,600 seconds (1 hour).
- **regular-space**—an optional token that specifies the real time capacity used, as a percentage of the available capacity, before secondary files are deleted. This token's value can range from 1 percent to 90 percent and has a default value of 60 percent. The value of this token must be less than the value for **minor-thresh**.

If there is a problem creating the ASCII accounting information files, the EMS will issue BILLING 14, BILLING 15, or BILLING 52 event reports. This is an indication that ASCII accounting data files cannot be created and stored on disk in the EMS. In these cases, verify that the alarm threshold levels are not set too low and that there is sufficient storage area available on the EMS to hold the FTP files. Use of the above commands is the appropriate place to start diagnosis of this situation.

Call File Management

The Cisco BTS 10200 Softswitch provides a command line interface that allows you to view lists of billing files on the Bulk Data Management System (BDMS) platform at any given time. The names of the available files and their operational status can be queried using the commands described.

The following **report billing-file** command examples allow you to query the BDMS for billing files and their associated information:

report billing-file filename=%—displays all file names stored in /opt/bms/ftp/billing. Depending on the number of files stored, this command might take awhile to complete.

report billing-file filename=xxx—displays the filename specified as well as the current state of the file.

report billing-file state=xxx—displays all filenames that are in the state entered by the user.

The following is a list of the command line tokens associated with this command and the valid values and purpose of each:

- **filename**—name of the billing file to report.

  If the file name entered does not exist, the user is notified that the file does not exist currently.
- **state**—current state of a given file. The valid states are:
  - OPEN—file is currently being written to
  - PRIMARY—file has not been sent to or acknowledged by the external billing mediation system
  - SECONDARY—file has been sent to and acknowledged by the external billing mediation system.
- **start-row**—row to start displaying from in the returned result set. The default value is 1.
- **limit**—maximum number of rows to display from the returned result set. The default value is 50.
- **display**—data columns to display from the ones supported by this command. The default is to display all available columns.
- **order**—column that the display is to be ordered by from the returned result set.
- **auto-refresh**—specifies whether a new result set is to be created or the existing result set is to be used (if one is available). The default value is Y (use the existing result set).

Call Detail Data Queries

The Cisco BTS 10200 Softswitch provides a command line interface to query CDB records from the ASCII flat files stored in /opt/bms/ftp/billing on the EMS. This mechanism provides the ability to specify record(s) to display based on the supplied information.

The following is an example of the command line for searching based on a time interval:

```
report billing-record start-time=2004-03-27 12:00:00; end-time=2004-03-27
12:05:00; orig-number=9726712355;
```

The example shown above scans the ASCII flat files on the EMS for any call detail records that match the supplied criteria. Each record written between 12:00:00 and 12:05:00 on the 27th of March 2004 with a originating number field containing 972-671-2355 would be displayed to the user.

The following is an example of the command line for searching based on a specified file:

```
report billing-record filename=bil-ca1-20000327-120000; orig-number=9726712355;
```

The example shown above scans the ASCII flat files on the EMS for any call detail records that match the supplied criteria. Each record written to the file *bil-ca1-20000327-120000* with a `originating number` field containing 972-671-2355 would be displayed to the user.

The user can also use this command with no filename or time interval specified. In this case, the system displays the most recently written call record. The following is an example of the command line syntax to request that the most recently written record be displayed (effectively a tail=1 command):

```
report billing-record
```

If a query is entered and no filename or time interval is specified, but a search qualifier is entered (such as call type)—the query is performed over the most recently written filename.

There are several types of searches that can be performed using this query. The billing files can be searched based on filename, start and stop times, or the most recently written file. These searches can be further refined by specifying the call type, orig number, term number, service type, termination cause, or tail parameter. Only one of these refinement parameters can be used at a time.

The following is a list of the search types that can be performed:

- **Filename**—by specifying the actual file name of a group of records, those records can be searched based on the other search qualifiers supplied.
- **Time Interval**—the start and stop times can be specified and all records written within that time period are displayed.
- **Call Type**—the type of call is specified so that all records within the database that match this type are displayed to the user.
- **Service Type**—the type of service to search for within a call record(s) is specified and all records within the database that match this service type are displayed to the user.
- **Termination Cause**—the type of call termination cause is specified and all records within the database that match this termination cause are displayed to the user.
- **Term Number**—each record that contains an exact match with the called number field in the database to the specified directory number is displayed to the user.
- **Orig Number**—each record that contains an exact match with the calling number field in the database to the specified directory number is displayed to the user.
- **Tail**—this query type displays the specified number of records most recently written to the billing database. The valid values range from 1 to 50. When this token is used, the most recently written record(s) is (are) searched. Any CDB files that do not contain actual CDB records are skipped.

The following section decribes the command line tokens associated with the **report billing-record** command and their valid values and purpose.

- **start-time**—a time stamp value in the format of YYYY-MM-DD HH:MM:SS.

  This value indicates the starting time to filter against in the search for when billing records were written to the database. This is an optional token that has no default value.

- **stop-time**—a time stamp value in the format of YYYY-MM-DD HH:MM:SS.

  This value indicates the stopping time to filter against in the search for when billing records were written to the database. This is an optional token that has no default value.

- **term-cause**—an ASCII character string specifying the call termination cause to filter against in the billing database.

  The valid values for this token are:

  AAL_PARAM_NOT_SUPPORTED
  ACCESS_INFO_DISCARDED
  BEARER_CAPAB_INCOMPAT_WITH_SERVICE
  BEARER_CAPABILITY_NOT_IMPLEMENTED
  BEARER_CAPABILITY_UNAVAILABLE
  CALL_AWARDED
  CALL_PROCEEDING
  CALL_REJECTED
  CALL_RESTRICTED_WITH_CLIR
  CHANNEL_DOES_NOT_EXISIT
  CHANNEL_UNACCEPTABLE
  CHANNEL_UNAVAILABLE
  CIRCUIT_CHANNEL_CONGESTED
  DESTINATION_OUT_OF_ORDER
  EXCESS_DIGIT_RECD
  FACILITY_NOT_IMPLEMENTED
  FACILITY_NOT_SUBSCRIBED
  FACILITY_REJECTED
  INCOMPATIBLE_DESTINATION
  INCORRECT_MESSAGE_LENGTH
  INFOELEMENT_NONEXISTENT
  INTERNETWORKING_ERROR_UNSPECIFIED
  INVALID_CALL_REFERENCE
  INVALID_ENDPOINT_REFERENCE
  INVALID_INFOELEMENT
  INVALID_NUMBER_FORMAT
  INVALID_TRANSIT_NETW_SELECTION
  MANDATORY_INFOELEMENT_MISSING
  MESSAGE_INCOMPAT_WITH_CALL_STATE
  MESSAGE_TYPE_NONEXISTENT
  NETWORK_OUT_OF_ORDER
  NO_ROUTE_DESTINATION
  NO_ROUTE_TRANSIT_NETWORK
  NO_VPCI_VCI_AVAILABLE
  NORMAL_CALL_CLEARING
  NORMAL_UNSPECIFIED
  NUMBER_CHANGED
  ONE_DIALED_IN_ERROR
  ONE_NOT_DIALED

PROTOCOL_ERROR_THRESHOLD_XCEEDED
PROTOCOL_ERROR_UNSPECIFIED
QOS_UNAVAILABLE
RESOURCE_UNAVAILABLE
SERVICE_DENIED
SERVICE_NOT_IMPLEMENTED
SERVICE_OPERATION_VIOLATED
SERVICE_UNSPECIFIED
SWITCH_EQUIP_CONGESTED
TEMPORARY_FAILURE
TIMER_EXPIRY_RECOVERY
TOO_MANY_PENDING_ADD_PARTY_REQ
UNAUTHORIZED_BEARER_CAPABILITY
UNASSIGNED_NUMBER
UNSUPPORTED_TRAFFIC_PARAMS
USER_ALERTED_NO_ANSWER
USER_BUSY
USER_CELLRATE_UNAVAILABLE
USER_NOT_RESPONDING
VACANT_CODE
VPCI_VCI_ASSIGNMENT_FAIL
VPCI_VCI_NOT_AVAILABLE
ZERO_DIALED_IN_ERROR

- **call-type**—an ASCII character string specifying the type of call record to filter against in the billing database.

  The valid values for this token are:

  500 (Service Access Code 500 calls using carrier to route the call)
  700 (Service Access Code 700 calls using PIC or dialed CAC to route the call)
  900 (Service Access Code 900 calls using carrier to route the call)
  976 (976-xxxx information services calls)
  AIRLINES
  AMBULANCE
  ATTENDANT (Centrex attendant calls)
  BLV (Busy Line Verification calls)
  BUSINESS (811 calls)
  CARRIER_OPERATOR
  CUT_THRU (calls routed to another carrier for collection of additional digits if necessary)
  DA (411 or NPA-555-1212 calls)
  DA_TOLL (1411 or 1-NPA-555-1212 calls)
  EMG (911 calls)
  EXTENSION (calls within a business group)
  FIRE
  INFO (976 type calls)
  INTERLATA (InterLATA calls using PIC or dialed CAC)
  INTL (01+ calls)
  INTL_OPERATOR
  INTL_WORLD_ZONE_1
  INVALID (partially dialed or abandoned calls)
  LOCAL (7D or 10D calls to local area)
  LOOPBACK_TEST (108 test calls)
  LRN (calls routed via Location Routing Numbers)
  NAS (Network Access Server calls)

NATIONAL (NANP based calls)
NATL_OPERATOR
NON_EMG (311 calls)
NONE (Indicates that for the given dialing pattern, no call type was provisioned into the BTS)
NULL[1]
OPERATOR
OPERATOR_ASSISTED
PCS (Personal Communication Services Calls)
POLICE
PREMIUM (900 type calls)
RAILWAYS
RELAY (711 calls)
REPAIR (611 calls)
SERVICE_CODE
SPEED_DIAL (Speed dialing calls)
TANDEM (calls placed to another call agent or switch)
TEST_CALL (100,101,102,103,105 test calls)
TIME
TOLL (IntraLATA calls)
TOLL_FREE (8xx calls)
TRAFFIC
TW (Time and Weather calls)
VACANT (calls to unassigned DNs)
WEATHER

.1. This is a valid call type when call processing does not use the Destination table in the call agent when routing the call. Examples of this are service activation / deactivations and calls involving unallocated numbers.

- **term-number**—an ASCII character string that is 4 characters to 15 characters long.

  This value indicates the actual called party directory number to filter against in the billing database. This is an optional token that has no default value.

- **orig-number**—an ASCII character string that is 4 characters to 15 characters long.

  This value indicates the actual calling party directory number to filter against in the billing database. This is an optional token that has no default value.

- **tail**—a decimal value from 1 to 50.

  This value indicates the number of most recently written records to query. This is an optional token that has no default value

- **service-type**—an ASCII character string specifying the type of service to filter against in the billing database.

  The valid values for this token are:

  911 HANDLING
  ACCOUNT CODE
  AIN HANDLING
  ANONYMOUS CALL REJECTION
  AUTHORIZATION CODE
  AUTO RECALL
  AUTOMATIC CALLBACK
  BUSY LINE VERIFICATION
  CALL BLOCK
  CALL FORWARD BUSY
  CALL FORWARD NO ANSWER

CALL FORWARD UNCONDITIONAL
CALL HOLD
CALL PARK
CALL PARK REOFFERED
CALL PARK RETRIEVAL
CALL TRANSFER
CALL WAITING
CALL WAITING DELUXE
CALL WAITING WITH CALLER IDENTITY
CALLING ID DELIVERY BLOCK PERMANENT
CALLING IDENTITY DELIVERY SUPPRESSION
CALLING NAME DELIVERY
CALLING NAME DELIVERY BLOCKING
CALLING NUMBER DELIVERY
CALLING NUMBER DELIVERY BLOCK
CANCELLED CALL WAITING
CLASS OF SERVICE
CNAM SCP QUERY
CUSTOM DIALING PLAN
CUSTOMER ORIGINATED TRACE
DIRECTED CALL PICKUP WITH BARGE IN
DIRECTED CALL PICKUP WITHOUT BARGE IN
DO NOT DISTURB
DRCW
HOTLINE
HOTLINE VARIABLE
LIMITED CALL DURATION—PREPAID (FUTURE)
LIMITED CALL DURATION—POSTPAID (FUTURE)
LNP
OUTGOING CALL BARRING
REFER
REJECT CALLER
REMOTE ACTIVATION OF CALL FORWARDING
REMOTE ACTIVATION OF CALL FORWARDING PIN
REPEAT CALL
RETURN CALL
SCREENING LIST EDIT DRCW
SCREENING LIST EDIT SCA
SCREENING LIST EDIT SCF
SCREENING LIST EDIT SCR
SELECTIVE CALL ACCEPTANCE
SELECTIVE CALL FORWARDING
SELECTIVE CALL REJECTION
SERIVCE FEATURE GROUP INCOMING
SERVICE FEAURE GROUP OUTGOING
SPEED CALLING
THREE WAY CALL
THREE WAY CALL DELUXE
TOLL FREE
USER SENSITIVE THREE WAY CALL
WARMLINE

Call Data Provisioning

The Cisco BTS 10200 Softswitch provides a command line interface to manage the types of call detail records generated. This mechanism provides the ability to specify which call detail block types are generated by the system on a per-call-type basis. When the system is installed, all CDB types are enabled by default.

The following is an example of the **show billing-cdb** command to display the current enable/disable setting for billing CDBs for a specific call type:

```
CLI>show billing-cdb type=LRN

TYPE=LRN
ENABLE=Y

Reply : Success: Request was successful.
```

The following is an example of the **change billing-cdb** command to enable local billing:

```
change billing-cdb type=LOCAL; enable=y;
```

The command line tokens associated with the **show billing-cdb** command and their valid values and purpose are as follows:

- **type**—an ASCII character string specifying the type of call record to provision.

  This is a mandatory token with no default value. The valid values for this token are the same as those listed in the previous section for the **report billing-record** command.

- **enable**—an ASCII character (Y or N).

  This string specifies whether the specified CDB type should be enabled or disable for generation. This is an optional token with a default value of Y.

