297-2667-328

Digital Switching Systems

SuperNode Data Manager Carrier

SuperNode Billing Application

Guide

SDMC0013 Standard 04.02 May 2000

NORTEL NETWORKS

Digital Switching Systems SuperNode Data Manager Carrier SuperNode Billing Application Guide

Document number: 297–2667–328
Document issue: 04.02
Document status: Standard
Date: May 2000

Publication history

May 2000

Standard release version 04.02. This document contains information for the SDMC0013 software release. The following changes were made to the document:

- Updated Chapter 1 to add general information for SBA filtering feature A60007686, SR NV00287, and SR NV00352.
- Updated Chapter 3 for SR NV90772, SR NV00287 and SR NV00307.
- Updated Chapter 4 for SBA filtering feature A60007686.
- Updated Chapter 5 for SBA filtering feature A60007686.
- Updated Chapter 6 for SBA “filtering” feature A60007686, SR 60104181, SR NV90778, SR NV90817, SR NV00287, SR NV00303 and SR NV00352.
- Updated Appendix A for SR NV00352.
- Updated Appendix B for SBA “filtering” feature A60007686, SR NV00064, SR NV00317, SR NV00319, SR NV00320, SR NV00321, SR NV00324, SR NV00326, SR NV00327, SR NV00328, SR NV00330, SR NV00331, SR NV00332, SR NV00333, SR NV00334, SR NV00352 and SR NV00353.
- Updated Appendix C for SR NV00287.
- Updated Appendix E for SBA “filtering” feature A60007686, SR NV90817, SR NV00287 and SR NV00352.
- Updated Appendix G for SR NV00075 and SR NV00188.
- Created Appendix L to incorporate SBA “filtering” feature A60007686 and to incorporate modifications from original spec. SR NV00308.

December 1999

Standard release version 03.03. This document contains information for the SDMC0012 software release.The following additional changes were made to the document:

- Updated Chapter 3 to include procedure for setting the Mib “typeOfCDR” to “GSP” for GSP streams.
- Updated Chapter 4 to add additional procedures for Configuring and activating alternative backup volumes.
- Updated Appendix A to add AMADUMP Listfields info for GSP streams.
- Updated Appendix B to add the Mib “typeOfCDR”.

- Updated Appendix E to add additional information for calculation of SDM disk space and calculation of DMS switch disk space requirements.
- Updated Appendix J to add an additional restriction.

November 1999

Standard release version 03.02. This document contains information for the SDMC0012 software release.The following changes were made to the document:

- Created Appendix J and updated Chapter 1 and Chapter 6 for feature A60007440, “Support for DMS-GSP CDRs on the SDM”
- Created Appendix K and updated Chapter 1, Chapter 4, Chapter 5, Chapter 6, and Appendix B for feature A60007444, “Multi-destination per Billing Stream”
- Updated Chapter 1 for feature A60007444, “BAF/DIRP File Support on SDM”
- Updated Chapter 2 for changes to the SWIM level of the SDMMTC
- Updated Chapter 6 for SR 60096228
- Updated Chapter 3 and Appendix B for SR 60097142
- Updated Chapter 3, Chapter 4, and Appendix B for SR 60097144
- Updated Chapter 5 for SR 60097145
- Updated Chapter 3, Chapter 6, and Appendix E for SR 60098286
- Updated Chapter 6, Appendix B, and Appendix H for SR NT90049
- Updated Chapter 4 and Chapter 5 for SR NT90052
- Updated Chapter 6, Appendix B, and Appendix E for SR NT90055
- Updated Chapter 6 for SR NT90059
- Updated Chapter 6 for SR NT90074

May 1999

Standard release version 02.04. This document contains information for the SDMC0011 software release. This document was updated to fix page numbering error.

May 1999

Standard release version 02.03. This document contains information for the SDMC0011 software release. This document was updated to include a note in Chapter 3, "Configuring the SDMC SBA".

May 1999

Standard release version 02.02. This document contains information for the SDMC0011 software release.

February 1999

Standard release version 01.02. This document contains information for the SDMC0010 software release.

Contents

About this document

This document describes the functions and features of the SuperNode Data Manager Carrier (SDMC) SuperNode Billing Application (SBA), including procedures for installing the application. It is intended for the users of the SDMC SBA application.

The SDMC SBA is designed to work on the SuperNode Data Manager/Fault Tolerant (SDM/FT) product. This document assumes that you are familiar with the SDM/FT product. If necessary, refer to the *SDM Fault Tolerant User Guide*.

How to check the version and issue of this document

The version and issue of the document are indicated by numbers, for example, 01.01.

The first two digits indicate the version. The version number increases each time the document is updated to support a new software release. For example, the first release of a document is 01.01. In the next software release cycle, the first release of the same document is 02.01.

The second two digits indicate the issue. The issue number increases each time the document is revised but re-released in the same software release cycle. For example, the second release of a document in the same software release cycle is 01.02.

This document is written for all DMS Family offices. More than one version of this document may exist. To determine whether you have the latest version of this document and how documentation for your product is organized, check the release information in *Product Documentation Directory*, 297-8991-001.

References in this document

The following documents are referred to in this document:

- *Bellcore Automatic Message Accounting Format (BAF) Requirements Specification,* GR-1100-CORE
- *DMS-300 Call Detail Recording Description,* 297-2301-119
- *UCS DMS-250 Billing Records Application Guide,* 297-2631-395
- *DMS-Global Services Platform Billing Records Reference Manual,* 297-2651-119
- *SDM Fault Tolerant User Guide,* 297-5061-906
- *SDM Enhanced Terminal Access User Guide,* 297-5051-904

- *Product Documentation Directory*, 297-8991-001

Writing conventions

The following subtopics describe writing conventions used in this document.

Description of commands, parameters, and responses in this document use the following conventions:

Input prompt

An input prompt (> or #) indicates that the information that follows is a command to be entered:

>**LIST**

Commands and fixed parameters

Commands and fixed parameters that are to be entered at a MAP terminal are shown in uppercase letters:

>**LIST ALL**

UNIX commands and fixed parameters that are entered at the SDM are shown in lowercase and uppercase letters, depending on the case-sensitive UNIX syntax required:

>**echo $TERM**

Optional inputs are shown inside square brackets:

>**QUIT [ALL]**

Variables

Variables that are to be entered at a MAP terminal are shown inside angle brackets:

>**TABLE <table_name>**

Unix variables that are entered at the SDM are shown in angle brackets:

>**setenv TERM <term_type>**

The letters or numbers that the variables represent must be entered. A list following the command string explains each variable.

Responses

Responses are shown in a monospaced typeface:

```
SDM 0 ManB
```

The following excerpt from a procedure shows the command syntax used in this document:

1 To manually busy the CTRL on the inactive plane, type

>**BSY CTRL <ctrl_no>**

and press **Enter**

where

<ctrl_no> is the number of the CTRL (0 or 1)

Example response:

```
FP 3 Busy CTRL 0: Command request has been submitted.
FP 3 Busy CTRL 0: Command passed.
```

Chapter 1: Understanding SDMC SBA

Overview

The SuperNode Data Manager Carrier (SDMC) SuperNode Billing Application (SBA) is a distributed, high capacity, scalable billing system that enhances the functionality of the DMS family switch. The primary purpose of the SDMC SBA is to receive records from the Computing Module (CM) and route the records to files. The SDMC SBA can also be configured to send billing files to the operating company's downstream processor(s).

The SDMC SBA provides operating companies with the following benefits:

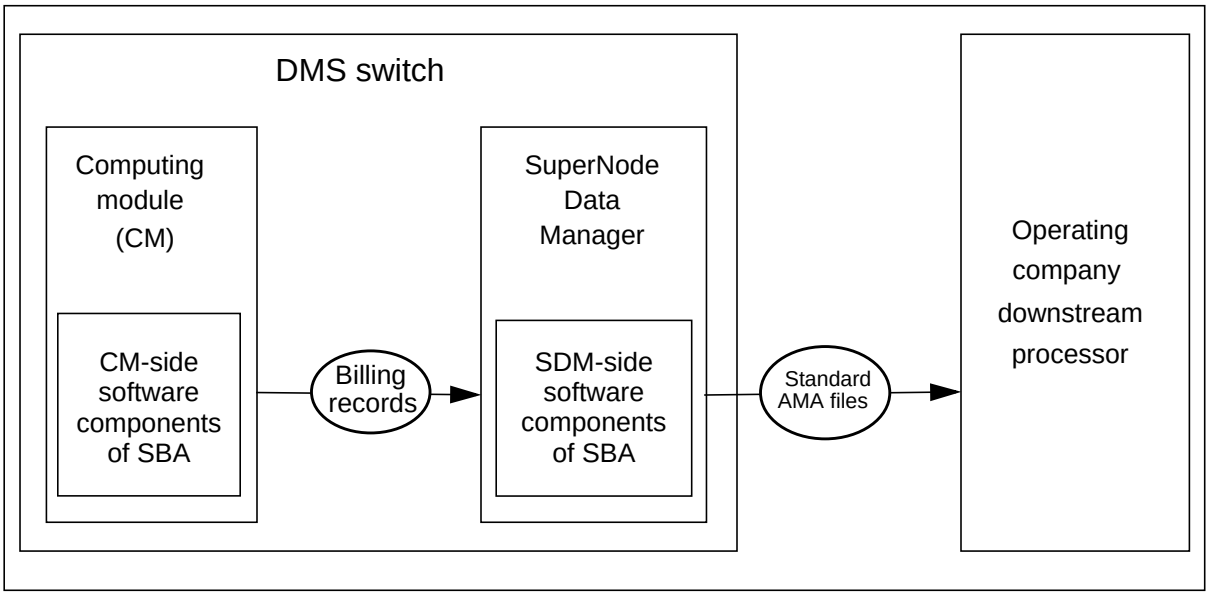
- increases the billing capacity of the operating company
- provides higher data transmission rates
- supports Bellcore AMA Format (BAF), Station Message Detail Recording (SMDR), and the following Call Detail Recording (CDR) billing record formats:
  - UCS DMS-250 CDR
  - DMS-300 CDR format 9, 14, and 15
  - DMS-GSP CDR
- supports up to sixteen streams of CM billing or filtered billing records
- provides real-time delivery of CDR (DIRP) billing records (within 30 seconds from record generation)
- supports multiple downstream destinations per stream
- enhances switch capacity
- supports conversion from UCS DMS-250 CDR stream records to a specified Bellcore AMA Format (BAF) format
- supports storage of BAF records in DIRP formatted files

Relationship with existing products and architecture

Hardware

SBA has software components running on the CM and the SDM as shown in Figure 1.

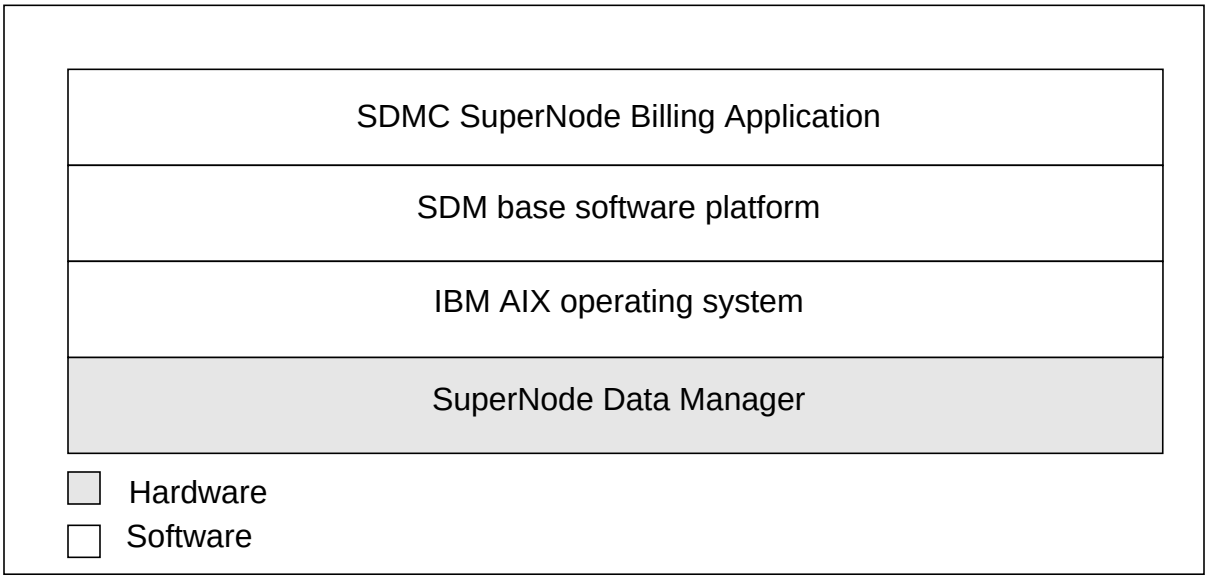
Figure 1
Hardware overview



Software

The SDM base software platform runs on the IBM AIX operating system. The SDMC SBA runs on the SDM base software platform (refer to Figure 2).

Figure 2
Software overview



Streams

In SBA, records are moved in components called streams until they are placed in DIRP (device independent recording package) or AMADNS (automatic message accounting data networking system) billing files in SDM disk storage or both. SBA supports up to 16 streams and each stream may have multiple destinations per stream.

You can configure streams using the ConfigStr command. This command alters parameters that specify the characteristics of the stream including logical volume utilization and occupancy, alarm thresholds, and closing of files based on customer defined criteria. The name of the stream must match a stream name in the CM table CRSFMT. Refer to Chapter 6, "SBA Commands" for more information for the ConfigStr command.

Operation of the SBA system

Because the integrity of billing data is an absolute requirement, the SBA is always running in one of the following three automatic modes:

- normal
- backup
- recovery

Overview of normal mode processing

When the SuperNode Billing Application's CM-side communications system receives a buffer from the buffer system, it sends the buffer to SDM-side communications. SDM-side communications passes the received buffer to

SBA stream management. Stream management routes the buffer to the SBA file manager, which writes the buffer's records to an open file on the SBA-allocated portion of SDM disk space.

The SBA buffer system in the CM holds the buffers in memory until it receives an acknowledgment (ACK) from the SDM indicating the system has successfully stored the transmitted records to disk.

Overview of backup mode processing

The SuperNode Billing Application goes into backup mode under any of the following conditions:

- when communication is lost between the CM and SDM
- when the SDM sends no acknowledgment indicating data has successfully been written to the disk
- when maintenance personnel at the CM enters a BSY command (“busys” the SDM side)
- when maintenance personnel at the SDM enters a BSY command for the SBA application
- when upgrading SBA software on the SDM

In backup mode, the SBA Buffer System routes billing records it receives from AMAPROC to the SBA auxiliary storage system. The auxiliary storage system writes each billing record to disk storage on the CM until the communication is restored between the SDM and CM. Once communication has been restored SBA enters the recovery mode.

Overview of recovery mode processing

When the SBA exits backup mode, it enters recovery mode. In recovery mode, the system routes both active (realtime) records and the backed up recovery records through the communications system to SBA. SBA writes the records to two separate files. One file for the active records and one file for the records from the auxiliary storage.

Overview of one night processing

When the Switch Active (SWACT) starts the inactive side of the DMS switch, the SBA application opens a back-up file. The SBA writes to the file the buffer containing billing records which has not been acknowledged or received by the SBA on the SDM. This backup file is found and recovered by the other side, which avoids any loss of billing during a one night process (ONP).

Note: CM-ONP does not require any SBA user action.

Overview of DAT backup

You can copy billing files to a 4mm DAT tape drive using SBA TAPE level commands. Refer to Chapter 6, "SBA Commands" for more information about TAPE level commands.

SBA subsystem and component descriptions

For the following descriptions, the numbered references refer to callouts in Figure 3 and Figure 4.

AMAPROC and CALLP (1)

AMAPROC and CALLP build records for calls and send the records to the SBA Buffer subsystem. AMAPROC and CALLP are invoked by billing software on the CM.

SBA Buffer subsystem (2)

The SBA Buffer subsystem stores billing records generated at the CM for transmission to the SDM. In normal mode, it dumps all full buffers to the communications client.

The SBA Buffer subsystem triggers back up mode when it detects any of the following:

- all of its allocated buffers are full
- volatile storage contains more than 9000 records
- the SDM has not acknowledged receipt of full buffers within 3 minutes

When the condition that forced backup mode is resolved, the SBA Buffer subsystem triggers transition to recovery mode, to allow recovery of data backed up in auxiliary storage. In recovery mode, the SBA Buffer subsystem processes both active buffers and recovered buffers in separate sub-streams. Priority is given to the active buffers.

Auxiliary Storage subsystem (3)

In backup mode, the auxiliary storage subsystem receives billing records from the SBA Buffer subsystem; in recovery mode, it passes billing records to the SBA Buffer subsystem.

Figure 3
SBA subsystems and components

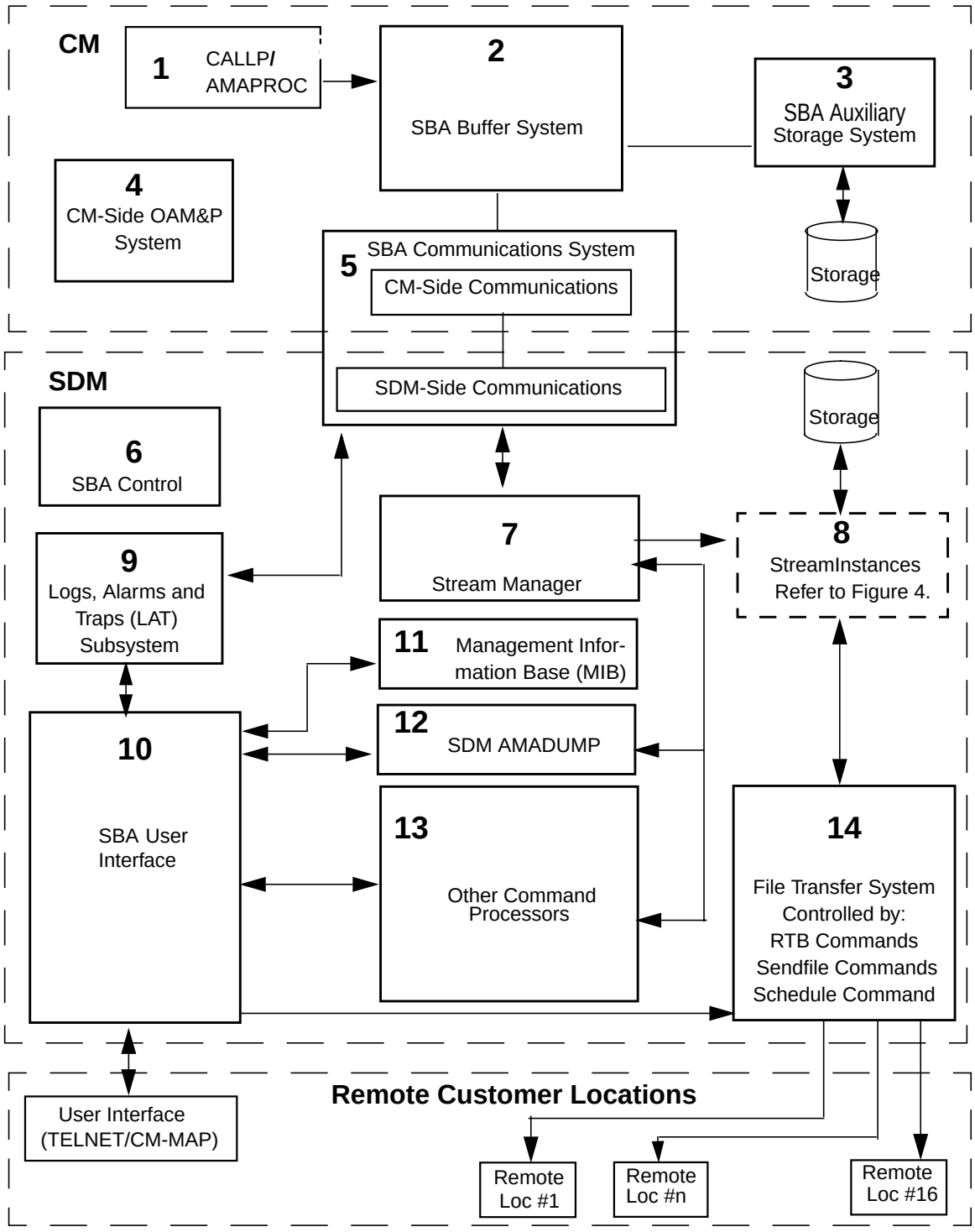
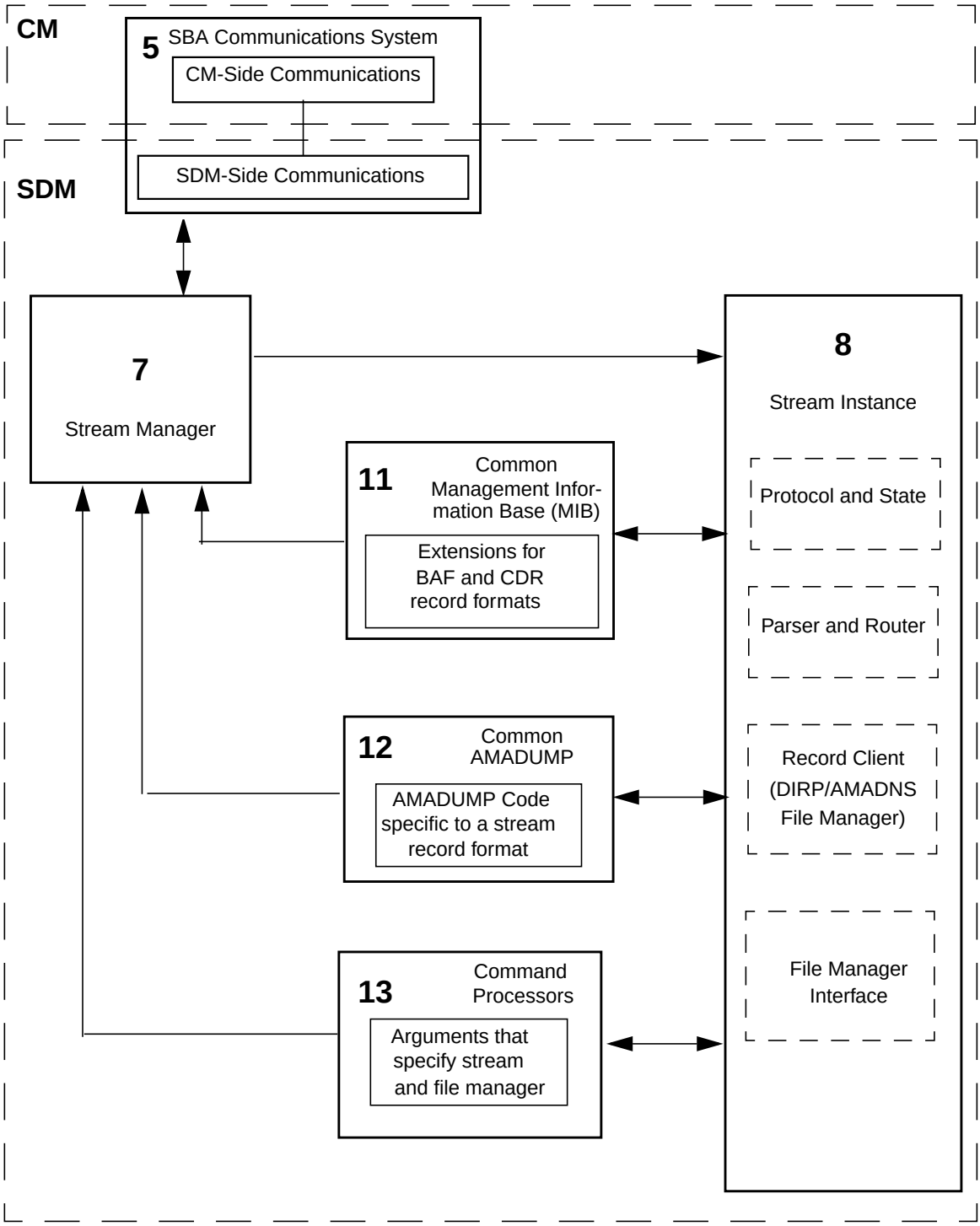


Figure 4
SBA subsystems and components (stream-specific processing)



CM-side OAM&P subsystem (4)

The CM-side OAM&P subsystem provides support for the CM-side SBA functions (LOGUTIL command) and the SDM-side SBA logs, alarms and traps.

SBA Communications subsystem (5)

The SBA Communications subsystem handles the two-way communications between the CM and the SDM.

SBA Control (6)

SBA requires its own installation and control functionality within the SDM operational environment. As part of its function, SBA Control enables user control (BSY/RTS) of the SBA from the user interface. Primary functions of SBA Control are:

- provide a level of control from the SDM maintenance level by responding to commands
- control processes in the SDM SBA system
- restart failed processes according to predefined algorithms

Stream Manager (7)

The Stream Manager controls the individual streams. It is responsible for creating and deleting the streams as well as routing messages from the SDM Communications subsystem to the appropriate stream. Finally, it provides a single point of contact for the user commands to gain access to a particular stream.

Stream instances (8)

This component represents a stream of billing data. There may be more than one of these entities active at one time in the SBA. It is responsible for the following:

- receiving buffers from the CM
- extracting billing records from the buffer
- acknowledging the CM for buffer safely retrieved
- storing the billing records in the appropriate file format (DIRP or AMADNS) as configured for the stream
- managing the creation, deletion and changes to the files
- providing other SBA components with access to files and other stream data

Each instance has the following components:

Protocol and State Message Receiver - receives messages and passes buffers

Parser/Router - receives buffers and parses records

Record Client - manages files

File Manager Interface - interfaces with external applications

Logs, Alarms, and Traps (LAT) subsystem (9)

The Logs, Alarms and Traps (LAT) subsystem takes the logs and alarms from all components in the SBA's SDM-side, displays them on the SDM, and sends them to the CM for reporting through LOGUTIL.

The logs are sent to the CM as SDMB logs. Alarms raised are visible in the mapci;mtc;appl;sdmbil level.

The logs and alarms can also be viewed on the SDM in the billmtc level, which is useful when communication problems occur between the CM and the SDM.

SBA logs will indicate the stream with which they are associated.

SBA user interface (10)

The SBA User Interface, also known as the Billing Maintenance interface (BILLMTC), is similar to that provided by the CM (MAP). Through the RMI, the user can schedule file transmissions, list and send files, set the stream context for subsequent commands, query a stream, close a current file, view/set MIB parameters, and configure a stream.

Refer to Chapter 6, "SBA Commands" for more information.

Management Information Base (MIB) subsystem (11)

The Management Information Base (MIB) subsystem provides storage of configuration and run-time data for the entire SBA system.

The MIB base is partitioned to allow format applications (such as BAF and CDR) to define and use their own application-specific MIB. This allows a change to a CDR-related MIB value, for example, to be in effect for all CDR streams.

Refer to Appendix B "Management information base variables" for MIB variable descriptions.

Refer to Chapter 6, "SBA Commands" for MIB command details and syntax.

SDM AMADUMP (12)

AMADUMP is an SDM tool that allows users to filter and view records from both standard AMA files and DIRP formatted files. The output can be refined by limiting the maximum number of records to search and display. In the case of DIRP formatted files, AMADUMP allows users to specify the start block of the record from which to begin the search. Refer to Appendix A "SDMC SBA Amadump Listfields" for more information.

AMADUMP is also used to define filter criteria files for use with filter streams. Refer to Appendix L: "SDM SBA Filtering" for more information about filtered streams.

Other Command Processors (13)

Below is a list of other SBA commands available in the SDM user interface and a brief description of each. Refer to Chapter 6, “SBA Commands” for command details and syntax.

- CloseC - close the current open file or files for a particular stream
- ConfigStr - configure a CM billing or filtered stream
- DispAl - display all the currently stored alarms on the SBA system
- DispLogs - display all the currently stored logs on the SBA system
- FTMode - configure the SBA file transfer component as either inbound or outbound
- ListFile - list the files that are currently stored in a particular stream
- MIB - display or change the value of a configurable piece of data for a particular application specific MIB or the base MIB
- Schedule - add, change, list or delete automatic file transfer scheduled events
- Real Time Billing (RTB) - setup and use RTB
- SendFile - manually trigger the transmission of a file or set of files from a particular stream to the down stream processor
- Set - set context for the next command(s)
- Tape - initiate a backup of billing data files from a particular stream to DAT (Digital Audio Tape) tape (refer to Appendix C, “Details of Write Tape Operations” for more information)
- Query - display the state of a particular stream or all streams

File Transfer subsystem (14)

The File Transfer subsystem contains a file transfer controller, which transfers files to remote customer locations, and a schedule manager which maintains the schedule for automatic file transfers.

Scheduled file transfers can be specified for a given stream/file format type/destination combination. For each different stream/file format type/destination combination, different file transfer parameters can be specified (e.g., start time, stop time, file transfer interval, etc.).

SBA subsystem and component interactions

For the following descriptions of SBA subsystem and component interactions, the numbered references refer to callouts in Figure 3 and Figure 4.

CM-side interactions

The SBA Buffer subsystem (2) receives billing records from CALLP/ AMAPROC (1), buffers them, then passes them to the Communications subsystem (5) for transmission to the SDM.

If the SBA Buffer subsystem (2) detects that a condition in the SDM or Communications subsystem (5) will not allow SDM to process the records, the SBA Buffer subsystem routes the records to the SBA Auxiliary Storage subsystem (3) which then stores the records in non-volatile (disk) storage.

When the SBA Auxiliary Storage subsystem (3) receives direction from the SBA Buffer subsystem (2), the SBA Auxiliary Storage subsystem routes the stored records to the Buffer subsystem as a recovery stream.

The CM-side of the Communications subsystem (5) receives stream-differentiated buffers from the Buffer subsystem (2) and passes them to the SDM-side of the Communications subsystem (5) using UDP.

In addition to the routing of billing records and their associated acknowledgments, the Communications subsystem (5) also routes logs and alarms and their associated acknowledgments between the SDM-side Logs, Alarms, and Traps (LAT) subsystem (9) and the CM-Side OAM&P subsystem (4).

SDM-side interactions

The SDM-side of the Communications subsystem (5) receives stream-differentiated buffers and passes them to the appropriate stream instances (8).

A stream instance (8)contains certain components:

- a protocol/state component which receives the buffers from the CM,
- a parser/route component which parses the billing records from the buffer, and
- a file manager component which stores the records into files and places them on the disk.

The Stream Manager (7) component maintains the states of the stream instances (8). It also initially interfaces to the appropriate stream instance to process requests for records on behalf of the File Transfer subsystem (14), the AMADUMP command (12), and other command processes (13).

The File Transfer subsystem (14) provides the interface between SBA and the remote customer locations. It handles the file transmission and transmission scheduling.

The SBA User Interface (10), also known as the Billing Maintenance Interface is similar to that provided by the CM (MAP). Through the Billing Maintenance Interface, the user can schedule file transmissions, list and send files, set the stream context for subsequent commands, query a stream, close a current file, view/set MIB parameters, and configure a stream. Refer to Chapter 6, "SBA Commands" for more information.

Remote locations

Remote locations receive records sent by the File Transfer subsystem (14), differentiated by selection criteria and stream. SBA allows multiple downstream destinations per stream.

The user interface is a map-like interface that the customer accesses via TELNET or Enhanced Terminal Access (ETA) (refer to the *SDM Enhanced Terminal Access User Guide* for more information about ETA). The user's login (root or maint) determines which commands and command parameters are available.

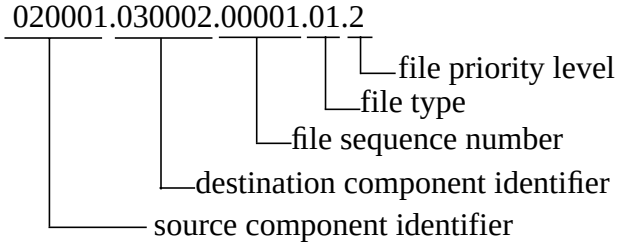
Overview of standard AMA file

The standard AMA file is a new streamlined file which consists of a header followed by the billing records. The name as defined in GR-1343 consists of five parts:

- Source component identifier indicates a unique number that identifies which AMADNS component is the source of the file.
- Destination component identifier indicates a unique number that identifies which AMADNS component is the destination for the file.

- File sequence number provides a numerical value used to distinguish the files in the same file category (for example, same file type, file priority level, source component and destination component).
- File type indicates what type of data is contained within a file.
- File priority level represents the level of priority of the data contained within a file.

An example of an actual standard AMA file name follows:



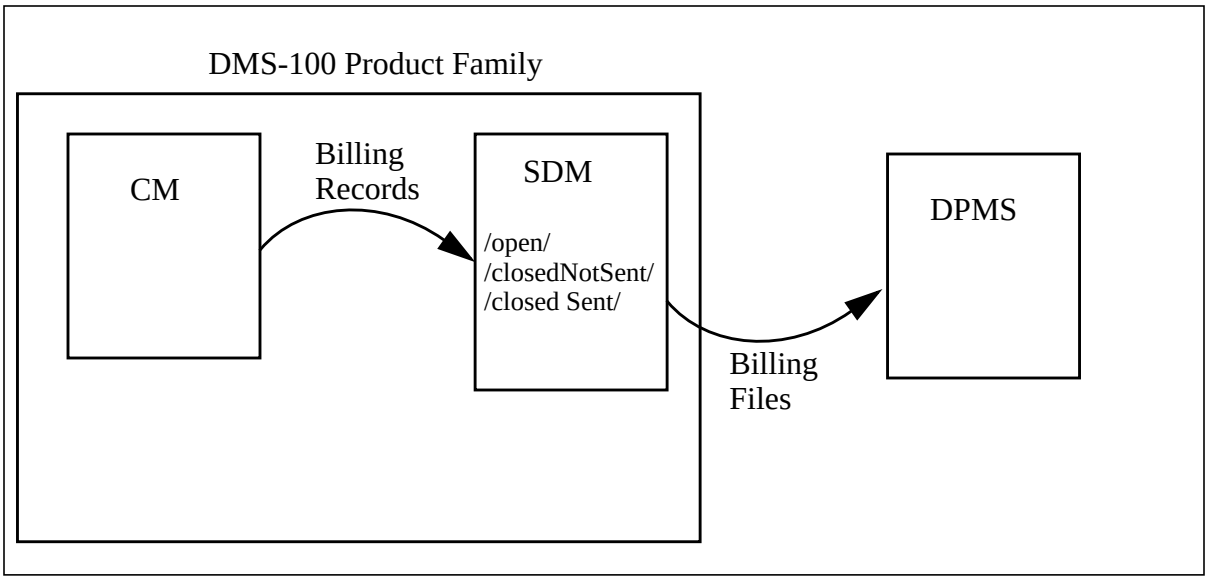
The file header is 28 bytes in length and consists of several fields. The fields along with the byte, are shown in Figure 5.

Figure 5 AMADNS file header

	7	6	5	4	3	2	1	0
Byte 1	File Header Length							
2	Source Component Identification Number							
3	Source Component Type				Source Component Identification Number			
4	Destination Component Identification Number							
5	Destination Component Type				Destination Component Identification Number			
6	File Type Code: Standard file: BAF code is 01; SMDR code is 11 Error file: BAF code is 02; SMDR code is 12					Data Format Type		
7	Field Suppression Type		File Priority Level			Reset Status	Pri/Sec Status	Record Source Info Type
8-9	File Sequence Number							
10	File Creation Time							
11	File Creation Date				File Creation Time			
12-13	File Creation Date							
14	File Last Modification Time							
15	File Last Modification Date				File Last Modification Time			
16-17	File Last Modification Date							
18-21	File Length							
22-24	Number of Records in File							
25	Record Source Type							
26	Record Source Identification Number				Record Source Type			
27-28	Record Source Identification Number							

Overview of File Status

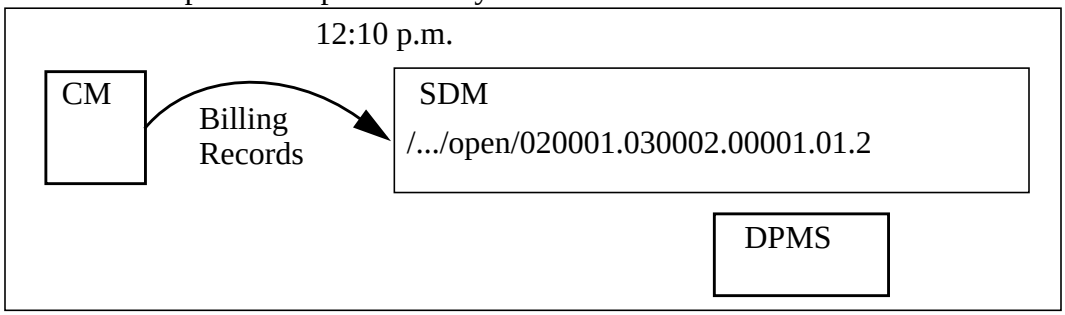
Figure 6 File Status and File Management Overview



As the SDM receives buffers of billing records from the CM, the SDM adds them to a file of billing records. Then, the file is “open”, so that the records can be written to the buffer. The “open” file is located in a directory named “open”. Once the file reaches a pre-determined size or after a pre-determined time period has elapsed, the file will be closed, and move to the “closedNotSent” directory. The billing files will be stored in the “closedNotSent” directory until it has been transferred to all configured clients. Once the file has been transferred to all appropriate clients, it is moved to the “closedSent” directory. The file remains in the “closedSent” directory until its space is needed, at which time it is removed from the disk.

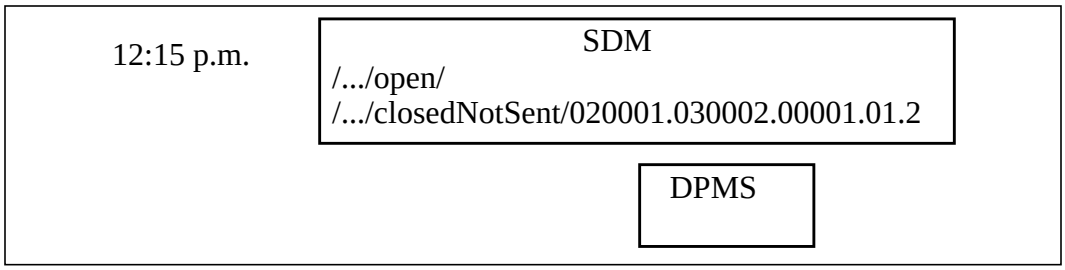
For example, the CM generates billing records, starting at 12:10 p.m. The billing records are transferred to the SDM (in near real-time) and stored in a file in the “open” directory.

An example of an open directory follows:



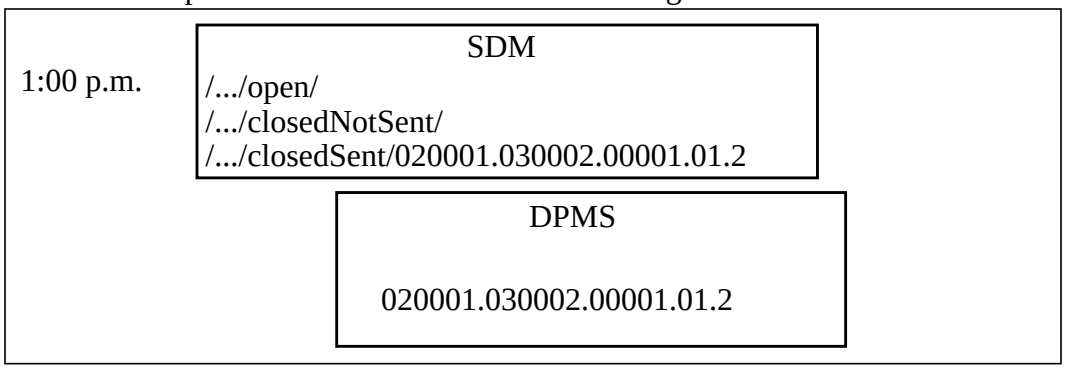
For this example, the stream is setup to close files file every 5 minutes. Also, billing files for the stream are scheduled to be sent to one specific downstream processor (DPMS) every 60 minutes.

At 12:15 p.m., file 020001.030002.00001.01.2 is closed and moved to the "closedNotSent" directory as shown below.



At 1:15 p.m. the billing file is transferred to the downstream processor. After the billing file is received by the downstream processor, it is moved to the "closedSent" directory (from the "closedNotSent" directory).

An example of a "closedNotSent" file transiting to "closedSent" follows:



Note: Although billing file 020001.030002.00001.01.2 is transferred to the downstream destination at 1:15 p.m. as scheduled, it is retained in the "closedSent" directory until its space is needed.

Standard billing file availability

Files are closed and available to be transferred to the collector when any one of three following scenarios are met.

- Max file size in bytes is reached. This values is specified by the user and can be
  - — 1MB to 20MB for BAF (the default is 20MB)
  - — 100KB to 20MB for SMDR (the default is 20MB)

- Max file size in records is reached. This value is specified by the user and can be
  - — 10,000 to 500,000 records for BAF (the default is 500,000 records)
  - — 1000 to 500,000 records for SMDR (the default is 500,000 records)
- File close time - This is a near real-time billing timer that is available to the user to close files before they reach the maximum file size. This timer can be set from 5 minutes to 10 080 minutes or can be disabled. Default is 120 minutes.

Files can be closed manually by using the CloseC command in the SDM Billing Maintenance Interface. Refer to Chapter 6, "SBA Commands" for more information.

Overview of file transfers

SBA has several methods of transferring files to the downstream destination

- scheduled
- manual request
- inbound file transfer
- real time billing (RTB) - DIRP only

Scheduled transfer

SBA pushes the billing files from the SDM to the downstream destination through the standard FTP. The user configures SBA with all the necessary destination information and schedules how often the files are sent to the downstream destination. Refer to Chapter 6, "SBA Commands" for more information.

Manual request

The user can log into the user interface provided in the SDM and issue the Sendfile command to request billing file(s) to be transferred to the downstream destination. The Sendfile command uses the same destination information as scheduled transfer to push the billing files from the SDM to the downstream destination through the standard file transfer protocol. Refer to Chapter 6, "SBA Commands" for more information.

Inbound FT

The user can FTP into the SDM and retrieve the billing files. Refer to Appendix D "SBA inbound FT feature" for more information.

Real Time Billing (DIRP only)

The Real Time Billing (RTB) feature allows billing records to be available for transfer from the SDM thirty (30) seconds after the call is disconnected. RTB downloads a small group of records to the DIRP billing file on the downstream

destination as they are added to the open billing file on the SDM. RTB uses File Transfer Protocol (FTP) through an Ethernet connection to deliver the records. Refer to Appendix G: "Real Time Billing" for more information.

Chapter 2: Installing SDMC SBA Software

This chapter describes how to install the SuperNode Data Manager Carrier (SDMC) SuperNode Billing Application (SBA). It assumes that the SDM platform has already been installed.

Installing or upgrading SDMC SBA on the SDMC

Complete the following steps to install SDMC SBA.

Procedure 1 Installing the SDMC SBA application on the SDM

1 Obtain the name of the SDMC SBA application fileset.

Note: The SDMC10, SDMC11, SDMC12, and SDMC13 SBA filesets are named SDM_SBA DMS500.

2 Insert the SDMC SBA software tape into the SDM tape drive.

At the workstation Unix prompt

3 Login to the SDM as the root user by typing:

>telnet *ip_address*

and press the Enter key.

Where

ip_address is the IP address or the nodename of the SDM

The system prompts you for your SDM login and password.

4 Enter the SDM login and password for the root user.

The SDM screen appears.

5 Access the SDM Remote Maintenance Interface (RMI) by typing

>sdmmtc

and press the Enter key. The SDM RMI is displayed.

6 Access the Application (appl) level to determine if another version of the SBA application is installed on the SDM by typing:

>appl

and press the Enter key.

Example response

```
# Application                                State
 1 Enhanced Terminal Access                   .
 2 Log Delivery Service                       .
 3 OM Access Service                          .
 4 Table Access Service                       .
 5 Exception Reporting                        .
 6 Secure File Transfer                       .
 7 OM_Data_Delivery                           .
 8 SDM_SBA DMS500 Application                 .
```

In this example, the Application level indicates there is an installed (other) version of the SDMC SBA application. It is listed as application number 8, SDM_SBA DMS500 Application.

Note 1: The "." value for the State column indicates that the application is in service (InSv).

Note 2: To scroll through the list of applications, use the **up** or **down** command.

7 Access the SWIM (software inventory manager) level by typing:

>swim

and press the Enter key.

Example response

```
# Fileset Description          Version       Status
1 Client Common Resources      10.0.29.2     APPLIED
2 Log Delivery Service         10.0.29.2     APPLIED
3 Platform Maintenance         10.0.29.2     APPLIED
4 SDM_SBA base Application     09.0.11.1     APPLIED
5 OM Access Service            10.0.29.2     APPLIED
6 Table Access Service         10.0.29.2     APPLIED
7 Enhanced Terminal Access     11.0.93.0     APPLIED
```

The SWIM level lists software filesets that are installed on the SDM.

Note 1: To scroll through the list of filesets, use the **up** or **down** command.

8 Access the Apply level by typing:

>apply

and press the Enter key.

Example response

```
# Fileset Description        Current      Available
1 SDM_SBA DMS500 Application 09.0.11.1    10.0.84.0 *
```

Note 1: The Apply level displays a list of filesets (on the source device) that are available for installation on the SDM. To scroll through the list of filesets, use the **up** or **down** command.

Note 2: Each fileset has a number which is used to select it. In the above example, the fileset number used to select the SDMC SBA fileset is “1”.

Note 3: The “Available” column lists the version of the fileset available on the source device.

Note 4: The “Current” column lists the version of filesets that are currently installed on the SDM. The “Current” column will indicate the value “NA” if a fileset is not currently installed on the SDM.

Note 5: You can determine the software release for any fileset; the first two fields of the version indicate the software release. For example; version “9.0.11.1” indicates software release “9.0”; version “10.0.29.2” indicates software release “10.0”; and version “11.0.93.0” indicates software release “11.0”.

9 Refer to the list of filesets that you compiled in step 1. If the Apply level lists the SDMC SBA fileset, proceed to Step 12. If the Apply level does not list the SDMC SBA fileset, change the source device by typing:

>source

and press the Enter key.

Example response

```
Specify the new source device:

To specify a directory on the SDM, enter the directory
   path.

To specify a tape drive:
   Enter 0 for the tape drive in the main chassis slot 2.
   Enter 1 for the tape drive in the main chassis slot 13.

To specify the default source device, press [Enter]. The
   default is default.
```

10 Choose the tape drive where you have inserted the SDMC SBA software tape by typing **0** or **1**; then press the Enter key.

Example response

```
Do you want to set the default source device?

Please confirm (“YES”, “Y”, “NO”, “N”):
```

11 Type **Y** and press the Enter key.

Example response

```
#  Fileset Description        Current      Available
1  SDM_SBA DMS500 Application NA           10.0.84.0   *
```

12 Select the SDMC SBA fileset by typing:

>select *number*

and press the Enter key.

Where

number is the number listed beside the fileset on the Apply level.

13 Apply the fileset by typing:

>apply

and press the Enter key.

Example response.

```
Command in progress.

APPLYING fileset: 1
   SDM_SBA.DMS500 10.0.84.0

Command completed with no errors.

An application applied has installed a configuration
script which must be executed before the software is
brought on-line.

Configuration scripts were found for the following
packages:

   SDM_SBA DMS500 Application:

Use the Config command to go to the Config level.

MORE...
```

14 Press the Enter key to continue.

15 Access the Config level by typing:

>config

and press the Enter key.

Example response.

```
#  Fileset Description        Status
1  Secure File Transfer       CONFIGURED
2  SDM_SBA DMS500 Application UNCONFIGURED
```

In this example, the fileset number used to select the SDMC SBA configuration script is 2.

16 Select the SBA configuration script by typing:

>select *number*

and press the Enter key.

Where

number is the number listed beside the SDMC SBA fileset on the Config level. If necessary, use the **Up** and **Down** commands to scroll through the fileset list until the SDMC SBA fileset is displayed.

17 Configure the SDMC SBA software by typing:

>config

and press the Enter key.

Example response.

```
The configuration script for the SDM_SBA DMS500
Application: fileset is ready to execute (it is currently
in the UNCONFIGURED state). The Config level will
disappear during execution of the script.

Do you wish to proceed?
Please confirm (“YES”,”Y”, “NO”, “N”):
```

18 Type **Y** or **YES** and press the Enter key.

Example response.

```
Warnings produced from installing SBA, if any, are shown
below.

Press ENTER to continue.
```

19 Observe any warnings; then press the Enter key.

Example response.

```
#  Fileset Description        Status
1  Secure File Transfer       CONFIGURED
2  SDM_SBA DMS500 Application CONFIGURED

The configuration script for the SDM_SBA DMS500
Application: fileset configured.
```

20 Access the Application level and verify the installation by typing:

>appl

and press the Enter key.

Example response

```
 # Application                              State
 1 Enhanced Terminal Access                   .
 2 Log Delivery Service                       .
 3 OM Access Service                          .
 4 Table Access Service                       .
 5 Exception Reporting                        .
 6 Secure File Transfer                       .
 7 OM_Data_Delivery                           .
 8 SDM_SBA DMS500 Application                 ManB
```

In this example, the Application level lists the SDMC SBA as application 8. The SDMC SBA is in the ManB (manual busy) state.

21 If the Application level lists the SDMC SBA in the ManB (manual busy) state, RTS (return to service) the SDMC SBA by typing:

>RTS *number*

and press the Enter key.

Where

number is the number listed beside the SDMC SBA application on the Application level.

Example response

```
# Application                                State
1 Enhanced Terminal Access                     .
2 Log Delivery Service                         .
3 OM Access Service                            .
4 Table Access Service                         .
5 Exception Reporting                          .
6 Secure File Transfer                         .
7 OM_Data_Delivery                             .
8 SDM_SBA DMS500 Application                   .

  Application RTS - Command submitted.
```

In this example, the Application level lists the SDMC SBA in the InSV (in service) state.

Note 1: The "." value for the State column indicates that the application is in service (InSv).

Note 2: If the SDMC SBA state does not change to InSv (changes to SysB), contact your next level of support.

22 Exit the SDM Maintenance Interface by typing:

>quit all

and press the Enter key.

23 The procedure is complete.

Starting the SDMC SBA application

Complete the following steps to start the SDMC SBA.

Procedure 2 Starting the SDMC SBA

At the workstation Unix prompt

1 Login to the SDM as the maint user by typing:

>telnet *ip_address*

and press the Enter key.

Where

ip_address is the IP address or the nodename of the SDM

The system prompts you for your SDM login and password.

2 Enter the SDM login and password for the maint user.

The SDM screen appears.

3 Access the SDM Remote Maintenance Interface (RMI) by typing

>sdmmtc

and press the Enter key.

4 Access the Application level and verify the installation by typing:

>appl

and press the Enter key.

Example response

```
 # Application                              State
 1 Enhanced Terminal Access                 .
 2 Log Delivery Service                     .
 3 OM Access Service                        .
 4 Table Access Service                     .
 5 Exception Reporting                      .
 6 Secure File Transfer                     .
 7 OM_Data_Delivery                         .
 8 SDM_SBA DMS500 Application               OffL
```

In this example, the Application level lists the SDMC SBA as application 8. The SDMC SBA is in the OffL (off line) state.

5 If the Application level lists the SDMC SBA in the OffL (off line) state, Bsy (busy) the SDMC SBA by typing:

>Bsy *number*

and press the Enter key.

Where

number is the number listed beside the SDMC SBA fileset

Example response

```
 # Application                                State
 1 Enhanced Terminal Access                   .
 2 Log Delivery Service                       .
 3 OM Access Service                          .
 4 Table Access Service                       .
 5 Exception Reporting                        .
 6 Secure File Transfer                       .
 7 OM_Data_Delivery                           .
 8 SDM_SBA DMS500 Application                 ManB

   Application Bsy- Command submitted.
```

In this example, the Application level lists the SDMC SBA in the ManB (manual busy) state.

6 If the Application level lists the SDMC SBA in the ManB (manual busy) state, RTS (return to service) the SDMC SBA by typing:

>RTS *number*

and press the Enter key.

Where

number is the number listed beside the SDMC SBA fileset

Example response

```
 # Application                                State
 1 Enhanced Terminal Access                   .
 2 Log Delivery Service                       .
 3 OM Access Service                          .
 4 Table Access Service                       .
 5 Exception Reporting                        .
 6 Secure File Transfer                       .
 7 OM_Data_Delivery                           .
 8 SDM_SBA DMS500 Application                 .

   Application RTS - Command submitted.
```

In this example, the Application level lists the SDMC SBA in the InSV (in service) state.

Note 1: The "." value for the State column indicates that the application is in service (InSv).

Note 2: If the SDMC SBA state does not change to InSv (changes to SysB), contact your next level of support.

7 Exit the SDM Maintenance Interface by typing:

>quit all

and press the Enter key.

8 The procedure is complete.

Chapter 3: Configuring the SDMC SBA

This chapter describes how to configure the SuperNode Data Manager Carrier (SDMC) SuperNode Billing Application (SBA). This section is divided into three procedures to configure the SDMC SBA application on the SDM and the DMS switch.

- Configuring SBA on the SDM
- Configuring SBA on the DMS switch
- Configuring outbound file transfer schedule (if desired)

The following flowchart summarizes the procedures to configure the SBA. To complete the procedure for configuring the application software, perform the step-action procedures that follow the flowchart.

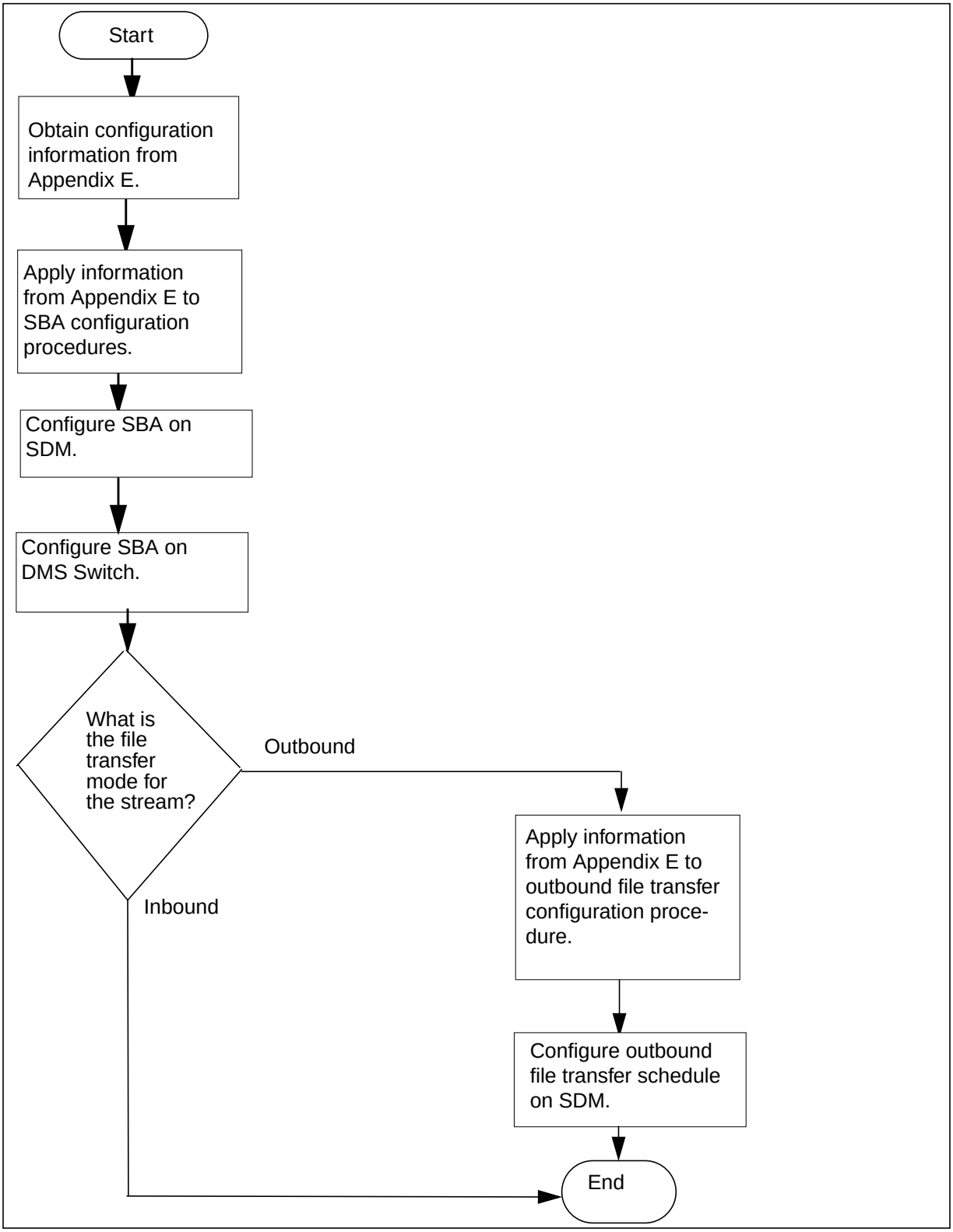
Note 1: Before you can configure the SBA, it is imperative that you complete the configuration questionnaires in Appendix E, "Configuration Settings".

Note 2: Configure is only necessary for first time installation.

Note 3: Before configuring SBA, it is recommended that the SDM and CM-SDM links are in service.

Note 4: Refer to “Configuring a volume” in Chapter 6 for detailed information about warnings and errors related to SLM disk volume creation and removal.

Figure 7 Summary of Configuring the SBA



Configuring SBA on the SDM

To add a logical volume to the SDM for a stream

1 Log into the SDM as the “root” user.

2 From the SDM prompt, type

sdmmtc

and press the Enter key.

The RMI menu appears, with menu selections highlighted in the left column.

3 Enter the Mtc level by typing

mtc

and press the Enter key.

4 Enter the Sys level, by typing

sys

and press the Enter key.

5 At the Sys level, type

storage

and press the Enter key.

6 Copy the values for the logical volume_name (Answer 4) and logical_volume_size (Answer 19) from the Appendix E, "Configuration Settings" and complete the table below.

Command to enter	First parameter	Second parameter
add lv	logical_volume_name (Answer 4)	logical_volume_size (Answer 19)

7 At the Storage menu prompt, type the command shown in the above table using the values that were copied from the appendix by typing

add lv <logical_volume_name> <logical_volume_size>

and press the Enter key.

where

<logical_volume_name> is the value for <logical_volume_name> and

<logical_volume_size> is the the value for <logical_volume_size>

8 Exit the SDM RMI by typing

quit all

and press the Enter key.

To configure a stream

1 Log into the SDM as the “root” user.

2 From the SDM prompt, type

#billmtc

and press the Enter key.

3 Enter the CONFSTRM level by typing

confstrm

and press the Enter key.

4 Copy the values from Appendix E, "Configuration Settings" into the value column of the table below. Use the value name with the associated answer number (for example, record_format (Answer 2)) in the value column of each row as a guide for placing the corresponding value from Appendix E, "Configuration Settings".

CONFSTRM:Add command prompts	**Values**
Stream Name	stream_name *(Answer 1)*
Is this a filtered stream	filter_stream *(Answer ?)*
associated stream (not applicable to CM billing streams)	associated_stream *(Answer ?)*
filter criteria file (not applicable to CM billing streams)	filter_criteria_file *(Answer ?)*
Stream Record Format	record_format *(Answer 2)*
File Format	file_format *(Answer 3)*
Please specify the logical Volume	logical_volume_name *(Answer 4)*
File Transfer Mode	file_transfer_mode *(Answer 5)*
Destination Component Id (not applicable if file format is DIRP)	destination_id *(Answer 7)*
Destination Component Type (not applicable if file format is DIRP)	destination_type *(Answer 8)*
Source Component Id (not applicable if file format is DIRP)	source_id *(Answer 9)*
Source Component Type (not applicable if file format is DIRP)	source_type *(Answer 10)*
Customer Standard Header File Type (not applicable if file format is DIRP)	standard_file_type *(Answer 11)*
Customer Error Header File Type (not applicable if file format is DIRP)	error_file_type *(Answer 12)*

CONFSTRM:Add command prompts	Values
Files Renamed With Close Date (not applicable if file format is DNS)	*files_renamed_with_close_date (Answer 36)*
Files Closed On File Transfer and writetepe (not applicable if file format is DNS)	*files_closed_on_file_transfer (Answer 37)*
Do you want files closed based on time	close_on_timer *(Answer 13)*
File Closure time limit (not applicable if you do not want files closed based on time)	file_close_time_limit *(Answer 14)*
Maximum Number of records per day	records_per_day *(Answer 15)*
Maximum Number of records per file	records_per_file *(Answer 17)*
Maximum Number of Bytes per file	bytes_per_file *(Answer 18)*

5 Select ADD from the CONFSTRM menu by typing

add

and press the Enter key.

The command will prompt you for input for each value in the above table. For each prompt, type in the corresponding value copied from Appendix E, "Configuration Settings".

Note: For detailed information about the CONFSTRM:Add command, refer to Chapter 6, "SBA Commands" in this document.

6 After all of the values are entered, CONFSTRM:Add will present all of the values you provided, as shown in the following example. Verify that the values displayed match the values in the table above.

The following is an example of CONFSTRM:Add command output for DNS file format:

```
Stream Name -> AMA2
Filter stream -> No
Stream Record Format -> BC
File Format Type -> DNS
Logical Volume Name -> /sba/ama2
File Transfer Mode -> OUTBOUND
Destination Component Id -> 2
Destination Component Type -> 3
Source Component Id -> 1
Source Component Type -> 2
Customer Standard Header File Type -> 1
Customer Error Header File Type -> 2
File Closed On Time Valid -> NO
File Closed On Time -> 10080
Maximum number of records -> 10000
Maximum number of bytes -> 1000000

Commit? [Save] {Save Edit Abort}:
```

The following is an example of CONFSTRM:Add command output for DIRP file format

```
Stream Name -> OCC4
Filter stream -> No
Stream Record Format -> CDR250
File Format Type -> DIRP
Logical Volume Name -> /sba/occ4
File Transfer Mode -> OUTBOUND
Files Renamed With Close Date -> NO
Files closed for file transfer or writetape -> NO
File Closed On Time Valid -> NO
File Closed On Time -> 10080
Maximum number of records -> 10000
Maximum number of bytes -> 1000000

Commit? [Save] {Save Edit Abort}:
```

7 If the values match, at the commit prompt type

save

and press the Enter key.

Then go to Step 9.

8 If the values do not match, at the commit prompt type

edit

and press the Enter key.

Correct the values as required and than go to Step 6.

Note: If you enter an incorrect value for stream, abort the procedure by typing **abort** and go to Step 5 of this procedure.

9 The CONFSTRM:Add command message will appear as shown below:

```
Committing the configuration
.
. (names and values of the MIB elements)
.
configuration of Stream <stream_name> is now complete
```

10 To exit the CONFSTRM level of the billmtc menu type

quit

and press the Enter key.

11 If you are setting up a UCS DMS-250 CDR stream for BAF conversion, complete the following steps:

a. Set the CDR2BAFActive Mib to “1” by typing

Mib cdr set CDR2BAFActive 1

and press the Enter key.

b. Set the CurrentTmpltID Mib by typing

Mib cdr set CurrentTmpltID <value>

and press the Enter key.

where

<value> is the template ID of the predefined template on the CM. (you can use the CM side CTMPLT “template all” command to determine this value).

c. Set the EnableAudit Mib to “1” by typing

Mib cdr set EnableAudit 1

and press the Enter key.

d. Set the BAFSuppression Mib by typing

Mib cdr set BAFSuppression <value>

and press the Enter key.

where

<value> is “0” (no BAF suppression) or “1” (BAF suppression)

e. If the BAFSuppression Mib is set to “1” (enabled), set the sensorID base Mib by typing

Mib set sensorID <value>

and press the Enter key.

where

<value> is “0” to “999999”; the value default is “1”

f. If the BAFSuppression Mib is set to “1” (enabled), set the sensorType base Mib by typing

Mib set sensorType <value>

and press the Enter key.

where

<value> is “0” to “999”; the default value is “36”

g. If the BAFSuppression Mib is set to “1” (enabled), set the recordSourceInfoType base Mib to “0” (zero) by typing

Mib set recordSourceInfoType 0

and press the Enter key.

Note: If you change the CDR2BAFActive, CurrentTmpltID, EnableAudit, or BAFSuppression Mib values after the stream is turned on, you must BSY, then RTS the SBA application to activate the changes to the Mib.

12 If you are setting up a DMS-GSP CDR stream, set the typeOfCDR Mib to “GSP” by typing

Mib cdr set typeOfCDR GSP

and press the Enter key.

Note: If you change the typeOfCDR Mib value after the stream is turned on, you must BSY, then RTS the SBA application to activate the changes to the Mib.

Configuring SBA on the DMS switch

1 Log into the switch.

2 Configure two volumes per stream on the DMS switch for backup purposes. These volumes will be used in situations where the DMS switch is temporarily unable to pass billing data to the SDM.

Copy the dms_disk_space (Answer 20) value from Appendix E: "Configuration Settings" into the following table.

DMS Disk Space
dms_disk_space (Answer 20)

Divide the value in the table above by 2 and this is the size of each volume (in blocks).

Note: Volume names on the System Load Module (SLM) disks can be up to eight alphanumeric characters in length, but the required name prefixes are S00D and S01D. This leaves four alphanumeric characters for use in individually identifying the volumes.

3 Access the CMMNT level of the MAP display to determine if the SLM disk that will be used for the volume is set as the primary autoload device (AutoLdev) by typing:

>mapci;mtc;cm;cmmnt

and press the Enter key.

Example response:

```
CM   Sync  Act  CPU0  CPU1  Jam  Memory  CMMnt  MC  PMC
 0    no  cpu 0  .    flt   yes    .       .    .    .

Traps:          Per minute =     0      Total =     8

AutoLdev:       Primary = SLM 0 DISK  Secondary =  SLM 1 DISK

Image Restartable = No image test since last restart

Next image test restart type = WARM

Last CMREXTST executed

System memory in kbytes as of  17:33:11
Memory (kbytes): Used = 236672 Avail = 418688 Total = 655360
```

Note: In the example above, SLM 0 DISK is the Primary autoload device.

4 To create a backup volume on a SLM disk, the SLM disk must be set as the secondary autoload device. If necessary, change the SLM disk from primary to secondary autoload device by typing:

>autold slm <slm_number> disk

and press the Enter key.

where

<slm_number> is the number of the SLM disk to set as the primary autoload device; this is the SLM disk that is ***not*** being used to create the new backup volume.

Example input command when creating a volume on SLM 0

autold slm 1 disk

Example response:

```
New autoload route has been set.
```

5 At the menu prompt, busy the SLM where the volume will be created by typing

>iod;slm <slm_number>;bsy

and press the Enter key.

where

<slm_number> is the SLM number for the volume

6 Access the Disk administration level, by typing

>diskadm <X>

and press the Enter key.

where

<X> is the disk name

Example input command:

diskadm S00D

Note: To show the available commands type **help diskadm** and press the Enter key.

7 Observe the free disk space by typing

>dd

and press the Enter key.

Example response:

```
Disk drive information for S00D
Drive name                          :S00D
Vendor Information                  :SEAGATE  ST31051N 9470
Date last formatted                 :1976/01/01 05:38:44.718 THU.
Date last modified                  :1998/04/23 17:46:59.754 THU.
Total space for volumes             :1000 Mbytes
Total Free space                    :174 Mbytes
Size of largest free segment        :174 Mbytes

1 Block = 512 bytes
```

8 Create a new logical volume by typing

>**cv <X> <Y> std**

and press the Enter key.

where

<X> is the backup volume name and **<Y>** is the size of the volume

Example input command:

cv BAK1 50 std

Note 1: Logical volume S00DBAK1 will be created.

Note 2: 1 block = 512 bytes and 50 blocks = 25K bytes.

9 Exit the disk administration level at the prompt by typing

>quit

and press the Enter key.

10 RTS the SLM into the InSv state by typing

>mapci;mtc;iod;slm 0;rts

and press the Enter key.

11 Copy the value for the stream_name (Answer 1) from Appendix E: "Configuration Settings" and complete the table below.

Command to enter	Parameter
mapci;mtc;appl;sdmbil;post	stream_name (Answer 1)

12 At the Mtc menu prompt, type the command shown in the above table using the values that were copied from Appendix E, "Configuration Settings" by typing

>mapci;mtc;appl;sdmbil;post <X>

and press the Enter key.

where

<X> is the stream name

13 Copy the values for the stream_name (Answer 1) from Appendix E, "Configuration Settings" and record the names of the backup volumes configured on the DMS switch, to complete the table below.

Command to enter	First Parameter	Second Parameter	Third Parameter
conf set	stream_name (Answer 1)	dms_backup_1	dms_backup_2

14 At the menu prompt, type the command shown in the above table using the values that were copied from the appendix by typing

>conf set <X> <Y> <Z>

and press the Enter key.

where

<X> is the stream name, **<Y>** is dms_backup_1, and **<Z>** is dms_backup_2

Example input command:

conf set AMA S00Dbak1 S01Dbak2

15 If you are setting up a UCS DMS-250 CDR stream for BAF conversion (refer to Appendix H:, "CDR to BAF conversion" for more information), complete the following steps:

a. Set the EDGE_SWITCH office parm to “Y” by typing

>table OFCVAR;pos EDGE_SWITCH;change y

and press the Enter key.

b. Set the FCDR_CDR_WORD_LAYOUT office parm to “NORMAL” by typing

>table OFCENG;pos FCDR_CDR_WORD_LAYOUT;change normal

and press the Enter key.

Note: If the FCDR_CDR_WORD_LAYOUT office parm is set to “READLR”, CDR records will not be converted to BAF records, and a NOSC alarm will appear on the banner at the APPL level of the SDM.

c. Ensure the predefined CDR Template ID for the CDR2BAF application is present and correct. If this is a new template or if you change the template, make the template active as follows:

i. Activate the CTMPLT tool by typing

>CTMPLT

and press the Enter key.

ii. Activate the change by typing

>UPGRADE

and press the Enter key.

16 Copy the values for the stream_name (Answer 1) and sba_stream_state (Answer 6) from the Appendix E, "Configuration Settings" into the table below.

Command to enter	First Parameter	Second Parameter
sdmbctrl	stream_name (Answer 1)	sba_stream_state (Answer 6)

17 At the menu prompt, type the command shown in the above table using the values that were copied from the appendix by typing

>sdmbctrl <X> <Y>

and press the Enter key.

where

<X> is the stream name and **<Y>** is the sba stream state

Example input command:

sdmbctrl AMA on

WARNING

Changing a stream that is set to “ON” or “BOTH” to “OFF” will stop billing to the SDM; billing records will no longer be sent to the SDM for that stream. If the DMS DIRP system is not able to receive billing records, all billing records generated while the stream is set to “OFF” will be lost.

Note 1: The”ON” state sends billing records only to the SDM.

Note 2: The “BOTH” state sends billing records to the DMS DIRP system and to the SDM. The SDM does not verify that the DMS DIRP system is functioning properly. Using the “BOTH” state will cause a real time impact to the DMS switch.

Note 3: Refer to Chapter 6, "SBA Commands" for more details on the Conf and SDMBCTRL commands.

18 The stream is now running and the SDM is receiving billing records and writing records to billing files. If the stream file transfer mode is set to outbound, then proceed with the Configuring Outbound File Transfer Schedule procedure. If the file transfer mode is inbound, configuration is complete.

Configuring outbound file transfer schedule

1 Log into the SDM as “root.” From the # SDM prompt, type

billmtc

and press the Enter key.

2 Go to the SCHEDULE level of the BILLMTC menu by typing

schedule

and press the Enter key.

3 Copy the values from Appendix E, "Configuration Settings" into the values column of the table below. Use the value name with the associated answer number (for example, stream_name (Answer 1)) in the value column of each row as a guide for placing the corresponding value from Appendix E: "Configuration Settings".

SCHEDULE:Add command prompts	**Values**
Enter Stream	stream_name *(Answer 1)*
Enter File_Format_Type	file_format *(Answer 3)*
Enter Destination	destination *(Answer 40)*
Enter Protocol	protocol *(Answer 21)*
Enter Primary_Destination	primary_destination *(Answer 22)*
Enter Primary_Port	primary_port *(Answer 38)*
Enter Alternate_Destination	alternate_destination *(Answer 23)*
Enter Alternate_Port	alternate_port *(Answer 39)*
Enter Start_Time	schedule_start_time *(Answer 33)*
Enter Stop_Time	schedule_stop_time *(Answer 34)*
Enter Interval	schedule_interval *(Answer 35)*
Enter Remote_Storage_Directory	remote_storage_directory *(Answer 26)*
Enter Remote_Login	remote_login *(Answer 24)*
Enter Remote_Password	remote_password *(Answer 25)*
Enter Timeout	protocol_timeout *(Answer 29)*
Enter Maximum_Retries	protocol_max_retries *(Answer 30)*
Enter Retry_Wait_Time	protocol_retry_wait_time *(Answer 31)*
Enter File_Extension	file_extension *(Answer 28)*
Enter Field_Separator	field_separator *(Answer 27)*

SCHEDULE:Add command prompts	Values
Enter Active	schedule_active *(Answer 32)*

4 Select ADD from the SCHEDULE menu by typing

add

and press the Enter key.

The command will prompt you with each of the command prompts from the above table. For each of the prompts, type in the corresponding value copied from Appendix E, "Configuration Settings".

Note: For detailed information about the SCHEDULE:Add command, refer to Chapter 6, "SBA Commands".

5 After all of the values are entered, SCHEDULE:Add will present all of the values you have chosen, as shown in the following example. To ensure the stream is configured properly, verify that the values match the values in the table above.

Example of SCHEDULE:Add command output:

```
Stream: ‘AMA’
File_Format_Type: ‘DNS’
Destination: ‘OSS’
Protocol: ‘FTPW’
Primary_Destination: ‘47.32.45.67’
Primary_Port: ‘21’
Alternate_Destination: ‘47.32.67.86’
Alternate_Port: ‘21’
Start_Time: ‘00:00’
Stop_Time: ‘00:00’
Interval: ‘120’
Remote_Storage_Directory:‘/home/amabilling/billingfiles’
Remote_Login: ‘amabilling’
Remote_Password: ‘******’
Timeout: ‘30’
Maximum_Retries: ‘3’
Retry_Wait_Time: ‘1’
File_Extension: ‘’
Field_Separator: ‘.’
Active: ‘Yes’

Valid actions are {‘Save’, ‘Edit’, ‘Abort’}.
Press Enter to accept ‘Edit’.
Enter Action:
```

6 If the values in the SCHEDULE:Add output match the values in the table (the password field is hidden), at the Action prompt type

save

and press the Enter key.

Go to Step 9.

7 If the values do not match, at the Action prompt type

edit

and press the Enter key.

Note: If you enter incorrect values for stream and/or file format, abort the procedure by typing **abort** at any SCHEDULE:Add command prompt and go back to Step 4 of this procedure.

8 At the Field Name prompt type the name of the field to change or type **all**. Complete corrections and go back to Step 5 of this procedure.

9 The SCHEDULE:Add command will save the information and the following message will appear:

```
Schedule tuple saved

Press Return to Continue
```

10 Press the Enter key.

11 Configuration of SBA is now complete, exit the BILLMTC menu by typing

quit all

and press the Enter key.

Note 1: The file transfer settings can be tested by executing a manual file transfer of a secondary file using the Sendfile command and checking that the billing file is transferred to the correct directory of the downstream destination. The Sendfile command can be found at position 7 of the FILESYS level of BILLMTC menu.

Note 2: If a stream is not running, the schedule tuple for that stream cannot be active. Use the SCHEDULE:Change command to activate the tuple after the stream is running.

Chapter 4: SDMC SBA alarms and maintenance

This section contains SuperNode Data Manager Carrier (SDMC) SuperNode Billing Application (SBA) maintenance procedures. You can perform these procedures only if you have root user permissions for accessing the SDM.

Alarms are listed in this document in alphabetical order. The common procedures that apply to a number of alarms are presented before the other procedures. Each alarm clearing procedure provides the following information:

- indication (where an alarm appears on the MAP display)
- meaning (what the alarm means)
- impact (how the alarm affects service)
- common procedures (a list of procedures that apply to multiple alarms are documented separately)
- action (how to clear the alarm, as both a summary flowchart and a set of step-action instructions)
  - — The flowchart is only a summary of the main actions, decision points, and possible paths you may take. Do not use the summary flowchart to perform the procedure. Instead, use it to preview what you will be doing and to prepare for it. For example, if you see that the procedure involves actions at the SDM site, you will know to advise that office before you begin the step-action instructions.
  - — The step-action instructions tell you how to perform the procedure. Normally you will perform the steps in order, but you may be directed to return to a previous step and repeat a sequence. The successful completion of a step may depend on previous steps; therefore, always perform the steps in the order specified. The step-action instructions provide the command syntax and system information you use or see while performing the procedure. For help on DMS and SDM commands or output, see “About this document” at the beginning of this document.

Controlling SBA

Use this procedure to shut down (manually busy) or restart (return to service) the SBA software package.

Note: For SBA to run successfully, communications between the SDM and the DMS switch/CM must be established.

Action

Use the following instructions to shut down or restart SBA:

At the SDM

1 To access the top menu level of the Remote Maintenance Interface (RMI), type

#sdmmtc

and press the Enter key.

2 To access the Maintenance (Mtc) menu level of the RMI type

mtc

and press the Enter key.

3 The RMI displays the SDM node state.

If the SDM node state is	Do
InSv, ISTb	step 7
SysB	step 4
OffL	step 4
ManB	step 5

At the MAP display

4 From the DMS switch, the next few steps affect the SDM. As a general rule, many other applications may be running on the SDM. Ensure that you do not interrupt these other applications by typing

>mapci;mtc;appl;sdm

and press the Enter key. Then type

>bsy

and press the Enter key.

5 Type

>rts

and press the Enter key to return the SDM to service.

At the SDM

6 To access the Appl menu level of the SDM RMI, type

#sdmmtc

and press the Enter key. Then type

>appl

and press the Enter key.

Example response

```
# Application                                State
1 Enhanced Terminal Access                     .
2 Log Delivery Service                         .
3 OM Access Service                            .
4 Table Access Service                         .
5 Exception Reporting                          .
6 Secure File Transfer                         .
7 OM_Data_Delivery                             .
8 SDM_SBA DMS500 Application                   .
```

Note 1: In this example, the Application level indicates SBA is in service. It is listed as application number 8. The "." value for the State column indicates that the application is in service (InSv).

Note 2: To scroll through the list of applications, use the **up** or **down** command.

7 Determine the application control activity you want to perform.

If you want to	Do
shut down (manually busy) SBA	step 8
restart (return to service) SBA from the offline state	step 8
restart (return to service) SBA from manually busy state	step 11

8 To manual busy (MANB) the SBA application, type

>bsy <X>

and press the Enter key.

where

<X> is the number of the SBA application in the Application level (for example, **bsy 8**).

Example response

```
The application is in service.
This command will cause a service interruption.
Do you wish to proceed?
Please confirm (“YES”, “Y”, “NO”, or “N”):
```

WARNING

This command will cause SBA to go into backup mode and cause an SBACP (major) alarm under the SDMBIL banner in the MAP display.

Note: Busying the application performs an orderly shutdown and can take up to 90 seconds.

9 To confirm the MANB command, type

>y

and press the Enter key.

10 After you confirm the Bsy command, the following is displayed:

```
Application Bsy - Command initiated.
Please wait...

Application Bsy - Command submitted.
```

11 To return the application to service, type

>RTS <X>

and press the Enter key.

where

<X> is the number of the SBA application in the Application level (for example, **RTS 8**).

Example response

```
Application RTS - Command initiated.
Please wait...

Application RTS - Command submitted.
```

Note 1: You can only RTS the application if it is in the MANB state.

Note 2: This command will cause SBA streams to go into recovery mode.

12 If you are unable to perform any of these procedures, contact the personnel responsible for the next level of support.

13 You have completed this procedure.

Alarm troubleshooting

In the SBA environment, there are many conditions that could cause an alarm to be raised. While there is a log message associated with each alarm, the information that is supplied may not always be enough to determine what raised the alarm.

> ***Note:*** When alarms related to a filtered stream are sent to the CM, they are sent under the name of the associated CM billing stream. When this occurs, the name of the filtered stream is prepended to the text of the alarm.

The majority of the alarms raised on the SBA system that you can resolve can be traced back to one of two problem areas:

- A problem in the FTP process. If you receive numerous FTP and LODSK alarms, this could indicate a problem with either SBA or the general FTP process on the SDM. LODSK generally indicates that your primary files (closedNotSent) are not being moved from the SDM to the downstream processor. If there is an accompanying log, look at the whole picture. You could have the downstream processor full and no space to write files, which would cause an FTP error. You should also see DMS switch/CM SDMB logs indicating that the file was not sent. If there is no FTP alarm, you could have scheduling turned off and nothing is being sent.
- An insufficient amount of storage. If you receive numerous alarms for the backup system (BAKUP, BACK50, BAK70, and BAK90) without receiving an FTP or LODSK alarm, this could indicate a general storage problem on the DMS switch/CM.

The other main problem that can occur is communication between the DMS switch/CM and the SDM. The NOCOM and SBACP alarm clearing procedures discuss how to solve this problem.

