Preface

Revised: March 11, 2009, OL-4486-12

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 4.5. This document describes both the format of the accounting data generated by the system and the standard operational practices for managing that data.[1]

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

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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 4.5 PacketCable Feature Module*.

Document Objective

This guide provides billing interface information for the Cisco BTS 10200 Softswitch software Release 4.5. 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 4.5 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 4.5.

Table 1 Document Change History

Chapter	Date	Change Made
Chapter 2	April 12, 2007	Modified Prepaid and Postpaid descriptions per Limited Call Duration (Prepaid/Postpaid) with RADIUS Interface to AAA feature module
Ch1 Operational Procedures	March 29, 2007	Modified Secured FTP Support for Billing per CSCsi13664
Ch1 Operational Procedures	February 28, 2007	Modifed p.1-3 per CSCsh84168.
Ch1 Operational Procedures	February 13, 2007	Modified billing record file naming convention format per CSCsg53867.
Ch1 Operational Procedures	December 18, 2006	Removed note from p. 1-11 per CSCse06964.
Ch1 Operational Procedures	December 14, 2006	Added billing file example with operational states
Ch 1 File Naming Conventions	December 17, 2007	Updated the BILLING_FILENAME_TYPE conventions

Table 1 Document Change History (continued)

Chapter	Date	Change Made
Appendix A	December 14, 2006	Changes for BTS Release 4.5.1: • Call Detail Billing ID 109 - Changed Field Description per change from Release 4.5 to 4.5.1. • Call Detail Billing ID143 - Changed “From” to “To”.
Ch1 Operational Procedures	December 1, 2006	Changes for BTS Release 4.5.1: • Added WAKE UP Call to list of valid tokens.
Appendix B	December 1, 2006	Changes for BTS Release 4.5.1: • Corrected Call Termination Cause Code in value row from No to Yes
Appendix C	December 1, 2006	Changes for BTS Release 4.5.1: • Changed MLHCENTREXGROUP to MLHGROUP • Added to CDB file: – CHARGINUNITS – ORIGLINEINFO – CENTREXGROUP
Appendix A	November, 2006	Changes for BTS Release 4.5.1: • Call Detail Block File field 1 — added Potential Value of 55 = WAKE_UP. • Call Detail Block File field 19 — changed Max Field Size to 12-17. • Call Detail Block File field 20 — changed Max Field Size to 12-17. • Call Detail Block File field 40 — removed Centrex group. • Call Detail Block File field 29 — added Potential Value of 69 = WAKE UP CALL. • Call Detail Block File field 164 — updated to show differences between BTS Releases 4.5 and 4.5.1. • Call Detail Block File fields 171-174 — added. Corrections: • Corrected Detail Block File field 92 and 101 to include more Data Source information. • Corrected Detail Block File field 92 to include more Potential Value information. • Corrected Detail Block File field 132 additional content to Field Description. • Updated Call Detail Block File field 164 to show differences between BTS Releases 4.5 and 4.5.1.
Appendix A	October, 2006	Corrected the Call Detail Block File field 150 and 151 values.

Table 1 Document Change History (continued)

Chapter	Date	Change Made
Appendix A	September 2006	Changed the Call Detail Block File field 166 values.
Chapter 2	August 2006	Added notes to the LCD Prepaid and Postpaid fields at the end of Chapter 2.
Chapter 1	August 2005	Added the "No Visible Billing Records" and "Removing Billing Files" sections.
Chapter 1, Appendix B	July 2005	The billing cause TEMPORARY_FAILURE was changed to CIRCUIT_CHANNEL_CONGESTED.
	April 2005	Initial draft of the Cisco BTS 10200 Softswitch Billing Guide for Release 4.5. This guide was updated from the Release 4.4 Billing Guide; below are the changes made for Release 4.5.
Chapter 1	April 2005	In the Call Data Transport Management section: The billing-file-prefix flag description was updated. The deposit-confirmation-file flag description was added.
		The File Naming Conventions section was added.
		The Time Interval field in the Call Detail Data Queries section was updated.
		Also in the Call Detail Data Queries section, added the CALLED_NUMBER_PORTED_OUT value to the term_cause token.
		In the Call Detail Data Queries section, added the following values to the service-type token: • CALL FORWARD COMBINATION • NO SOLICITATION ANNOUNCEMENT • PRIVACY SCREENING • VOICE MAIL • VOICE MAIL ACCESS

Table 1 Document Change History (continued)

Chapter	Date	Change Made
		The following values were added to the call-type token in the Call Detail Data Queries section • INTL_OPERATOR • NATL_OPERATOR • AIRLINES • RAILWAYS • SERVICE_CODE • INTL_WORLD_ZONE_1 • CALLING_NUMBER_ANNOUNCEMENT • INTERLATA_DA • INTERNATIONAL_DA • UNIVERSAL_ACCESS_NUMBER • MOBILE
	May 2006	Added the following note to the beginning of Chapter 1: **Note** Manual manipulation of billing files can cause Billing to fail. Contact Cisco for assistance before manually manipulating any billing file, including clean up
	May 2006	Added the following note to the Call Detail Data Queries section in Chapter 1: **Note** The time in the command "report billing_record start_time=xxxx;end_time=xxxx" is "GMT" time.
Chapter 2	April 2005	Added the following CDB fields and their descriptions: • Call Forwarding Combination (CFC) • No Solicitation Announcement (NSA) • Privacy Screening (PS) • Voice Mail (VM) • Voice Mail Access (VMA) • Limited Call Duration—PREPAID (LCD_PREPAID) • Limited Call Duration—POSTPAID (LCD_POSTPAID)
		Added new Result field values.
Appendix A, Call Detail Block File Fields	April 2005	Updated Table A-1,Call Detail Block Field Descriptions with Release 4.5 information.
	May 2006	Updated the Call Elapsed Table field description.

Table 1 Document Change History (continued)

Chapter	Date	Change Made
Appendix B, Call Termination Cause Codes	April 2005	Added the following cause codes: • 14: Indicates an exchange detected that the called number was ported out. • 901: NE Cause Audit Release Modified the following cause code: • 38: Network out of order. Implemented in Release 4.5 changed to "Yes."
Appendix C, Example Call Detail Block File	April 2005	Updated example.

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.

Table 2 Conventions Used in this Guide (continued)

Convention	Meaning	Description / Comments
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.	
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
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.
Software Upgrade	*Cisco BTS 10200 Softswitch Release 4.4 Software Upgrade Procedures*	Describes the steps necessary to upgrade 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 and Submitting a Service Request

For information on obtaining documentation, submitting a service request, and gathering additional information, see the monthly *What's New in Cisco Product Documentation*, which also lists all new and revised Cisco technical documentation, at:

http://www.cisco.com/en/US/docs/general/whatsnew/whatsnew.html

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