CHAPTER 2

Feature Server Derived Call Data

This chapter describes feature related data that is placed within various fields in the call detail block (CDB) records. This data is generated by the Feature Servers, either internal or external, whenever a feature is invoked during the context of a given call. Up to three feature instances can be captured in a single call detail block. The format of the data and the possible values are shown in the following sections. Each block of feature data contains up to four sub-fields, as follows:

- **ServiceId**—a string describing which services/features were involved in this billing event. The possible values are: (Blue typeface indicates a hyperlink to the associated CDB table.)
  - 1 = CB—Call Block
  - 2 = CFU—Call Forward Unconditional
  - 3 = CW—Call Waiting
  - 4 = RPC—Repeat Call
  - 5 = RTC—Return Call
  - 6 = CHD—Call Hold
  - 7 = TWC—Three-way Calling
  - 8 = CT—Call Transfer
  - 9 = CND—Calling Number Delivery
  - 10 = CNDB—Calling Number Delivery Blocking
  - 11 = CFB—Call Forward on Busy
  - 12 = COS—Class of Service
  - 13 = CNA—Calling Name Delivery
  - 14 = CFNA—Call Forward No Answer
  - 15 = AIN—AIN Handling
  - 16 = EMG—911 Handling
  - 17 = CDP—Custom Dialing Plan
  - 18 = CIDBP—Calling ID Delivery Block Permanent
  - 19 = SFGI—Service Feature Group Incoming
  - 20 = SFGO—Service Feature Group Outgoing
  - 21 = CCW—Cancel Call Waiting
  - 22 = USTWC—Usage Sensitive Three-way Calling
  - 23 = TOLL-FREE—Toll Free Service
  - 24 = ACCT—Account Code Service
  - 25 = AUTH—Authorization Code Service
  - 26 = LNP—Local Number Portability
  - 27 = CIDS—Caller Identity Delivery Suspension
  - 28 = CNAB—Calling Name Delivery Blocking
  - 29 = CIDCW—Call Waiting with Caller Identity
  - 30 = ACR—Anonymous Call Rejection
  - 31 = TOLL-FREE-CALL—Toll Free Service

- 32 = COT—Customer Originated Trace
- 33 = CPRK—Call Park
- 34 = CPRK-RETRIEVAL—Call Park Retrieval
- 35 = CPRK-REOFFER—Call Park Reoffer
- 36 = DPU—Directed Call Pickup with Barge-In
- 37 = DPN—Directed Call Pickup without Barge-In
- 38 = HOTLINE—Hotline
- 39 = WARMLINE—Warmline
- 40 = BLV—Busy Line Verification Busy Line Interruption
- 41 = SCR—Selective Call Rejection
- 42 = SCF—Selective Call Forwarding
- 43 = SCA—Selective Call Acceptance
- 44 = AUTO-CALLBACK—Automatic Call Back
- 45 = AUTO-RECALL—Automatic Recall
- 46 = SPEED-CALL—Speed Calling
- 47 = DND—Do Not Disturb
- 48 = RACF—Remote Activation of Call Forwarding
- 49 = RACF_PIN—Remote Activation of Call Forwarding PIN Change
- 50 = DRCW—Distinctive Ring Call Waiting
- 51 = SLE_SCF—sle-sca sle-scf sle-scr sle-drcw
- 52 = SLE_SCA—sle-sca sle-scf sle-scr sle-drcw
- 53 = SLE_SCR—sle-sca sle-scf sle-scr sle-drcw
- 54 = SLE_DRCW—sle-sca sle-scf sle-scr sle-drcw
- 55 = REJECT-CALLER—Reject Caller
- 56 = CWD—Call Waiting Deluxe
- 57 = TWCD—Three-way Calling Deluxe
- 58 = OCB—Outgoing Call Barring
- 59 = HOTV—Hotline Variable
- 60 = CNAM SCP Query
- 61 = REFER
- 67 = LCD_PREPAID (future)
- 68 = LCD_POSTPAID (future)

- **ServiceStatus**—a string denoting the type of invocation that occurred. The valid values are:
  - INSTANCE
  - ACTIVATION
  - DEACTIVATION
  - INTERROGATION
- **FeatureData**—a string containing the service/feature specific billing data as described in the following sections.
- **Result**—a string indicating if the action taken was successful or not. The valid values are:
  - SUCCESS
  - FAILURE
  - ANI_INVALID
  - ANI_BLOCKED
  - CASUAL_BLOCKED
  - II_SCREENED
  - BW_SCREENED
  - COS_RESTRICTED
  - 2L-ACT ABANDONED VOICEBACK DN
  - 2L-ACT CONNECTED ANONYMOUS DN
  - INSUFFICIENT_QUOTA
  - MEDIATION_REQUIRED

Table 2-1 lists the available features including the fields, values, and associated CDB fields.

Table 2-1 Features and the Associated Call Detail Block Fields

Feature Name	Field	Value	Associated CDB Fields
Account Code Service	**ServiceId**	ACCT	N/A
	ServiceStatus	INSTANCE	N/A
	FeatureData	Account Code	AccountCode
	Result	N/A	N/A
Authorization Code Service	**ServiceId**	AUTH	ServiceType1, ServiceType2, or ServiceType3
	ServiceStatus	INSTANCE	N/A
	FeatureData	Auth Code	AuthCode
	Result	N/A	N/A
Reject Caller	**ServiceId**	REJECT-CALLER	ServiceType1, ServiceType2, or ServiceType3
	ServiceStatus	INSTANCE	ServiceInstanceTime1, ServiceInstanceTime2, or ServiceInstanceTime3
	FeatureData	N/A	N/A
	Result	N/A	N/A

Table 2-1 Features and the Associated Call Detail Block Fields (continued)

Feature Name	Field	Value	Associated CDB Fields
Anonymous Call Rejection	**ServiceId**	ACR	ServiceType1, ServiceType2, or ServiceType3
	ServiceStatus	INSTANCE	ServiceInstanceTime1, ServiceInstanceTime2, or ServiceInstanceTime3
		ACTIVATION	ServiceActivationTime1, ServiceActivationTime2, or ServiceActivationTime3
		DEACTIVATION	ServiceDeactivationTime1, ServiceDeactivationTime2, or ServiceDeactivationTime3
	FeatureData	N/A	N/A
	Result	N/A	N/A
Call Hold	**ServiceId**	CHD	ServiceType1, ServiceType2, or ServiceType3
	ServiceStatus	INSTANCE	ServiceInstanceTime1, ServiceInstanceTime2, or ServiceInstanceTime3
	FeatureData	N/A	N/A
	Result	N/A	N/A
Call Transfer	**ServiceId**	CT	ServiceType1, ServiceType2, or ServiceType3
	ServiceStatus	INSTANCE	ServiceInstanceTime1, ServiceInstanceTime2, or ServiceInstanceTime3
	FeatureData	N/A	N/A
	Result	N/A	N/A
Calling Name Delivery Blocking	**ServiceId**	CNAB	ServiceType1, ServiceType2, or ServiceType3
	ServiceStatus	INSTANCE	ServiceInstanceTime1, ServiceInstanceTime2, or ServiceInstanceTime3
	FeatureData	N/A	N/A
	Result	N/A	N/A

Table 2-1 Features and the Associated Call Detail Block Fields (continued)

Feature Name	Field	Value	Associated CDB Fields
Calling Number Delivery Blocking	**ServiceId**	CNDB	ServiceType1, ServiceType2,or ServiceType3
	ServiceStatus	INSTANCE	ServiceInstanceTime1, ServiceInstanceTime2, or ServiceInstanceTime3
	FeatureData	N/A	N/A
	Result	N/A	N/A
Call Waiting	**ServiceId**	CW	ServiceType1, ServiceType2, or ServiceType3
	ServiceStatus	INSTANCE	ServiceInstanceTime1, ServiceInstanceTime2, or ServiceInstanceTime3
	FeatureData	N/A	N/A
	Result	N/A	N/A
Cancel Call Waiting	**ServiceId**	CCW	ServiceType1, ServiceType2, or ServiceType3
	ServiceStatus	INSTANCE	ServiceInstanceTime1, ServiceInstanceTime2, or ServiceInstanceTime3
	FeatureData	N/A	N/A
	Result	N/A	N/A
Call Waiting with Caller Identity	**ServiceId**	CIDCW	ServiceType1, ServiceType2, or ServiceType3
	ServiceStatus	INSTANCE	ServiceInstanceTime1, ServiceInstanceTime2, or ServiceInstanceTime3
	FeatureData	N/A	N/A
	Result	N/A	N/A
Caller Identity Delivery Suspension	**ServiceId**	CIDS	ServiceType1, ServiceType2, or ServiceType3
	ServiceStatus	INSTANCE	ServiceInstanceTime1, ServiceInstanceTime2, or ServiceInstanceTime3
	FeatureData	N/A	N/A
	Result	N/A	N/A

Table 2-1 Features and the Associated Call Detail Block Fields (continued)

Feature Name	Field	Value	Associated CDB Fields
Call Forward Unconditional	**ServiceId**	CFU	ServiceType1, ServiceType2, or ServiceType3
	ServiceStatus	INSTANCE	ServiceInstanceTime1, ServiceInstanceTime2, or ServiceInstanceTime3
		ACTIVATION	ServiceActivationTime1, ServiceActivationTime2, or ServiceActivationTime3
		INTERROGATION	ServiceInterrogationTime1, ServiceInterrogationTime2, or ServiceInterrogationTime3
		DEACTIVATION	ServiceDeactivationTime1, ServiceDeactivationTime2, or ServiceDeactivationTime3
	FeatureData	N/A	N/A
	Result	N/A	N/A
Call Forward No Answer	**ServiceId**	CFNA	ServiceType1, ServiceType2, or ServiceType3
	ServiceStatus	INSTANCE	ServiceInstanceTime1, ServiceInstanceTime2, or ServiceInstanceTime3
		ACTIVATION	ServiceActivationTime1, ServiceActivationTime2, or ServiceActivationTime3
		INTERROGATION	ServiceInterrogationTime1, ServiceInterrogationTime2, or ServiceInterrogationTime3
		DEACTIVATION	ServiceDeactivationTime1, ServiceDeactivationTime2, or ServiceDeactivationTime3
	FeatureData	N/A	N/A
	Result	N/A	N/A

Table 2-1 Features and the Associated Call Detail Block Fields (continued)

Feature Name	Field	Value	Associated CDB Fields
Call Forward on Busy	**ServiceId**	CFB	ServiceType1, ServiceType2, or ServiceType3
	ServiceStatus	INSTANCE	ServiceInstanceTime1, ServiceInstanceTime2, or ServiceInstanceTime3
		ACTIVATION	ServiceActivationTime1, ServiceActivationTime2, or ServiceActivationTime3
		INTERROGATION	ServiceInterrogationTime1, ServiceInterrogationTime2, or ServiceInterrogationTime3
		DEACTIVATION	ServiceDeactivationTime1, ServiceDeactivationTime2, or ServiceDeactivationTime3
	FeatureData	DN (On Activation)	FeatureData1, FeatureData2, or FeatureData3
	Result	N/A	N/A
Call Park	**ServiceId**	CPRK	ServiceType1, ServiceType2, or ServiceType3
	ServiceStatus	INSTANCE	ServiceInstanceTime1, ServiceInstanceTime2, or ServiceInstanceTime3
	FeatureData	N/A	N/A
	Result	N/A	N/A
Call Park Reoffer	**ServiceId**	CPRK-REOFFER	ServiceType1, ServiceType2, or ServiceType3
	ServiceStatus	INSTANCE	ServiceInstanceTime1, ServiceInstanceTime2, or ServiceInstanceTime3
	FeatureData	N/A	N/A
	Result	N/A	N/A
Call Park Retrieval	**ServiceId**	CPRK-RETRIEVAL	ServiceType1, ServiceType2, or ServiceType3
	ServiceStatus	INSTANCE	ServiceInstanceTime1, ServiceInstanceTime2, or ServiceInstanceTime3
	FeatureData	N/A	N/A
	Result	N/A	N/A

Table 2-1 Features and the Associated Call Detail Block Fields (continued)

Feature Name	Field	Value	Associated CDB Fields
Busy Line Verification Busy Line Interruption	**ServiceId**	BLV	ServiceType1, ServiceType2, or ServiceType3
	ServiceStatus	INSTANCE	ServiceInstanceTime1, ServiceInstanceTime2, or ServiceInstanceTime3
	FeatureData	N/A	N/A
	Result	N/A	N/A
Directed Call Pickup with Barge-In	**ServiceId**	DPU	ServiceType1, ServiceType2, or ServiceType3
	ServiceStatus	INSTANCE	ServiceInstanceTime1, ServiceInstanceTime2, or ServiceInstanceTime3
	FeatureData	DN from where the call was picked up	Feature Data1, Feature Data2, or Feature Data3
	Result	N/A	N/A
Directed Call Pickup without Barge-In	**ServiceId**	DPN	ServiceType1, ServiceType2, or ServiceType3
	ServiceStatus	INSTANCE	ServiceInstanceTime1, ServiceInstanceTime2, or ServiceInstanceTime3
	FeatureData	DN from where the call was picked up	Feature Data1, Feature Data2, or Feature Data3
	Result	N/A	N/A
Three-way Calling	**ServiceId**	TWC	ServiceType1, ServiceType2, or ServiceType3
	ServiceStatus	INSTANCE	ServiceInstanceTime1, ServiceInstanceTime2, or ServiceInstanceTime3
	FeatureData	N/A	N/A
	Result	N/A	N/A

Table 2-1 Features and the Associated Call Detail Block Fields (continued)

Feature Name	Field	Value	Associated CDB Fields
Usage Sensitive Three-way Calling	**ServiceId**	USTWC	ServiceType1, ServiceType2, or ServiceType3
	ServiceStatus	INSTANCE	ServiceInstanceTime1, ServiceInstanceTime2, or ServiceInstanceTime3
	FeatureData	N/A	N/A
	Result	N/A	N/A
	Usage Flag	Y / N	ServiceUsageSensitive1 or ServiceUsageSensitive2 or ServiceUsageSensitive3
Toll Free Service	**ServiceId**	TOLL-FREE-SCP TOLL-FREE-LOCAL	ServiceType1, ServiceType2, or ServiceType3
	ServiceStatus	INSTANCE	ServiceInstanceTime1, ServiceInstanceTime2, or ServiceInstanceTime3
	FeatureData	NPA-NXX-XXXX	ReturnedNumber
	Result	SUCCESS FAILURE ANI_INVALID ANI_BLOCKED CASUAL_BLOCKED II_SCREENED BW_SCREENED COS_RESTRICTED	ServiceResultCode1, ServiceResultCode2, or ServiceResultCode3
Customer Originated Trace	**ServiceId**	COT	ServiceType1, ServiceType2, or ServiceType3
	ServiceStatus	INSTANCE	ServiceInstanceTime1, ServiceInstanceTime2, or ServiceInstanceTime3
	FeatureData	N/A	N/A
	Result	SUCCESS FAILURE ANI_INVALID ANI_BLOCKED CASUAL_BLOCKED II_SCREENED BW_SCREENED COS_RESTRICTED	ServiceResultCode1, ServiceResultCode2, or ServiceResultCode3
	Usage Flag	Y / N	ServiceUsageSensitive1, ServiceUsageSensitive2, or ServiceUsageSensitive3