In general, the following steps may help to troubleshoot the alarm:

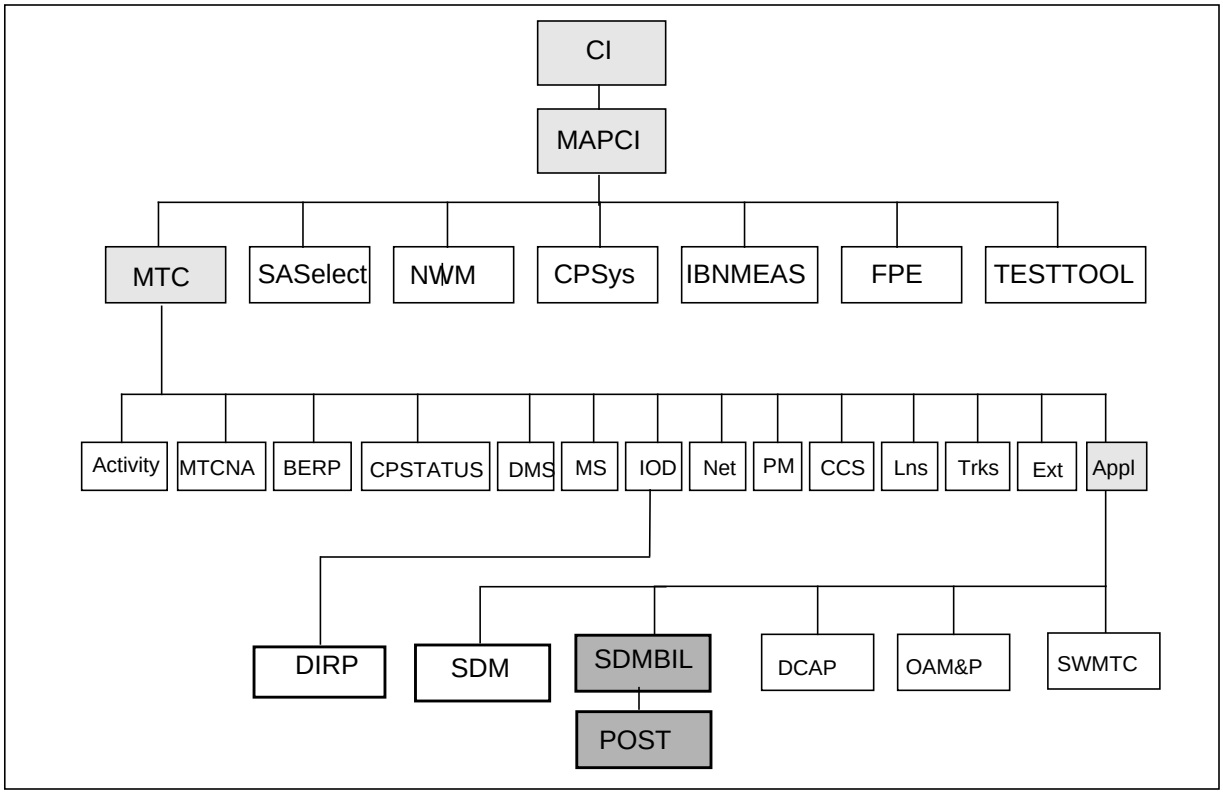
1. Determine which process caused the alarm. You should be able to do this from the log messages. Look at all of the alarms and determine what they say.
2. If the FTP process has alarms, verify that the IP addresses are correct and that the FTP function itself is working properly (see “Verifying FTP”).
3. If there is an insufficient amount of storage, try to determine why you have run out of space. Find out why you are in backup mode. If you have a problem that you deem to be long-term, configure an additional volume. The procedures for alarms NOVOL, NOREC, NOSTOR, and the BAK90, 70, and 50 discuss the insufficient storage problems.

Displaying alarms

Because the SBA processing takes place in both the DMS switch/CM and the SDM, the SBA program displays SDM-generated alarms in the MAPCI;MTC

window at the DMS switch/CM. Figure 8 shows all SBA alarms that are displayed under APPL on the MTC display on the DMS switch/CM.

Figure 8 Alarms layout



On the DMS switch/CM side, maintenance centers around the following entities:

- table SDMBILL
- MAP level SDMBIL
- logs
- states
- alarms

On the SDM-side, your interface to the SBA is through the SBA RMI. You perform maintenance on the SDM side of SBA by using commands in the billing level (billmtc) of the SDM RMI display.

You can also display the alarms raised by the SDM side for the SBA by using the DispAl command from the billmtc level. The DispAl command displays the alarm criticality, stream, and text of the alarms. Maintenance users who log into the SDM with the SDMRLOGIN command, cannot access either billmtc or sdmmtc but can issue commands.

Alarm criticality

There are three levels of criticality for alarms:

1 Critical indicates a severe problem with the system that requires intervention.

2 Major indicates a serious situation that may require some type of intervention.

3 Minor indicates a problem; minor alarms are an indication that there is a problem and should be investigated so that a minor problem is not allowed to evolve into a major problem.

CM MAP states

In the SBA environment, an SBA stream may have different state values due to some action or condition on the SBA system. To view the state of a stream from the CM type:

>MAPCI; MTC; APPL; SDMBIL; POST X {where **X** is the stream name}

The possible state values and their definition are as follows:

- Offline pending (OffP) indicates the stream has been turned off but is waiting for the SDM to complete processing its data.
- Offline (Off) indicates the stream is offline.
- Manual busy (ManB) indicates the stream has been manually busied by a user from the CM; data is being written to backup files.
- System busy (SysB) indicates the stream has been busied by the SBA system due to some communications or internal software error; data is being written to backup files.
- Remote busy (RBsy) indicates the stream has been manually busied by a user from the SDM, data is being written to backup files.
- Backup (Bkup) indicates the stream is writing data to backup files due to a performance problem.
- Recovery (Rcvy) indicates the stream is in service and also sending backup files previously created, to the SDM.
- In-service (InSv) indicates the stream is in a normal working state.
- In-service trouble (ISTb) indicates that the SDM Communication is in service trouble due to being in a split-mode state.

Common procedures

There are a few procedures that are common to all of the alarm clearing procedures. These common procedures include

1. The “Next-level-of-support procedure,” which helps you to determine what to do when either an alarm clearing procedure has failed or you have been directed to contact your next level of support.
2. The “Verifying FTP procedure,” which you should use to ensure that the FTP process is set up correctly and is able to transfer files.
3. The “Verifying the FTP schedule procedure,” which is used to ensure that the system is able to send FTPs on a regular basis.
4. The “Configuring and Activating Replacement Backup Volumes Procedure,” which is used to create and activate alternative backup volumes for a stream.

Next-level-of-support procedure

You have been routed to this procedure because your execution of an alarm clearing procedure within this chapter has failed to clear an alarm or you have been directed to contact your next level of support from the system log section of Chapter 5, "SDMC SBA logs".

Do the following:

1 Retrace your path through the procedures to verify accurate execution. For future reference, note on paper the page numbers and figure numbers your path included.

2 If the path you took through the procedures was accurate, you must conclude that the clearing of this alarm will require information and procedures that are beyond the scope of this application guide.

Refer this problem to your next level of support. Give your contact at the next level of support the following information:

— this application guide's title and form number

— the problem alarm and any additional problem symptoms

— the diagnostic path you took in trying to solve this problem (noted in step 1).

If you are uncertain about who or what your next level of support is, refer to the following procedure.

Determining your next level of support

If your company's operational structure requires that you refer all unresolved problems to your immediate technical supervisor, contact that supervisor now.

If you have no immediate technical supervisor, but your company's operational structure includes an Electronic Systems (Switching) Assistance Center (ESAC), contact that center now.

If you have neither a technical supervisor nor an ESAC, refer this problem to any alternative problem-handling facility within your company.

If your position represents the highest level of technical support within your company, contact Nortel's Technical Assistance Support (business hours) or Emergency Technical Assistance Support (off hours).

Verifying FTP procedure

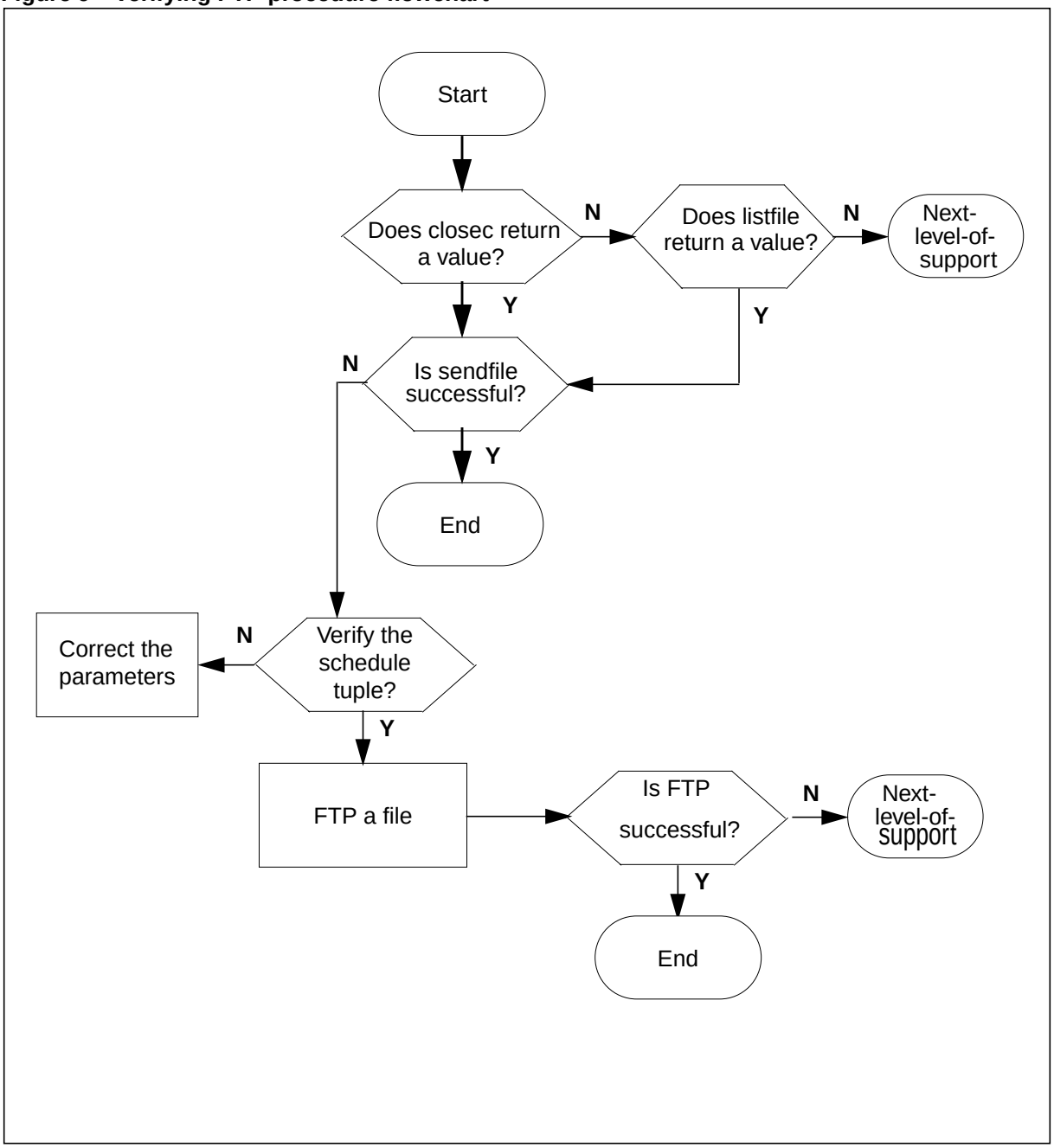
Application

Use this procedure on the SDM to verify that File Transfer Protocol is set up correctly and can transfer files.

Action

The following flowchart is a summary of this procedure. Use the instructions in the step-action procedure that follows the flowchart to perform the task.

Figure 9 Verifying FTP procedure flowchart



At the SDM

1 From the # SDM prompt, type

#billmtc

and press the Enter key. Then type

>filesys

If you have any current, open files, close the current file by typing

>closec X {where **X** is the stream name}

and press the Enter key.

2 If the command fails, or if the command does not return a filename, list the primary files (closedNotSent) by typing

>listfile X -p {where **X** is the stream name}

and press the Enter key.

3 Type

>sendfile X -f {where **X** is the stream name and where **-f** is the filename that was returned from the closec command or the listfile command}

where

filename is the filename that was returned from the closec command or the listfile command.

Press the Enter key. This command sends the file to the operating company's collector.

4 Type

>quit

to take you to the previous level.

5 From the # SDM prompt, type

#billmtc

and press the Enter key. Then type:

>schedule

and press the Enter key. Then type:

>list

and press the Enter key.

6 If a parameter is not set correctly, use the change command in the schedule menu to reset it.

When the parameters are correct, you can retry the preceding steps, starting with step 1, to see if the problem has been resolved. If the problem has been resolved, go to step 8.

7 (For the root user) copy a file from the /sba/*stream name*/ cloedNotSent directory into the /sdm/sba/tmp directory. Issue the following commands to FTP that file without using the SBA processes to verify whether FTP works correctly:

>ftp -n

>open agent

>quote user login

>quote pass password

>type binary

>struct File

>cd target

>put file test.tmp

>rename test.tmp test.extension

where

agent	is the IP address and port of the downstream destination
login	is the login of the downstream destination
password	is the password for the login of the downstream destination
target	is the target directory on the downstream destination
file	is the name of the file on the SDM
test	is the name you specify for that file on the downstream destination
extension	is the extension to be added to the end of the file name (the dot [.] character is not necessary if there is no extension specified)

8 If you have completed all the preceding steps and the alarm still fails to clear, proceed to the "Next-level-of-support procedure."

9 If the send is successful, delete the FTPed file from the target. If a parameter is not set correctly, use the change command in the schedule menu to reset it.

If the send command is successful, the problem is with the SBA program. If the send command fails, the problem is with FTP.

You have completed this procedure.

Verifying the FTP schedule procedure

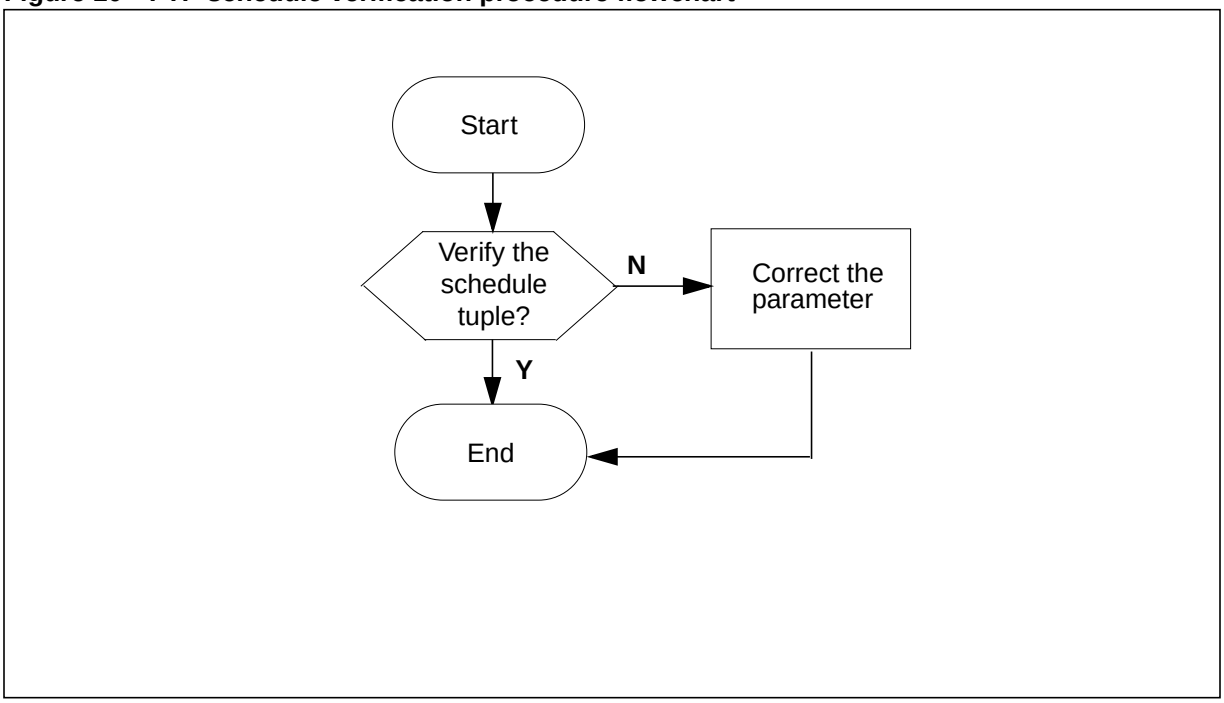
Application

Use this procedure to verify that the schedule is set up correctly and can transfer files, using File Transfer Protocol.

Action

The following flowchart is a summary of this procedure. Use the instructions in the step-action procedure that follows the flowchart to perform the task.

Figure 10 FTP schedule verification procedure flowchart



At the SDM

1 At the SDM prompt, type

#billmtc

and press the Enter key.

2 Type

>schedule

and press the Enter key, to go the Schedule menu.

3 Type

>change

and press the Enter key, to go the Change menu.

4 Enter stream name at the prompt.

5 Enter file format at the prompt.

6 Observe the tuple displayed.

7 Enter the field name to change or “all”

8 Enter the new values.

9 To commit changes, type

>save

or

If you have any current files to edit, type

>edit

or

If you have want to quit without saving, type

>abort

Note: During the ftp process, for a scheduled interval, files are sent sequentially. However, if the time required to ftp those files is greater than the file transfer schedule interval, then another ftp process is spawned. The new ftp session will pick up the files that were not scheduled to be transferred by the previous ftp session. This can result in sending files out of sequence. The following is an example of how the files can get out of sequence: if there are files in the primary directory a1, a2, ...a100. First FTP session picked up the a1, a2, ...a100. During this interval if only a1 ... a32 files got transferred and some new files were created, for example a101... a102, ..a200. Second FTP session was scheduled in 5 minutes after previous began. Second FTP session picked up a101 .. a200. During the next interval this second FTP session transferred files a101 .. a140. The result was a1 .. a32, a101, a102, ..a140, .. and so on. To minimize out of sequence ftp transfer, you may want to adjust the Interval by using the change command in the schedule menu.

10 If you have completed all the preceding steps and the alarm still fails to clear, proceed to the “Next-level-of-support procedure.”

11 You have completed this procedure.

Configuring and activating alternative backup volumes procedure

Overview

This procedure is used to clear alarms BAK50, BAK70, BAK90, NOBAK, NOFL, NOSTOR, and NOVOL by configuring and activating alternative backup volumes for a stream. This procedure might also be used as a corrective action in response to repeated and excessive numbers of SDMB320, SDMB321 and SDMB820 logs.

> ***Note:*** Refer to "Configuring a volume" in Chapter 6 for detailed information about warnings and errors related to volume creation and removal.

This procedure assumes the following:

- You need to configure additional back up storage due to a temporary problem that is forcing the SBA into long-term backup mode. You have determined that the presently-configured backup volumes will probably be filled to capacity before the problem can be corrected.
- You are aware of the fact that when you reconfigure, or swap-out backup volumes of a stream that is in backup mode, you risk losing some billing records during the transition process.
- You are also aware of the fact that if you swap out active backup volumes as an emergency measure, any SWITCH OUTAGE that occurs before recovery completes will cause the stream to be unaware of the swapped out volumes.
- Your original backup volumes are located on a SLM disk drive. If this is not true, pay particular attention to the notes associated with the procedure steps using the disk utility. Note that the command for displaying SLM disk volumes is spelled **DISKUT;LV volume** and the command for displaying DDU disk volumes is spelled **DSKUT;SV volume.**

This procedure configures two DMS backup volumes for a particular stream and replaces the presently-configured backup volumes. The stream will be aware that the replaced volumes exist and will recover files from both the swapped out and swapped in sets of volumes as part of its recovery process. However, if the switch must be SWACTed or RESTARTed before the stream completes recovery, the stream will lose track of the swapped out volumes. This problem can be corrected by the procedure, "Recovering backup files from lost backup volumes" on page 69.

Configuring SLM Disk Backup Volumes

The following steps determine the names and remaining capacities of the two current backup volumes.

1 Post the stream by typing:

>**MAPCI;MTC;APPL;SDMBIL;POST X** (where X is the stream name)

and pressing the Enter key.

2 Get the names of the stream's existing backup volumes by typing

>CONF VIEW X (where X is the stream name)

and pressing the Enter key.

Note 1: SLM volume names on the System Load Module disks can be up to twelve alphanumeric characters in length, but the Nortel-applied prefixes are S00D and S01D. The last eight alphanumeric characters are your installation-unique volume identifiers for the SLM volumes.

Note 2: DDU volume names on the System Load Module disks can be up to eight alphanumeric characters in length, but the Nortel-applied prefixes are D000 and D010. The last four alphanumeric characters are your installation-unique volume identifiers for the DDU volumes.

3 For future reference, note the complete names of the stream's backup volumes.

4 Display the size of the first volume and its number of free blocks by typing

>DISKUT;LV volume (where volume is the name of the first-listed volume)

and pressing the Enter key.

Note: This version of the disk utility command only works if the backup volumes are on SLM disks (their names start with S00D or S01D). If the volume information starts with D000 or D010, the backup volumes are on DDU disks (IOC) and you must use the **DSKUT;SV volume** command to retrieve the equivalent information.

5 Display the size of the second volume and its number of free blocks by repeating the previous step for that volume name.

6 Before you proceed to the next step, confirm that you have noted, in some manner similar to the following example, the information you retrieved during all of the above steps.

Example:

```
Total free space for drive S00D is 1000 Mbytes
Total free space for drive S01D is 1500 Mbytes

The first-listed volume for the xxxx stream is named
S00Dxxxx.  NNNN block are allocated to the file.

The second-listed volume for the xxxx stream is named
S01Dxxxx.  NNNN block are allocated to the file.
```

The following steps determine the required capacities and the names of the two new backup volumes that will replace the existing backup volumes.

7 Using the disk and volume sizing information you recorded in previous steps and your estimate of the number of records that may have to be backed up before the temporary problem is corrected, determine the sizes required for the new backup volumes. Note the required block sizes for future reference.

Note: SLM disk drives use 512-byte blocks, not 1024-byte blocks which are used by DDU disk drives.

8 Determine the twelve character names you will use for the new volumes. Refer to the notes on volume names in a previous procedure step. For future reference, note the names you have chosen along with their required sizes.

The following steps determine which SLM disks have enough available space to contain the two alternative backup volumes.

9 Busy and set the affected SLM offline by typing:

>mapci;mtc;iod;slm n;bsy (where n is the SLM disk drive number, 0 or 1)

and pressing the Enter key.

10 Access the Disk administration level, by typing

>diskadm X {where X is a disk name S00D or S01D}

and pressing the Enter key.

11 Determine the free disk space by typing

>dd

and pressing the Enter key.

Example: The following is an example response to this command with disk S00D specified:

```
Disk drive information for S00D
Drive name                      :  S00D
Vendor Information              :  SEAGATE  ST31051N 9470
Date last formatted             :  1976/01/01 05:38:44.718 THU.
Date last modified              :  1998/04/23 17:46:59.754 THU.
Total space for volumes         :  1000 Mbytes
Total Free space                :  174 Mbytes
Size of largest free segment    :  174 Mbytes

1 Block = 512 bytes
```

12 If you have not yet recorded the available storage for both SLM drives, return to step 9 to get the total free (available) space for the S01D drive.

13 If the SLM available storage is insufficient, skip the remainder of this procedure and go to the topic, “Configuring DDU disk backup volumes” on page 66.

14 Before you proceed to the next step, confirm that you have noted the total free space for each disk in some manner similar to the following

Example:

```
Total free space for drive S00D is 1000 Mbytes
Total free space for drive S01D is 1500 Mbytes
```

The following steps create and swap-in new backup volumes.

15 Assuming your last **diskadm** command was applied to the S01D drive, if the new logical volumes are to be placed on S00D, type

>diskadm S00D

and press the Enter key.

16 Create a new logical volume by typing

>cv X Y std (where X is the backup volume name and where **Y** is the blocksize of the volume)

and pressing the Enter key.

Example: The command **cv AMA8 50 std**, would cause the DMS to create logical volume S00DAMA8, with fifty 512-byte blocks (or 25 total K-bytes) of available disk storage.

17 Repeat the previous step to create the second logical volume.

18 Exit the disk administration level at the prompt by typing

>quit

and pressing the Enter key.

19 For the SLM disk drive(s) that you busied in earlier steps, RTS them to the InSv state by typing

>mapci;mtc;iod;slm n;rts (where n is the SLM disk drive number, 0 or 1)

and pressing the Enter key.

20 After receiving confirmation that the files were successfully created, configure the stream to use the logical volumes you just created by typing

>CONF SET X Y Z (where **X** is the stream name, **Y** is the dms_backup-1 volume and Z is the dms_backup_2 volume.

and pressing the Enter key.

21 Alert all operational personnel concerned with this DMS switch of the names of the old and new backup volumes and the procedure you used to swap them. Insure that they are aware of the fact that any RESTARTS and SWACTS occurring before the stream returns to normal mode can cause a serious loss of billing records. It is imperative that the mode of the stream be closely monitored to insure that it returns to normal mode without an intervening SWACT or RESTART. If such an intervening event does take place, refer to the procedure, “Recovering backup files from lost backup volumes” on page 69

You have completed this procedure.

Configuring DDU disk backup volumes

This procedure assumes the following:

- You have come to this procedure because you are running out of backup volume disk space on the SLM disks and have determined through the procedure "Configuring SLM Disk Backup Volumes" on page 62 that you must use your available DDU disk space to create replacement SBA backup volumes.
- From the SLM procedure, you have recorded the names and remaining capacities of the two current backup volumes in some form similar to the one shown in the following example:

Example:

```
Total free space for drive S00D is 1000 Mbytes
Total free space for drive S01D is 1500 Mbytes

The first-listed volume for the xxxx stream is named
S00Dxxxx.  NNNN block are allocated to the file.

The second-listed volume for the xxxx stream is named
S01Dxxxx.  NNNN block are allocated to the file.
```

If you know that replacement backup volumes have been previously allocated on the DDU, you can configure them just as you would configure SLM volumes using:

>CONF SET X Y Z (where **X** is the stream name, **Y** is the dms_backup-1 volume and Z is the dms_backup_2 volume.

If you need to configure DDU back up volumes, continue with the detailed procedure below.

The following steps determine the required capacities and the names of the two alternative backup volumes that will replace the presently-configured backup volumes.

1 Using the disk and volume sizing information you recorded in the SLM procedure steps and your estimate of the number of records that may have to be backed up before the temporary problem is corrected, determine the size required for the new DDU backup volumes. Note the required sizes for future reference.

Note: DDU disk drives use 1024-byte blocks, not 512-byte blocks which are used by SLM disk drives.The following steps determine the available DDUs and their disk space:

2 Determine the eight-character names to be used for the new volumes. Volume names on the DDU disks can be up to eight alphanumeric characters in length, but the Nortel-applied prefixes are D000 and D010. This leaves 4 alphanumeric characters that you can use to individually identify the volumes.

For future reference, note the proposed names with their required sizes (from the previous step).

The following steps determine the available DDUs and their disk space available:

3 Type

>mapci;mtc;iod

and press the Enter key.

4 Locate the DDUs by typing

>listdev ddu

and pressing the Enter key.

5 For future reference, note the DDU numbers and their respective IOC, CARD and PORT locations.

The following step finds a DDU containing sufficient available space for the alternative backup volumes. Do each of the sub-step within the following step for each DDU until you find DDU(s) that can be used for the new backup volumes.

6 BSY the DDU by typing

>ioc # (where # is the IOC controlling a DDU)

and pressing the Enter key. Then type

>card # (where # is the DDU card)

and press the Enter key. Then type

>bsy

and press the Enter key

Confirm that the Card # Unit # you selected now has a status of MBSY, then type

>dskalloc # (where # is the unit number)

and press the Enter key.

For future reference, note the free space from the alloc displayed.

If you have found a DDU with sufficient available disk space for backup volumes, go on to the next step. Otherwise, type

>rts

and press the Enter key. Quit back to the IOC menu and perform the procedures in this step for each DDU until you find one with sufficient space for the backup volumes.

The following steps create and swap-in new backup volumes.

7 Create a new logical volume by typing

>add x y (where **X** is the backup volume name and where **Y** is the blocksize of the volume)

and pressing the Enter key.

Example: The command **D000AMA8 50**, would cause the DMS to create logical volume D000AMA8, with fifty (1024-byte) blocks (or 50 total K-bytes) of available disk storage.

Verify the names and update the volume identifiers by typing

>display

and pressing the Enter key, then typing

>diradd x (where x is the backup volume name)

and pressing the Enter key, then type

>update

and press the Enter key

8 To configure the other backup volume, repeat the previous step.

9 Return the DDU to service by typing

>rts

10 Set the volumes you just created as the backup volumes by typing

>CONF SET X Y Z (where **X** is the stream name, **Y** is the dms_backup-1 volume and Z is the dms_backup_2 volume.

and pressing the Enter key.

11 Alert all operational personnel concerned with this DMS switch of the names of the old and new backup volumes and the procedure you used to swap them. Insure that they are aware of the fact that any RESTARTS and SWACTS occurring before the stream returns to normal mode can cause a serious loss of billing records. It is imperative that the mode of the stream be closely monitored to insure that it returns to normal mode without an intervening SWACT or RESTART. If such an intervening event does take place, refer to “Recovering backup files from lost backup volumes” on page 69.

12 Exit back to the command prompt by typing

>quit all

and pressing the Enter key.

You have completed this procedure.

Recovering backup files from lost backup volumes

You are here because you were forced to swap out backup files using "Configuring SLM Disk Backup Volumes" or "Configuring DDU disk backup volumes" , and an intervening SWACT or RESTART, as described in that procedure has occurred; this has caused the SBA to be unaware of backed up files on the old volumes that you swapped out,

This procedure swaps the old volumes back in as the primary backup files. To prevent loss of billing records, it is imperative that the conditions and actions contained in the following procedure be checked and followed precisely.

Prerequisites:

- Names of swapped out volumes.
- The SBA stream is operating in normal mode. (The SBA has completed its recovery of the files from the alternative volumes you configured using the "Configuring SLM Disk Backup Volumes" or "Configuring DDU disk backup volumes" procedure.)

The following steps confirm that the current backup volumes are those you set up earlier in "Configuring SLM Disk Backup Volumes" or "Configuring DDU disk backup volumes"

1 Post the stream by typing:

>**MAPCI;MTC;APPL;SDMBIL;POST X** (where X is the stream name)

and pressing the Enter key.

2 To confirm that the names of the stream's existing backup volumes are the volumes you swapped in earlier, type

>CONF VIEW X (where X is the stream name)

and press the Enter key.

3 Using the notes you made during the "Configuring SLM Disk Backup Volumes" or "Configuring DDU disk backup volumes" procedure, confirm that the backup volumes are those you setup.

If the names are those you set, continue with step 4. If the names are not the same, do not continue with this procedure until you have determined if someone else reconfigured the backup volumes since you did.

The following steps swap the original backup volumes back in as the primary backup volumes.

4 Refer to the notes you made earlier during the “Configuring SLM Disk Backup Volumes” or “Configuring DDU disk backup volumes” procedure, then type

>CONF SET X Y Z (where **X** is the stream name, **Y** is the original dms_backup-1 volume and Z is the original dms_backup_2 volume.

and press the Enter key.

The non-empty backup volumes will be automatically detected by the SBA audits, the SBA will place the stream into recovery mode, and the files from the original backup volumes will be sent to the SDM.

5 Alert all operational personnel concerned with this DMS switch that you have reconfigured the original backup volumes as the primary backup volumes and the files they contained are now recovered.

BAK50 alarm clearing procedure

Indication

At the MTC level of the MAP display, BAK50 appears under the APPL header of the alarm banner and indicates an alarm for the backup system.

Meaning

The SBA backup system is using more than 50% of the total space on backup volumes. The records are stored on the CM backup volume. If the stream is set to ON, the alarm is minor; if the stream is set to BOTH, no alarm occurs.

The SDM generates the SDMB820 log report when this alarm is raised.

Impact

If the disk usage for the SBA backup system reaches 100% of its capacity, data that should go to backup storage will be lost.

If the stream is set to BOTH, data is still being routed to the device-independent recording package (DIRP). Therefore, you can send the billing records to the operating company's collector through the previously-established network that DIRP uses.

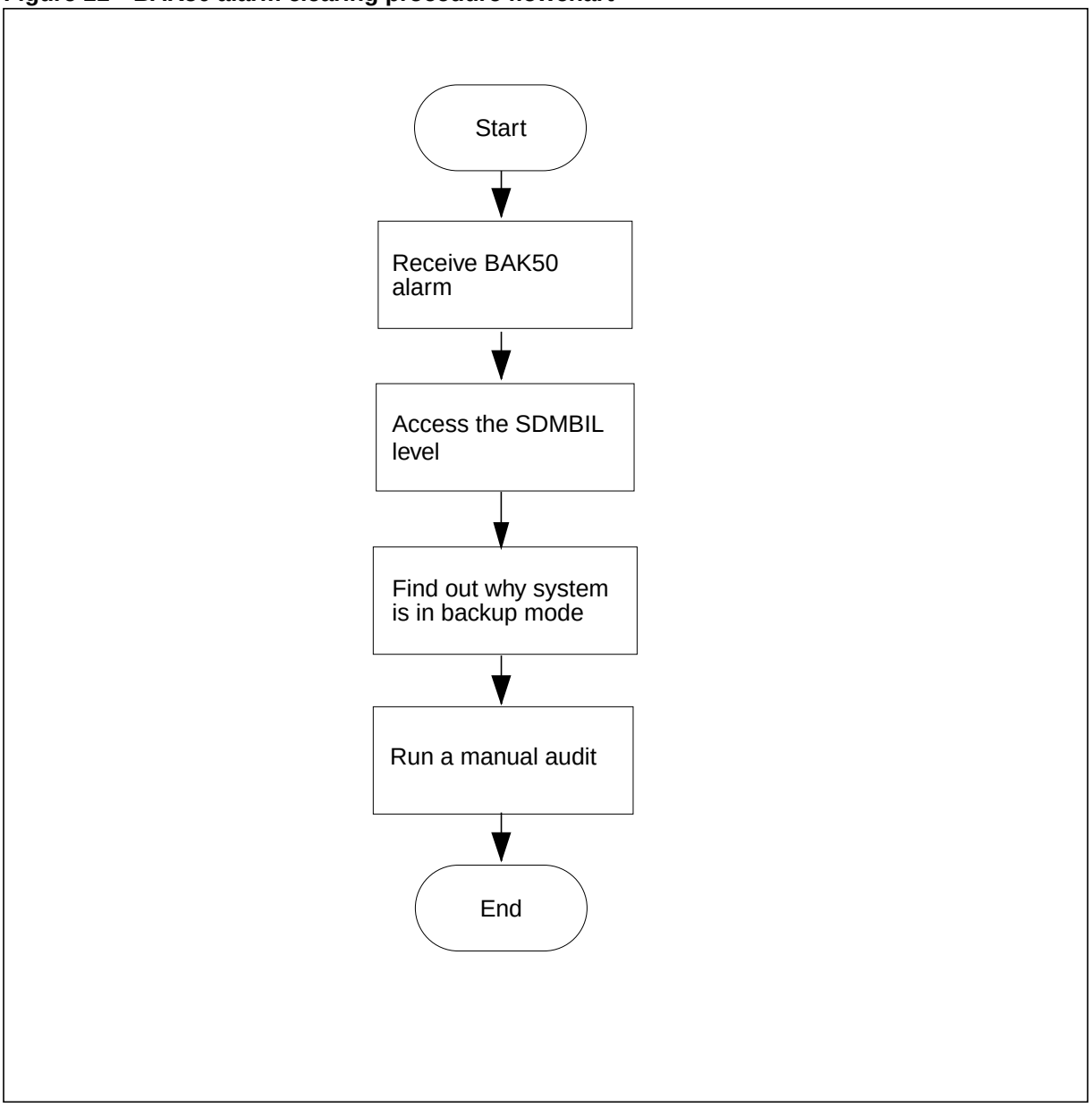
Common procedures

This procedure references the "Configuring and Activating Replacement Backup Volumes" and the "Next-level-of-support procedure."

Action

The following flowchart is only a summary of the procedure. Use the instructions in the step-action procedure that follows the flowchart to clear the alarm.

Figure 11 BAK50 alarm clearing procedure flowchart



At the MAP display

1 Type

>MAPCI;MTC;APPL;SDMBIL;POST X {where **X** is the stream name}

and press the Enter key.

2 Find out why the system is in backup mode. Check the system node state.

a. If SDM is Sysb, it is a NOCOM alarm. See the “NOCOM alarm clearing procedure.”

b. If SDM is ManB, find out why and for how long (to determine if you still have sufficient space in the backup volume).

c. If you determine if you have a long term problem, proceed to the next step.

3 Display the names of the backup volumes by typing

>CONF VIEW X {where **X** is the stream name}

and press the Enter key.

4 Display the size of the first volume and its number of free blocks by typing

>DISKUT;LV volume (where volume is the name of the first-listed volume)

and pressing the Enter key.

Note: This version of the disk utility command only works if the backup volumes are on SLM disks (their names start with S00D or S01D). If the volume information starts with D000 or D010, the backup volumes are on DDU disks (IOC) and you must use the **DSKUT;SV volume** command to retrieve the equivalent information.

5 Display the size of the second volume and its number of free blocks by repeating the previous step for that volume name.

If the volumes are large enough that the remaining free blocks are sufficient, no action is required.

6 If the volumes are not large enough and you will soon reach storage capacity, go to the common procedure, “Configuring and activating alternative backup volumes procedure” on page 61 to assign new volumes.

7 Use **Audit** to clear the alarm.

8 If you have completed all the preceding steps and the alarm still will not clear, go to the common procedure, “Next-level-of-support procedure” on page 53

9 You have completed this procedure.

BAK70 alarm clearing procedure

Indication

At the MTC level of the MAP display, BAK70 appears under the APPL header of the alarm banner and indicates an alarm for the backup system.

Meaning

The backup system is using more than 70% of the total space on backup volumes. The records are stored on the CM backup volume. If the stream is set to ON, the alarm is major; if the stream is set to BOTH, the alarm is minor.

The SDM generates the SDMB820 log report when this alarm is raised.

Impact

If the disk usage reaches 100% of its capacity, data that should go to backup storage might be lost.

If the stream is set to BOTH, data is still being routed to DIRP. Therefore, you can send the billing records to the operating company's collector through the previously-established network that DIRP uses.

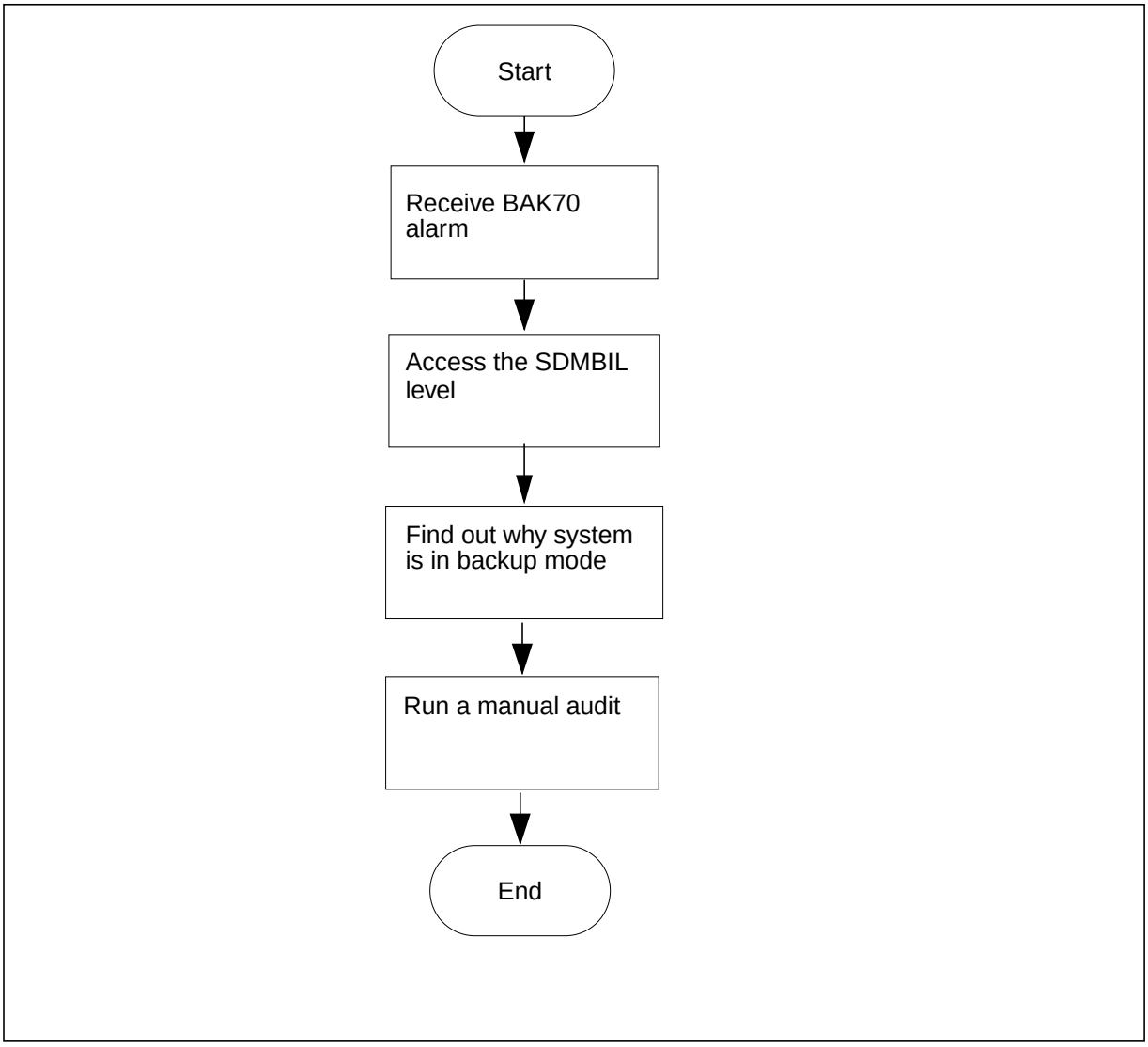
Common procedures

This procedure references the "Configuring and Activating Replacement Backup Volumes" and the "Next-level-of-support procedure."

Action

The following flowchart is only a summary of the procedure. Use the instructions in the step-action procedure that follows the flowchart to clear the alarm.

Figure 12 BAK70 alarm clearing procedure flowchart



At the MAP display

1 Type

>MAPCI;MTC;APPL;SDMBIL;POST X {where **X** is the stream name}

and press the Enter key.

2 Find out why the system is in backup mode. Check the system node state.

If SDM is Sysb, it is a NOCOM alarm. See the NOCOM alarm clearing procedure.

If SDM is ManB, find out why and for how long (to determine if you still have sufficient space in the backup volume).

If you determine that you have a long term problem, proceed to the next step.

3 Type

>CONF VIEW X {where **X** is the stream name}

and press the Enter key to display the names of the backup volumes.

4 Display the size of the first volume and its number of free blocks by typing

>DISKUT;LV volume (where volume is the name of the first-listed volume)

and pressing the Enter key.

Note: This version of the disk utility command only works if the backup volumes are on SLM disks (their names start with S00D or S01D). If the volume information starts with D000 or D010, the backup volumes are on DDU disks (IOC) and you must use the **DSKUT;SV volume** command to retrieve the equivalent information.

5 Display the size of the second volume and its number of free blocks by repeating the previous step for that volume name.

If the volumes are large enough that the remaining free blocks are sufficient, no action is required.

6 If the volumes are not large enough and you will soon reach storage capacity, go to the common procedure, “Configuring and activating alternative backup volumes procedure” on page 61 to assign new volumes.

7 Use **Audit** to clear the alarm.

8 If you have completed all the preceding steps and the alarm still will not clear, go to the common procedure, “Next-level-of-support procedure” on page 53

9 You have completed this procedure.

BAK90 alarm clearing procedure

Indication

At the MTC level of the MAP display, BAK90 appears under the APPL header of the alarm banner and indicates an alarm for the backup system.

Meaning

The backup system is using more than 90% of the total space on backup volumes. The records are stored on the CM backup volume. If the stream is set to ON, the alarm is critical; if the stream is set to BOTH, the alarm is major.

The SDM generates the SDMB820 log report when this alarm is raised.

Impact

If the disk usage reaches 100% of its capacity, data that should go to backup storage might be lost.

If the stream is set to BOTH, data is still being routed to DIRP. Therefore, you can send the billing records to the operating company's collector through the previously-established network that DIRP uses.

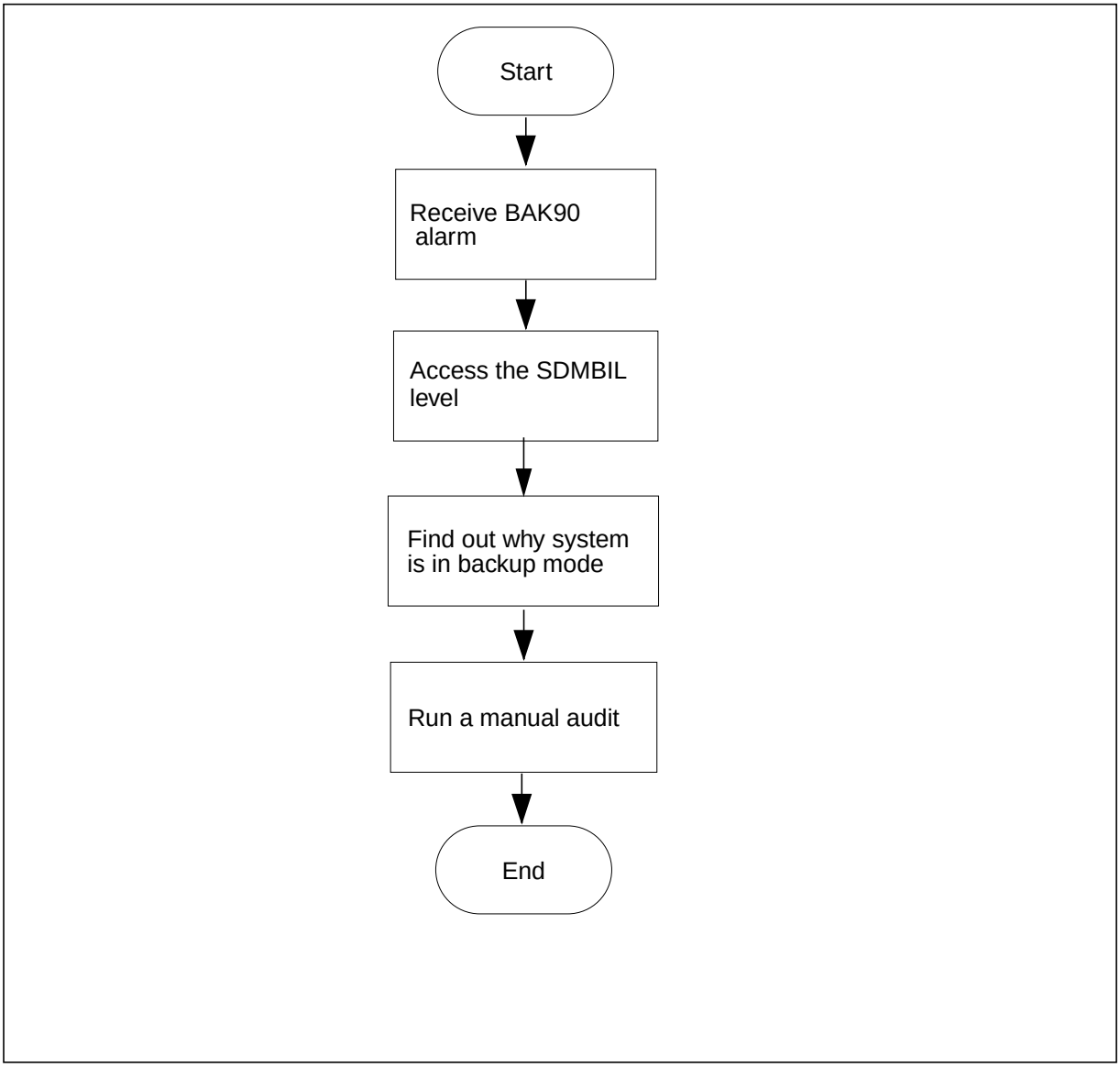
Common procedures

This procedure references the "Configuring and Activating Replacement Backup Volumes" and the "Next-level-of-support procedure."

Action

The following flowchart is only a summary of the procedure. Use the instructions in the step-action procedure that follows the flowchart to clear the alarm.

Figure 13 BAK90 alarm clearing procedure flowchart



At the MAP display.

1 Type

>MAPCI;MTC;APPL;SDMBIL;POST X {where **X** is the stream name}

and press the Enter key.

2 Find out why the system is in backup mode. Check the system node state.

If SDM is Sysb, it is a NOCOM alarm. See the NOCOM alarm clearing procedure.

If SDM is ManB, find out why and for how long (to determine if you still have sufficient space in the backup volume).

If you determine that you have a long term problem, proceed to the next step.

3 Type

>CONF VIEW X {where **X** is the stream name}

and press the Enter key to display the names of the backup volumes.

4 Display the size of the first volume and its number of free blocks by typing

>DISKUT;LV volume (where volume is the name of the first-listed volume)

and pressing the Enter key.

Note: This version of the disk utility command only works if the backup volumes are on SLM disks (their names start with S00D or S01D). If the volume information starts with D000 or D010, the backup volumes are on DDU disks (IOC) and you must use the **DSKUT;SV volume** command to retrieve the equivalent information.

5 Display the size of the second volume and its number of free blocks by repeating the previous step for that volume name.

If the volumes are large enough that the remaining free blocks are sufficient, no action is required.

6 If the volumes are not large enough and you will soon reach storage capacity, go to the common procedure, “Configuring and activating alternative backup volumes procedure” on page 61 to assign new volumes.

7 Use **Audit** to clear the alarm.

8 If you have completed all the preceding steps and the alarm still will not clear, go to the common procedure, “Next-level-of-support procedure” on page 53.

9 You have completed this procedure.

BAKUP alarm clearing procedure

Indication

At the MTC level of the MAP display, BAKUP appears under the APPL header of the alarm banner and indicates an alarm for the backup system.

Meaning

Records are stored on the CM backup volume for longer than 10 minutes. If the stream is set to ON, the alarm is major; if the stream is set to BOTH, the alarm is minor.

The SDM generates the SDMB820 log report when this alarm is raised.

Impact

Depending on the rate at which new data is sent to backup storage, a problem with the SBA disk storage capacity might occur. If such a problem occurs, BAKnn alarms (where nn is percentage of disk storage used) will notify you.

If the stream is set to BOTH, data is still being routed to DIRP. Therefore, if the SBA storage reaches capacity and cannot accept more data, you can send the billing records to the operating company's collector through the previously-established network that DIRP uses.

It is possible for a backup volume to fill up and it can be swapped for a volume that has free space using the **CONF SET** command.

Once the system goes into recovery mode, the volume that was swapped out can be swapped back into the system to complete the recovery.

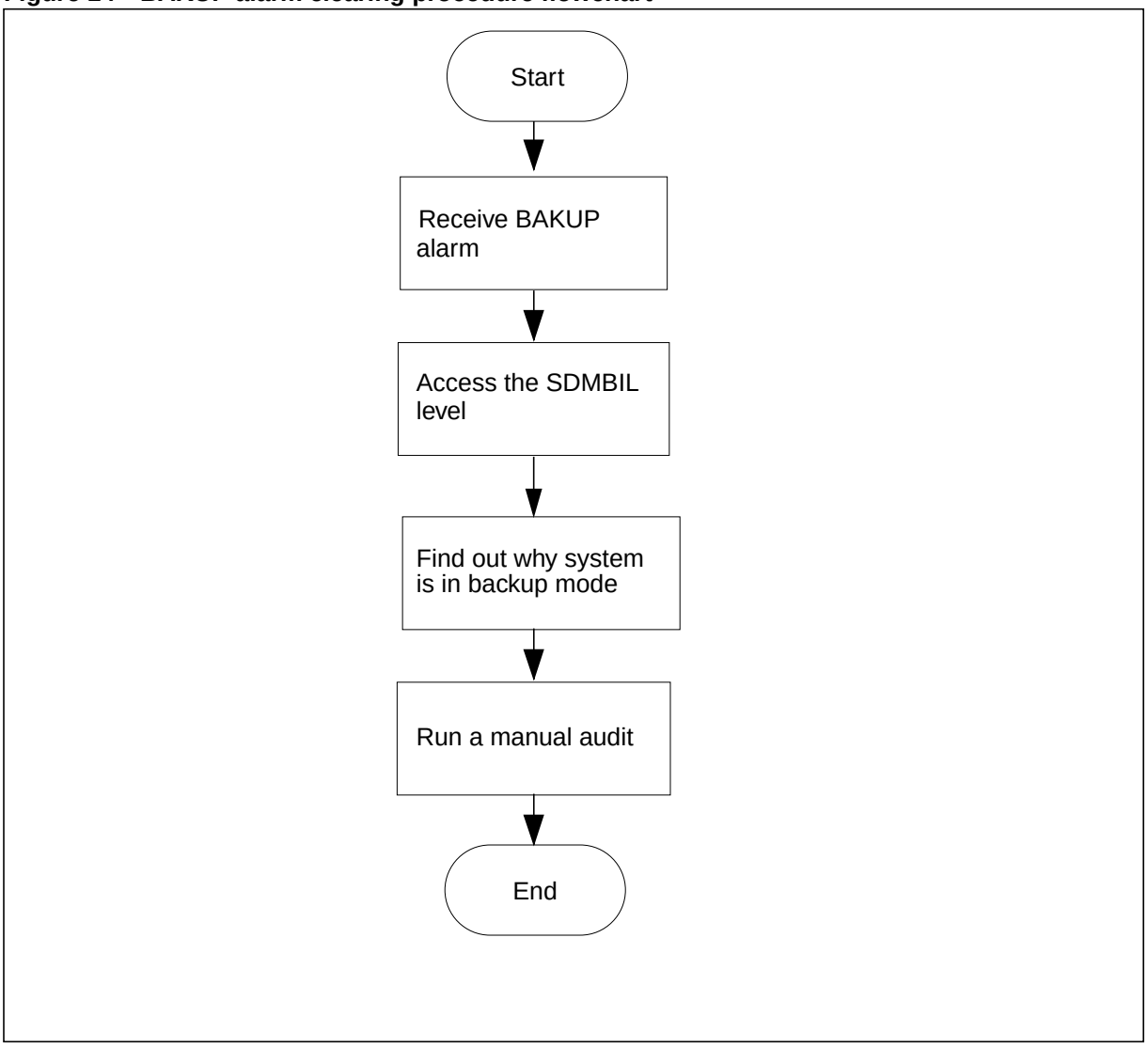
Common procedures

This procedure references the "Configuring and Activating Replacement Backup Volumes" and the "Next-level-of-support procedure."

Action

The following flowchart is only a summary of the procedure. Use the instructions in the step-action procedure that follows the flowchart to clear the alarm.

Figure 14 BAKUP alarm clearing procedure flowchart



At the MAP display

1 Type

>MAPCI;MTC;APPL;SDMBIL;POST X {where **X** is the stream name}

and press the Enter key.

2 Find out why the system is in backup mode. Check the system node state.

a. If SDM is Sysb, it is a NOCOM alarm. See the NOCOM alarm clearing procedure.

b. If SDM is ManB, find out why and for how long (to determine if you still have sufficient space in the backup volume).

c. If you determine that you have a long term problem, proceed with caution as you can run into storage problems.

3 If you have completed all the preceding steps and the alarm still fails to clear, proceed to the "Next-level-of-support procedure."

Note: It is possible that the backup volumes are filled up. They can be swapped for volumes that have free space; when the SBA finishes recovery of the swapped in volumes, it will recover files from the swapped out volumes. For more information, refer to “Configuring and activating alternative backup volumes procedure” on page 61.

4 You have completed this procedure.

CDRT alarm clearing procedure

Indication

At the MTC level of the MAP display, CDRT appears under the APPL header of the alarm banner and indicates an SDM alarm.

Meaning

The CDRT alarm indicates the value of the active template ID template on the DMS CM is not set to “0” (zero) or it does not match the value of the CurrentTmpltID MIB parameter. Log report SDMB370 is generated when this alarm is raised; log report SDMB670 is generated when this alarm is cleared.

Impact

The CDR to BAF conversion process will not create BAF records.

Common procedures

This procedure references the “Next-level-of-support procedure.”

Action

If this alarm occurs, set the value of the CurrentTmpltID MIB parameter to match the value (template ID) of the active template ID on the DMS CM or set the active template ID on the CM to “0” (zero).

You can determine the value of the active template ID on the DMS CM by using the following CM side command:

CTMPLT “template all”

You can set the CurrentTmpltID MIB parameter to match the value of the active template ID on the CM by typing:

mib cdr set CurrentTmpltID *value*

where

value is the value of the active template on the DMS CM

Note: If you change the CurrentTmpltID Mib value after the stream is turned on, you must BSY, then RTS the SBA application to activate the change.

If the alarm persists, the refer to the “Next-level-of-support procedure.”

DSKWR alarm clearing procedure

Indication

At the MTC level of the MAP display, DSKWR appears under the APPL header of the alarm banner and indicates a critical disk alarm.

Meaning

The system is unable to write records to the SDM disk because the disk is unavailable or the disk is full.

The SDM generates the SDMB355 log report when this alarm is raised.

Impact

The DMS switch/CM cannot send records to the SDM so the DMS switch/CM is sending them to backup storage. This storage is limited. As the backup storage becomes filled, alarms notify you how much of its capacity is used.

Common procedures

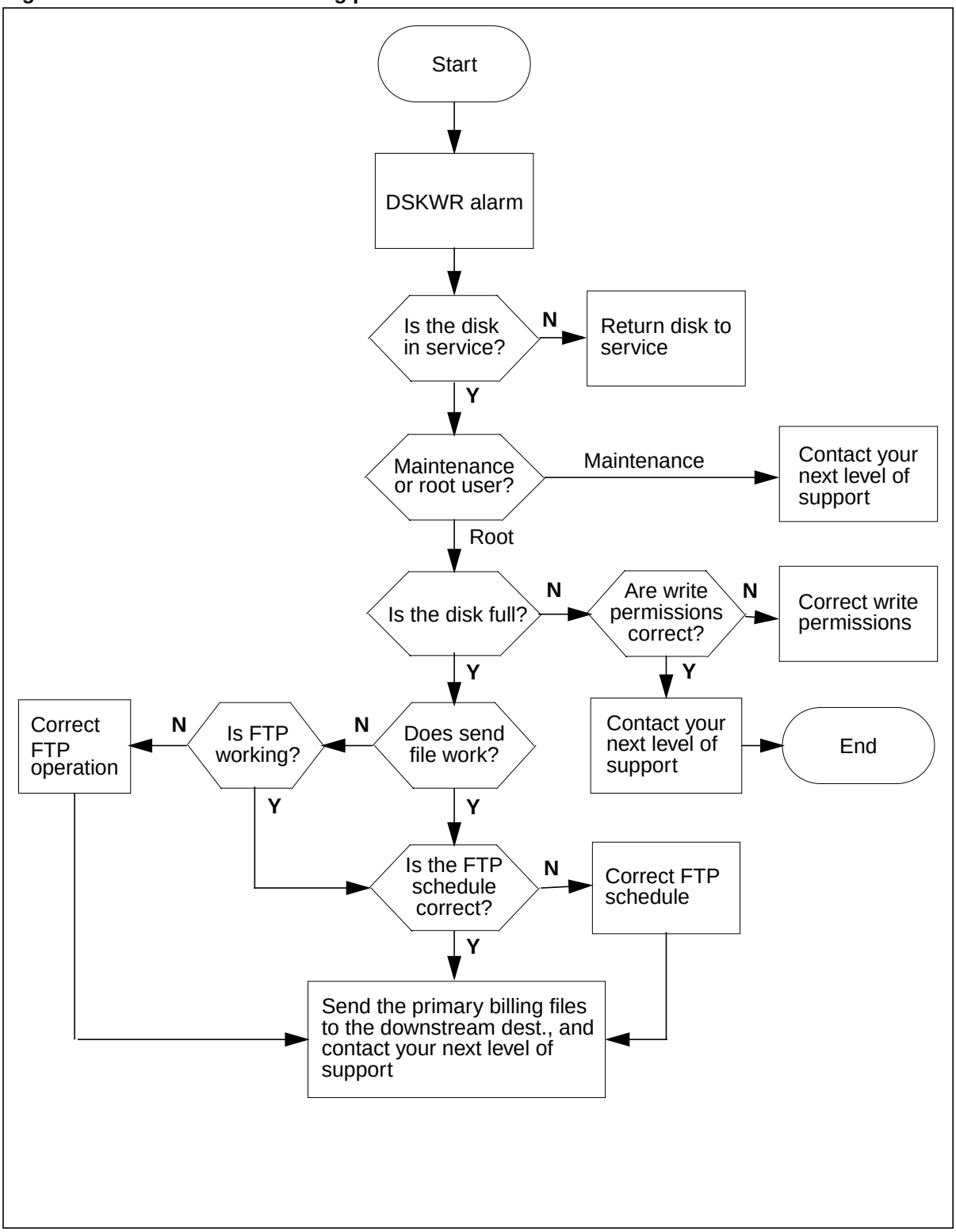
The following common procedures are referenced:

- “Verifying FTP procedure”
- “Verifying the FTP schedule”
- "Next-level-of-support procedure"

Action

The following flowchart is only a summary of the procedure. Use the instructions in the step-action procedure that follows the flowchart to clear the alarm.

Figure 15 DSKWR alarm clearing procedure flowchart



At the SDM

1 Type

#sdmmtc

and press the Enter key.

2 Type

>mtc;hw

and press the Enter key.

Example response

```
SDM Node State:              ISTb
SDM Hardware State:          InSv

         I F C E D D D D 5
         C A P T S S A A 1
         M N U H K K T T 2
                1 2 1 2

Domain 0 . . . . . . . . .
Domain 1 . . . . . . . . .
```

3 If there is a period (.) under both DSK1 and DSK2, the disk hardware is in service. Proceed to step 4.

If there is not a period (.) under either DSK1 or DSK2, that disk hardware is not in service. Type

>rts X Y

where

X	is the number of the domain in which the disk is not in service
Y	is the name of the disk that is not in service

Press the Enter key to return the disk to service.

Example input command:

rts 0 1

Note: If only one disk is out of service, you should not get a DSKWR alarm.

If the alarm clears, you have completed this procedure.

If the alarm does not clear, go to step 4.

4 Display the storage usage by typing

>mtc;sys;storage

and press the Enter key.

Example response:

```
SDM Node State:ISTb
SDM System State:ISTb
SDM Storage State:ISTb

Disk mirroring (rootvg),InSv
  Volume Size (MB) (% full/ threshold)
```

```
 1 /  20          25/ 80
 2 /usr192        85/ 90
 3 /var40         29/ 80
 4 /tem20         99/ 90
 5 /home300       57/ 70
 6 /sdm296        56/ 90
(unallocated) 740

Disk mirroring (datavg):      InSv
  Volume           Size (MB)  (% full/ threshold)
 7/sba/ama             416                  76/ 80
(unallocated)         1600
```

Line 7 (/sba/ama) shows the total size of the disk storage for the ama stream, the percentage of the disk storage that is used, and the threshold percentage that was set for this storage.

This information should help you to determine if the disk is full. The disk may be full because a primary file needs to be FTPed. If it is full, you will get an associated LODSK alarm. To alleviate the full condition, you should send files to the downstream processor. Before doing a sendfile, you should check for an FTP critical alarm.

5 To send the primary billing files to the operating company's collector, type

>sendfile X -p {where **X** is the stream name}

and press the Enter key.

If the Sendfile command is not successful, verify that FTP is working.

Verify the FTP schedule. If the alarm still fails to clear, proceed to the "Next-level-of-support procedure."

6 You must be a root user to proceed. Type

>quit all

and press the Enter key.

7 You need to check for orphan files and for files someone may have copied to the /sba/ama/base directory. To do that, type

>cd /sba/X {where **X** is the stream name}

and press the Enter key.

Your disk may be full because files have accumulated in the orphan directory. If you are unsure of how to clean up the directory, contact your next level of support.

8 If cleaning up the directory does not resolve the problem, you need to check the permissions and ownership of the disk.

Verify the write permissions and ownership by typing

>ls -l

and press the Enter key.

The following example shows the output from these commands.

```
drwxr-xr-x 2 maint maint  512 Jul 16 13:24 open
drwxr-xr-x 2 maint maint 1024 Jul 11 13:37 links
drwxr-xr-x 2 maint maint  512 Jul 11 14:51 orphan
```

```
drwxr-xr-x 2 maint maint  512 Jul 16 13:24 closedNotSent
drwxr-xr-x 2 maint maint 2048 Jul 16 13:24 closedSent
```

The first column shows the permissions, the third column shows the ownership, and the last column shows the directory to which the permissions and ownership apply.

9 If the permissions and file ownership are correct, contact your next level of support.

If the permissions for a directory are not rwx r-x r-x, type

>chmod 755 directory

where

directory — is the directory for which you are changing permissions. Press the Enter key.

If the ownership for a directory is not maint, type

>chown maint directory

where

directory — is the directory for which you are changing ownership. Press the Enter key.

10 If you have completed all the preceding steps and the alarm still fails to clear, proceed to the "Next-level-of-support procedure."

11 You have completed this procedure.

FTP alarm clearing procedure

Indication

At the MTC level of the MAP display, FTP appears under the APPL header of the alarm banner and indicates an alarm for FTP.

Meaning

The FTP process failed. The SDMB logs provide details about the FTP problem. This alarm can be either critical or major.

The SDM generates the SDMB375 log report when this alarm is raised.

Impact

The SDM cannot FTP files to the downstream destination. The SDM storage might reach capacity, depending on the amount of storage and the volume of records. As the SDM storage becomes filled, alarms notify you how much of its capacity is used.

When this storage is full, the DMS switch/CM will send subsequent records to backup storage. As the backup storage becomes filled, alarms notify you how much of its capacity is used.

Common procedures

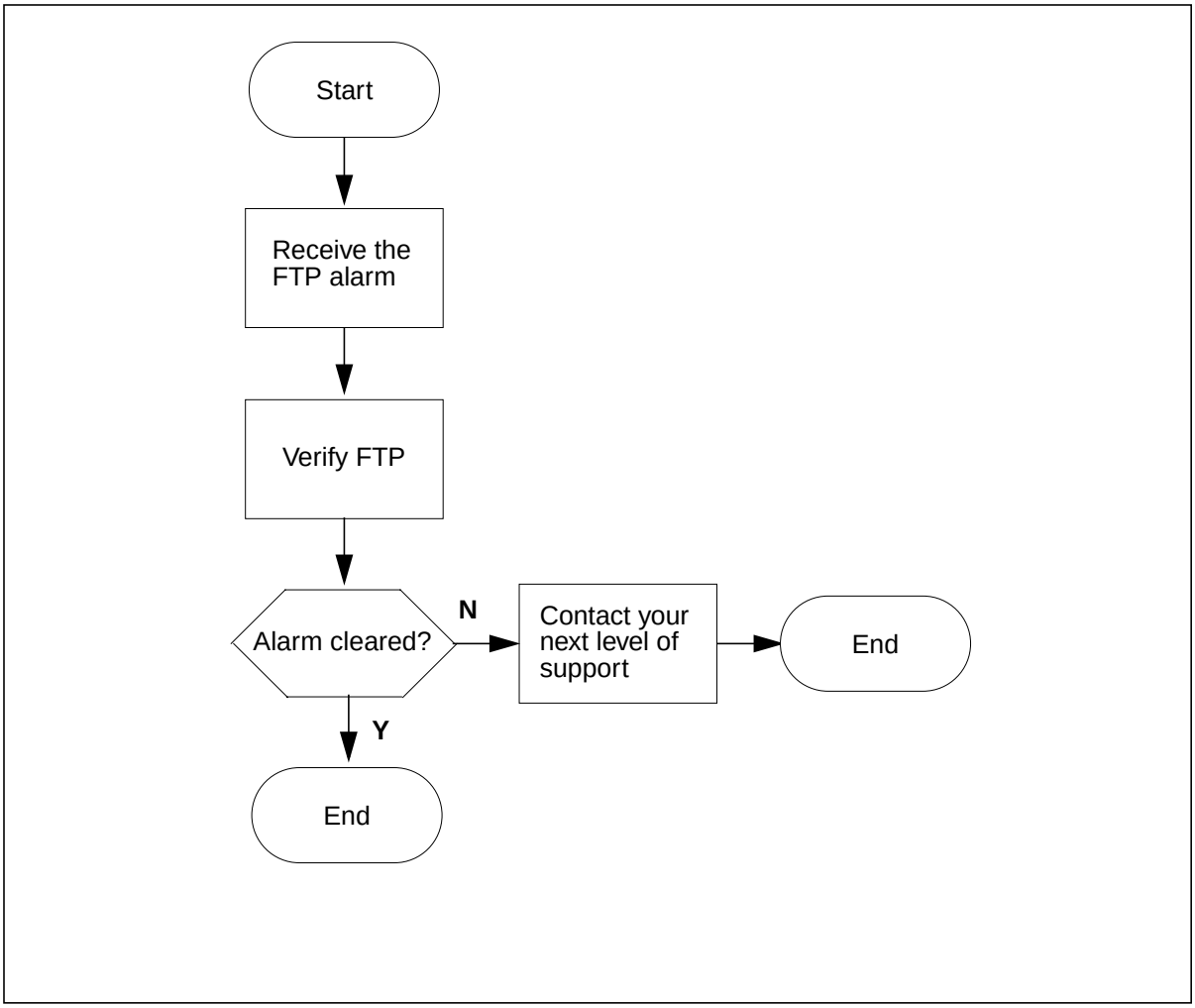
The following common procedures are referenced:

- “Verifying FTP procedure”
- "Next-level-of-support procedure"

Action

The following flowchart is only a summary of the procedure. Use the instructions in the step-action procedure that follows the flowchart to clear the alarm.

Figure 16 FTP alarm clearing procedure flowchart



At the MAP display

1 To look at the SDMB logs for details about the FTP problem, type

>LOGUTIL;OPEN SDMB

and press the Enter key.

The display shows the most recent log. To display previous logs, type

>BACK ALL

and press the Enter key to display all previous logs. Or type

>BACK n

where

n is any number to see that number of previous logs. Press the Enter key to display that number of previous logs.

2 Verify that FTP is working. Refer to the “Verify FTP procedure.”

3 If you have completed all the preceding steps and the alarm fails to clear, proceed to the "Next-level-of-support procedure."

4 If the alarm clears, you have completed this procedure.

FTPW alarm clearing procedure

Indication

At the MTC level of the MAP display, FTPW appears under the APPL header of the alarm banner and indicates an alarm for FTP.

Meaning

The FTP process failed. The SDMB375 log report provides details about the FTP problem. Log report SDMB675 is generated when this alarm is cleared. This alarm can be either critical or major.

Impact

The SDM cannot send files to the downstream destinations. The SDM storage might reach capacity, depending on the amount of storage and the volume of records. When this storage is full, the DMS switch/CM will send subsequent records to backup storage. When backup storage reaches capacity, billing records are lost.

Common procedures

The following common procedures are referenced:

- “Verifying FTP procedure”
- "Next-level-of-support procedure"

Action

Complete “Verifying FTP procedure.” If you have completed all the preceding steps and the alarm fails to clear, proceed to the "Next-level-of-support procedure."

IFT alarm clearing procedure

Indication

At the MTC level of the MAP display, IFT appears under the APPL header of the alarm banner and indicates an alarm for the inbound file transfer connection.

Meaning

The IFT alarm indicates a problem with inbound file transfer has occurred. This alarm will be raised if the link in the ftpdir directory of a stream cannot be managed, or if access to a ftpdir directory is not capable. This alarm can be minor, major, or critical.

Detailed information about the alarm condition will be documented in a log report that is generated when the alarm is raised (SDMB375 or SDMB380). After this alarm is cleared, log report SDMB675 or SDMB680 will be generated.

Impact

Inbound file transfers attempts for the stream will not be successful.

Common procedures

This procedure references the “Next-level-of-support procedure.”

Action

This alarm will occur only in rare situations. If this alarm occurs, ensure all other SBA alarms are cleared.

There are four ways the root user can clear the alarm conditions. Determine which alarm is present by observing the log text and mapping it to the associated alarm.

1 ftpdir directory has no write access

Verify that the /home/maint/ftpdir directory has write permissions, if not change the permissions with the chmod command:

>chmod 777 /home/maint/ftpdir

Verify that the <rcLogicalVolumeDirectory>/ftpdir directory has write permissions. If not remove the directory, the next interval will recreate with the correct permissions. All links will be recreated.

>rm /<rcLogicalVolumeDirectory>/ftpdir

2 No space left in storage for the stream.

Retrieve some closed not sent files (.pri *for DNS* or .unp *for DIRP*) and rename them to closed sent (.sec *for DNS* or .pro *for DIRP*). The closed sent files will be removed from the system to make more space as needed. Consider increasing the size of the logical volume if this is a continuing problem.

3 <rcLogicalVolumeDirectory>/ftpdir does not exist

Verify that the <rcLogicalVolumeDirectory> is correct. Most likely the path name was incorrect when entering it into CONFSTRM add or change.

4 <rcLogicalVolumeDirectory>/ftpdir is not a directory

For reasons unknown, the rcLogicalVolume/ftpdir is not a directory.

>rm <rcLogicalVolumeDirectory>/ftpdir

where

<rcLogicalVolumeDirectory> is the logical volume assigned to the stream in CONFSTRM for the billing files to be stored. During the next interval, the ftpdir directory will be recreated.

If the alarm persists, refer to the “Next-level-of-support procedure.”

LODSK alarm clearing procedure

Indication

At the MTC level of the MAP display, LODSK appears under the APPL header of the alarm banner and indicates a storage alarm.

Meaning

The record storage on the SDM is becoming filled. Depending on how much of the storage is filled, this alarm can be minor, major, or critical. Either FTP is not working correctly or the FTP schedule was not specified correctly or FTPs are failing to the downstream processor.

The SDM generates the SDMB355 log report when this alarm is raised.

Impact

The SDM storage is becoming filled. This storage is limited. As the storage becomes filled, alarms notify you how much of its capacity is used.

If SDM storage becomes filled, the DMS switch/CM will not be able to send records to SDM and will send them to backup storage. This storage is limited. As the backup storage becomes filled, alarms notify you how much of its capacity is used.

Common procedures

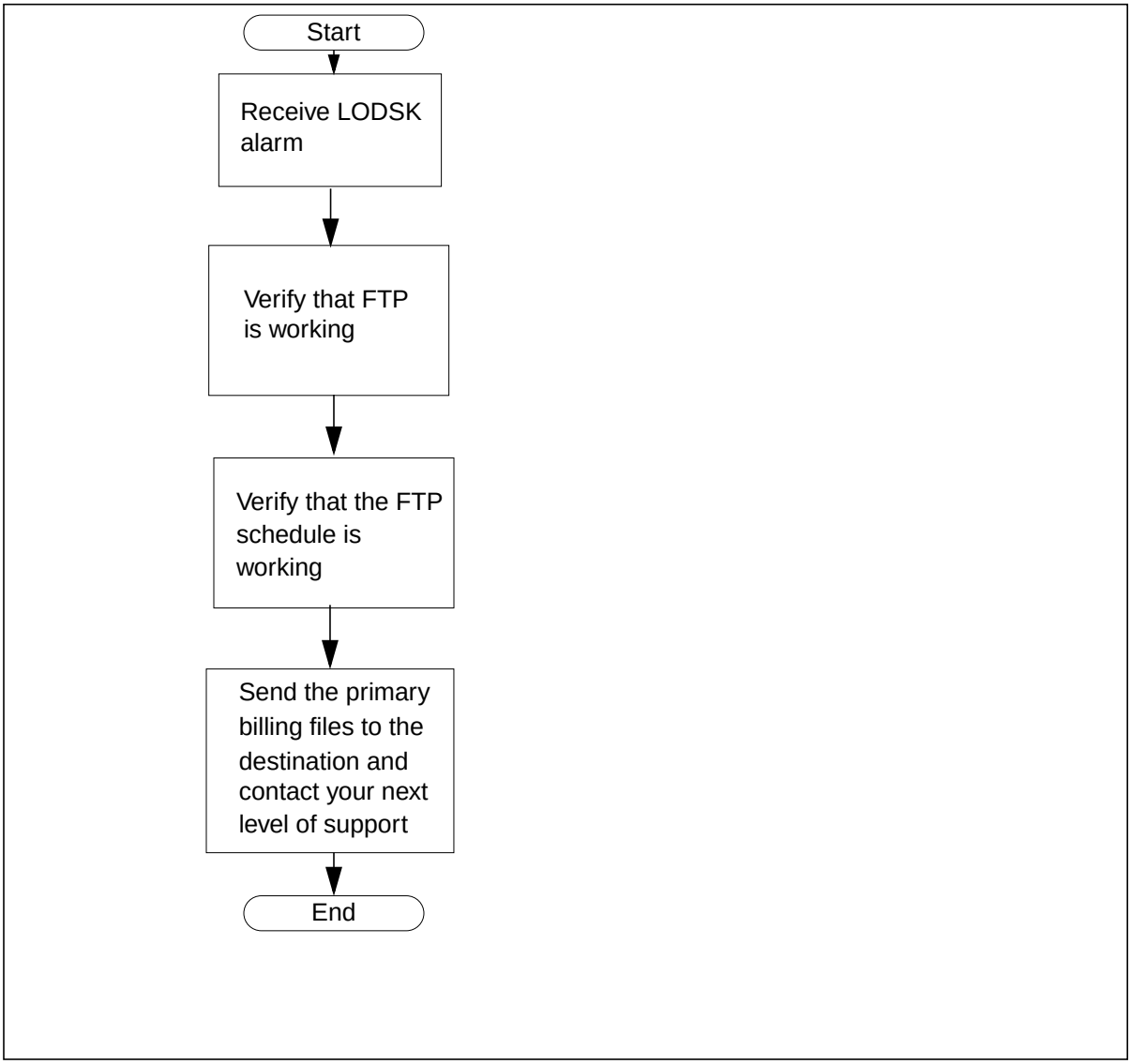
The following common procedures are referenced

- "Verify FTP procedure"
- “Verifying the FTP schedule procedure”
- "Next-level-of-support procedure"

Action

The following flowchart is only a summary of the procedure. Use the instructions in the step-action procedure that follows the flowchart to clear the alarm.

Figure 17 LODSK alarm clearing procedure flowchart



1 Use the common procedure to verify that the FTP process is working.

2 If the alarm does not clear, use the common procedure to verify that the FTP schedule is working.

3 If you have completed all the preceding steps and the alarm still fails to clear, proceed to the "Next-level-of-support procedure."

4 If the alarms clears, you have completed the procedure.

NOBAK alarm clearing procedure

Indication

At the MTC level of the MAP display, NOBAK appears under the APPL header of the alarm banner and indicates an alarm for the backup system.

Meaning

This alarm will only occur if the volumes that were configured for backup are 100% full.

Impact

If the stream is set to ON, billing records are lost.

If the stream is set to BOTH, data is still being routed to DIRP. Therefore, you can send the billing records to the operating company's collector through the previously-established network that DIRP uses.

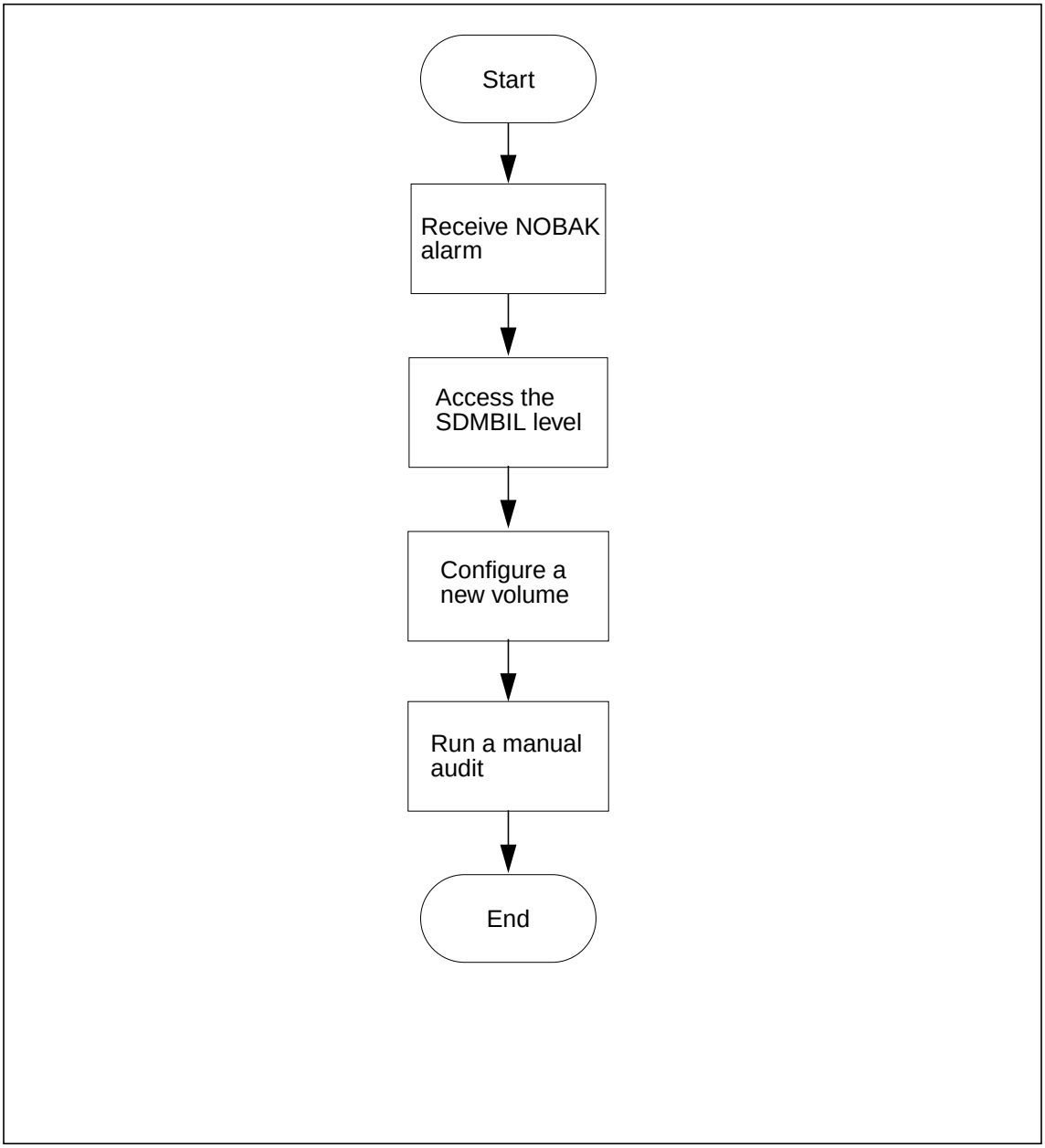
Common procedures

This procedure references the "Configuring and Activating Replacement Backup Volumes" and the "Next-level-of-support procedure."