Table 2-1 Features and the Associated Call Detail Block Fields (continued)

Feature Name	Field	Value	Associated CDB Fields
Selective Call Acceptance **Note** This FCI is generated only when the call is rejected because of SCA.	**ServiceId**	SCA	ServiceType1, ServiceType2, or ServiceType3
	ServiceStatus	INSTANCE	ServiceInstanceTime1, ServiceInstanceTime2, or ServiceInstanceTime3
		ACTIVATION	ServiceActivationTime1, ServiceActivationTime2, or ServiceActivationTime3
		DEACTIVATION	ServiceDeactivationTime1, ServiceDeactivationTime2, or ServiceDeactivationTime3
	FeatureData	N/A	N/A
	Result	N/A	N/A
Selective Call Forwarding **Note** This FCI is generated only when the call is rejected because of SCA.	**ServiceId**	SCF	ServiceType1, ServiceType2, or ServiceType3
	ServiceStatus	INSTANCE	ServiceInstanceTime1, ServiceInstanceTime2, or ServiceInstanceTime3
		ACTIVATION	ServiceActivationTime1, ServiceActivationTime2, or ServiceActivationTime3
		DEACTIVATION	ServiceDeactivationTime1, ServiceDeactivationTime2, or ServiceDeactivationTime3
	FeatureData	N/A	N/A
	Result	N/A	N/A
Selective Call Rejection **Note** This FCI is generated only when the call is rejected because of SCR.	**ServiceId**	SCR	ServiceType1, ServiceType2, or ServiceType3
	ServiceStatus	INSTANCE	ServiceInstanceTime1, ServiceInstanceTime2, or ServiceInstanceTime3
		ACTIVATION	ServiceActivationTime1, ServiceActivationTime2, or ServiceActivationTime3
		DEACTIVATION	ServiceDeactivationTime1, ServiceDeactivationTime2, or ServiceDeactivationTime3
	FeatureData	N/A	N/A
	Result	N/A	N/A

Table 2-1 Features and the Associated Call Detail Block Fields (continued)

Feature Name	Field	Value	Associated CDB Fields
Automatic Call Back	**ServiceId**	AUTO-CALLBACK	ServiceType1, ServiceType2, or ServiceType3
	ServiceStatus	INSTANCE	ServiceInstanceTime1, ServiceInstanceTime2, or ServiceInstanceTime3
		ACTIVATION	ServiceActivationTime1, ServiceActivationTime2, or ServiceActivationTime3
		DEACTIVATION	ServiceDeactivationTime1, ServiceDeactivationTime2, or ServiceDeactivationTime3
	FeatureData	N/A	N/A
	Result	N/A	N/A
	Usage Flag	Y/N	ServiceUsageSensitive1, ServiceUsageSensitive2, or ServiceUsageSensitive3
Automatic Recall	**ServiceId**	AUTO-RECALL	ServiceType1, ServiceType2, or ServiceType3
	ServiceStatus	INSTANCE	ServiceInstanceTime1, ServiceInstanceTime2, or ServiceInstanceTime3
		ACTIVATION	ServiceActivationTime1, ServiceActivationTime2, or ServiceActivationTime3
		DEACTIVATION	ServiceDeactivationTime1, ServiceDeactivationTime2, or ServiceDeactivationTime3
	FeatureData	1-LEVEL or 2-LEVEL (for activation)	FeatureData1, FeatureData2, or FeatureData3
	Result	SUCCESS, FAILURE, 2L-ACT ABANDONED VOICEBACK DN, 2L-ACT CONNECTED ANONYMOUS DN	ServiceResultCode1, ServiceResultCode2, ServiceResultCode3
	Usage Flag	Y/N	ServiceUsageSensitive1, ServiceUsageSensitive2, or ServiceUsageSensitive3

Table 2-1 Features and the Associated Call Detail Block Fields (continued)

Feature Name	Field	Value	Associated CDB Fields
Speed Calling	**ServiceId**	SPEED-CALL	ServiceType1, ServiceType2, or ServiceType3
	ServiceStatus	INSTANCE	ServiceInstanceTime1, ServiceInstanceTime2, or ServiceInstanceTime3
		ACTIVATION	ServiceActivationTime1, ServiceActivationTime2, or ServiceActivationTime3
		DEACTIVATION	ServiceDeactivationTime1, ServiceDeactivationTime2, or ServiceDeactivationTime3
	FeatureData	Speed Dial Code	FeatureData1, FeatureData2, or FeatureData3
	Result	SUCCESS FAILURE ANI_INVALID ANI_BLOCKED CASUAL_BLOCKED II_SCREENED BW_SCREENED COS_RESTRICTED	ServiceResultCode1, ServiceResultCode2, or ServiceResultCode3
Do Not Disturb	**ServiceId**	DND	ServiceType1, ServiceType2, or ServiceType3
	ServiceStatus	INSTANCE	ServiceInstanceTime1, ServiceInstanceTime2, or ServiceInstanceTime3
		ACTIVATION	ServiceActivationTime1, ServiceActivationTime2, or ServiceActivationTime3
		DEACTIVATION	ServiceDeactivationTime1, ServiceDeactivationTime2, or ServiceDeactivationTime3
	FeatureData	N/A	N/A
	Result	N/A	N/A

Table 2-1 Features and the Associated Call Detail Block Fields (continued)

Feature Name	Field	Value	Associated CDB Fields
Remote Activation of Call Forwarding	**ServiceId**	RACF	ServiceType1, ServiceType2, or ServiceType3
	ServiceStatus	ACTIVATION	ServiceActivationTime1, ServiceActivationTime2, or ServiceActivationTime3
		DEACTIVATION	ServiceDeactivationTime1, ServiceDeactivationTime2, or ServiceDeactivationTime3
	FeatureData	N/A	N/A
	Result	N/A	N/A
Remote Activation of Call Forwarding PIN Change	**ServiceId**	RACF-PIN	ServiceType1, ServiceType2, or ServiceType3
	ServiceStatus	INSTANCE	ServiceInstanceTime1, ServiceInstanceTime2, or ServiceInstanceTime3
	FeatureData	N/A	N/A
	Result	SUCCESS FAILURE ANI_INVALID ANI_BLOCKED CASUAL_BLOCKED II_SCREENED BW_SCREENED COS_RESTRICTED	ServiceResultCode1, ServiceResultCode2, or ServiceResultCode3
Screening List Editing Session	**ServiceId**	SLE-SCA SLE-SCF SLE-SCR SLE-DRCW	ServiceType1, ServiceType2, or ServiceType3
	ServiceStatus	INSTANCE	ServiceInstanceTime1, ServiceInstanceTime2, or ServiceInstanceTime3
	FeatureData	Size of list at end of the editing session	FeatureData1, FeatureData2, or FeatureData3
	Result	SUCCESS FAILURE ANI_INVALID ANI_BLOCKED CASUAL_BLOCKED II_SCREENED BW_SCREENED COS_RESTRICTED	ServiceResultCode1, ServiceResultCode2, or ServiceResultCode3

Table 2-1 Features and the Associated Call Detail Block Fields (continued)

Feature Name	Field	Value	Associated CDB Fields
Local Number Portability	**ServiceId**	LNP	ServiceType1, ServiceType2, or ServiceType3
	ServiceStatus	INSTANCE	ServiceInstanceTime1, ServiceInstanceTime2, or ServiceInstanceTime3
	FeatureData	N/A	N/A
	Result	SUCCESS FAILURE ANI_INVALID ANI_BLOCKED CASUAL_BLOCKED II_SCREENED BW_SCREENED COS_RESTRICTED	ServiceResultCode1, ServiceResultCode2, or ServiceResultCode3
Outgoing Call Barring	**ServiceId**	OCB	ServiceType1, ServiceType2, or ServiceType3
	ServiceStatus	INSTANCE	ServiceInstanceTime1, ServiceInstanceTime2, or ServiceInstanceTime3
		ACTIVATION	ServiceActivationTime1, ServiceActivationTime2, or ServiceActivationTime3
		INTERROGATION	ServiceInterrogationTime1, ServiceInterrogationTime2, or ServiceInterrogationTime3
		DEACTIVATION	ServiceDeactivationTime1, ServiceDeactivationTime2, or ServiceDeactivationTime3
	FeatureData	“1”, “2”, “3”, “4”, “5”, “6”, “7”, “8”, or “9” (On Activation)	FeatureData1, FeatureData2, or FeatureData3
	Result	N/A	N/A

Table 2-1 Features and the Associated Call Detail Block Fields (continued)

Feature Name	Field	Value	Associated CDB Fields
Call Waiting Deluxe	**ServiceId**	CWD	ServiceType1, ServiceType2, or ServiceType3
	ServiceStatus	INSTANCE	ServiceInstanceTime1, ServiceInstanceTime2, or ServiceInstanceTime3
		ACTIVATION	ServiceActivationTime1, ServiceActivationTime2, or ServiceActivationTime3
		INTERROGATION	ServiceInterrogationTime1, ServiceInterrogationTime2, or ServiceInterrogationTime3
		DEACTIVATION	ServiceDeactivationTime1, ServiceDeactivationTime2, or ServiceDeactivationTime3
	FeatureData	N/A	N/A
	Result	N/A	N/A
Three-way Calling Deluxe	**ServiceId**	TWCD	ServiceType1, ServiceType2, or ServiceType3
	ServiceStatus	INSTANCE	ServiceInstanceTime1, ServiceInstanceTime2, or ServiceInstanceTime3
	FeatureData	N/A	N/A
	Result	N/A	N/A
Warmline **Note** This FCI is generated only when the user does not dial any number.	**ServiceId**	WARMLINE	ServiceType1, ServiceType2, or ServiceType3
	ServiceStatus	INSTANCE	ServiceInstanceTime1, ServiceInstanceTime2, or ServiceInstanceTime3
	FeatureData	N/A	N/A
	Result	N/A	N/A
Hotline	**ServiceId**	HOTLINE	ServiceType1, ServiceType2, or ServiceType3
	ServiceStatus	INSTANCE	ServiceInstanceTime1, ServiceInstanceTime2, or ServiceInstanceTime3
	FeatureData	N/A	N/A
	Result	N/A	N/A

Table 2-1 Features and the Associated Call Detail Block Fields (continued)

Feature Name	Field	Value	Associated CDB Fields
Hotline Variable	**ServiceId**	HOTV	ServiceType1, ServiceType2, or ServiceType3
	ServiceStatus	INSTANCE	ServiceInstanceTime1, ServiceInstanceTime2, or ServiceInstanceTime3
		ACTIVATION	ServiceActivationTime1, ServiceActivationTime2, or ServiceActivationTime3
		INTERROGATION	ServiceInterrogationTime1, ServiceInterrogationTime2, or ServiceInterrogationTime3
		DEACTIVATION	ServiceDeactivationTime1, ServiceDeactivationTime2, or ServiceDeactivationTime3
	FeatureData	DN (On Activation)	FeatureData1, FeatureData2, or FeatureData3
	Result	VALID	N/A
Class of Service	**ServiceId**	COS	ServiceType1, ServiceType2, or ServiceType3
	ServiceStatus	INSTANCE	ServiceInstanceTime1, ServiceInstanceTime2, or ServiceInstanceTime3
	FeatureData	N/A	N/A
	Result	SUCCESS (1), FAILURE (2), ANI_INVALID (3), ANI_BLOCKED (4), CASUAL_BLOCKED (5) II_SCREENED (6), BW_SCREENED (7), COS_RESTRICTED (8)	ServiceResultCode1, ServiceResultCode2, or ServiceResultCode3
SIP Refer	**ServiceId**	REFER	ServiceType1, ServiceType2, or ServiceType3
	ServiceStatus	INSTANCE	ServiceInstanceTime1, ServiceInstanceTime2, or ServiceInstanceTime3
	FeatureData	N/A	N/A
	Result	N/A	N/A

Call Detail Block File Fields

The Cisco BTS 10200 system stores the raw call detail blocks (CDBs) in a flat file ASCII based format on the persistent store associated with the Bulk Data Management System (BDMS) for retention purposes. The Cisco BTS 10200 stores a minimum of 10 megabytes of billing records in a circular file implementation. This data is subsequently sent to the specified remote accounting office or billing server or mediation device via the File Transfer Protocol (FTP).

The following section illustrates the format of each field in a Call Detail Block (CDB), the order in which it occurs, the possible values for the individual fields and the meaning of the data within the field where applicable.

The delimiters used to separate fields within a record or records within a file can be any one of the following:

- semi-colon ";"
- vertical bar "|"
- linefeed
- comma ","
- caret "^".

Note The same character (value) cannot be used as both a field delimiter and a record delimiter. Different delimiters must be used to separate fields within a record and records within a file.

The CDB field and record separators are defined in the platform.cfg file that is read at initialization time. The platform.cfg file associated with the BDMS platform must be updated for changes to take affect; however, the file cannot be changed without a system restart. Both active and standby BDMS platforms must be restarted to pick up any change of delimiters.

The [ProcessParameter] block to update is "ProcName=BMG." The parameter to update is "Args." To change the field delimiter you must update the "-FD" option. To change the record delimiter you must update the "-RD" option.

Caution Once the delimiters are changed and the BDMSs are restarted, any billing files created with different delimiters will be inaccessible by the billing query command. An example of an actual call detail block FTP file containing one CDB is shown in Appendix C, "Example Call Detail Block File".

Table A-1 provides information detailing the information contained in the fields in the output files transmitted from the Element Management System (EMS) on the Cisco BTS 10200 Softswitch.