Action

The following flowchart is only a summary of the procedure. Use the instructions in the step-action procedure that follows the flowchart to clear the alarm.

Figure 18 NOBAK alarm clearing procedure flowchart



At the MAP display

1 Type

>MAPCI;MTC;APPL;SDMBIL;POST X {where **X** is the stream name}

and press the Enter key.

2 Type

>CONF VIEW X {where **X** is the stream name}

and press the Enter key to display the names of the backup volumes.

3 Go to the common procedure, “Configuring and activating alternative backup volumes procedure” on page 61 to assign new volumes.

4 Use **Audit** to clear the alarm.

5 If you have completed all the preceding steps and the alarm still will not clear, go to the common procedure, “Next-level-of-support procedure” on page 53.

6 You have completed this procedure.

NOCLNT alarm clearing procedure

Indication

At the MTC level of the MAP display, NOCLNT appears under the APPL header of the alarm banner and indicates an alarm.

Meaning

The stream was activated by the SDMBCTRL command before initialization was complete. If the stream is set to ON, the alarm is critical; if the stream is set to BOTH, the alarm is major.

Impact

No data will be buffered by the SBA system. Therefore, no data will be backed up or made available for delivery to the SDM.

If the stream is set to BOTH, data is still being routed to DIRP. Therefore, you can send the billing records to the operating company’s collector through the previously-established network that DIRP uses.

Common procedures

This procedure references the “Next-level-of-support procedure.”

Action

This alarm should not occur except in rare cases during installation. If this alarm does occur, refer to the "Next-level-of-support procedure."

NOCOM alarm clearing procedure

Indication

At the MTC level of the MAP display, NOCOM appears under the APPL header of the alarm banner and indicates a communication alarm.

Meaning

Communications cannot be established between the DMS switch and the SDM when the stream is set to BOTH.

The most likely causes of this alarm are the DS-512 links are not in-service (SDM node is SysB), the SDM power is OFF, or the SDM is rebooting.

Impact

No data will be transferred to the SDM. Data will be sent to the configured backup disk on the switch.

If the stream is set to BOTH, data is still being routed to device independent recording package (DIRP). Therefore, you can send the billing records to the operating company's collector through the previously established network that DIRP uses.

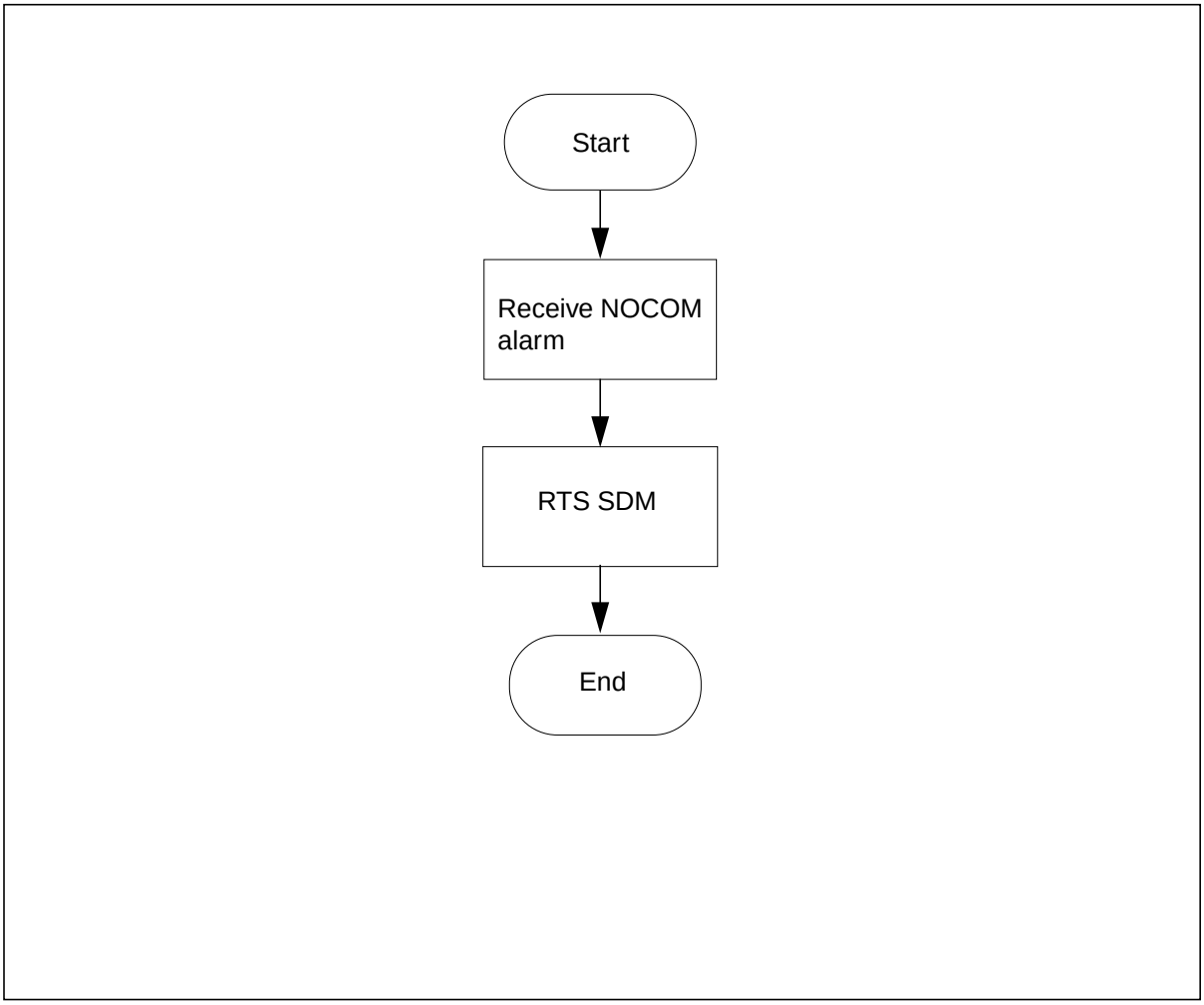
Common procedures

This procedure references the "Next-level-of-support procedure."

Action

The following flowchart is only a summary of the procedure. Use the instructions in the step-action procedure that follows the flowchart to clear the alarm.

Figure 19 NOCOM alarm clearing procedure flowchart



At the MAP display

1 Type

>MAPCI;MTC;APPL;SDM

and press the Enter key.

2 The DMS switch/CM MAP display shows the state of the SDM.

If the application state is	Do
OffL	step 3
ManB	step 4
anything else (InSv, ISTb)	step 5

3 Type

>BSY

and press the Enter key to manually busy the SDM.

4 Type

>RTS

and press the Enter key. This step establishes communication. If the first attempt fails, the system retries until it establishes communication.

5 If you have completed all the preceding steps and the alarm fails to clear, proceed to the “Next level of support procedure.”

6 You have completed this procedure.

NOFL alarm clearing procedure

Indication

At the MTC level of the MAP display, NOFL appears under the APPL header of the alarm banner and indicates an alarm for the backup system.

Meaning

On startup, the SBA backup file system was unable to create a file. If the stream is set to ON, the alarm is critical; if the stream is set to BOTH, the alarm is major.

Impact

Because no file is available for SBA data storage, data intended for storage might be lost.

If the stream is set to BOTH, data is still being routed to DIRP. Therefore, you can send the billing records to the operating company's collector through the previously-established network that DIRP uses.

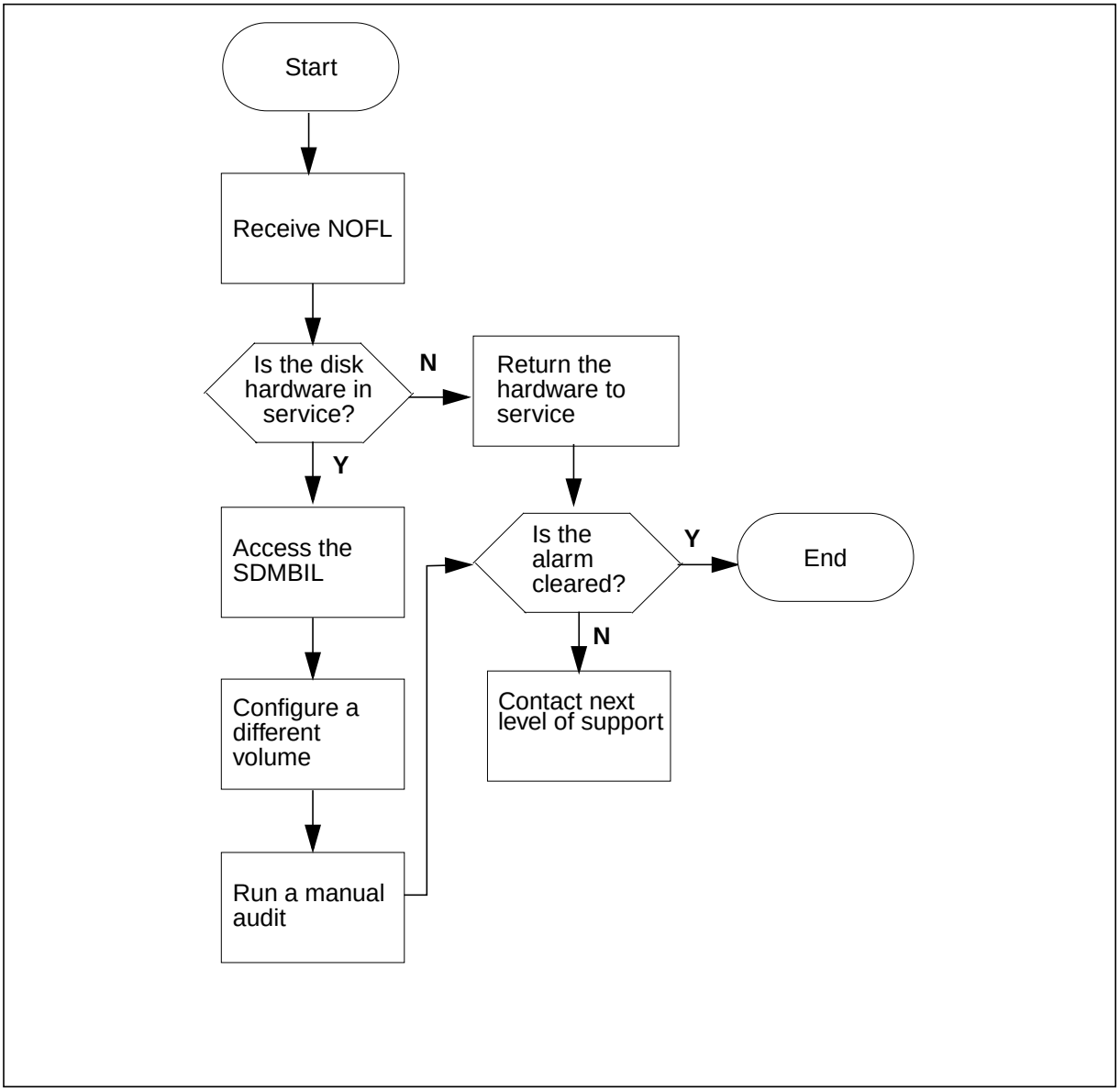
Common procedures

This procedure references the "Configuring and Activating Replacement Backup Volumes" and the "Next-level-of-support procedure."

Action

The following flowchart is only a summary of the procedure. Use the instructions in the step-action procedure that follows the flowchart to clear the alarm.

Figure 20 NOFL alarm clearing procedure flowchart



At the MAP display

1 Type

>MAPCI;MTC;IOD;SLM

to determine whether the disk hardware is in service.

2 If the disk hardware is not in service, return it to service by typing

>RTS n

where

n is number of the device that is not in service

CAUTION

The SLM is used by all of the DMS switch. Do not arbitrarily do anything to the SLM without coordinating with the operating company personnel in charge of switch maintenance.

3 If the hardware is in service, type

>APPL;SDMBIL;POST X {where **X** is the stream name}

and press the Enter key.

4 Use the **CONF** command to confirm that the backup volumes are filled.

5 If the volumes are not large enough, go to the common procedure, "Configuring and activating alternative backup volumes procedure" on page 61 to assign a new volume.

6 Use **Audit** to clear the alarm.

7 If you have completed all the preceding steps and the alarm still will not clear, go to the common procedure, "Next-level-of-support procedure" on page 53

8 You have completed this procedure.

NOREC alarm clearing procedure

Indication

At the MTC level of the MAP display, NOREC appears under the APPL header of the alarm banner and indicates an alarm for the recovery system.

Meaning

The SBA system is unable to create a recovery stream. The most likely reasons for not being able to start a recovery stream are:

- The system is out of buffers. This also causes a NOSTOR alarm.
- The disk on the SDM is full. This also causes a DSKWR and a LODSK alarm: if the stream is set to ON, the alarm is major; if the stream is set to BOTH, the alarm is minor.

Impact

No backup files will be recovered by the SBA system.

If the stream is set to BOTH, data is still being routed to DIRP. Therefore, you can send the billing records to the operating company's collector through the previously-established network that DIRP uses.

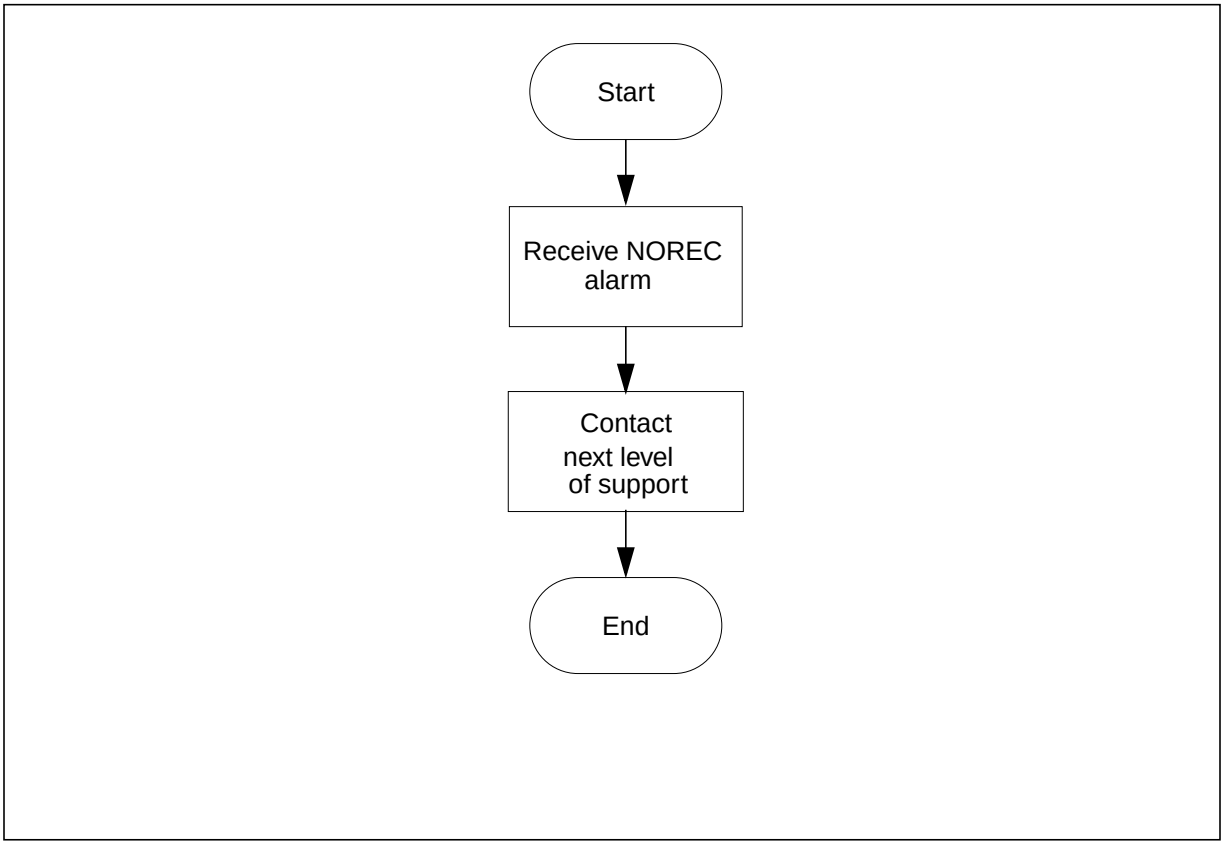
Common procedures

This procedure references the "Next-level-of-support procedure."

Action

The following flowchart is only a summary of the procedure. There is no action to take. Proceed to the "Next-level-of-support procedure."

Figure 21 NOREC Alarm Clearing Procedure Flowchart.



NOSC alarm clearing procedure

Indication

At the MTC level of the MAP display, NOSC appears under the APPL header of the alarm banner and indicates an SDM alarm.

Meaning

The NOSC alarm indicates that the CDR has not received a valid structure code. The four valid structure codes are 360, 364, 625, and 653.

The SDM generates the SDMB370 log report when this alarm is raised.

Impact

The CDR to BAF conversion process will not create BAF records.

Common procedures

This procedure references the “Next-level-of-support procedure.”

Action

This alarm is cleared when a call is completed that contains a valid structure code. Refer to the *UCS DMS-250 Billing Records Application Guide,* 297-2631-395 for more information about structure code.

If this alarm persists, refer to the “Next-level-of-support procedure.”

NOSTOR alarm clearing procedure

Indication

At the MTC level of the MAP display, NOSTOR appears under the APPL header of the alarm banner and indicates a storage alarm.

Meaning

The SBA buffer pool cannot allocate buffers. This means that all buffers are in use; it does not necessarily mean that the disk is full. If, however you also have alarms indicating that the disk is full, you need to configure a new volume. The NOSTOR alarm is usually seen when the system is in backup mode and the traffic is too high for the SLM to keep up.

If the stream is set to ON, the alarm is critical; if the stream is set to BOTH, the alarm is major.

Impact

If the stream is set to ON, there will be a loss of billing records.

If the stream is set to BOTH, data is still being routed to DIRP. Therefore, you can send the billing records to the operating company's collector through the previously-established network that DIRP uses.

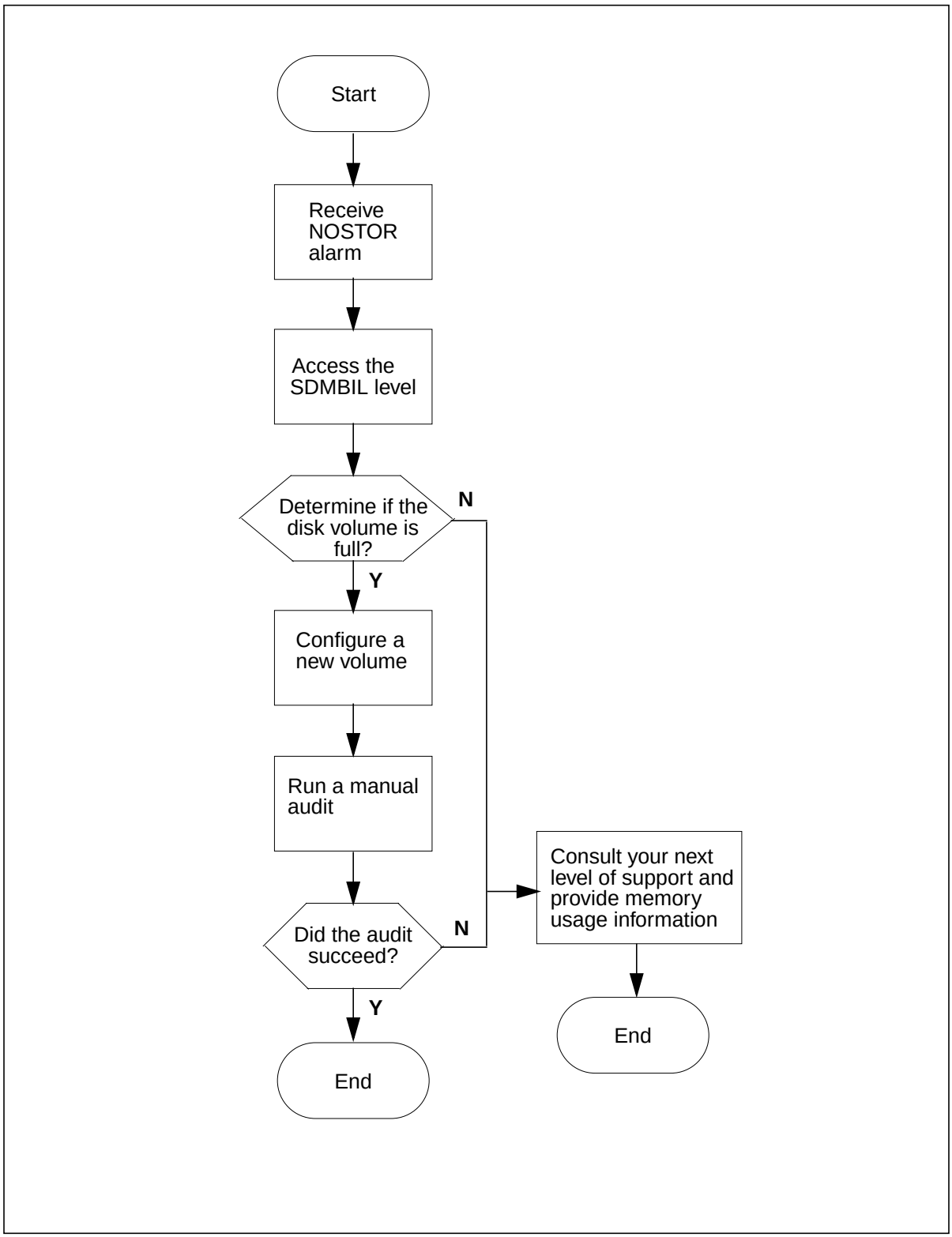
Common procedures

This procedure references the "Configuring and Activating Replacement Backup Volumes" and the "Next-level-of-support procedure."

Action

The following flowchart is only a summary of the procedure. Use the instructions in the step-action procedure that follows the flowchart to clear the alarm.

Figure 22 NOSTOR alarm clearing procedure flowchart



At the MAP display

1 Type

>MAPCI;MTC;APPL;SDMBIL;POST X {where **X** is the stream name}

and press the Enter key.

2 Find out why the system is in backup mode. Check the system node state.

a. If SDM is Sysb, it is a NOCOM alarm. See the "NOCOM alarm clearing procedure".

b. If SDM is ManB, find out why and for how long (to determine if you still have sufficient space in the backup volume).

c. If you determine that you have a long term problem, proceed to the next step.

3 Type

>CONF VIEW X {where **X** is the stream name}

and press the Enter key to display the names of the backup volumes.

4 Display the size of the first volume and its number of free blocks by typing

>DISKUT;LV volume (where volume is the name of the first-listed volume)

and pressing the Enter key.

Note: This version of the disk utility command only works if the backup volumes are on SLM disks (their names start with S00D or S01D). If the volume information starts with D000 or D010, the backup volumes are on DDU disks (IOC) and you must use the **DSKUT;SV volume** command to retrieve the equivalent information.

5 Display the size of the second volume and its number of free blocks by repeating the previous step for that volume name.

If the volumes are large enough that the remaining free blocks are sufficient, no action is required.

6 If the volumes are not large enough and you will soon reach storage capacity, go to the common procedure, “Configuring and activating alternative backup volumes procedure” on page 61 to assign new volumes.

7 Use **Audit** to clear the alarm.

8 If you have completed all the preceding steps and the alarm still will not clear, go to the common procedure, “Next-level-of-support procedure” on page 53

9 You have completed this procedure.

NOVOL alarm clearing procedure

Indication

At the MTC level of the MAP display, NOVOL appears under the APPL header of the alarm banner and indicates an alarm for the backup system.

Meaning

On startup, the SBA backup file system was unable to find a volume in which to create a file. If the stream is set to ON, the alarm is critical; if the stream is set to BOTH, the alarm is major.

Impact

Because there is no volume available for SBA storage, data intended for backup storage might be lost. If the stream is set to ON, billing records intended to be written to the backup volumes will be lost.

If the stream is set to BOTH, data is still being routed to DIRP. Therefore, you can send the billing records to the operating company's collector through the previously-established network that DIRP uses.

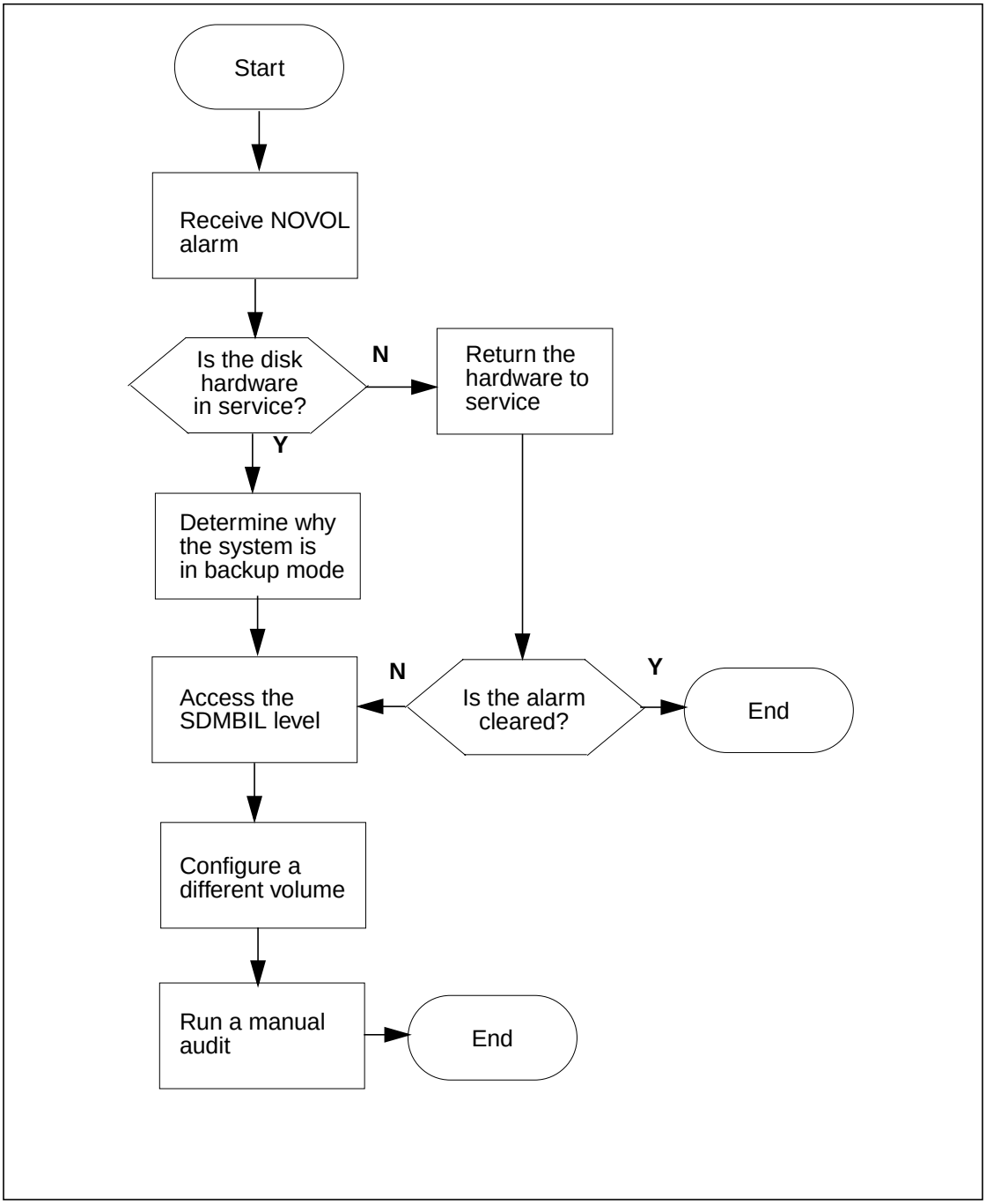
Common procedures

This procedure references the "Configuring and Activating Replacement Backup Volumes" and the "Next-level-of-support procedure."

Action

The following flowchart is only a summary of the procedure. Use the instructions in the step-action procedure that follows the flowchart to clear the alarm

Figure 23 NOVOL alarm clearing procedure flowchart.



At the MAP display

1 Type

>MAPCI;MTC;IOD;SLM

and press the Enter key to determine whether the disk hardware is in service.

2 If the hardware is not in service, type

>RTS n

where

n is the number of the device that is not in service. Press the Enter key to return the device to service.

CAUTION

The SLM is used by all of the DMS switch. Do not arbitrarily do anything to the SLM without coordinating with the operating company personnel in charge of switch maintenance.

3 If the hardware is in service, determine why the system is in backup mode.

Type

>APPL;SDMBIL;POST X {where **X** is the stream name}

4 Go to the common procedure, “Configuring and activating alternative backup volumes procedure” on page 61 to assign different volumes.

5 Use **Audit** to clear the alarm.

6 If you have completed all the preceding steps and the alarm still will not clear, go to the common procedure, “Next-level-of-support procedure” on page 53

7 You have completed this procedure.

RTBCF alarm clearing procedure

Indication

At the MTC level of the MAP display, RTBCF appears under the APPL header of the alarm banner and indicates a critical alarm for the Real Time Billing (RTB) application.

Meaning

The RTBCF alarm indicates that RTB is unable to transfer an open file after RTBMaxConsecutiveFailures.

The SDM generates the SDMB375 log report when this alarm is raised. When this alarm is cleared, the SDM generates the SDMB675 log report. Refer to the log reports for more information about the condition causing the alarm.

Impact

RTB moves to the SYSB state and stops transferring open files.

Common procedures

This procedure references the “Next-level-of-support procedure.”

Action

Refer to log report SDMB675 for more information about the alarm. If necessary, refer to the “Next-level-of-support procedure.”

RTBER alarm clearing procedure

Indication

At the MTC level of the MAP display, RTBER appears under the APPL header of the alarm banner and indicates a critical alarm for the RTB program.

Meaning

The RTBER alarm indicates that the restart count has been exceeded.

The SDM generates the SDMB375 log report when this alarm is raised. When this alarm is cleared, the SDM generates the SDMB675 log report. Refer to the log reports for more information about the condition causing the alarm.

Impact

RTB moves to the SYSB state.

Common procedures

This procedure references the “Next-level-of-support procedure.”

Action

Refer to log report SDMB675 for more information about the alarm. If necessary, refer to the “Next-level-of-support procedure.”

RTBFM alarm clearing procedure

Indication

At the MTC level of the MAP display, RTBFM appears under the APPL header of the alarm banner and indicates a critical alarm for the RTB program.

Meaning

The RTBFM alarm indicates that communication with the file manager is lost and that the file manager failed to close current active files.

The SDM generates the SDMB375 log report when this alarm is raised. When this alarm is cleared, the SDM generates the SDMB675 log report. Refer to the log reports for more information about the condition causing the alarm.

Impact

RTB moves to the SYSB state.

Common procedures

This procedure references the “Next-level-of-support procedure.”

Action

Refer to log report SDMB675 for more information about the alarm. Check to ensure that SBA is in service and that the stream that the alarm is associated with is active. If necessary, refer to the “Next-level-of-support procedure.”

RTBPD alarm clearing procedure

Indication

At the MTC level of the MAP display, RTBPD appears under the APPL header of the alarm banner and indicates a critical alarm for the RTB program.

Meaning

The RTBPD alarm indicates that the RTB controlling process has died and that RTB has been halted.

The SDM generates the SDMB375 log report when this alarm is raised. When this alarm is cleared, the SDM generates the SDMB675 log report. Refer to the log reports for more information about the condition causing the alarm.

Impact

RTB moves to the SYSB state.

Common procedures

This procedure references the “Next-level-of-support procedure.”

Action

Refer to log report SDMB675 for more information about the alarm. If necessary, refer to the “Next-level-of-support procedure.”

RTBST alarm clearing procedure

Indication

At the MTC level of the MAP display, RTBST appears under the APPL header of the alarm banner and indicates a critical alarm for the RTB program.

Meaning

The RTBST alarm is raised if the schedule tuple is deleted or invalid for RTB.

The SDM generates the SDMB375 log report when this alarm is raised. When this alarm is cleared, the SDM generates the SDMB675 log report. Refer to the log reports for more information about the condition causing the alarm.

Impact

RTB moves to the SYSB state.

Common procedures

This procedure references the “Next-level-of-support procedure.”

Action

Refer to log report SDMB675 for more information about the alarm. Verify that the protocol is set to “RFTPW” and the file format type is set to “DIRP” in the Schedule tuple associated with the alarm.

If necessary, refer to the “Next-level-of-support procedure.”

SBACP (major) alarm clearing procedure

Indication

At the MTC level of the MAP display, SBACP appears under the APPL header of the alarm banner and indicates a major alarm for the SBA program.

Meaning

The SBA program is shutting down because a user has issued a BSY command to either the SBA program or the SDM node, or a process kept dying and the SBA program shuts itself down.

Impact

The SBA program ends.

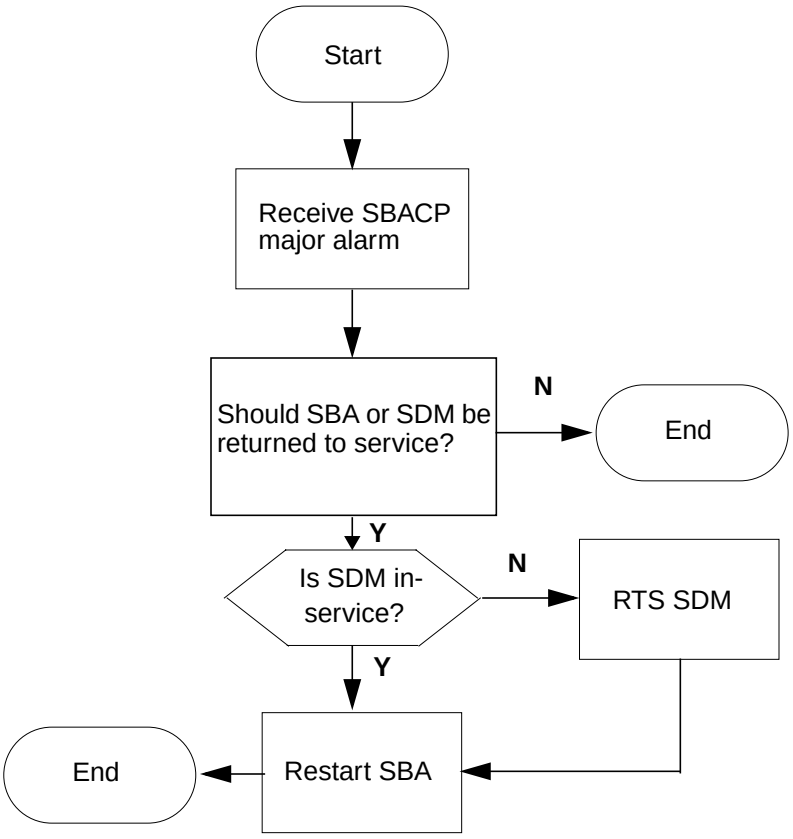
Common procedures

This procedure references the “Next-level-of-support procedure.”

Action

The following flowchart is only a summary of the procedure. Use the instructions in the step-action procedure that follows the flowchart to clear the alarm.

Figure 24 SBACP alarm clearing procedure flowchart



Note: If the SBA was made ManB intentionally, no action is required. If not, follow these steps to diagnose the problem.

At the SDM

1 To access the SDM RMI, type

#sdmmtc

and press the Enter key.

2 To access the Mtc menu level of the RMI, type

>mtc

and press the Enter key.

3 The RMI displays the SDM node state.

If the SDM node state is	Do
InSv, ISTb	step 7
SysB	step 4
OffL	step 4
ManB	step 5

Note: The next few steps affect the SDM. As a general rule, many other applications may be running on the SDM. Ensure that you do not interrupt these other applications. Moreover, if OffL state appears, verify reason for current state with user who placed in the OffL state before returning to service.

At the MAP display

4 To access the MTC menu level application for the SDM, type

>mapci;mtc;appl;sdm;bsy;

and press the Enter key.

5 To return the SDM to service, type

>rts

or, if you are not at the MTC level application for the SDM RMI, type

>mapci;mtc;appl;sdm;rts

and press the Enter key.

6 You are now back on the SDM. Consult the *SDM Fault Tolerant User Guide*, 297-5051-906, for troubleshooting procedures.

7 To access the APPL menu level by logging into the SDM as “root” . From the # SDM prompt, type

#sdmmtc

and press the Enter key.

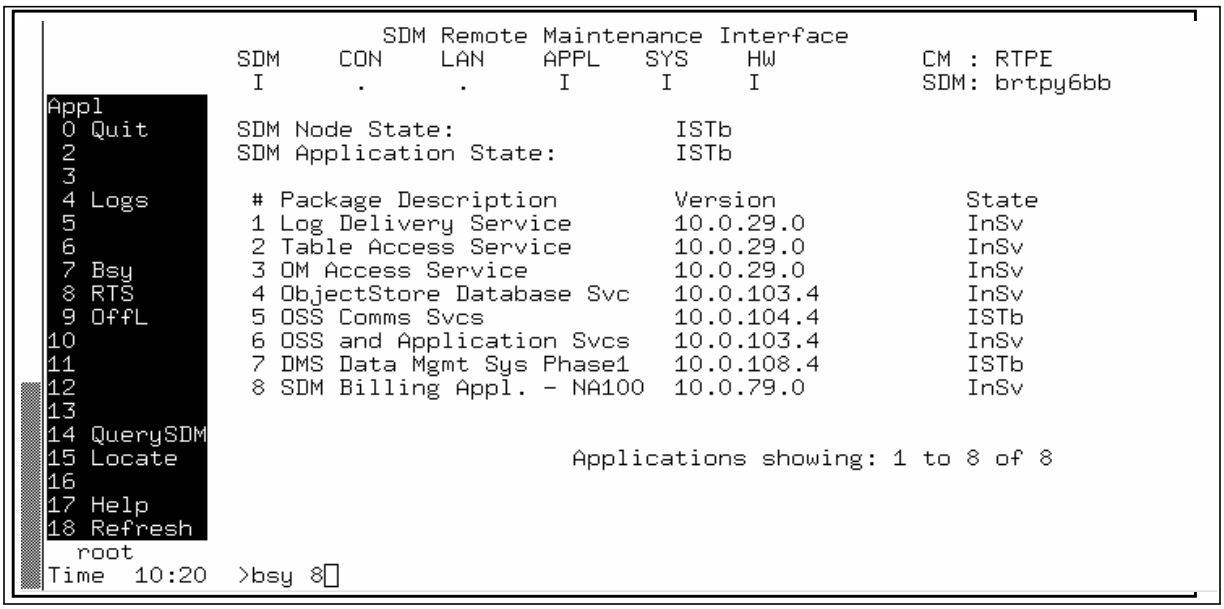
The RMI menu appears, with menu selections highlighted in the left column.

8 Place the currently installed SBA in a ManB state by typing

>appl

and press the Enter key.The screen will appear as shown below.

Figure 25 RMI application menu



Use the Up and Down command to scroll through the fileset list.

At the Appl menu, type **bsy** followed by a space and the number corresponding to the fileset you want to BSY. You will be prompted (**y** or **n**) to busy the selected filesets. Select **y** and press Enter to BSY, and the filesets will become manually BSY.

>bsy X {where **X** is the number corresponding to the fileset}

and press the Enter key.

9 Once the Manually BSY is complete, verify the SBA fileset status is in ManB state as shown in the example response.

Example response:

```
SDM Node State:               ISTb
SDM Application State:        ISTb

 # Package Description        Version       State
 1 OM Access Service          10.0.11.0      InSv
 2 SDM Billing Appl. - NA100  10.0.79.0      ManB
 3 Table Access Service       10.0.11.0      InSv
 4 log Delivery Service       10.0.11.0      InSv

                            Applications showing: 1 to 4 of 4

bsy - Command complete.
```

In this example, the SBA program is package 2.

10 To return the application to service, type

>rts n

and press the Enter key.

where

n	is the number under # of the SBA package. In this example, you would type rts 2.

Note: You can only Rts from the ManB state.

Response

```
Application RTS - Command initiated.
Please wait...
```

When the Rts command is finished, the system displays the following response:

```
Application RTS - Command submitted.
```

11 If you are unable to perform any of these procedures, contact the next level of support.

12 You have successfully completed this procedure.

SBACP (minor) alarm clearing procedure

Indication

At the MTC level of the MAP display, SBACP appears under the APPL header of the alarm banner and indicates a minor alarm for the SBA program.

Meaning

The SBA program is shutting down because one of the processes has failed 3 times in 1 minute. It will be re-created.

Impact

The SBA program ends but should restart within 2 minutes.

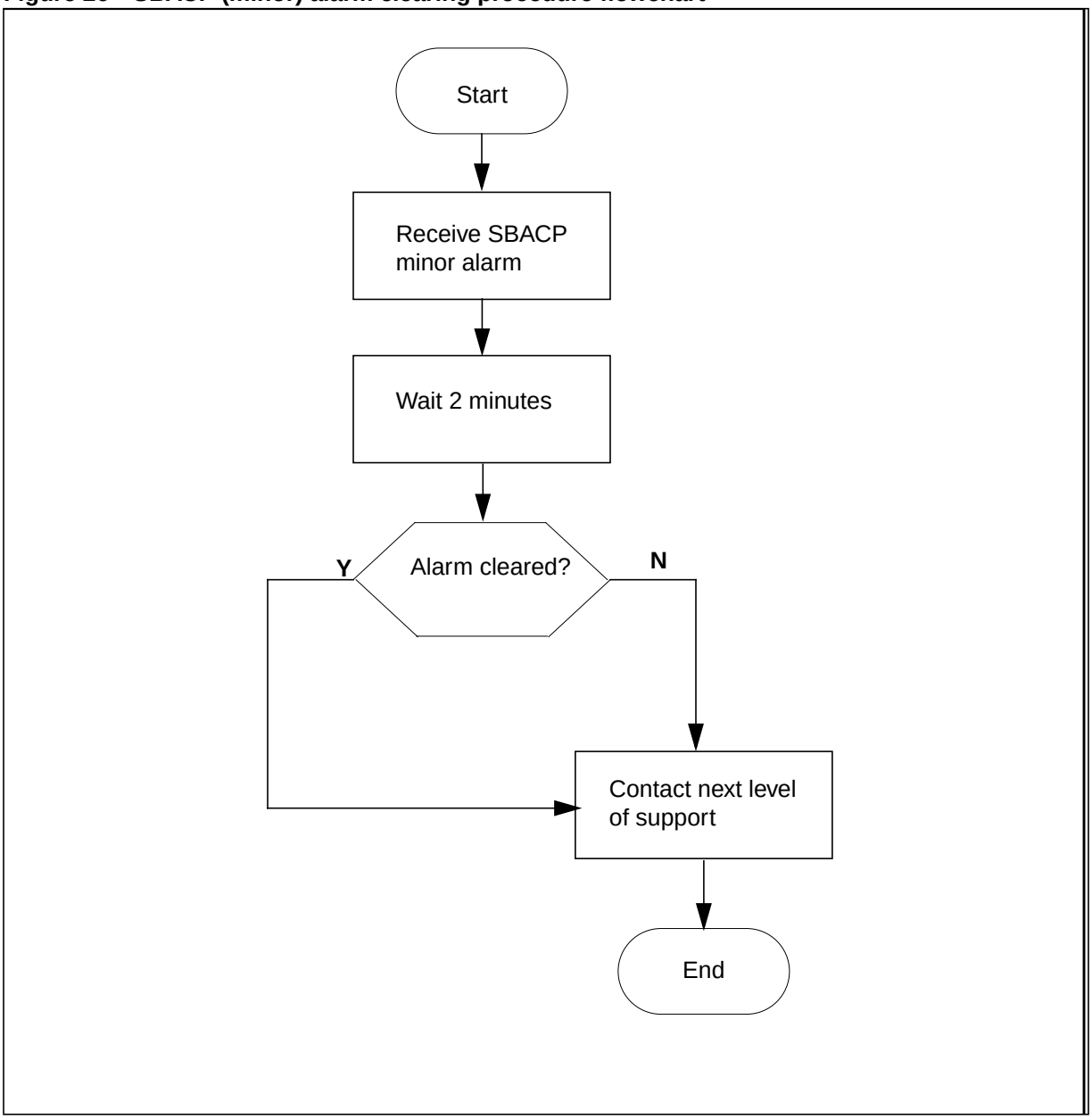
Common procedures

This procedure references the “Next-level-of-support procedure.”

Action

The following flowchart is only a summary of the procedure. Use the instructions in the step-action procedure that follows the flowchart to clear the alarm.

Figure 26 SBACP (minor) alarm clearing procedure flowchart



At the MAP display

1 Wait 2 minutes.

2 If the alarm is not cleared, contact your next level of support.

3 If a process dies 3 times within 1 minute, contact your next level of support.

If you have completed all the preceding steps and the alarm fails to clear, proceed to the “Next-level-of-support procedure.”

4 You have completed this procedure.

SBAIF alarm clearing procedure

Indication

At the MTC level of the MAP display, SBAIF appears under the APPL header of the alarm banner and indicates a major alarm for the file server.

Meaning

The connection to the file server has been lost.

Impact

This problem might be temporary. If the alarm does not clear, the SDM will not be able to FTP files to the downstream destination and will have to use SDM storage. As the storage becomes filled, alarms notify you how much of its capacity is used.

If SDM storage becomes filled, the DMS switch/CM will not be able to send records to SDM and will send them to backup storage. As the backup storage becomes filled, alarms notify you how much of its capacity is used.

Common procedures

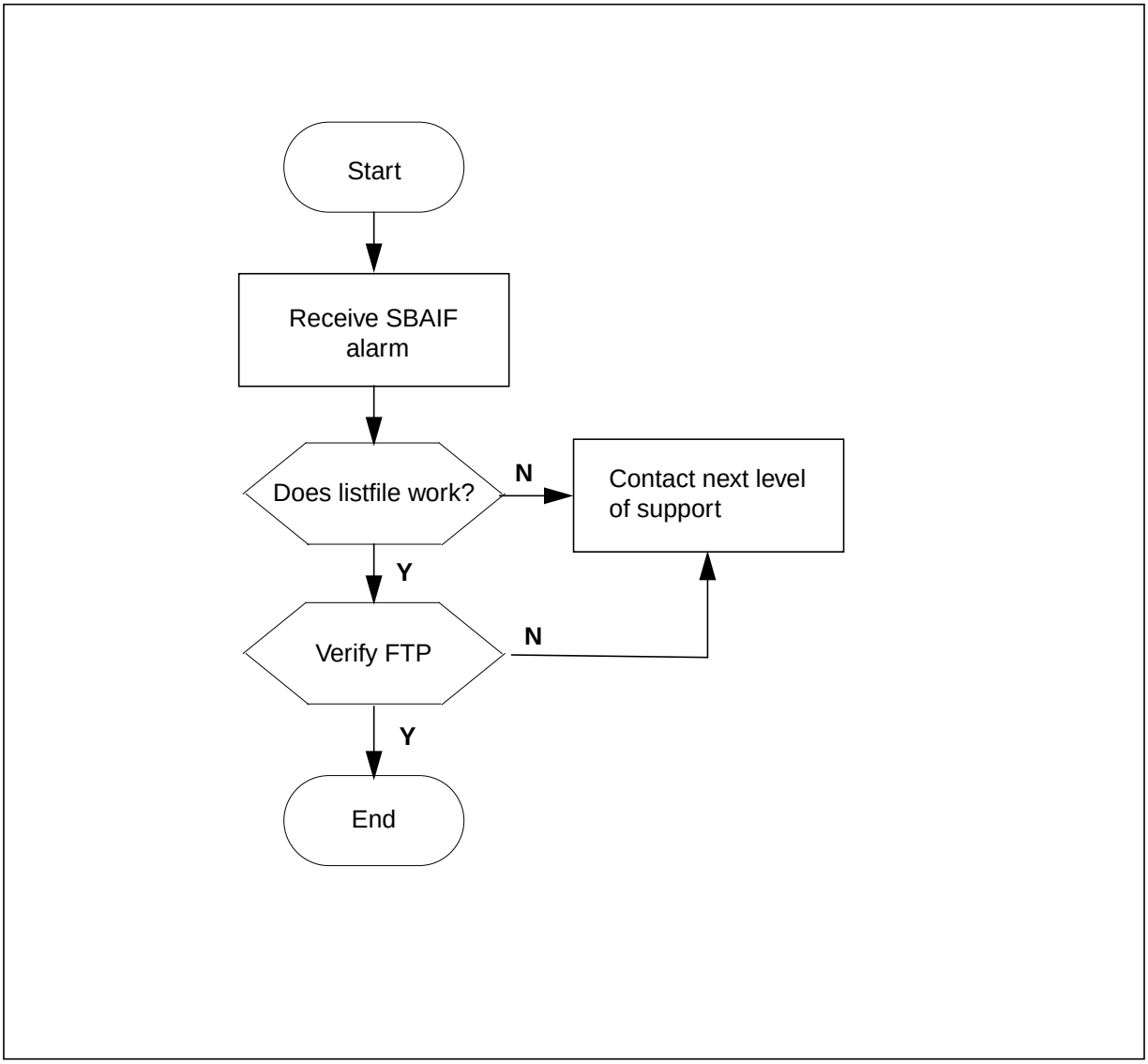
This procedure references the following procedures:

- “Verifying FTP procedure”
- "Next-level-of-support procedure"

Action

The following flowchart is only a summary of the procedure. Use the instructions in the step-action procedure that follows the flowchart to clear the alarm.

Figure 27 SBAIF alarm clearing procedure flowchart



At the SDM

1 At the # SDM prompt, type

#billmtc

and press the Enter key. Then, type

>filesys

2 List the primary files (closedNotSent) by typing the following

>listfile X -p {where **X** is the stream name}

and press the Enter key.

3 If the command fails, contact your next level of support.

4 If the command succeeds, verify FTP. Refer to “Verify the FTP procedure”

5 If you have completed all the preceding steps and the alarm fails to clear, proceed to the “Next-level-of-support procedure.”

6 You have completed this procedure.

Chapter 5: SDMC SBA logs

This chapter describes SuperNode Data Manager Carrier (SDMC) SuperNode Billing Application (SBA) logs.

This chapter covers logs that are available for the following product software releases:

- NA008

  NA008 has several logs with specific information about each log. The primary difference between the NA007 release and the NA008 is the number of logs.

- NA009

  NA009 introduced the CM support for multiple streams.

- NA010

  NA010 has several modified logs with specific information about each log. The NA010 logs added are SDMB365, SDMB375, SDMB380, SDMB675, SDMB390, and SDMB680.

- NA011

  NA011 modifies log SDMB367. The NA011 log added is SDMB530.

- SDMC11

  SDMC11 added logs SDMB370 and SDMB670. SDMC11 modified logs SDMB375 and SDMB675.

- SDMC12

  SDMC12 modified logs SDMB370, SDMB375, SDMB670, and SDMB675. Added SDMB380 and SDMB680.

Log types

The system generates the following two types of SBA logs:

- information logs

  Information logs occur throughout the course of events and inform you of the various states of the system. These logs do not require you to take any action.

- alarm-related logs

  The logs associated with an alarm notify you of some type of problem. These logs do not always require you to take any action but may warn you that an action needs to be taken at some point to avoid a more serious condition.

Log sources

All SBA logs are of the type SDMB. While there are both CM-side logs and SDM-side logs, all logs associated with alarms are printed on the CM side.

Alarm clearing procedures for each of the log types are provided in Chapter 4, "SDMC SBA alarms and maintenance". To determine your next level of support, refer to the “Next level of support procedure” in Chapter 4, "SDMC SBA alarms and maintenance" of this document.

Field descriptions

The following table explains each of the fields in the log report.

Table 1 Log field explanations

Field	Value	Description
alarm	Critical/Major/ Minor/No Alarm	Critical is indicated by ***, Major is indicated by **, and Minor is indicated by *. No Alarm has no asterisks.
<log ID>	string	SDMB300
<date>	mon:day	Date: month and day
<time>	hrs:mins:secs	Time: hours, minutes, and seconds
<seq#>	4 digits	Sequence number of log
<reason>	FLT	Indicates error or warning
<report_label>	string	“SDM Billing system”
<stream>	variable	Identifies the stream on which the problem occurred. ***Note:*** This parameter will appear only if it is related to a stream.
<filterstream>	variable	Identifies the filtered stream on which the problem occurred. ***Note:*** This parameter will appear only if it is related to a filtered stream.
<destination>	alphanumeric string (up to 15 characters)	Identifies the stream destination on which the problem occured. ***Note:*** This parameter will appear only if it is related to a multi-destination per billing stream file transfer.
<text>	string	Problem description

NA008-NA011 and SDMC11 SBA logs

The following log categories are defined for logs generated on the CM side. The category range for CM-generated logs is from x00 to x49.

> ***Note:*** Time stamp and log sequence number fields in the following examples are shown for completeness of the log layout only.

Since this information is the same for each of the logs, it is not repeated each time.

Table 2
Log categories for CM-side logs

#	Type	Label	Example log header
300	FLT	SDM Billing System	SDMB300 AUG19 17:51:24 1234 FLT SDM Billing System
310	FLT	SDM Billing Comms	SDMB310 AUG19 17:51:24 1234 FLT SDM Billing Comms
315	FLT	SDM Billing Soft Error	SDMB315 AUG19 17:51:24 1234 FLT SDM Billing Soft Error
316	FLT	SDM Billing Proc Death	SDMB316 AUG19 17:51:24 1234 FLT SDM Billing Proc Death
320	TBL	SDM Billing Backup	SDMB320 AUG19 17:51:24 1234 TBL SDM Billing Backup
321	FLT	SDM Billing Backup	SDMB321 AUG19 17:51:24 1234 FLT SDM Billing Backup
330	FAIL	SDM Billing Config	SDMB330 AUG19 17:51:24 1234 FAIL SDM Billing Config
400	SUMM	SDM Billing Summary	SDMB400 AUG19 17:51:24 1234 SUMM SDM Billing Summary
530	INFO	SDM Billing Config	SDMB530 AUG19 17:51:24 1234 INFO SDM Billing Config
531	INFO	SDM Billing Control	SDMB531 AUG19 17:51:24 1234 INFO SDM Billing Control
600	INFO	SDM Billing System	SDMB600 AUG19 17:51:24 1234 INFO SDM Billing System
610	INFO	SDM Billing Comms	SDMB610 AUG19 17:51:24 1234 INFO SDM Billing Comms
615	INFO	SDM Billing Soft Error	SDMB615 AUG19 17:51:24 1234 INFO SDM Billing Soft Error
620	INFO	SDM Billing Backup	SDMB620 AUG19 17:51:24 1234 INFO SDM Billing Backup
621	INFO	SDM Billing Backup	SDMB621 AUG19 17:51:24 1234 INFO SDM Billing Backup
625	INFO	SDM Billing File Recovery	SDMB625 AUG19 17:51:24 1234 INFO SDM Billing File Recovery
820	THR	SDM Billing Backup	SDMB820 AUG19 17:51:24 1234 INFO SDM Billing Backup

The following log categories are defined for logs generated on the SDM side. The category range for SDM generated logs is from x50 to x99. Generation of these logs, however, is done on the SDM side. The SDM is providing the actual

layout and text for those logs. The CM only produces those logs showing the given details.

> ***Note:*** Time stamp and log sequence number fields in the following examples are shown for completeness of the log layout only.

Since this information is the same for each of the logs, it is not repeated each time.

Table 3
Log categories for SDM-side logs

#	Type	Label	Example log header
350	FLT	SDM Billing Control	SDMB350 AUG19 17:51:24 1234 FLT SDM Billing Control
355	TBL	SDM Billing Disk	SDMB355 AUG19 17:51:24 1234 TBL SDM Billing Disk
360	TBL	SDM Billing Comms	SDMB360 AUG19 17:51:24 1234 TBL SDM Billing Comms
365	TBL	SDM Billing Soft Error	SDMB365 AUG19 17:51:24 1234 TBL SDM Billing Soft Error
367	TBL	SDM Billing Mib	SDMB367 AUG19 17:51:24 1234 TBL SDM Billing
370	TBL	SDM BILLING CDR2BAF CONVERSION	SDMB370 AUG19 17:51:24 1234 TBL SDM BILLING CDR2BAF CONVERSION
375	TBL	SDM Billing File Transfer	SDMB375 AUG19 17:51:24 1234 TBL SDM Billing File Transfer
380	TBL	SDM BILLING CONFIG	SDMB380 AUG19 17:51:24 1234 TBL TBL SDM BILLING CONFIG
390	TBL	SDM Billing File Transfer Schedule	SDMB390 AUG19 17:51:24 1234 TBL SDM Billing File Transfer Schedule
550	INFO	SDM Billing Control	SDMB550 AUG19 17:51:24 1234 INFO SDM Billing Control
650	INFO	SDM Billing Control	SDMB650 AUG19 17:51:24 1234 INFO SDM Billing Control
655	INFO	SDM Billing Disk	SDMB655 AUG19 17:51:24 1234 INFO SDM Billing Disk
660	INFO	SDM Billing Comms	SDMB660 AUG19 17:51:24 1234 INFO SDM Billing Comms
670	INFO	SDM BILLING CDR2BAF CONVERSION	SDMB670 AUG19 17:51:24 1234 INFO SDM BILLING CDR2BAF CONVERSION
675	INFO	SDM Billing File Transfer	SDMB675 AUG19 17:51:24 1234 INFO SDM Billing File Transfer
680	INFO	SDM BILLING CONFIG	SDMB680 AUG19 17:51:24 1234 INFO SDM BILLING CONFIG

LogNumber SDMB300

Explanation

This log is typically generated when memory allocation fails.

Format

SDMB300 <mmmdd hh:mm:ss ssdd>FLT SDM BILLING SYSTEM STREAM= <stream>: <48_character_text_string>

Table 4 shows the field descriptions and the actions for the log report.

Table 4 Log SDMB300

SDMB300 Logs	Action
SDMB300 AUG19 17:51:24 1234 FLT SDM BILLING SYSTEM STREAM= AMA: RECOVERY IS UNABLE TO GET BUFFERS	Contact your next level of support.

LogNumber SDMB310

Explanation

This log is generated when a communication problem has been encountered with SDM billing.

Format

SDMB310 <mmmdd hh:mm:ss ssdd>FLT SDM BILLING COMMS STREAM= <stream>: <48_character_text_string>

Table 5 shows the field descriptions and the actions for the log report.

Table 5 Log SDMB310

SDMB310 Logs	Action
SDMB310 AUG19 17:51:24 1234 FLT SDM BILLING COMMS STREAM= ALL: COMMUNICATION TO SDM CANNOT BE ESTABLISHED	You need to determine why the SDM is not communicating with the switch. For additional information about the alarm, refer to the “NOCOM alarm clearing procedure” in this document.

LogNumber SDMB315

Explanation

This log is generated when there is a software-related problem with the SDM billing that cannot be further specified.

Format

SDMB315 <mmmdd hh:mm:ss ssdd>FLT SDM BILLING SOFT ERROR STREAM= <stream>: <48_character_text_string>

Table 6 shows the field descriptions and the actions for the log report.

Table 6 Log SDMB315

SDMB315 Logs	Action
SDMB315 AUG19 17:51:24 1234 FLT SDM BILLING SOFT ERROR STREAM= AMA: FAILED TO START RECOVERY	Contact your next level of support.

LogNumber SDMB316

Explanation

This log is generated when an SDM billing related process was manually killed.

Format

SDMB316 <mmmdd hh:mm:ss ssdd>FLT SDM BILLING PROC DEATH STREAM= <stream>: <48_character_text_string>

Table 7 shows the field descriptions and the actions for the log report.

Table 7 Log SDMB316

SDMB316 Logs	Action
SDMB316 AUG19 17:51:24 1234 FLT SDM BILLING PROC DEATH STREAM= ALL: PROCESS BUFRECI WAS KILLED	The process has to be started again for SDM billing to work properly. Contact your next level of support.

LogNumber SDMB320

Explanation

This log is generated when there is some backup related problem with SDM billing that affects more than one file.

Format

SDMB320 <mmmdd hh:mm:ss ssdd>TBL SDM BILLING BACKUP STREAM= <stream>: <48_character_text_string>

Table 8 shows the field descriptions and the actions for the log report.

Table 8 Log SDMB320

SDMB320 Logs	Action
SDMB320 AUG19 17:51:24 1234 TBL SDM BILLING BACKUP STREAM= AMA: NO BACKUP AVAILABLE	Maintenance personnel should ensure backup volumes are configured for the stream and sufficient space is available on those volumes.

LogNumber SDMB321

Explanation

This log is generated when there is some backup related problem with SDM billing that does affect a specific file.

Format

SDMB321 <mmmdd hh:mm:ss ssdd>FLT SDM BILLING BACKUP
STREAM= <stream>: <48_character_text_string>
VOLUME= <volume> FILE= <file>

Table 9 shows the field descriptions and the actions for the log report.

Table 9 Log SDMB321

SDMB321 Logs	Action
SDMB321 AUG19 17:51:24 1234 FLT SDM BILLING BACKUP STREAM= AMA: WAS UNABLE TO CREATE FILE FOR BACKUP VOLUME= S00DAMA FILE= BACK12AMA_01	Maintenance personnel should ensure backup volume is not busied out. Backup volumes should have free space.

LogNumber SDMB330

Explanation

This log is generated when there has been an invalid attempt to configure SDM billing.

Format

SDMB330 <mmmdd hh:mm:ss ssdd> FAIL SDM BILLING CONFIG
STREAM= <stream>: <48_character_text_string>
CONFIGURATION= <config>

Table 10 shows the field descriptions and the actions for the log report.

Table 10 Log SDMB330

SDMB330 Logs	Action
SDMB330 AUG19 17:51:24 1234 FAIL SDM BILLING CONFIG STREAM= AMA: CONFIGURATION FAILEDCONFIGURATION= AMA s12dnew $	Maintenance personnel should verify configuration.

LogNumber SDMB350

Explanation

This log is generated when one of the SDM SBA processes has reached a death threshold (i.e., the process has died more than 3 times less than 1 minute apart) and requests to restart the SBA in the SDM.

Format

SDMB350 AUG19 17:51:24 1234 FLT SDM BILLING CONTROL STREAM= <stream>: <48_character_text_string>

Table 11 shows the field descriptions and the actions for the log report.

Table 11 Log SDMB350

SDMB350 Logs	Action
SDMB350 AUG19 17:51:24 1234 FLT SDM BILLING CONTROL STREAM= ALL: Due to multiple Process deaths the SBA is being restarted.	Investigate the SBA process death in SDM. The SBA will automatically restart itself. Watch logs that indicate that SBA is in normal operation. If the system generates this log more than once, contact your next level of support.

LogNumber SDMB355

Table 12 shows the field descriptions, field explanations, and the actions for the log report.

Table 12 Log SDMB355

SDMB355 Logs	Explanation and Action
SDMB355 AUG19 17:51:24 1234 TBL SDM Billing Disk STREAM=AMA: UNABLE TO WRITE RECORDS TO FILE	This log indicates that there is some disk problem preventing the writing of records. The log is associated with the raising of alarm DSKWR. Check the disk space on the SDM. You may need to FTP files or clean up the disk by purging some records.
SDMB355 AUG19 17:51:24 1234 TBL SDM Billing Disk DISK WRITE STREAM= AMA: FAILURE: CLOSING CURRENT FILE	This is generated when the Record Client/FileManager is unable to write to the disk. Check the disk space on the SDM. You may need to FTP files or may need to clean up the disk.
*** SDMB355 AUG19 17:51:24 1234 TBL SDM Billing Disk STREAM= AMA: CRITICAL: DISK UTILIZATION EXCEEDS 90%	This log indicates that the disk utilization has risen above the critical threshold in the MIB in parm. The log is associated with raising alarm LODSK. Check to see if files are being sent to FTP. If not, set the system up to FTP files or back up files to the DAT tape.
** SDMB355 AUG19 17:51:24 1234 TBL SDM Billing Disk STREAM= AMA: MAJOR: DISK UTILIZATION EXCEEDS 70%	This log indicates that the disk utilization has risen above the major threshold. The log is associated with raising alarm LODSK. Check to see if files are being sent to FTP. If not, set the system up to FTP files or back up files to the DAT tape.
* SDMB355 AUG19 17:51:24 1234 TBL SDM Billing Disk STREAM= AMA: MINOR: DISK UTILIZATION EXCEEDS 50%	This log indicates that the disk utilization has risen above the minor threshold. The log is associated with raising alarm LODSK. Check to see if files are being sent to FTP. If not, set the system up to FTP files or back up files to the DAT tape.
* SDMB355 AUG19 17:51:24 1234 TBL SDM Billing DiskSTREAM= AMA: DISK FULL	This log indicates that the disk is full. Check to see if files are being sent to FTP. If not, set the system up to FTP files or back up files to the DAT tape.

Table 12 Log SDMB355 (continued)

SDMB355 Logs	Explanation and Action
* SDMB355 AUG19 17:51:24 1234 TBL SDM Billing DiskSTREAM= AMA: CLOSE AND OPEN FILE FAILED	This log is generated when the SBA can not close or open a file. Check to see if files are being sent to FTP. If not, set the system up to FTP files or back up files to the DAT tape. Moreover, check file permissions for the destination directories.
* SDMB355 AUG19 17:51:24 1234 TBL SDM Billing DiskSTREAM= AMA: FLUSH FILE FAILED	This log indicates that there is some disk problem preventing the writing of records. Contact your next level of support.

LogNumber SDMB360

Explanation

This log is generated when the connection to the Persistent System Store (PSS) is lost and cannot be restored and is associated with the alarm SDM Billing Application Interface (SBAIF).

Note: Applicable for NA008-NA009 only.

Format

SDMB360 <date> <time> <seq #> TBL SDM BILLING COMMS STREAM=<stream>:<file transfer mode> - <error msg>

Table 13 shows the field descriptions and the actions for the log report.

Table 13 Log SDMB360

SDMB360 Logs	Action
SDMB360 AUG19 17:51:24 1234 TBL SDM BILLING COMMS STREAM=<stream>:OFT - CONNECTION TO FILE CLIENT UNAVAILABLE	Contact your next level of support.

LogNumber SDMB365

Explanation

This log is generated when a serious problem prevents creation of the named stream. Moreover, this log is generated when a new version of the SBA product does not support a stream format on an active stream that was present in a previous load.

Note: Applicable for NA008-NA009 only.

Format

SDMB365 <date> <time> <seq #> TBL SDM BILLING SOFT ERROR STREAM=<stream>: <status><48_character_text_string>

Table 14 shows the field descriptions, field explanations, and the actions for the log report.

Table 14 Log SDMB365

SDMB365 Logs	Action
SDMB365 AUG22 17:51:24 5703 TBL SDM BILLING SOFT ERROR STREAM=CDR1:Unable to create stream	Revert to the previous running version of SBA. If you removed the support for the stream format in the new release, turn off the stream before installing the new version. If the new version is supposed to support all existing streams, contact Nortel for the latest appropriate software.

LogNumber SDMB366

Explanation

This log is generated to indicate trouble on the SDM.

Format

SDMB366 <date> <time> <seq #> TBL SDM BILLING
STREAM=ALL: SBA STARTUP FAILURE: <error msg>

Table 15 shows the field descriptions, field explanations, and the actions for the log report.

Table 15 Log SDMB366

SDMB366 Logs	Action
SDMB366 AUG22 17:51:24 5703 TBL SDM BILLING STREAM=:ALL: SBA STARTUP FAILURE: BAF could not be initialized	Contact next level of support. If the installed SBA supports multiple stream record formats, you can continue to process streams of the unlogged formats.
SDMB366 AUG22 17:51:24 5703 TBL SDM BILLING STREAM=ALL: SBA STARTUP FAILURE: BAF was not initiated	Contact next level of support. If the installed SBA supports multiple stream record formats, you can continue to process streams of the unlogged formats.

LogNumber SDMB367

Table 16 shows the field descriptions, field explanations, and the actions for the log report.

Table 16 Log SDMB367

SDMB367 Logs	Explanation and Action
SDMB367 AUG19 17:51:24 1234 FLT SDM BILLING MIB STREAM=ALL WARNING:SET ON MIB OBJECT amaAuditAMACalRecsDup to 49	This log is generated when a trappable MIB object is set. The modification of some MIB objects provides notification of failures to the System Manager by way of a trap. Because there is no System Manager, the system logs messages. Consideration for separate streams is not built into the AMADNS MIB specification. Contact your next level of support.
SDMB367 AUG19 17:51:24 1234 FLT SDM BILLING MIB STREAM=ALL WARNING:SET ON MIB OBJECT rcFileMaxBytesOut to 100000	This log is generated when the maximum bytes per file (rcFileMaxBytesOut) or maximum records per file (rcFileMaxRecsOut) are changed. Contact your next level of support.

LogNumber SDMB370

Explanation

The SDMB subsystem generates the SDMB370 log when the CDR to BAF conversion encounters a problem which prevents it from converting CDR to BAF. The SDMB subsystem also raises the critical alarm NOSC because the BAF record was not generated.

The TEXT portion of the log provides the stream name and an explanation of the problem.

Format

The format for log report SDMB370 follows:

SDMB370 <date> <time> <seq #> TBL SDM BILLING CDR2BAF CONVERSION STREAM= <stream>: <specific error>.

Table 17 shows the field descriptions, field explanations, and the actions for the log report.

Table 17 Log SDMB370

SDMB370 Log	Explanation and Action
*** SDMB370 AUG19 7:51:24 1234 TBL SDM BILLING CDR2BAF CONVERSION STREAM= <stream>: BAF record not created. Structure code invalid.	The BAF record cannot be generated because the CDR field AMASC is missing. AMASC is needed to build the BAF field STRUCTURE_CODE. The critical alarm NOSC is raised. Clear the alarm (refer to Chapter 4, “SDMC SBA alarms and maintenance” for more information). If problem persists, contact your next level of support.
*** SDMB370 AUG19 7:51:24 1234 TBL SDM BILLING CDR2BAF CONVERSION STREAM= <stream>: “BAF record not created. CDR template mismatch.	The mismatch between the CM CDR Template ID and the CDR MIB CurrentTmpltID needs to be corrected. If the default fixed template ID of 0 is used, the default CDR MIB value of zero needs to be in the CurrentTmpltID field. The critical alarm NOSC is raised. Clear the alarm (refer to Chapter 4, “SDMC SBA alarms and maintenance” for more information). If problem persists, contact your next level of support.

LogNumber SDMB375

Explanation

The SDMB subsystem generates this log when a problem occurs during the transfer of a file and is associated with the alarm FTP. The error text is dependent upon the nature of the actual error and reflects what result was returned from the FTP process.

Note: All logs (shown here) with minor alarms may be escalated to critical status for the circumstance in which the DPMS transmitter has exhausted all possible retries (as specified by the MIB parameter SessionFtpMaxConsecRetries).

Format

The format for log report SDMB375 follows:

SDMB375 <date> <time> <seq #> TBL SDM BILLING FILE TRANSFER STREAM=<stream>:<destination>:<specific error>

Table 18 shows the field descriptions and the actions for the log report.

Table 18 Log SDMB375

SDMB375 Logs	Action
SDMB375 AUG19 17:51:24 1234 TBL SDM BILLING FILE TRANSFER STREAM=<stream>:<destination>:UNABLE TO FORK CHILD PROCESS	Contact your next level of support.
SDMB375 AUG19 17:51:24 1234 TBL SDM BILLING FILE TRANSFER STREAM=<stream>:<destination>:UNABLE TO OPEN PSEUDO TERMINAL MASTER	Contact your next level of support.
SDMB375 AUG19 17:51:24 1234 TBL SDM BILLING FILE TRANSFER STREAM=<stream>:<destination>:UNABLE TO SETSID IN CHILD PROCESS	Contact your next level of support.
SDMB375 AUG19 17:51:24 1234 TBL SDM BILLING FILE TRANSFER STREAM=<stream>:<destination>:UNABLE TO OPEN PSEUDO TERMINAL SLAVE	Contact your next level of support.
SDMB375 AUG19 17:51:24 1234 TBL SDM BILLING FILE TRANSFER STREAM=<stream>:<destination>:UNABLE TO SET STDOUT OF CHILD PROCESS TO PSEUDO TERMINAL SLAVE	Contact your next level of support.
SDMB375 AUG19 17:51:24 1234 TBL SDM BILLING FILE TRANSFER STREAM=<stream>:<destination>:UNABLE TO SET STDERR OF CHILD PROCESS TO PSEUDO TERMINAL SLAVE	Contact your next level of support.
SDMB375 AUG19 17:51:24 1234 TBL SDM BILLING FILE TRANSFER STREAM=<stream>:<destination>:UNABLE TO SET STDIN OF CHILD PROCESS TO PSEUDO TERMINAL SLAVE	Contact your next level of support.

Table 18 Log SDMB375 (continued)

SDMB375 Logs	Action
*** SDMB375 AUG19 17:51:24 1234 TBL SDM BILLING FILE TRANSFER STREAM= <stream>:<destination>: RTB Control Process Death Detected. RTB is Halted	RTBChild has detected the death of RTBControl process. The alarm RTBPD is raised and the RTB system state is changed to SYSB. Clear the alarm (refer to Chapter 4, "SDMC SBA alarms and maintenance" for more information). If problem persists, contact your next level of support.
*** SDMB375 AUG19 17:51:24 1234 TBL SDM BILLING FILE TRANSFER STREAM= <stream>:<destination>: Exceeded RTBMaxConsecutiveFailures <error text>	RTBChild has failed to send the open billing file downstream RTBMaxConsecutiveFailures times. The alarm RTBCF is raised and the RTB system state is changed to SYSB. Clear the alarm (refer to Chapter 4, “SDMC SBA alarms and maintenance” for more information). If problem persists, contact your next level of support.
*** SDMB375 AUG19 17:51:24 1234 TBL SDM BILLING FILE TRANSFER STREAM= <stream>:<destination>: File Manager Failed to close current active files	The File Manager Interface in RTBChild has failed to close the current open file. The alarm RTBFM is raised and the RTB system state is changed to SYSB. Clear the alarm (refer to Chapter 4, “SDMC SBA alarms and maintenance” for more information). If problem persists, contact your next level of support.
*** SDMB375 AUG19 17:51:24 1234 TBL SDM BILLING FILE TRANSFER STREAM= <stream>:<destination>: Unable to get current Schedule Tuple	Unable to get the current Schedule Tuple. The alarm RTBST is raised and the RTB system state is changed to SYSB. Clear the alarm (refer to Chapter 4, “SDMC SBA alarms and maintenance” for more information). If problem persists, contact your next level of support.

Table 18 Log SDMB375 (continued)

SDMB375 Logs	Action
*** SDMB375 AUG19 17:51:24 1234 TBL SDM BILLING FILE TRANSFER STREAM= <stream>:<destination>: Schedule Tuple is not valid for RTB	The current Schedule Tuple is not valid for RTB. The alarm RTBST is raised and the RTB system state is changed to SYSB. Clear the alarm (refer to Chapter 4, “SDMC SBA alarms and maintenance” for more information). If problem persists, contact your next level of support.
*** SDMB375 AUG19 17:51:24 1234 TBL SDM BILLING FILE TRANSFER STREAM= <stream>:<destination>: Restart count exceeded. RTB moved to SYSB state	A child process died more than three times during any 15 second period. The alarm RTBER is raised and the RTB system state is changed to SYSB. Clear the alarm (refer to Chapter 4, “SDMC SBA alarms and maintenance” for more information). If problem persists, contact your next level of support.
SDMB375 AUG19 17:51:24 1234 TBL SDM BILLING FILE TRANSFER STREAM= <stream>:<destination>: RTB:Unable to fork child process	The RTBController is unable to fork a RTBChild process during an initiate RTS command or when trying to re-create the RTBChild process. Contact your next level of support.
SDMB375 AUG19 17:51:24 1234 TBL SDM BILLING FILE TRANSFER STREAM= <stream>:<destination>: RTB-Unable to clean up write active files due too invalid input. Please remove any write active files that are associated with this stream and a closed file.	The routine to delete the “WriteActive” files is passed a stream name, write active directory name, or file label which is null. Remove any “write active” files that are associated with this stream or contact your next level of support.
SDMB375 AUG19 17:51:24 1234 TBL SDM BILLING FILE TRANSFER STREAM= <stream>:<destination>: RTB-Unable to clean up write active files. Please remove file <filename> to ensure correct operation of RTB	The write active files cannot be deleted for the stream. Remove the file listed in the log report or contact your next level of support.
SDMB375 AUG19 17:51:24 1234 TBL SDM BILLING FILE TRANSFER STREAM= <stream>:<destination>: RTB-Unable to clean up in use files due too invalid input. Please remove any in use files that are associated with this stream	The routine to delete the “InUse” files is passed a stream name or in use directory name which is null. Remove “in use” files associated the stream or contact your next level of support.

Table 18 Log SDMB375 (continued)

SDMB375 Logs	Action
SDMB375 AUG19 17:51:24 1234 TBL SDM BILLING FILE TRANSFER STREAM= <stream>:<destination>: RTB-Unable to clean up in use files. Please remove file <filename> to ensure correct operation of RTB	The “InUse” files could not be deleted. Remove the file listed in the log report or contact your next level of support.
SDMB375 AUG19 17:51:24 1234 TBL SDM BILLING FILE TRANSFER STREAM= <stream>:<destination>: RTB-Unable to clean up in use files due too invalid input. Please remove any in use files that are associated with this stream and with files that have been transferred downstream	The routine to delete the “InUse” file is passed a stream name or in use directory name which is null. Remove any “in use” files that are associated with this stream and files that are associated with files that have been transferred downstream or Contact your next level of support.
SDMB375 AUG19 17:51:24 1234 TBL SDM BILLING FILE TRANSFER STREAM= <stream>:<destination>: RTB-Unable to clean up rtb done files due too invalid input. Please remove any rtb done files that are associated with this stream	The routine to delete the “RtbDone” file is passed a stream name, in use directory name, or file label which is null. Remove any “rtb done” files that are associated with this stream or contact your next level of support.
SDMB375 AUG19 17:51:24 1234 TBL SDM BILLING FILE TRANSFER STREAM= <stream>:<destination>: RTB-Unable to clean up rtb done files. Please remove file <filename> to ensure correct operation of RTB.”	The “RtbDone” files could not be deleted. Remove remove the file listed in the log report or contact your next level of support.
SDMB375 AUG19 17:51:24 1234 TBL SDM BILLING FILE TRANSFER STREAM= <stream>:<destination>: RTB-Unable to change in use file to rtb done due too invalid input. Please move any in use file associated with this stream and with files that have been transferred downstream	The routine to rename the “InUse” file to “RtbDone” is passed a stream name, in use directory name, or file label which is null. Remove any “InUse” files that are associated with this stream and files that are associated with files that have been transferred downstream or contact your next level of support.
SDMB375 AUG19 17:51:24 1234 TBL SDM BILLING FILE TRANSFER STREAM= <stream>:<destination>: RTB-Unable to move an in use file to rtb done. Please move file <<stream><fileLabel>.InUse> to <<stream><fileLabel>.RtbDone> to ensure correct operation of RTB	The “InUse” file could not be renamed to “RtbDone” file. Contact your next level of support.

Table 18 Log SDMB375 (continued)

SDMB375 Logs	Action
SDMB375 AUG19 17:51:24 1234 TBL SDM BILLING FILE TRANSFER STREAM= <stream>:<destination>: RTB-Unable to clean up rtb done files due to invalid input. Please remove all but the most recent files that are associated with this stream	The routine to clean up all but the most recent “RtbDone” files is passed a stream name or in use directory name which is null. Contact your next level of support.
SDMB375 AUG19 17:51:24 1234 TBL SDM BILLING FILE TRANSFER STREAM= <stream>:<destination>: RTB-rtbFTPClient transfer rate exceeded!. Ftp of current open file <filename> aborted	The maximum lag time to transfer records in billing file has been exceeded. This will stop the transfer of the current file. Contact your next level of support.

LogNumber SDMB380

Explanation

The file transfer mode for the stream indicated has an invalid value.

Format

SDMB380 <date> <time> <seq #> TBL SDM BILLING CONFIG <48_character_text_string>

Example

```
SDMB380 MAR21 7:51:24 1234 TBL SDM BILLING CONFIG
STREAM=<stream>:IFT : Invalid File Transfer Mode: <mode saved>
```

Action to be taken

Access the CONFSTRM level of BILLMTC, then update the streamFileTransferMode by entering OUTBOUND or INBOUND. These are the only valid modes.

LogNumber SDMB390

Explanation

This log is generated when schedule-related trouble occurs and is associated with the alarm (IF). Moreover, generation of this alarm triggers generation of a critical alarm (SBAIF).

Format

SDMB390 <date> <time> <seq #> TBL SDM BILLING FILE TRANSFER SCHEDULE
STREAM= <*stream*> <48_character_text_string>.

Table 19 shows the field descriptions and the actions for the log report.

Table 19 Log SDMB390

SDMB390 Logs	Action
SDMB390 AUG19 17:51:24 1234 TBL SDM BILLING FILE TRANSFER SCHEDULE STREAM= <stream> Unable to activate file transfer schedule. Unable to register with File Client	Contact your next level of support.

LogNumber SDMB400

Explanation

The SuperNode Data Manager Billing (SDMB) subsystem generates this log for every active stream every hour. This log lists all of the current active alarms.

Format

SDMB400 <mmmdd hh:mm:ss ssdd> SUMM SDM BILLING SUMMARY
STREAM= <stream>: <48_character_text_string>
<level> <alarmtext>
<level> <alarmtext>

Table 20 shows the field descriptions and the actions for the log report.