Table A-1 Call Detail Block Field Descriptions

Field Number	Common Name	Field Type	Field Size*	Potential Values	Field Description
1	Call Type	Numeric		0 = NULL 1 = TEST-CALL 2 = INTL 3 = LOCAL 4 = TOLL 5 = INTERLATA 6 = TANDEM 7 = EMG 8 = NON-EMG 9 = DA 10 = DA-TOLL 11 = REPAIR 12 = RELAY 13 = BUSINESS 14 = TOLL-FREE 15 = 900 16 = 500 17 = 700 18 = 976 19 = VACANT 20 = PCS 21 = INVALID 22 = NONE 23 = LRN 24 = EXTENSION 25 = CUT-THRU 26 = OPERATOR 27 = CARRIER-OPERATOR 28 = OPERATOR-ASSISTED 29 = BLV 30 = SPEED-DIAL 31 = NATIONAL 32= TW 33 = INFO 34 = PREMIUM 35 = ATTENDANT 36 = NAS 37 = POLICE 38 = FIRE 39 = AMBULANCE 40 = TIME 41 = WEATHER 42 = TRAFFIC 43 = LOOPBACK_TEST 44 = INTL_OPERATOR 45 = NATL_OPERATOR 46 = AIRLINES 47 = RAILWAYS 48 = SERVICE_CODE 49 = INTL_WORLD_ZONE_1	The nature of the call, which indicates the type of accounting processing to apply to it.Call Type “NULL” is used for any calls that do not progress to the point where a lookup in the Destination table occurs, or if routing is not needed—as in cases of feature activation or deactivation.
2	Signal Start Time	Numeric		32 bit unsigned value in GMT epoch time format. The number of seconds since Jan 1, 1970 0:00:00h.	Time starts on receipt of an MGCP NTFY or SS7 IAM. If the value is NULL, timestamp is ignored.

Table A-1 Call Detail Block Field Descriptions (continued)

Field Number	Common Name	Field Type	Field Size*	Potential Values	Field Description
3	Signal Stop Time	Numeric		32 bit unsigned value in GMT epoch time format. The number of seconds since Jan 1, 1970 0:00:00h. If the value is NULL, the timestamp is to be ignored.	Time stops on the last of the following signaling events: 1) MGCP DLCX receipt 2) transmission/receipt of an RLC 3) transmission/receipt of last signaling message to/from a peer CMS/MGC.
4	Interconnect Start Time	Numeric		32 bit unsigned value in GMT epoch time format. The number of seconds since Jan 1,1970 0:00:00h. If the value is NULL, the timestamp is to be ignored.	Time starts on commitment of bandwidth between the IP/ATM and PSTN networks.
5	Interconnect Stop Time	Numeric		32 bit unsigned value in GMT epoch time format. The number of seconds since Jan 1,1970 0:00:00h. If the value is NULL, the timestamp is to be ignored.	Time stops on release of bandwidth between the IP/ATM and PSTN networks.
6	Call Connect Time	Numeric		32 bit unsigned value in GMT epoch time format. The number of seconds since Jan 1,1970 0:00:00h. If the value is NULL, the timestamp is to be ignored.	Time starts on receipt of an MGCP NTFY indicating off-hook, or SS7 ANS, or answer indication from the media gateway for an operator services trunk.
7	Call Answer Time	Numeric		32 bit unsigned value in GMT epoch time format. The number of seconds since Jan 1,1970 0:00:00h. If the value is NULL, the timestamp is to be ignored.	Time starts on both parties being off-hook for at least 2 seconds. Currently the Cisco BTS 10200 does not support Short Supervisory Transitions, so the contents of this field and field #6 will be identical.
8	Call Disconnect Time	Numeric		32 bit unsigned value in GMT epoch time format. The number of seconds since Jan 1,1970 0:00:00h. If the value is NULL, the timestamp is to be ignored.	Time starts on receipt of an MGCP NTFY indicating on-hook of the calling party, or expiration of the call-continuation timer, an SS7 REL, or an indication from the media gateway that the operator services trunk has disconnected.
9	Database Query Time1	Numeric		32 bit unsigned value in GMT epoch time format. The number of seconds since Jan 1,1970 0:00:00h. If the value is NULL, the timestamp is to be ignored.	The time the first database query response was received for this call.
10	Service Instance Time1	Numeric		32 bit unsigned value in GMT epoch time format. The number of seconds since Jan 1,1970 0:00:00h. If the value is NULL, the timestamp is to be ignored.	The time the instance of Service Type 1 occurred.

Table A-1 Call Detail Block Field Descriptions (continued)

Field Number	Common Name	Field Type	Field Size*	Potential Values	Field Description
11	Service Instance Time2	Numeric		32 bit unsigned value in GMT epoch time format. The number of seconds since Jan 1,1970 0:00:00h. If the value is NULL, the timestamp is to be ignored.	The time the instance of Service Type 2 occurred.
12	Service Instance Time3	Numeric		32 bit unsigned value in GMT epoch time format. The number of seconds since Jan 1,1970 0:00:00h. If the value is NULL, the timestamp is to be ignored.	The time the instance of Service Type 3 occurred.
13	Service Activation Time1	Numeric		32 bit unsigned value in GMT epoch time format. The number of seconds since Jan 1,1970 0:00:00h. If the value is NULL, the timestamp is to be ignored.	The time the activation of Service Type 1 occurred.
14	Service Activation Time2	Numeric		32 bit unsigned value in GMT epoch time format. The number of seconds since Jan 1,1970 0:00:00h. If the value is NULL, the timestamp is to be ignored.	The time the activation of Service Type 2 occurred.
15	Service Activation Time3	Numeric		32 bit unsigned value in GMT epoch time format. The number of seconds since Jan 1,1970 0:00:00h. If the value is NULL, the timestamp is to be ignored.	The time the activation of Service Type 3 occurred.
16	Service Deactivation Time1	Numeric		32 bit unsigned value in GMT epoch time format. The number of seconds since Jan 1,1970 0:00:00h. If the value is NULL, the timestamp is to be ignored.	The time the deactivation of Service Type 1 occurred.
17	Service Deactivation Time2	Numeric		32 bit unsigned value in GMT epoch time format. The number of seconds since Jan 1,1970 0:00:00h. If the value is NULL, the timestamp is to be ignored.	The time the deactivation of Service Type 2 occurred.
18	Service Deactivation Time3	Numeric		32 bit unsigned value in GMT epoch time format. The number of seconds since Jan 1,1970 0:00:00h. If the value is NULL, the timestamp is to be ignored.	The time the deactivation of Service Type 3 occurred.

Table A-1 Call Detail Block Field Descriptions (continued)

Field Number	Common Name	Field Type	Field Size*	Potential Values	Field Description
19	Call Elapsed Time	String	11	(DDDDD):HH:MM:SS	The duration that the voice path was established. The days (DDDDD) portion of this field is optional and variable in length depending on the number of days the calls has been connected. If this field is NULL, then no data was captured for this record.
20	Interconnect Elapsed Time	String	11	(DDDDD):HH:MM:SS	The duration that bandwidth was established with another carrier. The days (DDDDD) portion of this field is optional and variable in length depending on the number of days the calls has been connected. If this field is NULL, then no data was captured for this record.
21	Originating QOS Time	Numeric		32 bit unsigned value in GMT epoch time format. The number of seconds since Jan 1,1970 0:00:00h. If the value is NULL, the timestamp is to be ignored.	The time that the originating side QoS measurements were collected. If this field is NULL, then the associated Originating QoS parameters are to be ignored.
22	Terminating QOS Time	Numeric		32 bit unsigned value in GMT epoch time format. The number of seconds since Jan 1,1970 0:00:00h. If the value is NULL, the timestamp is to be ignored.	The time that the terminating side QoS measurements were collected. If this field is NULL, then the associated Terminating QoS parameters are to be ignored.
23	Originating Number	String	64	DIGITS	This field contains the calling party number after it has gone through the complete translation process on the BTS including any possible overriding. If this field is NULL, then no data was captured for this field.
24	Terminating Number	String	64	DIGITS	Directory number of the terminating party. If this field is NULL, then no data was captured for this record.
25	Charge Number	String	64	DIGITS	Directory number of the billable party. For Mexican ISUP scenarios this field is populated with the tarrification number. If this field is NULL, then no data was captured for this record.
26	Location Routing Number	String	64	DIGITS	The location routing number (LRN) of the switch to which the directory number has been ported. If this field is NULL, then no data was captured for this record.

Table A-1 Call Detail Block Field Descriptions (continued)

Field Number	Common Name	Field Type	Field Size*	Potential Values	Field Description
27	Dialed Digits	String	64	DIGITS This field contains the actual digits dialed by the originator of the call. This field only contains digits dialed in the first stage of the call when dialed by a subscriber that is homed on the Cisco BTS 10200 Softswitch.	This field is intended for troubleshooting purposes only. If the call is terminating to this switch from a subscriber homed elsewhere, then this field will contain the information in the ieCldPartyNum field. In this case - the digits stored may have been manipulated after the originator dialed. If this field is NULL, then no data was captured for this record.
28	Forwarding Number	String	64	DIGITS	Directory number that is forwarding the call to another subscriber's DN. This field is populated only in the call forwarding instance record leg, not in the normal call leg that terminated to the forwarding number. If this field is NULL, then no data was captured for this record.

Table A-1 Call Detail Block Field Descriptions (continued)

Field Number	Common Name	Field Type	Field Size*	Potential Values	Field Description
29	Service Type 1	Numeric		1 = CALL_BLOCK 2 = CALL_FORWARD_UNCONDITIONAL 3 = CALL_WAITING 4 = REPEAT_CALL 5 = RETURN_CALL 6 = CALL_HOLD 7 = THREE_WAY_CALL 8 = CALL_TRANSFER 9 = CALLING_NUMBER_DELIVERY 10 = CALLING_NUMBER_DELIVERY_BLOCK 11 = CALL_FORWARD_BUSY 12 = CLASS_OF_SERVICE 13= CALLING_NAME_DELIVERY 14 = CALL_FORWARD_NO_ANSWER 15 = AIN_HANDLING 16 = 911_HANDLING 17 = CUSTOM_DIALING_PLAN 18 = CALLING_ID_DELIVERY_BLOCK_PERM 19 = SFG_INCOMING 20 = SFG_OUTGOING 21 = CANCELLED_CALL_WAITING 22 = USER_SENSITIVE_3WAY_CALL 23 = TOLL_FREE 24 = ACCT_CODE 25 = AUTH_CODE 26 = LOCAL_NUMBER_PORTABILITY 27 = CALLER_IDENTITY_DELIVERY_SUSPENSION 28 = CALLING_NAME_DELIVERY_BLOCKING 29 = CALL_WAITING_WITH_CALLER_IDENTITY 30 = ANONYMOUS_CALL_REJECTION 31 = TOLL_FREE_CALL 32 = CUSTOMER_ORIGINATED_TRACE 33 = CALL_PARK 34 = CALL_PARK_RETRIEVAL 35 = CALL_PARK_REOFFERED 36 = DIRECTED_CALL_PICKUP WITH BARGE-IN 37 = DIRECTED_CALL_PICKUP WITHOUT BARGE-IN 38 = HOTLINE 39 = WARMLINE	Class name of the first service invoked in call. If this field is NULL, then no data was captured for this record.

Table A-1 Call Detail Block Field Descriptions (continued)

Field Number	Common Name	Field Type	Field Size*	Potential Values	Field Description
	Service Type 1 (continued)	Numeric		40= BUSY_LINE_VERIFICATION 41 = SELECTIVE_CALL_REJECTION 42 = SELECTIVE_CALL_FORWARDING 43 = SELECTIVE_CALL_ACCEPTANCE 44 = AUTOMATIC_CALLBACK 45 = AUTO_RECALL 46 = SPEED_CALLING 47 = DO_NOT_DISTURB 48 = REMOTE_ACTIVATION OF CALL_FORWARDING 49 = REMOTE_ACTIVATION OF CALL_FORWARDING PIN 50 = DRCW DISTINCTIVE_RING_CALL_WAITING 51 = SCREENING_LIST_EDIT SCF 52 = SCREENING_LIST_EDIT SCA 53 = SCREENING_LIST_EDIT SCR 54 = SCREENING_LIST_EDIT DRCW 55 = REJECT_CALLER 56 = CALL WAITING DELUXE 57 = THREE WAY CALL DELUXE 58 = OUTGOING CALL BARRING 59 = HOTLINE VARIABLE 60 = CNAM SCP Query 61 = REFER 67 = LCD PREPAID (FUTURE) 68 = POSTPAID (FUTURE)	Class name of the first service invoked in call. If this field is a value of ZERO, then no data was captured for this record.
30	Service Type 2	Numeric		(same as Service Type 1 above)	The class name of the second service invoked within the call.
31	Service Type 3	Numeric		(same as Service Type 1 above)	The class name of the third service invoked within the call.
32	Feature Data 1	String	30	See Chapter 2, "Feature Server Derived Call Data" for specifics on feature data.	Feature specific data provided by the associated Feature Server for the Service Type 1 of a call. If this field is NULL, then no data was captured for this record.
33	Feature Data 2	String	30	See Chapter 2, "Feature Server Derived Call Data" for specifics on feature data.	Feature specific data provided by the associated Feature Server for the Service Type 2 of a call. If this field is NULL, then no data was captured for this record.
34	Feature Data 3	String	30	See Chapter 2, "Feature Server Derived Call Data" for specifics on feature data.	Feature specific data provided by the associated Feature Server for the Service Type 3 of a call. If this field is NULL, then no data was captured for this record.
35	Authorization Code	String	25	DIGITS	Authorization code information. If this field is NULL, then no data was captured for this record.

Table A-1 Call Detail Block Field Descriptions (continued)

Field Number	Common Name	Field Type	Field Size*	Potential Values	Field Description
36	Account Code	String	15	DIGITS	Account code information. If this field is NULL, no data was captured for this record.
37	Database Query Type1	Numeric		0 = RESERVED (null) 1 = TOLL_FREE_ LOCAL 2 = TOLL_FREE_SCP 3 = LNP	Indicator of the specific type of 800 or LNP query performed on the first database query for the call. If this field is a value of NULL, then no data was captured for this record.
38	Database Query Result Code1	Numeric		1 = SUCCESS 2 = FAILURE	Indication of the disposition of the first database query for the call. If this field is a value of NULL, then no data was captured for this record.
39	Returned Number 1	String	128	DIGITS	Directory number returned from the first database query for the call. If this field is NULL, then no data was captured for this record. CAVEAT: If this field contains a character that coincides with the character specified as the field or record delimiter for the Cisco BTS 10200 billing records, it is replaced with a SPACE character to ensure the integrity of the billing data.
40	MLH Centrex Group Name	String	16	ASCII characters	Identity of the multi-line hunt group (MLHG) or Centrex group that this call is associated with. If this field is NULL, then no data was captured for this record.
41	Called Party Off Hook Indicator	Numeric		0 = NO 1 = YES	Indication that the terminating party went off-hook. If this field is NULL, then no data was captured for this record.
42	Called Party Short Off Hook Indicator	Numeric		0 = NO 1 = YES	Indication that the called party was off-hook for less than two seconds. If this field is NULL, then no data was captured for this record.
43	Call Termination Cause	Numeric		See Appendix C, "Release Cause Codes," in the *Cisco BTS 10200 Operations, Maintenance, and Troubleshooting Guide*.	The reason the call was released. If this field is a value of NULL, then no data was captured for this record.
44	Operator Action	Numeric		0 = AUTO_IDENTIFIED_ CUSTOMER_DIALED 1 = AUTO_IDENTIFIED_ OPERATOR_DIALED 2 = OPER_IDENTIFIED_ CUSTOMER_DIALED 3 = OPER_IDENTIFIED_ OPERATOR_DIALED	Operator action with respect to the originating party: automatically identified— customer dialed (0) or operator dialed (1) or operator identified— customer dialed (2) or operator dialed (3) If this field is NULL, then no data was captured for this record.