Table 20 Log SDMB400

SDMB400 Logs	Action
SDMB400 AUG19 17:51:24 1234 SUMM SDM BILLING SUMMARY STREAM= AMA: FOLLOWING ALARMS ARE ACTIVE *** COMMUNICATION TO SDM CANNOT BE ESTABLISHED*** BACKUP ACTIVE FOR LONGER THAN 10 MINUTES	Maintenance personnel should try to clear any outstanding alarms as soon as possible.

LogNumber SDMB530

Explanation

This log is generated when there had been a there had been a change in configuration or status of a stream. A stream status indication of ISTb occurs for in-service trouble.

Format

SDMB530 <mmmdd hh:mm:ss ssdd> INFO SDM BILLING CONFIG
STREAM= <stream>: <48_character_text_string>
NEW STATUS= <state> OLD STATUS= <state>

Table 21 shows the field descriptions and the actions for the log report.

Table 21 Log SDMB530

SDMB530 Logs	Action
SDMB530 AUG19 17:51:24 1234 INFO SDM BILLING CONFIG STREAM= AMA: Status change occurred.NEW STATUS= ISTb OLD STATUS= InSv	This is an information-only log; no action is required.

LogNumber SDMB531

Explanation

This log is generated when there has been a successful configuration change for the backup volumes.

Format

SDMB531 <mmmdd hh:mm:ss ssdd> INFO SDM BILLING CONFIG STREAM= <stream>: <48_character_text_string>

New Volume1 = < 8 character text> New Volume 2 = <8 characters text> Old Volume1 = < 8 character text> Old Volume 2 = <8 characters text>

Table 22 shows the field descriptions and the actions for the log report.

Table 22 Log SDMB531

SDMB531 Logs	Action
SDMB531 AUG19 17:51:24 1234 INFO SDM BILLING CONFIG STREAM= AMA: NEW VOLUME1 = S00DTEST NEW VOLUME2 = $ OLD VOLUME1 = S00DAM OLD VOLUME2 = $	This is an information-only log; no action is required.

LogNumber SDMB550

Explanation

This log is generated whenever the SBA shuts down. This can occur because the SDM node is busied or because the SBA is turned off in the SDM RMI.

Format

SDMB550 <mmmdd hh:mm:ss ssdd> INFO SDM BILLING CONTROL STREAM= <stream>: <48_character_text_string>

Table 23 shows the field descriptions and the actions for the log report.

Table 23 Log SDMB550

SDMB550 Logs	Action
SDMB550 AUG19 17:51:24 1234 INFO SDM BILLING CONTROL STREAM= ALL: <text>	Verify why the SBA is shutting down, ensure that anybody that busied the SDM or turned the SBA off understands all implications. In this mode, the SBA is not receiving any billing data, nor can it send billing files to collectors. The SBA in the CM should be recording to Backup.

LogNumber SDMB600

Explanation

This log is a typical information log for the overall SDM billing system.

Format

SDMB600 <mmmdd hh:mm:ss ssdd> INFO SDM BILLING SYSTEM STREAM= <stream>: <48_character_text_string>

Table 24 shows the field descriptions and the actions for the log report.

Table 24 Log SDMB600

SDMB600 Logs	Action
SDMB600 AUG19 17:51:24 1234 INFO SDM BILLING SYSTEM STREAM= AMA: RECOVERY ALARM CLEARED	This is an information-only log; no action is required.

LogNumber SDMB610

Explanation

This log is generated when a communication-related problem with SDM billing has been resolved.

Format

SDMB610 <mmmdd hh:mm:ss ssdd> INFO SDM BILLING COMMS STREAM= <stream>: <48_character_text_string>

Table 25 shows the field descriptions and the actions for the log report.

Table 25 Log SDMB610

SDMB610 Logs	Action
SDMB610 AUG19 17:51:24 1234 INFO SDM BILLING COMMS STREAM= ALL: COMMUNICATION TO SDM ESTABLISHED	This is an information-only log; no action is required.

LogNumber SDMB615

Explanation

This log is a typical information log for the overall SDM Billing system. It will be produced after a software related error condition was resolved.

Format

SDMB615 <mmmdd hh:mm:ss ssdd> INFO SDM BILLING SOFT ERROR STREAM= <stream>: <48_character_text_string>

Table 26 shows the field descriptions and the actions for the log report.

Table 26 Log SDMB615

SDMB615 Logs	Action
SDMB615 AUG19 17:51:24 1234 INFO SDM BILLING SOFT ERROR STREAM= ALL: SOFTWARE ALARM CLEARED	This is an information-only log; no action is required.

LogNumber SDMB620

Explanation

This log is generated when a backup related problem with SDM billing has been resolved.

Format

SDMB620 <mmmdd hh:mm:ss ssdd> INFO SDM BILLING BACKUP STREAM= <stream>: <48_character_text_string>

Table 27 shows the field descriptions and the actions for the log report.

Table 27 Log SDMB620

SDMB620 Logs	Action
SDMB620 AUG19 17:51:24 1234 INFO SDM BILLING BACKUP STREAM= AMA: BACKUP ALARM CLEARED	This is an information-only log; no action is required.

LogNumber SDMB621

Explanation

This log is generated when a new backup file is started.

Format

SDMB621 <mmmdd hh:mm:ss ssdd> INFO SDM BILLING BACKUP
STREAM= <stream>: <48_character_text_string>
VOLUME= <volume> FILE= <file>

Table 27 shows the field descriptions and the actions for the log report.

Table 28 Log SDMB621

SDMB621 Logs	Action
SDMB621 AUG19 17:51:24 1234 INFO SDM BILLING BACKUP STREAM= AMA: BACKUP STARTED TO RECORD TOVOLUME= S00DAMA FILE= BACK12AMA_01	This is an information-only log; no action is required.

LogNumber SDMB625

Explanation

This log is generated when a file is started to be recovered.

Format

SDMB625 <mmmdd hh:mm:ss ssdd> INFO SDM BILLING BACKUP
STREAM= <stream>: <48_character_text_string>
VOLUME= <volume> FILE= <file>

Table 29 shows the field descriptions and the actions for the log report.

Table 29 Log SDMB625

SDMB625 Logs	Action
SDMB625 AUG19 17:51:24 1234 INFO SDM BILLING BACKUP STREAM= AMA: RECOVERY STARTED FORVOLUME= S00DAMA FILE= BACK12AMA_01	This is an information-only log; no action is required.

LogNumber SDMB650

Explanation

This log indicates that SBA program is restarting one or more of its processes.

Format

SDMB650 AUG19 17:51:24 1234 INFO SDM BILLING CONTROL STREAM= ALL: <48_character_text_string>

Table 30 shows the field descriptions and the actions for the log report.

Table 30 Log SDMB650

SDMB650 Logs	Action
SDMB650 AUG19 17:51:24 1234 INFO SDM BILLING CONTROL STREAM= ALL: Cleared SBACP alarm, operating normally	This is an information-only log; no action is required.

LogNumber SDMB655

Table 31 shows the field descriptions, field explanation, and the actions for the log report.

Table 31 Log SDMB655

SDMB655 Logs	Explanation and Action
SDMB655 AUG19 17:51:24 1234 INFO SDM Billing DiskSTREAM = <stream>: File <file name> has moved from <previous state> to <new state>	This log indicates file state changes and disk utilization levels. This is an information-only log; no action is required.
SDMB655 AUG19 17:51:24 1234 INFO SDM Billing Disk STREAM= AMA: BELOW <Threshold> DISK UTILIZATION	This log indicates that the disk utilization has dropped below a threshold. ***Note:*** The three thresholds are critical, major, and minor. This is an information-only log; no action is required.
SDMB655 AUG19 17:51:24 1234 INFO SDM Billing Disk STREAM=<stream>: Failed to move file <filename> to closedSent. Manual removal necessary.	This log indicates that the SBA can not move a file to the closedSent directory. Remove the file manually. If the condition persist, contact your next level of support.

LogNumber SDMB660

Explanation

This log is generated whenever a problem involving communications with other SuperNode Billing Application (SBA) features is resolved and is associated with the alarm FTP.

Note: Applicable for NA008-NA009 only.

Format

SDMB660 <date> <time> <seq #> INFO SDM BILLING COMMS STREAM= <STREAM>: OFT - <specific resolution>

Table 32 shows the field descriptions and the actions for the log report.

Table 32 Log SDMB660

SDMB660 Logs	Action
SDMB660 AUG19 17:51:24 1234 INFO SDM BILLING COMMS STREAM= <stream>: OFT - RECONNECTED TO FILE CLIENT	This is an information-only log. No action is required.
SDMB660 AUG19 17:51:24 1234 INFO SDM BILLING COMMS STREAM= <stream>: OFT - CONNECTION TO FILE CLIENT reestablished.	This is an information-only log. No action is required.

LogNumber SDMB670

Explanation

The SDMB subsystem generates the SDMB670 log when the CDR to BAF conversion process uses default values to create a BAF field because a CDR field is missing. The SDMB subsystem also generates the SDMB670 log when problem is corrected.

The TEXT portion of the log provides the stream name and an explanation of the problem.

Format

The format for log report SDMB670 follows

SDMB670 <date> <time> <seq #> INFO SDM BILLING CDR2BAF CONVERSION STREAM= <stream>: <specific error>.

Table 33 shows the field descriptions, field explanations, and the actions for the log report.

Table 33 Log SDMB670

SDMB670 Logs	Explanation and Action
SDMB670 AUG19 7:51:24 1234 INFO SDM BILLING CDR2BAF CONVERSION STREAM= <stream>: Fields needed to build <BAF field> not in CDR. Defaults used.	A BAF field is generated using default values because the associated CDR fields are not in the CDR. Determine the CDR fields needed to generate the BAF field. The BAF field is displayed in the log report. Refer to the *UCS DMS-250 Billing Records Application Guide* for a list of the CRD fields associated with each BAF field. Update the CDR to include the missing CDR field.
SDMB670 AUG19 7:51:24 1234 INFO SDM BILLING CDR2BAF CONVERSION STREAM= <stream>: Warning cleared for <BAF field> BAF field missing CDR fields.	A BAF field is no longer generated using default values because the associated CDR fields are in the CDR.
SDMB670 AUG19 7:51:24 1234 INFO SDM BILLING CDR2BAF CONVERSION STREAM= <stream>: Alarm cleared for CDR template ID mismatch.	The CDRT alarm has been cleared.
SDMB670 AUG19 7:51:24 1234 INFO SDM BILLING CDR2BAF CONVERSION STREAM= <stream>: Alarm cleared for invalid Structure Code.	The NOSC alarm has been cleared.

LogNumber SDMB675

Explanation

This log is generated whenever a problem involving a file transfer has been resolved. The error text is dependent upon the nature of the actual error and reflects what result the system returned.

Format

SDMB675 <date> <time> <seq #> INFO SDM BILLING FILE TRANSFER STREAM= <stream>:<destination>: <specific resolution>

Table 34 shows the field descriptions and the actions for the log report.

Table 34 Log SDMB675

SDMB675 Logs	Action
SDMB675 AUG19 17:51:24 1234 INFO SDM BILLING FILE TRANSFER STREAM= <stream>:<destination>: Transmission type set to binary.	This is an information-only log. No action is required.
SDMB675 AUG19 17:51:24 1234 INFO SDM BILLING FILE TRANSFER STREAM= <stream>:<destination>: Transmission structure set to FILE.	This is an information-only log. No action is required.
SDMB675 AUG19 17:51:24 1234 INFO SDM BILLING FILE TRANSFER STREAM= <stream>:<destination>:File rename from <fileName1> to <fileName2> on downstream succeeded.	This is an information-only log. No action is required.
SDMB675 AUG19 17:51:24 1234 INFO SDM BILLING FILE TRANSFER STREAM= <stream>:<destination>:File not transmitted to downstream processor: <fileName>.	This is an information-only log. No action is required.
SDMB675 AUG19 17:51:24 1234 INFO SDM BILLING FILE TRANSFER STREAM= <stream>:<destination>: RTB-File Manager Able to Close Files	After alarm RTBFM is raised, this log is generated to indicate one of the following: 1. RTB was successful in closing the current open file to start transfer of a fresh open file. 2. There was a failure when trying to transfer the current open file. The current open file was closed to start transfer of fresh open file. 3. RTB is being shutdown and successful closing the current open file. No action is required.
SDMB675 AUG19 17:51:24 1234 INFO SDM BILLING FILE TRANSFER STREAM= <stream>:<destination>: RTB-Communication with a RTBControl Process has been reestablished	After alarm RTBPD is raised, this log is generated to indicate RTB was successfully put INSV for a stream. No action is required.

Table 34 Log SDMB675 (continued)

SDMB675 Logs	Action
SDMB675 AUG19 17:51:24 1234 INFO SDM BILLING FILE TRANSFER STREAM= <stream>:<destination>: RTB-Schedule tuple is valid for Real Time Billing	After alarm RTBST is raised, this log is generated to indicate RTB has validated the Schedule tuple. No action is required.
SDMB675 AUG19 17:51:24 1234 INFO SDM BILLING FILE TRANSFER STREAM= <stream>:<destination>: RTB-Consecutive Failures has been reset to 0	After alarm RTBCF is raised, this log is generated to indicate RTB has successfully transferred the open file. No action is required.
SDMB675 AUG19 17:51:24 1234 INFO SDM BILLING FILE TRANSFER STREAM= <stream>:<destination>: RTB-Session started by command	RTB was put INSV for a stream. No action is required.
SDMB675 AUG19 17:51:24 1234 INFO SDM BILLING FILE TRANSFER STREAM= <stream>:<destination>: RTB-Session stopped by command	RTB state changed from INSV to MANB for a stream. No action is required.

LogNumber SDMB680

Explanation

This log is generated whenever information not related to the file system or creating links needs to be communicated to the customer. For example, when the fileTransferMode experiences a transition.

Format

SDMB680 <date> <time> <seq #> INFO SDM BILLING CONFIG <specific resolution>

Example 1

```
SDMB680 MAR21 7:51:24 1234 TBL SDM BILLING CONFIG
STREAM=<stream>:IFT : fileTransferMode changed from
<ftmode> to <ftmode>
```

Example 2

```
SDMB680 MAR21 7:51:24 1234 TBL SDM BILLING CONFIG
STREAM=<stream>:IFT : fileTransferMode changed from
<invalid_ftmode> to <ftmode>
```

Example 3

```
SDMB680 MAR21 7:51:24 1234 TBL SDM BILLING CONFIG
STREAM=<stream>:IFT : fileTransferMode changed from
<ftmode> to <invalid_ftmode>
```

Action 1

None.

Action 2

None

Action 3

Change the streamFileTransferMode (using the CONFSTRM command) to one of the two valid values: INBOUND or OUTBOUND.

LogNumber SDMB820

Explanation

This log is generated whenever a backup hits a threshold.

Format

SDMB820<mmmdd hh:mm:ss ssddd> INFO SDM BILLING BACKUP
STREAM= <stream>: <48_character_text_string>
Volume1= <volume> AND VOLUME2=<volume>

Table 35 shows the field descriptions and the actions for the log report.

Table 35 Log SDMB820

SDMB820 Logs	Action
SDMB820 AUG19 17:51:24 1234 INFO SDM BILLING BACKUP STREAM= AMA: 30% OR LESS FREE BACKUP SPACE ON VOLUME1= S00DAMA AND VOLUME2= $	Maintenance personnel should try to resolve the reason for backup or provide more space on backup volumes.

Chapter 6: SBA Commands

This chapter describes SuperNode Data Manager Carrier (SDMC) SuperNode Billing Application (SBA) commands.

Accessing the SBA on the SDM side

Note: You can access SBA commands from the CM-side through SDMRLOGIN. Refer to "CM/DMS switch commands" for more information.

1 Log on to the SDM.

The SDM displays the input prompt

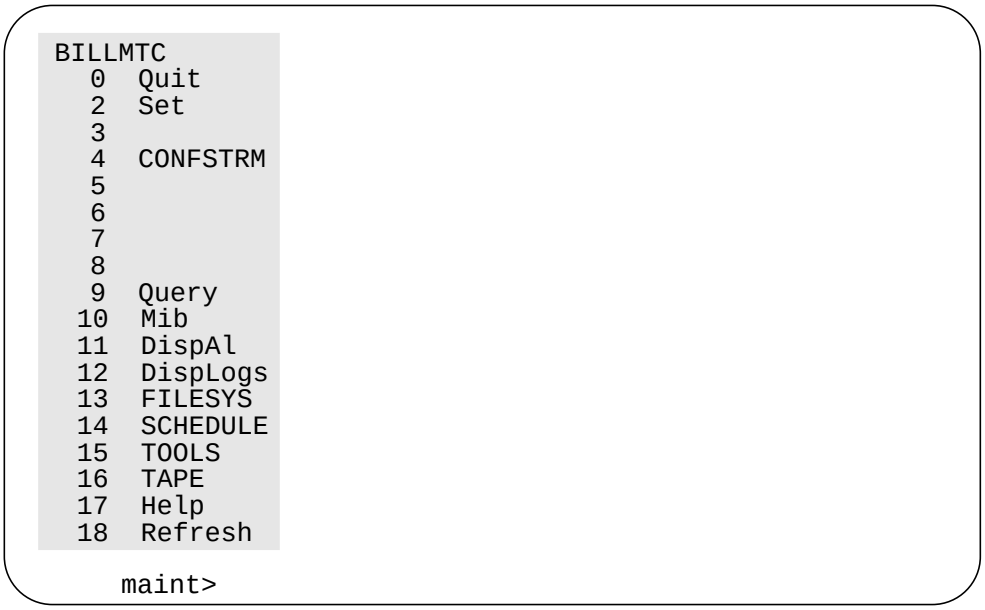
2 Type

>billmtc

and press **Enter**.

The SDM displays the billing maintenance user interface level as shown in Figure 28.

Figure 28 Billing maintenance menu



The shaded area to the left is the menu. The menu lists all available commands at the appropriate numbered location for the specific level. You can execute these commands at the prompt by typing either the command name or the number to which it corresponds. Enter any arguments or options for the command on the same command line.

If the command happens to be a different level, the system clears the commands menu and shows the commands available at the different level.

Note 1: All “level” commands are in capital letters, such as *TOOLS* or *FILESYS*. All commands are shown in mixed case, however, these commands are not case sensitive when read from the command line. The command BILLMTC, used to start up the Remote Maintenance Interface (RMI) session, is not available for users logging in from the CM with SDMRLOGIN. (See "Accessing the SBA on the SDM side" in this document.)

Note 2: Certain commands (Amadump) take you temporarily out of the BILLMTC RMI environment into a different environment. This involves clearing the screen for the environment. The original screen is restored once the command has finished executing.

SBA commands

There are different categories of SBA commands. These are as follows:

- General SBA commands
- SBA Billing commands
- SBA TAPE commands
- SBA TOOLS commands
- SBA FILESYS commands
- SBA SCHEDULE commands
- SBA CONFSTRM commands

General SBA commands

There are some commands that are common to all of the SBA levels. These are Quit, Set, Help, and Refresh. These are described in the following sections.

Note: When a command is running, the message “command running” is displayed on the screen, above the menu.

Quitting or exiting out

Command name: Quit

Command description

The Quit command is used to quit out of the current level and take you back to the previous level. It quits out of the application if it is currently at the top level.

The “Quit all” command can be used to quit out of the RMI application from any level.

Command syntax

```
Quit [all]
```

where

[] indicates that this parameter is optional.

Parameter definitions

Parameter	Value	Definition
all	ALL	Quits out of the RMI application. This is optional.

Getting help

Command name: Help

Command description

The Help command displays the help text available for all the commands at the particular level.

Command syntax

```
Help
```

Parameter definitions

None.

Refreshing

Command name: Refresh

Command description

The Refresh command clears the screen and displays the menu banner again.

Command syntax

```
Refresh
```

Parameter definitions

None.

Setting

Command name: Set

Command description

The Set command is used to set a context for a particular stream. This allows subsequent command invocations to utilize this value for the stream parameter.

Command syntax

```
Set <Object_name> [to_value]
```

Parameter definitions

Parameter	Value	Definition
object_name	string representing the name of the object to set	This is a required parameter that is a string representing the name of the object to set. The only object supported is “STREAM”.
to_value	string representing the value to apply to the named object.	This is an optional parameter that is, a string representing the value to apply to the object name. For object name “STREAM” this can only be a valid stream name.

SBA Billing commands

These commands enable you to access information about the SBA system. This information may consist of Management Information Base (mib) settings, alarms, or logs.

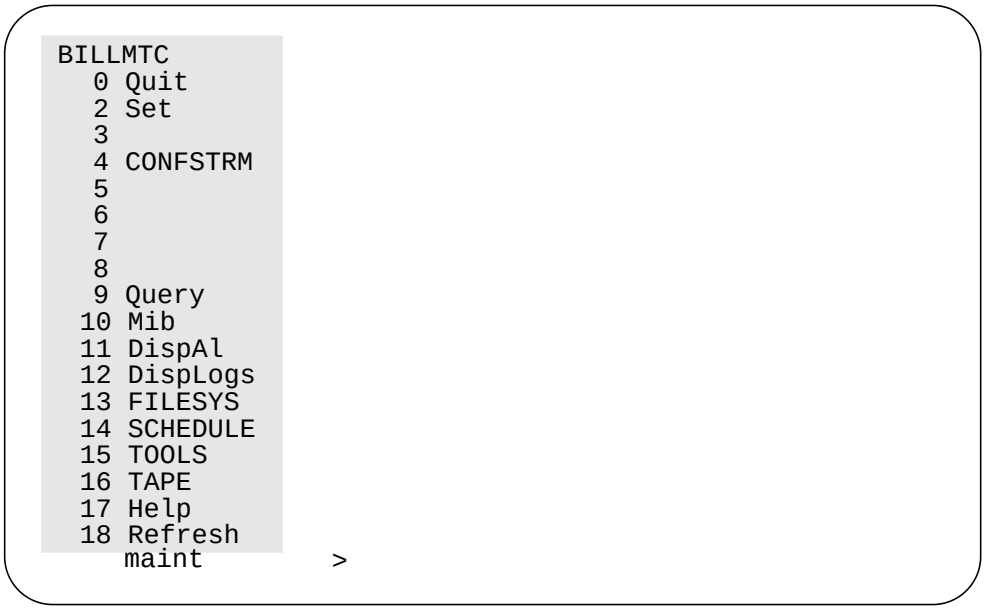
The SBA Billing commands are as follows:

- Mib
- DispAl
- DispLogs
- Query

These commands are available using SDMRLOGIN or the BILLMTC RMI interface. Refer to “Accessing the SDM through the CM side.” in this document. The BILLMTC RMI with all of the SBA billing commands appears similar to Figure 29.

Note: For SDMC13 and later releases, the AMABakUp command is replaced with the SBA TAPE level of the BILLMTC.

Figure 29 SBA billing commands



Management information base overview

The mib contains elements that control and monitor the operation of the SBA. Mib functionality enables maintenance personnel and SBA processes to read (get) all of these parameters, and to write (set) many of them.

All mib elements are either simple or tabular. To retrieve and store simple mib elements, a user supplies the object name. To similarly access a tabular element, the user supplies the object name and a row parameter.

ATTENTION

The assignment of inappropriate values to the mib by maintenance personnel may disrupt or even halt the system. Please refer to the mib table information in Appendix B for a detailed description of the mib objects and their valid assignable values.

Setting, viewing, and describing configuration parameters

Command name: mib

Command description

This command enables maintenance users to obtain read/write access to mib data of the SBA. This command is not case sensitive.

Maintenance personnel use the mib command to display values of elements, display descriptions of elements and set values of elements. Access the Billmtc RMI to enter the mib command by typing:

```
# billmtc
```

followed by

```
> mib
```

Command syntax

```
mib [record_format] view

mib [record_format] describe <OBJECT_NAME>

mib [record_format] get <-r ROW_NUMBER>
<OBJECT_NAME>

mib [record_format] set <-r ROW_NUMBER> <OBJECT NAME>
<TO_VALUE>
```

Note 1: The wildcard character "*" can not be used for the <TO_VALUE> field in the MIB SET command.

Note 2: Refer to Appendix B: "Management information base variables" for complete listing of mib variables.

Note 3: The mib command processor is not case sensitive when you enter object names or describe, get, and set parameters. It is best to always use lowercase when entering SBA command names.

Parameter definition

Parameter	Value	Definition
GET	"get"	get a mib object's value
Row number	integer	row number when the mib variable is a table name
SET	"set"	set a mib object's value.
Object name	String	mib object name
Value	String	assigned value in SET Operation
VIEW	"view"	display all accessible mib objects
DESCRIBE	"describe"	displays text describing the element's purpose.
Record format	"baf" or "cdr"	required to access BAF/CDR specific mib parameter. The default is the base mib.

Mib responses

The response to the mib command depends on the option chosen:

GET Responses: the value of the mib object requested, or an error message indicating that the specified object is not in the mib or is read only.

Example

object_name = current_value

The command results in the name of the object retrieved and the current value of that object being displayed. If invalid input is provided, an error message indicating that the specified object is not in the mib is displayed.

SET responses: <object_name> is set to <new value>, or an error message indicating that the specified object is not in the mib.

If an invalid input is provided, an error message indicates the entered value is incorrect and suggests what a valid entry might look like.

VIEW responses: the list of all accessible mib objects is displayed.

DESCRIBE responses: text which describes the function of the element.

Mib examples of error messages

```
>mib crd get someCdrSpecificParm

Invalid record format. Valid record formats are {baf,
cdr}

>mib set sendBillingLogsToCM 100

RANGE ERROR: sendBillingLogsToCM 100 NOT IN (0,1)
```

Mib command examples

```
>mib view
```

The command mib view lists the names of all mib elements.

```
>mib describe sendBillingLogsToCM
```

The command mib describe sendBillingLogsToCM causes display of the following help text describing the purpose of the element:

```
MIBBase OBJECT: sendBillingLogsToCM

(OID=1.3.6.1.4.1.148.1.7.4.1.4.6) ‘Boolean
indicating whether to send logs to the CM or the SDM.
To have all logs go to the CM, set to 1. If set to 0,
logs will go to the SDM log delivery process. The
default value is 1. Regardless of the setting of this
parm, logs that are associated with the raising and
lowering of alarms will go to the CM.’

Range (0, 1)

>mib get sendBillingLogsToCM
```

The command mib get sendBillingLogsToCM returns the following:

```
“sendBillingLogsToCM = 1”

>mib set sendBillingLogsToCM 0
```

The command mib set sendBillingLogsToCM 0 returns the following:

```
“sendBillingLogsToCM set to 0”
```

Displaying alarms

Command name: DispAl

Command description

DispAL displays all of the current alarms raised by the SDM for the SBA. The criticality, stream, and text are displayed on the map screen. Moreover, this command displays alarms that have not been sent to the CM. In addition, this command does not display CM-side alarms like; BAK70, BAK90, NOBAK, BAKUP, etc.

Command format

criticality: stream: alarm short text: alarm long text

Command syntax

```
DispAl
```

Responses

The current alarms are displayed. If there are no alarms, “No Alarm” will be displayed.

> ***Note:*** The response only shows the alarms raised at the time the command is entered. Recent alarms raised, and existing alarms lowered after command output is displayed, are not shown.

System action

None.

User action

User action is specific to the alarm. DispAl is only a way to view all of the current alarms from the SDM side of the SBA, it does not alter the alarms in anyway.

Example

Figure 30 shows an example of the DispAl command.

Figure 30 Example of DispAl

```
BILLMTC          Major:ALL:FTPW  :  Requested  action  not  taken.  File
  0 Quit         unavailable.
  2 Set          Major:AMA:FTPW  :  FTP  session  failed.   Max  retries
  3              encountered.
  4 CONFSTRM     Crit:AMA:DSKWR : DISK FULL
  5              Crit:AMA:LODSK : CRITICAL: DISK UTILIZATION EXCEEDS 90%
  6              Major:SBA0:FTC : Fork failed; cannot exec.
  7
  8
  9 Query
 10 Mib
 11 DispAl
 12 DispLogs
 13 FILESYS
 14 SCHEDULE
 15 TOOLS
 16 TAPE
 17 Help
 18 Refresh
    maint          >
```

Displaying logs

Command name: DispLogs

Command description

DispLogs will display all of the current logs raised by the SDM that have not been sent to the CM or the BASE group log interface. Moreover, this command displays logs that have not been sent to the CM. This command is affected by the mib parameter setting for sendBillingLogsToCM.

Command format

name: number: event type: alarm value: label

Command syntax

```
DispLogs
```

Responses

The current logs will be displayed on the map screen, if there are no logs, “No unsent logs” will be displayed.

Note: The response only shows the logs not acknowledged by the CM.

System action

None.

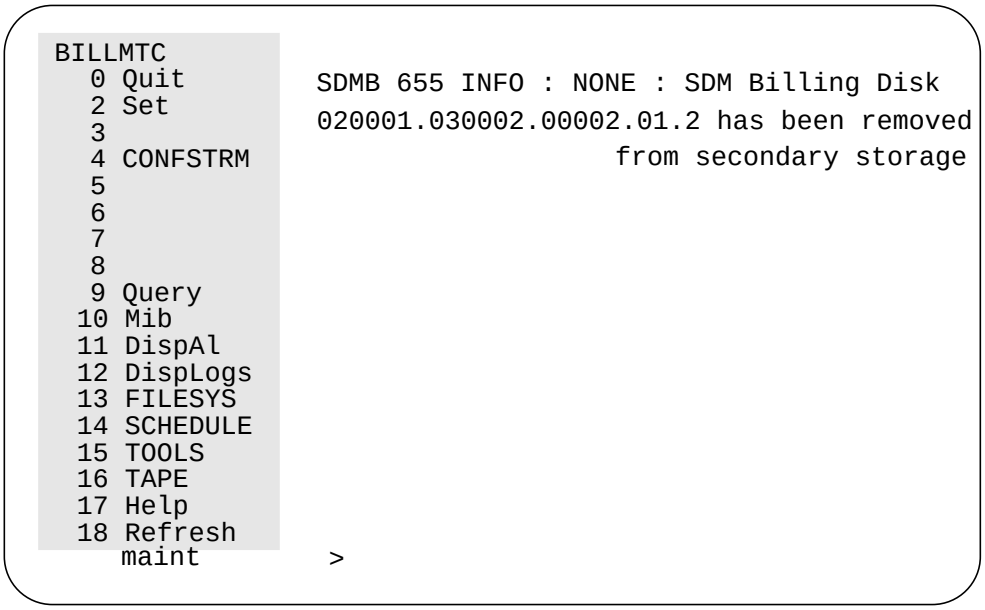
User action

User action is specific to the log. DispLogs is only a way to view all of the current logs prior to being sent to the CM. It does not alter the logs in any way.

Example

Figure 31 shows an example of the DispLogs command.

Figure 31 Example of DispLogs



Query

Command name: Query

Command description

Query displays current information about a certain stream or all streams. The stream information displayed is described as follows:

- Possible state values and their definition
  - RBsy The stream either has been manually busied or a problem has been encountered on the CM. This stands for “Remote Busy.”
  - Init The stream is either in the process of coming up or being stopped. It is a transitional state that occurs momentarily.
  - InSv The stream is in normal running mode.
  - Off The stream has been turned off from the CM side, accepted on the SDM side and is going down. It is a transitional state that occurs momentarily.
  - OffP The stream has been turned off but is waiting for the SDM to complete processing its data.
- Closed Not Sent Files Available indicates the number of ClosedNotSent files currently on this stream’s logical volume. Note that the accuracy of this measurement is contingent upon the user’s adherence to normal operating procedures (the manual deletion of ClosedNotSent files while the SBA application is ManB could introduce errors).
- Records within the ClosedNotSent Files indicates the number of billing records, contained in ClosedNotSent files, currently on this stream’s logical volume. Note that the accuracy of this measurement is contingent upon the user’s adherence to normal operating procedures (the manual deletion of ClosedNotSent files while the SBA application is ManB could introduce errors).
- Date of Last File Sent indicates the last date and time that a closedNotSent file was made closedSent.
- Records within the Open Files Indicates the number of records in open files of a particular stream. For example, records that have not changed into primary (or closedNotSent).

Command format

```
query <stream_name,ALL>
```

Command syntax

```
Query
```

Parameter definitions

Parameter	Value	Definition
stream_name	string representing a stream or ALL	This is an optional parameter that is a string representing the particular stream to query (for example, AMA.) If the user does not supply a stream_name or the keyword, ALL, or a stream was not previously set by the set stream command, ALL is assumed. The user may wish to use the command, SET <stream> <stream_name>, before invoking query and would not need to enter this parameter due to the fact that the stream was previously set by the Set Stream command. However, if a stream name or ALL is entered on the command line as part of the query command, it takes precedence over a previously set stream.

Responses

Response

```
<stream_name>:
    PrimarySubStream:                          <current state>
    SecondarySubStream:                        <current state>
    Number of records in open files<           <record>
    ClosedNotSent Files Available:             <files available>
    Records within the ClosedNotSent files:    <records>
    Date of Last File Sent:                    <last file>
```

Explanation

This is the information screen that the user gets for each stream if more than one was requested with the ALL keyword, or absence of a stream name. These few lines would be repeated for each stream.

The Secondary Substream (RECOVERY) would not be displayed if it was not present. What this means is that the SBA is currently not recovering files that were previously backed up in auxiliary storage on the CM.

System action

Displays this information, command ends and the prompt is returned to the user.

User action

None.

Response

```
Invalid stream. Valid streams are {<stream1>,
<stream2>, etc.}
```

Explanation

This message is generated whenever a user invokes this command with an invalid stream name. A valid stream is one that is running, actually turned on from the CM. If a stream is configured, but not yet turned on, it is considered an invalid stream.

System action

Prompt is returned to user' execution of the command ends.

User action

User must re-enter the command providing a valid stream name. The user may also choose to use the Set Stream command to set a stream, then re-invoke the command without providing the stream name. Also, the user has the choice of using the keyword, ALL or not entering a stream name (resulting in ALL).

> ***Note:*** The output of this command is a Snapshot of the current states of the substreams. This value displayed to the screen is Not Updated dynamically. Therefore, at the instance this command is invoked, the state is displayed as one value that could change at any moment after this command is invoked.

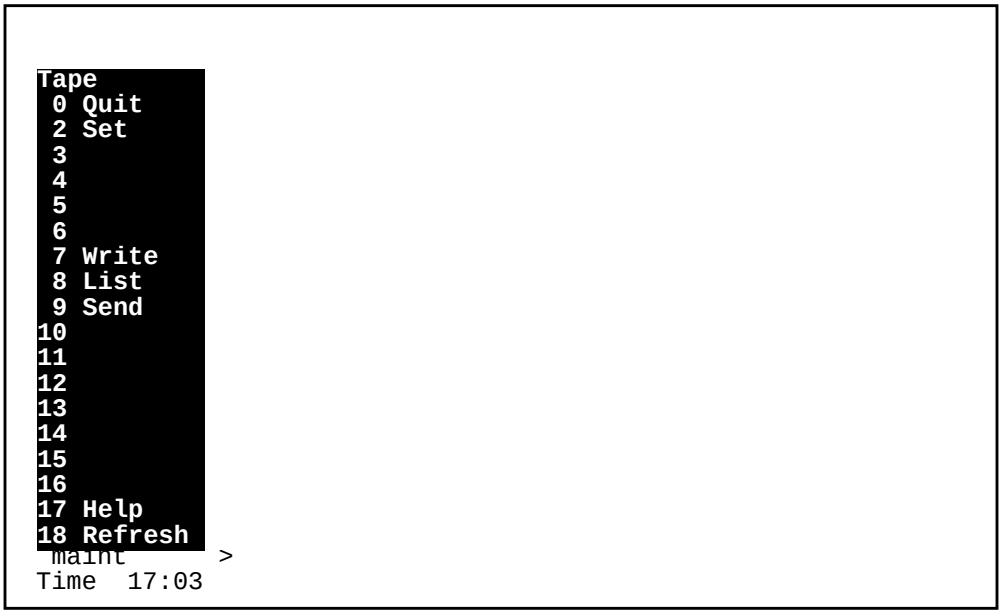
SBA TAPE commands

The TAPE level is accessed through the BILLMTC RMI. The TAPE level has three commands as shown in Figure 32 "TAPE level" below:

- The write command replaces the pre-SBA013 AMABakUp command
- The list command lists files contained on a DAT tape
- The send command sends files contained on a DAT tape via FTP

Note: For SDMC13 and later releases, the AMABakUp command is replaced with TAPE level commands.

Figure 32 TAPE level



Writing to Tape

Command name: WRITE

Command description

This command starts a back up of user-specified billing files from the SDM disk to a DAT tape located in the user-specified tape drive (dat0 or dat1).

System action

None.

User action

From the BILLMTC RMI screen, type TAPE at the command line. At the TAPE level, type WRITE at the command line.

ATTENTION

When two applications, for example File Transfer Controller (FTC) and the write command, are trying to access the same file, one of two exception conditions can occur: (1) the write command backs up the file but issues an error message stating that it has backed up the <filename> but was unable to change the state of the file. (2) If the FTC has already moved the file to closeSent state when write command tries to back it up, the write command issues a message stating that it is unable to back up <filename>.

In both cases, the write command exits and does not continue accessing the file list.

Note 1: When SBA is running normally, the write command can be run at traffic levels up to 1.2 million records per hour. However, the write command should not be run when the SBA is operating in RECOVERY mode and the traffic level is in excess of 750,000 records an hour.

Note 2: The WriteTape command uses the CPIO utility to back up standard billing files. Each file copied requires a separate invocation of the CPIO utility and produces a separate archive. For details on the CPIO commands issued and the tape headers generated, refer to Appendix C: "Details of write tape operations" in this document.

Command syntax for AMADNS file format

```
writetape <stream_name> <SENT,NOTSENT> [-p, -s, -a]
[ -b [hh[:mm[:ss]]][.mm[/dd[/[yy]yy]]] ] [ -e
[hh[:mm[:ss]]][.mm[/dd[/[yy]yy]]] ] [-q i[,j]] [-r
<priority integer 1-4>] [-f <filename>] [ -y
<filetype>] [DAT0 or DAT1] [NOEJECT] [OVERWRITE]
[APPEND]
```

Parameter definitions for AMADNS file format

Parameter	Value	Definition
stream_name	string	The stream name that the WriteTape command is to be applied to. It supersedes any previously set stream.
SENT or NOTSENT	SENT or NOTSENT	A required parameter that specifies what file state the files are to be set to after they are backed up. ***Note:*** If this parameter is not specified, a prompt is displayed asking if the user wishes the files' states changed to "closedSent." If "y" is entered in response to the prompt, the file state of all backed up files will be "closed sent" after the backup is successfully completed.If "n" is entered in response to the prompt, the states of the backed up files remain as they were before the backup operation was performed.
-p (or -P)		Directs the WriteTape command to back up "Primary" files.
-s (or -S)		Directs the WriteTape command to back up "Secondary" files.
-a (or -A)		Directs the WriteTape command to back up all files (both "Primary" and "Secondary").
-b (or -B)	[hh[:mm[:ss]]][.mm[/dd[/[yy]yy]]]	Directs backup to back up only files that have a creation timestamp equal to or later than the specified timestamp, but not later than the ETIME timestamp (described below), if specified.
-e (or -E)	[hh[:mm[:ss]]][.mm[/dd[/[yy]yy]]]	Directs backup to back up only files that have a creation timestamp equal to or earlier than the specified timestamp, but not earlier than the BTIME timestamp (described above), if specified.
-q (or -Q)	integer, integer	Directs backup to back up only files that have sequence numbers that match the specified value or are within the specified range of values.

Parameter definitions for AMADNS file format

Parameter	Value	Definition
-f (or -F)	filename	WriteTape backs up only the filename specified.
-y	integer 0-32	Directs backup to back up only files that have the specified file type value. Range is between 0 and 32. Default values are 1 for Standard AMA Files and 2 for Error files. These values can also be assigned in the range 16-32 using the ConfStrm:add command.
-r	integer	Directs backup to back up only files that have the specified DNS priority level. ***Note:*** Currently all DNS files have a priority of 2.
DAT0 or DAT1	DAT0 or DAT1	Specifies the tape drive on which the target tape is mounted
-n		Specifies that the tape is not to be ejected when the backup operation is complete.
OVERWRITE or APPEND	OVERWRITE or APPEND	A required parameter that specifies what file state the files are to be set to after they are backed up. ***Note:*** If this parameter is not specified, and the command processing detects that files exist on the tape, the user is prompted to select either to overwrite the existing files, or to preserve existing files on the tape and write backed up file data behind them.
—end—		

Command syntax - general file formats

```
WriteTape <stream_name> <SENT, NOTSENT> [STATE
<primary, secondary, unprocessed, processed, open,
all>],[ BTIME [hh[:mm[:ss]]][.mm[/dd[/[yy]yy]]] ,
[ETIME [hh[:mm[:ss]]][.mm[/dd[/[yy]yy]]], [SEQNUM
<i, [j]>], [PRIO <priority integer 1-4>], [FNAME
<filename>], [FTYPE <file type>], [DAT0 or DAT1],
[NOEJECT], [OVERWRITE], [APPEND]
```

Parameter definitions for general file format

Parameter	Value	Definition
stream_name	string	The stream name that the WriteTape command is to be applied to. It supersedes any previously set stream.
new_file_state	SENT or NOTSENT	A required parameter that specifies what file state the files are to be set to after they are backed up. ***Note:*** If this parameter is not specified, a prompt is displayed asking if the user wishes the files' states changed to "ClosedSent." If "y" is entered in response to the prompt, the file state of all backed up files will be "closedSent" after the backup is successfully completed. If "n" is entered in response to the prompt, the states of the backed up files remain as they were before the backup operation was performed.
STATE (or state)	PROCESSED, UNPROCESSED, PRIMARY, SECONDARY, OPEN, or ALL	Selects the State of the files that WriteTape is to operate on within the specified stream. The files with the state equal to this value are to be backed up. For example: PROCESSED means all processed files are to be backed up.
BTIME (or btime)	[hh[:mm[:ss]]][.mm[/dd[/[yy]yy]]]	Directs backup to back up only files that have a creation timestamp equal to or later than the specified timestamp, but not later than the ETIME timestamp (described below), if specified.

—continued—

Parameter definitions for general file format

Parameter	Value	Definition
ETIME (or etime)	[hh[:mm[:ss]]][.mm[/dd[/[yy]yy]]]	Directs backup to back up only files that have a creation timestamp equal to or earlier than the specified timestamp, but not earlier than the BTIME timestamp (described above), if specified.
SEQNUM (or seqnum)	integer, integer	Directs backup to back up only files that have sequence numbers that match the specified value or are within the specified range of values.
FNAME (or fname)	filename example: U980223163503OCC	WriteTape backs up only the file name specified.
FTYPE	integer 0-32	Directs backup to back up only files that have the specified file type value. Range is between 0 and 32. Default values are 1 for Standard AMA Files and 2 for Error files. These values can also be assigned in the range 16-32 using the ConfStrm:add command.
PRIO	integer 1-4	Directs backup to back up only files that have the specified DNS priority level. ***Note:*** Currently all DNS files have a priority of 2.
DAT0 or DAT1	DAT0 or DAT1	Specifies the tape drive on which the target tape is mounted
NOEJECT		Specifies that the tape is not to be ejected with the backup operation is complete.
OVERWRITE or APPEND	OVERWRITE or APPEND	A required parameter that specifies what file state the files are to be set to after they are backed up. ***Note:*** If this parameter is not specified, and the command processing detects that files exist on the tape, the user is prompted to select either to overwrite the existing files, or to preserve existing files on the tape and write backed up file data behind them.
—end—		

Example of time/day formats

Parameter	Value	Definition
time-date	examples: 10:30 12/24/1997 10:30.12/24	time | date| time.date
time	examples: 10: 10:30 10:30:30	hh:[mm[:ss]] time of day for specifying date/time ranges
date	examples: 12/ 12/24 12/24/1997	mm/[dd[/yyyy]] day of year for specifying date/time ranges

WriteTape command examples

Note: In the following examples “baf1” is used for stream_name.

To back up all primary files named in the baf1 stream, type the following command:

```
>WriteTape baf1 -p (for AMADNS file format only)

>WriteTape baf1 STATE PRIMARY (for general file
formats)
```

To back up all secondary files that were created in the baf1 stream between yesterday (say the current date is May 12, 1998) at 23:00 and the present time, type the following command:

```
>WriteTape baf1 -s -b 23:00.5/11/98(for AMADNS file
format only)

>WriteTape baf1 STATE SECONDARY BTIME 23:00.5/11/98
(for general file formats)
```

To back up all secondary files that were created in the baf1 stream between 10:00 and 12:00 noon today, type the following command:

```
>WriteTape baf1 -s -b 10:00 -e 12:00(for AMADNS file
format only)

>WriteTape baf1 STATE SECONDARY BTIME 10:00 ETIME
12:00(for general file formats)
```

Example

The system responses are:

```
Do you wish the files' state to be changed to secondary (y/n)? n

*** WARNING: Any data previously written to the tape will be
overwritten. ***

Do you wish to continue (y/n)? y

*** WARNING: Do not kill process while the AMA backup is
running. ***

*** Killing the process may have adverse effects on the DAT
drive. ***

10 blocks

004096.004096.00145.01.2 was successfully written to tape.

10 blocks

004096.004096.00145.01.2 was successfully written to tape.

10 blocks

004096.004096.00145.01.2 was successfully written to tape.

more...

10 blocks

004096.004096.00145.01.2 was successfully written to tape.

10 blocks

004096.004096.00145.01.2 was successfully written to tape.

10 blocks

004096.004096.00145.01.2 was successfully written to tape.

*** AMA backup done. Please remove tape from drive /dev/rmt1.1.
***

Press Return to Continue...
```

The warnings are for information only. The WriteTape process ignores most signals that can be sent by the kill (1) command. It is unlikely that there would ever be a need to kill a running WriteTape process. However, if it were to occur, it could have adverse effects on the DAT drive.

Responses

Response 1

```
ERROR: tape drive not there
```

Explanation

This message is displayed when the SBA detects that an invalid tape drive location, such as DAT3, has been selected.

System action

The SBA prompts for a new command.

User action

Select a valid SDM DAT tape drive, DAT0 or DAT1.

Response 2

```
ERROR: tape not there or in use
```

Explanation

This message is displayed when a tape is not mounted in the selected drive or when the drive is already in use.

System action

The SBA prompts for a new command.

User action

Mount a DAT tape in the selected DAT tape drive, select the other DAT tape drive after mounting the tape or wait for the executing tape command to complete.

Response 3

```
cpio: End of tape, insert the next tape.
Enter the device or file name when ready to continue.
```

Explanation

This message is displayed if the end of the tape was reached before all the files were transferred.

System action

The process is now suspended until you insert another tape and press enter.

User action

Put another tape in the drive and type in /dev/rmt1.1 <return> to continue backing up files.

Response 4

```
*** Backup done. Please remove tape from drive
<device>. ***
```

Explanation

This message is displayed when the AMA backup is complete and ended normally.

System action

The prompt is returned to you, the user.

User action

Remove the tape and deliver it to the appropriate location for processing of the billing records. Place another tape in the drive to be ready for the next AMA backup.

Response 5

```
Error: Unable to rewind tape (<number>). Exiting.
```

Explanation

This message is displayed when the AMA backup is entered but no tape is inserted in the drive or there was something else wrong with the drive or the tape. The <number> displayed is the return value of the system call used internally.

System action

The prompt is returned to you.

User action

Insert a tape into the drive ensuring that if data already exists on the tape, it is expendable. Then, invoke the WriteTape command again. If there was a tape in the drive, get a different tape and try the command again. If you continue to get this error, call support to have the drive serviced. (The return code displayed in parenthesis could be used by a support technician to gain additional information if the problem continues.)

Response 6

Any other messages, such as the following:

```
*** WriteTape: abnormal termination (<...>) ***
WriteTape: <...>
Error: <...>
```

Explanation

Any messages other than those listed in previous sections indicate serious errors, usually a result of a failure in some other part of the SDM (software or hardware).

System action

Process will exit. Usually, the backup operation has not been performed, or was not completed.

User action

Depending on the actual response, try to correct the problem or refer the problem to a support technician.

Note: You will not be able to stop the AMA backup once it is initiated.

Response 7

```
Do you wish the files’ state to be changed to
closedSENT? (y/n)
```

Explanation

This message is displayed when the user invokes WriteTape without specifying the new_file_state parameter (sent or notsent.) There is no default for this parameter so the user must choose one way or the other.

System action

The command is halted until the user specifies yes or no to this question.

User action

Choose (y) to change the files that are in the “closed not sent" state to “closed sent" after they are backed up to tape. Choose no to keep the files’ state the same.

Response 8

```
File state changed to “closed sent" for <filename>.
```

Explanation

This message is for each file that was backed up and had its new file state changed to “closed sent." This is in response to a user specifying the SENT optional parameter when invoking the command for the files that are in the “closed not sent" state before they are backed up. It could also be a result of the user answering "y" to the prompt: Do you wish the files state to be changed to closedSENT? (y/n)

System action

System is just reporting that the file state has been changed.

User action

Make note of what files have had their state changed.

Response 9

```
File state was already “closed sent" for <filename>.
```

Explanation

This message is for each file that was backed up and was already in the state of “closed sent". This is in response to a user specifying the SENT optional parameter when invoking the command for the files that are already in the “closed sent" state before they are backed up. It could also be a result of the user answering "y" to the prompt: Do you wish the files state to be changed to closedSENT? (y/n)

System action

System is just reporting that the file state was already closed sent.

User action

Make note that the state was not changed since it was already in the desired state.

Response 10

```
Invalid stream. Valid streams are {<stream1>,
<stream2>, etc.}
```

Explanation

This message is generated when a user invokes the command with an invalid stream name. A valid stream is one that is running and actually turned on from the CM. If a stream is configured, but not yet turned on, it is considered an invalid stream.

System action

Prompt is returned to user and execution of the command ends.

User action

User must re-enter the command providing a valid stream name. The user may also choose to use the Set Stream command to set a stream, then re-invoke the command without providing the stream name.

Response 11

```
RMT1 Changed

RMT0

OS system has changed the configuration of the tape
drive.
```

Explanation

The system generates this message when the operating system changes the configuration of the tape drive.

System action

The operating system changes the configuration of the tape drive when you issue the WriteTape command. The WriteTape command automatically sets the tape compression correctly.

User action

There is no user action.

Listing files on a tape

Command name: LIST

Command description

This command lists the billing files contained on the DAT tape mounted in the specified DAT tape drive (DAT0 or DAT1).

Note: This command could take up to two hours to complete.

System action

None.

User action

From the BILLMTC RMI screen, type TAPE at the command line. At the TAPE level, type LIST at the command line.

Command syntax

```
list [DAT0 or DAT1]
```

Parameter definitions for AMADNS file format

Parameter	Value	Definition
DAT0 or DAT1	DAT0 or DAT1	Specifies the tape drive on which the target tape is mounted. DAT1 is the default tape drive.

List command examples

This examples lists the files contained on the tape mounted in SDM tape drive DAT0:

```
> listtape dat0

Listing the files on this tape.

This may take up to 2 hours.

020001.030002.00001.01.2

  Date: 11/22/99 22:58:23   Size: 957223

020001.030002.00002.01.2

  Date: 11/22/99 22:58:34   Size: 957223

020001.030002.00003.01.2

  Date: 11/22/99 22:58:40   Size: 957223

020001.030002.00001.01.2

  Date: 12/14/99 14:03:47   Size: 26288

020001.030002.00002.01.2

  Date: 12/15/99 13:34:40   Size: 52028

020001.030002.00003.01.2

  Date: 12/15/99 13:37:46   Size: 26028

DAT0 is 0.14% used
```

Responses

Response 1

```
ERROR: tape drive not there
```

Explanation

This message is displayed when the SBA detects that an invalid tape drive location, such as DAT3, has been selected.

System action

The SBA prompts for a new command.

User action

Select a valid SDM DAT tape drive, DAT0 or DAT1.

Response 2

```
ERROR: tape not there or in use
```

Explanation

This message is displayed when a tape is not mounted in the selected drive or when the drive is already in use.

System action

The SBA prompts for a new command.

User action

Mount a DAT tape in the selected DAT tape drive, select the other DAT tape drive after mounting the tape or wait for the executing tape command to complete.

Sending files contained on a tape

Command name: SEND

Command description

This command sends the billing files contained on the DAT tape mounted in the specified DAT tape drive (DAT0 or DAT1) to the destination specified in response to a prompt.

Note: This command could take up to two hours to complete.

System action

None.

User action

From the BILLMTC RMI screen, type TAPE at the command line. At the TAPE level, type LIST at the command line.

Command syntax

```
send [DAT0 or DAT1]
```

Parameter definitions for AMADNS file format

Parameter	Value	Definition
DAT0 or DAT1	DAT0 or DAT1	Specifies the tape drive on which the target tape is mounted. DAT1 is the default tape drive.

Send command example

The following example sends all files contained on the DAT tape in DAT tape drive 0 to destination HUBBARD:

```
>send dat0
```

On command execution, the user is prompted for the destination (selected from the schedule table):

```
>Possible destinations for the tape files:
0) stream=BAF1    destination=HUBBARD
1) stream=BAF1    destination=GIRARD
Select a destination for the tape files or “x” to exit
{0 - 1,x}0
```

The command has retrieved the information from the output schedules for use in these prompts. (The output schedules would have been previously set up with a destination literal of up to 15 alphanumeric characters.) The user has selected zero (0).

```
Connected to 47.239.65.99
Send all files on tape, or prompt for each file?
All files, Prompt, or eXit (A/P/X)? A
```

The user has selected all files (A).

```
020001.030002.00001.01.2 sent
020001.030002.00002.01.2 sent
020001.030002.00003.01.2 sent
End of tape
```

In the following example the user directs SBA to prompt before sending user selected files from the DAT tape in DAT tape drive 1 to destination GIRARD:

```
>send dat1
```

On command execution, the user is prompted for the destination (selected from the schedule table):

```
>Possible destinations for the tape files:
0) stream=BAF1    destination=HUBBARD
1) stream=BAF1    destination=GIRARD
Select a destination for the tape files or “x” to exit
{0 - 1,x}1
```

The command has retrieved the information from the output schedules for use in these prompts. (The output schedules would have been previously set up with a destination literal of up to 15 alphanumeric characters.) The user has selected one (1).

```
Connected to 47.239.62.76
Send all files on tape, or prompt for each file?
All files, Prompt, or eXit (A/P/X)? p
```

The user has selected prompting to select files for transmission:

```
Send file 020001.030002.00001.01.2?
Yes, No, eXit (Y/N/X) y
020001.030002.00001.01.2 sent
Send file 020001.030002.00002.01.2?
Yes, No, eXit (Y/N/X) n
Send file 020001.030002.00003.01.2?
Yes, No, eXit (Y/N/X) y
020001.030002.00003.01.2 sent
End of tape
```

Responses

Response 1

```
ERROR: tape drive not there
```

Explanation

This message is displayed when the SBA detects that an invalid tape drive location, such as DAT3, has been selected.

System action

The SBA prompts for a new command.

User action

Select a valid SDM DAT tape drive, DAT0 or DAT1.

Response 2

```
ERROR: tape not there or in use
```

Explanation

This message is displayed when a tape is not mounted in the selected drive or when the drive is already in use.

System action

The SBA prompts for a new command.

User action

Mount a DAT tape in the selected DAT tape drive, select the other DAT tape drive after mounting the tape or wait for the executing tape command to complete.

Response 3

```
ERROR: 020001.030002.00001.01.2 already exists on destination
020001.030002.00001.01.2 will not be sent.
```

Explanation

This message is displayed when the SBA detects that a file at the destination has the same name as the file being sent.

System action

The SBA will not send a file to a destination that contains a file of the same name.

User action

At the destination, remove the file with the same name as that specified in the message.

SBA TOOLS commands

Viewing records

Command name: AMADUMP

Command description

AMADUMP is a tool that allows you to view billing records from the standard billing files. You can display all the records using AMADUMP or you can create filters that allow you to display only records matching a specific search criteria.

AMADUMP can be used to view records in multiple files by specifying a time period. AMADUMP can also be used to view a particular file or files by entering the filename(s). The time period is used internally to retrieve the billing files created within the time period given.

The results of AMADUMP are to be displayed on the maintenance personnel's screen. There is no hard copy associated with this dump.

The amadump command is available from both the RMI using "BILLMTC" and the DMS switch CM, SDMRLOGIN.

> ***Note:*** If you change the BAFSuppression Mib value after the stream is turned on, you will not be able to use AMADUMP to view files that were created before the change. AMADUMP will only view files that were created while the BAFSuppression Mib was set to the same value as the value at the time the command is issued.

Command format

```
amadump <stream name>
```

where

<stream name> is a valid stream name.

User action

The user can dump records, maintain a list of filters, specify the number of records to search and output, specify the starting block of DIRP files, list fields, request help, or quit out of amadump.

Sub-commands

Command name: Dump (DNS file format)

Command description

This command allows users to dump records from standard DNS file(s) onto the screen. The formatted records are displayed one page at a time as per the request. The following command syntax shows the usage of UNIX type options.

Command syntax for UNIX types

```
DUMP <DISPLAY MODE> [-S] [-NO <NUM OUT>] [-NM<NUM
SEARCH>] [-NK <NUM BLOCK>] [-FT <FILTER STRING>] [-
FN <FILES...>] -B <STARTTIME>] [-E <ENDTIME>]
```

The following command syntax shows a user entering a specific file name.

Command syntax for specifying the name

```
DUMP <DISPLAY MODE> [SUM] [NUMOUT <NUMOUT VALUE>]
[NUMSEARCH <NUMSRCH VALUE>] [NUMBLK <NUMBLOCK
VALUE>] [FILTER <FILTER STRING>][FNAME <FILES...>]
[BTIME <STARTTIME>] [ETIME <ENDTIME>]
```

Parameter definitions

Parameter	Value	Definition
<display mode>	{HEX, DETAILS, NODETAILS, NOSHOW}	It dumps the record in any of these modes: • HEX indicates that the record is displayed in its raw form. • The DETAILS option displays the record after it's split into the individual fields with the field names preceding each field. • The NODETAILS option is used when the record is to be split into individual field and is to be displayed without a label preceding the fields. • NOSHOW is usually used with the SUMMARY option. This option allows you to suppress all the details about the records. When this particular option is used, record information is not displayed. ***Note:*** This is a required parameter.
summary	-s or sum	Option requesting amadump to display a summary of the dump. The summary contains the following information: filenames, total records in each file, total records matched (or selected) from each file, total of all the records in this particular dump, total records matched in this particular dump, and the search criteria used.
numout	-no <numout val> or numout <numout val>	The -no option specifies the maximum number of records to output. The <numout> value is an integer.
numsrch	-ns <numsrch val> or numsrch <numsearch val>	The -ns option specifies the maximum number of records to search. The <numsearch> value is an integer.

—continued—

Parameter definitions

Parameter	Value	Definition
numblk	-nk <numblk val> or numblk <numblk val>	The -nk option allows the user to specify the starting block of records in the case of DIRP files. If the file format is DNS, the system reads the value but ignores it. The numblk option allows the user to specify the complete sub-command instead of specifying a flag.
—end—		

WARNING

The Dump command might take a long time depending on the number of files to be scanned. Thus you should be careful in specifying the set of files or the time period, so that this delay does not occur.

Command name: Dump (DIRP file format)

Command description

This command allows users to dump records from DIRP formatted file(s) onto the screen. The formatted records are displayed one page at a time as per the request. The syntax below shows the usage. Because of the ambiguous nature of UNIX type option flags with DIRP files, users must use complete command names.

Command syntax

```
DUMP <DISPLAY MODE> [SUM] [NUMOUT <NUMOUT VALUE>]
[NUMSEARCH <NUMSRCH VALUE>] [NUMBLK <NUMBLOCK
VALUE>] [FILTER <FILTER STRING>] [BTIME <START TIME>]
[ETIME <ENDTIME>] [FNAME <FILES...>]
```

Parameter definitions

Parameter	Value	Definition
<display mode>	{HEX, DETAILS, NODETAILS, NOSHOW}	It dumps the record in any of these modes: • HEX indicates that the record is displayed in its raw form. • The DETAILS option displays the record after it's split into the individual fields with the field names proceeding each field. • The NODETAILS option should be used when the record is to be split into individual field and is to be displayed without a label preceding the fields. • NOSHOW is usually used with the SUMMARY option. This option allows you to suppress all the details about the records. When this particular option is used, record information is not displayed. ***Note:*** This is a required parameter.
summary	sum	Option requesting amadump to display a summary of the dump. The summary contains the following information. Filenames, total records in each file, total records matched (or selected) from each file, total of all the records in this particular dump, and the total records matched in this particular dump.
numout	numout <numout val>	The numout option specifies the maximum number of records to output. The <numout> value is an integer.
numsrch	numsrch <numsearch val>	The numsrch option specifies the maximum number of records to search. The <numsearch> value is an integer.
numblk	numblk <numblk val>	The numblk option allows the user to specify the starting block of records in the case of DIRP files. If the file format is DNS, the user gets the following message: "This option is not valid with a DNS file and is ignored". The numblk option allows the user to specify the complete sub-command instead of specifying a flag.
		—continued—

Parameter definitions

Parameter	Value	Definition
filter	filter <filter string>	The filter option specifies that the string that follows is the filter string. The string can be given in double quotes if it spans more than one word. The filters from the filter list (see the filter command) could be used in this filter string by referencing the number with a "%" sign in front of the number. For example, to refer to the second filter from the list, the string can be written like "structure_code = 0001 & %2".
time period	btime <start time> or etime <end time>	The btime and etime options specify the time period (start time and end time) in the format **"hh:mm:ss.mm/dd/yyyy"**. All the files matching the creation dates that fall within this time frame will be used for the dump. The etime option is optional in that if it is not provided, the system assumes the current date and time**.** ***Note:*** The dump command must have either a time period or a filename.
file names	fname <list of files>	Instead of the time period, you can enter a set of one or more files to be dumped. If more than one file is specified, the file list must be entered within double quotes. If only one file is requested, the double quotes are optional. The user will have to list the file names separated by spaces. ***Note:*** The dump command must have either a time period or a filename.
—end—		

Command name: numout

Command description

This command, when used with the set option, allows users to set the maximum number of records to output. The maximum and default number is configured to 500 000. When used with the reset option the value is set to the default number. This value set will be used in all subsequent dump commands for the current session. If the -no or numout option is used in the dump command, it overrides the one set by this command.

Command syntax

```
NUMOUT SET <INT_VALUE>
NUMOUT RESET
```

Parameter definitions

Parameter	Value	Definition
<set>	integer value	Indicates the value of the number of records to output.
<reset>		Sets the value of the number of records to output, or to the maximum default value.

Command name: numsrch

Command description

This command, when used with the set option, allows users to set the maximum number of records to search. The maximum and default number is configured to 500 000. When used with the reset option the value is set to the default number. This value set will be used in all subsequent dump commands for the current session. If the -ns or numsrch option is used in the dump command, it overrides the one set by this command.

Command syntax

```
NUMSRCH SET <INT_VALUE>
NUMSRCH RESET
```

Parameter definitions

Parameter	Value	Definition
<set>	integer value	Indicates the value of the number of records to search.
<reset>		Sets the value of the number of records to search, or to the maximum default value.

Command name: numblk

Command description

This command is valid for DIRP formatted files only. When used with the set option, numblk allows the user to set the block number to start searching from. If a value greater than the total number of blocks in the file is specified, a message showing the correct use is displayed to the user. When used with the reset option the value is set to the first block.

If the numblk option is used with the DNS file, the user can set a value, but the system does not use it.

Command syntax

```
NUMBLK SET <INT_VALUE>
NUMBLK RESET
```

Parameter definitions

Parameter	Value	Definition
<set>	integer value	indicates starting block in DIRP files
<reset>		sets the starting block to the first block

Listing fields

Command name: Listfields

Command description

The Listfields command, when invoked, provides you with a list of the field names used when adding the filter string.

The variables in filter strings are used interchangeably with field names throughout this document.

Refer to Appendix A: "SDMC SBA Amadump Listfields" for a complete list of fields displayed by Listfields.

The options and output format are altered slightly for UCS CDR250 and BAF streams.

Command syntax

UCS CDR250:

```
listfields {cdr | osr | fhr | cpr | tpr | bhr | gsr
| ger | ssr | ccr | esr | all}
```

BAF:

```
listfields {struct <structure code> | module <module
code> | all}
```

Parameter definitions

Parameter	Value	Definition
record	For UCS CDR250: cdr, osr, fhr, cpr, tpr, bhr, gsr, ger, ssr, ccr, esr, all For BAF: struct <structure code> or module <module code> or all	The record to be display or all if all is selected then all of the fields for this record type are to be displayed.

UCS CDR250 Responses

```
unknown option
Usage: listfields
parms: <record format>  {cdr, osr, fhr, cpr, tpr,
         bhr, gsr, ger, ssr, ccr, esr, all}
```

Explanation:

User entered an invalid option.

System action:

Prompt is returned to the craftsperson and execution of the command ends.

User action:

Reenter with a valid option.

BAF Responses

```
unknown option or unsupported mod/struct number
Usage: listfields
```

```
parms: <record format>  {struct <structure code>,
module <module code>, all}
```

Explanation:

User entered an invalid option or an unsupported module or structure code.

System action:

Prompt is returned to the craftsperson and execution of the command ends.

User action:

Reenter the command with the correct options.

Example

```
AMADUMP>> listfields cdr
RECCD          [EBCDIC]
   -- RECORD CODE
VARLNGTH       [BOOLEAN]
   -- FIX OR VAR LENGTH IND
RESERVED             [FILLER]
   -- RESERVED
UE             [BOOLEAN]
   -- USED EDIT
TG             [BOOLEAN]
   -- TOOL GEN
ACTIDX         [BIN]
   -- ACTIVE INDEX
TEMPLID        [BIN]
   -- TEMPLATE ID
RESERVED1      [FILLER]
   -- RESERVED 1
LENGTH         [BIN]
   -- RECORD LENGTH
SEQNUM         [BIN]
   -- SEQUENCE NUMBER
CIC            [TBCD]
   -- CARRIER ID CODE
ORIGDATE       [BIN]
   -- ORIGINATE DATE
More...
```

Command name: REINIT

Command description

This command will query and re-initialize all search parameters currently defined with the exception of the search keys defined by the filter command.

Command syntax

```
reinit <flag>
```

Parameter definitions

Parameter	Value	Definition
flag	<-q> or <query>	Query all search parameters.
	<-r> or <init>	Reinitialize all search parameters.

Help

Command name: Help

Command description

This command provides the user with syntax help on all the commands available at the AMADUMP prompt.

Command syntax

```
help
```

Parameter definitions

None.

Command name: quit

Command description

The quit command or “q” allows the user to end an AMADUMP session.

Command syntax

```
quit
```

Parameter definitions

None.

Adding search criteria

Command name: Filter

Command description

The filter command is used to maintain a set of user defined and pre-defined filters to be used in the dump command. The current release allows 20 filter strings to be saved in the buffer. These filter strings can be referred to in the <filter string> of the dump command as "%<filter number>". This allows you the additional capability of storing complicated filters in the buffer for the current amadump session.

Numerical constraints in the filter string can be specified to be of type decimal, octal, or hexadecimal.

If a number is written with a "0" preceding it, for example, 023, it is interpreted as an octal number. In this case, "023" is equal to decimal 19.

If a number has a "0x" preceding it, it is considered to be a hexadecimal number. Decimal numbers are written without a preceding "0".

Examples

For decimal comparisons:

```
call_code = 110
call_code = 67
```

For octal comparisons:

```
call_code = 010 (this is equivalent to call_code = 8)
```

For hexadecimal comparisons:

```
call_code = 0xA1 (this is equivalent to call_code =
161)
```

A set of pre-defined filters is also provided for BAF streams; these filters cannot be overwritten. The sub-commands Add, Delete, and Display are used to add, delete, or display the filter strings from the internal buffer with the filter strings.

> ***Note:*** The filter strings are not validated until they are actually used in the Dump command.

Command syntax

```
FILTER ADD <AT> <FILTER STRING>
```

This command adds a filter string at the location specified by <at>. The command does nothing if the location is invalid. This command overwrites an existing filter if it is writable.

```
FILTER DELETE <AT>
```

This command puts a null string at the location specified by <at>. If it is a non-writable location or if the location is out of bounds, the command simply returns back to the prompt.

```
FILTER DISPLAY [<AT>]
```

This command displays the filters in a tabular form. If the <at> value is present, then it only displays the filter string at the location specified.

Parameter definitions

Parameter	Value	Definition
<at>	int	Indicates the location of the filter on which the operation is to be performed. The maximum is 19.
<filter string>	string	The actual filter that has to go in the appropriate location.

Note 1: The filter string is a string that can contain logical, comparison, and arithmetic operations between constants and variables.

Note 2: A constant could be an actual number (up to 19 digits) or a string in single quotes.

Note 3: Variables are field names. A list of available field names (variables) can be obtained by issuing the Listfields command at the amadump prompt.

The operations permitted, in the order of decreasing precedence, are given in Table 36, “Operation Explanations.”

Table 36 Operation Explanations

Operation	Symbol
Parenthesis	
slice a variable	from <int> count <int>. The from <int> starts indexing from 0. A count of 0 returns a variable of size 0.
multiplication, division, addition, subtraction	* / + -
greater than, less than, greater or equal, lesser or equal, equality, inequality	> < >= <= =<=
And, Or (both logical and bit-wise)	& |

Note 1: Most of the operands are binary, except the parentheses. Parentheses hold other expressions.

Note 2: The slice operation is a ternary operation and it only works on variables. The result of a slice is a temporary variable.

Note 3: The And and Or operations function as both logical and bit-wise operators.

Note 4: The result of any comparison operation is either “0” (false) or “1” (true). An expression is considered “true” if it evaluates to a non-zero value.

Note 5: A string constant can only be used as a regular expression string to be compared to a variable. In other words, string constants can only be used in an equality (“=”) operation with the other operand being a variable.

The filter sub-command has different syntax for a different data type. The following syntax and examples are for each data type. There are five data types: BCD, TBCD, PINDIGS, bit, and EBCDIC.

General Rules for Using or Not Using the Single Quotes (‘ ‘):

- Variables are case insensitive but string constants are case sensitive. A constant string is anything enclosed by the single quotes.
- The decimal or binary digits can be used with/without the single quotes.

- EBCDIC digits are used with the single quotes; however, the equivalent decimal digits are used without the single quotes.
- TBCD digits are used without the single quotes if they are in the range (1 to 9). If they are not in this range, they are used with the single quotes.
- BCD digits (0 to 9) are used with/without the single quotes.
- PINDIGS digits are used with/without the single quotes.
- Sub-set of string constants of EBCDIC, decimal, TBCD, PINDIGS, and BCD digits can be used as a filter string (a search criteria) used by the AMADUMP. Any record that matches this criteria is displayed on the screen by the *dump* sub-command.
- Sub-set of TBCD, PINDIGS, and BCD digits cannot be used as a search criteria. All the digits must be used in the criteria.
- EBCDIC and TBCD digits are in upper case.

Filter syntax for EBCDIC

This section describes the filter syntax for the EBCDIC data type. EBCDIC value requires string constant ‘F0’ or its equivalent decimal constant is used without enclosing by the single quotes.

- EBCDIC digits are used with the single quotes.
- The equivalent decimal digits are used without the single quotes.
- EBCDIC digits are in upper case.
- The equivalent TBCD of a EBCDIC value cannot be used.
- An equivalent decimal digits cannot be used with the single quotes.
- An equivalent hex digits of the EBCDIC digits cannot be used.
- All equivalent decimal digits of the EBCDIC must be used as a search criteria.
- Sub-set of string constant an be used as a search criteria.

Example of displaying the buffer containing filter strings.

```
AMADUMP>> filter display
Filter #   Writable   String
00           Y
01           Y
02           Y
03           Y
04           Y
```

```
05          Y
06          Y
07          Y
08          Y
09          Y
10          Y
11          Y
12          Y
13          Y
14          Y
15          Y
16          Y
17          Y
18          Y
19          Y
```

Example of adding the record-code at the 3rd row of the buffer and display the buffer afterward. Note, the EBCDIC value must be in upper case.

```
AMADUMP>> filter add 3 reccd='F0'
AMADUMP>> filter display
Filter #   Writable   String
  00           Y
  01           Y
  02           Y
  03           Y      reccd='F0'
  04           Y
  05           Y
  06           Y
  07           Y
  08           Y
  09           Y
  10           Y
  11           Y
  12           Y
  13           Y
```

```
  14            Y
  15            Y
  16            Y
  17            Y
  18            Y
  19            Y
```

Example of deleting a filter string from a buffer and display the content of the buffer.

```
AMADUMP>> filter delete 3
AMADUMP>> filter display
Filter #   Writable   String
  00            Y
  01            Y
  02            Y
  03            Y
  04            Y
  05            Y
  06            Y
  07            Y
  08            Y
  09            Y
  10            Y
  11            Y
  12            Y
  13            Y
  14            Y
  15            Y
  16            Y
  17            Y
  18            Y
```

```
  19            Y
```

Example of adding a filter string into the buffer and using it in the dump sub-command.

```
AMADUMP>> filter add 3 reccd = 'F0'

AMADUMP>> dump details filter %3 fname
U9909241321320CC

Depending on the number of records/files specified,
the command could take a few minutes or a few hours
to complete

Record
RECORD CODE F0  FIX OR VAR LENGTH IND N  RESERVED1 0
USER EDIT N
TOOL GEN N  ACTIVE INDEX 1  TEMPLATE ID 006  SEQUENCE
NUMBER 00040 CARRIER ID CODE ORIGINATING TIME 04847
ORIGINATE DATE 0267 ANSWER TYPE 00  CLOCK CHANGE
INDICATOR N  ORIG. TIME AM OR PM 1 INCOMING INTL CALL
N  DISCONNECT TIME 04855  DISCONNECT DATE 0267 NATURE
OF EQUAL ACCESS CALL 0  DISCONNECTED TIME AM OR PM 1
INCREMENTAL CDR 0 1-BIT FILLER 0 CALL DURATION
0000000000 PERSONAL ID DIGITS 0000 ANI DIGITS
COLLECTED INFORMATION DIGITS FOR THE CALL BILLING
NUMBER 6113311 ACCOUNT CODE DIGITS CALLING PARTY NUM
:
:
```

Example of adding the filter string with the equivalent decimal value of the EBCDIC value (F0). Note, the variable is not case sensitive. For a record-code, it can be either reccd or RECCD.

```
AMADUMP>> filter add 0 RECCD=50928

AMADUMP>> dump details filter %0 fname
U9909241321320CC

Depending on the number of records/files specified, the command
could take a few minutes or a few hours to complete

Record
RECORD CODE F0  FIX OR VAR LENGTH IND N  RESERVED1 0  USER EDIT N

 TOOL GEN N  ACTIVE INDEX 1  TEMPLATE ID 006  SEQUENCE NUMBER
00040

 CARRIER ID CODE      ORIGINATING TIME 04847  ORIGINATE DATE 0267

 ANSWER TYPE 00  CLOCK CHANGE INDICATOR N  ORIG. TIME AM OR PM 1
```

```
 INCOMING INTL CALL N  DISCONNECT TIME 04855  DISCONNECT DATE
0267

 NATURE OF EQUAL ACCESS CALL 0  DISCONNECTED TIME AM OR PM 1

 INCREMENTAL CDR 0  1-BIT FILLER 0  CALL DURATION 0000000000

 PERSONAL ID DIGITS 0000  ANI DIGITS COLLECTED

 INFORMATION DIGITS FOR THE CALL     BILLING NUMBER 6113311

 ACCOUNT CODE DIGITS               CALLING PARTY NUM

      :

      :
```

Example of wrong syntax. The equivalent decimal value of an EBCDIC value (F0) cannot enclosed by the single quotes.

```
AMADUMP>> filter add 8 reccd=’50928’

AMADUMP>> dump details filter %8 fname
U990924132132OCC

Depending on the number of records/files specified, the command
could take a few minutes or a few hours to complete.

The equivalent TBCD value of the EBCDIC value (F0) cannot be
used as filter criteria.

AMADUMP>> filter add 8 reccd = ‘C6F0’

AMADUMP>> dump details filter %8 fname
U990924132132OCC

Depending on the number of records/files specified, the command
could take a few minutes or a few hours to complete

AMADUMP>> filter add 8 reccd = C6F0

Filter string could not be evaluated.

Kindly re-enter
```

Example of the string constant that is case sensitive.

```
AMADUMP>> filter add 8 reccd = ‘f0’

AMADUMP>> dump details filter %8 fname
U990924132132OCC

Depending on the number of records/files specified, the command
could take a few minutes or a few hours to complete
```

Filter Syntax for Bit or Decimal

This section describes the filter syntax for the bit or decimal data type.

- The decimal or binary digits can be either in quote or not in quote.
- All decimal digits must be used as a search criteria.
- Sub-set of the string constant can be used as a search criteria.

Example of adding the binary data type as the filter string into the 7th row of the buffer, and displaying any record that match this criteria.

```
AMADUMP>> filter add 7 ACTIDX = 1

AMADUMP>> dump details filter %7 fname
U9909241321320CC

Depending on the number of records/files specified, the command
could take a few minutes or a few hours to complete

Record

RECORD CODE AA  YEAR 23  MONTH 09  MINUTE 21  DAY 24  HOUR 13
SECOND 23

 BLOCK COUNT 00008  SWITH ID 251529976398818

 SOFTWARE RELEASE 251530228974054  3-BIT FILLER 0  CDR SIZE 083

 FIX OR VAR LENGTH IND N  ACTIVE INDEX 1  WORD LAYOUT FORMAT
READLR

 OSR SIZE 060  BHR SIZE 060

Record

 RECORD CODE FA  YEAR 23  MONTH 09  MINUTE 21  DAY 24  HOUR 13
SECOND 23

 4-BIT FILLER 0  CDR SIZE 083  FIX OR VAR LENGTH IND N  ACTIVE
INDEX 1

 OSR SIZE 060  GSR SIZE 060

Record

 RECORD CODE AA  YEAR 23  MONTH 09  MINUTE 21  DAY 24  HOUR 13
SECOND 23

 BLOCK COUNT 00009  SWITH ID 251529976398818

 SOFTWARE RELEASE 251530228974054  3-BIT FILLER 0  CDR SIZE 083
```

```
 FIX OR VAR LENGTH IND N  ACTIVE INDEX 1  WORD LAYOUT FORMAT
READLR

 OSR SIZE 060  BHR SIZE 060

Record

 RECORD CODE F0  FIX OR VAR LENGTH IND N  RESERVED1 0  USER EDIT N

 TOOL GEN N  ACTIVE INDEX 1  TEMPLATE ID 006  SEQUENCE NUMBER
00040

 CARRIER ID CODE      ORIGINATING TIME 04847  ORIGINATE DATE 0267

 ANSWER TYPE 00  CLOCK CHANGE INDICATOR N  ORIG. TIME AM OR PM 1

      :

      :
```

Example of adding the binary value without the single quotes and display any record that matches this filter criteria.

```
AMADUMP>> filter add 2 TEMPLID = 6

AMADUMP>> dump details filter %2 fname
U990924132132OCC

Depending on the number of records/files specified, the command
could take a few minutes or a few hours to complete

Record

 RECORD CODE F0  FIX OR VAR LENGTH IND N  RESERVED1 0  USER EDIT N

 TOOL GEN N  ACTIVE INDEX 1  TEMPLATE ID 006  SEQUENCE NUMBER
00040

 CARRIER ID CODE      ORIGINATING TIME 04847  ORIGINATE DATE 0267

 ANSWER TYPE 00  CLOCK CHANGE INDICATOR N  ORIG. TIME AM OR PM 1

 INCOMING INTL CALL N  DISCONNECT TIME 04855  DISCONNECT DATE
0267

 NATURE OF EQUAL ACCESS CALL 0  DISCONNECTED TIME AM OR PM 1

 INCREMENTAL CDR 0  1-BIT FILLER 0  CALL DURATION 0000000000

 PERSONAL ID DIGITS 0000  ANI DIGITS COLLECTED

        :

        :
```

Example of adding the binary value with the single quotes and display any record that matches this filter criteria.

```
AMADUMP>> filter add 2 TEMPLID = ‘6’

AMADUMP>> dump details filter %2 fname
U9909241321320CC

Depending on the number of records/files specified, the command
could take a few minutes or a few hours to complete

Record

 RECORD CODE F0  FIX OR VAR LENGTH IND N  RESERVED1 0  USER EDIT N

 TOOL GEN N  ACTIVE INDEX 1  TEMPLATE ID 006  SEQUENCE NUMBER
00040

 CARRIER ID CODE     ORIGINATING TIME 04847  ORIGINATE DATE 0267

 ANSWER TYPE 00  CLOCK CHANGE INDICATOR N  ORIG. TIME AM OR PM 1

 INCOMING INTL CALL N  DISCONNECT TIME 04855  DISCONNECT DATE
0267

            :

            :
```

Filter syntax for TBCD

This section describes the filter syntax for the TBCD data type.

- TBCD digits are used without the single quotes if they are in the range (1 to 9). If they are not in this range, they are used with the single quotes.
- A sub-set (12) of TBCD digits (12345) cannot be used as a search criteria.
- Sub- set (1) of TBCD string constant (12345) can be used as a search criteria.

Example of adding a TBCD value as a filter string to the filter buffer and displaying any record that matches this criteria.

```
AMADUMP>> filter add 5 ADIN = 01

AMADUMP>> dump details filter %5 fname
U9909241321320CC

Depending on the number of records/files specified, the command
```

```
could take a few minutes or a few hours to complete

Record

 RECORD CODE F0  FIX OR VAR LENGTH IND N  RESERVED1 0  USER EDIT N

 TOOL GEN N  ACTIVE INDEX 1  TEMPLATE ID 006  SEQUENCE NUMBER
00040

 CARRIER ID CODE      ORIGINATING TIME 04847  ORIGINATE DATE 0267

 ANSWER TYPE 00  CLOCK CHANGE INDICATOR N  ORIG. TIME AM OR PM 1

 INCOMING INTL CALL N  DISCONNECT TIME 04855  DISCONNECT DATE
0267

 NATURE OF EQUAL ACCESS CALL 0  DISCONNECTED TIME AM OR PM 1

 INCREMENTAL CDR 0  1-BIT FILLER 0  CALL DURATION 0000000000

 PERSONAL ID DIGITS 0000  ANI DIGITS COLLECTED

 INFORMATION DIGITS FOR THE CALL     BILLING NUMBER 6113311

 ACCOUNT CODE DIGITS                CALLING PARTY NUM

 RLT INDICATION N  SCREEN INFO FOR ACCTV 0

 UNIVERSAL ACCESS NUMBER              DIALED NUMBER 2142211234

 CALLED NUMBER 2142211234       OUTPULSED CALLED NUMBER
2142211234

 OUTGOING NOA N  CIC_CASU OPTION DATAFILLED N  CIC ORIGIN 0

 1ST ORIG PARTITION 0111  PREFFIX DIGITS INDICATOR 0

 CALLED PARTY TRANSLATED PREFIX IND 0  ORIG PARTITION NUMBER
0111

 TERMINATING PARTITION NUM 0000  QUEUED INDICATOR N  OPCHOICE
TABLE INDEX 000

 TIME WHEN ALL DIGITS ARE COLLECTED 004  AUTHCODE DATABASE INDEX
NUMBER 01

 LOCAL NUMBER PORTABILITY INDICATOR 04  NUM OF DS0'S FOR
WIDEBAND CALL 00

 CHANNEL USEED IN WIDEBAND CALL 00000000 00000000 00000000
00000000
```

Example of wrong syntax. The filter sub-command does allow the TBCD value enclosed by the single quotes.

```
AMADUMP>> filter add  add 5 ADIN = ‘01’

Usage: filter

parms:  [add <at>{0 to 19} <filter string>],

        [delete <at>{0 to 19}],

        [display [<at> {0 to 19}]]
```

Filter syntax for PINDIGS

This section describes the filter syntax for the PINDIGS data type.

- The PINDIGS values can be used either with or without the single quotes.
- The sub-set (69) of PINDIGS digits (6987) cannot be used as a search criteria.
- The sub- set(69) of the string constant (6987) can be used a search criteria.

Example of adding a PINDIGS data without the single quotes, as a filter string and displaying any record that matches this filter criteria.

```
AMADUMP>> filter add 3 PINDIGS = 0000

AMADUMP>> dump details filter %3 fname
U9909241321320CC

Depending on the number of records/files specified, the command

could take a few minutes or a few hours to complete

Record

 RECORD CODE F0  FIX OR VAR LENGTH IND N  RESERVED1 0  USER EDIT N

 TOOL GEN N  ACTIVE INDEX 1  TEMPLATE ID 006  SEQUENCE NUMBER
00040

 CARRIER ID CODE      ORIGINATING TIME 04847  ORIGINATE DATE 0267

 ANSWER TYPE 00  CLOCK CHANGE INDICATOR N  ORIG. TIME AM OR PM 1

 INCOMING INTL CALL N  DISCONNECT TIME 04855  DISCONNECT DATE
0267

 NATURE OF EQUAL ACCESS CALL 0  DISCONNECTED TIME AM OR PM 1

 INCREMENTAL CDR 0  1-BIT FILLER 0  CALL DURATION 0000000000

 PERSONAL ID DIGITS 0000  ANI DIGITS COLLECTED
```

```
 INFORMATION DIGITS FOR THE CALL     BILLING NUMBER 6113311

 ACCOUNT CODE DIGITS                CALLING PARTY NUM

 RLT INDICATION N  SCREEN INFO FOR ACCTV 0

            :

            :
```

Example of adding a PINDIGS data with the single quotes to the filter buffer, as a filter string and displaying any record that matches this filter criteria.

```
AMADUMP>> filter add 3 PINDIGS = ‘0000’

AMADUMP>> dump details filter %3 fname
U9909241321320CC

Depending on the number of records/files specified, the command

could take a few minutes or a few hours to complete

Record

 RECORD CODE F0  FIX OR VAR LENGTH IND N  RESERVED1 0  USER EDIT N

 TOOL GEN N  ACTIVE INDEX 1  TEMPLATE ID 006  SEQUENCE NUMBER
00040

 CARRIER ID CODE      ORIGINATING TIME 04847  ORIGINATE DATE 0267

 ANSWER TYPE 00  CLOCK CHANGE INDICATOR N  ORIG. TIME AM OR PM 1

 INCOMING INTL CALL N  DISCONNECT TIME 04855  DISCONNECT DATE
0267

 NATURE OF EQUAL ACCESS CALL 0  DISCONNECTED TIME AM OR PM 1

 INCREMENTAL CDR 0  1-BIT FILLER 0  CALL DURATION 0000000000

 PERSONAL ID DIGITS 0000  ANI DIGITS COLLECTED

 INFORMATION DIGITS FOR THE CALL     BILLING NUMBER 6113311

 ACCOUNT CODE DIGITS                CALLING PARTY NUM

 RLT INDICATION N  SCREEN INFO FOR ACCTV 0

 UNIVERSAL ACCESS NUMBER              DIALED NUMBER 2142211234

 CALLED NUMBER 2142211234        OUTPULSED CALLED NUMBER
2142211234

 OUTGOING NOA N  CIC_CASU OPTION DATAFILLED N  CIC ORIGIN 0
```

```
 1ST ORIG PARTITION 0111  PREFFIX DIGITS INDICATOR 0

 CALLED PARTY TRANSLATED PREFIX IND 0  ORIG PARTITION NUMBER
0111

         :

         :
```

Filter syntax for BCD

This section describes the filter syntax for the BCD data type.

- BCD digits (0 to 9) are used with/without the single quotes.
- Sub-set (12) of BCD digits (1234) cannot be used as a search criteria.
- Sub-set (‘12’) of string constant (‘1234’) cannot be used as a search criteria.

Example of adding BCD data with the single quotes to the filter buffer and displaying any record that matches this criteria. Note, BCD digits are in the range (0 to 9). In this example, the ‘AA’ are the HEX equivalent digits. Since the ‘AA’ are not in the range, the digits must be enclosed with the single quotes.

```
AMADUMP>> filter add 3 HEX_ID = ‘AA’

AMADUMP>> dump details filter %3 fname
U991004161515AMA

Depending on the number of records/files specified, the command

could take a few minutes or a few hours to complete

Record

   HEX ID AA  STRUCTURE CODE 09013C  CALL CODE 092C  SENSOR TYPE
036C

 SENSOR ID 0000000C  REC OFFICE TYPE 036C  REC OFFICE ID 0000000C

 DATE 91004C  TIME 1615030C  GENERIC ISSUE 00000C  TRACER TYPE
007C

 SEQUENCE NUMBER 015C

Record

   HEX ID AA  STRUCTURE CODE 00001C  CALL CODE 006C  SENSOR TYPE
036C

 SENSOR ID 0000000C  REC OFFICE TYPE 036C  REC OFFICE ID 0000000C
```

```
 DATE 91004C  TIMING IND 00000C  STUDY IND 0201000C  CLD PTY
OFF-HK 0C

 SERVICE OBSERVED 0C  OPER ACTION 0C  SERVICE FEATURE 000C  ORIG
NPA 919C

 ORIG NUMBER 7828826C  OVERSEAS IND 0C  TERM NPA 00800C  TERM
NUMBER 5551212C

 CONNECT TIME 1617456C  ELAPSED TIME 000098182C
```

Example of adding the BCD data unsuccessfully to the string buffer. The ‘AA’ are not in the range (0 to 9).

```
AMADUMP>> filter add 4 HEX_ID = AA

Filter string could not be evaluated.

Kindly re-enter
```

Example of adding the BCD data successfully to the string buffer. The ‘99’ digits are in the range (0 to 9).

```
AMADUMP>> filter add 4 HEX_ID = 99
```

Example of adding sub-set (‘1) of string constant (‘1C’ or ‘09013C’)as a search criteria. Any record has a pattern that matches this criteria is displayed.

```
AMADUMP>> filter add 5 STRUCTURE_CODE = ‘1’

AMADUMP>> dump details filter %5 fname
P991004140610AMA

Depending on the number of records/files specified, the command

could take a few minutes or a few hours to complete

Record

   HEX ID AA  STRUCTURE CODE 09013C  CALL CODE 092C  SENSOR TYPE
036C

 SENSOR ID 0000000C  REC OFFICE TYPE 036C  REC OFFICE ID 0000000C

 DATE 91004C  TIME 1406510C  GENERIC ISSUE 00000C  TRACER TYPE
007C

 SEQUENCE NUMBER 010C
```

```
Record

  HEX ID AA  STRUCTURE CODE 00001C  CALL CODE 006C  SENSOR TYPE
036C

 SENSOR ID 0000000C  REC OFFICE TYPE 036C  REC OFFICE ID 0000000C

 DATE 91004C  TIMING IND 00000C  STUDY IND 0201000C  CLD PTY
OFF-HK 0C

 SERVICE OBSERVED 0C  OPER ACTION 0C  SERVICE FEATURE 000C  ORIG
NPA 919C

 ORIG NUMBER 7828826C  OVERSEAS IND 0C  TERM NPA 00800C  TERM
NUMBER 5551212C

 CONNECT TIME 1409329C  ELAPSED TIME 000098182C
```

Adding a filter at location 6

```
AMADUMP>> filter add 6 structure_code = 40511
```

Displaying the filters

```
AMADUMP>> filter display
Filter #   Writable   String
00           N      (STUDY_INDICATOR & 0x0001000)
01           N      (STUDY_INDICATOR & 0x0200000)
02           N      (TIMING_INDICATOR & 0x20000)
03           Y
04           Y
05           Y
06           Y      (STRUCTURE_CODE = 40511)
07           Y
08           Y
09           Y
10           Y
11           Y
12           Y
13           Y
14           Y
15           Y
16           Y
17           Y
18           Y
19           Y
```

Filter 0 views all test records. This filter will select all records that have the "Test Call Indicator" bit in the STUDY_INDICATOR field.

Filter 1 views all unanswered call records. The filter checks to see if the "Network Completion" bit is set in the STUDY_INDICATOR field.

Filter 2 selects all records that have an estimated elapsed time. The filter selects all records that have the "Timing Guard Flag" set to 2 in the field TIMING_INDICATOR.

Deleting a filter

```
AMADUMP>> filter delete 6.
```

Dumping a file when a file name is given

```
dump details -s -ft "%1 & structure_code = 510"
-fn 004096.00001.01.2
```

In this example, the filter string uses a pre-defined filter (%1) number 1 along with some other criteria. The %1 is substituted, as is, with the string from filter list location 1. This (if the earlier examples are considered) is actually evaluated as "(STUDY_INDICATOR & 0x0200000) & structure_code = "510". The structure_code is compared with the string "510" as a regular expression comparison. The "-s" option indicates that a summary of the report should be output at the end. The filename at the end is a standard AMA file.

Dumping records when a time range is given

```
dump details -s -ft "structure_code = 40001" -b
08:10.03/18/1997
```

This dumps all the records with modules attached having a structure code of 0001 that were created after 18th of March 1997, 8:10 until the current date and time. It also gives a summary of the dump.

Dumping details

```
AMADUMP>> dump details -s -ft "%1 & structure_code = 625" -fn
020001.030002.00006.01.2

Record

   HEX ID AA STRUCTURE CODE 00625C  CALL CODE 110C SENSOR TYPE
036C

 SENSOR ID 0619351C REC OFFICE TYPE 036C REC OFFICE ID 0619351C

 DATE 61022C TIMING IND 00000C STUDY IND 0201000C CLD PTY OFF-
HK 0C

 SERVICE OBSERVED 0C OPER ACTION 0C SERVICE FEATURE 000C  ORIG
NPA 919C
```

```
 ORIG NUMBER 8472452C OVERSEAS IND 0C TERM NPA 00800C TERM
NUMBER 9917782C

 CONNECT TIME 1044249C ELAPSED TIME 000098182C IC/INC PREFIX
00001C

 CC DATE 61022C CC TIME 1044249C ELAPSED CC 000000000C

 IC/INC EVENT STATUS 010C TRUNK GROUP NUMBER 00287C  ROUTING
INDICATOR 0C

 DIALING INDICATOR 8C  ANI INDICATOR 1C

Record

 HEX ID AA STRUCTURE CODE 00625C CALL CODE 110C SENSOR TYPE 036C

 SENSOR ID 0619351C REC OFFICE TYPE 036C REC OFFICE ID 0619351C
DATE 61022C TIMING IND 00000C STUDY IND 0201000C CLD PTY OFF-HK
0C

 SERVICE OBSERVED 0C OPER ACTION 0C SERVICE FEATURE 000C ORIG
NPA 919C

 ORIG NUMBER 8472452C  OVERSEAS IND 0C  TERM NPA 00800C  TERM
NUMBER 9917782C

 CONNECT TIME 1044249C  ELAPSED TIME 000098182C  IC/INC PREFIX
00001C

 CC DATE 61022C  CC TIME 1044249C  ELAPSED CC 000000000C

 IC/INC EVENT STATUS 010C  TRUNK GROUP NUMBER 00287C  ROUTING
INDICATOR 0C

 DIALING INDICATOR 8C  ANI INDICATOR 1C

      FILE                 Total Records Total Matched

-------------------------------------------------------------

020001.030002.00006.01.2     240964          2

-------------------------------------------------------------

TOTALS                       240964          2

AMADUMP>> quit
```

Responses

Response

Invalid stream name

Explanation

If you enter an invalid stream name, the system generates this message and displays the RMI prompt again.

System action

This is the system's method of informing you that your request is for a stream that is not configured correctly.

User action

Verify stream name and re-enter.

To save output or AMADUMP records

The current release of amadump does not support saving the output of a dump onto a UNIX file on the SDM. The following work around is suggested to save the output of amadump in text files on the CM.

1. On the CM, run the command "record start onto sfdev" (or any device).
2. Login to the SDM through the CM using the command "SDMRLOGIN" from the CI prompt.
3. Run the "amadump <streamname>" command at the prompt.
4. Dump the records using the dump sub-command.
5. Quit out of amadump ("Quit").
6. Exit out of the SDMRLOGIN ("exit").
7. Run the command "record stop onto sfdev or device specified."

The output is stored in file RECORDFILE created on sfdev.

AMADUMP filter save

Command description

The filter subcommand is altered to allow the user to write a filter to a file

Command syntax

FILTER SAVE <AT> <FILTERNAME>

Qualifications and warnings

If there are no filter streams using this criteria then the following message is displayed.

This command will overwrite the contents of filter <filter>.

Do you wish to proceed? (Y/N)

If there are filter streams using this criteria that the following message is displayed.

```
This command will overwrite the contents of filter
<filter>

This will affect the following filter streams.

<stream> <stream> ...

Do you wish to continue? <Y/N> :
```

Parameter definitions

Parameter	Value	Definition
<at>	int	Indicates the location of the filter on which the operation is to be performed. The maximum is 19.
<filter name>	String	The name to associated with the filter string.

Responses

invalid number of args

```
Usage: filter
parms:  [add <at>{0 to 19} <filter string>],
        [delete <at>{0 to 19}],
        [display [<at> {0 to 19}]]
    [ save <at> {0 to 19} <filter name>],
    [ restore <at> {0 to 19} <filter name>],
   [remove <filter name],
   [list]]
```

Explanation:

User entered the wrong number of arguments.

System action:

Prompt is returned to the craftsperson and execution of the command ends.

User action:

Enter the correct number of arguments

Command Successful

AMADUMP>>

Explanation:

The command completed successfully.

System action:

Prompt is returned to the craftsperson and execution of the command ends.

User action:

None.

Example

unable to write to file

```
AMADUMP>> filter save 1 filter1

Unable to save the filter.
Kindly re-enter
```

success

```
AMADUMP>> filter save 1 filter1
This command will overwrite the contents of filter1.
This will affect the following filter streams.
 FLT1 FLT2
Do you wish to proceed? (Y/N)
Y
AMADUMP>>
```

AMADUMP filter restore

Command description

The filter subcommand is altered to allow the user to read a filter from a file

Command syntax

```
FILTER RESTORE <AT> <FILTERNAME>
```

Qualifications and warnings

If there is already a filter at this position the following warning is displayed.

```
This command will overwrite the contents of this
filter
Do you wish to continue? <Y/N> :
```

Parameter definitions

Parameter	Value	Definition
<at>	int	Indicates the location of the filter on which the operation is to be performed. The maximum is 19.
<filtername>	String	The name to associated with the filter string.

Responses

filter criteria is invalid

```
Filter string could not be evaluated.
Kindly re-enter
```

Explanation:

Filter string could not be evaluated.

System action:

Prompt is returned to the craftsperson and execution of the command ends.

User action:

Verify that the file contains a valid filter criteria.

invalid number of args

```
Usage: filter
parms:  [add <at>{0 to 19} <filter string>],
```

```
        [delete <at>{0 to 19}],
        [display [<at> {0 to 19}]]
    [ save <at> {0 to 19} <filter name>],
    [ restore <at> {0 to 19} <filter name>],
   [remove <filter name>],
   [list]]
```

Explanation:

User entered the wrong number of arguments.

System action:

Prompt is returned to the craftsperson and execution of the command ends.

User action:

Enter the correct number of arguments

Invalid position

Invalid position specified. Cannot modify filter

Explanation:

The position entered is not in range.

System action:

The command ends

User action:

Reenter the command with a valid position.

read-only position

```
Cannot modify filter at a read-only location
```

Explanation:

The position entered is not writable.

System action:

The command ends

User action:

Reenter the command with a valid position.

Command Successful

AMADUMP>>

Explanation:

The command completed successfully.

System action:

The filter criteria is read from the file and placed at filter position <at>. Prompt is returned to the craftsperson and execution of the command ends.

User action:

None.

Example

success

```
AMADUMP>> filter restore 1 filter1
============================================================
ExpressionCompiler invoked on filter expression string:
RECCD == 'FE'
============================================================
============================================================
The following expression string compiled successfully.
RECCD == 'FE'
============================================================

AMADUMP>>
```

filter criteria invalid

```
AMADUMP>> filter restore 1 filter1
============================================================
ExpressionCompiler invoked on filter expression string:
RECCD == 'FE
============================================================
------------------------------------------------------------------------
(ExpressionProcessor.C, 0) Filter compilation failure.
Expression processing failed when this much of the string had been read:
RECCD == '
Error message:
Unrecognized character: '
------------------------------------------------------------------------
Processing terminated.

------------------------------------------------------------------------
(ExpressionProcessor.C, 236) Filter compilation failure.
Expression processing failed when this much of the string had been read:
RECCD == '
Error message:
Incomplete expression.
------------------------------------------------------------------------
Processing terminated.

============================================================
Compile failed.  Please try again.
============================================================
Filter string could not be evaluated.
Kindly re-enter
```

AMADUMP filter remove

Command description

The filter subcommand is altered to allow the user to remove a saved filter.

Command syntax

```
FILTER REMOVE <FILTERNAME>
```

Qualifications and warnings

If the filter is not used by a filter stream the following warning is displayed.

```
This command will delete filter: <filter>
Do you wish to continue? <Y/N> :
```

Parameter definitions

Parameter	Value	Definition
<filter name>	String	The name to associated with the filter string.

Responses

filter is used by a filtered stream

```
This filter is used by the following filter stream(s)
<stream> <stream> ...
This command is not allowed for this filter
```

Explanation:

Filter string could not be removed because it is in use by a filtered stream.

System action:

Prompt is returned to the craftsperson and execution of the command ends.

User action:

Update the filtered streams to use a new criteria and reenter the command.

invalid number of args

```
Usage: filter
parms:  [add <at>{0 to 19} <filter string>],
        [delete <at>{0 to 19}],
        [display [<at> {0 to 19}]]
    [ save <at> {0 to 19} <filter name>],
    [ restore <at> {0 to 19} <filter name>],
   [remove <filter name>],
   [list]]
```

Explanation:

User entered the wrong number of arguments.

System action:

Prompt is returned to the craftsperson and execution of the command ends.

User action:

Enter the correct number of arguments

not a filter

```
The requested filter does not exist.
Kindly re-enter
```

Explanation:

The requested filter does not exist.

System action:

The command ends

User action:

Reenter the command with a valid filter.

Command Successful

```
AMADUMP>>
```

Explanation:

The command completed successfully.

System action:

The filter criteria is deleted and execution of the command ends.

User action:

None.

Example

Example - success

```
AMADUMP>> filter remove filter1
This command will delete filter: <filter1>
Do you wish to continue? <Y/N> :
y
AMADUMP>>
```

Example - filter inuse

```
AMADUMP>> filter remove filter1
This filter is used by the following filter stream(s)
 FLT1 FLT2
This command is not allowed for this filter
AMADUMP>>
```

AMADUMP filter list

Command description

The filter subcommand is altered to allow the user to list the filters that apply to the same record code as the stream that the AMADUMP instance is associated.

Command syntax

```
FILTER LIST
```

Responses

list of filters

```
Valid filters are {‘CCR’, ‘CDR’}.
```

Explanation:

The list of filters is displayed.

System action:

Prompt is returned to the craftsperson and execution of the command ends.

User action:

None.

Example

success

```
AMADUMP>> filter list
Valid filters are {‘CCR’, ‘CDR’}.
AMADUMP>>
```

SBA FILESYS commands

Sending files

Command name: sendfile

The sendfile command is available from the Filesys level of the BILLMTC RMI.

Command description

The sendfile command is used to transfer files from the SBA to one or more destinations.

Command syntax for general file formats

The following syntax is available for general file formats.

```
sendfile <stream_name> [DEST <destination>] [STATE
<primary, secondary, unprocessed, processed>],[BTIME
[hh[:mm[:ss]]][.mm[/dd[/[yy]yy]]], [ETIME
[hh[:mm[:ss]]][.mm[/dd[/[yy]yy]], [SEQNUM <i, [j]>],
[FNAME <filename>],[FTYPE <file type>], [PRIO
<priority>], [new_file_state]
```

Note 1: The <stream_name> parameter must be first, but the order of the other parameters is not significant.

Note 2: If the destination is not specified, the files will be sent to all destinations for the stream.

Parameter definitions for general file formats

Parameter	Value	Definition
stream_name	stream	This is a Required parameter that is a string representing the particular stream that the files being sent are a part of (for example, AMA). This is the string matching the stream name in table SDMBILL and CRSFMT on the CM. If you use the command SET <stream> <stream_name> before invoking sendfile, you do not need to enter this parameter due to the fact that the stream was previously set. However, if a stream name is entered on the command line as part of the sendfile command, it takes precedence over a previously set stream.
DEST <destination>	Alphanumeric String (up to 15 characters)	This optional parameter specifies the name of the destination to which the billing files will be sent to.When the destination option is not specified, billing files will be sent to all destinations under the same stream. The value of this parameter combined with the value of stream name and file format acts as key to the schedule tuple.
STATE (or state) <value>	PROCESSED, UNPROCESSED, PRIMARY, or SECONDARY	This is an optional parameter that tells sendfile which files in the stream specified are to be sent. The files with the state equal to this value are to be sent. For example, PROCESSED means all processed files are to be sent.
BTIME (or btime) <date-time>	hh[:mm[:ss]]][.mm[/dd[/[yy]yy]]] examples: 8:00 1/12/98 12:00:00.2/23/98	This optional parameter further constricts the matching criteria for files. This particular parameter, BTIME (begin time), states to send only the files that were created at this time and later.
—continued—		

Parameter definitions for general file formats

Parameter	Value	Definition
ETIME (or etime) <value>	[hh[:mm[:ss]]][.mm[/dd[/[yy]yy]]] examples: 8:00 1/12/98 12:00:00.2/23/98	This optional parameter further constricts the matching criteria for files. This particular parameter, ETIME (end time), states to send only those files created before and up to this time.
SEQNUM (or seqnum) <value, value>	integer, integer defines a range of integers that represent file sequence numbers	This optional parameter further constricts the matching criteria for files. This particular parameter, SEQNUM, states to send only those files with a sequence number matching the value, or falling in the range of values stated by <value, value>.
FNAME (or fname) <filename>	filename	This is an optional parameter that states to send only this one file with this file name. The exact file name must match the string entered.
FTYPE <filetype>	filetype is an integer representing the DNS only concept of file type.	This is an optional parameter that states to send only those files with this file type value. Range is between 0 and 32. Default values are 1 for Standard AMA files and 2 for Error files.
PRIO (or priority)	priority is an integer between 1 and 4 representing DNS priority	This is an optional parameter that states to send only the files with this priority.

—continued—

Parameter definitions for general file formats

Parameter	Value	Definition
new_file_state	SENT OR NOTSENT	This is an optional parameter representing the new file state after it is sent.The default for this parameter SENT is a file with the state “closed not sent" would change to “closed sent" once the file was transferred. If NOTSENT is entered on the command line then the result is that the file state is not changed to “closed sent" after the file is transferred. This is only applicable for files in the “closed not sent" (for example, primary or unprocessed) state and therefore is ignored when it is used in the case of already “closed sent” files. Example: “sendfile ama -p SENT” would send all primary files in the ama stream, and the state of the files would change to SENT (secondary).
—end—		

Command syntax for AMADNS file format

The following syntax is appropriate only with a stream that is configured with a DNS file format type.

```
sendfile <stream_name> [-d <destination>] [-p, -s] [
-b [hh[:mm[:ss]]][.mm[/dd[/[yy]yy]]] ] [ -e
[hh[:mm[:ss]]][.mm[/dd[/[yy]yy]]] ] [-q i[,j]] [-f
<filename>] [-y <filetype>] [-r <priority>],
[new_file_state]
```

Note: The <stream_name> parameter must be first, but the order of the other parameters is not significant.

Parameter definitions for AMADNS file format

Parameter	Value	Definition
stream_name	string	This is a required parameter that is a string representing the particular stream that the files being sent are a part of (for example, AMA.) This is the string matching the stream name in table SDMBILL and CRSFMT on the CM. If you use the command SET <stream> <stream_name> before invoking sendfile, you do not need to enter this parameter due to the fact that the stream was previously set. However, if a stream name is entered on the command line as part of the sendfile command, it takes precedence over a previously set stream.
-d <destination>	Alphanumeric String (up to 15 characters)	This optional parameter specifies the name of the destination to which the billing files will be sent to.When the destination option is not specified, billing files will be sent to all destinations under the same stream. The value of this parameter combined with the value of stream name and file format acts as key to the schedule tuple.
-b	hh[:mm[:ss]]][.mm[/dd[/[yy]yy]]] examples: 8:00 1/12/98 12:00:00.2/23/98	This optional parameter further constricts the matching criteria for files. This particular parameter, BTIME (begin time), states to send only the files that were created at this time and later.
-e	[hh[:mm[:ss]]][.mm[/dd[/[yy]yy]]] examples: 8:00 1/12/98 12:00:00.2/23/98	This optional parameter further constricts the matching criteria for files. This particular parameter, ETIME (end time), states to send only those files created before and up to this time.

—continued—

Parameter definitions for AMADNS file format

Parameter	Value	Definition
-f	filename	Specify file to transmit. The filename is in standard AMA format; [source componentidentifier].[Destinat- ion Component Identifier]. [File Sequence Number].[File type]. [File Sequence Number Restart Indicator]. For more information. on the filename, refer to GR-1343-CORE, Generic Requirements for AMADNS, file structure.
-p		Send all primary files.
-q	i[,j]	This optional parameter further constricts the matching criteria for files. This particular parameter, SEQNUM, states to send only those files with a sequence number matching the value, or falling in the range of values stated by <value, value>.
-r <priority>	1..4	This is an optional parameter that states to a back up only the files with this priority.
-s		Send all secondary files.
-y type		This is an optional parameter that states to send only those files with this file type value. Range is between 0 and 32. Default values are 1 for Standard AMA files and 2 for Error files.
—continued—		

Parameter definitions for AMADNS file format

Parameter	Value	Definition
new_file_state	SENT or NOTSENT	This is an optional parameter representing the new file state after it is sent.The default for this parameter SENT is a file with the state “closed not sent" would change to “closed sent” once the file was transferred. If NOTSENT is entered on the command line then the result is that the file state is not changed to “closed sent” after the file is transferred. This is only applicable for files in the “closed not sent” (for example, primary or unprocessed) state and therefore is ignored when it is used in the case of already “closed sent” files. Example: “sendfile ama -p SENT” would send all primary files in the ama stream, and the state of the files would change to SENT (secondary).
—end—		

SendFile command examples

Note: When the destination option is not specified, billing files will be sent to all destinations under the same stream.

To transfer all files to all destinations, issue the following command:

```
> SendFile stream
```

To transfer all primary files that were created between yesterday (say the current date is May 12, 1998) at 23:00 and the present time, issue the following command:

```
> SendFile stream -p -b 23:00.5/11/98(for AMADNS
file format only)

> SendFile stream STATE primary BTIME
23:00.5/11/98(for general file formats)
```

To transfer one file by name, issue the following command:

```
> SendFile stream -f 020001.030002.00006.01.2(for
AMADNS file format only)
```

```
   > SendFile stream FNAME
020001.030002.00006.01.2(for general file formats)
```

To transfer all secondary files that have a sequence number between 60 and 80, but only those that were created between 6:00 and 11:00 this morning, issue the following command:

```
   > SendFile stream -s -q 60,80 -b 6:00 -e 11:00(for
AMADNS file format only)

   > SendFile stream STATE secondary SEQNUM 60,80
BTIME 6:00 ETIME 11:00(for general file formats)
```

To transfer all files that were created between midnight today (say the current day is May 12, 1998) and the present time, issue the following command:

```
   > SendFile stream -b 5/12/98(for AMADNS file
format only)

   > SendFile stream BTIME 5/12/98(for general file
formats)
```

As the SBA creates Standard AMA Files, they are assigned sequence numbers. The -q or seqnum option in SendFile allows you to choose a specific file for transmission by specifying a specific sequence number.

```
   > SendFile stream -q 934(for AMADNS file format
only)

   > SendFile stream SEQNUM 934(for general file
formats)
```

You can specify that a group of files be transmitted by specifying a range of sequence numbers.

```
   > SendFile stream -q 934,976(for AMADNS file
format only)

   > SendFile stream SEQNUM 934,976(for general file
formats)
```

The SendFile -q 934,976 command would result in all files with sequence numbers in the range of 934 to 976 inclusive to be transmitted.

The standard AMA file naming conventions require that sequence numbers be the third field in the filename. This allows easy visual verification of the files sent since SendFile displays the filenames of all sent files.

SendFile options act as filters. The SendFile -q 934,976 command will ignore all other file characteristics, including whether the files are secondary or

primary. Thus, if you wish to retransmit all files in the range 934 to 976 (that is, all secondary files in that range) use the following command:

```
> SendFile stream -s -q 934,976(for AMADNS file
format only)

> SendFile stream STATE secondary SEQNUM 934,976(for
general file formats)
```

You may specify as many filters as you wish on the command line.

```
> sendFile stream -q 45360,45370 -b 2:30(for AMADNS
file format only)

> SendFile stream SEQNUM 45360,45370 BTIME 2:30(for
general file formats)


021234.031234.45364.01.2 sent
021234.031234.45365.01.2 sent
021234.031234.45366.01.2 sent
021234.031234.45367.01.2 sent
021234.031234.45368.01.2 sent
021234.031234.45369.01.2 unsent
```

In this example, you have requested transmission of all files with sequence numbers between 45360 and 45370 inclusive whose creation time was at least 2:30 this morning; from this source, to all destinations for the stream, with any file in the sequence number range 45360 to 45370, with a create date on or after 2:30 this morning.

> ***Note:*** If Field separator = "_" and file extension = "_tmp" in the schedule file transfer information for this stream, then the names would be changed at the DPMS as, for example, 021234_031234_45364_01_2_tmp. In this case, the system displays the following message:
>
> ```
> File rename from_____.tmp to ____. at downstream succeeded
> ```

Example of specifying a non-existent file

```
> sendFile stream -f 023456.031234.000100.01.2(for
AMADNS file format only)

> sendFile stream FNAME 023456.031234.000100.01.2
(for general file formats)


No files to transfer. Sendfile complete.
```

In this example, you have specified the transmission of a particular file name. An error was generated indicating that the file was unavailable. This could mean that the file name was invalid or that the file has either not yet been created, or had existed and has already been deleted.

Response to invalid destination

```
ERROR: The destination is not valid for this stream
```

This message indicates you provided a value for the destination option that is not valid. You must re-enter the command with the correct destination or with the destination option omitted.

Response to incorrect use of destination option (file format)

```
ERROR : -d keyword is for DNS file format.
```

or

```
Please use DEST keyword for DIRP file format.
```

You incorrectly invoked the SENDFILE command using the -d keyword for the destination option with DIRP file format. The DEST keyword can be used for both DIRP and DNS file formats, but the -d keyword is used only when the file format is DNS. You must re-enter the command using the correct keyword as mentioned above.

Response to incorrect use of destination option (multiple input)

```
ERROR : It’s invalid to specified more than one
destinations with keywords DEST and/or -D.
```

You invoked the SENDFILE command with multiple destinations specified. You must re-enter the command with only one destination.

> ***Note:*** You may specify all destinations by omitting the keyword (DEST and/or -D) and the destination.

Response to missing destination

```
ERROR : destination is missing.
```

You invoked the SENDFILE command with the destination option with no destination string. You must re-enter the command with both destination keyword and destination string.

Response to missing schedule tuple

```
ERROR : OCC is not set up for manual transmission.
Use schedule:add to set up.
```

You invoked the SENDFILE command before datafilling a schedule tuple. You must datafill a schedule tuple before invoking sendfile command.

Listing a file

Command name: Listfile

Command description

This command lists all files currently stored in an SBA stream. Command options allow users to specify criteria for listing files.

Command syntax for AMADNS file format

```
listfile <stream_name> [-p, -s] [ -b
[hh[:mm[:ss]]][.mm[/dd[/[yy]yy]]] ] [ -e
[hh[:mm[:ss]]][.mm[/dd[/[yy]yy]]] ] [-q i[,j]] [-f
<filename>] [ -y <filetype>] [-r <priority>]
```

Parameter definitions for AMADNS file format

Parameter	Value	Definition
stream_name	string	Identifies the stream that the listed files belong to. This is the string matching the stream name in table SDMBILL and CRSFMT on the CM. The user can use the command, SET <stream> <stream_name> before invoking listfile and would not need to enter this parameter because the stream was previously set by the set stream command. However, if a stream name is entered on the command line as part of the listfile command, it takes precedence over a previously set stream.
-b	hh[:mm[:ss]]][.mm[/dd[/[yy]yy]]] examples: 8:00 1/12/98 12:00:00.2/23/98	This optional parameter further constricts the matching criteria for files. This particular parameter, BTIME (begin time), states to send only the files that were created at this time and later.

Parameter definitions for AMADNS file format

Parameter	Value	Definition
-e	[hh[:mm[:ss]]][.mm[/dd[/[yy]yy]]] examples: 8:00 1/12/98 12:00:00.2/23/98	This optional parameter further constricts the matching criteria for files. This particular parameter, ETIME (end time), states to send only those files created before and up to this time.
-f	filename	Specify file to list. The filename is in standard ama format; [source componentidentifier].[Destinat- ion Component Identifier]. [File Sequence Number].[File type].[File Sequence Number Restart Indicator]. For more information. on the filename, refer to Chapter , "Overview of standard AMA file".
-q	i[,j]	This optional parameter further constricts the matching criteria for files. This particular parameter, SEQNUM, states to send only those files with a sequence number matching the value, or falling in the range of values stated by <value, value>.
-p		Lists all primary files currently stored.
-r i	i	List files with priority specified.
-s		List secondary files.
-y type		Used for files of type.
—end—		

Command syntax for general file formats

```
listfile <stream_name> [STATE <primary, secondary,
unprocessed, processed>],[BTIME
[hh[:mm[:ss]]][.mm[/dd[/[yy]yy]]] ,[ETIME
[hh[:mm[:ss]]][.mm[/dd[/[yy]yy]]],[SEQNUM <i, [j]>,
FNAME <filename>],[FTYPE <file type>],[PRIO
<priority>]
```

Parameter definitions for general file formats

Parameter	Value	Definition
stream_name	string	This is a required parameter that is a string representing the particular stream that the files that are listed are a part of (for example, AMA.) This is the string matching the stream name in table SDMBILL and CRSFMT on the CM. The user may wish to use the command SET <stream> <stream_name> before invoking listfile and would not need to enter this parameter due to the fact that the stream was previously set by the set stream command. However, if a stream name is entered on the command line as part of the listfile command, it takes precedence over a previously set stream.
STATE (or state) <value>	PROCESSED, UNPROCESSED, PRIMARY or SECONDARY	This is an optional parameter that tells listfile which files in the stream specified are to be displayed. The files with the state equal to this values are listed. For example: PROCESSED means all processed files are to be displayed.
BTIME (or btime) <date-time>	[hh[:mm[:ss]]][.mm[/dd[/[yy]yy]]] examples: 8:00 1/12/98 12:00:00.2/23/98	This optional parameter further constricts the matching criteria for files. This particular parameter, BTIME (begin time) states to list only the files that were created at this time and later.

Parameter definitions for general file formats

Parameter	Value	Definition
ETIME (or etime) <value>	[hh[:mm[:ss]]][.mm[/dd[/[yy]yy]]] examples: 8:00 1/12/98 12:00:00.2/23/98	This optional parameter further constricts the matching criteria for files. This particular parameter, ETIME (end time), states to list only those files created before and up to this time.
SEQNUM (or seqnum) <value, value>	integer, integer defines a range of integers that represent file sequence numbers	This optional parameter further constricts the matching criteria for files. This particular parameter, SEQNUM, states to list only those files with a sequence number matching the value, or falling in the range of values stated by <value, value>.
FNAME (or fname) <filename>	filename	This is an optional parameter that states to only list this one file with this file name. The exact file name must match the string entered. This may be used if the user wishes to see the other attributes of the file.
FTYPE (or ftype) <file type>	file type is an integer representing the DNS only concept of file type	This is an optional parameter that states to list only those files with this file type value. Range is between 0 and 32. Default values are 1 for Standard AMA Files and 2 for Error files.
PRIO <priority>	priority is an integer between 1 and 4 representing DNS priority	This is an optional parameter that states to list only those files with this priority. ***Note:*** Currently all DNS files have a priority of 2.
—end—		

Example of time/day format

Parameter	Value	Definition
time-date	examples: 10:30 12/24/1997 10:30.12/24	time | date| time.date
time	examples: 10: 10:30 10:30:30	hh:[mm[:ss]] time of day for specifying date/time ranges.
date	examples: 12/ 12/24 12/24/1997	mm/[dd[/yyyy]] day of year for specifying date/time ranges

Listfile command examples

To list all the files that were created between 13:00 March 10, 1998, and 6:00 March 11, 1998, issue the following command:

```
>listfile stream_name -b 13:00.3/10/98 -e
6:00.3/11/98(for AMADNS file format only)
```

```
>listfile stream_name ETIME 6:00:00.3/11/98 BTIME
13:00:00.3/10/98(for general file formats)
```

To list all PRIMARY files that have a sequence number between 1 and 100, but only the ones that were created between this morning at 8:00 and the present time, issue the following command:

```
>listfile stream_name -p -b 8:00 -q 1,100(for AMADNS
file format only)
```

```
>listfile stream_name BTIME 8:00:00 STATE primary
SEQNUM 1,100(for general file formats)
```

To list only one file by name in order to view the creation time, issue the following command:

```
>listfile stream_name -f <filename>(for AMADNS
file format only)
```

```
>listfile stream_name FNAME <filename> (for general
file formats)
```

Example of listfile

Regardless of the selection criteria used, the output of listfile is either a list of files that meet the criteria, or a message stating “no files returned,” as shown in the following two display samples (Figure and Figure 34.)

Figure 33 Example of listfile with list of files returned

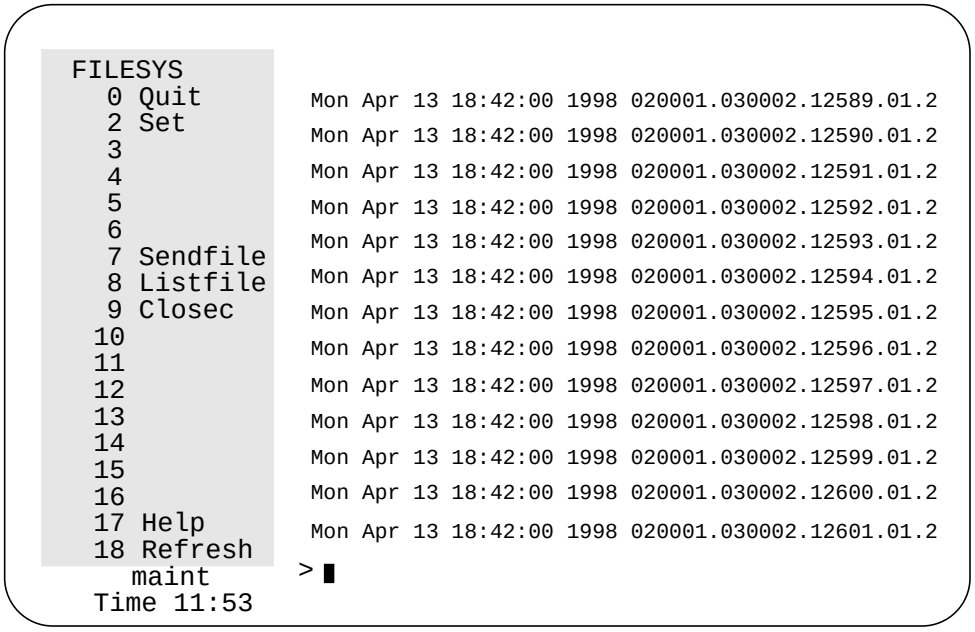


Figure 34 Example of listfile with no files returned

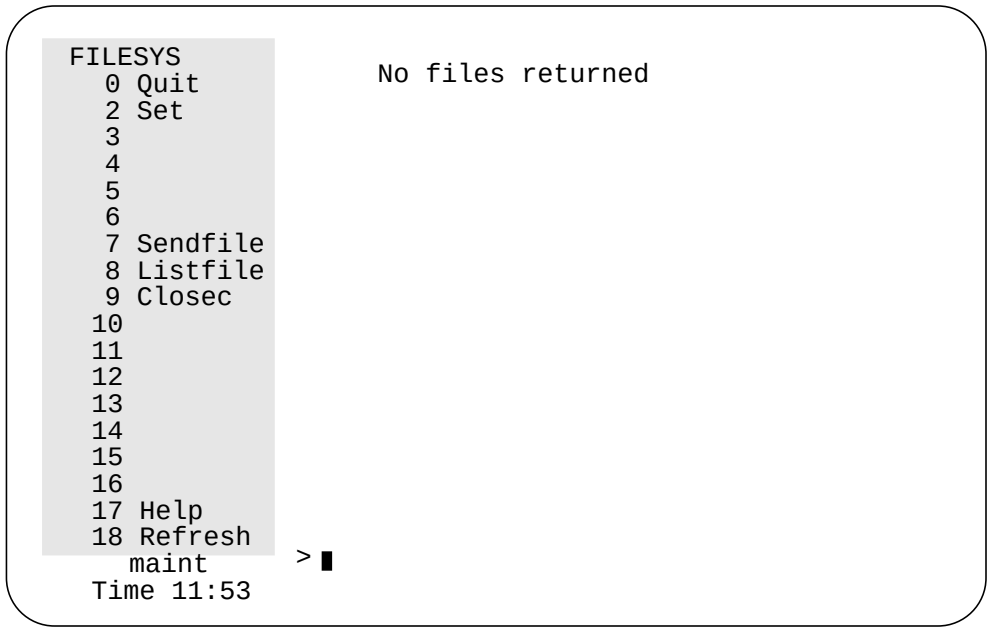


Figure 35 Example of listfile with list of files returned

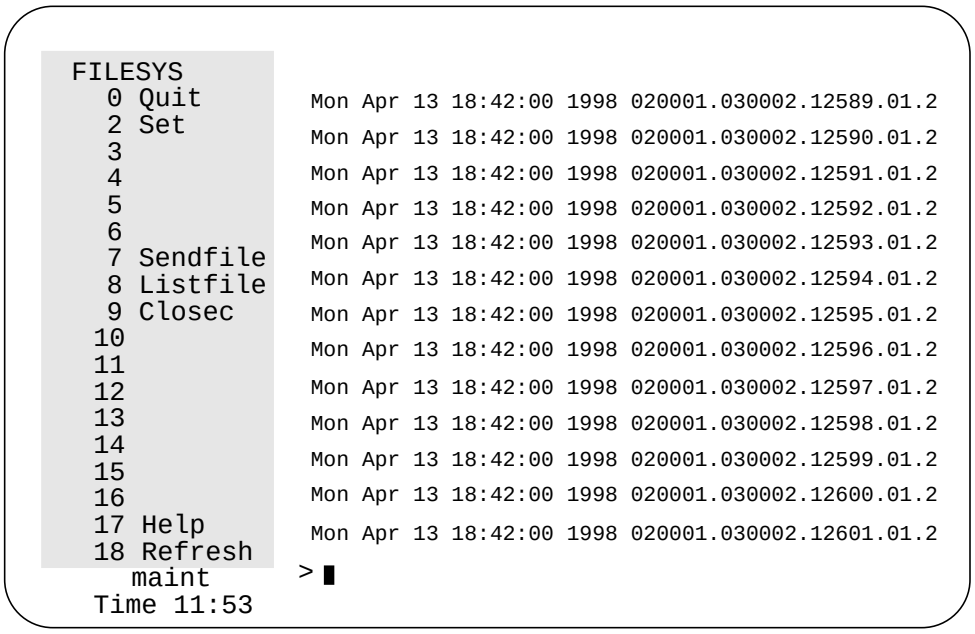
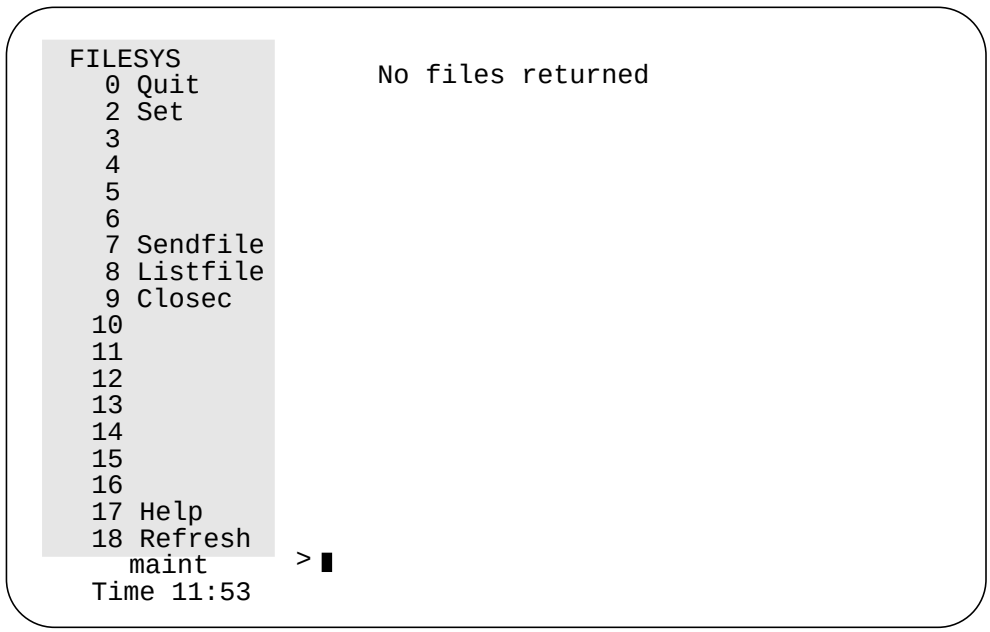


Figure 36 Example of listfile with no files returned



Closing current files

Command name: Closec

Command description

This command closes the current files by changing the state from open to closedNotSent. The command requires a stream name parameters; it returns a list of the files it acted on, as shown in Figure 37.

In this release, the SBA operates on more than one Current file only when it is in, or has recently been in, recovery mode.

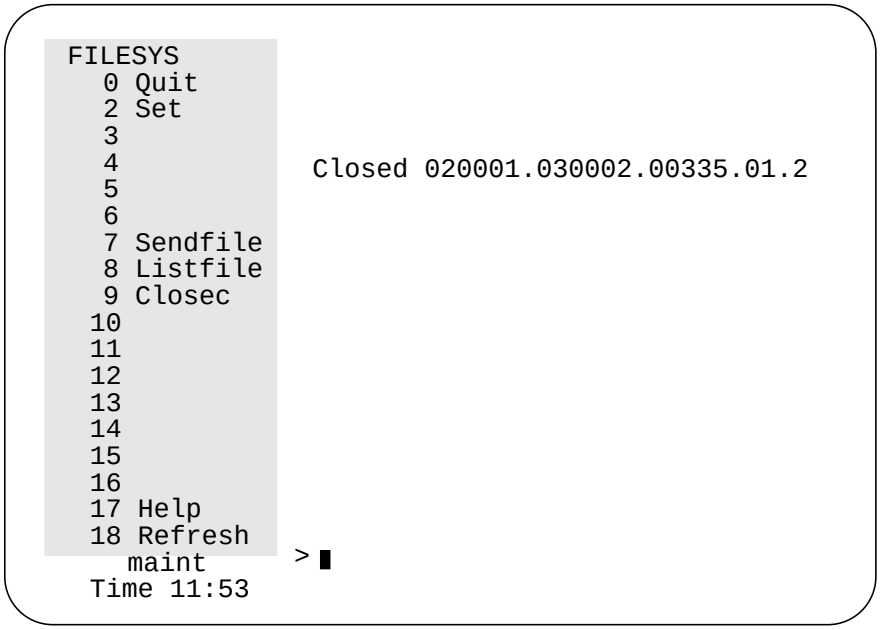
Command syntax

```
>closec <stream_name>
```

Parameter definitions

Parameter	Value	Definition
stream_name	string	This is a required parameter that is a string representing the particular stream that the files are to be closed from (for example, AMA.) This is the string matching the stream name in table SDMBILL and CRSFMT on the CM. The user may wish to use the command SET <stream> <stream_name> before invoking closec and would not need to enter this parameter due to the fact that the stream was previously set by the set stream command. However, if a stream name is entered on the command line as part of the closec command, it takes precedence over a previously set stream.

Figure 37 Example of Closec command



Responses

The following responses may come back after any of the previous commands have been issued.

Response

```
Command not recognized.
```

Explanation

This response indicates that the command (number or name) entered by the maintenance personnel does not correspond to an available command.

System action

The system, after displaying the error message, returns to the prompt and waits for you to enter a command.

User action

You are required to enter the proper command. The list of commands available at the level will be displayed on the menu.

Response

```
More...
```

Explanation

This response indicates that the command just executed has text that scrolls more than one screen and RMI is waiting for you to press the <Enter> key before displaying the next page of text.

System action

The system, after displaying the prompt, waits for you to press the <Enter> key.

User action

You will be required to press <enter> after you have read the text on the current screen.

Response

```
Invalid stream. Valid streams are {<stream1>,
<stream2>, ...}
```

Explanation

This response indicates that the user has entered closec command with an invalid stream name. A valid stream is one that is running and actually turned on from the CM.

System action

The system, after displaying the error message, displays the prompt again.

User action

Re-enter the command with a proper stream name.

SBA SCHEDULE commands

Schedule tuples are used by the SBA to hold the information needed to transfer files, automatically and manually using the sendfile command. The SBA maintains a collection of schedule tuples in a table which can be displayed and modified by users with schedule commands. Schedule commands allow you to add new schedule tuples (Add), modify existing schedule tuples (Change), display schedule tuples (List), remove schedule tuples (Delete), access Real Time Billing (RTB) commands.

Adding schedule tuples

Command name: ADD

Command description

The add command allows users to add schedule tuples to the schedule table. The Add command has many required parameters. The Add command works from the prompt (command line) mode and the parameters supplied are used to create a schedule tuple. Help text will be displayed with each prompt. Some parameters will have default values which will be displayed with the help text. The Abort command can be used at any prompt to exit the program without adding a tuple. Schedule tuples can be added for any configured streams, even if they are not running.

> ***Note:*** Do not add two destinations on the same stream with the same IP address and remote storage directory.

Command syntax

```
add [<stream_name>]

<file_format_type> <destination> <protocol>
<primary_destination> <primary_port>
<alternate_destination> <alternate_port>
<start_time> <stop_time> <interval>
<remote_store_directory> <remote_login>
<remote_password> <timeout> <maximum_retries>
<retry_wait_time> <file_extension> <field_separator>
<active>
```

Parameter definitions

Parameter	Value	Definition
stream_name	string which must be the name of a configured stream	This parameter identifies the stream for the file transfer and schedule settings. The user may wish to use the command SET <stream> <stream_name> before invoking add and would not need to enter this parameter because stream was previously set by the set stream command. However, if a stream name is entered on the command line as part of the command, it takes precedence over a previously set stream. The value of this parameter combined with the value of the file format type and destination parameters acts as the key to the schedule table.
file_format_type	string which must be a valid file format type for the specified stream	This parameter identifies the file format of the stream. The value of this parameter combined with the value of the stream name and destination parameters acts as the key to the schedule table. At this time, only DIRP file format is supported for RTB.
destination	Alphanumeric String SIZE(15)	This parameter specifies the name of the destination to which the billing files are sent. The value of this parameter combined with the value of stream name and file format type acts as key to the schedule tuple.
protocol	string which must be a valid protocol name	This parameter identifies which protocol will be used for file transfers. The protocol to use for RTB is RFTPW.

Parameter definitions

Parameter	Value	Definition
primary_destination	string which must have the format of an IP address (that is N.N.N.N where N represents a number between 0 and 255	This parameter identifies the IP address of the primary destination for file transfers.
primary_port	number 21, 1025 to 65535	This parameter identifies the primary destination Port.
alternate_destination	string which must have the format of an IP address (that is N.N.N.N where N represents a number between 0 and 255	This parameter identifies the IP address of the alternate destination for file transfers. The alternate destination is used when the primary destination is unavailable.
alternate_port	number 21, 1025 to 65535	This parameter identifies the alternate destination Port.
start_time	string which must have a valid time of day format (that is hh:mm) where hh represents the hour between 0 and 23 and mm represents the minute between 0 and 59	This parameter identifies what time of day scheduled file transfers start each day. The time of day is based on a 24 hour clock.
stop_time	string which must have a valid time of day format (that is hh:mm) where hh represents the hour between 0 and 23 and mm represents the minute between 0 and 59	This parameter identifies what time of day scheduled file transfers stop each day. The time of day is based on a 24 hour clock. A stop time that is less than or equal to the start time is interpreted as occurring on the following day.
interval	number which must be between 5 and 1440	This parameter identifies how often the files will be transferred between the start time and stop time each day. The interval is in units of minutes. The default value is 120 minutes.

Parameter definitions

Parameter	Value	Definition
remote_store_directory	string up to 255 characters in length. No spaces allowed.	This parameter identifies the directory on the destination where the transferred files are stored. The FTP State Machine does not issue the change working directory command if this parameter is set to the value of a single period "**.**"
remote_login	string up to 20 characters in length. No spaces allowed.	This parameter identifies the login to use at the destination.
remote_password	string up to 20 characters in length. No spaces allowed.	This parameter identifies the password to use with the login at the destination.
timeout	number between 1 and 300	This parameter identifies how long to wait in seconds for a response from the destination before giving up. The default value is 30 seconds.
maximum_retries	number between 0 and 10	This parameter identifies how many times to retry transferring the files if there are failures. The default value is 3.
retry_wait_time	number between 1 and 60	This parameter identifies how long to wait in seconds between having a failure and starting the next retry. The default value is 1 second.
file_extension	string up to 3 characters. No spaces allowed. "Blank" to indicate no file extension.	This parameter identifies the file extension to use when the transferred files are renamed at the destination. The default value is no file extension.
field_separator	1 character string	This parameter identifies the character used to separate the fields in a file name at the destination. It is useful for destinations that don't allow more than one period in a file name. The default value is period ".".

Parameter definitions

Parameter	Value	Definition
active	string up to 3 characters. Can be “Yes”, “No”, “Y”, “N.” Not case sensitive.	This identifies whether the schedule tuple is active, meaning that the start time, stop time, and interval are used for scheduled file transfer. If it has a value of No, no scheduled file transfers take place using this tuple, but the other settings can still be used by manual sendfile commands if the file transfer mode set to outbound. If the file transfer mode is set to outbound and the stream is running when the add command is ready to save the schedule tuple in the schedule table then it will allow the user to activate the tuple. The default value is always No.

Responses

The following responses occur when the desired options are chosen.

Response 1

```
Valid streams are {‘<stream1>’, ‘<stream2>’, etc.}.
Press Enter to accept ‘<stream1>’.
Enter Stream:
```

Explanation

This message is generated when a user starting the add command or in response to the user entering an invalid stream name. It is prompting the user to enter a stream value and provides help text. The default value provided is in this precedence: stream name provided on command line, stream name provided by set stream, first item in list of valid streams.

System action

This response is presented repeatedly until the user provides a valid stream or enters “Abort”. If the user enters “Abort”, then command aborted response is presented. If the user provides a valid stream, then the file format type prompt is presented.

User action

User must enter a valid stream name or Abort.

Response 2

```
Valid file format types are {‘<file_format1>’,
‘<file_format2>’, etc.}.
Press Enter to accept ‘<file_format1>’.
Enter File_Format_Type:
```

Explanation

This message is generated when a user enters a valid stream name or enters an invalid file format type. It is prompting the user to enter a file format type and provides help text. The default value provided is the first value in the list of valid file format types.

System action

This response will be presented until the user enters a valid file format type. If the user enters “Abort”, then command aborted response is presented. If the user provides a valid file format type, then the destination prompt is presented.

User action

Use must enter a valid file format type or Abort.

Response 3

```
Valid Destination is between one and fifteen
alphanumeric characters.
Enter Destination:
```

Explanation

This message is in response to the user entering a valid file format or entering an invalid destination string. It is prompting the user to enter a destination string and provides help text. If user enters the destination already exists then the add operation will be aborted.

System action

This response will be presented until the user enters a valid destination. If the user does not provide a valid destination or enters “Abort”. If the user enters “Abort” then command aborted response is presented. If the user provides a valid destination, then the protocol prompt is presented.

User action

Use must enter a valid destination or Abort.

Response 4

```
Valid protocols are {‘<protocol1>’, ‘<protocol2>’}.
Enter Protocol:
```

Explanation

This message is generated when a user enters a valid destination or an invalid protocol. It is prompting the user to enter a protocol value and provides help text. The default value provided is the first value in the list of valid protocols.

System action

This response will be presented repeatedly until the user provides a valid protocol or enters “Abort”. If the user enters “Abort”, then command aborted response is presented. If the user provides a valid protocol, then the primary destination prompt is presented.

User action

User must enter a valid protocol or Abort.

Response 5

```
A valid primary destination must follow IP address
format (i.e. N.N.N.N where N is a number between 0
and 255).
Enter Primary_Destination:
```

Explanation

This message is generated when a user enters a valid protocol or an invalid primary destination. It is prompting the user to enter a primary destination and provides help text. There is no default value.

System action

This response will be presented repeatedly until the user provides a valid primary destination or enters “Abort”. If the user enters “Abort”, then command aborted response is presented. If the user provides a valid primary destination, then the primary port prompt is presented.

User action

User must enter valid primary destination or Abort.

Response 6

```
Primary port can be 21 or between 1025 and 65535.
Enter Primary_Port:
```

Explanation

This message is generated when a user enters a valid primary destination or an invalid primary port. It is prompting the user to enter a primary port value and provides help text. There is no default value.

System action

This response will be presented repeatedly until the user provides a valid primary port or enters “Abort”. If the user enters “Abort”, then command aborted response is presented. If the user provides a valid primary port, then the alternate destination prompt is presented.

User action

User must enter valid primary port or Abort.

Response 7

```
A valid alternate destination must follow IP address
format (i.e. N.N.N.N where N is a number between 0
and 255).
Enter Alternate_Destination:
```

Explanation

This message is generated when a user enters a valid primary port or an invalid alternate destination. It is prompting the user to enter an alternate destination value and provides help text. There is no default value. If no alternate destination is available, enter the same value as the primary destination.

System action

This response will be presented repeatedly until the user provides a valid alternate destination or enters “Abort”. If the user enters “Abort”, then command aborted response is presented. If the user provides a valid alternate destination, then the alternate port prompt is presented.

User action

User must enter valid alternate destination or Abort.

Response 8

```
Alternate port can be 21 or between 1025 and 65535.
Enter Alternate_Port:
```

Explanation

This message is generated when a user enters a valid alternate destination or an invalid alternate port. It is prompting the user to enter a alternate port value and provides help text. There is no default value.

System action

This response will be presented repeatedly until the user provides a valid alternate port or enters “Abort”. If the user enters “Abort”, then command aborted response is presented. If the user provides a valid alternate port, then the start time prompt is presented.

User action

User must enter valid alternate port or Abort.

Response 9

```
Start time is in time of day format (hh:mm) where hh
is hours from 0 to 23 and mm is minutes from 0 to 59.
Enter Start_Time:
```

Explanation

This message is generated when a user enters a valid alternate destination or an invalid start time. It is prompting the user to enter a start time value and provides help text. There is no default value.

System action

This response will be presented repeatedly until the user provides a valid start time or enters “Abort”. If the user enters “Abort”, then command aborted response) is presented. If the user provides a valid start time, then the stop time prompt is presented.

User action

User must enter valid start time or Abort.

Response 10

```
Stop time is in time of day format (hh:mm) where hh
is hours from 0 to 23 and mm is minutes from 0 to 59.

Enter Stop_Time:
```

Explanation

This message is generated when a user enters a valid start time or an invalid stop time. It is prompting the user to enter a stop time value and provides help text. There is no default value.

System action

This response will be presented repeatedly until the user provides a valid stop time or enters “Abort”. If the user enters “Abort”, then command aborted response) is presented. If the user provides a valid stop time, then the interval prompt is presented.

User action

User must enter valid stop time or Abort.

Response 11

```
Interval can be between 5 and 1440 minutes.
Press Enter to accept ‘120’.

Enter Interval:
```

Explanation

This message is generated when a user enters a valid stop time or an invalid interval. It is prompting the user to enter an interval value and provides help text. The default value is 120 minutes.

System action

This response will be presented repeatedly until the user provides a valid interval or enters “Abort”. If the user enters “Abort”, then command aborted response is presented. If the user provides a valid interval, then the remote storage directory prompt is presented.

User action

User must enter valid interval or Abort.

Response 12

```
Remote storage directory can have between 1 and 255
characters.

Enter Remote_Storage_Directory:
```

Explanation

This message is generated when a user enters a valid interval or an invalid remote storage directory. It is prompting the user to enter a remote storage directory value and provides help text. There is no default value.

System action

This response will be presented repeatedly until the user provides a valid remote storage directory or enters “Abort”. If the user enters “Abort”, then command aborted response is presented. If the user provides a valid remote storage directory, then the remote login prompt is presented.

User action

User must enter valid remote storage directory or Abort.

Response 13

```
Remote login can have between 1 and 20 characters.

Enter Remote_Login:
```

Explanation

This message is generated when a user enters a valid remote storage directory or an invalid remote login. It is prompting the user to enter a remote login value and provides help text. There is no default value.

System action

This response will be presented repeatedly until the user provides a valid remote login or enters “Abort”. If the user enters “Abort”, then command aborted response is presented. If the user provides a valid remote storage directory, then the remote password prompt is presented.

User action

User must enter valid remote login or Abort.

Response 14

```
Remote password can have between 1 and 20 characters.
```

```
Enter Remote_Password:
```

Explanation

This message is generated when a user enters a valid remote login or an invalid remote password. It is prompting the user to enter a remote password value and provides help text. There is no default value.

System action

This response will be presented repeatedly until the user provides a valid remote password or enters “Abort”. If the user enters “Abort”, then command aborted response is presented. If the user provides a valid remote password, then the timeout prompt.

User action

User must enter valid remote password or Abort.

Response 15

```
Timeout can be between 1 and 300 seconds.
Press Enter to accept ‘30’.

Enter Timeout:
```

Explanation

This message is generated when user enters a valid password or an invalid timeout. It is prompting the user to enter a timeout value and provides help text. The default value is 30 seconds.

System action

This response will be presented repeatedly until the user provides a valid timeout or enters “Abort”. If the user enters “Abort”, then command aborted response is presented. If the user provides a valid timeout, then the maximum retries prompt is presented.

User action

User must enter valid timeout or Abort.

Response 16

```
Maximum retries can be between 0 and 10.
Press Enter to accept ‘3’.

Enter Maximum_Retries:
```

Explanation

This message is generated when a user enters a valid timeout or an invalid maximum retries value. It is prompting the user to enter a maximum retries value and provides help text. The default value is 3.

System action

This response will be presented repeatedly until the user provides a valid maximum retries value or enters “Abort”. If the user enters “Abort”, then command aborted response is presented. If the user provides a valid maximum retries value, then the retry wait time prompt is presented.

User action

User must enter valid maximum retries value or Abort.

Response 17

```
Retry wait time can be between 1 and 60 seconds.
Press Enter to accept ‘1’.

Enter Retry_Wait_Time:
```

Explanation

This message is generated when a user enters a valid maximum retries value or an invalid retry wait time value. It is prompting the user to enter a retry wait time value and provides help text. The default value is 1 second.

System action

This response will be presented repeatedly until the user provides a valid retry wait time value or enters “Abort”. If the user enters “Abort”, then command aborted response is presented. If the user provides a valid retry wait time value, then the file extension prompt is presented.

User action

User must enter valid retry wait time value or Abort.

Response 18

```
Valid file extension values have 0 to 3 characters.
Enter ‘Blank’ for no file extension.
Press Enter to accept ‘Blank’.

Enter File_Extension:
```

Explanation

This message is generated when a user enters a valid retry wait time or an invalid file extension. It is prompting the user to enter a file extension value and provides help text. The default value is no file extension.

System action

This response will be presented repeatedly until the user provides a valid file extension or enters “Abort”. If the user enters “Abort”, then command aborted response is presented. If the user provides a valid file extension, then the field separator prompt is presented.

User action

User must enter valid file extension or Abort.

Response 19

```
Valid field separators can have 1 character.
Press Enter to accept '.'.

Enter Field_Separator:
```

Explanation

This message is generated when a user enters a valid file extension or an invalid field separator. It is prompting the user to enter a field separator value and provides help text. The default value is “.”.

System action

This response will be presented repeatedly until the user provides a valid field separator or enters “Abort”. If the user enters “Abort”, then command aborted response is presented. If the user provides a valid field separator, then the active prompt is presented.

User action

User must enter valid field separator or Abort.

Response 20

```
Valid active values are {'No', 'Yes'}.
Press Enter to accept 'No'.

Enter Active:
```

Explanation

This message is generated when a user enters a valid field separator or an invalid active value. It is prompting the user to enter an active value and provides help text. The default value is No.

System action

This response will be presented repeatedly until the user provides a valid active value or enters “Abort”. If the user enters “Abort”, then command aborted response is presented. If the user provides a valid active value, then the save tuple response is presented.

User action

User must enter valid active value or Abort.

Response 21

```
Stream:                    ‘<stream>’
File_Format Type:          ‘<fileFormatType>’
Destination:               ‘<destination>’
Protocol:                  ‘<protocol>’
Primary_Destination:       ‘<primaryDestination>’
Primary_Port:              ‘<primaryPort>’
Alternate_Destination:     ‘<alternateDestination>’
Alternate_Port:            ‘<alternatePort>’
Start_Time:                ‘<startTime>’
Stop_Time:                 ‘<stopTime>’
Interval:                  ‘<interval>’
Remote_Storage_Directory: ‘<remoteDirectory>’
Remote_Login:              ‘<login>’
Remote_Password:           ‘******’
Timeout:                   ‘<timeout>’
Maximum_Retries:           ‘<maxRetries>’
Retry_Wait_Time:           ‘<retryWait>’
File_Extension:            ‘<fileExtension>’
Field_Separator:           ‘<fieldSeparator>’
Active:                    ‘<active>’

Valid actions are {‘Save’, ‘Edit’, ‘Abort’}.
Press Enter to accept ‘Edit’.
Enter Action:
```

Explanation

This message is generated when a user enters a valid active value. It is showing the user all of the entries made and asking for confirmation to save the tuple to the schedule table, edit it or abort.

System action

Saves the tuple and presents the tuple saved prompt if the user chooses Save. If the user chooses Abort then the command aborted response is presented. If the user chooses Edit then the edit tuple response is presented. The default is Edit.

User action

User must enter Save, Edit, or Abort.

Response 22

```
Schedule tuple saved.
```

Explanation

This message is generated when a user enters save at the action prompt. It is informing the user that the schedule tuple just entered has been successfully saved in the schedule table.

System action

The command is about to exit.

User action

None.

Response 23

```
Schedule tuple already exists with stream <stream>
file format type <fileFormatType> and destination
<destination>.

Use the change command to change the tuple.
```

Explanation

This message is generated when a user enters a previously entered combination of stream, file format type and destination in the schedule tuple. The duplicating stream, file format type, and destination are not permitted.

System action

Command execution stops.

User action

If the user wishes to change this schedule tuple, this can be accomplished using the change command in the schedule level of BILLMTC.

Response 24

```
Command Aborted. Schedule tuple not saved.
```

Explanation

This message is generated when a user enters an abort at any of the prompts.

System action

Command execution stops.

User action

User can restart add command and enter valid values.

Response 25

```
Stream:                    '<stream>'
File_Format Type:          '<fileFormatType>'
Destination:               '<destination>'
Protocol:                  '<protocol>'
Primary_Destination:       '<primaryDestination>'
Primary_Port:              '<primaryPort>'
Alternate_Destination:     '<alternateDestination>'
Alternate_Port:            '<alternatePort>'
Start_Time:                '<startTime>'
Stop_Time:                 '<stopTime>'
Interval:                  '<interval>'
Remote_Storage_Directory: '<remoteDirectory>'
Remote_Login               '<login>'
Remote_Password            '******'
Timeout                    '<timeout>'
Maximum_Retries            '<maxRetries>'
Retry_Wait_Time            '<retryWait>'
File_Extension             '<fileExtension>'
Field_Separator            '<fieldSeparator>'
Active                     '<active>'
```

```
Enter the field name to be changed. Stream,
File_Format_Type, and Destination cannot be changed.
Enter 'All' to be prompted for all field names.
Press Enter to accept 'All'.
Enter Field_Name:
```

Explanation

This message is generated when a user enters an edit at the save tuple prompt. It is asking the user to provided the name of the field to change its value. The default value is All.

System action

Prompts for specified field name if user provides a valid one. Prompts for all changeable field names if the user enters "All" or accepts the default. Presents the command aborted response, if the user enters "Abort". Re-prompts if the user enters an invalid value.

User action

User can enter one of the changeable field names, all, or abort.

Changing schedule tuples

Command name: Change

Command description

The change command changes the values of existing schedule tuples in the schedule table. It has many required parameters and because of this complexity works in a prompting mode rather than requiring all of the parameters on the command line. Three of the required parameters, the combination of stream, file format type, and destination are used as a key to find the correct schedule tuple to modify. The values of the parameters which make up the key cannot be modified. Once an existing tuple is identified by the stream, file format type, and destination, the other values stored in the tuple can be changed. The change command reads the existing values of the schedule tuple and uses these values as the default if the user does not want to change them. Help text will be displayed with each prompt along with the previous value of that parameter which is the default value if the user just presses enter at the prompt.

Command syntax

```
change [<stream_name>]
```

The following are also required named parameters. The command prompts for these parameters, which are not specified on the command line.

```
<file_format_type> <destination> <parameter_name>
<protocol> <primary_destination> <primary_port>
<alternate_destination> <alternate_port>
<start_time> <stop_time> <interval>
<remote_store_directory> <remote_login>
<remote_password> <timeout> <maximum_retries>
<retry_wait_time> <file_extension> <field_separator>
<active>
```

Parameter definitions

Parameter	Value	Definition
stream_name	string which must be the name of the stream contained by the schedule tuple to be changed	This is a required parameter that, along with the file format type, identifies which schedule tuple the user wishes to change. The user may wish to use the command SET <stream> <stream_name> before invoking change and would not need to enter this parameter due to the fact that the stream was previously set by the set stream command. However, if a stream name is entered on the command line as part of the change command, it takes precedence over a previously set stream. The change command prompts for this parameter. This parameter forms part of the schedule table key, see the file format type parameter definition for more information about the key.
file_format_type	string which must be the file format type contained by the schedule tuple to be changed	This is a required parameter that, along with the stream, identifies which schedule tuple the user wishes to change. The value of this parameter combined with the value of the stream name parameter act as the key to the schedule table. This means that there can only be one tuple having a given pair of stream name and file format type values stored in the schedule table at any time. At this time, only DIRP file format is supported for RTB. The change command prompts for this parameter.

Parameter definitions (continued)

Parameter	Value	Definition
destination	Alphanumeric String SIZE(15)	This parameter specifies the name of the destination to which the billing files are sent. The value of this parameter combined with the value of stream name and file format type acts as key to the schedule tuple.
parameter_name	string (Protocol, Primary_Destination, Alternate_Destination, Start_Time, Stop_Time, Interval, Remote_Storage_ Directory, Remote_Login, Remote_Password, Timeout, Maximum_Retries, Retry_Wait_Time, File_Extension, Field_Separator, Active, All)	This is a required parameter that identifies the parameter that the user wishes to change. If the user chooses All then the change command will prompt for each of the changeable parameters. If the user chooses a specific parameter name then the change command prompts for that parameter name only. The change command prompts for this parameter. The default value is All. **NOTE**: Parameter names are not case sensitive.
protocol	string which must be a valid protocol name	This is a parameter that replaces the current protocol value of the selected schedule tuple. It is required if the user chooses All or Protocol as the name of the parameter to change. The RTB protocol is RFTPW. The change command prompts for this parameter. The current value of protocol is the default value.
primary_destination	string which must have the format of an IP address (that is N.N.N.N where N represents a number between 0 and 255	This is a parameter that replaces the current primary destination of the selected schedule tuple. It is required if the user chooses All or Primary_Destination as the name of the parameter to change. The change command prompts for this parameter. The current value of primary destination is the default.
primary_port	number 21, 1025 to 65535	The primary destination requires the Port for the IP address. The change command prompts for this parameter.

Parameter definitions (continued)

Parameter	Value	Definition
alternate_destination	string which must have the format of an IP address (that is N.N.N.N where N represents a number between 0 and 255.	This is a parameter that replaces the current alternate destination of the selected schedule tuple. It is required if the user chooses All or Alternate_Destination as the name of the parameter to change. The change command prompts for this parameter. The current value of alternate destination is the default.
alternate_port	number 21, 1025 to 65535	The alternate destination requires the Port for the IP address. The change command prompts for this parameter.
start_time	string which must have a valid time of day format (that is hh:mm) where hh represents the hour between 0 and 23 and mm represents the minute between 0 and 59	This is a parameter that replaces the current start time of the selected schedule tuple. It is required if the user chooses All or Start_Time as the name of the parameter to change. The time of day is based on a 24-hour clock. The change command prompts for this parameter. The current value of start time is the default.
stop_time	string which must have a valid time of day format (that is hh:mm) where hh represents the hour between 0 and 23 and mm represents the minute between 0 and 59	This is a parameter that replaces the current stop time of the selected schedule tuple. It is required if the user chooses All or Stop_Time as the name of the parameter to change. The time of day is based on a 24-hour clock. A stop time that is less than or equal to the start time is interpreted as occurring on the following day. The change command prompts for this parameter. The current value of stop time is the default.

Parameter definitions (continued)

Parameter	Value	Definition
interval	number which must be between 5 and 1440.	This is a parameter that replaces the current interval of the selected schedule tuple. It is required if the user chooses All or Interval as the name of the parameter to change. The change command prompts for this parameter. The current value of interval is the default.
remote_store_ directory	string up to 255 characters in length. No spaces allowed.	This is a parameter that replaces the current remote storage directory of the selected schedule tuple. It is required if the user chooses All or Remote_Storage_Directory as the name of the parameter to change. The FTP State Machine does not issue the change working directory command if this parameter is set to the value of a single period "**.**" The change command prompts for this parameter. The current value of remote storage directory is the default.
remote_login	string up to 20 characters in length. No spaces allowed.	This is the parameter that replaces the current remote login of the selected schedule tuple. It is required if the user chooses All or Remote_Login as the name of the parameter to change. The change command prompts for this parameter. The current value of remote login is the default.
remote_password	string up to 20 characters in length. No spaces allowed.	This is the parameter that replaces the current remote password of the selected schedule tuple. It is required if the user chooses All or Remote_Password as the name of the parameter to change. The current value of the remote password is not displayed as the default, but the value will not change if the user just presses Enter at the prompt.

Parameter definitions (continued)

Parameter	Value	Definition
timeout	number between 1 and 300	This is the parameter that replaces the current timeout of the selected schedule tuple. It is required if the user chooses All or Timeout as the name of the parameter to change. The change command prompts for this parameter. The current value of timeout is the default.
maximum_retries	number between 0 and 10	This is the parameter that replaces the current maximum retries of the selected schedule tuple. It is required if the user chooses All or Maximum_Retries as the name of the parameter to change. The change command prompts for this parameter. The current value of maximum retries is the default.
retry_wait_time	number between 1 and 60	This is the parameter that replaces the current retry wait time of the selected schedule tuple. It is required if the user chooses All or Retry_Wait_Time as the name of the parameter to change. The change command prompts for this parameter. The current value of retry wait time is the default.
file_extension	string up to 3 characters. No spaces allowed.	This is the parameter that replaces the current file extension of the selected schedule tuple. It is required if the user chooses All or File_Extension as the name of the parameter to change. The change command prompts for this parameter. The current value of file extension is the default.
field_separator	1 character string	This is the parameter that replaces the current field separator of the selected schedule tuple. It is required if the user chooses All or Field_Separator as the name of the parameter to change. The change command prompts for this parameter. The current value of field separator is the default.

Parameter definitions (continued)

Parameter	Value	Definition
active	string up to 3 characters. Can be “Yes”, “No”, “Y”, “N.” Not case sensitive.	This is the parameter that replaces the current active value of the selected schedule tuple. It is required if the user chooses All or Active as the name of the parameter to change. If the file transfer mode is set to outbound, and the stream is running when the change command is ready to save the changes to the schedule tuple, then all values of active are accepted. If the file transfer mode is not set to outbound, or the stream is not running when the change command is ready to save the changed schedule tuple, then only negative values of active (No or N) are accepted. The change command prompts for this parameter. The current value of active is the default.

Responses

Response 1

```
Valid streams are {‘<stream1>’, ‘<stream2>’, etc.}.
Press Enter to accept ‘<stream1>’.
Enter Stream:
```

Explanation

This message is generated when a user starts the change command or in response to the user entering an invalid stream name. It is prompting the user to enter a stream value and provides help text. The default value provided is in this precedence: stream name provided on command line, stream name provided by set stream, first item in list of valid streams.

System action

This response will be presented repeatedly until the user provides a valid stream or enters “Abort”. If the user enters “Abort”, then command aborted response is presented. If the user provides a valid stream, then the file format type prompt is presented.

User action

User must enter a valid stream name which is contained by the schedule tuple to be changed or Abort.

Response 2

```
Valid file format types are {‘<file_format1>’,
‘<file_format2>’}.
Press Enter to accept ‘<file_format1>’.
Enter File_Format_Type:
```

Explanation

This message is generated when a user enters a valid stream name or enters an invalid file format type. It is prompting the user to enter a file format type and provides help text. The default value provided is the first value in the list of valid file format types.

System action

This response will be presented repeatedly until the user provides a valid file format type or enters “Abort”. If the user enters “Abort”, then command aborted response is presented. If the user provides a valid file format type, then the destination prompt is presented.

Use must enter a valid file format type which is contained by the schedule tuple to be changed or Abort.

Response 3

```
Valid destinations are {‘<destination1>’,....}.
Press Enter to accept ‘<destination1>’.
Enter Destination:
```

Explanation

This message is in response to the user entering a valid file format or entering an invalid destination string. It is prompting the user to enter a destination string and provides help text.

System action

This response will be presented until the user enters a valid destination. If the user does not provide a valid destination or enters “Abort”. If the user enters “Abort” then command aborted response is presented. If the user provides a valid destination, then the parameter prompt is presented.

User action

Use must enter a valid destination or Abort.

Response 4

```
Stream:                     ‘<stream>’
File_Format Type:           ‘<fileFormatType>’
Destination:                ‘<destination>’
Protocol:                   ‘<protocol>’
Primary_Destination:        ‘<primaryDestination>’
Primary_Port:               ‘<primaryPort>’
Alternate_Destination:      ‘<alternateDestination>’
Alternate_Port:             ‘<alternatePort>’
Start_Time:                 ‘<startTime>’
Stop_Time:                  ‘<stopTime>’
Interval:                   ‘<interval>’
Remote_Storage_Directory:   ‘<remoteDirectory>’
Remote_Login:               ‘<login>’
Timeout:                    ‘<timeout>’
Maximum_Retries:            ‘<maxRetries>’
Retry_Wait_Time:            ‘<retryWait>’
File_Extension:             ‘<fileExtension>’
Field_Separator:            ‘<fieldSeparator>’
Active:                     ‘<active>’

Enter the field name to be changed. Stream,
File_Format_Type, and Destination cannot be changed.
Enter ‘All’ to be prompted for all field names.

Press Enter to accept ‘All’.

Enter Field_Name:
```

Explanation

This message is generated when a user enters the destination and the combination of the stream, file format type, and destination match an existing schedule tuple stored in the schedule table. Also in response to the user entering edit at the save tuple prompt. It is showing the user the current values for this tuple and prompting the user to enter a the name of the parameter to be changed. Help text is provided. The default value is to change all changeable parameters.

System action

This response will be presented repeatedly until the user provides a valid parameter name or enters “Abort”. If the user enters “Abort”, then command aborted response is presented. If the user provides a valid parameter name,

then the protocol prompt is presented if the parameter name is All or Protocol. Otherwise the chosen parameter name prompt is displayed.

User action

Use must enter a valid parameter name, press enter to accept the default, or Abort.