Table A-1 Call Detail Block Field Descriptions (continued)

Field Number	Common Name	Field Type	Field Size*	Potential Values	Field Description
45	Originating Signaling T ype	Numeric		0 = LINE (MGCP) 1 = SS7 2 = ISDN 3 = CAS 4 = MGCP 5 = SIP 6 = H323	Denotes trunk type of originator. If this field is NULL, then no data was captured for this record.
46	Termination Signaling Type	Numeric		0 = LINE (MGCP) 1 = SS7 2 = ISDN 3 = CAS 4 = MGCP 5 = SIP 6 = H323	Denotes trunk type of terminator. If this field is NULL, then no data was captured for this record.
47	Originating Trunk Number	Numeric		32 bit unsigned integer in the range of 1- 99999999	Identity of the originating trunk. It is recommended the upper end of this range be limited to 9999 when converting these records to BAF AMA format for compatibility. If this field is a value of NULL, then no data was captured for this record.
48	Terminating Trunk Number	Numeric		32 bit unsigned integer in the range of 1- 99999999	Identity of the terminating trunk. It is recommended the upper end of this range be limited to 9999 when converting these records to BAF AMA format for compatibility. If this field is a value of NULL, then no data was captured for this record.
49	Outgoing Trunk Number	Numeric		16 bit unsigned integer	The outgoing trunk is on the network facing side of the access tandem. When a call is terminated to the access tandem it is over a generic trunk group and the TNS is passed, and, based on the TNS, the access tandem will select the trunk for routing, for example 0288 will select an AT&T trunk. The access tandem then sends an exit message back with the trunk number from the network facing side. That is the number that appears in this field. If this field is a value of ZERO, then no data was captured for this record.

Table A-1 Call Detail Block Field Descriptions (continued)

Field Number	Common Name	Field Type	Field Size*	Potential Values	Field Description
50	Carrier Identification Code	String	5	DIGITS	Identification of the carrier that transported the call, either an inter-exchange carrier or an international carrier. This value is typically 3- or 4-digits, not necessarily 5-digits. If this field is NULL, then no data was captured for this record.
51	Originating Circuit Identifier			16 bit unsigned integer in the range of 0 - 16383	This field is used to represent the Circuit Id of Inc ISUP trunk. If this field is a value of NULL, then no data was captured for this record.
52	Terminating Circuit Identifier	Numeric		16 bit unsigned integer in the range of 0 - 16383	This field is used to represent the Circuit Id of Outgoing ISUP trunk. If this field is a value of NULL, then no data was captured for this record.
53	PIC Source	Numeric		1 = PIC_DIALED 2 = PIC_DEFAULT	Indication of how the carrier's access code was entered—dialed or via PIC. If this field is a value of NULL, then no data was captured for this record.
54	Inter-exchange carrier or international carrier indicator	Numeric		0 = CIC_FGD_OPERATOR_INVOLVED 1 = CIC_FGD_OPERATOR_NOT_INVOLVED 2 = CIC_FGD_OPERATOR_INVOLVED_UNKNOWN 7 = CIC_UNKNOWN_OPERATOR_INVOLVED 8 = CIC_UNKNOWN_OPERATOR_NOT_INVOLVED 9 = CIC_UNKNOWN_OPERATOR_INVOLVED_UNKNOWN	Describes operator involvement: FGD CIC with (1) operator involvement, (2) dialed direct with no operator, (3) with undetermined operator involvement, or unknown CIC with (1) operator involvement, (2) dialed direct with no operator, or (3) undetermined operator involvement. **Note** This field is applicable only in calls interconnected to other carriers. If this field is NULL, then no data was captured for this record.
55	Inter-exchange carrier or international carrier Event Status Indicator	Numeric		Call is abandoned or release before IAM is sent by originating EC = 15 Call is abandoned or release after IAM is received by originating EC = 20	Indication of how far a call has progressed before terminating when an IC/INC is involved. **Note** This field is only applicable to SS7 calls that are interconnected to another carrier. If this field is a value of NULL, then no data was captured for this record.

Table A-1 Call Detail Block Field Descriptions (continued)

Field Number	Common Name	Field Type	Field Size*	Potential Values	Field Description
56	Inter-exchange carrier or international carrier Routing Indicator	Numeric		0 = DIRECT 1= TANDEM 2 = CAP_ENDOFFICE 3 = CAP_TANDEM 4 = TANDEM_TSP	Describes how the call was routed to/from the IC/INC: EAEO direct to IC/INC, or EAEO via AT to INC/IC, or CAP direct from EO, or CAP direct from AP tandem. **Note** This field is applicable only in calls interconnected to other carriers. If this field is NULL, then no data was captured for this record.
57	Orig Quality of Service Packets Sent	Numeric		32 bit unsigned value	Number of packets sent over bearer path for duration of call reported by media gateway. If this field is NULL, then no data was captured for this record.
58	Orig Quality of Service Packets received	Numeric		32 bit unsigned value	Number of packets received over bearer path for duration of call reported by media gateway. If this field is NULL, then no data was captured for this record.
59	Orig Quality of Service Octets Sent	Numeric		32 bit unsigned value	Number of octets sent over bearer path for duration of call reported by media gateway. If this field is NULL, then no data was captured for this record.
60	Orig Quality of Service Octets Received	Numeric		32 bit unsigned value	Number of octets received over bearer path for duration of call reported by media gateway. If this field is NULL, then no data was captured for this record.
61	Orig Quality of Service Packets Lost	Numeric		32 bit unsigned value	Number of packets lost over bearer path for duration of call reported by media gateway. If this field is NULL, then no data was captured for this record.
62	Orig Quality of Service Jitter	Numeric		32 bit unsigned value	Amount of jitter over bearer path for duration of call reported by media gateway. If this field is NULL, then no data was captured for this record.
63	Orig Quality of Service Average Latency	Numeric		32 bit unsigned value	Average latency over bearer path for duration of call reported by media gateway. If this field is NULL, then no data was captured for this record.

Table A-1 Call Detail Block Field Descriptions (continued)

Field Number	Common Name	Field Type	Field Size*	Potential Values	Field Description
64	Term Quality of Service Packets Sent	Numeric		32 bit unsigned value	Number of packets sent over bearer path for duration of call reported by media gateway. If this field is NULL, then no data was captured for this record.
65	Term Quality of Service Packets received	Numeric		32 bit unsigned value	Number of packets received over bearer path for duration of call reported by media gateway. If this field is NULL, then no data was captured for this record.
66	Term Quality of Service Octets Sent	Numeric		32 bit unsigned value	Number of octets sent over bearer path for duration of call reported by media gateway. If this field is NULL, then no data was captured for this record.
67	Term Quality of Service Octets Received	Numeric		32 bit unsigned value	Number of octets received over bearer path for duration of call reported by media gateway. If this field is NULL, then no data was captured for this record.
68	Term Quality of Service Packets Lost	Numeric		32 bit unsigned value	Number of packets lost over bearer path for duration of call reported by media gateway. If this field is NULL, then no data was captured for this record.
69	Term Quality of Service Jitter	Numeric		32 bit unsigned value	Amount of jitter over bearer path for duration of call reported by media gateway. If this field is NULL, then no data was captured for this record.
70	Term Quality of Service Average Latency	Numeric		32 bit unsigned value	Average latency over bearer path for duration of call reported by media gateway. If this field is NULL, then no data was captured for this record.
71	Operator Involvement	Numeric		0 = NO, 1 = YES	Determines if operator is involved in the call for 0-, 0+, or 01+. If this field is NULL, then no data was captured for this record.
72	Casual Dialing	Numeric		0 = NO, 1 = YES	Determines whether it is a casual call (CIC) or PIC call. If this field is NULL, then no data was captured for this record.

Table A-1 Call Detail Block Field Descriptions (continued)

Field Number	Common Name	Field Type	Field Size*	Potential Values	Field Description
73	Connection Type	Numeric		0 = IP 1 = HAIRPIN 3 = ATM SVC 4 = ATM PVC	Type of connection gateway is making so the reader of the record will know why the QoS parameters are different than expected. For example, if a Hairpin connection is used, then the QoS will be zeros. If this field is NULL, then no data was captured for this record.
74	Packet Time	Numeric		8 bit unsigned value	Packetization period for voice sampling. If this field is a value of NULL, then no data was captured for this record.
75	Silence Suppression	Numeric		0 = NO, 1 = YES	Indicates if silence suppression is enabled or not. If this field is NULL, then no data was captured for this record.
76	Echo Cancellation	Numeric		0 = NO, 1 = YES	Indicates if echo cancellation at far end is enabled or not. If this field is NULL, then no data was captured for this record.
77	Codec Type	Numeric		1= PCMU G711 2 = PCMA G711 3 = G729A 4 = G729B 5 = G729E 6 = G729 7 = G726-40 8 = G726-32 9 = G726-24 10 = G726-16 11 = G728 12 = G723-H 13 = G723A-H 14 = G723-L 15 = G723A-L 16 = G723	Codec used to transport RTP traffic. If this field is a value of NULL, then no data was captured for this record.
78	Interstate Indicator	Numeric		0 = NO, 1 = YES	Indicates whether call crossed a state boundary or not. If this field is NULL, then no data was captured for this record.

Table A-1 Call Detail Block Field Descriptions (continued)

Field Number	Common Name	Field Type	Field Size*	Potential Values	Field Description
79	Record Type	Numeric		0 = NORMAL_RECORD 1 = FIRST_LONG_DURN_RECORD 2 = CONTINUATION_ LONG_DURN_RECORD 3 = LAST_LONG_DURN_RECORD 4 = INVALID_RECORD	Indicates whether record is involved in long duration call accounting or not. If this field is NULL, then no data was captured for this record.
80	Timer Indicator	Numeric		1 = FIRST 2 = CONTINUATION	Type of long duration record. If this field is a value of NULL, then no data was captured for this record.
81	Present Time	Numeric		32 bit unsigned value in GMT epoch time format. The number of seconds since Jan 1,1970 0:00:00h. If the value is NULL, the timestamp is to be ignored.	Time the continuation record was created.
82	Overall Correlation Identifier	String	25	Alphanumeric characters	This field is unique on a per call scenario basis; not on a per record basis. Any call scenario that results in multiple call records being generated by the Cisco BTS 10200, each will contain the same value in this field. The main use at this time is within the real time Event Message billing stream that is supported by the BTS for PacketCable compliancy and for correlation of multiple record call scenarios. This field should always be populated.
83	JIP	String	10	Alphanumeric characters	Jurisdiction information parameter used for tarriffing purposes. If this field is NULL, then no data was captured for this record.
84	Originating CLLI	String	11	Alphanumeric characters	Trunk Group Name for originating call leg. If this field is NULL, then no data was captured for this record.
85	Terminating CLLI	String	11	Alphanumeric characters	Trunk Group Name for terminating call leg. If this field is NULL, then no data was captured for this record.
86	Call Agent Id	String	8	Alphanumeric characters	Identifies Call Agent on which CDB is created. If this field is NULL, then no data was captured for this record.

Table A-1 Call Detail Block Field Descriptions (continued)

Field Number	Common Name	Field Type	Field Size*	Potential Values	Field Description
87	Originating POP Time Zone	Numeric		Refer to Appendix D, "Time Zone Mapping Table," for the potential values.	This is the point of presence that the originating subscriber on the Cisco BTS 10200 is provisioned into. This field provides information on the locale to which the subscriber is a member. This information can also be leveraged for partitioning subscribers on a single Cisco BTS 10200 into multiple business entities for billing purposes. If this field is NULL, then no data was captured for this record.
88	Service Usage Sensitive 1	Numeric		0 = FALSE, 1 = TRUE **Note** This field is applicable only if Service Type 1 field is populated.	Indication of whether first service usage within the call context was usage sensitive or not. If this field is NULL, then no data was captured for this record.
89	Service Usage Sensitive 2	Numeric		0 = FALSE, 1 = TRUE **Note** This field is applicable only if Service Type 2 field is populated.	Indication of whether second service usage within the call context was usage sensitive or not. If this field is NULL, then no data was captured for this record.
90	Service Usage Sensitive 3	Numeric		0 = FALSE, 1 = TRUE **Note** This field is applicable only if Service Type 3 field is populated.	Indication of whether third service usage within the call context was usage sensitive or not. If this field is NULL, then no data was captured for this record.
91	Originating H323 Call Origin	Numeric		0 = NULL 1 = ANSWER 2 = ORIGINATE	ANSWER indicates call terminated on reporting gateway. ORIGINATE indicates call was outbound from reporting gateway for originating half of call. **Note** This field is populated only for calls over an H.323 network. If this field is a value of NULL, no data was captured for this record.
92	Originating H323 Call Type	Numeric		1 = VOIP 2 = TELEPHONY 3 = VIDEO	Value indicates protocol family used on originating leg of the call. **Note** This field is populated only for calls over an H.323 network. If this field is a value of NULL, no data was captured for this record.