Response 5

```
Valid protocols are {"<protocol1>", "<protocol2>"}.
Press Enter to accept '<current_protocol>'.
Enter Protocol:
```

Explanation

This message is generated when a user enters "All" or "Protocol" as the parameter name or the user enters an invalid protocol. It is prompting the user to enter a protocol value and provides help text. The default value is the current value of protocol of the selected schedule tuple.

System action

This response will be presented repeatedly until the user provides a valid protocol or enters "Abort". If the user enters "Abort", then command aborted response is presented. If the user provides a valid protocol, and All was the parameter name selected then the primary destination prompt is presented. If Protocol is the parameter name selected then the save tuple response is presented.

User action

User must enter a valid protocol, press enter to accept the current value, or Abort.

Response 6

```
A valid primary destination must follow IP address
format (i.e. N.N.N.N where N is a number between 0
and 255).
Press Enter to accept '<current_primary_dest>'.
Enter Primary_Destination:
```

Explanation

This message is generated when a user enters a valid protocol if the parameter name selected is All. This message can also occur if the parameter name selected is Primary_Destination or an invalid primary destination is entered by the user. It is prompting the user to enter a primary destination and provides

help text. The default value is the current value of primary destination for the selected schedule tuple.

System action

This response will be presented repeatedly until the user provides a valid primary destination or enters “Abort”. If the user enters “Abort”, then command aborted response is presented. If the user provides a valid primary destination, then the alternate destination prompt is presented if the parameter name selected is All. If Primary_Destination is the parameter name selected, then the save tuple response is presented.

User action

User must enter valid primary destination, press enter to accept the current value, or Abort.

Response 7

```
Primary port can be 21 or between 1025 and 65535.
Press Enter to accept '<current_primary_port>'.
Enter Primary_Port:
```

Explanation

This message is generated when a user enters a valid primary destination if the parameter name selected is All. This message can also occur if the parameter name selected is Primary_Port or an invalid primary port is entered by the user. It is prompting the user to enter a primary port value and provides help text. There is no default value.

System action

This response will be presented repeatedly until the user provides a valid primary port or enters “Abort”. If the user enters “Abort”, then command aborted response is presented. If the user provides a valid primary port, then the alternate destination prompt is presented if the parameter name selected is All. If Primary_Port is the parameter name selected, then the save tuple response is presented.

User action

User must enter valid primary port or Abort.

Response 8

```
A valid alternate destination must follow IP address
format (i.e. N.N.N.N where N is a number between 0
and 255).
Press Enter to accept '<current_alternate_dest>'.
Enter Alternate_Destination:
```

Explanation

This message is generated when a user enters a valid primary port when the parameter name selected is All. Also if the parameter name selected is Alternate_Destination or the user enters an invalid alternate destination. It is prompting the user to enter an alternate destination value and provides help text. The default value is the current value of alternate destination for the selected schedule tuple.

System action

This response will be presented repeatedly until the user provides a valid alternate destination or enters "Abort". If the user enters "Abort", then command aborted response is presented. If the user provides a valid alternate destination, and All is the selected parameter name, then the alternate port prompt is presented if the parameter name selected is All. If Alternate_Destination is the parameter name selected then the save tuple response is presented.

User action

User must enter valid alternate destination. Press enter to accept the current value, or Abort.

Response 9

```
Alternate port can be 21 or between 1025 and 65535.
Press Enter to accept '<current_alternate_port>'.
Enter Alternate_Port:
```

Explanation

This message is generated when a user enters a valid alternate destination if the parameter name selected is All. This message can also occur if the parameter name selected is Alternate_Port or an invalid alternate port is entered by the user. It is prompting the user to enter an alternate port value and provides help text. There is no default value.

System action

This response will be presented repeatedly until the user provides a valid alternate port or enters “Abort”. If the user enters “Abort”, then command aborted response is presented. If the user provides a valid alternate port, then the start time prompt is presented if the parameter name selected is All. If Alternate_Port is the parameter name selected, then the save tuple response is presented.

User action

User must enter valid primary port or Abort.

Response 10

```
Valid start times are in time of day format (hh:mm)
where hh is hours from 0 to 23 and mm is minutes from
0 to 59.
Press Enter to accept ‘<current_start_time>’.
Enter Start_Time:
```

Explanation

This message is generated when a user enters a valid alternate port if the parameter name selected is ALL. Also if the parameter name selected is Start_Time or if the user enters an invalid start time. It is prompting the user to enter a start time value and provides help text. There default value is the current value of start time for the selected schedule tuple.

System action

This response will be presented repeatedly until the user provides a valid start time or enters “Abort”. If the user enters “Abort”, then command aborted response is presented. If the user provides a valid start time, then the stop time prompt is presented if the parameter name selected is All. If Start_Time is the selected parameter name then the save tuple response is presented.

User action

User must enter valid start time, press enter to accept the current value, or Abort.

Response 11

```
Valid stop times are in time of day format (hh:mm)
where hh is hours from 0 to 23 and mm is minutes from
0 to 59.
```

```
Press Enter to accept '<current_stop_time>'.
Enter Stop_Time:
```

Explanation

This message is generated when a user enters a valid start time if the parameter name selected is ALL. Also if the parameter name selected is Stop_Time or if the user enters an invalid stop time. It is prompting the user to enter a stop time value and provides help text. There default value is the current value of stop time for the selected schedule tuple.

System action

This response will be presented repeatedly until the user provides a valid stop time or enters "Abort". If the user enters "Abort", then command aborted response is presented. If the user provides a valid stop time, then the interval prompt is presented if the parameter name selected is All. If Stop_Time is the selected parameter name then the save tuple response is presented.

User action

User must enter valid stop time, press enter to accept the current value, or Abort.

Response 12

```
Interval can be between 5 and 1440 minutes.
Press Enter to accept '<current_interval>'.
Enter Interval:
```

Explanation

This message is generated when a user enters a valid stop time if the selected parameter name is All. Also if the selected parameter name is Interval or if the user enters an invalid interval. It is prompting the user to enter an interval value and provides help text. The default value is the current interval value of the selected schedule tuple.

System action

This response will be presented repeatedly until the user provides a valid interval or enters "Abort". If the user enters "Abort", then command aborted response is presented. If the user provides a valid interval, then the remote storage directory prompt is presented if the selected parameter name is All. If Interval is the selected parameter name, then the save tuple response is presented.

User action

User must enter valid interval. Press enter to accept the current value, or Abort.

Response 13

```
Remote storage directory can have between 1 and 255
characters.
Press Enter to accept ‘<current_remote_store_dir>’.
Enter Remote_Storage_Directory:
```

Explanation

This message is generated when a user enters a valid interval if the selected parameter name is All. Also if the selected parameter name is Remote_Storage_Directiory or the user enters an invalid remote storage directory. It is prompting the user to enter a remote storage directory value and provides help text. The default value is the current remote storage directory value for the selected schedule tuple.

System action

This response will be presented repeatedly until the user provides a valid remote storage directory or enters “Abort”. If the user enters “Abort”, then command aborted response is presented. If the user provides a valid remote storage directory, then the remote login prompt is presented if the selected parameter name is All. If Remote_Storage_Directory is the selected parameter name, then the save tuple response is presented.

User action

User must enter valid remote storage directory, press enter to accept the current value, or Abort.

Response 14

```
Remote login values can have between 1 and 20
characters.
Press Enter to accept ‘<current_remote_login>’.
Enter Remote_Login:
```

Explanation

This message is generated when a user enters a valid remote storage directory if the selected parameter name is All. Also if the selected parameter name is Remote_Login or the user enters an invalid remote login. It is prompting the user to enter a remote login value and provides help text. The default value is the current remote login of the selected schedule tuple.

System action

This response will be presented repeatedly until the user provides a valid remote login or enters “Abort”. If the user enters “Abort”, then command aborted response is presented. If the user provides a valid remote storage directory, then the remote password prompt is presented if the selected parameter name is All. If Remote_Login is the selected parameter name then the save tuple response is presented.

User action

User must enter valid remote login, press enter to accept the current value, or Abort.

Response 15

```
Remote password values can have between 1 and 20
characters.
Press Enter to accept current value.
Enter Remote_Password:
```

Explanation

This message is generated when a user enters a valid remote login if the selected parameter name is All. Also if the selected parameter name is Remote_Password or the user enters an invalid remote password. It is prompting the user to enter a remote password value and provides help text. There default value is the current value of password for the selected schedule tuple, but is not displayed for security reasons.

System action

This response will be presented repeatedly until the user provides a valid remote password or enters “Abort”. If the user enters “Abort”, then command aborted response is presented. If the user provides a valid remote password or accepts the default, then the timeout prompt is presented if the selected parameter name is All. If Remote_Password is the selected parameter name then the save tuple response is presented.

User action

User must enter valid remote password. Press enter to accept the current value, or Abort.

Response 16

```
Timeout can be between 1 and 300 seconds.
Press Enter to accept '<current_timeout>'.
Enter Timeout:
```

Explanation

This message is generated when a user enters a valid remote password if the selected parameter name is All. Also if the parameter name is Timeout or the user enters an invalid timeout. It is prompting the user to enter a timeout value and provides help text. The default value is the current timeout value for the selected schedule tuple.

System action

This response will be presented repeatedly until the user provides a valid timeout or enters "Abort". If the user enters "Abort", then command aborted response is presented. If the user provides a valid timeout, then the maximum retries prompt is presented if the selected parameter name is All. If Timeout is the selected parameter name then the save tuple response is presented.

User action

User must enter valid timeout, press enter to accept the current value, or Abort.

Response 17

```
Maximum retries can be between 0 and 10.
Press Enter to accept '<current maximum_retries>'.
Enter Maximum_Retries:
```

Explanation

This message is generated when a user enters a valid timeout if the selected parameter name is All. Also if the selected parameter name is Maximum_Retries or the user enters an invalid maximum retries value. It is prompting the user to enter a maximum retries value and provides help text. The default value is the current maximum retries value for the selected schedule tuple.

System action

This response will be presented repeatedly until the user provides a valid maximum retries value or enters "Abort". If the user enters "Abort", then command aborted response is presented. If the user provides a valid maximum retries value, then the retry wait time prompt is presented if the selected

parameter name is All. If Maximum_Retries is the selected parameter name then the save tuple response is presented.

User action

User must enter valid maximum retries value, press enter to accept the current value, or Abort.

Response 18

```
Retry wait time values can be between 1 and 60
seconds.
Press Enter to accept '<current_retry_wait_time>'.
Enter Retry_Wait_Time:
```

Explanation

This message is generated when a user enters a valid maximum retries value if the selected parameter name is All. Also if the selected parameter name is Retry_Wait_Time or the user enters an invalid retry wait time value. It is prompting the user to enter a retry wait time value and provides help text. The default value is the current retry wait time for the selected schedule tuple.

System action

This response will be presented repeatedly until the user provides a valid retry wait time value or enters "Abort". If the user enters "Abort", then command aborted response is presented. If the user provides a valid retry wait time value, then the file extension prompt is presented if the selected parameter name is All. If Retry_Wait_Time is the selected parameter name then the save tuple response is presented.

User action

User must enter valid retry wait time value, press enter to accept the current value, or Abort.

Response 19

```
File extension can have between 0 and 3 characters.
Press Enter to accept '<current_file_extension>'.
Enter File_Extension:
```

Explanation

This message is generated when a user enters a valid retry wait time if the selected parameter name is All. Also if the selected parameter name is File_Extension or the user enters an invalid file extension. It is prompting the

user to enter a file extension value and provides help text. The default value is the current file extension value for the selected schedule tuple.

System action

This response will be presented repeatedly until the user provides a valid file extension or enters “Abort”. If the user enters “Abort”, then command aborted response is presented. If the user provides a valid file extension, then the field separator prompt is presented if the selected parameter name is All. If File_Extension is the selected parameter name then the save tuple response is presented.

User action

User must enter valid file extension, press enter to accept current value, or Abort.

Response 20

```
Field separator can have 1 character.
Press Enter to accept ‘<current_field_separator>’.
Enter Field_Separator:
```

Explanation

This message is generated when a user enters a valid file extension if the selected parameter name is All. Also if the selected parameter name is Field_Separator or the user enters an invalid field separator. It is prompting the user to enter a field separator value and provides help text. The default value is the current file separator value for the selected schedule tuple.

System action

This response will be presented repeatedly until the user provides a valid field separator or enters “Abort”. If the user enters “Abort”, then command aborted response is presented. If the user provides a valid field separator, then active prompt is presented if the selected parameter name is All. If Field_Separator is the selected parameter name then the save tuple response is presented.

User action

User must enter valid field separator, press enter to accept current value, or Abort.

Response 21

```
Valid active values are: {"No", "Yes"}.
Press Enter to accept ‘<current_active>’.
Enter Active:
```

Explanation

This message is generated when a user enters a valid field separator if the selected parameter name is All. Also if the selected parameter name is Active or the user enters an invalid active value. It is prompting the user to enter an active value and provides help text. The default value is the current active value of the selected schedule tuple. If the file transfer mode for this stream is not outbound or the stream is not running, then only negative values (No, N) are accepted.

System action

This response will be presented repeatedly until the user provides a valid active value or enters “Abort”. If the user enters “Abort”, then command aborted response is presented. If the user provides a valid active value, then the save tuple response is presented.

User action

User must enter valid active value, press enter to accept the current value, or Abort.

Response 22

```
Stream:                     ‘<stream>’
File_Format Type:           ‘<fileFormatType>’
Destination:                ‘<destination>’
Protocol:                   ‘<protocol>’
Primary_Destination:        ‘<primaryDestination>’
Primary_Port:               ‘<primaryPort>’
Alternate_Destination:      ‘<alternateDestination>’
Alternate_Port:             ‘<alternatePort>’
Start_Time:                 ‘<startTime>’
Stop_Time:                  ‘<stopTime>’
Interval:                   ‘<interval>’
Remote_Storage_Directory:   ‘<remoteDirectory>’
Remote_Login                ‘<login>’
Remote_Password:            ‘******’
Timeout:                    ‘<timeout>’
Maximum_Retries             ‘<maxRetries>’
Retry_Wait_Time             ‘<retryWait>’
File_Extension              ‘<fileExtension>’
Field_Separator             ‘<fieldSeparator>’
Active                      ‘<active>’

Valid actions are {‘Save’, ‘Edit’, ‘Abort’}.
Press Enter to accept ‘Edit’.
Enter Action:
```

Explanation

This message is generated when a user enters a valid active value. It is showing the user all of the entries made and asking for confirmation to change the tuple in the schedule table, edit it, or abort.

System action

Saves the tuple and presents the tuple changed response if the user chooses Save. If the user chooses Abort then the command aborted response is presented. If the user chooses Edit then the edit tuple response is presented. The default is Edit.

User action

User must enter Save, Edit, or Abort.

Response 23

```
Schedule tuple changed.
```

Explanation

This message is generated when a user confirming the tuple changes at the save tuple response. It is informing the user that the changes made to the selected schedule tuple have been saved successfully.

System action

The command just saved the changes and is about to exit.

User action

None.

Response 24

```
Schedule tuple does not exist with stream '<stream>',
file format type '<fileFormatType>', and destination
'<destination>'.

Use the add command to add a tuple.
```

Explanation

This message is generated when a user enters a stream, file format type, and destination for which there does not exist a schedule tuple in the schedule table.

System action

Command execution stops.

User action

User much choose a different schedule tuple to change or use the add command to add one.

Response 25

```
Command aborted. Schedule tuple not changed.
```

Explanation

This message is generated when a user enters Abort at any of the prompts.

System action

Command execution stops.

User action

User can restart change command.

Deleting schedule tuples

Command name: Delete

Command description

The delete command is a command which is used to remove schedule tuples from the table which stores file transfer schedules and settings. It has only one optional parameter which is used to specify a stream. No schedule tuples will be deleted without prompting the user for confirmation.

Command syntax

```
delete [<stream_name>]
```

Parameter definitions

Parameter	Value	Definition
stream_name	string representing a stream or the keyword, ALL	This is an optional parameter that acts as a filter to only delete schedule tuples that refer to the specified stream. The user may wish to use the command SET <stream> <stream_name> before invoking delete and would not need to enter this parameter due to the fact that the stream was previously set by the set stream command. However, if a stream name is entered on the command line as part of the delete command, it takes precedence over a previously set stream. If no stream parameter is entered and none is supplied using the set stream command, the delete command uses no filter and tries to delete all of the schedule tuples. Specifying “All” as a stream name also causes delete to try to delete all of the schedule tuples. In any case, no tuples are deleted without confirmation from the user.

Responses

The following responses occur when the desired options are chosen.

Response 1

```
Invalid stream ‘<stream>’.’
Valid streams are {‘<stream1>’, ‘<stream2>’, etc.}
```

Explanation

This message is generated when a user is invoking the delete command with an invalid stream name.

System action

Prompt is returned to user, execution of the command ends.

User action

User must re-enter the command providing a valid stream name. The user may also choose to use the Set Stream command to set a stream, then re-invoke the command without providing the stream name.

Response 2

```
<x> schedule tuples found containing stream
‘<stream_name>’.
Valid responses are {"Yes", "Prompt", "Abort"}.
Press Enter to accept "Prompt".
Delete all schedule tuples containing stream
‘<stream_name>’?
```

Explanation

This message occurs when a stream is specified by the user, but more than one tuple exists which contains the specified stream. The message is prompting the user for more information. about how to delete the tuples. The choices are: “Yes”, “Prompt”, and “Abort”.

System action

“Yes”, deletes all of the schedule tuples containing the specified stream with no further interaction from the user. If the user enters “Abort”, the system exits the command without deleting any schedule tuples. If the user enters “Prompt”, the system displays each schedule tuple containing the specified stream and prompts for confirmation from the user to delete each one at a time.

User action

The user may type one of the options (“Yes”, “Prompt”, “Abort”).

Response 3

```
<x> schedule tuples found.
Valid responses are {"Yes", "Prompt", "Abort"}.
Press Enter to accept "Prompt."
Delete all schedule tuples for all streams?
```

Explanation

This message occurs when no stream is specified and more than one schedule tuple exists. The message is prompting the user for more information. about how to delete the tuples. The choices are: “Yes”, “Prompt”, and “Abort”.

System action

“Yes”, deletes all of the schedule tuples with no further interaction from the user. If the user enters “Abort”, the system exits the command without deleting any schedule tuples. If the user enters “Prompt”, the system displays each schedule tuple and prompts for confirmation from the user to delete each one at a time.

User action

The user may type one of the options (“Yes”, “Prompt”, “Abort”).

Response 4

```
Stream:                     "<stream>"
File_Format Type:           "<fileFormatType>"
Destination:                "<destination>"
Protocol:                   "<protocol>"
Primary_Destination:        "<primaryDestination>"
Primary_Port:               "<primaryPort>"
Alternate_Destination:      "<alternateDestination>"
Alternate_Port:             "<alternatePort>"
Start_Time:                 "<startTime>"
Stop_Time:                  "<stopTime>"
Interval:                   "<interval>"
Remote_Storage_Directory:   "<remoteDirectory>"
Remote_Login:               "<login>"
Remote_Password:            "******"
Timeout:                    "<timeout>"
Maximum_Retries:            "<maxRetries>"
Retry_Wait_Time:            "<retryWait>"
File_Extension:             "<fileExtension>"
Field_Separator:            "<fieldSeparator>"
Active:                     "<active>"
```

```
Valid responses are {"Yes", "No", "Abort"}.
Press Enter to accept "No".

Delete this tuple?
```

Explanation

This message displays a tuple and prompts the user to confirm deletion of this tuple. This message occurs after the user has responded to a “delete all” response with the choice of “Prompt”. This message also occurs if only one tuple containing the specified stream exists or there is no stream specified and only one tuple exists in the table. The choices are: “Yes”, “No”, and “Abort”

System action

“Yes” deletes the tuple and displays the next tuple if there are more. “No” skips that tuple (does not delete it) and displays the next tuple if there are more. “Abort” skips this tuple and all others after it (does not delete them) and ends execution of the command. If “Yes” is chosen, the tuple is deleted immediately, responding with “Abort” to a later message does not restore tuples already deleted.

User action

The user may type one of the options (“Yes”, “No”, “Abort”).

Response 5

```
<x> schedule tuple(s) deleted.
```

Explanation

This message occurs just before the delete command exits. It displays a count of how many schedule tuples were deleted.

System action

None.

User action

None.

Response 6

```
No tuples found containing stream "<stream>."
```

Explanation

This message indicates that either there are no schedule tuples in the schedule table or no schedule tuples in the schedule table that contain the specified stream.

System action

Prompt is returned to the user, execution of the command ends after reporting that zero schedule tuples were deleted.

User action

If the specified stream is not correct, re-enter command with correct one. If no stream was provided in the command line or using set stream, then no tuples exist in the schedule table to delete.

Listing schedule files

Command name: List

Command description

The List command is a command used to list schedule tuples stored in the schedule table. It has only one optional parameter that is used to specify a stream name. The parameter is used by the list command as a filter so that it only displays schedule tuples which contain the specified stream.

Command syntax

```
list[<stream_name>]
```

Parameter definitions

Parameter	Value	Definition
stream_name	string representing a stream or the keyword, ALL	This is an optional parameter that acts as a filter to only list schedule tuples that contain the specified stream. The user may wish to use the command SET <stream> <stream_name> before invoking list and would not need to enter this parameter due to the fact that the stream was previously set by the set stream command. However, if a stream name is entered on the command line as part of the list command, it takes precedence over a previously set stream. If no stream parameter is entered and none is supplied using the set stream command, the list command uses no filter and lists all of the schedule tuples. Specifying “All” as a stream name also causes list to list all of the schedule tuples.

Responses

The following responses occur when the desired options are chosen.

Response 1

```
Invalid stream "<stream>." Valid streams are
{"<stream1>", "<stream2>", etc.}
```

Explanation

This message is generated when a user invoking the command with an invalid stream name.

System action

Prompt is returned to user, execution of the command ends.

User action

User must re-enter the command providing a valid stream name. The user may also choose to use the Set Stream command to set a stream, then re-enter the command without providing the stream name.

Response 2

```
Stream:                     "<stream>"
File_Format_Type:           "<fileFormatType>"
Destination:                "<destination>"
Protocol:                   "<protocol>"
Primary_Destination:        "<primaryDestination>"
Primary_Port:               "<primaryPort>"
Alternate_Destination:      "<alternateDestination>"
Alternate_Port:             "<alternatePort>"
Start_Time:                 "<startTime>"
Stop_Time:                  "<stopTime>"
Interval:                   "<interval>"
Remote_Storage_Directory:   "<remoteDirectory>"
Remote_Login:               "<login>"
Remote_Password:            "******"
Timeout:                    "<timeout>"
Maximum_Retries:            "<maxRetries>"
Retry_Wait_Time:            "<retryWait>"
File_Extension:             "<fileExtension>"
Field_Separator:            "<fieldSeparator>"
Active:                     "<active>"

Press Enter to continue ("Abort" quits)...
```

Explanation

This message displays one or more schedule tuples.

System action

Displays tuples listed count and exits if user enters abort. Displays the next tuple (if it exists) if the user enters any thing else.

User action

User views schedule tuples of interest and either type **aborts** to stop the listing or presses enter to see the next tuple.

Response 3

```
<x> schedule tuple(s) listed.
```

Explanation

This message occurs just before the list command exits. It displays a count of how many schedule tuples were listed.

System action

None.

User action

None.

Real Time Billing (RTB)

Command name: RTB

Command description

The RTB directory resides under the SCHEDULE directory. The RTB directory provides access to commands that are used for the transfer of billing files over TCP/IP through an Ethernet connection. The RTB is a menu command from the SCHEDULE level of BILLMTC.

To access the RTB directory, you must enter the BILLMTC;SCHEDULE menu in the BILLMTC RMI, then type RTB.

To go back to the SCHEDULE menu, you must enter “quit.” You can also enter “quit all” to exit all menus.

RTB SET

Command name: SET

Command description

The SET command is used to set the RTB session to a default stream or, if no stream is provided, to clear the previously set default stream.

This command is useful because when a default stream name is set, other RTB commands will automatically use the default stream if one is not explicitly specified for that command.

Command syntax

```
Set {STREAM} <stream name>
```

Parameter definitions

Parameter	Value	Definition
streamName	1 to 4 character ascii string	This parameter specifies the name of the stream that originates the billing data. This is a string that matches the stream name in table SDMBIL and CRSFMT on the DMS CM. If the stream name is not specified the default stream name is cleared. Subsequent commands in the RTB map level requiring a stream will use the default stream unless a stream is explicitly specified for that command.

Responses

The SET command can generate the responses outlined below.

Response 1

```
RTB stream context now set to: <StreamName>
```

Explanation

This message is in response to a craftsperson invoking the SET command successfully.

System action

User action

No action is required.

Response 2

```
ERROR: Invalid Stream Name. Valid streams are
{<stream1, stream2...}.
Command aborted.
```

Explanation

This message is generated in response to a craftsperson invoking the SET command using an invalid stream name.

System action

Prompt is returned to craftsperson, execution of the command ends and the SET command terminates execution.

User action

The craftsperson must re-enter the command providing a valid stream name.

Response 3

```
Invalid keyword.Valid keywords for set are:{stream}.
```

Explanation

This message is generated in response to a craftsperson invoking the SET command without the keyword “stream”.

System action

Prompt is returned to craftsperson, execution of the command ends and the SET command terminates execution.

User action

The craftsperson must re-enter the command providing a keyword stream.

Response 4

```
Stream context is now cleared.
```

Explanation

This message is in response to a craftsperson invoking the SET command without an argument.

System action

User action

No user action is required.

RTB RTS

Command name: RTS

Command description

The RTS command is used to return RTB to service for a stream that is in the ManB (manual busy) state.

Command syntax

```
RTS [<streamName>] <fileformat> <destination>
```

Parameter definitions

Parameter	Value	Definition
streamName	1 to 4 character ascii string	This parameter specifies the name of the stream that originates the billing data. This is a string that matches the stream name in table SDMBIL and CRSFMT on the DMS CM. If the craftsperson specifies a stream name using the SET command prior to using this command, the streamName in this command can be omitted and the stream name specified with the SET command will be used. If a stream name is entered in this command, it overrides the stream name defined with the SET command. This parameter is required if the SET command hasn't been used previously.
fileformat	Alphanumeric String Range {Dirp}	This is required parameter which is part of the new RTB tuple. This parameter identifies the file format type of a stream. The value of this parameter combines with the value of stream name and destination acts as key to the RTB tuple.

Parameter definitions

Parameter	Value	Definition
destination	Alphanumeric String SIZE(15)	This parameter specifies the name of the destination to which the bill files will be sent to. The value of this parameter combined with the value of stream name and file format acts as key to the RTB tuple.

Responses

The RTS command can generate the responses outlined below.

Response 1

```
RTB is INSV for the stream: <StreamName>
```

Explanation

This message is in response to a craftsperson invoking the RTS command successfully.

System action

Prompt is returned to the craftsperson and execution of the command ends and RTB is brought in service.

User action

No action is required.

Response 2

```
ERROR: RTB already INSV for stream <StreamName>
```

Explanation

This message is generated in response to a craftsperson invoking the RTS command with RTB already in service.

System action

Prompt is returned to craftsperson, execution of the command ends.

User action

No action is required

Response 3

```
ERROR: Turning on RTB for stream <StreamName> while
schedule tuple not present

Use BILLMTC;SCHEDULE;ADD to add schedule tuple.
```

Explanation

This message is in response to a craftsperson invoking the RTS command while the schedule tuple is not present.

System action

Prompt is returned to craftsperson, execution of the command ends and RTB is not turned on.

User action

The craftsperson must add the RTB schedule tuple through the BILLMTC;SCHEDULE;ADD command before turning on the RTB session.

Response 4

```
Stream <streamname>: The following protocol is not
supported by RTB- <protocol>.

Try changing the protocol to RFTPW using the “Change”
command in the BILLMTC;SCHEDULE level.
```

Explanation

This message is generated in response to a craftsperson invoking the RTS command for a stream that doesn’t use RFTPW protocol. RTB only supports the RFTPW protocol.

System action

Prompt is returned to craftsperson, execution of the command ends and RTB is not brought in service.

User action

The craftsperson must change the protocol in the RTB schedule tuple to RFTPW through the BILLMTC;SCHEDULE;CHANGE command before turning on the RTB session.

Response 5

```
ERROR: Stream doesn’t use DIRP file format.
```

```
Command aborted.
```

Explanation

This message is generated in response to a craftsperson invoking the RTS command for a stream that doesn't use DIRP file format. RTB is supported for DIRP file format only.

System action

Prompt is returned to craftsperson, execution of the command ends and RTB is not brought in service.

User action

The craftsperson must change the file format in the RTB schedule tuple to DIRP through the BILLMTC;SCHEDULE;CHANGE command before turning on the RTB session.

Response 6

```
ERROR: Unable to connect to RTB server.
Command aborted.
```

Explanation

This message is generated in response to a craftsperson invoking the RTS command for a stream when an RTB server process has failed.

System action

Prompt is returned to craftsperson, execution of the command ends and RTB is not turned on.

User action

Attempts will automatically be made to restart the RTB server whenever it fails. Re-issuing the command may work if RTB has been successfully restarted. However, if RTB fails to restart, contact the next level of support.

Response 7

```
ERROR: Invalid Stream Name. Valid streams are
{<stream1, stream2...}.
Command aborted.
```

Explanation

This message is generated in response to a craftsperson invoking the RTS command using an invalid stream name.

System action

Prompt is returned to craftsperson, execution of the command ends and RTB is not turned on.

User action

The craftsperson must re-enter the command and provide a valid stream name.

Response 8

```
ERROR: This command requires a valid stream name as
an argument.
```

Explanation

This message is in response to a craftsperson invoking the RTS command without an argument and without previously using SET to set the default stream.

System action

Prompt is returned to the craftsperson and execution of the command ends.

User action

You must re-enter the command providing the required argument or must use the SET command to set the stream before executing this command.

Response 9

```
ERROR : One of the required parameter is missing.
Please re-enter all the
required parameters in the following order.


Usage : Command
[<streamname>]<fileformat><destination>
```

Explanation

You invoked the RTS command without a file format argument.

System action

Prompt is returned and execution of the command ends.

User action

You must re-enter the command providing the all required argument. Please use help command for more details.

Response 10

```
ERROR: Invalid file format. Valid file formats are
{DIRP,...}.

Command aborted.
```

Explanation

You invoked the RTS command without a valid file format argument.

System action

Prompt is returned and execution of the command ends.

User action

You must re-enter the command providing the valid file format.

Response 11

```
ERROR : One of the required parameter is missing.
Please re-enter all the required parameters in the
following order.


Usage : Command
[<streamname>]<fileformat><destination>
```

Explanation

You invoked the RTS command without a destination argument.

System action

Prompt is returned and execution of the command ends.

User action

You must re-enter the command providing the required all arguments.

Response 12

```
Error : RTB is not configured for stream <streamName>
```

Explanation

You invoked the RTS command with a bad destination.

System action

Prompt is returned and execution of the command ends.

User action

You must re-enter the command providing the valid destination.

RTB BSY

Command name: BSY

Command description

The BSY command is used to manual busy RTB.

Warning

Due to the destructive nature of the BSY command, the user will be prompted for a confirmation if RTB is in service at that time.:

```
Bsying a RTB stream will stop current RTB open file
transferring.

Are you sure you want to BSY RTB? (Y/N):
```

Command syntax

```
BSY [<streamName>] <fileformat> <destination>
```

Parameter definitions

Parameter	Value	Definition
streamName	1 to 4 character ascii string	This parameter specifies the name of the stream that originates the billing data. This is a string that matches the stream name in table SDMBIL and CRSFMT on the DMS CM. If the craftsperson specifies a stream name using the SET command prior to using this command, the streamName in this command can be omitted and the stream name specified with the SET command will be used. If a stream name is entered in this command, it overrides the stream name defined with the SET command. This parameter is required if the SET command hasn't been used previously.
fileformat	Alphanumeric String Range {Dirp}	This is required parameter which is part of the new RTB tuple. This parameter identifies the file format type of a stream. The value of this parameter combines with the value of stream name and destination acts as key to the RTB tuple.
destination	Alphanumeric String SIZE(15)	This parameter specifies the name of the destination to which the bill files will be sent to. The value of this parameter combined with the value of stream name and file format acts as key to the RTB tuple.

Responses

The BSY command can generate the following responses.

Response 1

```
RTB is MANB for the stream : <StreamName>
```

Explanation

This message is in response to a craftsperson invoking the BSY command successfully.

System action

Prompt is returned to the craftsperson and execution of the command ends.

User action

No action is required.

Response 2

```
ERROR: RTB already MANB

Command aborted.
```

Explanation

This message is generated in response to a craftsperson invoking the BSY command whose status has already turned off.

System action

The command is aborted, execution ends and the prompt is returned to craftsperson

User action

No user action is required.

Response 3

```
Stream <streamname>: The following protocol is not
supported by RTB- <protocol>.

Try changing the protocol to RFTPW using the “Change”
command in the BILLMTC;SCHEDULE level.
```

Explanation

This message is generated in response to a craftsperson invoking the BSY command for a offline stream that doesn’t use RFTPW protocol. When trying to BSY a stream whose state is INSV, no error message is generated. RTB is designed not to check Schedule tuple’s protocol when bsying the in-service stream. When the RTB state is OFFL, busying the stream will generate the above error message. RTB requires the RFTPW protocol.

System action

Prompt is returned to craftsperson, execution of the command ends and RTB is not brought to MANB.

User action

The craftsperson must change the protocol in the RTB schedule tuple to RFTPW through the BILLMTC;SCHEDULE;CHANGE command before turning off the RTB session.

Response 4

```
ERROR: Stream doesn’t use DIRP file format.

Command aborted.
```

Explanation

This message is generated in response to a craftsperson invoking the BSY command for a stream that doesn’t use DIRP file format. RTB supports only DIRP file format.

System action

Prompt is returned to craftsperson, execution of the command ends and RTB is not brought to MANB.

User action

The craftsperson must change the file format in the RTB schedule tuple to DIRP through the BILLMTC;SCHEDULE;CHANGE command before turning off the RTB session.

Response 5

```
Error : RTB is not configured for the <streamname >
stream.
```

Explanation

This message is shown when this RTB has not been configured yet.

System action

The operation is aborted.

User action

The craft person must configure the RTB tuple by using the BILLMTC;SCHEDULE;RTB;CONFRTB;ADD command to add a RTB tuple.

Response 6

```
ERROR: Invalid Stream Name. Valid streams are
{<stream1, stream2...}.
Command aborted.
```

Explanation

This message is generated in response to a craftsperson invoking the BSY command using an invalid stream name.

System action

Prompt is returned to craftsperson, execution of the command ends and RTB is not turned off.

User action

The craftsperson must re-enter the command providing a valid stream name or use the SET command to set a default stream.

Response 7

```
ERROR: This command requires a valid stream name as
an argument
```

Explanation

This message is in response to a craftsperson invoking the BSY command without an argument and without setting the default stream with SET.

System action

Prompt is returned to the craftsperson and execution of the command ends.

User action

The craftsperson must re-enter the command providing the required argument or must use the SET command to set a default stream before executing this command.

Response 8

```
ERROR : One of the required parameter is missing.
Please re-enter all the
required parameters in the following order.
```

```
Usage : Command
[<streamname>]<fileformat><destination>
```

Explanation

You invoked the BSY command without a file format argument.

System action

Prompt is returned and execution of the command ends.

User action

You must re-enter the command providing the all required argument. Please use help command for more details.

Response 9

```
ERROR: Invalid file format. Valid file formats are
{DIRP,...}.

Command aborted.
```

Explanation

You invoked the BSY command without a valid file format argument.

System action

Prompt is returned and execution of the command ends.

User action

You must re-enter the command providing the valid file format.

Response 10

```
ERROR : One of the required parameter is missing.
Please re-enter all the required parameters in the
following order.


Usage : Command
[<streamname>]<fileformat><destination>
```

Explanation

You invoked the BSY command without a destination argument.

System action

Prompt is returned and execution of the command ends.

User action

You must re-enter the command providing the required all arguments.

Response 11

```
Error : RTB is not configured for stream <streamName>
```

Explanation

You invoked the BSY command with a bad stream name.

System action

Prompt is returned and execution of the command ends.

User action

You must re-enter the command providing the valid stream.

RTB OFFL

Command name: OFFL

Command description

The OFFL command is used to take the RTB offline.

Warning

There is no warning associated with this command.

Command syntax

```
OFFL [<streamName>] <fileformat> <destination>
```

Parameter definitions

Parameter	Value	Definition
streamName	1 to 4 character ascii string	This parameter specifies the name of the stream that originates the billing data. This is a string that matches the stream name in table SDMBIL and CRSFMT on the DMS CM. If the craftsperson specifies a stream name using the SET command prior to using this command, the streamName in this command can be omitted and the stream name specified with the SET command will be used. If a stream name is entered in this command, it overrides the stream name defined with the SET command. This parameter is required if the SET command hasn't been used previously.
fileformat	Alphanumeric String Range {Dirp}	This is required parameter which is part of the new RTB tuple. This parameter identifies the file format type of a stream. The value of this parameter combines with the value of stream name and destination acts as key to the RTB tuple.
destination	Alphanumeric String SIZE(15)	This parameter specifies the name of the destination to which the bill files will be sent to. The value of this parameter combined with the value of stream name and file format acts as key to the RTB tuple.

Response 1

```
ERROR : One of the required parameter is missing.
Please re-enter all the
required parameters in the following order.


Usage : Command
[<streamname>]<fileformat><destination>
```

Explanation

You invoked the OFFL command without a file format argument.

System action

Prompt is returned and execution of the command ends.

User action

You must re-enter the command providing the all required argument. Please use help command for more details.

Response 2

```
ERROR: Invalid file format. Valid file formats are
{DIRP,...}.

Command aborted.
```

Explanation

You invoked the OFFL command without a valid file format argument.

System action

Prompt is returned and execution of the command ends.

User action

You must re-enter the command providing the valid file format.

Response 3

```
ERROR : One of the required parameter is missing.
Please re-enter all the required parameters in the
following order.


Usage : Command
[<streamname>]<fileformat><destination>
```

Explanation

You invoked the OFFL command without a destination argument.

System action

Prompt is returned and execution of the command ends.

User action

You must re-enter the command providing the required all arguments.

Response 4

```
Error : RTB is not configured for stream <streamName>
```

Explanation

You invoked the OFFL command with a bad stream.

System action

Prompt is returned and execution of the command ends.

User action

You must re-enter the command providing the valid stream.

RTB QUERY

Command name: QUERY

Command description

The Query command is used to query the status of RTB. In contrast to other RTB commands, this command doesn't depend on protocol RFTPW being datafilled in Schedule tuple.

Command syntax

```
QUERY [<streamname>]
```

Parameter definitions

Parameter	Value	Definition
streamName	1 to 4 character ascii string	This parameter specifies the name of the stream that originates the billing data. This is a string that matches the stream name in table SDMBIL and CRSFMT on the DMS CM. If the craftsperson specifies a stream name using the SET command prior to using this command, the streamName in this command can be omitted and the stream name specified with the SET command will be used. If a stream name is entered in this command, it overrides the stream name defined with the SET command. This parameter is required if the SET command hasn't been used previously.

Responses

The QUERY command can generate the following responses.

Response 1

```
STREAM : <streamName>
Destination list:
-------------------------------------------------
DIRP Eventure                                <status>
DIRP Eventure1                               <status>
DIRP EventureN                               <status>
```

The status could be either INSV, SYSB, MANB or OFFL.

Explanation

This message is in response to a craftsperson invoking the QUERY command successfully.

System action

User action

No action is required.

Response 2

```
ERROR: Unable to connect to RTB server.
Command aborted.
```

Explanation

This message is generated in response to a craftsperson invoking the QUERY when the RTB server process has failed.

System action

Prompt is returned to craftsperson, execution of the command ends and no status is shown.

User action

The RTB server will attempt to restart itself whenever it fails. Reissuing the command may work if RTB has restarted itself. However, if RTB fails to restart, contact the next level of support.

Response 3

```
Error : RTB is not configured for the <streamname >
stream.
```

Explanation

This message is shown when this RTB has not been configured yet.

System action

The operation is aborted.

User action

The craft person must configure the RTB tuple by using the BILLMTC;SCHEDULE;RTB;CONFRTB;ADD command to add a RTB tuple.

Response 4

```
ERROR: Invalid Stream Name. Valid streams are
{<stream1, stream2...}.
Command aborted.
```

Explanation

This message is generated in response to a craftsperson invoking the QUERY command using an invalid stream name.

System action

Prompt is returned to craftsperson and execution of the command ends.

User action

The craftsperson must re-enter the command providing a valid stream name.

Response 5

```
ERROR: This command requires a valid stream name as
an argument.
Command aborted.
```

Explanation

This message is in response to a craftsperson invoking the QUERY command without an argument or without setting the default stream using the SET command.

System action

Prompt is returned to the craftsperson and execution of the command ends.

User action

The craftsperson must re-enter the command providing the required argument or must use the SET command to set the stream.

Response 6

```
STREAM : <streamName>
Destination list:
-------------------------------------------------
There are no RTB tuples configured for this stream.
```

Explanation

This message is in response to a craftsperson invoking the QUERY command when no RTB tuple has been configured yet.

User action

You may use the CONFRTB:Add command to configure RTB tuples.

RTB IPTEST

Command name: IPTEST

Command description

The IPTEST command is used to ping the downstream processor. Like the RTB QUERY command, IPTEST command doesn't depend on protocol RFTPW being datafilled in the Schedule tuple.

Command syntax

```
IPTEST [<streamName>] <fileformat> <destination>
```

Parameter definitions

Parameter	Value	Definition
streamName	1 to 4 character ascii string	This parameter specifies the name of the stream that originates the billing data. This is a string that matches the stream name in table SDMBIL and CRSFMT on the DMS CM. If the craftsperson specifies a stream name using the SET command prior to using this command, the streamName in this command can be omitted and the stream name specified with the SET command will be used. If a stream name is entered in this command, it overrides the stream name defined with the SET command. This parameter is required if the SET command hasn't been used previously.
fileformat	Alphanumeric String Range {Dirp}	This is required parameter which is part of the new RTB tuple. This parameter identifies the file format type of a stream. The value of this parameter combines with the value of stream name and destination acts as key to the RTB tuple.
destination	Alphanumeric String SIZE(15)	This parameter specifies the name of the destination to which the bill files will be sent to. The value of this parameter combined with the value of stream name and file format acts as key to the RTB tuple.

Responses

The IPTEST command can generate the following responses.

Response 1

```
Ping downstream processor: 64 bytes packets
64 bytes from 47.41.128.114: icmp_seq=0. time=19. ms
64 bytes from 47.41.128.114: icmp_seq=1. time=2. ms
64 bytes from 47.41.128.114: icmp_seq=2. time=2. ms
64 bytes from 47.41.128.114: icmp_seq=3. time=2. ms
64 bytes from 47.41.128.114: icmp_seq=4. time=2. ms
64 bytes from 47.41.128.114: icmp_seq=5. time=2. ms
64 bytes from 47.41.128.114: icmp_seq=6. time=2. ms
```

```
64 bytes from 47.41.128.114: icmp_seq=7. time=2. ms
64 bytes from 47.41.128.114: icmp_seq=8. time=2. ms
64 bytes from 47.41.128.114: icmp_seq=9. time=2. ms
----47.41.128.114 PING Statistics----
10 packets transmitted, 10 packets received, 0%
packet loss
round-trip min/avg/max = 2/2/3 ms
```

Note: The number of bytes, downstream processor IP address and time in the above response of the IPTEST command are used here as an example only. The data may not look the same when actually issuing the IPTEST command.

Explanation

This message is in response to a craftsperson invoking the IPTEST command successfully.

System action

User action

No action is required.

Response 2

```
Error : RTB is not configured for the <streamname>
stream.
```

Explanation

This message is shown when this RTB has not been configured yet.

System action

The operation is aborted.

User action

The craft person must configure the RTB tuple by using the BILLMTC;SCHEDULE;RTB;CONFRTB;ADD command to add a RTB tuple.

Response 3

```
ERROR: Invalid Stream Name. Valid streams are
```

```
{<stream1, stream2...}.

Command aborted.
```

Explanation

This message is generated in response to a craftsperson invoking the IPTEST command using an invalid stream name.

System action

Prompt is returned to the craftsperson and the execution of the command ends.

User action

The craftsperson must re-enter the command providing a valid stream name.

Response 4

```
ERROR: This command requires a valid stream name as
an argument.

Command aborted
```

Explanation

This message is in response to a craftsperson invoking the IPTEST command without an argument. An argument is required at the command line if the SET command hasn't been used previously.

System action

Prompt is returned to the craftsperson and the execution of the command ends.

User action

The craftsperson must re-enter the command providing the required argument or must use the SET command to set the default stream.

Response 5

```
ERROR : One of the required parameter is missing.
Please re-enter all the
required parameters in the following order.


Usage : Command
[<streamname>]<fileformat><destination>
```

Explanation

You invoked the IPTEST command without a file format argument.

System action

Prompt is returned and execution of the command ends.

User action

You must re-enter the command providing the all required argument. Please use help command for more details.

Response 6

```
ERROR: Invalid file format. Valid file formats are
{DIRP,...}.
Command aborted.
```

Explanation

You invoked the IPTEST command without a valid file format argument.

System action

Prompt is returned and execution of the command ends.

User action

You must re-enter the command providing the valid file format.

Response 7

```
ERROR : One of the required parameter is missing.
Please re-enter all the required parameters in the
following order.


Usage : Command
[<streamname>]<fileformat><destination>
```

Explanation

You invoked the IPTEST command without a destination argument.

System action

Prompt is returned and execution of the command ends.

User action

You must re-enter the command providing the required all arguments.

Response 8

```
Error : RTB is not configured for stream <streamName>
```

Explanation

You invoked the IPTEST command with a bad stream.

System action

Prompt is returned and execution of the command ends.

User action

You must re-enter the command providing the valid stream.

RTB CONFRTB Directory

Command name: CONFRTB

Command description

The CONFRTB directory resides in the RTB directory, which resides under the SCHEDULE directory. The CONFRTB directory provides access to commands that are used to configure RTB.

To access the CONFRTB directory, you must enter the BILLMTC;SCHEDULE;RTB menu in the BILLMTC RMI, then type CONFRTB.

To go back to the RTB menu, you must enter “quit.” You can also enter “quit all” to exit all menus.

RTB CONFRTB SET

Command name: SET

Command description

The SET command is used to set the RTB session to a default stream or, if no stream is provided, to clear the previously set default stream.

When a default stream name is set, other RTB commands will automatically use the default stream if one is not explicitly specified for that command.

Command syntax

```
SET {stream} <streamname>
```

Parameter definitions

Parameter	Value	Definition
streamName	1 to 4 character ascii string	This parameter specifies the name of the stream that originates the billing data. This is a string that matches the stream name in table SDMBIL and CRSFMT on the DMS CM. If the stream name is not specified the default stream name is cleared. Subsequent commands in the RTB map level requiring a stream will use the default stream unless a stream is explicitly specified for that command.

Responses

The SET command can generate the following responses.

Response 1

```
RTB stream context now set to: <StreamName>
```

Explanation

This message is in response to a craftsperson invoking the SET command successfully.

System action

User action

No action is required.

Response 2

```
ERROR: Invalid Stream Name. Valid streams are
{<stream1, stream2...}.
Command aborted.
```

Explanation

This message is generated in response to a craftsperson invoking the SET command using an invalid stream name.

System action

Prompt is returned to craftsperson, execution of the command ends and the SET command terminates execution.

User action

The craftsperson must re-enter the command providing a valid stream name.

Response 3

```
Invalid keyword.Valid keywords for set are:{stream}.
```

Explanation

This message is generated in response to a craftsperson invoking the SET command without the keyword “stream”.

System action

Prompt is returned to craftsperson, execution of the command ends and the SET command terminates execution.

User action

The craftsperson must re-enter the command providing a keyword stream.

Response 4

```
Stream context is now cleared.
```

Explanation

This message is in response to a craftsperson invoking the SET command without an argument.

System action

User action

No user action is required.

RTB CONFRTB ADD

Command name: ADD

Command description

This command creates a new RTB billing configuration for a stream.

Command syntax

```
ADD [<streamName>] <fileformat> <destination>
```

After the above command is entered, the following response is displayed:

> ***Note:*** You will not be able to abort from this command until a value is provided for the prompt below.

```
Please enter the RTBMaxConsecutiveFailures(0..10)[3]
```

Parameter definitions

Parameter	Value	Definition
streamName	1 to 4 character ascii string	This parameter specifies the name of the stream that originates the billing data. This is a string that matches the stream name in table SDMBIL and CRSFMT on the DMS CM. If the craftsperson specifies a stream name using the SET command prior to using this command, the streamName in this command can be omitted and the stream name specified with the SET command will be used. If a stream name is entered in this command, it overrides the stream name defined with the SET command. This parameter is required if the SET command hasn't been used previously.

Parameter definitions

Parameter	Value	Definition
fileformat	Alphanumeric String Range {Dirp}	This is required parameter which is part of the new RTB tuple. This parameter identifies the file format type of a stream. The value of this parameter combines with the value of stream name and destination acts as key to the RTB tuple.
destination	Alphanumeric String SIZE(15)	This parameter specifies the name of the destination to which the bill files will be sent to. The value of this parameter combined with the value of stream name and file format acts as key to the RTB tuple.
RTBMaxConsecutiveFailures	0 to 10	This number defines the maximum retry attempt before RTB raises a critical alarm. The default value is 3.

Responses

The Add command can generate the following responses.

Response 1

```
ERROR: Invalid Stream Name. Valid streams are
{<stream1, stream2...}.
Command aborted.
```

Explanation

This message is generated in response to a craftsperson invoking the ADD command using an invalid stream name.

System action

Prompt is returned to the craftsperson and the execution of the command ends.

User action

The craftsperson must re-enter the command providing a valid stream name.

Response 2

```
Stream <streamName>: There is no Schedule Tuple. Try
“Add” from the BILLMTC;SCHEDULE level.
```

Explanation

This message is generated in response to a craftsperson invoking the ADD command while schedule tuple is not present.

System action

Prompt is returned to the craftsperson and the execution of the command ends.

User action

The craftsperson must add the schedule tuple by using Add command from the BILLMTC;SCHEDULE.

Response 3

```
Stream <streamname>: The following protocol is not
supported by RTB- <protocol>.

Try changing the protocol to RFTPW using the “Change”
command in the BILLMTC;SCHEDULE level.
```

Explanation

This message is generated in response to a craftsperson invoking the CONFRTB ADD command for a stream that doesn’t use RFTPW protocol. RTB supported only RFTPW protocol.

System action

Prompt is returned to craftsperson, execution of the command ends and RTB is not configured.

User action

The craftsperson must change the protocol in the RTB schedule tuple to RFTPW through the BILLMTC;SCHEDULE;CHANGE command before configuring the RTB stream.

Response 4

```
Stream <streamname> : The following file format is
not supported by RTB - <fileformat>.
```

Explanation

This message is generated in response to a craftsperson invoking the CONFRTB ADD command for a stream that doesn’t use DIRP file format. RTB supports only DIRP file format.

System action

Prompt is returned to craftsperson, execution of the command ends and RTB tuple is not configured.

User action

The craftsperson must change the file format in the RTB schedule tuple to DIRP through the BILLMTC;SCHEDULE;CHANGE command before configuring the RTB stream.

Response 5

```
ERROR: This command requires a valid stream as an
argument.

Command aborted
```

Explanation

This message is in response to a craftsperson invoking the ADD command without an argument. An argument is required at the command line if the SET command hasn't been used previously.

System action

Prompt is returned to the craftsperson and the execution of the command ends.

User action

The craftsperson must re-enter the command providing the required argument or must use the SET command to set the default stream.

Response 6

```
You entered:

RTB Max Consecutive Failures : <User's entered value>

Commit ? [Save] {Save Edit Abort}:
```

Explanation

This message is shown at the end after the user has entered all the valid values. It allows the user to review the contents of additions made to the stream and edit, save or abort the operation.

System action

If the user enters “save”, the information entered by the user is saved. On an “edit”, the system takes the user through all the fields again. An “abort” will cancel the whole operation and it will not change anything in the system.

User action

User must enter Save, Edit or Abort.

Response 7

```
RTBMaxConsecutiveFailures has been saved.
```

Explanation

This message informs the user that the values entered are now saved. The configuration of the stream was successful.

System action

The command is about to exit.

User action

None, this is information for the user.

Response 8

```
User accepts default value of
RTBMaxConsecutiveFailures = <defaultvalue>.
```

Explanation

This message is displayed to the user when the user types “abort” at the prompt for MaxRTBConsecutiveFailures.

System action

Command execution stops.

User action

No user action is required.

Response 9

```
RTB already configured for stream : <streamname>
```

Explanation

This message is shown when RTB has already been configured.

System action

The operation is aborted.

User action

Not applicable.

Response 10

```
ERROR : One of the required parameter is missing.
Please re-enter the required parameters in the
following order.


Usage : Command
[<streamname>]<fileformat><destination>
```

Explanation

You invoked the ADD command without a file format argument.

System action

Prompt is returned and execution of the command ends.

User action

You must re-enter the command providing the all required argument. Please use help command for more details.

Response 11

```
ERROR: Invalid file format. Valid file formats are
{DIRP,...}.
Command aborted.
```

Explanation

You invoked the ADD command without a valid file format argument.

System action

Prompt is returned and execution of the command ends.

User action

You must re-enter the command providing the valid file format.

Response 12

```
ERROR : One of the required parameter is missing.
Please re-enter all the required parameters in the
following order.


Usage : Command
[<streamname>]<fileformat><destination>
```

Explanation

You invoked the ADD command without a destination argument.

System action

Prompt is returned and execution of the command ends.

User action

You must re-enter the command providing the required all arguments.

Response 13

```
Error : RTB is not configured for stream <streamName>
```

Explanation

You invoked the ADD command with a bad destination.

System action

Prompt is returned and execution of the command ends.

User action

You must re-enter the command providing the valid destination.

RTB CONFRTB CHANGE

Command name: CHANGE

Command description

This command modifies an existing RTB billing configuration for a stream.

Command syntax

```
CHANGE [<streamName>] <fileformat> <destination>
```

After the above command is entered, the following response is displayed:

Note: You will not be able to abort from this command until a value is provided for the prompt below.

```
Please enter the RTBMaxConsecutiveFailures(0..10)[3]
```

Parameter definitions

Parameter	Value	Definition
streamName	1 to 4 character ascii string	This parameter specifies the name of the stream that originates the billing data. This is a string that matches the stream name in table SDMBIL and CRSFMT on the DMS CM. If the craftsperson specifies a stream name using the SET command prior to using this command, the streamName in this command can be omitted and the stream name specified with the SET command will be used. If a stream name is entered in this command, it overrides the stream name defined with the SET command. This parameter is required if the SET command hasn't been used previously.
fileformat	Alphanumeric String Range {Dirp}	This is required parameter which is part of the new RTB tuple. This parameter identifies the file format type of a stream. The value of this parameter combines with the value of stream name and destination acts as key to the RTB tuple.

Parameter definitions

Parameter	Value	Definition
destination	Alphanumeric String SIZE(15)	This parameter specifies the name of the destination to which the bill files will be sent to. The value of this parameter combined with the value of stream name and file format acts as key to the RTB tuple.
RTBMaxConsecutiveFailures	0 to 10	This number defines the maximum retry attempt before RTB raises a critical alarm. The default value is 3.

Responses

The Change command can generate the following responses.

Response 1

```
ERROR: Invalid Stream Name. Valid streams are
{<stream1, stream2...}.
Command aborted.
```

Explanation

This message is generated in response to a craftsperson invoking the CHANGE command using an invalid stream name.

System action

Prompt is returned to the craftsperson and the execution of the command ends.

User action

The craftsperson must re-enter the command providing a valid stream name.

Response 2

```
ERROR: This command requires a valid stream as an
argument.
Command aborted
```

Explanation

This message is in response to a craftsperson invoking the CHANGE command without an argument. An argument is required at the command line if the SET command hasn't been used previously.

System action

Prompt is returned to the craftsperson and the execution of the command ends.

User action

The craftsperson must re-enter the command providing the required argument or must use the SET command to set the default stream.

Response 3

```
You entered:
RTB Max Consecutive Failures : <User's entered value>
Commit ? [Save] {Save Edit Abort}:
```

Explanation

This message is shown at the end after the user has entered all the valid values. It allows the user to review the contents of additions made to the stream and edit, save or abort the operation.

System action

If the user enters "save", the information entered by the user is saved. On an "edit", the system takes the user through all the fields again. An "abort" will cancel the whole operation and it will not change anything in the system.

User action

User must enter Save, Edit or Abort.

Response 4

```
RTBMaxConsecutiveFailures has been changed
```

Explanation

This message informs the user that the values entered are now saved. The configuration of the stream was successful.

System action

The command is about to exit.

User action

None, this is information for the user.

Response 5

```
User accepts default value of
RTBMaxConsecutiveFailures = <defaultvalue>.
```

Explanation

This message is displayed to the user when the user types “abort” at the prompt for MaxRTBConsecutiveFailures.

System action

Command execution stops.

User action

No user action is required.

Response 6

```
RTB is not configured for stream : <streamname>
Try the “Add” command. Operation aborted.
```

Explanation

This message is shown when this RTB has not been configured yet.

System action

The operation is aborted.

User action

Not applicable.

Response 7

```
ERROR : One of the required parameter is missing.
Please re-enter all the
required parameters in the following order.
```

```
Usage : Command
[<streamname>]<fileformat><destination>
```

Explanation

You invoked the CHANGE command without a file format argument.

System action

Prompt is returned and execution of the command ends.

User action

You must re-enter the command providing the all required argument. Please use help command for more details.

Response 8

```
ERROR: Invalid file format. Valid file formats are
{DIRP,...}.

Command aborted.
```

Explanation

You invoked the CHANGE command without a valid file format argument.

System action

Prompt is returned and execution of the command ends.

User action

You must re-enter the command providing the valid file format.

Response 9

```
ERROR : One of the required parameter is missing.
Please re-enter all the required parameters in the
following order.


Usage : Command
[<streamname>]<fileformat><destination>
```

Explanation

You invoked the CHANGE command without a destination argument.

System action

Prompt is returned and execution of the command ends.

User action

You must re-enter the command providing the required all arguments.

Response 10

```
Error : RTB is not configured for stream <streamName>
```

Explanation

You invoked the CHANGE command with a bad destination.

System action

Prompt is returned and execution of the command ends.

User action

You must re-enter the command providing the valid destination.

RTB CONFRTB DELETE

Command name: DELETE

Command description

This command deletes an existing RTB billing configuration for a stream.

Command syntax

```
Delete [<streamName>] <fileformat> <destination>
```

Parameter definitions

Parameter	Value	Definition
streamName	1 to 4 character ascii string	This parameter specifies the name of the stream that originates the billing data. This is a string that matches the stream name in table SDMBIL and CRSFMT on the DMS CM. If the craftsperson specifies a stream name using the SET command prior to using this command, the streamName in this command can be omitted and the stream name specified with the SET command will be used. If a stream name is entered in this command, it overrides the stream name defined with the SET command. This parameter is required if the SET command hasn't been used previously.
fileformat	Alphanumeric String Range {Dirp}	This is required parameter which is part of the new RTB tuple. This parameter identifies the file format type of a stream. The value of this parameter combines with the value of stream name and destination acts as key to the RTB tuple.
destination	Alphanumeric String SIZE(15)	This parameter specifies the name of the destination to which the bill files will be sent to. The value of this parameter combined with the value of stream name and file format acts as key to the RTB tuple.

Responses

The Delete command can generate the following responses.

Response 1

```
ERROR: Invalid Stream Name. Valid streams are
{<stream1, stream2...}.
Command aborted.
```

Explanation

This message is generated in response to a craftsperson invoking the DELETE command using an invalid stream name.

System action

Prompt is returned to the craftsperson and the execution of the command ends.

User action

The craftsperson must re-enter the command providing a valid stream name.

Response 2

```
ERROR: This command requires a valid stream as an
argument.

Command aborted
```

Explanation

This message is in response to a craftsperson invoking the DELETE command without an argument. An argument is required at the command line if the SET command hasn't been used previously.

System action

Prompt is returned to the craftsperson and the execution of the command ends.

User action

The craftsperson must re-enter the command providing the required argument or must use the SET command to set the default stream.

Response 3

```
Are you sure you want to delete the RTB tuple? (Y/N).
```

Explanation

This message is shown at the end after the user has entered delete but before the configuration is actually removed.

System action

If the user enters "yes", the configuration is deleted. If "no" is entered, the command is cancelled.

User action

User must enter Yes, No

Response 4

```
Delete RTB tuple has completed.
```

Explanation

This message informs the user that Real Time Billing has been removed from the stream.

System action

The command is about to exit.

User action

None, this is information for the user.

Response 5

```
Delete operation has been cancelled.
```

Explanation

This message is displayed to the user when the user types “N” at the prompt for “Yes/No”.

System action

Command execution stops.

User action

No user action is required.

Response 6

```
RTB is not configured for stream : <streamname>
Operation aborted.
```

Explanation

This message is shown when this RTB has not been configured yet.

System action

The operation is aborted.

User action

Not applicable.

Response 7

```
Stream <streamname> : The requested action is not
valid in the current state.
```

Explanation

This message is shown when this RTB state either in RTS or MANB state. The deletion of RTB tuple is allowed only when RTB state=OFFL.

System action

The operation is aborted.

User action

Not applicable.

Response 8

```
ERROR : One of the required parameter is missing.
Please re-enter all the
required parameters in the following order.


Usage : Command
[<streamname>]<fileformat><destination>
```

Explanation

You invoked the DELETE command without a file format argument.

System action

Prompt is returned and execution of the command ends.

User action

You must re-enter the command providing the all required argument. Please use help command for more details.

Response 9

```
ERROR: Invalid file format. Valid file formats are
{DIRP,...}.
```

```
Command aborted.
```

Explanation

You invoked the DELETE command without a valid file format argument.

System action

Prompt is returned and execution of the command ends.

User action

You must re-enter the command providing the valid file format.

Response 10

```
ERROR : One of the required parameter is missing.
Please re-enter all the required parameters in the
following order.


Usage : Command
[<streamname>]<fileformat><destination>
```

Explanation

You invoked the DELETE command without a destination argument.

System action

Prompt is returned and execution of the command ends.

User action

You must re-enter the command providing the required all arguments.

Response 11

```
Error : RTB is not configured for stream <streamName>
```

Explanation

You invoked the DELETE command with a bad destination.

System action

Prompt is returned and execution of the command ends.

User action

You must re-enter the command providing the valid destination.

RTB CONFRTB QUERY

Command name: QUERY

Command description

The Query command is used to query the RTB configured stream tuple. In contrast to other RTB commands, this command doesn't depend on protocol RFTPW being datafilled in Schedule tuple.

Command syntax

```
QUERY [<streamname>]
```

Parameter definitions

Parameter	Value	Definition
streamName	1 to 4 character ascii string	This parameter specifies the name of the stream that originates the billing data. This is a string that matches the stream name in table SDMBIL and CRSFMT on the DMS CM. If the craftsperson specifies a stream name using the SET command prior to using this command, the streamName in this command can be omitted and the stream name specified with the SET command will be used. If a stream name is entered in this command, it overrides the stream name defined with the SET command. This parameter is required if the SET command hasn't been used previously.

Responses

The QUERY command can generate the following responses.

Response 1

```
STREAM : <streamName>
Destination list:
-------------------------------------------------
```

```
DIRP Eventure                                    <status>
DIRP Eventure1                                   <status>
DIRP EventureN                                   <status>
```

The status could be either CONFIGURED, UNCONFIGURED, SCHEDULEDELETED.

Explanation

This message is in response to a craftsperson invoking the QUERY command successfully.

System action

User action

No action is required.

Response 2

```
ERROR: Unable to connect to RTB server.
Command aborted.
```

Explanation

This message is generated in response to a craftsperson invoking the QUERY when the RTB server process has failed.

System action

Prompt is returned to craftsperson, execution of the command ends and no status is shown.

User action

The RTB server will attempt to restart itself whenever it fails. Reissuing the command may work if RTB has restarted itself. However, if RTB fails to restart, contact the next level of support.

Response 3

```
Error : RTB is not configured for the <streamname >
stream.
```

Explanation

This message is shown when this RTB has not been configured yet.

System action

The operation is aborted.

User action

The craft person must configure the RTB tuple by using the BILLMTC;SCHEDULE;RTB;CONFRTB;ADD command to add a RTB tuple.

Response 4

```
ERROR: Invalid Stream Name. Valid streams are
{<stream1, stream2...}.
Command aborted.
```

Explanation

This message is generated in response to a craftsperson invoking the QUERY command using an invalid stream name.

System action

Prompt is returned to craftsperson and execution of the command ends.

User action

The craftsperson must re-enter the command providing a valid stream name.

Response 5

```
ERROR: This command requires a valid stream name as
an argument.
Command aborted.
```

Explanation

This message is in response to a craftsperson invoking the QUERY command without an argument or without setting the default stream using the SET command.

System action

Prompt is returned to the craftsperson and execution of the command ends.

User action

The craftsperson must re-enter the command providing the required argument or must use the SET command to set the stream.

Response 6

```
STREAM : <streamName>
Destination list:
-------------------------------------------------
There are no RTB tuples configured for this stream.
```

Explanation

This message is in response to a craftsperson invoking the QUERY command when no RTB tuple has been configured yet.

User action

You may use the CONFRTB:Add command to configure RTB tuples.

SBA CONFSTRM commands

CONFSTRM (configure stream) commands manage CM billing and filtered billing stream configurations on the SDM.

You may configure a maximum of sixteen streams on the SDM. For example, if you configure ten filtered streams, you may configure a maximum of six CM streams on the SDM. You must configure at least one CM stream before configuring filtered streams.

For more information about filtered streams, refer to Appendix L: "SDM SBA Filtering".

CONFSTRM commands reside in the **BILLMTC -> CONFSTRM** level of the SDM billing maintenance interface (shown below):

Figure 38
CONFSTRM level of BILLMTC

```
CONFSTRM
 0 Quit
 2 Set
 3
 4
 5
 6
 7 Add
 8 Change
 9 Delete
10 List
11 Act
12 Deact
13 Update
14 Start
15 Stop
16
17 Help
18 Refresh
 maint      >
Time  17:03
```

CONFSTRM commands include:

- Set - set the stream name context for use with commands
- Add - use this to add CM and filtered streams
- Change - modify settings of existing CM and filtered streams
- Delete - remove CM and filtered streams
- List - display CM and filtered stream settings
- Act - activate a filtered stream

- Deact - deactivate a filtered stream
- Update - implement new filter criteria
- Start - starts filtered stream
- Stop - stops filtered stream

Setting the stream

Use the Set command to set the stream context to a particular CM billing or filtered stream. This allows subsequent command invocations to utilize this value for the stream parameter.

Command syntax

```
Set <STREAM> <streamName>
```

Parameter definitions

Parameter	Value	Definition
STREAM	STREAM	The Set command is changing the value of the STREAM object. STREAM is the only valid value for this parameter.
streamName	1 to 4 character ascii string	The stream name parameter specifies the name of the CM billing or filter stream you want to be used for subsequent commands. Examples include AMA and OCC.

Responses

Response 1

```
Stream context now set to: OCC
```

Explanation

The system displays this message when the Set command has set the stream context to a particular CM billing or filtered stream.

The upper left corner of the **BILLMTC** window will indicate **[STREAM=<*name*>]** to indicate the stream that is in context after the Set command has completed.

User action

None

Response 2

```
Wrong number of arguments.
Syntax is: Set <STREAM> <streamName>
```

Explanation

You did not include all of the required parameters in the command.

User action

Execute the command again using all of the required parameters.

Response 3

```
Error: Invalid stream name. Valid stream names are:
{list}
```

Explanation

The value you provided for the stream name did not match any streams configured on the SDM.

User action

Execute the command again using a valid value for stream name.

Adding a stream

Use the add command to configure CM billing and filtered streams on the SDM.

The add command has many required parameters because of the complexity of the information required to configure a stream. After invoking the add command, you will be prompted for each of the remaining parameters required to configure the stream.

Default values that are provided for some parameters are shown in the square brackets (if any are shown). Press the Enter to use the default value, if provided.

Refer to the Chapter 1, "Understanding SDMC SBA" for more information about AMA related parameters.

Note: You may type “Abort” at any prompt to exit the add command without configuring the stream.

Command syntax

```
add [<stream name>]
```

Add parameter definitions

Parameter	Value	Definition
stream name	1 to 4 character ascii string	The stream name parameter specifies the name of the CM billing or filter stream you want to configure on the SDM. For CM billing streams, the stream name parameter value must match the value of the stream name parameter datafilled in the CM table CRSFMT. Examples include AMA and OCC. This parameter is not required if the stream name has been set in context using the Set command. You may provide the value of string name as a command line argument. If you do not, the system will prompt you for the value of this parameter. ***WARNING:*** Do not enter the wildcard character ***“*”*** (asterisk) for the stream name parameter when adding a stream.
filter stream	No or Yes	The filter stream parameter specifies whether the stream is a CM billing stream or a filtered stream. The default value is No. The system will prompt you for the value of this parameter.
associated stream name	1 to 4 character ascii string.	The associated stream name parameter specifies the name of the CM billing stream with which the filtered stream is associated. The system will prompt you for the value of this parameter if the value of the Filter Stream parameter is Yes.

Add parameter definitions

Parameter	Value	Definition
filter criteria file	string	The filter criteria file parameter identifies the name of the filter criteria file that contains the expression to be applied for the filtered stream. Refer to the **AMADUMP Filter** subcommand to save, restore, list and remove a filter criteria file. The system will prompt you for the value of this parameter if the value of the Filter Stream parameter is Yes.
stream record format	string	The stream record format parameter is based on the DMS switch software installed. Different markets use different values. Examples include BC, CDR250, CDR300, and SMDR. For DMS-GSP, use CDR250. The system will prompt you for the value of this parameter.
file format	DNS or DIRP	The file format parameter specifies the format of the file to which the billing records are written. The file format must be set to DIRP for RTB. The system will prompt you for the value of this parameter.

Add parameter definitions

Parameter	Value	Definition
logical volume name	string specifying a valid directory	The logical volume name parameter specifies the SDM directory where the billing files for the stream are to be created and stored. The name of the stream will be shown as the default logical volume name. Logical volume directories commonly reside in the **"/sba"** directory on the SDM and are named as follows: **/sba/*dir*** where ***dir*** is a directory named the same as the value of stream name For example; **/sba/occ**; **/sba/AMA** ***NOTE:*** A logical volume for the stream must exist before running the CONFSTRM Add command. If necessary, refer to Chapter 3, "Configuring the SDMC SBA" to create a logical volume for the stream. The system will prompt you for the value of this parameter.
file transfer mode	OUTBOUND or INBOUND	This parameter specifies the file transfer mode for the stream. OUTBOUND indicates that the SDM will initiate the file transfer. INBOUND indicates that the downstream processor will ftp into the SDM and retrieve the billing files. The file transfer mode must be set to OUTBOUND for RTB The system will prompt you for the value of this parameter.
destination component id	integer (0000 to 4095)	The destination component id parameter specifies an "id" for the destination of the DNS billing files. The default value is 0000. The system will prompt you for the value of this parameter only when the stream file format is DNS.

Add parameter definitions

Parameter	Value	Definition
destination component type	integer (01 to 15)	The destination component type parameter specifies the “type” for the destination of the DNS billing files. The default value is 01. The system will prompt you for the value of this parameter only when the stream file format is DNS.
source component id	integer (0000 to 4095)	The source component id parameter specifies an “id” for the source of the billing records. ***WARNING:*** All streams share the same value for the source component id. A change in this parameter would change the source component id for all streams. The default value is 0001. The system will prompt you for the value of this parameter only when the stream file format is DNS.
source component type	integer (1 to 15)	The source component type parameter specifies the type of the source of the billing records. ***WARNING:*** All streams share the same value for source component type. A change in this parameter would change the source component type for all streams. The default value is 02. The system will prompt you for the value of this parameter only when the stream file format is DNS.
customer standard header file type	integer (1, or 6 to 31)	The customer standard header file type parameter specifies the value that should be given to the standard files. This value goes into the header of the file. The default value is 1 for BC format and 11 for SMDR format. The system will prompt you for the value of this parameter only when the stream file format is DNS.

Add parameter definitions

Parameter	Value	Definition
customer error header file type	integer (2, or 6 to 31)	The customer error header file type parameter specifies the value that should be given to the error files. This value goes into the header of the file. The default value is 2 for BC format and 12 for SMDR format. The system will prompt you for the value of this parameter only when the stream file format is DNS.
files renamed with close date	Yes or No	The files renamed with close date parameter specifies whether the file names should reflect the date/time when the file was created or when the file was closed. The default value is No. The system will prompt you for the value of this parameter only when the stream file format is DIRP.
files closed based on time	Yes or No	The files closed based on time parameter indicates if you want a limit on how long the billing file should be kept in the open or active state. The default value is No. The system will prompt you for the value of this parameter.
files closure time limit	integer (5 to 10 080)	The value specified in this field is the maximum time in minutes for which the files will be kept open. The default value is 10 080 minutes. The system will prompt you for the value of this parameter only if the value of the files closed on time field is set to Yes.
number of records per day	integer	This value specifies the number of records that pass through the switch in a typical day. This value is used to calculate recommended values for maximum number of records and maximum bytes per file. The default value is 0. The system will prompt you for the value of this parameter.

Add parameter definitions

Parameter	Value	Definition
average record size	integer	This value is used to calculate the maximum number of records and maximum number of bytes per file. The default value is 80. The system will prompt you for the value of this parameter only when the number of records per day parameter is not zero.
maximum number of records per file	integer (1,000 to 500,000)	The maximum number of records per file parameter specifies the maximum number of records that a billing file can have. In other words, the active (or open) billing file is closed when the total number of records in the file reach this limit. For BC format, the value can be 10,000 to 500,000. For SMDR format, the value can be 1,000 to 500,000. The default value is 500,000. The system will prompt you for the value of this parameter.
maximum number of bytes per file	integer (100,000 to 20,000,000)	The maximum number of bytes per file parameter specifies the maximum number of bytes that a billing file can have. In other words, the active (or open) billing file is closed when the size of the billing file reaches this limit. The default value is 20,000,000. The system will prompt you for the value of this parameter.

Warnings

```
WARNING: The source component id is the same for all streams. A
change here amounts to changing the source component id for all
streams.
```

If you change the value for Source Component Id for this stream, value for Source Component Id will be changed for all previously configured streams.

```
WARNING: The source component Type is the same for all streams.
A change here amounts to changing the source component Type for
all streams
```

If you change the value for Source Component Type for this stream, value for Source Component Type will be changed for all previously configured streams.

Responses

The DNS or DIRP specific responses (or prompts) will only be shown when either DNS or DIRP is selected as the file format type.

The default value for a parameter is provided in square brackets. Press the Enter key to select the default value (if applicable).

System action

If you type “Abort”, the system will terminate the command, discard all values that you entered, and return to the CONFSTRM level.

If you enter an invalid value, the system prompts you again for a valid value. An example of an invalid entry follows,

```
Stream Record Format: [BC] {BC CDR250 SMDR} baf
Please enter a valid value -> You entered BAF
```

If you provide a valid input, the system continues by prompting you for the next parameter value. After valid values have been provided for all parameters required, the system will display all parameters and the values entered for each. You are then prompted to save, edit, or abort the values entered. An explanation of this prompt follows.

User action

User must enter a valid value or Abort. Pressing the <enter> or <return> key at the prompt assumes the default value, if any is applicable. The default value is shown in square brackets in the prompt.

Response 2

```
Commit? [Save] {Save Edit Abort}:
```

Explanation

This message is shown at the end after the user has entered all the valid values. It allows the user to review the contents of additions made to the stream and edit or save or abort the operation.

System action

If the user enters “save”, the information entered by the user is saved in the mib. On an “edit”, the system takes the user through all the fields again. An

"abort" will cancel the whole operation and it will not change anything in the system.

User action

User must enter Save, Edit, or Abort.

Response 3

```
Committing the configuration.
```

Explanation

This message informs the user that the values entered prior to this message being displayed is now being written to the mib. The configuration of the stream was successful.

System action

The command is about to exit.

User action

None.

Response 4

```
Aborting operation for stream <streamName>
```

Explanation

This message is displayed to the user when the user types "abort" at any field except the stream record format prompt. The <streamName> is replaced with the appropriate value.

System action

Command execution stops.

User action

User can restart add command and enter valid values.

Changing configured stream

Use the Change command to change the configuration of an existing stream. After invoking the change command, you will be prompted for each applicable parameter.

Default values that are provided for some parameters are shown in the square brackets (if any are shown). Press the Enter to use the default value, if provided.

The default values for all the parameters will be taken from what was set earlier. You may exit the change command at any prompt without changing the configuration by typing “Abort”.

Not all the parameters for a stream can be modified if the stream is running (or active).

Command syntax

```
change [<stream name>]
```

Change parameter definitions

Parameter	Value	Definition
stream name	1 to 4 character ascii string	The stream name parameter specifies the name of the configured CM billing or filter stream you want to change. This parameter is not required if the stream name has been set in context using the Set command. You may provide the value of string name as a command line argument. If you do not, the system will prompt you for the value of this parameter.
filter criteria file	string	The filter criteria file parameter identifies the name of the filter criteria file that contains the expression to be applied for the filtered stream. Refer to the **AMADUMP Filter** subcommand to save, restore, list and remove a filter criteria file. The system will prompt you for the value of this parameter if the stream is a filtered stream.

Change parameter definitions (continued)

Parameter	Value	Definition
stream record format	string specifying the record format for the stream. (for example, BC, CDR250, SMDR. . .)	The valid range for this field is determined at install time based on the software installed. For different markets it will have different values. Can only be modified if the stream is not running (inactive). The change command prompts for this parameter.
file format	string specifying the file format of the billing files. {DNS, DIRP}.	A required parameter, it specifies the format of the file to which the billing records are written. The default is the current file format. Can only be modified if the stream is not running (inactive). Only DIRP file format is supported for RTB at this time. The change command prompts for this parameter.
logical volume name	string specifying a valid directory path	A required parameter. It specifies the directory (a logical volume should be created for each stream) on which the billing files are to be created. The default is the current logical volume name. Validation will be done by verifying that the specified directory exists and is accessible to the user. Can only be modified if the stream is not running (inactive). The change command prompts for this parameter.

Change parameter definitions (continued)

Parameter	Value	Definition
file transfer mode	string specifying whether the mode is outbound or inbound. Valid values are {OUTBOUND, INBOUND}.	A required parameter, it specifies the mode of file transfer. OUTBOUND indicates that the SDM will initiate the file transfer. In the case of INBOUND, it is expected that the downstream processor will ftp into the SDM and retrieve the billing files. The file transfer mode must be set to OUTBOUND for RTB. The change command prompts for this parameter.
destination component id	integer {0000-4095}	Required parameter for DNS file format, Default to current destination component id. It specifies an “id” for final destination of the DNS billing files. Refer to the Chapter 1, "Understanding SDMC SBA" for more information. The change command prompts for this parameter.
destination component type	integer {01-15}	Required parameter for DNS file formats. Default to current destination component type. It specifies the type of the destination. Refer to the Chapter 1, "Understanding SDMC SBA" for more information. The change command prompts for this parameter.

Change parameter definitions (continued)

Parameter	Value	Definition
source component id	integer {0000-4095}	Non mandatory parameter for DNS file format, defaults to current source component ID. It specifies an “id” for the source of the billing records. Refer to the Chapter 1, "Understanding SDMC SBA" for more information. The change command prompts for this parameter. All streams share the same value for the source component id. A change in this parameter would change the source component id for all streams.
source component type	integer {01-15}	Non mandatory parameter for DNS file formats. Default to current source component type. It specifies the type of the source of the billing records. Refer to the Chapter 1, "Understanding SDMC SBA" for more information. The change command prompts for this parameter. All streams share the same value for the source component type. A change in this parameter would change the source component type for all streams.
customer standard header file type	integer {1, 6-31}	DNS specific mandatory parameter. Default to current customer standard header file type. It specifies the value that should be given to the standard files. This value goes into the header of the file. Refer to the Chapter 1, "Understanding SDMC SBA" for more information. The change command prompts for this parameter.

Change parameter definitions (continued)

Parameter	Value	Definition
customer error header file type	integer {2, 6-31}	DNS specific mandatory parameter. Default to current customer error header file type. It specifies the value that should be given to the error files. This value goes into the header of the file. Refer to the Chapter 1, "Understanding SDMC SBA" for more information. The change command prompts for this parameter.
files renamed with close date	Boolean {Yes, No}	DIRP specific mandatory parameter. Default to current files renamed with close date. It specifies whether the file names should reflect the date/time when the file was created or when the file was closed. The change command prompts for the parameter.
files closed based on time	Boolean {Yes, No}	Default to current files closed based on time. This parameter indicates whether the billing files should be closed based on a timer expiry. In other words, it specifies whether the craftsperson wants a limit on the how long the billing file should be kept in the open or active state. Refer to the Chapter 1, "Understanding SDMC SBA" for more information. The change command prompts for this parameter.

Change parameter definitions (continued)

Parameter	Value	Definition
files closure time limit	integer {5-10 080} in minutes	Default is current files closure time limit. This prompt will only be shown if the user specified TRUE in the “files closed on time” field. The value specified in this field is the maximum time in MINUTES for which the files will be kept open. Changes to this setting are not applied until open files are closed. The next file opened will be affected by the change to this value. Refer to the Chapter 1, "Understanding SDMC SBA" for more information. The change command prompts for this parameter.
number of records per day	integer	Default is 0 This value specifies the number of records that pass through the switch in a typical day. This value is used to calculate recommended values for maximum number of records and maximum bytes per file. The change command prompts for this parameter.
average record size	integer	Default is 80 This prompt is only shown, if the number of records per day is not 0. This value is used to calculate the maximum number of records and maximum number of bytes per file. The change command prompts for this parameter.