Table A-1 Call Detail Block Field Descriptions (continued)

Field Number	Common Name	Field Type	Field Size*	Potential Values	Field Description
93	Originating H323 Conference Id	String	32	Alphanumeric characters.	Unique identifier generated by originating PSTN gateway for each unique call scenario within a given call context. **Note** This field is populated only for calls over an H.323 network. If this field is NULL, no data was captured for this record.
94	Originating H323 Remote Address	String	16	Alphanumeric characters.	IP address of originating remote gateway. **Note** This field is populated only for calls over an H.323 network. If this field is NULL, no data was captured for this record.
95	Originating H323 Time Day	Numeric		32 bit unsigned value in GMT epoch time format. The number of seconds since Jan 1,1970 0:00:00h. If the value is zero, the timestamp is to be ignored.	Time of day terminating number was dialed for originating half of call. **Note** This field is populated only for calls over an H.323 network.
96	Originating H323 Voice Quality	Numeric		**This field is not populated for this release.**	Quality of voice connection for originating side of call. This is a decimal number from the ICPIF table of G.113.
97	Originating H323 Subscriber	Numeric		**This field is not populated for this release.**	Subscriber T1/CAS signaling information from originating side of call.
98	Originating H323 Gateway Id	String	16	Alphanumeric characters.	For incoming calls from an H.323 network, this field will contain the h323-id of the originating (far end) H.323 gateway/endpoint. If this parameter is not available in the incoming H.323 call, the Cisco BTS 10200 will populate this field with local h323-id from the H.323-GW that received the call. For incoming calls from non-H.323 networks, this field is NULL. **Note** This field is only populated for calls over an H.323 network. If this field is NULL, no data was captured for this record.
99	Originating H323 Gatekeeper Id	String	16	Alphanumeric characters.	The hostname of the originating primary gatekeeper for the call. **Note** This field is only populated for calls over an H.323 network. If this field is NULL, no data was captured for this record.

Table A-1 Call Detail Block Field Descriptions (continued)

Field Number	Common Name	Field Type	Field Size*	Potential Values	Field Description
100	Terminating H323 Call Origin	Numeric		0 = NULL 1 = ANSWER 2 = ORIGINATE	ANSWER indicates the call terminated on the reporting gateway ORIGINATE indicates the call was outbound from the reporting gateway for the terminating half of the call. **Note** This field is only populated for calls over an H.323 network. If this field is a value of NULL, no data was captured for this record.
101	Terminating H323 Call Type	Numeric		1 = VOIP 2 = TELEPHONY 3 = VIDEO	Indication of the protocol family used on the terminating leg of the call. **Note** This field is only populated for calls over an H.323 network. If this field is a value of NULL, no data was captured for this record
102	Terminating H323 Conference Id	String	32	Alphanumeric characters.	A unique identifier generated by the terminating PSTN gateway for each unique call scenario within a given call context. **Note** This field is only populated for calls over an H.323 network. If this field is NULL, no data was captured for this record.
103	Terminating H323 Remote Address	String	16	Alphanumeric characters.	The IP address of the terminating remote gateway. **Note** This field is only populated for calls over an H.323 network. If this field is NULL, no data was captured for this record.
104	Terminating H323 Time Day	Numeric		32 bit unsigned value in GMT epoch time format. The number of seconds since Jan 1,1970 0:00:00h. If the value is NULL, the timestamp is to be ignored.	The time of day that the terminating number was dialed for the terminating half of the call. **Note** This field is populated only for calls over an H.323 network.
105	Terminating H323 Voice Quality	Numeric		**This field is not populated for this release.**	The quality of voice connection for the terminating side of the call. This is a decimal number from the ICPIF table of G.113. If this field is a value of NULL, no data was captured for record.
106	Terminating H323 Subscriber	Numeric		**This field is not populated for this release.**	Subscriber T1/CAS signaling information from terminating side of call. If this field is a value of NULL, no data was captured for this record.

Table A-1 Call Detail Block Field Descriptions (continued)

Field Number	Common Name	Field Type	Field Size*	Potential Values	Field Description
107	Terminating H323 Gateway Id	String	16	Alphanumeric characters.	For outgoing calls from Cisco BTS 10200 and terminating to an H.323 network, this field will contain h323-Id of the terminating (far end) H.323 gateway/endpoint if available in backward Call signaling message. If this parameter is not available from terminating H.323 Gateway/endpoint Cisco BTS 10200 will populate the local h323-id from H323-GW which is used to send out the call. For outgoing calls to no H.323 network, this field is NULL. **Note** This field is populated only for calls over an H.323 network. If this field is NULL, no data was captured for this record.
108	Terminating H323 Gatekeeper Id	String	16	Alphanumeric characters.	The symbolic host name assigned to the terminating primary gatekeeper for the call. **Note** This field is populated only for calls over an H.323 network. If this field is NULL, no data was captured for this record.
109	Orig Type	Numeric		0 = ON NET 1 = OFF NET	Indication of whether call was originated by a subscriber homed on the reporting Cisco BTS 10200 Softswitch. If this field is NULL, then no data was captured for this record.
110	Term Type	Numeric		0 = ON NET 1 = OFF NET	Indication of whether call was terminated by subscriber homed on the reporting Cisco BTS 10200 Softswitch.

Table A-1 Call Detail Block Field Descriptions (continued)

Field Number	Common Name	Field Type	Field Size*	Potential Values	Field Description
111	Source Service Provider Id	String	16	Alphanumeric characters	This field contains the network provided or Service Provider Identifier configured for incoming calls to the Cisco BTS 10200. For incoming calls from the PSTN network, this field contains the service provider ID value after finding a matching entry in the CARRIER table for the TNS/CIP parameter against the Carrier ID. For incoming calls from an H.323 network, this field contains the value in the field "circuitInfo.destinationCircuitId" (H323v4) or Service Provider ID derived from tech-prefix received in the SETUP message. When this parameter does not exist in the SETUP message, the service provider ID configured for the incoming trunk group will be used to populate this field. When source based routing is enabled, the Cisco BTS 10200 selects the trunk group based on the source IP address and circuitInfo.sourceCircuitId field from the SETUP message received. When the circuitInfo.destinationCircuitId does not match the service provider ID configured on the incoming trunk group, the call is routed using the default route. If this field is NULL, then no data was captured for this record.
112	Destination Service Provider Id	String	16	Alphanumeric characters	This field contains the identifier of the destination service provider which is used to route the call. For outgoing calls to an H.323 network, this field is populated with destinationCarrierId from the IZCT (Intra Zone Clear Token) parameter of the ACF message returned by the outgoing Gatekeeper. If this value is not received from the Gatekeeper, the value provisioned in the service provider ID of the outgoing trunk group is used. For outgoing calls to the PSTN network, this field is populated with a value of the service provider ID provisioned in the outgoing trunk group. If this field is NULL, then no data was captured for this record.

Table A-1 Call Detail Block Field Descriptions (continued)

Field Number	Common Name	Field Type	Field Size*	Potential Values	Field Description
113	Source Carrier Id	String	4	Numeric characters	This field contains a 4-digit value form the Transit Network Selection (TNS) or Carrier Identification code Parameter (CIP) parameter of the IAM/SETUP message received from the PSTN network. If TNS or CIP is not received, this field is populated with the Carrier ID field provisioned in the incoming trunk group. This field is only applicable to tandem call scenarios. If this field is NULL, then no data was captured for this record.
114	Destination Carrier Id	String	4	Numeric characters	This field contains the 4-digit carrier ID of the outgoing trunk group used to route the call. For calls routed to the PSTN network, this field contains the value provisioned into the Carrier ID field of the trunk group table. If this field is NULL, then no data was captured for this record.
115	Originating SIP Username	String	64	Alphanumeric characters.	MSN PUID from Proxy Authorization header field for all MSN calls. Username value of From field for all other SIP calls. **Note** This field is populated only for SIP calls. If this field is NULL, no data was captured for this record.
116	Originating SIP Call Id	String	64	Alphanumeric characters.	SIP Call Id header field. This field is a truncation of SIP Call Id header field received via SIP if it is over 64 characters in length. **Note** This field is populated only for SIP calls. If this field is NULL, no data was captured for this record.
117	Originating SIP Adjacent Hop Address	String	16	Alphanumeric characters.	IP address of last proxy that forwarded calls inbound to Cisco BTS 10200 Softswitch. IP address of proxy to which outbound calls from the Cisco BTS 10200 are forwarded. **Note** This field is only populated for SIP calls. If this field is NULL, no data was captured for this record.
118	Database Query Time 2	Numeric		32 bit unsigned value in GMT epoch time format. The number of seconds since Jan 1,1970 0:00:00h.	Time the second database query response was received for this call. If the value is NULL, timestamp is ignored.
119	Database Query Result Code 2	Numeric		1 = SUCCESS 2 = FAILURE	Indicates disposition of the second database query for call. If this field is a value of NULL, no data was captured for this record.

Table A-1 Call Detail Block Field Descriptions (continued)

Field Number	Common Name	Field Type	Field Size*	Potential Values	Field Description
120	Database Query Type2	Numeric		1 = TOLL_FREE_ SCP 2 = TOLL_FREE_LOCAL 3 = LNP 4 = CNAM_SCP	Indicates specific type of 800 or LNP query performed on second database query for call. If this field is a value of ZERO, no data was captured for this record.
121	Returned Number 2	String	128	DIGITS, DIGITS	The directory number returned from the second database query for the call. If field is NULL, no data was captured for this record. CAVEAT: If this field is found to contain a character coinciding with the character specified as the field or record delimiter for the Cisco BTS 10200 billing records, it is replaced with a SPACE character to ensure the integrity of the billing data.
122	Database Query Time 3	Numeric		32 bit unsigned value in GMT epoch time format. The number of seconds since Jan 1,1970 0:00:00h. If the value is NULL, the timestamp is to be ignored.	The time the third database query response was received for this call.
123	Database Query Result Code 3	Numeric		1 = SUCCESS 2 = FAILURE	Indicates disposition of third database query for call. If this field is a value of NULL, no data was captured for this record.
124	Database Query Type 3	Numeric		1 = TOLL_FREE_ SCP 2 = TOLL_FREE_LOCAL 3 = LNP 4 = CNAM_SCP	Indicates specific type of 800 or LNP query performed on the third database query for the call. If this field is a value of NULL, no data was captured for this record.
125	Returned Number 3	String	128	DIGITS, DIGITS	Directory number returned from third database query for call. If this field is NULL, no data was captured for this record.
126	Service Result Code1	Numeric		1 = SUCCESS 2 = FAILURE 3 = ANI INVALID 4 = ANI BLOCKED 5 = CASUAL CALLS NOT ALLOWED 6 = II SCREENING REJECT 7 = BW SCREENING REJECT 8 = COS RESTRICTED	Indicates disposition of first service activation, service deactivation, or service instance within the call context. **Note** This field is applicable only if the Service Type 1 field is populated. If this field is a value of NULL, no data was captured for this record.

Table A-1 Call Detail Block Field Descriptions (continued)

Field Number	Common Name	Field Type	Field Size*	Potential Values	Field Description
127	Service Result Code2	Numeric		(same as Service Result Code 1)	Indicates disposition of second service activation, service deactivation, or service instance within the call context. **Note** This field is applicable only if the Service Type 2 field is populated. If this field is a value of NULL, no data was captured for this record
128	Service Result Code3	Numeric		(same as Service Result Code 1)	Indicates disposition of third service activation, service deactivation, or service instance within the call context. **Note** This field is applicable only if the Service Type 3 field is populated. If this field is a value of NULL, no data was captured for this record
129	NAS Error Code	Numeric		800 = ISP PORT LIMIT OVERRUN 801 = NO MODEMS AVAILABLE 802 = ORIGINATING NUMBER UNACCEPTABLE 803 = TERMINATING NUMBER UNACCEPTABLE	Specific error code explaining reason that this NAS call could not be completed. If this field is a value of NULL, no data was captured for this record.
130	NAS DLCX Reason	Numeric		801 = USER REQUEST 802 = LOST CARRIER 803 = LOST SERVICE 804 = IDLE TIMEOUT 805 = SESSION TIMEOUT 806 = ADMIN RESET 807 = ADMIN REBOOT 808 = PORT ERROR 809 = NAS ERROR 810 = NAS REQUEST 811 = NAS REBOOT 812 = PORT UN-NEEDED 813 = PORT PRE-EMPTED 814 = PORT SUSPENDED 815 = SERVICE UNAVAILABLE 816 = CALLBACK 817 = USER ERROR 818 = HOST REQUEST	Reason code returned in the DLCX message for NAS calls. If this field is a value of NULL, no data was captured for this record.
131	NAS Pre-Authorization Result	Numeric		0 = NULL 1 = AU—EVERYTHING IS OK 2 = AX—CGN/CDN NUMBERS ARE NOT GOOD 3 = OF—MODEM FAILURE	Indicates result of performing pre-authorization on a NAS-based call. If this field is a value of NULL, no data was captured for this record.

Table A-1 Call Detail Block Field Descriptions (continued)

Field Number	Common Name	Field Type	Field Size*	Potential Values	Field Description
132	Fax Indicator	Numeric		1= NOT FAX 2 = FAX ONLY 3 = VOICE AND FAX	Indication of whether the call involved any fax transmissions. Value of 1 (Not Fax) indicates no fax transmissions occurred, the other two values indicate faxes were sent or received. If this field is a value of NULL, no data was captured for this record.
133	Fax Pages Sent	Numeric		The range of values is 0 – 999.	Number of fax pages sent during call. If this field is a value of NULL, no data was captured for this record.
134	Fax Pages Received	Numeric		The range of values is 0 – 999.	Number of fax pages received during call. If this field is a value of NULL, no data was captured for this record.
135	Service Interrogation Time 1	Numeric		32 bit unsigned value in GMT epoch time format. The number of seconds since Jan 1,1970 0:00:00h. If the value is NULL, the timestamp is to be ignored.	The time the interrogation of Service Type 1 occurred.
136	Service Interrogation Time 2	Numeric		32 bit unsigned value in GMT epoch time format. The number of seconds since Jan 1,1970 0:00:00h. If the value is NULL, the timestamp is to be ignored.	The time the interrogation of Service Type 2 occurred.
137	Service Interrogation Time 3	Numeric		32 bit unsigned value in GMT epoch time format. The number of seconds since Jan 1,1970 0:00:00h. If the value is NULL, the timestamp is to be ignored.	The time the interrogation of Service Type 3 occurred.
138	Originating Pop Id	String	16	Alphanumeric characters	This is the point of presence that the originating subscriber on the BTS is provisioned on. This field provides information on the locale of which the subscriber is a member. This information can also be leveraged for partitioning subscribers on a single BTS into multiple business entities for billing purposes. If this field is NULL, no data was captured for this record.