Change parameter definitions (continued)

Parameter	Value	Definition
maximum number of records per file	integer {10000-500000}	Default is maximum number of records per file. This value specifies the maximum number of records that a billing file can have. In other words, the active (or open) billing file is closed when the total number of records in the file reach this limit. Refer to the Chapter 1, "Understanding SDMC SBA" for more information. The change command prompts for this parameter.
maximum number of bytes per file	integer {1000000-20000000}	Default to current maximum number of bytes per file. This value specifies the maximum number of bytes that a billing file can have. In other words, the active (or open) billing file is closed when the size of the billing file reaches this limit. Refer to the Chapter 1, "Understanding SDMC SBA" for more information. The change command prompts for this parameter.
files closed for file transfer and writetape	Yes or No	

Responses

The following responses occur when the desired options are chosen.

Response 1

```
Commit? [Save] {Save Edit Abort}:
```

Explanation

This message is shown at the end after the user has entered all the valid values. It allows the user to review the contents of changes made to the stream and edit or save or abort the operation.

System action

If the user enters “save”, the information entered by the user is saved in the mib. On an “edit”, the system takes the user through all the fields again. An “abort” will cancel the whole operation and it will not change anything in the system.

User action

User must enter Save, Edit or Abort.

Response 3

```
Committing the configuration.
```

Explanation

This message informs the user that the values entered prior to this message being displayed is now being written to the mib. The configuration of the stream was successful.

System action

The command is about to exit.

User action

None.

Response 4

```
Aborting operation for stream <streamName>
```

Explanation

This message is displayed to the user when the user types “abort” at any field except the stream record format prompt. The <streamName> is replaced with the appropriate value.

System action

Command execution stops.

User action

User can restart the command and enter valid values.

Deleting configured stream

Use the Delete command to reconfigure (or delete) a stream.

> ***Note:*** This command will function only if the stream is inactive, there are no tuples setup in the schedule, and no ClosedNotSent files exist.

This command is available from the command line for root users as unconfigureStream.sh and from SDMRLOGIN as CONFSTRM.delete.

Command syntax

```
delete [<stream name>]
```

Parameter definitions

Parameter	Value	Definition
stream name	1 to 4 character ascii string	This parameter is only used to find the appropriate stream configuration information.

Responses

The following responses occur when the desired options are chosen.

Response 1

```
Stream Name: [AMA2]
```

Explanation

The user is required to enter the name of the stream that has to be deleted. If the name was entered on the command line or if the “set stream” command has been run, then that value will be shown as the default.

System action

The system will display the configuration information pertaining to the whole stream before asking the user to confirm the deletion.

User action

Enter a valid stream name or press <enter> or <return> to accept the default value.

Response 2

```
Are you sure you want to delete the stream? [NO]
{Yes/No, Y/N}
```

Explanation

This message is shown after the configuration information is displayed. The user is required to confirm the deletion of the stream.

System action

If the user enters “save”, the information entered by the user is saved in the mib. On an “edit”, the system takes the user through all the fields again. An “abort” will cancel the whole operation and it will not change anything in the system.

User action

User must enter Yes or Y or No or N.

Response 3

```
Unconfiguration of Stream AMA2 is now complete.
```

Explanation

This message informs the user that the stream is deleted.

System action

The command is about to exit.

User action

None.

Response 4

```
Verifying that no scheduled events exists for this
stream.
```

Explanation

This message informs the user that the stream that is trying to be deleted is being checked for in the schedule table.

System action

The command will exit if tuple(s) are found. The command will continue if no tuples are found with that stream.

User action

None.

Listing configured stream

Use the List command to list (or display) the details about a stream.

This command is available from the command line for root users as displayStream.sh or from SDMRLOGIN as CONFSTRM.list.

Command syntax

```
list [<stream name>, ALL]
```

Parameter definitions

Parameter	Value	Definition
stream name	1 to 4 character ascii string "ALL" can also be used	This parameter is only used to find the appropriate stream configuration information. If ALL is entered, the user is prompted as each configured stream is displayed.

Responses

The following responses occur when the desired options are chosen.

Response

```
Stream Name: [AMA2]
```

Explanation

The user is required to enter the name of the stream that has to be displayed. If the name was entered on the command line or if the "set stream" command has been run, then that value will be shown as the default.

System action

The system will display the configuration information pertaining to the whole stream.

User action

Enter a valid stream name or press <enter> or <return> to accept the default value.

Activating a filter stream

Use the Act command to activate a filtered stream.

Command syntax

```
Act [<filteredStreamName>]
```

Parameter definitions

Parameter	Value	Definition
filteredStreamName	Alphanumeric String Range (valid filtered stream)	The filtered stream to which the activate message is to be sent.

Responses

Missing stream

```
ERROR: A filtered stream name must be provided.
Valid filtered streams are {OCC, OCC1....}
Usage: Act [<filteredStreamName>]
```

Explanation:

This message is in response to a craftsperson invoking the command without a filtered stream name and without having the stream variable set.

System action:

Prompt is returned to the craftsperson and execution of the command ends.

User action:

The craftsperson must reenter the command providing a valid filtered stream.

Not a filtered stream

```
ERROR: The stream <stream> is not a valid filtered
stream.
Valid filtered streams are {OCC, OCC1....}
```

```
Usage: Act [<filteredStreamName>]
```

Explanation:

This message is in response to a craftsperson invoking the command with a stream name that is not a filtered stream

System action:

Prompt is returned to the craftsperson and execution of the command ends.

User action:

The craftsperson must reenter the command providing a valid filtered stream

Record type not supported by filtering

```
Filtering is not supported for this stream's
record type.
```

Explanation:

The stream selected is not supported for filtering

System action:

Prompt is returned to the craftsperson and execution of the command ends.

User action:

This functionality is not supported at this time.

stream is already active

```
ERROR: Stream <streamName> is already active.
```

Explanation:

The requested filter stream is already in the active state.

System action:

Prompt is returned to the craftsperson and execution of the command ends.

User action:

None.

Stream: <stream> has been activated

```
Stream: <stream> has been activated
```

Explanation:

The command completed successfully.

System action:

Prompt is returned to the craftsperson and execution of the command ends.

User action:

None.

The specified criteria file is not present.

```
The specified criteria file is not present.
```

Explanation:

The filter criteria specified in the add command is not present.

System action:

The command ends.

User action:

Use the change command to specify another criteria.

The filter criteria provided is not valid.

```
The filter criteria provided is not valid.
```

Explanation:

The filter criteria specified in the add command is not valid.

System action:

The command ends.

User action:

Use the change command to specify another criteria.

Example

Example - Invalid filter stream name

```
CONFSTRM
 0 Quit
 2 Set
 3
 4
 5
 6
 7 Add
 8 Change
 9 Delete
10 List
11 Act
12 Deact
13 Update
14 Start
15 Stop
16
17 Help
18 Refresh
 maint
Time  17:03  > 11 junk
```

```
CONFSTRM
 0 Quit
 2 Set
 3
 4
 5
 6
 7 Add
 8 Change
 9 Delete
10 List
11 Act
12 Deact
13 Update
14 Start
15 Stop
16
17 Help
18 Refresh
 maint
Time  17:03  > ERROR: The stream <stream> is not a valid filtered stream.
Valid filtered streams are {OCC, OCC1 ....}
Usage : Act [<filteredStreamName>]
```

Example - record format not supported

```
CONFSTRM                ERROR: The record type of this stream is not supported for
 0 Quit                 filtering.
 2 Set
 3
 4
 5
 6
 7 Add
 8 Change
 9 Delete
10 List
11 Act
12 Deact
13 Update
14 Start
15 Stop
16
17 Help
18 Refresh
  maint
Time  17:03  >
```

Deactivating a filter stream

Use the Deact command to deactivate the filtered stream

Command syntax

```
Deact [<filteredStreamName>]
```

Parameter definitions

Parameter	Value	Definition
filteredStreamName	Alphanumeric String Range (valid filtered stream)	The filtered stream to which the deactivate message is to be sent.

Responses

Invalid stream

```
ERROR: The stream <stream> is not a valid filtered
stream. Valid filtered streams are {OCC, OCC1....}

Usage: Deact [<filteredStreamName>]
```

Explanation:

This message is in response to a craftsperson invoking the command with an invalid filtered stream name.

System action:

Prompt is returned to the craftsperson and execution of the command ends.

User action:

The craftsperson must reenter the command providing a valid filtered stream.

Missing stream

```
ERROR: A filtered stream name must be provided. Valid
filtered streams are {OCC, OCC1....}

Usage: Deact [<filteredStreamName>]
```

Explanation:

This message is in response to a craftsperson invoking the command without a filtered stream name and without having the stream variable set.

System action:

Prompt is returned to the craftsperson and execution of the command ends.

User action:

The craftsperson must reenter the command providing a valid filtered stream.

Not a filtered stream

```
ERROR: The stream <stream> is not a valid filtered
stream. Valid filtered streams are {OCC, OCC1....}

Usage: Deact [<filteredtreamName>]
```

Explanation:

This message is in response to a craftsperson invoking the command with a stream name that is not a filtered stream

System action:

Prompt is returned to the craftsperson and execution of the command ends.

User action:

The craftsperson must reenter the command providing a valid filtered stream

Stream select is already inactive

```
ERROR: Stream <stream> is already inactive.
```

Explanation:

The stream is already in the inactive state.

System action:

Prompt is returned to the craftsperson and execution of the command ends.

User action:

The requested action is already accomplished.

Closed not sent files

```
The requested stream contains files in the
closedNotSent state. Stop the stream and transfer the
remaining files.
```

Explanation:

A filter stream can not be deactivated while there are files in the closed not sent state.

System action:

The command ends.

User action:

Use the “stop” command to stop receiving records in the filtered stream. Close and transfer all files downstream. Repeat the deact command.

Command Successful

```
Stream: <stream> has been deactivated.
```

Explanation:

The command completed successfully.

System action:

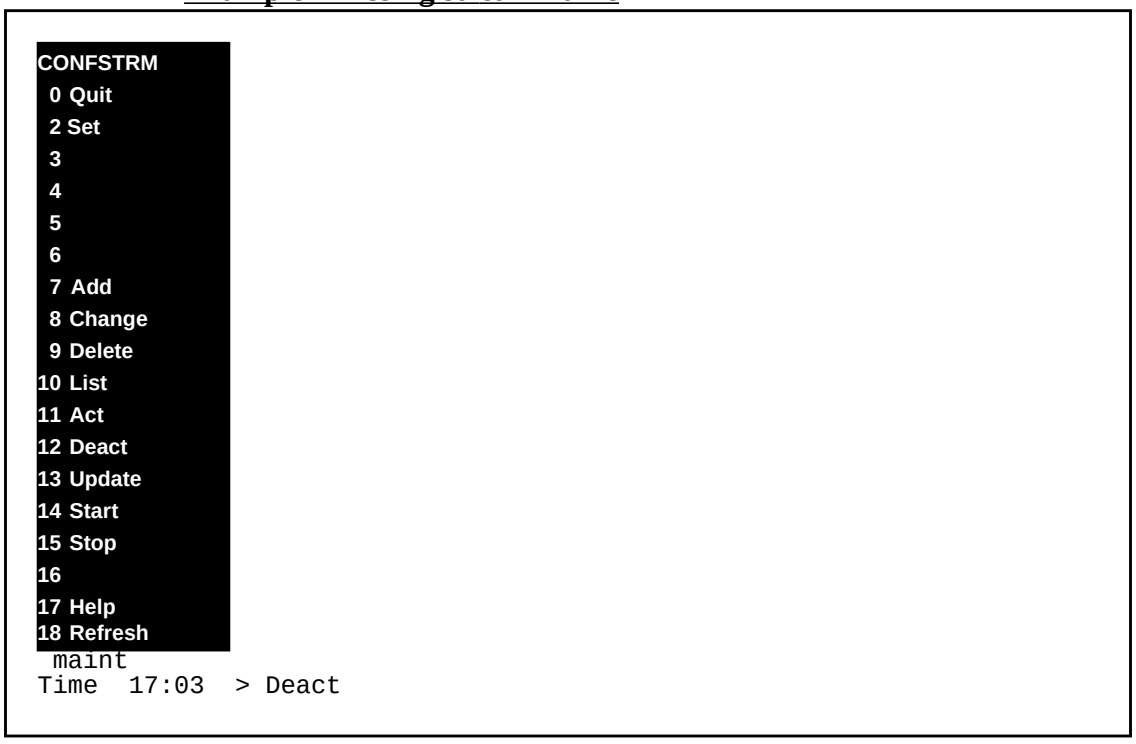
Prompt is returned to the craftsperson and execution of the command ends.

User action:

None.

Example

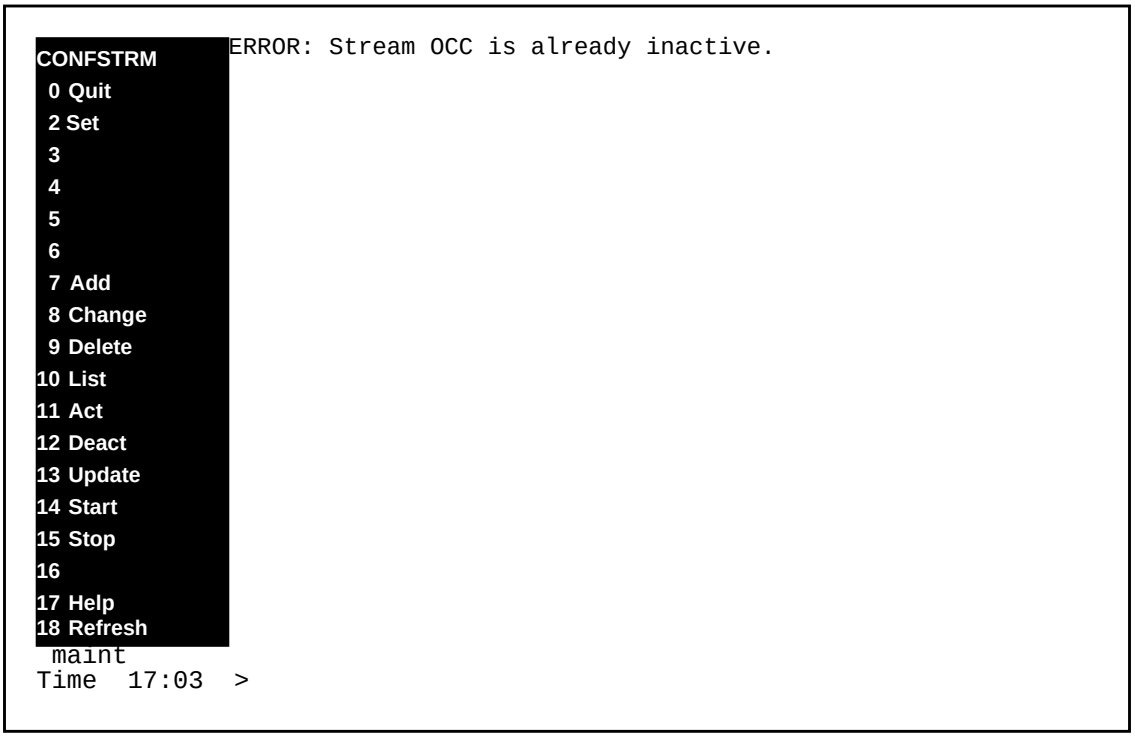
Example - missing stream name



```
CONFSTRM                ERROR: A filtered stream name must be provided. Valid filtered
 0 Quit                 streams are {OCC, OCC1 ....}
 2 Set                  Usage : Deact [<filteredStreamName>]
 3
 4
 5
 6
 7 Add
 8 Change
 9 Delete
10 List
11 Act
12 Deact
13 Update
14 Start
15 Stop
16
17 Help
18 Refresh
 maint
Time  17:03  >
```

Example - stream already inactive

```
CONFSTRM
 0 Quit
 2 Set
 3
 4
 5
 6
 7 Add
 8 Change
 9 Delete
10 List
11 Act
12 Deact
13 Update
14 Start
15 Stop
16
17 Help
18 Refresh
 maint
Time  17:03  > Deact occ
```



Update filter criteria for filter stream

Use the Update command to reread a filter stream's filter criteria.

Command syntax

```
Update [<filteredStreamName>]
```

Parameter definitions

Parameter	Value	Definition
filteredStreamName	Alphanumeric String Range (valid filtered stream)	The filtered stream to which the update message is to be sent.

Responses

Invalid stream

```
ERROR: The stream <stream> is not a valid filtered
stream. Valid filtered streams are {OCC, OCC1....}

Usage: Update [<filteredStreamName>]
```

Explanation:

This message is in response to a craftsperson invoking the command with an invalid filtered stream name.

System action:

Prompt is returned to the craftsperson and execution of the command ends.

User action:

The craftsperson must reenter the command providing a valid filtered stream.

Missing stream

```
ERROR: A filtered stream name must be provided. Valid
filtered streams are {OCC, OCC1....}

Usage: Update [<filteredStreamName>]
```

Explanation:

This message is in response to a craftsperson invoking the command without a filtered stream name and without having the stream variable set.

System action:

Prompt is returned to the craftsperson and execution of the command ends.

User action:

The craftsperson must reenter the command providing a valid filtered stream.

Not a filtered stream

```
ERROR: The stream <stream> is not a valid filtered
stream. Valid filtered streams are {OCC, OCC1....}

Usage: Update [<filteredStreamName>]
```

Explanation:

This message is in response to a craftsperson invoking the command with a stream name that is not a filtered stream

System action:

Prompt is returned to the craftsperson and execution of the command ends.

User action:

The craftsperson must reenter the command providing a valid filtered stream

Stream is not active

```
ERROR: The requested stream is not active.
```

Explanation:

The filter criteria is automatically reevaluated each time the filtered stream is activated. Reevaluation in the inactive state does nothing.

System action:

Prompt is returned to the craftsperson and execution of the command ends.

User action:

Activating the stream will automatically cause reevaluation.

The specified criteria file is not present.

```
The specified criteria file is not present.
```

Explanation:

The filter criteria specified in the add command is not present.

System action:

The command ends.

User action:

Use the changes command to specify another criteria.

The filter criteria provided is not valid.

```
The filter criteria provided is not valid.
```

Explanation:

The filter criteria specified in the add command is not valid.

System action:

The command ends.

User action:

Use the changes command to specify another criteria.

Command Successful

```
The filter criteria for stream: <stream> has been
updated.,
```

Explanation:

The command completed successfully.

System action:

Prompt is returned to the craftsperson and execution of the command ends.

User action:

None.

Example

Example - invalid criteria

```
CONFSTRM
 0 Quit
 2 Set
 3
 4
 5
 6
 7 Add
 8 Change
 9 Delete
10 List
11 Act
12 Deact
13 Update
14 Start
15 Stop
16
17 Help
18 Refresh
 maint
Time  17:03  > update occ
```

```
                ERROR: The filtering criteria provided is not valid.
CONFSTRM
 0 Quit
 2 Set
 3
 4
 5
 6
 7 Add
 8 Change
 9 Delete
10 List
11 Act
12 Deact
13 Update
14 Start
15 Stop
16
17 Help
18 Refresh
 maint
Time  17:03  >
```

Example - stream not active

```
CONFSTRM
 0 Quit
 2 Set
 3
 4
 5
 6
 7 Add
 8 Change
 9 Delete
10 List
11 Act
12 Deact
13 Update
14 Start
15 Stop
16
17 Help
18 Refresh
 maint
Time  17:03  > update occ
```

```
                ERROR: The requested stream is not active.
CONFSTRM
 0 Quit
 2 Set
 3
 4
 5
 6
 7 Add
 8 Change
 9 Delete
10 List
11 Act
12 Deact
13 Update
14 Start
15 Stop
16
17 Help
18 Refresh
 maint
Time  17:03  >
```

Stop receiving records for filter stream

Use the Stop command to stop a filter stream from receiving records.

Command syntax

```
Stop [<filteredStreamName>]
```

Parameter definitions

Parameter	Value	Definition
filteredStreamName	Alphanumeric String Range (valid filtered stream)	The filtered stream to which the stop message is to be sent.

Responses

Invalid stream

```
ERROR: The stream <stream> is not a valid filtered
stream. Valid filtered streams are {OCC, OCC1....}

Usage: Update [<filteredStreamName>]
```

Explanation:

This message is in response to a craftsperson invoking the command with an invalid filtered stream name.

System action:

Prompt is returned to the craftsperson and execution of the command ends.

User action:

The craftsperson must reenter the command providing a valid filtered stream.

Missing stream

```
ERROR: A filtered stream name must be provided. Valid
filtered streams are {OCC, OCC1....}

Usage: Stop [<filteredStreamName>]
```

Explanation:

This message is in response to a craftsperson invoking the command without a filtered stream name and without having the stream variable set.

System action:

Prompt is returned to the craftsperson and execution of the command ends.

User action:

The craftsperson must reenter the command providing a valid filtered stream.

Not a filtered stream

```
ERROR: The stream <stream> is not a valid filtered
stream. Valid filtered streams are {OCC, OCC1....}

Usage: Update [<filteredStreamName>]
```

Explanation:

This message is in response to a craftsperson invoking the command with a stream name that is not a filtered stream

System action:

Prompt is returned to the craftsperson and execution of the command ends.

User action:

The craftsperson must reenter the command providing a valid filtered stream

Stream is not active

```
ERROR: The requested stream is not active.
```

Explanation:

The filter criteria is automatically reevaluated each time the filtered stream is activated. Reevaluation in the inactive state does nothing.

System action:

Prompt is returned to the craftsperson and execution of the command ends.

User action:

Activating the stream will automatically cause reevaluation.

Command Successful

```
The stream: <stream> has stopped receiving records,
```

Explanation:

The command completed successfully.

System action:

Prompt is returned to the craftsperson and execution of the command ends.

User action:

None.

Example

Example - success

```
CONFSTRM
 0 Quit
 2 Set
 3
 4
 5
 6
 7 Add
 8 Change
 9 Delete
10 List
11 Act
12 Deact
13 Update
14 Start
15 Stop
16
17 Help
18 Refresh
 maint
Time  17:03  > Stop occ
```

```
CONFSTRM                The stream: OCC has stopped receiving records.
 0 Quit
 2 Set
 3
 4
 5
 6
 7 Add
 8 Change
 9 Delete
10 List
11 Act
12 Deact
13 Update
14 Start
15 Stop
16
17 Help
18 Refresh
 maint
Time  17:03  >
```

Example - stream not active

```
CONFSTRM
 0 Quit
 2 Set
 3
 4
 5
 6
 7 Add
 8 Change
 9 Delete
10 List
11 Act
12 Deact
13 Update
14 Start
15 Stop
16
17 Help
18 Refresh
 maint
Time  17:03  > Stop occ
```

```
CONFSTRM
 0 Quit
 2 Set
 3
 4
 5
 6
 7 Add
 8 Change
 9 Delete
10 List
11 Act
12 Deact
13 Update
14 Start
15 Stop
16
17 Help
18 Refresh
 maint
Time  17:03  >
```

ERROR: The requested stream is not active.

Start receiving records for a filter stream

Use the Start command to start receiving records for a filter stream.

Command syntax

```
Start [<filteredStreamName>]
```

Parameter definitions

Parameter	Value	Definition
filteredStreamName	Alphanumeric String Range (valid filtered stream)	The filtered stream to which the start message is to be sent.

Responses

Invalid stream

```
ERROR: The stream <stream> is not a valid filtered
stream. Valid filtered streams are {OCC, OCC1....}
Usage: Start [<filteredStreamName>]
```

Explanation:

This message is in response to a craftsperson invoking the command with an invalid filtered stream name.

System action:

Prompt is returned to the craftsperson and execution of the command ends.

User action:

The craftsperson must reenter the command providing a valid filtered stream.

Missing stream

```
ERROR: A filtered stream name must be provided. Valid
filtered streams are {OCC, OCC1....}
Usage: Update [<filteredStreamName>]
```

Explanation:

This message is in response to a craftsperson invoking the command without a filtered stream name and without having the stream variable set.

System action:

Prompt is returned to the craftsperson and execution of the command ends.

User action:

The craftsperson must reenter the command providing a valid filtered stream.

Not a filtered stream

```
ERROR: The stream <stream> is not a valid filtered
stream. Valid filtered streams are {OCC, OCC1....}

Usage: Update [<filteredStreamName>]
```

Explanation:

This message is in response to a craftsperson invoking the command with a stream name that is not a filtered stream

System action:

Prompt is returned to the craftsperson and execution of the command ends.

User action:

The craftsperson must reenter the command providing a valid filtered stream

Stream is not active

```
ERROR: The requested stream is not active.
```

Explanation:

The filter criteria is automatically reevaluated each time the filtered stream is activated. Reevaluation in the inactive state does nothing.

System action:

Prompt is returned to the craftsperson and execution of the command ends.

User action:

Activating the stream will automatically cause reevaluation.

Command Successful

```
The stream: <stream> has started receiving records,
```

Explanation:

The command completed successfully.

System action:

Prompt is returned to the craftsperson and execution of the command ends.

User action:

None.

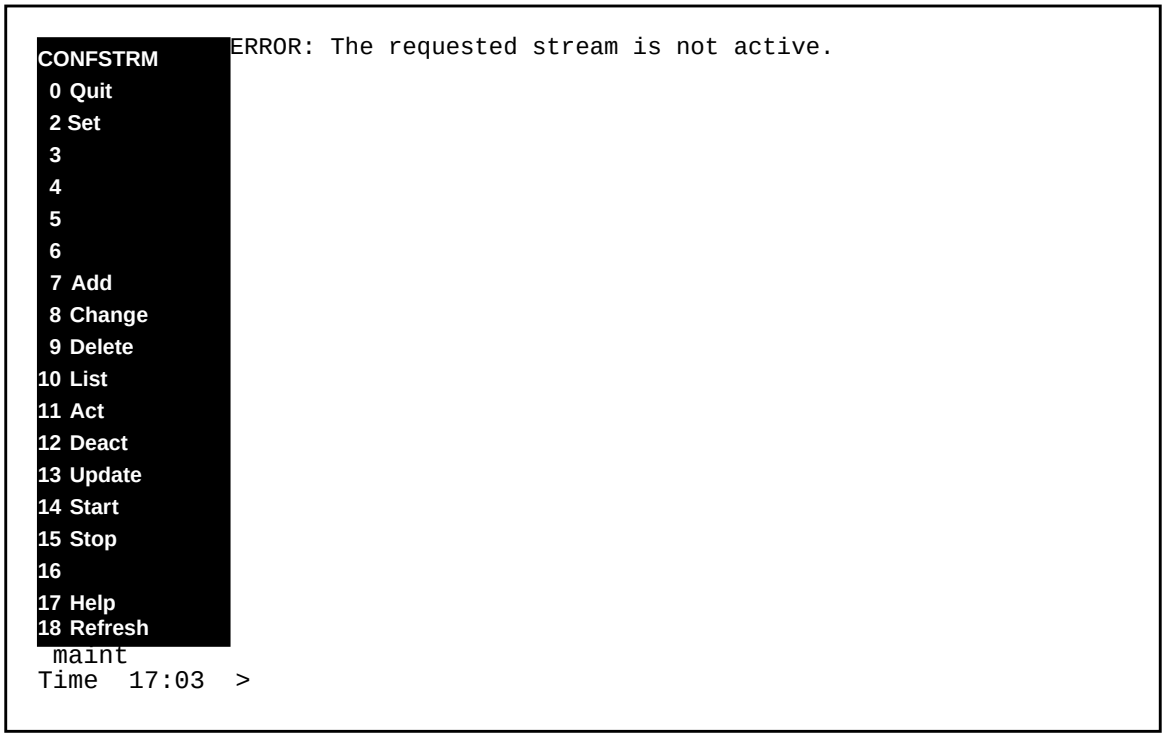
Example

Example - success

```
                The stream: OCC has started receiving records.
CONFSTRM
 0 Quit
 2 Set
 3
 4
 5
 6
 7 Add
 8 Change
 9 Delete
10 List
11 Act
12 Deact
13 Update
14 Start
15 Stop
16
17 Help
18 Refresh
 maint
Time  17:03  >
```

Example - stream not active

```
CONFSTRM
 0 Quit
 2 Set
 3
 4
 5
 6
 7 Add
 8 Change
 9 Delete
10 List
11 Act
12 Deact
13 Update
14 Start
15 Stop
16
17 Help
18 Refresh
 maint
Time  17:03  > Start occ
```


ERROR: The requested stream is not active.
CONFSTRM
0 Quit
2 Set
3
4
5
6
7 Add
8 Change
9 Delete
10 List
11 Act
12 Deact
13 Update
14 Start
15 Stop
16
17 Help
18 Refresh
maint
Time 17:03 >

CM/DMS switch commands

The following table lists all the CM commands available from the SDMBIL MAP level.

Table 37 CM commands from the SDMBIL MAP level

SDMBCTRL	Allows control over the direction of the billing data
Conf	Views or sets configuration information for the SBA volumes for backup.
DispAL	Displays all current alarms in the SDM Billing platform.
Status	Displays status of all streams.
Audit	Produces alarms or may clear a stale alarm.
Post	Posts a stream. Brings up TST, BSY, and RTS commands for use on the posted stream.
Query	Gives detailed information about the status of streams.
TST	Test communication between the SDM and the CM.
BSY	Busy the communications to the SDM for the stream posted.
RTS	Return to Service for the stream posted, if it is busy-ed out.

Activating SBA

Command Name: SDMBCTRL

Command description

The SDMBCTRL command allows control over the direction of the billing data. Each stream that is datafilled in table CRSFMT is also stored in table SDMBILL, which is the read-only information table for SBA. The SDMBCTRL and CONF commands alter the values in table SDMBILL. SDMBCTRL alters the SDMBACT field.

- If the value is “OFF”, the data is only going to DIRP.
- If the value is “BOTH”, billing data is going to the SDM and DIRP. This will cause a real time impact to the DMS switch.
- If the value is “ON”, the billing data is only sent to the SDM.

WARNING

Changing a stream that is set to “ON” or “BOTH” to “OFF” will stop billing to the SDM; billing records will no longer be sent to the SDM for that stream. If the DMS DIRP system is not able to receive billing records, all billing records generated while the stream is set to “OFF” will be lost.

Note: The SDM does not verify that the DMS DIRP system is functioning properly.

Command syntax

```
SDMBCTRL stream <ON,OFF,BOTH>
```

Parameter definitions

Parameter	Value	Definition
STREAM	buffer_stream	mapped to the streams that are datafilled in table CRSFMT
sdmbact	ON, OFF, BOTH	ON - sends billing data to the SDM OFF - does not send billing data to SDM, but to DIRP BOTH - sends billing data to both the SDM and DIRP

Restriction

The system generates a warning when a stream is activated (that is, ON or BOTH) and no backup volumes are currently configured for the stream. For example, the warning given when the stream is turned ON and no backup volumes have been configured reads:

```
"Warning: You are trying to activate SDM Billing for
AMA without having backup volumes configured! This
might result in losing billing data if a problem with
the SDM occurs!"
```

You will have to cancel the activation request and configure backup volumes for the stream. After backup volumes are configured, the ON or BOTH activation attempt could be repeated and the warning would not be given.

Responses

There is the invalid stream response, invalid parameter, and the command complete response. There may also be warnings.

Response 1

```
Invalid Stream
```

Explanation

The stream is not valid. It would be a valid stream if it is in table CRSFMT.

System action

None.

User action

Check the table CRSFMT for valid streams.

Response 2

```
Invalid parameter
```

Explanation

Something other than ON, OFF, or BOTH must have been entered after the valid stream.

System action

None.

User action

Re-enter the command.

Response 3

```
WARNING: Sending data to both the SDM and DIRP will
have a real time impact to the switch.
```

Explanation

When the activation parameter is BOTH, there will be an impact to real time to send the data to both the SDM and to DIRP.**System action**

None.

User action

There will be an additional confirmation requested, you can confirm that BOTH is necessary, or deny the request and no action will be taken.

Response 4

```
Command Complete
```

Explanation

All the parameters were valid, and the command was executed successfully.

System action

To update the stream to the state entered. There will be initialization of all necessary code associated with the stream in the Buffer system, Communications and the Auxiliary Storage.

User action

You should be sure that the backup volumes have been configured with the CONF command when sending data to the SDM.

The SDMBCTRL command will not add, nor delete a tuple in SDMBILL; it will only change it, altering the SDMBACT field of the table.

The command writes to the table SDMBILL, updating the SDMBACT field of the specified stream.

Examples

To send an AMA stream to DIRP and the SDM:

```
>SDMBCTRL ama BOTH
```

To send an AMA stream only to DIRP:

```
>SDMBCTRL ama OFF
```

To send an AMA stream only to the SDM:

```
>SDMBCTRL ama ON
```

Configuring a volume

Command name: Conf

Command description

The Conf command enables you to configure or set up disks for the auxiliary backup system. Each stream will have two volumes configured against it. Every stream that is datafilled in table CRSFMT with the exception of the NIL stream is valid for the reservation of volumes. If no volumes are identified and the SDMBACT field for the stream is ON or BOTH, an alarm will be present for that particular stream.

WARNING

If no volumes are assigned using the Conf command, billing data will be lost if the system enters backup mode.

Command syntax

```
CONF

VIEW stream

SET stream VOLUME1 VOLUME2
```

Parameter definitions

Parameter	Value	Definition
ACTION	SET/VIEW	commands
stream	buffer_stream	synchronized with the streams that are datafilled in table CRSFMT
VOLUME1	eight_char_vector	valid disk volumes (***Note***)
VOLUME2	eight_char_vector	valid disk volumes (***Note***)
[force]	"force"	Option to bypass validation
Note: Name must be eight characters or less.		

SET

The successful response indicates that the table has been updated.

The unsuccessful response lets you know what is wrong with the information entered. The stream or volumes could be invalid.

VIEW

View displays the information about the SDM Billing Platform. It gives the information about that stream from the fields in table SDMBILL.

Response 1

```
Invalid Stream
```

This message indicates that you entered a stream that is not datafilled in table CRSFMT, thus, it is not in table SDMBILL.

Response 2

```
Invalid Volume
```

This message indicates that either the volume is not a valid disk device, or that there is not enough room available on it to make it a valid backup.

System action

The system modifies the tuple corresponding to the stream entered to reflect the change to the VOLUME fields of table SDMBILL.

User action

Re-enter data after verifying the stream with CRSFMT table or the volumes through DISKUT.

Examples

The command to add another volume would be:

```
CONF SET AMA DISKX1 DISKX2
```

The command to view the AMA stream:

```
CONF VIEW AMA
```

The command to configure one volume:

```
CONF SET AMADISKX1 $
```

Response 3

```
Stream AMA is NOT activated for SDM Billing
The backup volumes are $ and $
```

This message indicates that AMA is not activated.

User action

Configure backup volumes by issuing the Conf set command again.

Warnings and errors

Warnings and errors associated with the Conf command and volume configuration are described below.

Removing configured volumes with unrecovered data: If you attempt to remove a volume that contains unrecovered data, the system displays the following warning because there is a potential for billing record files to be lost.

```
"WARNING: Unrecovered data exists on at least one of the volumes
you are removing. The system should automatically recover this
data. However, if errors occur during automatic recovery, this
data will become unrecoverable. Also, the volume(s) with
unrecovered data can not be re configured until the data has
been recovered."
```

Answer Y (Yes) to remove the volume or answer N (No) to cancel the configuration request. To be safe, choose N to cancel the configuration request to ensure that no backup files exist on the volume that is being removed.

Errors that are referred to in the warning text above include the following:

- The file information becomes unusable (the internal system file identifier becomes corrupt) when performing a reload restart. If the operating company or the system performs a reload restart for any reason, unrecovered data on the deleted volumes is lost.
- The software detects invalid file identifiers. If the file identifier is corrupt for a file on a removed volume, the file is lost.

Configuring a volume with active data: If you remove a volume with active data and then attempt to reconfigure the volume, the system displays one of the following errors:

```
“ERROR, both volumes still contain active data. They may not be
configured until recovery is complete."

"ERROR, Volume1 still contains active data. Volume1 may not be
configured until recovery is complete."

"ERROR, Volume2 still contains active data. Volume2 may not be
configured until recovery is complete."
```

Choose a different volume to configure or wait until the data is recovered and then configure the volume.

Configuring a volume that is already in use for another stream: If you attempt to configure a volume that is already configured against another stream, the system displays one of the following errors:

```
"ERROR, both volumes are already configured."
"ERROR, Volume1 is already configured."
"ERROR, Volume2 is already configured."
```

Remove the existing volume or choose a different volume name to configure a new volume.

Lack of system resources available: If the software resources necessary to configure a volume are not available (for example, no DSPERM store left on the switch), the system displays the following error:

```
"ERROR, volume resources not obtained."
```

Increase the DSPERM data store on the switch or free existing data store. You can delete a volume if it has no unrecovered data and then issue the audit command to free space. Removing a volume that is in use by an active stream is not recommended.

Lack of disk space: Determine if you must cancel the configuration request.

```
“WARNING. Volume 1 has no space or is out of service.”
“WARNING, Volume 1 has less than 4Mbytes of free space.”
“WARNING. Volume 2 has no space or is out of service.”
“WARNING, Volume 2 has less than 4Mbytes of free space.”
```

CONF storage pre-allocation

A volume storage allocation mechanism is in place that pre-allocates storage in files as placeholders.

Figure 39 Example listing of configured volume

FILE NAME	ORG	RECOC	INTOPEN	OPLD	VLD	FILE CODE	MAX REC LEN	NUM OF RECORDS IN FILE	FILE SIZE IN BLOCKS	LAST MODIFY DATE
FILESEGBR004	O	F				O	4096	500	4000	760110
FILESEGBR000	O	F				O	4096	500	4000	760110
FILESEGBR001	O	F				O	4096	500	4000	760110
FILESEGBR006	O	F				O	4096	500	4000	760110
FILESEGBR008	O	F				O	4096	500	4000	760110
FILESEGBR010	O	F				O	4096	500	4000	760110
FILESEGBR012	O	F				O	4096	500	4000	760110
FILESEGBR013	O	F				O	4096	500	4000	760110
FILESEGBR002	O	F				O	4096	500	4000	760110
FILESEGBR003	O	F				O	4096	500	4000	760110
FILESEGBR005	O	F				O	4096	500	4000	760110
FILESEGBR007	O	F				O	4096	500	4000	760110
FILESEGBR009	O	F				O	4096	500	4000	760110

Displaying current alarms

Command name: DispAL

Command description

DispAL displays all of the current alarms in the SDM Billing Platform. The criticality, stream, and text will be displayed on the map screen. If the stream is "ALL", then the alarm exists for all streams.

Command format

criticality: stream: alarm short text: alarm long text

Command syntax

```
DispAL
```

Responses

The system displays current alarms on the map screen. The system also indicates when there are no alarms.

System action

None.

User action

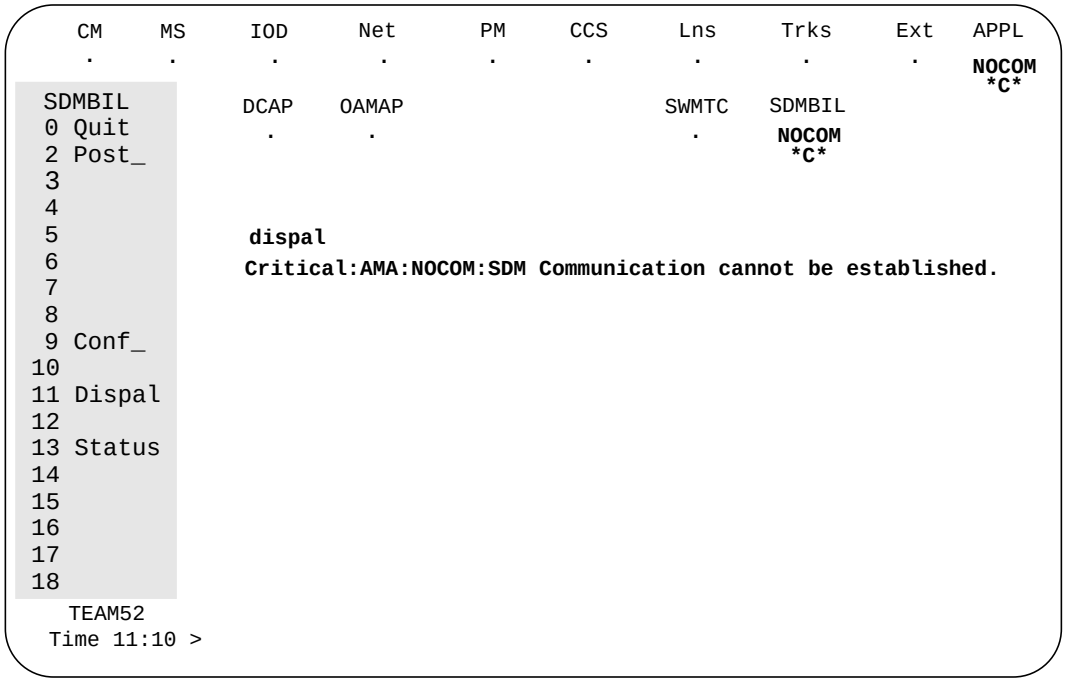
User action is specific to the alarm. DispAl is only a way to view all of the current alarms, it does not alter the alarms in any way.

More information about how the alarms are effecting the system is available through the status command or from posting the streams.

There is a log message for every alarm. This should help you to determine what to do next.

The alarms are not displayed in order of criticality, with the most severe displayed first.

Figure 40 SDMBIL MAP level, DispAL command example



Getting status

Command name: Status

Command description

The Status command displays the current status of all streams from an SDM Billing point of view. This is a snapshot of the current system. Upon pressing the return key, the text will be cleared.

Command syntax

```
Status
```

Response

```
AMA: Off
```

Explanation

All of the stream in table CRSFMT and their state.

System action

None.

User action

None.

Possible system states

The following list enumerates possible system states in priority order:

a. OffP (offline pending)

b. Off (offline)

c. ManB (manual busy)

d. SysB (system busy)

e. Bkup (backup)

f. Rcvy (recovery)

g. InSv (in service)

h. RBsy (remote busy)

The overall state of the system is determined by the client (or subsystem) that has the highest priority status. For example, if the stream is off, but the

auxiliary storage is in OFFP because there are still records in backup that need to be shipped to the SDM, then the status will be OffP.

The following figure shows an example of Status command output at the SDMBIL MAP display.

Figure 41 SDMBIL MAP level, Status command example

```
   CM     MS     IOD      Net      PM     CCS      Lns     Trks     Ext   APPL
    .      .       .        .       .       .        .        .       .   NOCOM
                                                                          *C*
 SDMBIL          DCAP    OAMAP                    SWMTC   SDMBIL
 0 Quit           .       .                        .       .
 2 Post_
 3
 4              SDMBIL:
 5               Status
 6                AMA: INSV
 7
 8
 9 Conf_
10
11 Dispal
12
13 Status
14
15
16
17
18
   TEAM52
 Time 11:10 >
```

Auditing

Command name: Audit

Command description

The Audit command causes an audit to be run.

Audits may produce alarms, such as non-billing information stored on a backup volume, or an audit may clear a stale alarm.

Note 1: Currently the Audit command is a subset of the automatic audit.

Note 2: An audit can not be run when the stream is off.

Command syntax

```
Audit
```

Response

```
Audit complete.
```

Posting

Command name: Post

Command description

The Post command allows you to post the stream to the map screen, giving dynamic information on the status of that stream. A few more commands become available at this level: query, tst, bsy, rts; which all have activities associated with the stream posted.

Command syntax

```
POST stream
```

Parameter definitions

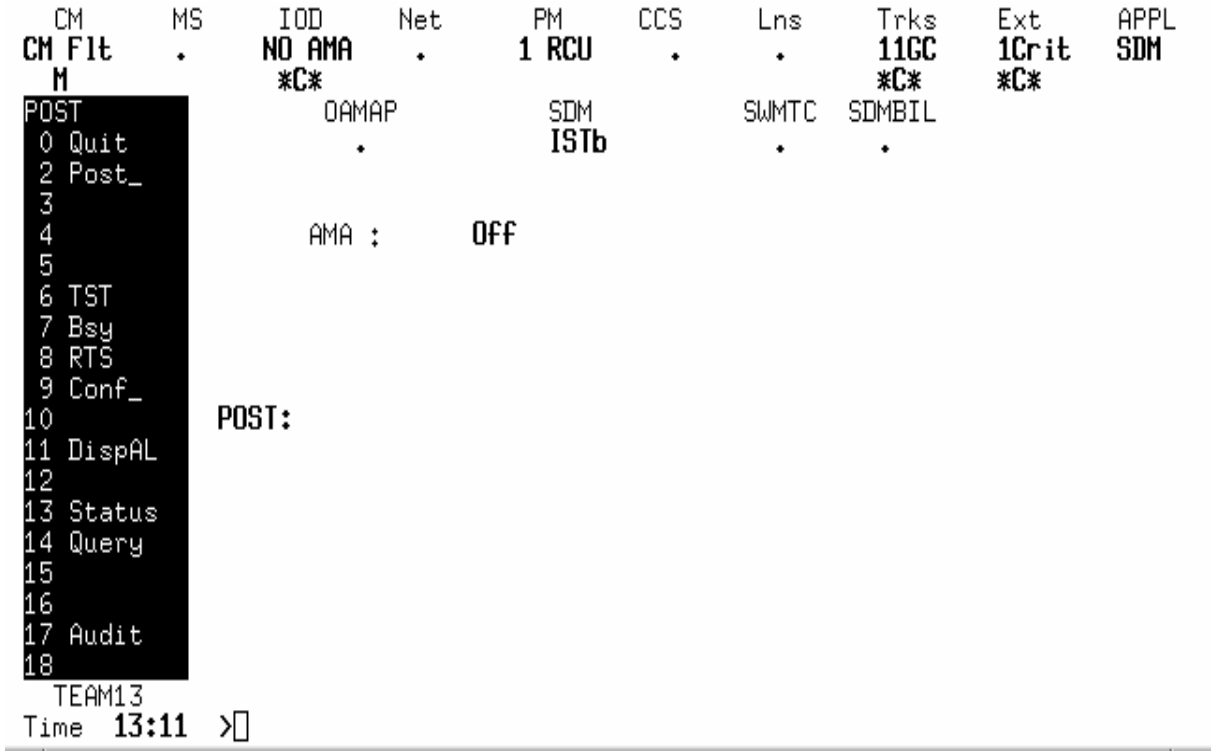
Parameter	Value	Definition
STREAM	buffer_stream	Start the streams that are datafilled in table CRSFMT

Response

If a stream other than a configured stream is posted, the message “Invalid stream” is generated indicating that the stream is not available.

The following figure shows an example of Post AMA command output at the SDMBIL MAP display.

Figure 42 SDMBIL MAP level Post command for the AMA example



System action

None.

User action

None.

Querying

Command name: Query

Command description

The Query command works in conjunction with the Status command in that the Status command will give a brief overview of all the status of the streams, but the Query command will go into detail about what is going on with the particular stream that is posted. The information displayed is a snapshot. It will not be dynamically updated on the screen, that is, a return key will clear the screen.

Command syntax

```
Query
```

Responses

Responses will vary depending on the system's status.The following are the possible display messages for the QUERY command.

```
Stream activity is [ON, OFF, BOTH]

Buffer system is in service.

SDM communication is in service trouble - split mode

Recovery system is in service.

Backup system is out of service.

The backup volumes are <VOL1> and <VOL2>.
```

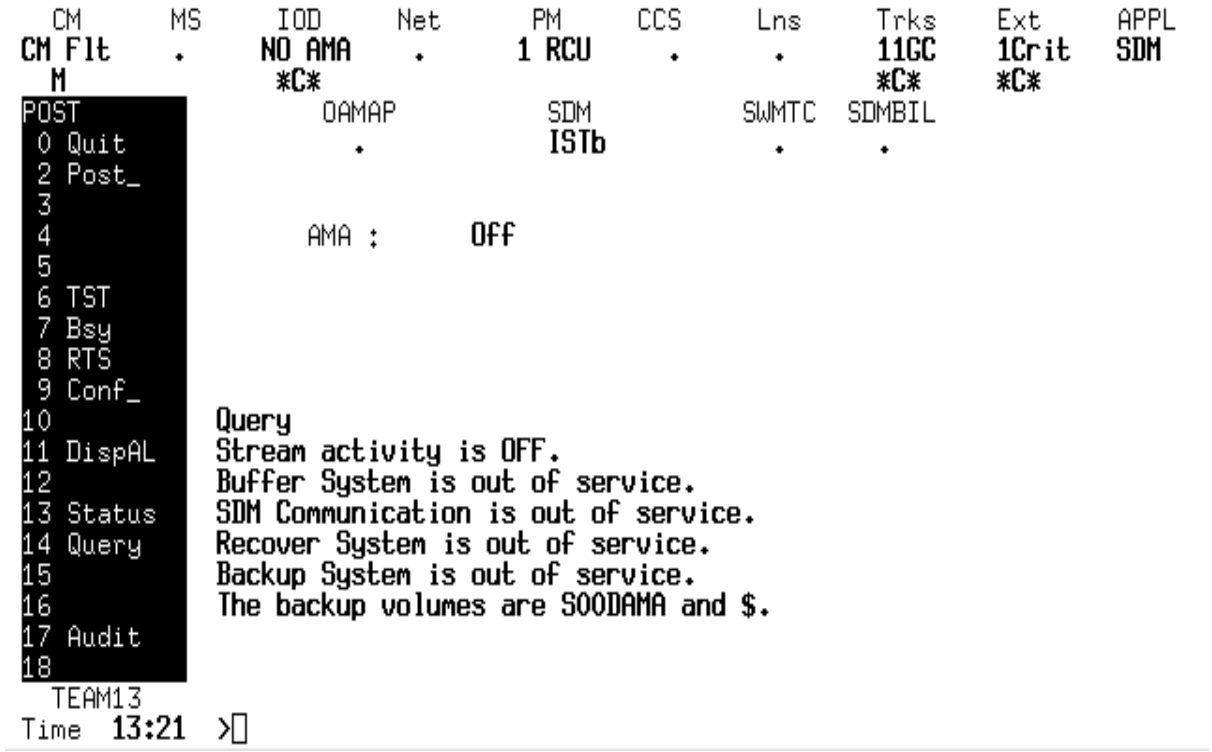
This is a snapshot of the system. It will not be dynamically updated.

User action

If the SDM Communications In-Service Trouble message is reported, the reasons for the condition needs to be investigated. There could be a normal upgrade or maintenance activity on the SDM or there could be an SDM hardware error.

The following figure shows an example of Query command output at the SDMBIL MAP display.

Figure 43 Stream, MAP level layout, Query command example



Testing communication

Command name: TST

Command description

The TST command sends information to the communications subsystem to run a test message to the SDM. Text information is sent back and displayed on the MAP screen.

Command syntax

TST

System action

None.

User action

None.

Note: A TST can not be performed when the stream is off.

Busying

Command Name: BSY

Command description

The Bsy command is used to busy out the stream posted. This sends the data to backup. The RTS command triggers the recovery of the data sent to backup. There is a severe warning message with additional confirmation needed to commit the BSY command.

WARNING

If "busy" for a duration that is too long, because the resources available for backup are limited, there is a potential for lost data.

Command syntax

```
BSY
```

Response

```
Stream is busy.
```

Explanation

The billing data is no longer going to the SDM. It is now going to backup.

System action

Start backup.

User action

None.

Note: The BSY command can not be performed when the stream is off.

Returning to service

Command name: RTS

The RTS command is used to return the stream to service. The recovery mechanism is triggered as the stream goes into service.

Command syntax

RTS

At the stream posted level, the RTS command can be initiated for the stream posted.

Response

None.

Explanation

Returns the stream to service.

System action

Send the recovery stream to the SDM as well as the primary stream.

User action

None.

Note: This command is not available when the stream is off.

Accessing the SDM through the CM side

SDMRLogin is a non-menu command that allows root user and maint (maintenance) users to log in to the SDM from any MAP display level. The SDM must be in InSv or ISTb state to execute this command.

To access the SDM through the CM side, use the command interface CI>SDMRLOGIN.

Figure 44 SDMRLOGIN

```
>sdmrlogin
SDM IP address is 47.245.8.70.

SDM Remote Login command in progress. Please wait...

telnet (brtpycf1)
AIX Version 4
(C) Copyrights by IBM and by others 1982, 1994.
login:
>maint
Password:
>
**************************************************
**
**
**             This is a private database.
**       All activity is subject to monitoring.
**    Any UNAUTHORIZED access or use is PROHIBITED.
**
**
**************************************************
Last unsuccessful login: Wed Jul 2 11:02:26 EDT 1997 o
Last login: Thu Jul 3 12:05:35 EDT 1997 on /dev/pts/2
SDMO>
```

Using the SDMRLogin command

You are then prompted for your password. The screen displays your last login, and your last unsuccessful and successful logins and your current login.

You are automatically placed in a restricted shell. Type “help” to display a command list. The commands available during an SDMRLogin session are as follows (commands are case sensitive):

- amadump - displays record information contained in a billing file
- bsyapp - busy an application
- closec - closes currently open billing file(s) per stream
- CONFSTRM.add - adds configured billing streams
- CONFSTRM.change - changes an existing billing stream configuration
- CONFSTRM.delete - deletes an existing billing stream configuration
- CONFSTRM.list - lists configuration of a (or all) billing stream(s)
- dispal - displays current SDM Billing alarms
- displogs - displays SDM Billing logs that have not been acknowledged by the CM
- help - display help for commands available through SDM Remote Login
- listfile - lists stored billing file(s) per stream
- locate - query hardware module information
- logout - end this SDM Remote Login session
- logquery - invoke the logquery tool to browse DMS logs
- ls - list contents of the SDM Remote Login directory
- mib - get or set mib objects for SDM Billing
- offlapp - offline an application
- ping - send 10 ICMP ECHO_REQUEST packets to network hosts
- ps - report process status
- querysdm - query information about the SDM
- rtsapp - return an application to service
- SCHEDULE.add - adds a tuple to the schedule
- SCHEDULE.change - changes an existing tuple in the schedule
- SCHEDULE.delete - deletes tuple from the schedule after user confirmation
- SCHEDULE.list- list tuples in the schedule

- sendfile - sends billing file(s) per stream to downstream DPMS
- who_is_on - displays current usage and state information for the SDM

Enter the Logout command to end the remote login session. Entering the Logout command returns you to the same MAP display level from which you entered the SDMRLogin command. If you enter the Break<hx> command, you return to the command interpreter (CI) level.

Note: The UNIX shell prompt must not be modified during an SDM remote login session. If the prompt is modified, the remote login session will hang, and must be terminated using the BREAK<hx> command.

Error messages

Error messages are displayed for the following reasons:

- The SDM is not in the InSv or ISTb state. Put the SDM in the InSv state and re-enter the SDMRLogin command.
- A telnet session could not be established between the CM and the SDM.
- The terminal that you are using for the remote login does not suppress the echoing of password entries. You may continue or exit the remote login session.
- The terminal that you are using for the remote login is being used to output DMS logs. You may continue or exit the remote login session.

Appendix A: SDMC SBA Amadump Listfields

Table 38 Amadump Listfields (BAF)

Field Name	What is displayed
RDW	ACCESS CODE %
ACCESS_METHOD	ACCESS %
ACCOUNT_CODE_BILLING_INDICATOR	AC CODE BILL INDICATOR %
ACCOUNT_CODE_BILLING_NUMBER	AC CODE BILL NUMBER %
ACCOUNT_CODE_CDAR	ACCT CODE %
ACCUMULATED_OPERATOR_WORK_TIME	ACC OPERATOR WORK TIME %
ACTIVATING_NPA	ACTIVATING NPA %
ACTIVATING_NUMBER	ACTIVATING NUMBER %
ACTIVATION_TIME	ACTIVATION TIME %
ADDITIONAL_DIGITS_DIALED	ADDITIONAL DIGITS DIALED %
ALTERNATE_BILLING_NUMBER	ALTERNATE BILLING NUMBER %
ALTERNATE_ROUTE_NUMBER	ALTERNATE ROUTE NUMBER %
AMA_CARRIER_CONNECT_DATE	CARRIER CONNECT DATE %
AMA_CARRIER_CONNECT_TIME	CARRIER CONNECT TIME %
AMINPROG	AMINPROG %
AMOUNT_OF_CHARGE	AMOUNT OF CHARGE %
AMOUNT_OF_CREDIT	AMOUNT OF CREDIT %
ANI_INDICATOR	ANI INDICATOR %
ANSWER	CLD PTY OFF-HK %
ARS_PATTERN	ARS PATTERN %

Table 38 Amadump Listfields (BAF)

Field Name	What is displayed
ATANS	BCANS %
ATED411	BCED411 %
ATED555	BCED555 %
ATEDIWAT	BCEDIWAT %
ATEDMR	BCEDMR %
ATEDOTHR	BCEDOTHR %
ATEDOWAT	BCEDOWAT %
ATEDSTPD	BCEDSTPD %
ATLT411	BCLT411 %
ATLT555	BCLT555 %
ATLTIWAT	BCLTIWAT %
ATLTLONG	BCLTLONG %
ATLTMR	BCLTMR %
ATLTOTHR	BCLTOTHR %
ATLTOWAT	BCLTOWAT %
ATLTSTPD	BCLTSTPD %
ATLTTRCR	BCLTTRCR %
ATNA411	BCNA411 %
ATNA555	BCNA555 %
ATNAIWAT	BCNAIWAT %
ATNAMR	BCNAMR %
ATNAOTHR	BCNAOTHR %
ATNAOWAT	BCNAOWAT %
ATNASTPD	BCNASTPD %
ATNOTRMT	BCNOTRMT %
ATORIGS	BCORIGS %
ATRC411	BCRC411 %
ATRC555	BCRC555 %
ATRCIWAT	BCRCIWAT %
ATRCLONG	BCRCLONG %

Table 38 Amadump Listfields (BAF)

Field Name	What is displayed
ATRCMR	BCRCMR %
ATRCOTHR	BCRCOTHR %
ATRCOWAT	BCRCOWAT %
ATRCSTPD	BCRCSTPD %
ATRCTRCR	BCRCTRCR %
ATTRMT	BCTRMT %
AUTHORIZATION_CODE	AUTHORIZATION CODE %
AVAIL_DN_COUNT	AVAIL DN COUNT %
AVAIL_INFO_COUNT	AVAIL COUNT %
BAD_TRACER_INDICATOR	BAD TRACER INDICATOR %
BEARER_CAPABILITIES	BEARER CAPABILITY %
BILLABLE_DIGITS_1	BILLABLE DIGITS 1 %
BILLABLE_DIGITS_2	BILLABLE DIGITS 2 %
BILLING_NUMBER	BILLING NUMBER %
BILLING_NUMBER_TREATMENT	BILLING NUMBER TREATMENT %
BILLING_NUM_CONT	BILLING NUMBER CONTENT %
BILLING_TYPE_IDENTIFICATION	BILLING TYPE ID %
BILLING_VALID_FILE	BILLING VALID FILE %
BLOCK_COUNT	BLOCK COUNT %
BLV_INTERRUPT_RESULT	BLV/INTERRUPT RESULT %
BUSINESS_CUSTOMER_ID	BUSINESS CUSTOMER ID %
BUSINESS_FEATURE_CODE	BUSINESS FEATURE CODE %
CALLED_DN_DESCRIPTOR	CALLED DN DESC %
CALLED_NUMBER_SERVICE_ACCESS_NUMBER_INPUT	CALLED NUMBER INPUT %
CALLING_CARD_SUBACCOUNT_NUMBER	CALLING CARD SUBACCOUNT NUMBER %
CALLING_NUMBER_SOURCE	CALLING NUMBER SOURCE %
CALL_CHARACTERISTIC	CALL CHARACTERISTIC %
CALL_CODE	CALL CODE %
CALL_COMPLETION_CODE	CALL COMPLETION CODE %

Table 38 Amadump Listfields (BAF)

Field Name	What is displayed
CALL_ID_BILLING	CALL ID BILLING %
CALL_RECORD_SEQUENCE_NUMBER	CALL RECORD SEQUENCE NUMBER %
CARRIER_CONNECT_DATE	CC DATE %
CARRIER_CONNECT_TIME	CC TIME %
CARRIER_PREFIX	CARRIER PREFIX %
CAUSE_OF_OVERFLOW	CAUSE OF OVERFLOW %
CHARGEABLE_DNIC	CHG DNIC %
CHARGEABLE_NPA	CHG NPA %
CHARGEABLE_NUMBER	CHG NUMBER %
CHARGEABLE_OPERATOR_HOLDING_TIME	CHARGEABLE OPER HOLDING TIME %
CHARGE_ADJ_INDICATOR	CHARGE ADJ INDICATOR %
CHARGE_INDICATOR	CHARGE INDICATOR %
CHARGE_PKT_INDICATOR	CHARGING IND %
CIRCUIT_DATE	CIRCUIT DATE %
CIRCUIT_TIME	CIRCUIT TIME %
CLASS_FEATURE_CODE	CLASS FEATURE %
CLASS_FUNCTION	CLASS FUNCTION %
COINS_COLLECTED	COIN COL %
COIN_CREDIT_INDICATOR	COIN CREDIT IND %
COIN_DEPOSIT_TROUBLE_INDICATOR	COIN TROUBLE INC %
COMPANY_IDENTIFICATION	COMPANY ID %
COMPLETION_INDICATOR	COMPLETION IND %
COMPLETION_REASON	COMPLETION INDICATOR %
CONNECTION_TYPE_AND_IDENTIFICATION	CONNECTION TYPE AND ID %
CONNECT_TIME	CONNECT TIME %
CONTEXT_ID	CONTEXT ID %
CONVERSION_REQ	CONV REQ %
COUNTRY_CODE	COUNTRY CODE %
COUNTRY_CODE_OR_DNIC	COUNTRY CODE OR DNIC %
CREDIT_CARD_FAIL	CREDIT CARD FAIL %

Table 38 Amadump Listfields (BAF)

Field Name	What is displayed
CUSTOMER_DIALED_ACCT_NO	CDAR NUMBER %
CUSTOMER_IDENTIFICATION	CUSTOMER IDENTIFICATION %
DATABASE_QUERIED	DATABASE QUERIED %
DATA_DESCRIPTOR	DATA DESCRIPTOR %
DATA_RATE_INDICATOR	DATA RATE INDICATOR %
DATE	DATE %
DATE_AFTER_CHANGE	DATE AFTER CHANGE %
DATE_BEFORE_CHANGE	DATE BEFORE CHANGE %
DAY_OF_THE_MONTH	DAY OF MONTH %
DESTINATION_NPA	DESTINATION NPA %
DESTINATION_NUMBER	DESTINATION NUMBER %
DIALED_NPA	DIALED NPA %
DIALED_NUMBER	DIALED NUMBER %
DIALING_INDICATOR	DIALING INDICATOR %
DIALING_RATE	DIALING RATE %
DIGITS_DIALED_1	DIGITS DIALED1 %
DIGITS_DIALED_2	DIGITS DIALED2 %
DIGITS_ID	DIGITS ID %
DIR_NUMBER	DIR NUMBER %
DOMESTIC_INTL_INDICATOR	DOMESTIC/INTL INDICATOR %
ELAPSED_FROM_CC	ELAPSED CC %
ELAPSED_TIME	ELAPSED TIME %
END_OF_DIALING_TIME	END OF DIALING TIME %
FACILITY_RELEASE_CAUSE	FACILITY RELEASE CAUSE %
FACILITY_RESTRICTION_LVL	FACILITY RESTRICTION LVL %
FAST_SELECT	FAST SELECT %
FEATURE_STATUS	FEATURE STATUS %
FEATURE_TYPE_INDICATOR	FEATURE TYPE INDICATOR %
FORMAT_IDENTIFIER	FORMAT ID %
FWD_NPA	FWD NPA %

Table 38 Amadump Listfields (BAF)

Field Name	What is displayed
FWD_NUMBER	FWD NUMBER %
FWD_OVERSEAS_IND	FWD OVERSEAS IND %
GENERIC_CONTEXT_ID	GENERIC CONTEXT ID %
GENERIC_DIGIT_STRING	GENERIC DIGIT STRING %
GENERIC_ISSUE	GENERIC ISSUE %
GEN_ADD_PARM	GENERIC ADD PARM %
GUEST_NAME	GUEST NAME %
HEX_ID	HEX ID %
HOP_OFF_OFFICE_NUMBER	HOP-OFF OFFICE NUMBER %
IC_INC_AGREEMENT_TABLE	IC/INC AGREEMENT TABLE %
IC_INC_ANI_INDICATOR	IC/INC ANI %
IC_INC_CHECKS	IC/INC CHECKS %
IC_INC_EVENT_STATUS	IC/INC EVENT STATUS %
IC_INC_PREFIX	IC/INC PREFIX %
INCOMING_FACILITY_TYPE	INCOMING FACILITY TYPE %
INCOMING_TRUNK_FACILITY_ID	INCOMING TRUNK FACILITY ID %
INC_X75_ID	INCOMING X.75 ID %
INTL_SERVICE_DIFFICULTY	INTL SERVICE DIFFICULTY %
INWARD_SERVICE_TYPE	INWARD SERVICE TYPE %
ISDN_CHANNEL_ID	ISDN CHANNEL ID %
KEYING_ACTIONS	KEYING ACTIONS %
LIDB_RESPONSE	LIDB RESPONSE %
LINE_NUMBER	LINE NUMBER %
LINE_NUMBER_TYPE	LINE NUMBER TYPE %
LISTING_RESPONSE	LISTING RESPONSE %
LISTING_STATUS	LISTING STATUS %
LOCAL_DETERMINATION_INDICATOR	LOCAL INDICATOR %
LOCAL_SERVICE_TYPE	LOCAL SERVICE TYPE %
LOCATION	LOCATION %
LOCATION_ROUTING_NUMBER	LOCATION ROUTING NUMBER %

Table 38 Amadump Listfields (BAF)

Field Name	What is displayed
LOGICAL_CHAN_NO	LOGICAL CHAN NUMBER %
LSDBS_BOC_IDENTIFICATION	LSDBS BOC ID %
LSDB_ACCESSES	LSDB ACCESSES %
MBG_ID	MULTI BUSINESS GRP ID %
MBG_LINE_PRIV	MBG LINE PRIVILEGES %
MEANS_OF_INFORMATION_INPUT	MEANS OF INFORMATION INPUT %
MEANS_OF_INPUT_RESPONSE	MEANS OF INPUT/RESPONSE %
MEANS_OF_LSDB_ACCESS	MEANS OF LSDB ACCESS %
MEANS_OF_REPORT_PROVISION	MEANS OF REPORT PROVISION %
MESSAGE_DIRECTION	SEIZURE DIRECTION %
METHOD_OF_SIGNALING	METHOD OF SIGNALING %
MINUTES_OF_CREDIT	MINUTES OF CREDIT %
MODULE_CODE	MODULE CODE %
MULTIPLIER_FACTOR	MULTIPLIER FACTOR %
NETWORK_INTERWORKING	NETWORK INTERWORKING %
NETWORK_OPERATOR_DATA	NETWORK OPERATOR DATA %
NETWORK_USER_ID	NETWORK USER ID %
NFY_PERIOD_DURATION	NFY PERIOD DURATION %
NPA	NPA %
NPA_LINE	NPA LINE %
NPA_VERIFIED	NPA VERIFIED %
NSN_DIGITS	DIGITS %
NUMBER_IDENTITY	NUMBER IDENTITY %
NUMBER_OF_DESTINATIONS	NUMBER OF DESTINATIONS %
NUMBER_OF_OCCURRENCES	NUMBER OF OCCURRENCES %
NUMBER_OF_PERIODS	NUMBER OF PERIODS %
NUMBER_VERIFIED	NUMBER VERIFIED %
NUMBER_WIDEBAND_CIRCUITS	WIDEBAND CIRCUITS %
OBSOLETE_TRUNK_NETWORK_NUMBER	TNN %
OLIP	OLIP %

Table 38 Amadump Listfields (BAF)

Field Name	What is displayed
OPERATOR_ACTION	OPER ACTION %
OPERATOR_IDENTIFICATIONS	OPERATOR IDS %
OPERATOR_NOTIFICATION	OPER NOTIFICATION %
OPERATOR_NUMBER	OPERATOR NUMBER %
OPERATOR_SERVICES_SYSTEM_ACTION	OSS ACTION %
OPERATOR_SERVICE_FEATURE	OPERATOR SERVICE FEAT %
OPERATOR_WORK_TIME	OPERATOR WORK TIME %
ORIGINATING_CHARGE_INFO	ORIGINATING CHARGE INFO %
ORIGINATING_FEATURE_CODE	ORIGINATING FEATURE CODE %
ORIGINATING_LATA	ORIGINATING LATA %
ORIGINATING_NPA	ORIG NPA %
ORIGINATING_NUMBER	ORIG NUMBER %
ORIGINATING_OPEN_DIGITS_1	ORIG OPEN DIGITS 1 %
ORIGINATING_OPEN_DIGITS_2	ORIG OPEN DIGITS 2 %
ORIGINATION_CALL_TYPE	ORIG CALL TYPE %
ORIG_DNIC	ORIG DNIC %
ORIG_SENSOR_ID	ORIG SENSOR ID %
ORIG_SERVICE_TYPE	ORIG SERVICE TYPE %
OSS_CALL_COMPLETION_SERVICE_CONDITIONS	OSS CALL COMPLETION CONDITIONS %
OUTGOING_FACILITY_TYPE	OUTGOING FACILITY TYPE %
OUT_OF_BAND_INDICATOR	OUT-OF-BAND INDICATOR %
OUT_X75_ID	OUTGOING X.75 ID %
OVERSEAS_CC_NUMBER	OVERSEAS CC NUMBER %
OVERSEAS_INDICATOR	OVERSEAS IND %
OVERWRITTEN_DIGITS_1	OVERWRITTEN DIGITS 1 %
OVERWRITTEN_DIGITS_2	OVERWRITTEN DIGITS 2 %
OVERWRITTEN_NUMBER	OVERWRITTEN NUMBER %
OVERWRITTEN_NUMBER_SEQUENCE	OVERWRITTEN NUMBER SEQUENCE %
OVERWRITTEN_NUMBER_TYPE	OVERWRITTEN NUMBER TYPE %
PARTY_IDENTIFIER	PARTY IDENTIFIER %

Table 38 Amadump Listfields (BAF)

Field Name	What is displayed
PARTY_NAME	PARTY NAME %
PKT_BILLING_NUMBER	PKT BILLING NUMBER %
PRESENT_DATE	PRESENT DATE %
PRESENT_TIME	PRESENT TIME %
PRIORITY	PRIORITY %
PVC_ID	PVC ID %
PVN_DIGITS_DIALED	PVN DIGITS DIALED %
QUEUE_ELAPSED_TIME	QUEUE ELAPSED TIME %
RAO_NUMBER	RAO NUMBER %
RATE_INDICATOR	RATE IND %
RECORD_COUNT	RECORD COUNT %
RECORD_OFFICE_ID	REC OFFICE ID %
RECORD_OFFICE_TYPE	REC OFFICE TYPE %
REC_FRAME_COUNT	REC FRAME CNT %
REC_SEG_COUNT	REC SEG CNT %
REDIRECTION_DIGITS1	REDIRECTION DIGITS 1 %
REDIRECTION_DIGITS2	REDIRECTION DIGITS 2 %
REDIRECTION_INFO	REDIRECTION INFO %
RELEASE_CAUSE_INDICATOR	RELEASE CAUSE INDICATOR %
REQUEST_COUNTER	REQUEST COUNTER %
ROOM_NUMBER	ROOM NUMBER %
ROUTING_INDICATOR	ROUTING INDICATOR %
SCREENING_CODE	SCREENING CODE %
SCRN_LIST_DRCW	SCRN LIST DRCW %
SCRN_LIST_SCF	SCRN LIST SCF %
SCRN_LIST_SCR	SCRN LIST SCR %
SEGMENT_COUNT1	SEG COUNT1 %
SEGMENT_COUNT2	SEG COUNT2 %
SEGMENT_COUNT3	SEG COUNT3 %
SEGMENT_COUNT4	SEG COUNT4 %

Table 38 Amadump Listfields (BAF)

Field Name	What is displayed
SEGMENT_SIZE	SEG SIZE %
SENSOR_ID	SENSOR ID %
SENSOR_TYPE	SENSOR TYPE %
SEQUENCE_CALL_COUNTER	SEQUENCE CALL COUNTER %
SEQUENCE_NUMBER	SEQUENCE NUMBER %
SERVICE_CODE	SERV CODE %
SERVICE_DIFFICULTY	SERVICE DIFFICULTY %
SERVICE_DIFFICULTY_DATE	SERVICE DIFFICULTY DATE %
SERVICE_DIFFICULTY_TIME	SERVICE DIFFICULTY TIME %
SERVICE_FEATURE	SERVICE FEATURE %
SERVICE_IDENTIFICATION	SERVICE ID %
SERVICE_IDENTIFIER	SERVICE IDENTIFIER %
SERVICE_INDICATOR	SERVICE INDICATOR %
SERVICE_OBSERVED	SERVICE OBSERVED %
SERVICE_PROCESSING_DATE	SERVICE PROC DATE %
SERVICE_PROCESSING_TIME	SERVICE PROC TIME %
SERVICE_PROVIDER	SERVICE PROVIDER %
SERVICE_PROVIDER_ID	SERVICE PROVIDER ID %
SERVICE_PROVIDER_IDENTITY	SERVICE PROVIDER IDENTITY %
SERVICE_PROVIDER_TYPE	SERVICE PROVIDER TYPE %
SIGNIFICANT_DIGITS_IN_NEXT_FIELD	SIGNIFICANT DIGITS IN NEXT FIELD %
SIG_DIGITS_NEXT_2_FIELDS	SIG DIGITS %
SIG_DIGITS_NEXT_FIELD	SIG DIGITS NEXT FIELD %
SIG_OR_SUP_SERVICE_CAPABILITIES_USAGE	SIG OR SUP SERVICE CAPABILITIES USAGE %
SLP_ID	SLP ID %
SMALL_INTERVAL_ELAPSED_TIME	SMALL INTERVAL ELAPSED TIME %
SOURCE_OF_CHARGE_NUMBER	SOURCE OF CHARGE NO %
SOURCE_OF_IC_INC_CODE	SOURCE OF IC/INC CODE %
SOURCE_OF_REQUEST	SOURCE OF REQUEST %

Table 38 Amadump Listfields (BAF)

Field Name	What is displayed
SSAS_CODE	SSAS CODE %
SSAS_INDICATOR	SSAS INDICATOR %
STATION_SIGNALING_INDICATOR	STATION SIGNALING IND %
STRUCTURE_CODE	STRUCTURE CODE %
STUDY_INDICATOR	STUDY IND %
SUBSCRIBER_ID	SUBSCR ID %
SUPPORTING_INFORMATION	SUPPORTING INFORMATION %
SURCHARGE	SURCHARGE %
TANDEM_DIGITS_DIALED1	TANDEM DIGITS DIALED1 %
TANDEM_DIGITS_DIALED2	TANDEM DIGITS DIALED2 %
TARIFF_UTILITY	TARIFF UTILITY %
TAX	TAX %
TERMINATING_COMPANY	TERMINATING COMPANY %
TERMINATING_FEATURE_CODE	TERMINATING FEATURE CODE %
TERMINATING_NPA	TERM NPA %
TERMINATING_NPA_4BCD	TERM-NPA %
TERMINATING_NUMBER	TERM NUMBER %
TERMINATING_OPEN_DIGITS_1	TERM OPEN DIGITS 1 %
TERMINATING_OPEN_DIGITS_2	TERM OPEN DIGITS 2 %
TERM_CAUSE_IND	TERM CAUSE IND %
TERM_DNIC	TERM DNIC %
TERM_SENSOR_ID	TERM SENSOR ID %
TERM_SERVICE_TYPE	TERM SERVICE TYPE %
TERM_SIG_OR_SUP_SERVICE_USAGE	TERM SIG OR SUP SERVICE USAGE %
TEXT	TEXT %
TICKET_NUMBER	TICKET NUM %
TIME	TIME %
TIME_AFTER_CHANGE	TIME AFTER CHANGE %
TIME_BEFORE_CHANGE	TIME BEFORE CHANGE %
TIMING_INDICATOR	TIMING IND %

Table 38 Amadump Listfields (BAF)

Field Name	What is displayed
TRACER_TYPE	TRACER TYPE %
TRANSIT_CODE	TRANSIT CODE %
TRANSLATION_SETTABLE_FIELD	TRANS SETTABLE %
TRANS_FRAME_COUNT	TRANS FRAME CNT %
TRANS_NETWORK1	TRANS NET1 %
TRANS_NETWORK2	TRANS NET2 %
TRANS_NETWORK3	TRANS NET3 %
TRANS_NETWORK4	TRANS NET4 %
TRANS_SEG_COUNT	TRANS SEG CNT %
TRUNK_FACILITY_ID	TRUNK FACILITY ID %
TRUNK_GROUP_NUMBER	TRUNK GROUP NUMBER %
TRUNK_LEGS_USED	TRUNK LEGS USED %
TYPE_OF_ANNOUNCEMENT	TYPE OF ANNOUNCEMENT %
TYPE_OF_MBG_CALL	TYPE OF MBG CALL %
TYPE_OF_NAME	TYPE OF NAME %
TYPE_OF_TEXT	TYPE OF TEXT %
UNAVAIL_DN_COUNT	UNAVAIL DN COUNT %
UNAVAIL_INFO_COUNT	UNAVAIL COUNT %
USAGE_COUNT	USAGE COUNT %
VCN_BG_ID	VCN BG ID %
VCN_BG_SCOPE	VCN BG SCOPE %
VCN_CALL_TYPE	VCN CALL TYPE %
VCN_EGRESS_IDENT	VCN EGRESS IDENTIFIER %
VCN_ORIG_PRIV_NUM	VCN ORIG PRIV NUM %
VCN_ORIG_SIG_DIG	VCN ORIG SIG DIGITS %
VCN_TERM_PRIV_NUM	VCN TERM PRIV NUM %
VCN_TERM_SIG_DIG	VCN TERM SIG DIGITS %
VCN_VOICE_DATA	VCN VOICE/DATA %
VPN_ORIG_BAG	VPN ORIG BAG %
VPN_ORIG_SITE_ID	VPN ORIG SITE ID %

Table 38 Amadump Listfields (BAF)

Field Name	What is displayed
VPN_TERM_BAG	VPN TERM BAG %
VPN_TERM_SITE_ID	VPN TERM SITE ID %
WALK_OR_DEPOSIT_AMT	WALK OR DEPOSIT AMT %
WATS_ADMINISTRATION	WATS ADMINISTRATION %
WATS_BAND_OR_MBI	WATS BAND OR MBI %
WATS_INDICATOR	WATS INDICATOR %
TOPS_SPECIAL_FIELD	

Table 39 Amadump Listfields (UCS DMS-250 FLEXCDR)

Field Name	What is displayed
ACCTCD	ACCOUNT CODE DIGITS %
ACCTV	SCREEN INFO FOR ACCTV %
ACG	CALL GAPPING %
ACTIDX	ACTIVE INDEX %
ADDRNUM	OVERFLOW TRANSLATE NUMBER %
ADIN	AUTHCODE DATABASE INDEX NUMBER %
ANISP	ANI DIGITS COLLECTED %
ANISUFF	NATURE OF EQUAL ACCESS CALL %
ANSCDR	ANSWER CDR INDICATOR %
ANSTYPE	ANSWER TYPE %
BILLNUM	BILLING NUMBER %
BILLTYPE	TRANSLATION BILLING TYPE %
CAINCT	CAINT CALL TYPE %
CALLDUR	CALL DURATION %
CALLEDNO	CALLED NUMBER %
CALLTYPE	TYPE OF ACCESS AND SERVICE %
CARRSEL	CARRIER SELECTION PARAMETER %
CDRALGOR	TEMPLATE SELECTION METHOD %
CIC	CARRIER ID CODE %

Table 39 Amadump Listfields (UCS DMS-250 FLEXCDR)

Field Name	What is displayed
CICCASU	CIC_CASU OPTION DATAFILLED %
CICORIGN	CIC ORIGIN %
CLDNOA	CALLED PARTY NOA %
CLGNOA	CALLING PARTY NOA %
CLGPTYNO	CALLING PARTY NUM %
CN1REQ	FIRST NETWORKBUILDER TRIGGER/EVENT %
CN1TREQ	NUM OF TIMES CN1REQ EVENT SENT %
CN2REQ	SECOND NETWORKBUILDER TRIGGER/EVEN %
CN2TREQ	NUM OF TIMES CN2REQ EVENT SENT %
CN3REQ	THIRD NETWORKBUILDER TRIGGER/EVENT %
CN3TREQ	NUM OF TIMES OF CN3REQ EVENT SENT %
CNPREDIG	CALLED PARTY TRANSLATED PREFIX IND %
CNTOTREQ	NUM OF TIMES TDP/EDP REQUESTS MESG %
COLLTIME	TIME WHEN ALL DIGITS ARE COLLECTED %
COMPCODE	CALL COMPLETE CODE %
COSINDEX	COSUS INDEX TABLE %
COSOVE	SERVICE SCREENING OVERRIDE %
CRID	PSN CALL REF. ID %
DCR	DYNAMCIC CALL ROUTING %
DIALEDNO	DIALED NUMBER %
DIALNOA	DIALED NOA %
DIGDATA	DATA CALL %
DISCAMPM	DISCONNECTED TIME AM OR PM %
DISCDATE	DISCONNECT DATE %
DISCTIME	DISCONNECT TIME %
DISCTYPE	CALL DISCONNECTED TYPE %
DNIS	DNIS DIGITS RETURNED FROM SCP %

Table 39 Amadump Listfields (UCS DMS-250 FLEXCDR)