Table A-1 Call Detail Block Field Descriptions (continued)

Field Number	Common Name	Field Type	Field Size*	Potential Values	Field Description
139	Terminating Pop Id	String	16	Alphanumeric characters	This is the point of presence that the terminating subscriber on the BTS is provisioned on. This field provides information on the locale of which the subscriber is a member. This information can also be leveraged for partitioning subscribers on a single BTS into multiple business entities for billing purposes. If this field is NULL, no data was captured for this record.
140	Terminating POP Time Zone	Numeric		Refer to Appendix D, "Time Zone Mapping Table," for the potential values.	This is the point of presence that the originating subscriber on the Cisco BTS 10200 is provisioned into. This field provides information on the locale to which the subscriber is a member. This information can also be leveraged for partitioning subscribers on a single Cisco BTS 10200 into multiple business entities for billing purposes. If this field contains a value of NULL, then there is no information stored in this field for this record.
141	Dial Plan Id	String	16	Alphanumeric characters.	Dial plan used for call routing purposes by originating subscriber on Cisco BTS 10200. The dial plan defines valid digit patterns for the subscriber in addition to routing based on the dialed digits. If this field is NULL, no data was captured for this record.
142	GTD Global Call Indicator	String	32	Alphanumeric characters inclusding hyphens.	GTD Global Call Identification field populated only for H.323 calls with GTD enabled. The Cisco BTS 10200 will use the GCI format consistent with the IOS GTD implementation, which is in the form of a 16-character ASCII representation of a UTC timestamp followed by a 4-character ASCII representation of the clock sequence, plus a 12-character ASCII representation of the MAC address This field will always be in the length of 32 characters. If this field is NULL, no data was captured for this record.
143	Terminating SIP Username	String	64	Alphanumeric characters.	The username value of the "From" field on the terminating side for all outgoing SIP calls. This field is populated only for SIP calls. If this field is NULL, no data was captured for this record.

Table A-1 Call Detail Block Field Descriptions (continued)

Field Number	Common Name	Field Type	Field Size*	Potential Values	Field Description
144	Terminating SIP Call Id	String	64	Alphanumeric characters.	The SIP Call ID header field. This field is a truncation of the SIP Call ID header field received via SIP if it is over 64 characters in length. This field is populated only for outgoing SIP calls. If this field is NULL, no data was captured for this record.
145	Terminating SIP Adjacent Hop Address	String	16	Alphanumeric characters	The IP address of the proxy or SIP User Agent that the call is sent to for calls outbound from the BTS. This field is only populated for outgoing SIP calls. If this field is NULL, then no data was captured for this record.
146	Originating SIP Type	Numeric		SUBSCRIBER = 1 SIP = 2 SIP-T = 3 CMSS = 4	The type of SIP call on the inbound side. This field is only populated for SIP originations. If this field is a value of NULL, no data was captured for this record.
147	Terminating SIP Call Type	Numeric		SUBSCRIBER = 1 SIP = 2 SIP-T = 3 CMSS = 4	The type of SIP call on the outbound side. This field is only populated for SIP terminations. If this field is a value of NULL, no data was captured for this record.
148	Originating H.323 Network Provider Id	String	16	Alphanumeric characters.	This field contains the value contained in the IZCT source zone parameter of the ACF message for the outgoing call leg. If this field is NULL, then no data was captured for this record.
149	Destination H.323 Network Provider Id	String	16	Alphanumeric characters.	This field contains the identifier of the destination service provider which is used by external route servers to route the call to the final destination. This field is only applicable for outgoing calls to an H.323 network. This field contains the IntermediateCarrierId field from the IZCT parameter of the ACF message received from the outgoing Gatekeeper. If this field is NULL, then no data was captured for this record.
150	Video codec	Numeric		None = 0 (future) H.261 = 1 (future) H.263 = 2 (future) H.264 = 3 (future) **This field is always zero in Release 4.4**	The codec used to transport the RTP traffic. The value in this field is pulled from the provisioning of the Cisco BTS 10200 Softswitch, not from the actual SDP message.

Table A-1 Call Detail Block Field Descriptions (continued)

Field Number	Common Name	Field Type	Field Size*	Potential Values	Field Description
151	Original Originating Number	String	64	DIGITS	This field contains the calling number received in the SETUP Message after digit manipulation is performed but before any overriding occurs—such as overwriting with a billing dn. If this field is NULL, then no data was captured for this field.
152	Calling Party Category	Numeric		Unknown = 0 National Operator = 9 Ordinary Subscriber = 10 Subscriber w/Priority = 11 Voice Band Data = 12 Test Call = 13 Pay Phone = 15 Line Test Desk = 249 Interception Operator = 250 Immediate Charge Info = 251	The Calling Party Category value that was received in the SS7 IAM. If this field is NULL, then no data was captured for this record.
153	Called Party Category Indicator	Numeric		No Indication = 0 Ordinary Subscriber = 1 Payphone = 2	The Called Party Category Indicator value is derived from the FE bits of the Backward Call Indicator received via SS7. If this field is NULL, then no data was captured for this record.

Call Termination Cause Codes

This appendix lists call termination cause values and definitions in Table B-1.

Note A "*" next to the value in Table B-1 indicates the cause code is not a standard BAF cause code; it is unique to the Cisco BTS 10200 Softswitch. All values of 400 or higher are used internally only and do not appear in the billing records transmitted from the EMS.

Table B-1 Call Termination Cause Values and Definitions

Value	Cause Definition	In 4.4
1	Attempted termination to an unallocated or unassigned directory number	Yes
2	No route available to the specified transit network	Yes
3	No route available to the specified destination	Yes
4	Vacant code	Yes
6	Channel unacceptable	Yes
7	Call awarded and being delivered in an established channel	Yes
8	Prefix 0 was dialed in error	Yes
9	Prefix 1 was dialed in error	Yes
10	Prefix 1 was not dialed when required	Yes
11	Excessive digits received, call is progressing	Yes
12	Call is proceeding	Yes
13	The requested service was denied	Yes
16	Normal call clearing	Yes
17	Termination called is busy	Yes
18	No user responding	Yes
19	User altering, no answer	Yes
21	Call was rejected	Yes
22	The terminating number was changed	Yes
23	Terminating party rejects all calls with Calling Line Identification Restriction	Yes
25*	Exchange routing error	No
26*	Misrouted to ported number	No

Table B-1 Call Termination Cause Values and Definitions (continued)

Value	Cause Definition	In 4.4
27	The specified destination was out of order	No
28	Invalid number format or incomplete address	Yes
29	Facility rejected	Yes
30	Response to STATUS ENQ message	Yes
31	Normal, unspecified	Yes
34	Circuit or channel congestion	Yes
35	Requested VPCI/VCI was not available	Yes
36	VPCI/VCI assignment failure	Yes
37	The user cell rate was unavailable	Yes
38*	Network out of order	No
41	Temporary failure	Yes
42	Switching Equipment Congestion	Yes
43	Access information discarded	Yes
44	Requested channel not available	Yes
45	No VPCI/VCI available	Yes
47	Network resource unavailable or unspecified	Yes
49	Quality of service unavailable	Yes
50	Requested facility not subscribed to	Yes
51	Bearer capability incompatible with service request	Yes
53	Service operation violated	Yes
57	Bearer capability not authorized	Yes
58	Bearer capability not presently available	Yes
63	Service or option unspecified	Yes
65	Bearer capability not implemented	Yes
66*	Channel type not implemented	No
69	Requested facility not implemented	Yes
70	Restoration digital bearer capacity only available	No
73	Unsupported combination of traffic parameters	Yes
78	AAL parameter cannot be supported	Yes
79	Service or option not implemented	Yes
81	Invalid call reference value	Yes
82	Identified channel does not exist	Yes
84*	Call id already in use	No
85*	No call suspended	No
86*	Call id cleared	No
88	Incompatible destination	Yes

Table B-1 Call Termination Cause Values and Definitions (continued)

Value	Cause Definition	In 4.4
89	Invalid endpoint reference	Yes
90*	Unspecified invalid message error	No
91	Invalid transit network selection	Yes
92	Too many pending add party requests	Yes
96	Mandatory information element missing	Yes
97	Message type nonexistent or not implemented	Yes
98*	Message type not compatible	No
99	Information element nonexistent or not implemented	Yes
100	Invalid information element contents	Yes
101	Message not compatible with call state	Yes
102	Recovery on timer expiration	Yes
104	Incorrect message length	Yes
111	Protocol error - unspecified	Yes
112	Protocol error - threshold exceeded	Yes
120	Special intercept announcement	No
121	Special intercept announcement - undefined code	No
122	Special intercept announcement - call blocked due to group restriction	No
127	Interworking error - unspecified	Yes
150	Call Terminated due to Session Timer Refresh Request Time Out	Yes

APPENDIX C

Example Call Detail Block File

This section provides an example of an actual call detail block (CDB) record generated by the Cisco BTS 10200 Softswitch's Element Management System (EMS) for a Local POTS SIP to MGCP Line Call. The ASCII text as created is depicted below with a translation matrix after it to decode the contents of the record within the file. The billing file shown contains only a single record.

Note The times shown in the record below are in Pacific Standard Time (PST), which is offset minus 8 hours from Greenwich Mean Time (GMT).

This CDB is configured to use the semicolon (;) as a field separator and the vertical bar (|) as a record separator. Where the value for a given field is denoted by an empty field, two field separators in a row [semicolons (;;)], it indicates that the field is irrelevant in the call context shown.

The contents of the billing file are:

```
001;04.4;2004-09-01 10:35:10;CA146||
3;1094034906;1094034927;0;0;1094034908;1094034908;1094034927;0;0;0;0;0;0;0;0;0;0
;00:00:19;;0;1094034927;9725581000;9775551232;9725581000;;9775551232;;0;0;0;;;;;
;0;0;;;1;0;16;0;5;0;158;0;0;;0;0;0;0;0;0;0;0;0;0;0;0;0;0;1056;515;168960;80608;0;3
44;2;0;0;0;0;0;0;1;0;0;0;0;CA146381;;;;CA146;2;0;0;0;0;;;0;0;0;;;0;0;;;0;0;0;;
;0;0;;;;;9725581000;757C88A2-3AA111CC-81B98F4D-B468D474@10.9.27.4;10.89.227.58;0
;0;0;;0;0;0;;0;0;0;0;0;0;0;0;0;0;0;0;;;2;8;10;;;;1;0;;;9725581000;0;0;0||1;
2004-09-01 10:35:30


Header information:

Header/TrailerVersionNumber=001
CDBVersion=04.4
StartingTime=2004-09-01 10:35:10
CAName=CA146

Trailer information:

NumberOfRecords=1
Close/FinishTime=2004-09-01 10:35:30
```

The record is decoded as follows:

CallType=LOCAL

SigStartTime=2004-09-01 10:35:06

SigStopTime=2004-09-01 10:35:27

InterconnectStartTime=
InterconnectStopTime=
CallConnectTime=2004-09-01 10:35:08
CallAnswerTime=2004-09-01 10:35:08
CallDisconnectTime=2004-09-01 10:35:27
DatabaseQueryTime1=
ServiceInstanceTime1=
ServiceInstanceTime2=
ServiceInstanceTime3=
ServiceActivationTime1=
ServiceActivationTime2=
ServiceActivationTime3=
ServiceDeactivationTime1=
ServiceDeactivationTime2=
ServiceDeactivationTime3=
CallElapsedTime=00:00:19
InterconnectCallElapsedTime=
OriginatingQosTime=
TerminatingQosTime=2004-09-01 10:35:27
OriginatingNumber=972-558-1000
TerminatingNumber=977-555-1232
ChargeNumber=972-558-1000
LocationRoutingNumber=
DialedDigits=9775551232
ForwardingNumber=
ServiceType1=
ServiceType2=
ServiceType3=
FeatureData1=
FeatureData2=
FeatureData3=
AuthorizationCode=
AccountCode=
DatabaseQueryType1=
DatabaseQueryResultCode1=
ReturnedNumber1=
MLH/CentrexGroup=
OffHookIndicator=Yes

ShortOffHookIndicator=No
CallTerminationCause=Normal Call Clearing
OperatorAction=Auto Identified, Customer Dialed
OriginatingSignalingType=SIP
TerminatingSignalingType=MGCP Line
OriginatingTrunkNumber=158
TerminatingTrunkNumber=0
OutgoingTrunkNumber=0
CarrierId=
OriginatingCircuitId=0
TerminatingCircuitId=0
PICSource=
IcIncIndicator=
IcIncEventStatusIndicator=
IcIncRtIndicator=
OriginatingQosPacketsSent=
OriginatingQosPacketsRecd=
OriginatingQosOctetsSent=
OriginatingQosOctetsRecd=
OriginatingQosPacketsLost=
OriginatingQosJitter=
OriginatingQosAverageLatency=
TerminatingQosPacketsSent=1056
TerminatingQosPacketsRecd=515
TerminatingQosOctetsSent=168960
TerminatingQosOctetsRecd=80608
TerminatingQosPacketsLost=0
TerminatingQosJitter=344
TerminatingQosAverageLatency=2
OperatorInvolved=No
CasualCall=No
ConnectionType=IP
PacketizationTime=0
SilenceSuppression=no
EchoCancellation=No
CodecType=PCMU G711
InterStateIndicator=No
RecordType=Normal Record

TimerIndicator=
PresentTime=
OverallCorrelationId=CA146381
JipInformation=
OriginatingCLLI=
TerminatingCLLI=
CallAgentId=CA146
POPTimeZone=CST
ServiceUsageSensitive1=
ServiceUsageSensitive2=
ServiceUsageSensitive3=
OriginatingH323CallOrigin=
OriginatingH323CallType=
OriginatingH323ConferenceId=
OriginatingH323RemoteAddress=
OriginatingH323TimeDay=
OriginatingH323VoiceQuality=
OriginatingH323Subscriber=
OriginatingH323GatewayId=
OriginatingH323GatekeeperId=
TerminatingH323CallOrigin=
TerminatingH323CallType=
TerminatingH323ConferenceId=
TerminatingH323RemoteAddress=
TerminatingH323TimeDay=
TerminatingH323VoiceQuality=
TerminatingH323Subscriber=
TerminatingH323GatewayId=
TerminatingH323GatekeeperId=
OriginatingType=
TerminatingType=OFF NET
SourceServiceProviderId=
DestinationServiceProviderId=
SourceCarrierId=
DestinationCarrierId=
OriginatingSIPUserName=9725581000
OriginatingSIPCallId=757C88A2-3AA111CC-81B98F4D-B468D474@10.89.227.58
OriginatingSIPAdjacentHopAddress=10.89.227.58

DatabaseQueryTime2=
DatabaseQueryResultCode2=
DatabaseQueryType2=
ReturnedNumber2=
DatabaseQueryTime3=
DatabaseQueryResultCode3=
DatabaseQueryType3=
ReturnedNumber3=
ServiceResultCode1=
ServiceResultCode2=
ServiceResultCode3=
NASErrorCode=
NASDlcxReason=
NASPreauthorizationCode=
FaxIndicator=0
FaxPagesSent=
FaxPagesRecieved=
ServiceInterrogationTime1=
ServiceInterrogationTime2=
ServiceInterrogationTime3=
OriginatingPopId=
TerminatingPopId=
TerminatingPopTimeZone=
DialPlanId=
GtdGlobalCallIndicator=
TerminatingSIPUserName=
TerminatingSIPCallId=
TerminatingSIPAdjacentHopAddress=
OriginatingSIPCallType=
TerminatingSIPCallType=
OrigNetworkProviderID=
DestNetworkProviderID=
OriginalOrigNumber=972-558-1000
VideoCodec=
CallingPartyCategory=
CalledPartyIndicator=

Time Zone Mapping Table

This appendix defines the various time zones supported by the Cisco BTS 10200 for localization of the various timestamps in the billing records. The table below contains the CLI string used to provision each and the associated value that appears in the billing record fields of Originating Pop Time Zone and/or Terminating Pop Time Zone.

The times shown in the record below are in Pacific Standard Time (PST), which is offset minus 8 hours from Greenwich Mean Time (GMT).

Table D-1 Time Zone Mapping Table

Provisioning String	CDB Value
EST	1
CST	2
MST	3
AST	4
PST	5
EDT	6
CDT	7
MDT	8
PDT	9
ADT	10
GMT	11
PRC	12
HONGKONG	13
CET	14
CEST	15
UTC	16
US_ALASKA	17
US_ALEUTIAN	18
US_ARIZONA	19
US_CENTRAL	20
US_EAST_INDIANA	21

Provisioning String	CDB Value
US_EASTERN	22
US_HAWAII	23
US_MICHIGAN	24
US_MOUNTAIN	25
US_PACIFIC	26
US_SAMOA	27
GMT_MINUS1	28
GMT_MINUS2	29
GMT_MINUS3	30
GMT_MINUS4	31
GMT_MINUS5	32
GMT_MINUS6	33
GMT_MINUS7	34
GMT_MINUS8	35
GMT_MINUS9	36
GMT_MINUS10	37
GMT_MINUS11	38
GMT_MINUS12	39
GMT_PLUS1	40
GMT_PLUS2	41
GMT_PLUS3	42
GMT_PLUS4	43
GMT_PLUS5	44
GMT_PLUS6	45
GMT_PLUS7	46
GMT_PLUS8	47
GMT_PLUS9	48
GMT_PLUS10	49
GMT_PLUS11	50
GMT_PLUS12	51
HST	52
PST8PDT	53
MST7MDT	54
CST6CDT	55
EST5EDT	56
CANADA_ATLANTIC	57
CANADA_EAST_SASKATCHEWAN	58

Provisioning String	CDB Value
CANADA_MOUNTAIN	59
CANADA_PACIFIC	60
CANADA_CENTRAL	61
CANADA_EASTERN	62
CANADA_NEWFOUNDLAND	63
CANADA_YUKON	64
AUSTRALIA_ACT	65
AUSTRALIA_LHI	66
AUSTRALIA_NSW	67
AUSTRALIA_SOUTH	68
AUSTRALIA_VICTORIA	69
AUSTRALIA_YANCOWINNA	70
AUSTRALIA_BROKEN_HILL	71
AUSTRALIA_NORTH	72
AUSTRALIA_QUEENSLAND	73
AUSTRALIA_TASMANIA	74
AUSTRALIA_WEST	75
JAMAICA	76
MEXICO_BAJANORTE	77
MEXICO_BAJASUR	78
MEXICO_GENERAL	79
TAIWAN	80
ROK	81
EUROPE_LONDON	82
EUROPE_BELFAST	83
EUROPE_DUBLIN	84
EUROPE_TIRANE	85
EUROPE_ANDORRA	86
EUROPE_VIENNA	87
EUROPE_MINSK	88
EUROPE_BRUSSELS	89
EUROPE_SOFIA	90
EUROPE_PRAGUE	91
EUROPE_COPENHAGEN	92
EUROPE_TALLINN	93
EUROPE_HELSINKI	94
EUROPE_PARIS	95

Provisioning String	CDB Value
EUROPE_BERLIN	96
EUROPE_GIBRALTAR	97
EUROPE_ATHENS	98
EUROPE_BUDAPEST	99
EUROPE_ROME	100
EUROPE_RIGA	101
EUROPE_VADUZ	102
EUROPE_VILNIUS	103
EUROPE_LUXEMBOURG	104
EUROPE_MALTA	105
EUROPE_CHISINAU	106
EUROPE_MONACO	107
EUROPE_AMSTERDAM	108
EUROPE_OSLO	109
EUROPE_WARSAW	110
EUROPE_LISBON	111
EUROPE_BUCHAREST	112
EUROPE_KALININGRAD	113
EUROPE_MOSCOW	114
EUROPE_SAMARA	115
EUROPE_MADRID	116
EUROPE_STOCKHOLM	117
EUROPE_ZURICH	118
EUROPE_ISTANBUL	119
EUROPE_KIEV	120
EUROPE_SIMFEROPOL	121
EUROPE_BELGRADE	122
EUROPE_VATICAN	123
EUROPE_SAN_MARINO	124
EUROPE_BRATISLAVA	125
EUROPE_LJUBLJANA	126
EUROPE_SARAJEVO	127
EUROPE_SKOPJE	128
EUROPE_ZAGREB	129
AFRICA_CEUTA	130
AFRICA_ALGIERS	131
AFRICA_LUANDA	132

Provisioning String	CDB Value
AFRICA_PORTO_NOVO	133
AFRICA_GABORONE	134
AFRICA_OUAGADOUGOU	135
AFRICA_BUJUMBURA	136
AFRICA_DOUALA	137
AFRICA_BANGUI	138
AFRICA_NDJAMENA	139
AFRICA_KINSHASA	140
AFRICA_LUBUMBASHI	141
AFRICA_BRAZZAVILLE	142
AFRICA_ABIDJAN	143
AFRICA_DJIBOUTI	144
AFRICA_CAIRO	145
AFRICA_MALABO	146
AFRICA_ASMERA	147
AFRICA_ADDIS_ABABA	148
AFRICA_LIBREVILLE	149
AFRICA_BANJUL	150
AFRICA_ACCRA	151
AFRICA_CONAKRY	152
AFRICA_BISSAU	153
AFRICA_NAIROBI	154
AFRICA_MASERU	155
AFRICA_MONROVIA	156
AFRICA_TRIPOLI	157
AFRICA_BLANTYRE	158
AFRICA_BAMAKO	159
AFRICA_TIMBUKTU	160
AFRICA_NOUAKCHOTT	161
AFRICA_CASABLANCA	162
AFRICA_EL_AAIUN	163
AFRICA_MAPUTO	164
AFRICA_WINDHOEK	165
AFRICA_NIAMEY	166
AFRICA_LAGOS	167
AFRICA_KIGALI	168
AFRICA_SAO_TOME	169

Provisioning String	CDB Value
AFRICA_DAKAR	170
AFRICA_FREETOWN	171
AFRICA_MOGADISHU	172
AFRICA_JOHANNESBURG	173
AFRICA_KHARTOUM	174
AFRICA_MBABANE	175
AFRICA_DAR_ES_SALAAM	176
AFRICA_LOME	177
AFRICA_TUNIS	178
AFRICA_KAMPALA	179
AFRICA_LUSAKA	180
AFRICA_HARARE	181
AMERICA_SCORESBYSUND	182
AMERICA_GODTHAB	183
AMERICA_THULE	184
AMERICA_BUENOS_AIRES	185
AMERICA_ROSARIO	186
AMERICA_CORDOBA	187
AMERICA_JUJUY	188
AMERICA_CATAMARCA	189
AMERICA_MENDOZA	190
AMERICA_ARUBA	191
AMERICA_LA_PAZ	192
AMERICA_NORONHA	193
AMERICA_BELEM	194
AMERICA_FORTALEZA	195
AMERICA_ARAGUAINA	196
AMERICA_MACEIO	197
AMERICA_SAO_PAULO	198
AMERICA_CUIABA	199
AMERICA_PORTO_VELHO	200
AMERICA_MANAUS	201
AMERICA_PORTO_ACRE	202
AMERICA_SANTIAGO	203
AMERICA_BOGOTA	204
AMERICA_CURACAO	205
AMERICA_GUAYAQUIL	206

Provisioning String	CDB Value
AMERICA_CAYENNE	207
AMERICA_GUYANA	208
AMERICA_ASUNCION	209
AMERICA_LIMA	210
AMERICA_PARAMARIBO	211
AMERICA_PORT_OF_SPAIN	212
AMERICA_MONTEVIDEO	213
AMERICA_CARACAS	214
AMERICA_NEW_YORK	215
AMERICA_CHICAGO	216
AMERICA_DENVER	217
AMERICA_LOS_ANGELES	218
AMERICA_JUNEAU	219
AMERICA_YAKUTAT	220
AMERICA_ANCHORAGE	221
AMERICA_NOME	222
AMERICA_ADAK	223
AMERICA_PHOENIX	224
AMERICA_BOISE	225
AMERICA_INDIANAPOLIS	226
AMERICA_INDIANA_MARENGO	227
AMERICA_INDIANA_KNOX	228
AMERICA_INDIANA_VEVAY	229
AMERICA_INDIANA_INDIANAPOLIS	230
AMERICA_LOUISVILLE	231
AMERICA_DETROIT	232
AMERICA_MENOMINEE	233
AMERICA_ST_JOHNS	234
AMERICA_GOOSE_BAY	235
AMERICA_HALIFAX	236
AMERICA_GLACE_BAY	237
AMERICA_MONTREAL	238
AMERICA_THUNDER_BAY	239
AMERICA_NIPIGON	240
AMERICA_RAINY_RIVER	241
AMERICA_WINNIPEG	242
AMERICA_REGINA	243

Provisioning String	CDB Value
AMERICA_SWIFT_CURRENT	244
AMERICA_EDMONTON	245
AMERICA_VANCOUVER	246
AMERICA_DAWSON_CREEK	247
AMERICA_PANGNIRTUNG	248
AMERICA_IQALUIT	249
AMERICA_RANKIN_INLET	250
AMERICA_YELLOWKNIFE	251
AMERICA_INUVIK	252
AMERICA_WHITEHORSE	253
AMERICA_DAWSON	254
AMERICA_CANCUN	255
AMERICA_MEXICO_CITY	256
AMERICA_CHIHUAHUA	257
AMERICA_MAZATLAN	258
AMERICA_TIJUANA	259
AMERICA_ENSENADA	260
AMERICA_ANGUILLA	261
AMERICA_ANTIGUA	262
AMERICA_NASSAU	263
AMERICA_BARBADOS	264
AMERICA_BELIZE	265
AMERICA_CAYMAN	266
AMERICA_COSTA_RICA	267
AMERICA_HAVANA	268
AMERICA_DOMINICA	269
AMERICA_SANTO_DOMINGO	270
AMERICA_EL_SALVADOR	271
AMERICA_GRENADA	272
AMERICA_GUADELOUPE	273
AMERICA_GUATEMALA	274
AMERICA_PORT_AU_PRINCE	275
AMERICA_TEGUCIGALPA	276
AMERICA_JAMAICA	277
AMERICA_MARTINIQUE	278
AMERICA_MONTSERRAT	279
AMERICA_MANAGUA	280

Provisioning String	CDB Value
AMERICA_PANAMA	281
AMERICA_PUERTO_RICO	282
AMERICA_ST_KITTS	283
AMERICA_ST_LUCIA	284
AMERICA_MIQUELON	285
AMERICA_ST_VINCENT	286
AMERICA_GRAND_TURK	287
AMERICA_TORTOLA	288
AMERICA_ST_THOMAS	289
AMERICA_SHIPROCK	290
ASIA_YEKATERINBURG	291
ASIA_OMSK	292
ASIA_NOVOSIBIRSK	293
ASIA_KRASNOYARSK	294
ASIA_IRKUTSK	295
ASIA_YAKUTSK	296
ASIA_VLADIVOSTOK	297
ASIA_MAGADAN	298
ASIA_KAMCHATKA	299
ASIA_ANADYR	300
ASIA_ISTANBUL	301
ASIA_KABUL	302
ASIA_YEREVAN	303
ASIA_BAKU	304
ASIA_BAHRAIN	305
ASIA_DACCA	306
ASIA_THIMBU	307
ASIA_BRUNEI	308
ASIA_RANGOON	309
ASIA_PHNOM_PENH	310
ASIA_HARBIN	311
ASIA_SHANGHAI	312
ASIA_CHUNGKING	313
ASIA_URUMQI	314
ASIA_KASHGAR	315
ASIA_HONG_KONG	316
ASIA_TAIPEI	317

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ASIA_MACAO	318
ASIA_NICOSIA	319
ASIA_TBILISI	320
ASIA_CALCUTTA	321
ASIA_JAKARTA	322
ASIA_UJUNG_PANDANG	323
ASIA_JAYAPURA	324
ASIA_TEHRAN	325
ASIA_BAGHDAD	326
ASIA_JERUSALEM	327
ASIA_TOKYO	328
ASIA_AMMAN	329
ASIA_ALMATY	330
ASIA_AQTOBE	331
ASIA_AQTAU	332
ASIA_BISHKEK	333
ASIA_SEOUL	334
ASIA_PYONGYANG	335
ASIA_KUWAIT	336
ASIA_VIENTIANE	337
ASIA_BEIRUT	338
ASIA_KUALA_LUMPUR	339
ASIA_KUCHING	340
ASIA_ULAN_BATOR	341
ASIA_KATMANDU	342
ASIA_MUSCAT	343
ASIA_KARACHI	344
ASIA_GAZA	345
ASIA_MANILA	346
ASIA_QATAR	347
ASIA_RIYADH	348
ASIA_SINGAPORE	349
ASIA_COLOMBO	350
ASIA_DAMASCUS	351
ASIA_DUSHANBE	352
ASIA_BANGKOK	353
ASIA_ASHKHABAD	354

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ASIA_DUBAI	355
ASIA_SAMARKAND	356
ASIA_TASHKENT	357
ASIA_SAIGON	358
ASIA_ADEN	359