Field Name	What is displayed
DNISNOA	DNIS NOA VALUE %
ECRM1	FIRST ECAN RESOURCE MODULE %
ECRM2	SEC. ECAN RESOURCE MODULE %
ECRN1	RESOURCE NUMBER IN FIRST RM %
ECRN2	RESOURCE NUMBER IN SEC. RM %
FILL	1-BIT FILLER %
FILL1	1-BIT FILLER %
FILL2	2-BIT FILLER %
FILL3	3-BIT FILLER %
FILL4	4-BIT FILLER %
FILL5	4-BIT FILLER %
FILL6	4-BIT FILLER %
FILL8	8-BIT FILLER %
FINSID	FINAL SWID FOR CALL EXIT CCS7 NETWORK %
FINTKGRP	FINAL TERM. TRKGRP NUM %
FINTKMEM	FINAL TERM. TRKGR MEM %
INCBILL	INCREMENTAL CDR %
INCINTL	INCREMENTAL CDR %
INFODIG	INFORMATION DIGITS FOR THE CALL %
LENGTH	RECORD LENGTH %
LNPCHECK	LOCAL NUMBER PORTABILITY INDICATOR %
MLTCOSID	MULTICOS INDEX %
NETOPNO	CCS7 NETWORK OUTPULSED DIGITS %
NETOPNOA	NETWORK OUTPULSED NOA %
NETSEC	NETWORK SECURITY LOG %
NUMADDRS	ADDRESS NUMBERS %
NUMWBCKT	NUM OF DS0'S FOR WIDEBAND CALL %
OPART	ORIG PARTITION NUMBER %
OPCHOICE	OPCHOICE TABLE INDEX %

Table 39 Amadump Listfields (UCS DMS-250 FLEXCDR)

Field Name	What is displayed
ORIGAMPM	ORIG. TIME AM OR PM %
ORIGDATE	ORIGINATE DATE %
ORIGECHO	NT6X50EC ECHO CANCELLER %
ORIGGRP	ORIG. TRKGRP NUM %
ORIGLRN	ORGI. LOCATION ROUTER %
ORIGMEM	ORIG TRKGRP MEMBER NUM %
ORIGOPRT	1ST ORIG PARTITION %
ORIGPVN	ORIG. VPN %
ORIGSTS	FIRST SERVING TRANS. %
ORIGTIME	ORIGINATING TIME %
OSRASSOC	OSR RECORD %
OTPULNOA	OUTPULSE NOA VALUE %
OUTNOA	OUTGOING NOA %
OUTPULNO	OUTPULSED CALLED NUMBER %
OVERFLOW	OVERFLOW INDICATOR %
PASSTHRU	CALL PASS THRU ACCTION %
PIC	POINT IN CALL %
PINDIGS	PERSONAL ID DIGITS %
PORTEDNO	LNP PORTED NUMBER %
PREDIG	PREFFIX DIGITS INDICATOR %
PRESIND	PRESENTION RESTRICITON IND %
PRJCODE	PROJECT CODE %
QUEUED	QUEUED INDICATOR %
RECCD	RECORD CODE %
RELCAUSE	RELEASE CAUSE %
REORGCTR	ROLL-OVER COUNTER OF REORG. CALL %
RESERVED1	RESERVED1 %
RESERVED2	SPARE BYTE %
RESERVED3	RESERVED5 %

Table 39 Amadump Listfields (UCS DMS-250 FLEXCDR)

Field Name	What is displayed
RESERVED4	RESERVED4 %
RESERVED5	RESERVED5 %
RLTCDR	RLT INDICATION %
RTEINDEX	RTEINDEX %
RTELIST	ROUTE LIST TABLE NUMBER %
RTENO	ROUTE NUMBER %
RTETAB	ROUTING TABLE %
SCPBILL	SCP AND DMS250 BILLING RECORDS %
SEQNUM	SEQUENCE NUMBER %
SLPID	SLPID %
STS	SERVING TRANSLATION SCHEME %
SUBRIDX1	SUBSCRIBER NUMBER1 %
SUBRIDX2	SUBSCRIBER NUMBER2 %
SUBRLOG1	SUBSCRIBER FRAUDULENT LOG1 %
SUBRLOG2	SUBSCRIBER FRAUDULENT LOG2 %
SUBRNUM1	SUBSCRIBER ID. NUMBER1 %
SUBRNUM2	SUBSCRIBER ID. NUMBER2 %
SUBRTYP1	SUBSCRIBER FLEXTYPE1 %
SUBRTYP2	SUBSCRIBER FLEXTYPE2 %
SUBRVAL1	SUBSCRIBER VALIDATION1 %
SUBRVAL2	SUBSCRIBER VALIDATION2 %
TDP	AIN TRIGGER DECTION %
TEMPLID	TEMPLATE ID %
TERMECHO	TERMINAL NT6X50EC ECHO CANCELLER %
TERMGRP	TERM. TRUNK GROUP NUM %
TERMLRN	TERM. LOCATION ROUTING NUMBER %
TERMMEM	TERM TRKGRP MEMBER NUM %
TERMPVN	TERM. PVN %
TIMECHNG	CLOCK CHANGE INDICATOR %

Table 39 Amadump Listfields (UCS DMS-250 FLEXCDR)

Field Name	What is displayed
TOOLGEN	TOOL GEN %
TPART	TERMINATING PARTITION NUM %
TRAP	LOG GENERATED FOR FRAUDULENT AUTHCODE %
TRIGGER	AIN TRIGGER %
TRTMTCD	TREATMENT APPLIED %
UNIVACC	UNIVERSAL ACCESS NUMBER %
USEEDIT	USER EDIT %
VARLNGTH	FIX OR VAR LENGTH IND %
WBCKTS	CHANNEL USEED IN WIDEBAND CALL %

Table 40 Amadump Listfields (DMS-300 CDR)

Field Name	What is displayed
RECCD	RECORD CODE %
ACCOUNTDEST	ACCOUNT DESTINATION CODE %
ANSWERDAY	ANSWER DAY %
ANSWERDAY9	ANSWER DAY %
ANSWERHOUR	ANSWER HOUR %
ANSWERHOUR9	ANSWER HOUR %
ANSWERMIN	ANSWER MINUTE %
ANSWERMIN9	ANSWER MINUTE %
ANSWERSEC	ANSWER SECOND %
ANSWERSEC9	ANSWER SECOND %
ARI	ACCOUNTING ROUTE INDEX %
BEARERSERVPRO	BEARER SERVICE PROVIDED %
BEARERSERVREQ	BEARER SERVICES REQUESTED %
CALLEDNUM	CALLED NUMBER %
CALLEDNUMGRP	CALLED NUMBER GROUP %
CALLINGNUM	CALLING NUMBER %
CALLINGNUM9	CALLING NUMBER %
CCLENGTH	COUNTRY CODE LENGTH %
CHRGINFODIGS	CHARGE INFORMATION DIGITS %
CLDNUM	CALLED NUMBER %
CLDNUMPLAN	CALLED NUMBERING PLAN %
CLDPARTYCAT	CALLED PARTY CATEGORY AND ISUP INTERWORKING INDICATOR %
CLDSADDRCNT	CALLED SUB-ADDR COUNT %
CLDSADDRDGT	CALLED SUB-ADDR DIGITS %
CLGNUMPLAN	CALLING NUMBERING PLAN %
CLGPARTYCAT	COMMON CALLING PARTY CATEGORY %
CLGSADDRCNT	CALLING SUB-ADDR COUNT %
CLGSADDRDGT	CALLING SUB-ADDR DIGITS %

Table 40 Amadump Listfields (DMS-300 CDR)

Field Name	What is displayed
CLLIGRPNAME	CLLI GROUP NAME %
COMPLCODE	CALL COMPLETION CODE %
COMPLCODE9	CALL COMPLETION CODE %
CONSADDRCNT	CONNECTED SUB-ADDR COUNT %
CONSADDRDGT	CONNECTED SUB-ADDR DIGITS %
DAY	DAY %
DISCDAY	DISCONNECT DAY %
DISCDAY9	DISCONNECT DAY %
DISCHOUR	DISCONNECT HOUR %
DISCHOUR9	DISCONNECT HOUR%
DISCMIN	DISCONNECT MINUTE %
DISCMIN9	DISCONNECT MINUTE %
DISCSEC	DISCONNECT SECOND %
DISCSEC9	DISCONNECT SECOND %
ENTRYCODE	CALL TYPE %
EVENTINFO	EVENT INFORMATION DIGIT %
FIRSTCLLI9	FIRST CHOICE CLLI %
FIRSTCLLI	FIRST CHOICE CLLI %
GROUPID	GROUP ID %
HOUR	HOUR %
IC_ADNUM	INCOMING ADNUM %
INFODIGS	INFORMATION DIGITS 1 & 2 %
INFODIGS	INFORMATION DIGITS 1 & 2 %
INTRKCLLI	INCOMING TRUNK GROUP CLLI %
INTRKINGROUP	INCOMING TRUNK MEMBER %
ISPREACCIND	ISUP PREFERENCE/ISUP ACCESS INDICATOR BITS %
LANGUAGEDIGIT	LANGUAGE DIGIT %
MINUTE	MINUTE %
NUMOFSEIZES	NUMBER OF SEIZURES %

Table 40 Amadump Listfields (DMS-300 CDR)

Field Name	What is displayed
OG_ADNUM	OUTGOING ADNUM %
ORIGCC	ORIGINATING COUNTRY CODE %
ORIGMEMBER	ORIGINATING MEMBER %
ORIGTRUNK	ORIGINATING TRUNK NAME %
OUTSEIZSEC	OUTGOING SEIZURE TIME %
OUTTRKCLLI	OUTGOING TRUNK GROUP CLLI %
OUTTRKINGROUP	OUTGOING TRUNK MEMBER %
PAMCOUNTER	PASS ALONG MESSAGE COUNTER %
SATELLITEIND	SATELLITE/NW INDICATOR %
SECOND	SECOND %
SEIZECOMPCODE	SEIZURE COMPLETION CODE %
SEIZETRKGRP	SEIZURE TRUNK GROUP %
SEIZUREDAY	SEIZURE DAY %
SEIZUREDAY9	SEIZURE DAY %
SEIZUREHOUR	SEIZURE HOUR %
SEIZUREHOUR9	SEIZURE HOUR %
SEIZUREMIN	SEIZURE MINUTE %
SEIZUREMIN9	SEIZURE MINUTE %
SEIZURESEC	SEIZURE SECONDS %
SEIZURESEC	SEIZURE SECONDS %
SEIZUREYEAR	SEIZURE YEAR %
SENTCALLEDNUM	DIALED OR INCOMING DIGITS %
SEQUENCENUM	SEQUENCE NUMBER %
SEQUENCENUM9	SEQUENCE NUMBER %
SPE1	SPACE %
SPE2	SPACE %
SPK1	SPACE %
SPK2	SPACE %
SUPPSERVPRO	SUPP. SERVICE - PROVIDED %
SUPPSERVREQ	SUPP. SERVICE - REQUESTED %

Table 40 Amadump Listfields (DMS-300 CDR)

Field Name	What is displayed
SVCFEATCODE	SERVICE FEATURE CODE %
SVCFEATCODE9	SERVICE FEATURE CODE %
TELESERVICE	TELESERVICE %
TERMMEMBER	TERMINATING MEMBER %
TERMTRUNK	TERMINATING TRUNK NAME %
TRAFFICDEST	TRAFFIC DESTINATION CODE %
TRAFFICTYPE	TRAFFIC TYPE %
TRANSFERMODE	TRANSFER MODE/PAM IND. %
TREATMENTCODE	TREATMENT CODE %
UTUSRVC1	USER TO USER - SERVICE 1 %
UTUSRVC2	USER TO USER - SERVICE 2 %
UTUSRVC3	USER TO USER - SERVICE 3 %

Table 41 Amadump Listfields (DMS-GSP)

Field Name	What is displayed
ACCT_EXT	ACCNT CODE EXT. %
BILL_NUM	BILLING NUMBER %
BILL_TYP	BILLING TYPE %
CALL_DUR	CALL DURATION 0 %
CCD	CARRIER CONNECT DATE %
CCT	CARRIER CONNECT TIME %
CLASS_SERV	CALL CLASS OF SRVC %
CLG_NUM	CALLING NUMBER %
CLI_INDEX	CALLING LINE ID INDEX %
COMPL_CODE	CALL COMPLETE CODE %
CPC	CALLING PARTY CAT. %
CUST_COST	COST CENTER ACNT CODE %
CUST_ID	CUSTOMER ID. %
DATA_CALL	DATA CALL INDICATOR %

Table 41 Amadump Listfields (DMS-GSP)

Field Name	What is displayed
DEST_NUM	DESTINATION NUMBER %
DIAL_NUM	DIALED NUMBER %
DISC_DATE	DISCONNECT DATE %
DISC_TIME	DISCONNECT TIME %
DISP_QUAL	DISPOSITION QUALIFIER %
INAP_CALL	INAP CALL %
NODE_ID	NODE ID %
ORIG_CLLI	ORIGINATING TRUNK GROUP CLLI %
ORIG_DATE	ORIGINATE DATE %
ORIG_MEM	ORIGINATING MEMBER NUMBER %
ORIG_TIME	ORIGINATE TIME %
OUTP_NUM	OUTPULSED NUMBER %
PART_NUM	PARTITION NUMBER %
RECCD	RECORD CODE %
SATE_IND	SAT. INDICATOR %
SEQ_NUM	CALL SEQ. NUMBER 0 %
TERM_CLLI	TERMINATING TRUNK GROUP CLLI %
TERM_MEM	TERMINATING MEMBER NUMBER %
TRMT_CODE	CALL TREATMENT CODE %
TTON	TERMINATING TYPE OF NUMBER %
TYPE_CALL	CALL TYPE %
T_EXT_NUM	TOTAL NUM. OF EXT. RECs %
VPN_CUST	VPN CUSTOMER %

AMAdump listfields for SMDR Records

FIELDNAME	What is displayed
ACCESS_DIR_	NUMBER ACC DN %
ACCIND	ACCIND %
ACCOUNT_CODE	ACCT/AUTH CODE %
ADD_DIGITS	ADDITIONAL DIGITS %
ADD_DIGITS_	LARGE ADD DIGS DIALED %
ALT_BILL_NUMBER	ALT BILL NUM %
ANI_MAPPING	ANI MAPPING %
ANI_NUM	ANI NUM %
ANI_SUFFIX	ANI SUFFIX %
BANDWIDTH	BANDWIDTH %
BEARERCAP	BEARERCAP %
BILLNUM	BILLNUM %
BILL_DIGITS	BILLDIGS %
BUSINESS_CUST_ID	BUS CUSTID %
CALL_BLOCK_COUNT	CALL BLK CNT %
CARRIER_ACCESS_	CODE CARR ACC %
CARRIER_TYPE	CARR TYP %
CLBKANS	CLBKANS: %
CLD_NO	CLD NO %
CLD_NO2	CLD NO %
CONS_NO	CONS NO %
CSNUM	CSNUM %
CUSTGRP	CUSTGRP CLLI %
DATA_CALL_ID	DATA CALL ID %
DAY	DAY %
DESCRIPTION	DESCRIP %
DIGITS_MISSING	DIGS MISSING %
DIGITS_OUTPULSED	DIGS AS OUTPULSED %
ELAPSED_TIME	ELAPSED TIME %
F_RECORD	REC CODE %
FORM_CODE	FORMAT CODE %
HOUR	HR %
INFO	INFO %
INFO_DIGITS	INFO DIGS %
LENGTH_	COUNT LENGTH %
LMNNUM	LMNNUM %
MESSAGE_TYPE	MESSAGE TYPE %
MINUTE	MIN %
MOBILE	MOBILE %
MSGAREA	MSGAREA %
MSN_N00_CALL_	TYPE N00 %
MSN_ORIG_TYPE	MSNORIGID %
NCOS	NCOS %
NOCRG	NOCRG %
NETWORK_CLID	NETWORK CLID %
NETID	NETID %
NEW_DAY	NEW DAY %
NTCCRG	NTCCRG %
NUM_AUTH	NUM_AUTHDIGS_IN_COMB %
OFFICE_ID	OFC ID %
OLD_DAY	OLD DAY %
ORIGID	ORIGID %
ORIGTIME	ORIGTIME: %
ORIGINATION_TRUNK	ORIGINATION TRUNK %
ORIGTYPE	ORIGTYPE %
ORIG_CALLING_NUMBER	ORIG CALL NUM %
ORIG_FC	ORIG FC %
PAYPHONE	PAYPHONE %
PERSONAL	PERSONAL %
PINORTCN	PINORTCN %
RECORD_CODE	REC CODE %
RECORD_CODE_	SM REC CODE %
RECORD_TYPE_	D6 REC_TYP %

REORIG	REORIG %
RTE_INFO	RTE INFO %
SECOND	SEC %
SIGNALING_TYPE	SIGNALING TYPE %
SIGNIF_DIGS_NEXT_FIELD	SIG DIGS NEXT FLD %
SMDRITC_CALLID	SMDRITC CALLID %
SPARE	SPARE %
SUBGRP	SUBGRP %
TERM_FC	TERM FC %
TERM_ID	TRM ID %
TIME	TIME: %
TREATMENT	TRTMT %
TRM_TYPE	TRM TYPE %
TRTMTCD	TRTMTCD %
TRUNK_MEMBER	0 4 0 0 MEMBER %

Appendix B: Management information base variables

Overview

The Management Information Base (mib) contains elements that control and monitor the operation of the SuperNode Billing Application (SBA). All mib elements are either simple or tabular. To access a mib element, supply the object name. To access a tabular element, supply the object name and a row parameter.

Mib command options

Mib commands and options provide mib element access. RMI access to the mib command is by means of **billmtc -> mib**. Refer to Chapter 6, "SBA Commands" for detailed information for MIB commands.

Mib element descriptions

The remainder of this appendix consists of tables that describe all user-accessible mib elements. The tables group mib elements by usage. Within the tables, element names are sorted alphabetically.

Table 42 stores counts of records and files sent to external components (for example, File Transfer). Each entry corresponds to the entry in the recordClientTable with the same row.

Table 42 Output audit table

Element Name	Value(s)	Default	Description
outFilesRemaining	1 to 2,147,483,647	0	The number of ClosedNotSent files remaining to be sent by the record client with the same row number in the recordClientTable.
outLastFileTime	1 to 2,147,483,647	12/31/69	The date and time the last file was sent by the record client with the same row number in the recordClientTable. If the default value of 12/31/69 appears, no files have been sent yet.
outNumErrorFiles	1 to 2,147,483,647	0	The number of error files sent by the record client with the same row number in the recordClientTable.
outNumErrorRecs	1 to 2,147,483,647	0	The number of error records sent in error files by the record client with the same row number in the recordClientTable.
outNumFiles	1 to 2,147,483,647	0	The number of non-error files sent by the record client with the same row number in the recordClientTable.
outNumRecs	1 to 2,147,483,647	0	The number of records sent in files by the record client with the same row number in the recordClientTable.

Table 43 contains auditing information: counts of incoming records and counts of changes to the number of records in storage. This table has 96 rows. Each row corresponds to a fifteen minute interval of the day: 00:00 - 00:14 is interval 0; 11:45-11:59 is interval 95.

Values inAuditRecsIn, inAuditCalcRecsDupl, inAuditChangeInRecsStored each have 96 entries. InAuditTimeIndex also has 96 rows (from GR1343) but *only* row 0 is used. It's value indicates the current index value that the system is using. To find out how many records have come into the system in the current interval, do the following: mib get -r0 inAuditTimeIndex to get the current row. If this was 46, then do mib get -r46 inAuditRecsIn.

Table 43 Input audit table

Element Name	Value	Default	Description
inAuditCalcRecsDupl	1 to 2,147,483,647	0	This is a table value. There are 96 values, one for each 15-minute interval in the day. The value represents the number of non-error records unintentionally duplicated in the time interval specified by the inAuditTimeIndex. A trap is generated when the counter increments.
inAuditChangeInRecsStored	1 to 2,147,483,647	0	This value represents the number of incoming records *written* to disk in the appropriate 15-minute interval. Note: Despite it's name, this attribute does not represent a total number of records stored in the system. Generally, this will have the same value as inAuditRecsIn except in the case of a failure to fully write the incoming set of records to disk. This situation will be flagged in normal way by incrementing the value in the corresponding inAuditCalcRecsDupl.
inAuditRecsIn	1 to 2,147,483,647	0	The total number of non-error records which arrive over any interface (network interface or removable media interface) in the time interval specified by the inAuditTimeIndex.

Table 43 Input audit table (continued)

Element Name	Value	Default	Description
inAuditTimeIndex	min = 0 max = 95	Not applicable	The day is divided into 96 15-minute intervals. Index `0' corresponding to midnight-12:15 am, and the index `95' corresponding to 11:45 pm-midnight. Only row 0 of this table is used. The value in row 0 indicates which 15-minute interval is being used currently by the system.

Table 44 contains information on the streams running in SBA, such as the stream and substream status. The indexing is not related to streamId.

Table 44 Stream table

Element name	Value(s)	Default	Description
streamName	alphanumeric string of up to four characters	NULL_STRING	The name of a stream, as specified by the CM.
typeOfStream	0 or 1	0 (not a filtered stream)	The typeOfStream parameter indicates if the stream is a filtered stream. 1 - filtered stream 0 - not a filtered stream SBA sets the typeOfStream parameter when you configure a filtered stream using the CONFSTRM command.
associatedStream	alphanumeric string of up to four characters	empty or blank	The associatedStream parameter indicates the CM billing stream that the filtered stream is associated with. SBA sets the associatedStream parameter when you configure a filtered stream using the CONFSTRM command. If the stream is not a filtered stream, the associatedStream parameter is empty or blank.
filterCriteria	string	empty or blank	The filterCriteria parameter stores the name of the file containing the filtering criteria expression. SBA sets the filterCriteria parameter when you configure a filtered stream using the CONFSTRM command. The CONFSTRM command's prompt for filterCriteria includes a list of existing filter criteria files. If the stream is not a filtered stream, the filterCriteria parameter is empty or blank.

Table 44 Stream table

Element name	Value(s)	Default	Description
streamId	1 to 2,147,483,647	0	The number of the stream, as specified by the CM. This number will be used as an index into other tables that are on a per stream basis.
streamFileTransferMode	0 => Inbound 1 => Outbound	1	The number indicates whether the files for this stream will be pushed (outbound file transfer initiated from SBA) or pulled (inbound file transfer initiated outside SBA). Inbound is 0, Outbound is 1.
streamRecordFormat	alphanumeric string SIZE(6)	NULL_STRING	Specifies the format of the CM Messages that will be sent on this stream. This determines which format-specific code will be executed to handle the messages. The value will either be an enumeration or a short string like BAF, CDR, or SMDR.

Table 45 contains record clients for streams, where each row is a record client for a stream. This table contains data about the logical volume and stream data that the record client manages. Each row in this table has an index into the streamTable for the associated stream that this recordClient belongs to.

Table 45 Record Client Table

Element name	Value	Default	Description
rcCloseFilesOnGetFiles	0 (false) or 1 (true)	1 (true)	This parameter indicates whether the current open files should be closed upon a “getFiles”.
rcCurrNumErrorFiles	1 to 2,147,483,647	0	Number of ClosedNotSent error files currently on this record client’s logical volume. Applies only for DNS record clients.
rcCurrNumErrorRecs	1 to 2,147,483,647	0	Number of error records, contained in ClosedNotSent error files, currently on this record client’s logical volume. Applies only for DNS record clients.
rcCurrNumFiles	1 to 2,147,483,647	0	Number of ClosedNotSent files currently on this record client’s logical volume. Applies only for DNS record clients. Note that the accuracy of this measurement is contingent upon the user’s adherence to normal operating procedures (the manual deletion of ClosedNotSent files while the SBA application is ManB may introduce errors).
rcCurrNumRecs	1 to 2,147,483,647	0	Number of billing records, contained in ClosedNotSent files, currently on this record client’s logical volume. Applies only for DNS record clients. Note that the accuracy of this measurement is contingent upon the user’s adherence to normal operating procedures (the manual deletion of ClosedNotSent files while the SBA application is ManB may introduce errors).

Table 45 Record Client Table (continued)

Element name	Value	Default	Description
rcDIRPFileNameRedateOnClose	0 => no 1 => yes	0	This indicates whether the file name for DIRP files is changed when the file is closed. If true (1), the time/date portion of the DIRP file name is changed to the file closure time. The default value is 0 (false) so the time stays set at the creation time.
rcDIRPSeqNumber	1 to 65,535	0	The current file sequence number for DIRP files for this record client.
rcDNSDestCompId	alphanumeric string SIZE(4)	NULL_STRING	The component id for the destination for naming dns files. This subfield must be within 0000 and 4095 inclusive.
rcDNSDestCompType	alphanumeric string SIZE(2)	01	The component identification type for the destination for naming DNS files. This field must be within 01 and 15 inclusive.
rcDNSSeqNumber	1 to 65,535	0	The current file sequence number for DNS files for this record client.
rcErrorSeqNumber	1 to 65,535	0	The current file sequence number for error files for this record client.
rcFileMaxBytesOut	min = 1,000,000 max = 20,000,000	20,000,000	The maximum file size (expressed in bytes) for any file being sent by this record client. A trap is generated when this value is changed.
rcFileMaxRecsOut	min = 10,000 max = 500,000	500,000	The maximum file size (expressed in records) for any file being sent by this record client. A trap is generated when this value is changed.
rcFileType	alphanumeric string SIZE(6)	NULL_STRING	The type of files that this record client manages (for example, DIRP or DNS).
rcLogicalVolumeDir	alphanumeric string SIZE(128)	NULL_STRING	Stores the name of the directory where the billing data files for this record client will be stored.

Table 45 Record Client Table (continued)

Element name	Value	Default	Description
rcLVCriticalAlarmThres	min = 71 max = 90	90	The threshold percentage of mass storage on this record client's logical volume occupied by ClosedNotSent files that will trigger a critical alarm (for example, 90 = 90%).
rcLVDesUtil	min = 10 max = 90	60	This object is used to control the Sent file deletion algorithm. It represents the desired disk utilization (percentage) for the logical volume under normal conditions. In other words, the billing application will attempt to keep the disk utilization for the volume containing this record client's files within rcLVDesUtilVariance of this value. Value may range between 10 and 90.
rcLVDesUtilVariance	min = 5 max = 30	5	The desired variance from rcLVDesUtil within which to keep the logical volume disk utilization percentage under normal conditions. This setting may range between 5 and 30. So assuming both default values for rcLVDesUtil and rcDesUtilVariance, this record client will attempt to keep disk utilization between 55 and 65 percent.
rcLVPercentCNSOccu	min = 0 max = 100	0	Percentage of mass storage on this record client's logical volume that is occupied by ClosedNotSent files (for example, 45 = 45%).
rcLVPercentTotalOccu	min = 0 max = 100	0	Percentage of the logical volume mass storage occupied (for example, 45 = 45%).

Table 45 Record Client Table (continued)

Element name	Value	Default	Description
rcMaxFileOpenTime	min = 5 max = 10,080	120	Maximum time (in minutes) that the current file can remain open. This setting may range between 5 and 10,080. The default value of 120 corresponds to 2 hours. Changes to this setting are not applied until open files are closed. The next file opened will be affected by the change to this value.
rcMaxFileOpenTimeValid	0 => no 1 => yes	0	This indicates whether timers are used to close the files. The default value of 0 indicates that timers are not to be used. A value of 1 indicates that timers are used to close the files.
rcName	alphanumeric string SIZE(10)	NULL_STRING	The name of this record client.
rcStreamName	alphanumeric string SIZE(4)	NULL_STRING	The name of the stream that this record client supports.

Table 46 contains MIB information for elements in the RTB table

Table 46 RTB table

Element Name	Value(s)	Default	Description
RTBDestination	alphanumeric string SIZE(15)	downstream	This parameter specifies the name of the destination to which the billing files will be sent to. The value of this parameter combined with the value of stream name and file format acts as key to the RTB tuple.
RTBFileFormat	alphanumeric string SIZE(6)	DIRP	This is required parameter which is part of the new RTB tuple. This parameter identifies the file format type of a stream. The value of this parameter combines with the value of stream name and destination acts as key to the RTB tuple. DIRP is the only file format supported by RTB at this time.
RTBMaxConsecutiveFailures	1 to 10	3	This number defines the maximum retry attempt before RTB raises a critical alarm.
RTBMaxTransferLag	5 to 60	5	This parameter specifies the maximum time, in seconds, that the Real Time Billing transfer is allowed to lag behind the SDM file before gracefully failing transfer of that file.
RTBStreamName	alphanumeric string SIZE(4)	NULL_STRING	This parameter specifies the name of the stream that originates the billing data. This is a string that matches the stream name in table SDMBIL and CRSFMT on the DMS CM.

Table 47 contains MIB information for elements in the schedule table.

Table 47 Schedule table

Element Name	Value(s)	Default	Description
schActiveStatus	2 => invalid 1 => active 0 => inactive	2	This object indicates if a table entry is active, inactive, or invalid. The value of this object is set to 0 when the entry is inactive. The value is 1 when the row is active. The value is 2 when the row is invalid (has not been populated).
schDestFieldSeparatorChar	alphanumeric string SIZE(2)	" . "	Contains the character to use as the field separator when naming billing files. Used by FileTransfer to rename a file for the downstream.
schDestFileNameExtension	alphanumeric string SIZE(4)	NULL_STRING	Contains the three character string to be used as a file name extension when naming billing files. Used by FileTransfer to rename a file for the downstream. File is renamed to use this extension after file transmission is complete. The default value is the null string.
schDestination	alphanumeric string SIZE(15)	downstream	The downstream destination to which the billing files will be sent.
schDestLoginId	alphanumeric string SIZE(20)	NULL_STRING	The user's login ID. This string is used for remote identification using the chosen file transfer protocol.
schFileFormat	alphanumeric string SIZE(6)	NULL_STRING	The format of the files that will be sent for this entry. Values can be DNS or DIRP.

Table 47 Schedule table (continued)

schFTControlTimeout	0 to 300	30	The maximum amount of time (in seconds) allowed for a period when no messages are exchanged between two components over a control connection during an FileTransfer session. If a silent period exceeds this time period, other than during a file transfer, the corresponding FileTransfer session is forcefully ended.
schFTInterval	min = 0 max = 86400	7200	The interval (in seconds) used for scheduling periodic file transfers to the remote host.
schFTMaxConsecRetries	1 to 10	3	The maximum number of consecutive times the initiator of a file Transfer session (i.e., the FTP User) should attempt to complete a failed session before ceasing to do so. If the maximum number is reached, the problem is assumed to be permanent and must be fixed before another session is attempted.
schFTProtocol	alphanumeric string SIZE(5)	NULL_STRING	The type of File Transfer protocol that will be used to send the files for this entry. Values can be FTP, FTAM, x25, RFTPW . . .
schFTRetryWaitTime	0 to 60	1	The amount of time (in minutes) the initiator of an FT session should wait after a failed session before requesting a session again.
schPrimaryDestAddr	IpAddress	0.0.0.0	The primary IP address for the destination component. The valid addresses are 0.0.0.0 to 255.255.255.255.
schPrimaryDestPort	21, 1025 to 65535	21	The primary destination requires the Port for the IP address.

Table 47 Schedule table (continued)

schRemoteStorageDirectory	alphanumeric string SIZE(255)	NULL_STRING	The directory path on the remote host to use when storing files using a File Transfer. The FTP State Machine does not issue the change working directory command if this mib is set to the value of a single period “.”
schSecondaryDestAddr	IpAddress	0.0.0.0	The secondary IP address for the destination component. The valid addresses are 0.0.0.0 to 255.255.255.255.
schSecondaryDestPort	21, 1025 to 65535	21	The secondary destination requires the Port for the IP address.
schStartTime	alphanumeric string SIZE(5)	NULL_STRING	Time that a scheduled file transfer to the downstream processor should begin. This setting varies between 00:00 and 23:59.
schStopTime	alphanumeric string SIZE(5)	NULL_STRING	Scheduled file transfer to the downstream processor should not begin after this time. This setting varies between 00:00 and 23:59.
schStreamName	alphanumeric string SIZE(4)	NULL_STRING	The name of the stream that originates the data to be sent in this file transfer.

Table 48 contains the supported (valid) file transfer protocols for the installed version of SBA.

Table 48 Valid File Transfer Protocol (FTP) Table

Element Name	Value	Default	Description
validFTProtocol	alphanumeric string SIZE(5)	NULL_STRING	The type of File Transfer protocol that can be used to send the files. Values could be FTP, FTAM, x25, RFTPW . . .

Table 49 contains information to override the standard AMADNS file type codes for standard and error files. If a record format's file type codes are not specified, the defaults of 1 for standard files and 2 for error files will be used.

Table 49 AMADNS Header Format Table

Element Name	Value	Default	Description
amadnsRecordFormat	alphanumeric string SIZE(6)	NULL_STRING	The record format for the which the specified Standard and Error file type codes will apply.
errorFileTypeCode	Numeric String SIZE(2)	NULL_STRING	The file type code that will be used in the header of error dns files for streams that have the corresponding amadnsRecordFormat. Values must be between 16 and 31.
standardFileTypeCode	Numeric string SIZE(2)	NULL_STRING	The file type code that will be used in the header of normal dns files for streams that have the corresponding amadnsRecordFormat. Values must be between 16 and 31.

Table 50 contains FLEXCDR MIB parameters.

Table 50 FLEXCDR MIB parameters

Element Name	Value	Default	Description
CPRSize	0, 10 - 128 (words)	0 - indicating that CPR should not be included in billing files.	Size of the CDR parameter record (CPR). If the value is greater than 39 (words), then CPR records are padded with null characters. Note that if CPRSize is 0 then TPRSize must also be set to 0.
TPRSize	0, 68 - 128 (words)	0 - indicating that TPR should not be included in billing files.	Size of the Template record (TPR). If the value is greater than 33 (words), then TPR records are padded with null characters. Note that if TPRSize is 0 then CPRSize must also be set to 0.
CPRTPRInAllFile	True or False	False	Indicates whether CPR or TPR records are to be included in every file or only when the FLEXCDR CI UPGRADE/RESTORE commands are issued on the CM. If this value is False, the CPR and TPRs are included only when the CDR SBA billing stream is started or restarted or when the FLEXCDR CI UPGRADE/RESTORE commands are issued on the CM.
FHRSize	0 - 128 (words)	11 (words).	Size of the File Header Record (FHR). If the value is greater than 11, the FHR records are padded with null characters.

Table 51 contains CDR2BAF MIB parameters.

Table 51 CDR2BAF MIB parameters

Element Name	Value	Default	Description
AbortedBAFRecords	0 to 3000000	0	The AbortedBAFRecords parameter indicates records lost between the CM and the SDM.
AMALost	0 to 72000000	0	The AMALost parameter indicates the number of records lost while being written to storage. SBA sets the value of this parameter. The value is always zero since the SDM does not know when records are lost.
AMAToDisk	0 to 72000000	0	The AMAToDisk parameter indicates the number of records written to the disk. This includes the count of all BAF records and unconverted CDR's if the record could not be converted. SBA sets the value of this parameter.
AuditResetTime	0 to 86399 (seconds)	0	The AuditResetTime parameter is used to store the value for the time to reset the audit counts for structure 9042. The time is stored in the number of seconds from 12:00 A.M. (for example; 0 is 12:00:00 A.M.).
BAFRecords	0 to 3000000	0	The BAFRecords parameter indicates the number of BAF records with no errors as well as flagged BAF records. SBA increments this value when a BAF record is created.

Table 51 CDR2BAF MIB parameters (continued)

Element Name	Value	Default	Description
BAFSuppression	0 or 1 (0 = NO; 1 = YES)	1 (yes)	The BAFSuppression parameter is used to determine four-field suppression. When this field is set to 1 (Yes), logic will suppress the Sensor Type, Sensor Identification, Recording Office Type, and Recording Office Identification BAF tables and update the related fields within the AMADNS File Header Record. These fields include File Header Length, Field Suppression Type, Record Source Type, and Record Source Identification Number. ***Note:*** If you change the BAFSuppression Mib value after the stream is turned on, you must BSY, then RTS the SBA application to activate the change. ***Note:*** If you change the BAFSuppression Mib value after the stream is turned on, you will not be able to use AMADUMP to view files that were created before the change. AMADUMP will only view files that were created while the BAFSuppression Mib was set to the same value as the value at the time the command is issued.
CallType9000	0 to 999	42	The CallType9000 parameter is used to store the default value for the AMA Recording Office Type table for structure 9000. The CallType9000 parameter provides audit information which is required for AMA Table 1 as defined in GR-1100-CORE.

Table 51 CDR2BAF MIB parameters (continued)

Element Name	Value	Default	Description
CallType9042	0 to 999	90	The CallType9042 parameter is used to store the default value for the AMA Recording Office Type table for structure 9042. The CallType9042 parameter provides audit information which is required for AMA Table 4 as defined in GR-1100-CORE.
CallType9102	0 to 999	90	The CallType9102 parameter is used to store the default value for the AMA Recording Office Type table for structure 9102. The CallType9102 parameter provides audit information which is required for AMA Table 4 as defined in GR-1100-CORE.
CDR2BAFactive	0 or 1 (0 = NO; 1 = YES)	0	The CDR2BAFactive parameter is used to store the value which is used to create a CDR2BAF stream so CDR's are converted to BAF records. ***Note:*** If you change the CDR2BAFActive Mib value after the stream is turned on, you must BSY, then RTS the SBA application to activate the change.

Table 51 CDR2BAF MIB parameters (continued)

Element Name	Value	Default	Description
CurrentTmpltID	0 to 63	0	The CurrentTmpltID parameter is used to store the ID of the CDR template being used for CDR2BAF conversions. This parameter should be set to match the value of the template ID of the predefined template on the DMS CM. You can determine the value (template ID) of the predefined template on the DMS CM by using the following CM side command: **CTMPLT “template all”** ***Note:*** If you change the CurrentTmpltID Mib value after the stream is turned on, you must BSY, then RTS the SBA application to activate the change.
CustomerRAO	0 to 999	0	The CustomerRAO parameter is used to store the default value for the AMA Customer RAO Number table. The CustomerRAO parameter provides billing information which is required for AMA Table 46 as defined in GR-1100-CORE.

Table 51 CDR2BAF MIB parameters (continued)

Element Name	Value	Default	Description
EnableAudit	0 or 1 (0 = NO; 1 = YES)	0	The EnableAudit parameter is used to indicate the enabling/disabling of the generation of the Hourly AMA Audit Record (Structure 9102) and the Primary Tracer Record (Structure 9042). These audit records are generated on the hour, every hour. ***Note:*** If you change the EnableAudit Mib value after the stream is turned on, you must BSY, then RTS the SBA application to activate the change.
ExpanderPos	0 to 99	0	The ExpanderPos parameter is used to store the default value for the International Expander Position field. The OperatorAction parameter provides billing information which is required for AMA Table 16 as defined in GR-1100-CORE.
FlaggedBAFRecords	0 to 3000000	0	The FlaggedBAFRecords parameter indicates the number of BAF records that may have invalid data. SBA increments this value when a BAF record is created that may have invalid data (which is indicated in the record by setting the sign field to D).
Location	Up to 15 digits in the range 0 to 9 or 15 “F” characters.	FFFFFFFFFFFFFFF	The Location parameter is used to store the default value for the AMA Location table. The Location parameter provides billing information which is required for AMA Table 733 as defined in GR-1100-CORE.

Table 51 CDR2BAF MIB parameters (continued)

Element Name	Value	Default	Description
OperatorAction	0 to 3	0	The OperatorAction parameter is used to store the default value for the AMA Operator Action table. The OperatorAction parameter provides billing information which is required for AMA Table 11 as defined in GR-1100-CORE.
OperatorInvolve	0 to 9	0	The OperatorInvolve parameter is used to store the default value for the AMA Operator Involvement Indicator field. The OperatorInvolve parameter provides billing information which is required for AMA Table 57 as defined in GR-1100-CORE.
RecordingOfficeId	0 to 2999999	0	The RecordingOfficeId parameter is used to store the default value for the AMA Recording Office Identification table. The RecordingOfficeId parameter provides billing information which is required for AMA Table 5 as defined in GR-1100-CORE. This value is only used when BAFSuppression is off.
RecordingOfficeType	0 to 999	36	The RecordingOfficeType parameter is used to store the default value for the AMA Recording Office Type table. The RecordingOfficeId parameter provides billing information which is required for AMA Table 4 as defined in GR-1100-CORE. This value is only used when BAFSuppression is off.

Table 51 CDR2BAF MIB parameters (continued)

Element Name	Value	Default	Description
RecordType9042	0 to 999	32	The RecordType9042 parameter is used to store the default value for the AMA Type of Audit Record table for structure 9042. The RecordType9042 parameter provides audit information which is required for AMA Table 40 as defined in GR-1100-CORE.
RecordType9102	0 to 999	52	The RecordType9102 parameter is used to store the default value for the AMA Type of Audit Record table for structure 9102. The RecordType9102 parameter provides audit information which is required for AMA Table 40 as defined in GR-1100-CORE.
RoutingInd	0 to 5	0	The RoutingInd parameter is used to store the default value for the IC/INC Routing Indicator table. The RoutingInd parameter provides billing information which is required for AMA Table 59 as defined in GR-1100-CORE.
SensorId	0 to 999999	1	The SensorId parameter is not used at this time.
SensorType	0 to 999	36	The SensorType parameter is not used at this time.
SeqNumber9042	1 to 5 character string	FFFFF	The SeqNumber9042 parameter is used to store the default value for the AMA Sequence Number table for structure 9042. The SeqNumber9042 parameter provides audit information which is required for AMA Table 140 as defined in GR-1100-CORE.

Table 51 CDR2BAF MIB parameters (continued)

Element Name	Value	Default	Description
ServiceObserved	0 to 3	0	The ServiceObserved parameter is used to store the default value for the AMA Service Observed / Traffic Sampled table. The ServiceObserved parameter provides billing information which is required for AMA Table 10 as defined in GR-1100-CORE.
ServiceProvider	Up to 9 digits in the range 0 to 9 or 9 “F” characters	FFFFFFFFF	The ServiceProvider parameter is used to store the default value of the AIN for the AMA Service Provider Identity table. The ServiceProvider parameter provides billing information which is required for AMA Table 732 as defined in GR-1100-CORE.
ShortCallInd	0 or 1	0	The ShortCallInd parameter is used to store the default value for the AMA Short Call Indicator field. The ShortCallInd parameter provides billing information which is required for AMA Table 7 as defined in GR-1100-CORE.
SignalingInd	1 to 6 or 9	4	The SignalingInd parameter is used to store the default value for the Trunk Group Signalling Type Indicator field. The SignalingInd parameter provides billing information which is required for AMA Table 83 as defined in GR-1100-CORE.
StudyInd	0 to 9999999	0	The StudyInd parameter is used to store the default value for the AMA Study Indicator table. The StudyInd parameter provides billing information which is required for AMA Table 8 as defined in GR-1100-CORE.

Table 51 CDR2BAF MIB parameters (continued)

Element Name	Value	Default	Description
TimeChangeDays	0 to 3650 (days)	0	The TimeChangeDays parameter indicates the number of days added or subtracted for time change. SBA updates this parameter when a clock change record is received from the CM.
TimeChangeNegative	0 to 1 (0 =positive; 1 = negative)	0 (positive)	The TimeChangeNegative parameter indicates if time change was negative or positive. SBA updates this parameter when a clock change record is received form the CM. The default value is 0 for positive.
TimeChangeSeconds	0 to 86399 (seconds)	0	The TimeChangeSeconds parameter indicates the number of seconds added or subtracted for time change. SBA updates this parameter when a clock change record is received from the CM.

Table 52 contains DMS-GSP CDR MIB parameters.

Table 52 DMS-GSP CDR MIB parameters

Element Name	Value	Default	Description
typeOfCDR	GSP	UCS	The DMS-GSP and UCS DMS-250 products both use CDR250 as their record-formats. When the DMS-GSP switch is connected to the SDM, the typeOfCDR parameter must be set to “GSP”.

Table 53 contains miscellaneous non-table elements.

Table 53 Miscellaneous non-table elements

Element Name	Value	Default	Description
iftMonitorInterval	1 to 60 (minutes)	5	The parameter indicates how often links in each stream's FTP directory are refreshed. Time is stored in minutes.
maxConcurrentFileTransfers	0 to 2147483647	20	The parameter indicates the maximum number of concurrent file transfers allowed.
productName	1 to 6 character alphanumeric string	DMS500	Name of SBA product installed.
sendBillingLogsToCM	0 => no 1 => yes	1	The number indicates whether to send logs to the CM or the SDM. To have all logs go to the CM, set to 1. If set to 0, logs will go to the SDM log delivery process. Regardless of the setting of this parm, logs that are associated with the raising and lowering of alarms will go to the CM. It is strongly recommended that you set this value to 1 (to send logs to the CM).
sourceCompId	1 to 4 character alphanumeric string	0001	The component id for the source for naming dns files. This subfield must be within 0000 and 4095 inclusive.
sourceCompType	1 to 2 character alphanumeric string	01	The component identification type for the source for naming dns files. This field must be within 01 and 15 inclusive.
sourcePrimaryAddr	IpAddress	0.0.0.0	The primary IP address for the sdm host. The valid addresses are 0.0.0.0 to 255.255.255.255.
sourceSecondaryAddr	IpAddress	0.0.0.0	The secondary IP address for the sdm host. The valid addresses are 0.0.0.0 to 255.255.255.255.

Table 53 Miscellaneous non-table elements (continued)

Element Name	Value	Default	Description
recordSourceInfoType	0 or 1	1	This field determines which mib elements to choose for Record Source Type and Record Source Identification. If it is 0 then sensorType and sensorId will be used. If it is 1 then sourceCompType and sourceCompId will be used.
sensorType	000 to 999	36	A 3 digit sensor-type code is used to identify the type of sensor that generates or formats the BAF record that contains the code. 000 - 799 are administered by Bellcore and 800 - 999 are reserved for Local Exchange Carrier use. Only used when recordSourceInfoType is set to 0.
sensorId	000000 to 999999	1	A 6 digit sensor identification code that is specified by a Local Exchange Carrier (except for 999999 which is used to designate a vendor's working code identifies the sensor that generated or formatted the BAF model that is generating AMA tested tapes). This record that contains the code. Only used when recordSourceInfoType is set to 0.

Appendix C: Details of write tape operations

This appendix provides details of WriteTape operations. This information describes the internal operations of WriteTape and the output formats produced by WriteTape.

CPIO utility

The CPIO utility is a common tape utility in UNIX and PC environments. The WriteTape command uses the CPIO utility to back up Standard AMA Files. Each file copied requires a separate invocation of the CPIO utility. Following is the exact UNIX CPIO command used by WriteTape:

ls <filename> | /usr/bin/cpio -oBcu > /dev/rmt1.1

Options set by the '-oBcu' flags are:

o = Copy out

B = 512 block size

c = Write header information in ASCII character form

u = Copy unconditionally

The user should use CPIO to restore files backed up by WriteTape. Following is an example using AIX CPIO to restore the files backed up by WriteTape:

1 Rewind the tape using:

/usr/bin/mt -f/dev/rmt1.1 rewind

2 Copy one file at a time from the current directory using:

/usr/bin/cpio -iBc > /dev/rmt1.1

OR

If you need to change the name of the file at the downstream processor, copy one file at a time interactively, with name change, using:

/usr/bin/cpio -iBcr < /dev/rmt1.1

Note: The option flags in the version and type of CPIO at your location may be different. Refer to the documentation for the specific CPIO utility used at your site.

Tape format

WriteTape uses the CPIO utility to back up Standard AMA files. The system uses the -c flag to save the files on the DAT tape with the following cpio header:

Table 54 Tape format explanation fields

Header field sequence	Format *	Name	Detail
1	%6ho	Hdr.h_magic	Contains the constant octal 070707 (or 0x71c7).
2	%6ho	Hdr.h_dev	Device that contains a directory entry for this file.
3	%6ho	Hdr.h_ino	I-node number that identifies the input file to the file system.
4	%6ho	Hdr.h_mode	Mode of the input file, as defined in the mode.h file.
5	%6ho	Hdr.h_uid	User ID of the owner of the input file.
6	%6ho	Hdr.h_gid	Group ID of the owner of the input file.
7	%6ho	Hdr.h_nlink	Number of links that are connected to the input file.
8	%6ho	Hdr.h_rdev	ID of the remote device from which the input file is taken.
9	%6ho	Longtime	Longtime is equivalent to Hdr.h_mtime. It represents the time when data was last modified.
10	%11lo	Hdr.h_namesize	Length of the path name, including the terminating null byte.
11	%6ho	Longfile	Longfile is equivalent to Hdr.h_filesize. It is the length of the file in bytes. This is 0 in the trailer.
12	%11lo	Hdr.h_name	Null terminated path name.
Note: ‘ho’ means unsigned short octal integer; ‘lo’ means unsigned long octal integer; ‘%6ho’ means the field consists of six unsigned short octal digits.			

Example header with file information

070707000001000001100660003100003100000010001110646614216400003100000003634/data/sba/base//primary/020001.030002.00220.01.2

Where the first 76 characters are the cpio header, then the '/data/sba/base//primary/' is the path of the Standard AMA File as it was stored on the SDM, and the '020001.030002.00220.01.2' is the actual file name backed up.

> ***Note:*** The path for a secondary file that was backed up would be '/data/sba/base/locks/'.

After each file, which represents a cpio archive, the following trailer is present:

```
070707000001000001100666000310000310000001000111064
661421640000130000000000TRAILER!!!
```

Where the first 76 characters are the cpio header, then the 'trailer!!!' denotes the end of the archive.

Appendix D: SBA inbound FT feature

Understanding the inbound file transfer (IFT) Feature

The SuperNode Billing Application (SBA) Inbound File Transfer (IFT) feature allows customers to retrieve billing files from the SuperNode Billing Application.

Background

The SBA file transfer component allows customers to schedule when and to what IP address they want their billing files transmitted. This scheduling is normally configured during setup, although the customer can, at any time, change the scheduling and IP addresses through the scheduling commands. Moreover, all the file transmissions of the SBA that are initiated from the SDM are referred to as outbound FT mode.

The Inbound FT Feature introduces an additional file transfer mode wherein the customer's FTP client can selectively retrieve billing files. Because the FTP requests are inbound from the customer client to the SDM, this is known as inbound FT mode.

> ***Note:*** A stream can have a file transfer mode of either Inbound or Outbound, but not both.

Inbound File Transfer makes it possible for a down stream collector to retrieve billing files and maintain the integrity of the billing application. By renaming the billing files to indicate successful retrieval, SBA is triggered to change the type of file from *closedNotSent* to *closedSent*.

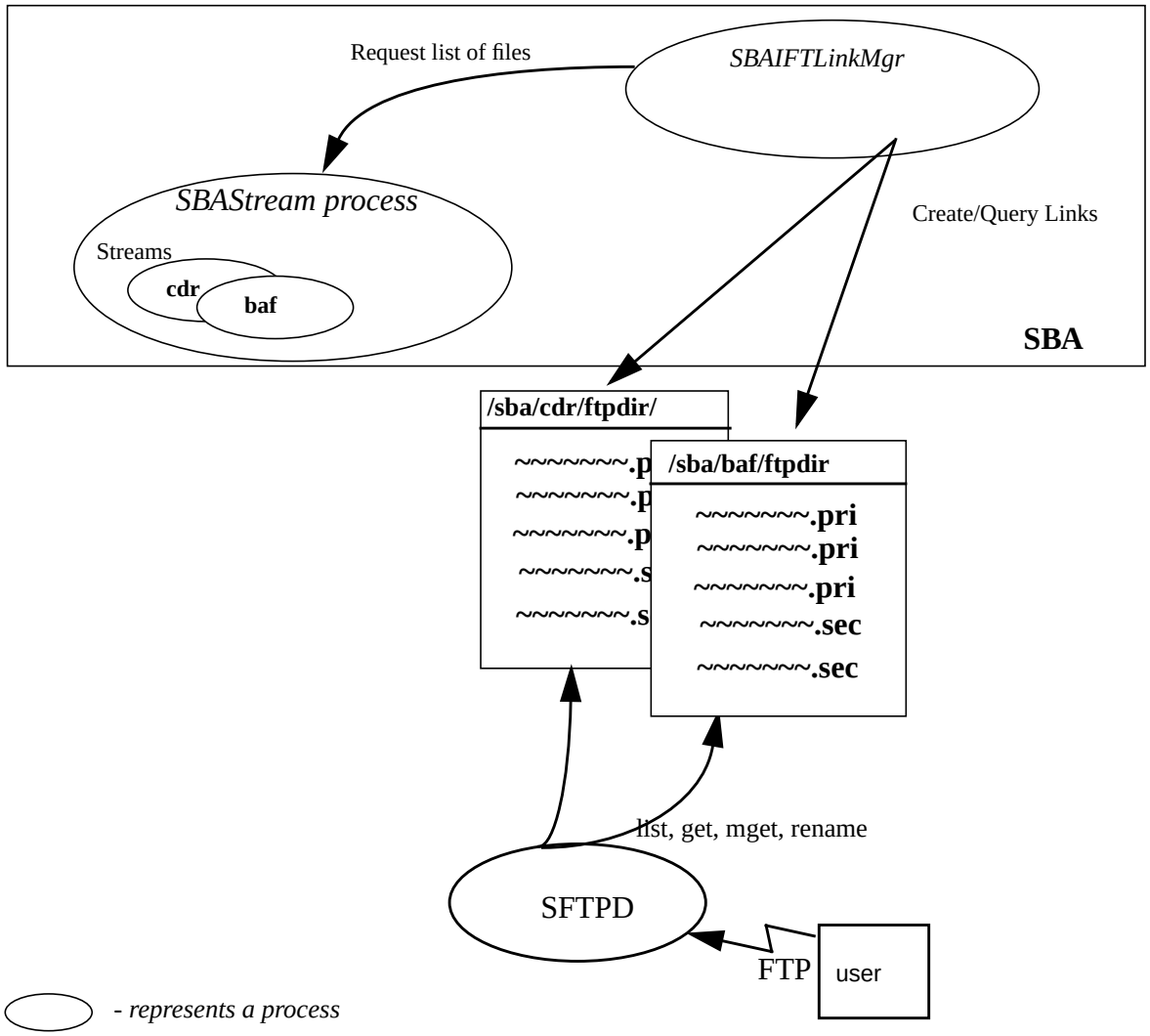
Streams can be configured on an individual basis for either Inbound File Transfer or scheduled outbound file transfer. While a stream is in inbound mode, it is still possible to back up data using TAPE level commands. Inbound File Transfer can only be enabled through the CONFSTRM command, which is accessible throught the BILLMTC menu.

File status

Outbound FTP automatically FTPs all closed billing (*closedNotSent*) files during the customer-scheduled periodic file transfers. This outbound FTP process changes SBA-resident files from *closedNot Sent* to *closedSent* status when it receives confirmation that the files were successfully transferred.

However, because the inbound FTPs are under the control of the customer's FTP client, the FTP client is responsible for renaming the files that it successfully receives. The following figure shows an overview of the Inbound FT process. The Inbound FT Feature adds a new directory, ftpdir, to a stream's logical volume which contains links to all of a stream's closed files that are candidates for inbound file transfer. When a user FTPs into the SDM as a maint user and changes to the stream specific FTP directory, the user will be able to list, get and rename the files. All files will have either a ".pri" or ".sec" extension to indicate primary or secondary for streams of DNS file format. Files with the extension of ".unp" are unprocessed files, and ".pro" indicates processed files for streams of DIRP file format. After a file is successfully retrieved it must be renamed from ".pri" to ".sec" or from "unp" to "pro." When a user renames a billing file in ftpdir, the SBAIFTLinkMgr process recognizes the change and requests SBA streams to change that file from *closedNotSent* to *closedSent*.

Figure 45 Inbound FTP process overview



Note 1: The directories described above are not required by the billing application. However, the naming convention is recommended.

Note 2: cdr and baf are examples of stream names.

Using the inbound FT feature

At the SDM

In order to set up the SDM for Inbound File Transfer, the streamFileTransferMode for a particular stream must be set to INBOUND. This can be set by using the CONFSTRM command as described in Chapter 6 SBA Commands. Also, the SFT application must be installed, configured in DCE mode, if desired, and enabled as described in the *SuperNode Data Manager Fault Tolerant User Guide.*

At the downstream FTP client

The following actions must be completed in order to successfully retrieve the files and to assure the SBA application will recognize the retrieval.

1 Ftp into the SDM and login as maint user with maint's password by entering the following:

>ftp <SDM's ip address>

2 Change directory to the stream for which files are to be retrieved by entering:

>cd ftpdir/<stream name>

3 Set the ftp session to retrieve the files in binary format

>bi

4 List the files by entering:

>ls

Note: Files with the extension of ".pri" are primary files, or files which have not yet been retrieved. Files with the extension of ".sec" are secondary files, or files that have been successfully retrieved at least once. Files with the extension of ".unp" are unprocessed files, and ".pro" indicates processed files for streams of DIRP file format.

5 Retrieve the desired file with the get command, as follows:

>get <filename.extension>

Note: The mget command can retrieve multiple files. For example: "mget *.pri" will retrieve all files ending in ".pri". Ftp will prompt the user for each file unless "prompt off" is entered before the mget command. It is risky to enter the mget command because if the ftp session should be interrupted while retrieving files, the rename command will not get executed (which should follow the mget), therefore, it could result in duplicate files on the target machine.

ATTENTION

Step 6 is imperative to the reliability of the SBA application. Without having the file marked as retrieved, it can not be considered for removal when the disk reaches capacity and, in that case, can result in lost billing data.

ATTENTION

A root user can FTP into the SDM and retrieve the billing files from the closed NotSent and closedSent directories. Performing this will jeopardize the integrity of the billing system, since the files will ***not*** *get marked closed sent and storage problems will occur.*

6 For DNS, if the file was primary, rename the file to have the ".sec" extension to indicate successful retrieval. This will mark the file secondary in the SBA application. For DIRP, if the file was unprocessed, rename the file to have the ".pro" extension to indicate successful retrieval.

>rename <filename.pri> <filename.sec>

or for DIRP

>rename <filename.unp> <filename.pro>

7 After all desired files are retrieved and renamed, exit with the following:

>bye

Alarms and maintenance

IFT alarm clearing procedure

Indication

At the MTC level of the MAP display, IFT appears under the APPL header of the alarm banner and indicates an alarm for the inbound FT connection.

Meaning

This alarm will be raised if the link in the ftpdir directory of a stream can not be managed, or if access to a ftpdir directory is not capable. This alarm can be minor, major, or critical.

Impact

There are four ways the root user can clear the alarm conditions. Determine which alarm is present by observing the log text and mapping it to the associated alarm. For detailed information about an alarm, contact the next level of support as indicated in Chapter 4, Next-level of Support Procedure.

a. ftpdir directory has no write access

   Verify that the /home/maint/ftpdir directory has write permissions, if not change the permissions with the chmod command:

   >chmod 777 /home/maint/ftpdir

   Verify that the <rcLogicalVolumeDirectory>/ftpdir directory has write permissions. If not remove the directory, the next interval will recreate with the correct permissions. All links will be recreated.

   >rm /<rcLogicalVolumeDirectory>/ftpdir

b. No space left in storage for the stream.

   Retrieve some closed not sent files (.pri *for DNS* or .unp *for DIRP*) and rename them to closed sent (.sec *for DNS* or .pro *for DIRP*). The closed sent files will be removed from the system to make more space as needed. Consider increasing the size of the logical volume if this is a continuing problem.

c. <rcLogicalVolumeDirectory>/ftpdir does not exist

   Verify that the <rcLogicalVolumeDirectory> is correct. Most likely the path name was incorrect when entering it into CONFSTRM add or change.

d. <rcLogicalVolumeDirectory>/ftpdir is not a directory

   For reasons unknown, the rcLogicalVolume/ftpdir is not a directory.

   >rm <rcLogicalVolumeDirectory>/ftpdir

   where <rcLogicalVolumeDirectory> is the logical volume assigned to the stream in CONFSTRM for the billing files to be stored. During the next interval, the ftpdir directory will be recreated.

Common procedures

Contact your next level of support. If your next level of support is not readily apparent, refer to the Chapter 4, Next-level of Support Procedure.

Logs

The following table explains each of the fields in the log report.

Table 55 Log report field explanations

Field	Value	Description
alarm	Critical/Major/Minor/No Alarm	Critical is indicated by ***, Major is indicated by **, and Minor is indicated by *. No alarm has no asterisks.
<log ID>	string	SDMB375, SDMB380, SDMB675, SDMB680
<date>	mon:day	Date: month and day
<time>	hrs:mins:secs	Time: hours, minutes, and seconds
<seq#>	4 digits	Sequence number of log
<stream>	variable	Identifies the stream on which the problem occurred. ***Note:*** This parameter will appear only if it is related to a stream.
<reason>	FLT	Indicates error or warning
<report_label>	string	“SDM Billing system”
<text>	string	Problem description

LogNumber SDMB375

Explanation

This log is generated when an error occurs while processing links. There are generally two types of problems: ones involving creation of links and ones involving reading the contents of the link directory.

There are many reasons why these problems may occur. There may be insufficient space on the disk, the directory where the link is to be created may not have write permission, etc. The following logs cover these different reasons. The examples all show that the link could not be created, these logs may occur giving the “Could not remove link:” text. The same corrective action applies whether it is create or remove.

Format

SDMB375 <date> <time> <seq #> TBL SDM BILLING FILE TRANSFER <specific error>

Example 1

```
SDMB375 MAR21 7:51:24 1234 TBL SDM BILLING FILE TRANSFER
STREAM=<stream>:IFT : Could not create link. Directory has no
write access: <link_directory>
```

Example 2

```
SDMB375 MAR21 7:51:24 1234 TBL SDM BILLING FILE TRANSFER
STREAM=<stream>:IFT : Could not create link. No space left
on volume of target directory <link_directory>
```

Example 3

```
SDMB375 MAR21 7:51:24 1234 TBL SDM BILLING FILE TRANSFER
STREAM=<stream>:IFT : Could not create link. Source file
already has maximum number of links: <source_file_name>
```

Example 4

```
SDMB375 MAR21 7:51:24 1234 TBL SDM BILLING FILE TRANSFER
STREAM=<stream>:IFT : Could not create link. Source file
is actually a directory <source_file_name>
```

Example 5

```
SDMB375 MAR21 7:51:24 1234 TBL SDM BILLING FILE TRANSFER
STREAM=<stream>:IFT : Could not create link. Read only
access to volume of target directory: <link_directory>
```

Example 6

```
SDMB375 MAR21 7:51:24 1234 TBL SDM BILLING FILE TRANSFER
STREAM=<stream>:IFT : Could not create link. Source file
<source_file_name> is on a different logical volume than
target directory <link_directory>
```

Example 7

```
SDMB375 MAR21 7:51:24 1234 TBL SDM BILLING FILE TRANSFER
STREAM=<stream>:IFT : Could not create link: No such
device: <link_directory>
```

Example 8

```
SDMB375 MAR21 7:51:24 1234 TBL SDM BILLING FILE TRANSFER
STREAM=<stream>:IFT : Could not create link. Unknown error
encountered: <error_number>
```

Example 9

```
SDMB375 MAR21 7:51:24 1234 TBL SDM BILLING FILE TRANSFER
STREAM=<stream>:IFT : Could not manage link directory
<directory> : search permission denied for some directory
in path
```

Action 1

Make sure that the directory specified in the log has write permission.

Action 2

Remove data from the volume containing the link directory. The lack of space could be due to a buildup of primary AMA files on the disk. Since these files can only be removed if they are changed to secondary, action should be taken to either backup primary data to tape or FTP into the link directory and get files with a .pri or .unp extension.

Action 3

Contact your next level of support.

Action 4

Remove the directory specified by the source file name.

Actions 5, 6

Contact your next level of support. If your next level of support is not readily apparent, refer to Chapter 4, Next-level of Support Procedure.

Actions 7

Verify that the logical volume for the associated stream with the log is correct. Use the list CONFSTRM command to display the stream settings. If problem persists, contact your next level of support.

Actions 8, 9

Contact your next level of support. If your next level of support is not readily apparent, refer to Chapter 4, Next-level of Support Procedure.

LogNumber SDMB380

Explanation

The file transfer mode for the stream indicated has an invalid value.

Format

SDMB380 <date> <time> <seq #> TBL SDM BILLING CONFIG <48_character_text_string>

Example

```
SDMB380 MAR21 7:51:24 1234 TBL SDM BILLING CONFIG
STREAM=<stream>:IFT : Invalid File Transfer Mode: <mode saved>
```

Action to be taken

Access the CONFSTRM level of BILLMTC, then update the streamFileTransferMode by entering OUTBOUND or INBOUND. These are the only valid modes.

LogNumber SDMB675

Explanation

This log is generated whenever a problem with generating links has been resolved or when an error occurred which does not effect the processing of files and links.

Format

SDMB675 <date> <time> <seq #> INFO SDM BILLING FILE TRANSFER <specific resolution>

Example 1

```
SDMB675 MAR21 7:51:24 1234 TBL SDM BILLING FILE TRANSFER
STREAM=<stream>:IFT : Could not create link. Invalid file name:
<source_file_name>
```

Example 2

```
SDMB675 MAR21 7:51:24 1234 TBL SDM BILLING FILE TRANSFER
```

```
STREAM=<stream>:IFT : Could not create link. Source file
does not exist: <source_file_name>
```

Example 3

```
SDMB675 MAR21 7:51:24 1234 TBL SDM BILLING FILE TRANSFER
STREAM=<stream>:IFT : Could not create link. Link already
exists: <target_link_name>
```

Example 4

```
SDMB675 MAR21 7:51:24 1234 TBL SDM BILLING FILE TRANSFER
STREAM=<stream>:IFT : Link created successfully
```

Example 5

```
SDMB675 MAR21 7:51:24 1234 TBL SDM BILLING FILE TRANSFER
STREAM=<stream>:IFT : Not a regular file or symbolic link:
<file_name>
```

Action to be taken

None.

LogNumber SDMB680

Explanation

This log is generated whenever information not related to the file system or creating links needs to be communicated to the customer. For example, when the fileTransferMode experiences a transition.

Format

SDMB680 <date> <time> <seq #> INFO SDM BILLING CONFIG <specific resolution>

Example 1

```
SDMB680 MAR21 7:51:24 1234 TBL SDM BILLING CONFIG
STREAM=<stream>:IFT : fileTransferMode changed from
<ftmode> to <ftmode>
```

Example 2

```
SDMB680 MAR21 7:51:24 1234 TBL SDM BILLING CONFIG
STREAM=<stream>:IFT : fileTransferMode changed from
<invalid_ftmode> to <ftmode>
```

Example 3

```
SDMB680 MAR21 7:51:24 1234 TBL SDM BILLING CONFIG
STREAM=<stream>:IFT : fileTransferMode changed from
<ftmode> to <invalid_ftmode>
```

Action 1

None.

Action 2

None

Action 3

Change the streamFileTransferMode (using the CONFSTRM command) to one of the two valid values: INBOUND or OUTBOUND.

Appendix E: Configuration Settings

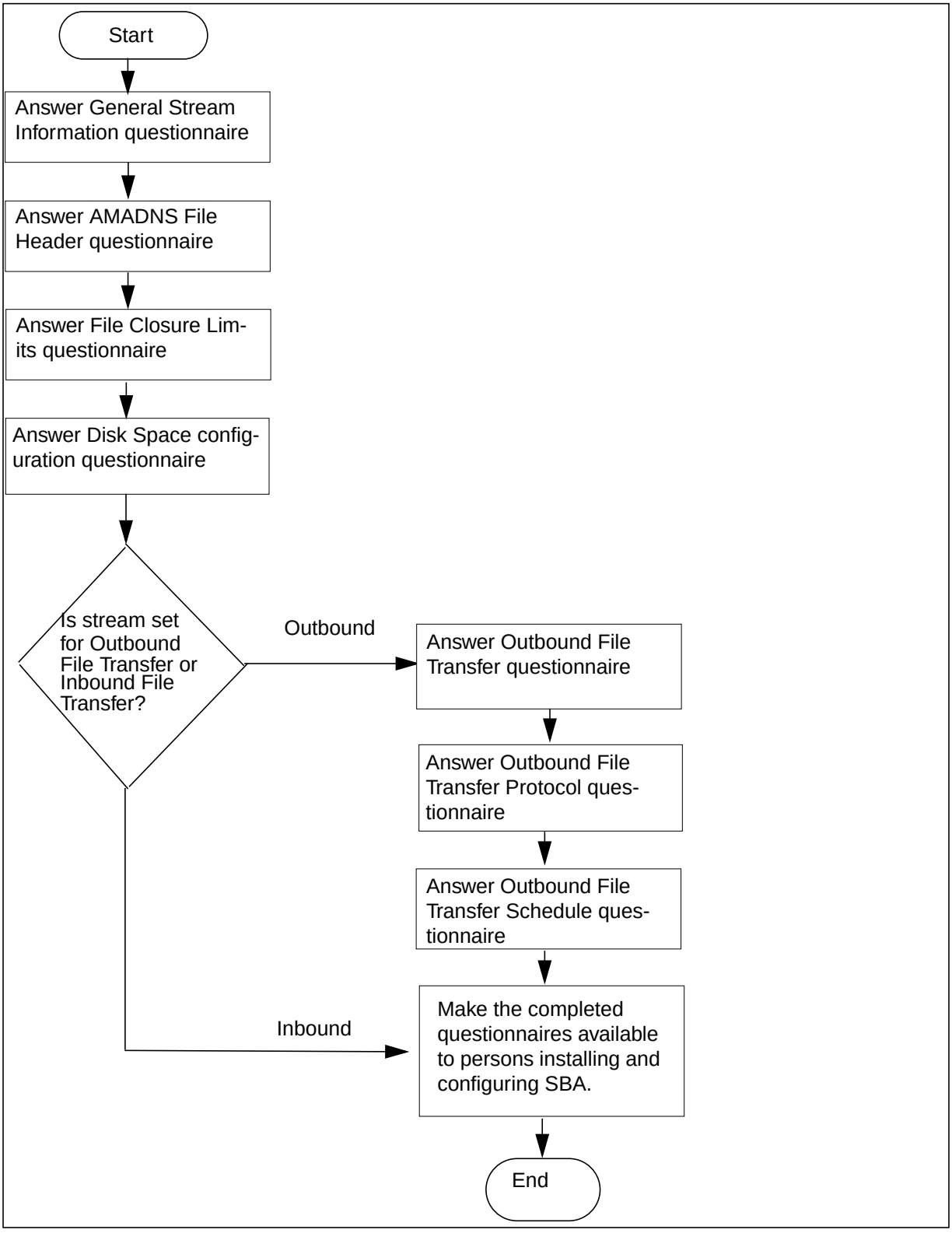
SBA configuration considerations

This appendix contains questions which must be answered before the SuperNode Billing Application (SBA) is installed on the SuperNode Data Manager (SDM) and configured. The questions are grouped into questionnaires of related questions.

- Complete General Stream Information questionnaire
- Complete AMADNS File Header questionnaire
- Complete File Closure Limits questionnaire
- Complete Disk Space questionnaire
- Complete Outbound File Transfer questionnaire
- Complete Outbound File Transfer Protocol questionnaire
- Complete Outbound File Transfer Schedule questionnaire

The following flowchart summarizes the procedures to complete the SBA configuration questionnaires.

Figure 46 Summary of completing SBA configuration questionnaire



General stream information questionnaire

The following table contains a list of questions concerning general stream information. Record your answers in the spaces provided.

#	Question	Explanation	Answer
1	What is the name of this stream?	The stream name on the SBA must match the name of the stream on the DMS Switch. Type: String Range: 1 to 4 characters. Example: AMA, OCC Not case sensitive ***WARNING:*** Do not enter the wildcard character ***"*"*** (asterisk) for the stream name parameter when adding a stream. ***Note:*** This name must match a stream name in the CM table CRSFMT.	stream_name
	Is this a Filter Stream?	The filter stream parameter specifies whether the stream is a CM billing stream or a filtered stream. Type: Boolean Range: Yes, No Default: No Not case sensitive	filter_stream
	What is the Associated Stream Name?	This question is applicable only for filter streams. The associated stream name parameter specifies the name of the CM billing stream with which the filtered stream is associated. Type: String Range: 1 to 4 characters. Example: AMA, OCC Not case sensitive	associated_stream

#	Question	Explanation	Answer
	What is name of the Filter Criteria file?	This question is applicable only for filter streams. The filter criteria file parameter identifies the name of the filter criteria file that contains the expression to be applied for the filtered stream. Type: String Range: 1 to 255 characters Case sensitive	filter_criteria_file
2	What is the record format of this stream?	The stream record format on the SBA must match the record format of the stream on the DMS Switch. For CDR2BAF conversion, use CDR250. For the DMS-GSP or the UCS DMS-250 switch, use CRD250. Type: Enumeration Range: BC, CDR250, CDR300, SMDR Not case sensitive	record_format
3	What is the file format of this stream?	This is the format of the billing files that SBA will create on the SDM. For CDR2BAF, use DNS. For the DMS-GSP, use DIRP. Type: Enumeration Range: DNS, DIRP Not case sensitive	file_format

#	Question	Explanation	Answer
4	What is the name of the logical volume on the SDM for storing the billing files for this stream?	The logical volume is the name of the directory where the billing files will be stored on the SDM for this stream. Type: String Range: 1 to 255 characters Example: /sba/ama Case sensitive	logical_volume_name
5	Will file transfers for this stream be initiated by the SBA (Outbound) or by the downstream destination (Inbound)?	Billing files always move from SBA to the downstream destination, but the file transfers can be initiated by SBA (this is called outbound) or by the downstream destination (this is called inbound). If Outbound is chosen then the SBA must also be configured with additional file transfer information, so also complete the outbound file transfer questionnaires. If Inbound is chosen, the outbound file transfer questionnaires are not needed. Type: Enumeration Range: Inbound, Outbound Default: Outbound Not case sensitive	file_transfer_mode

#	Question	Explanation	Answer
6	What is the desired state for the stream?	The state controls where the records are sent. On: records are sent to SBA only. Off: records are sent to existing DIRP system only. Both: records are sent to both SBA and to existing DIRP system (has a real time impact to the DMS switch). Type: Enumeration Range: On, Off, Both Not case sensitive	sba_stream_state
36	Do you want the files renamed with close date?	This question is applicable only if the file format is DIRP. Type: Boolean Range: Yes, No Default: No Not case sensitive	files_renamed_with_close_date
37	Do you want the files closed for file transfer and writetape?	This question is applicable only if the file format is DIRP. Type: Boolean Range: Yes, No Default: No Not case sensitive	files_closed_on_file_transfer

AMADNS file header questionnaire

The following table contains a list of configuration questions concerning AMADNS filename and header values. The values selected here will be used in the headers and names of the AMADNS files that SBA creates for this stream. Note that the source component id and type are not configured per stream and their values will be used by every enabled AMADNS stream on this SBA. For an explanation of these AMADNS header values please refer to Chapter 1, "Understanding SDMC SBA". Record your answers in the spaces provided.

#	Question	Explanation	Answer
7	What is the destination component id for this stream?	Type: String Range: 0000 - 4095 Default: 0000	destination_id
8	What is the destination component type for this stream?	Type: String Range: 01 - 15 Default: 01	destination_type
9	What is the source component id for this SBA?	Type: String Range: 0000 - 4095 Default: 0001	source_id
10	What is the source component type for this SBA?	Type: String Range: 01 - 15 Default: 02	source_type
11	What is the standard file type for this stream?	Type: Number Range: 1, 6 - 31 Default: 1 (BC), 11 (SMDR)	standard_file_type
12	What is the error file type for this stream?	Type: Number Range: 1, 6 - 31 Default: 2 (BC), 12 (SMDR)	error_file_type

File closure limits questionnaire

The following table contains a list of configuration questions concerning limits that control automatic closing of billing files by SBA. Note that the first of these settings that are reached, triggers the closing of the file. Record your answers in the spaces provided.

#	Question	Explanation	Answer
13	Do you want the files for this stream to be closed after a defined elapsed time?	This controls whether SBA will close billing files based on how long the files have been open. Setting this to Yes causes SBA to have a file open no longer than the answer in the following question (14). Setting this to No disables automatic file closure based on time limit. Type: Boolean Range: Yes, No Default: No Not case sensitive	close_on_timer
14	The desired maximum time that a file can be open for this stream?	This controls the maximum time SBA will have a file open, but it is enabled only if Yes is the answer to the previous question (13). Changes to this value will not affect current open files; the change will apply to the next file that is opened. Skip this question if the answer to the previous question (13) is No. Type: Number Units: Minutes Range: 5 - 10,080 Default: 120	file_close_time_limit

#	Question	Explanation	Answer
15	What is the maximum number of records generated each day for this stream?	This is used to calculate a recommended value for the maximum number of records per file and the maximum number of bytes per file. Type: Number Units: Records per day Range: none	records_per_day
16	What is the maximum size of a record?	This is used to calculate a recommended value for the maximum number of bytes per file. Type: Number Units: Bytes per record Range: none	bytes_per_record
17	What is the desired maximum number of records per billing file for this stream?	This controls the maximum number records a billing file may contain before SBA will automatically close it. The recommended value based on a target of 300 files a day will be calculated and provided as the default value, if the average number of records per day is non-zero. Type: Number Units: Records per file Range: 10,000 - 500,000 (BC) 1,000 - 500,000 (SMDR)	records_per_file

#	Question	Explanation	Answer
18	What is the desired maximum number of bytes per billing file for this stream?	This controls the maximum number of bytes a billing file may contain before SBA will automatically close it. A recommended value may be calculated with the following formula: Records per day for this stream * average record size / 300 = Bytes per file Type: Number Units: Bytes per file Range: 1,000,000 - 20,000,000 (BC) 100,000 - 20,000,000 (SMDR)	bytes_per_file

Disk space questionnaire

The following table contains a list of configuration questions relating to disk space requirements for SBA on the SDM and DMS switch. Record your answers in the spaces provided.

Disk space sizing considerations discussed here use the DMS switch value Billable Busy Hour Call Attempts (BBHCA). This value is the total number of billing-record-generating calls that are processed within the busiest one hour window of your switch's typical 24-hour day.

For information on the BBHCA estimation factor and its use in calculating required disk space, refer to "Calculation of SDM Disk Space Requirements" on page 537 , and "Calculation of DMS Switch Disk Space Requirements" on page 538.

#	Question	Explanation	Answer
19	How much disk space on the SDM is needed for the billing files for this stream?	If the SDM is unable to send the billing files to the downstream processor, they will accumulate on SDM disk space. At a minimum, it is suggested that the allocated SDM disk space be capable of holding at least 5 days of SBA billing files. The recommended formula for calculating SBA required disk space on the SDM is described in "Calculation of SDM Disk Space Requirements" on page 537. Type: Number Units: Megabytes Range: NA Default: none Space is allocated in 16 Mb increments.	logical_volume_size

#	Question	Explanation	Answer
20	How much disk space is needed for backup of billing records on the DMS Switch for this stream?	If the DMS switch is unable to send the billing records to the SDM, they will be backed up to the switch disk space. It is suggested that the allocated DMS disk space be capable of holding at least one day's accumulation of SBA billing records. The recommended formula for calculating SBA required disk space on the DMS switch is described in "Calculation of DMS Switch Disk Space Requirements" on page 538. Type: Number Units: Blocks (of 512 bytes) Range: NA Default: none	dms_disk_space

Calculation of SDM Disk Space Requirements

The recommended formula for calculating megabytes of disk space needed for SBA billing streams is:

BBHCA (Billable busy hour call attempts) multiplied by

average length of a call record in bytes, multiplied by

10 hours, multiplied by

Call-record retention days, divided by

1048576, divided by **the desired disk utilization**

Note 1: This formula must be applied to each billing stream with the total of all streams representing the total megabytes of SDM disk space required.

Note 2: For streams using AMA record format, the recommended value for average record length is 85 bytes.

Note 3: The calculation of 10 hours multiplied by BBHCA is an experience-based factor that, in the absence of detail statistics, can be used to accurately estimate 24 hours of call traffic. If you know that the stream has a high BBHCA for more or less than 10 hours per day, adjust the formula accordingly.

Note 4: 1048576 is the number of bytes in a megabyte.

Note 5: The desired disk utilization is a percentage that, for the purposes of this formula, is expressed as a decimal figure between 0.1 and 0.9.

Calculation Example

Assumptions:

BBHCA = 150,000

Average length of call records = 85 bytes

Call retention days = 10

Desired disk utilization = 60%

Calculation:

150,000*85*10*10/1048576/.6=2,026 Megabytes

Calculation of DMS Switch Disk Space Requirements

The recommended formula for calculating the blocks of DMS SLM disk space needed for SBA billing streams is:

BBHCA (Billable busy hour call attempts) multiplied by

average length of a call record in bytes, multiplied by

10 hours, multiplied by

Call-record retention days, divided by **512**

Note 1: This formula must be applied to each billing stream with the total of all streams representing the total blocks of DMS Switch SLM disk space required.

Note 2: For streams using AMA record format, the recommended value for average record length is 85 bytes.

Note 3: The calculation of 10 hours multiplied by BBHCA is an experience-based factor that, in the absence of detail statistics, can be used to accurately estimate 24 hours of call traffic. If you know that the stream has a high BBHCA for more or less than 10 hours per day, adjust the formula accordingly.

Note 4: 512 is the number of bytes in a block of DMS disk storage.

Calculation Example

Assumptions:

BBHCA = 150,000

Average length of call records = 85 bytes

Call retention days = 2

Calculation:

150,000*85*10*2/512 = 498,047 blocks of SLM disk space

Outbound file transfer questionnaire

The following table contains a list of stream configuration questions relating to transferring files from SBA to one or multiple destinations. This table specifically addresses configuration information concerning the destination, IP addresses, user id, passwords, and directories. This configuration information is used by the SBA to successfully login to and transfer files to the downstream destination. Record your answers in the spaces provided.

#	Question	Explanation	Answer
40	What is the destination to which the billing files will be transferred from the SBA?	The combination of the values for stream name, file format type, and destination acts as the key to the schedule tuple. Destination must not contain unprintable characters or white spaces. Type: Alphanumeric String Range: 1 to 15 characters Default: downstream Example: Eventure	destination
21	Which protocol is used to transfer billing files from the SBA?	FTPW uses the File Transfer Protocol; Real time billing uses RFTPW. Type: Enumeration Range: FTPW, RFTPW Default: FTPW Not case sensitive.	protocol
22	What is the IP address of the primary destination for this stream?	The primary destination is the IP address where SBA will login and transfer the billing files. Type: IP Address Range: 0.0.0.0 to 255.255.255.255 Example: 47.202.35.189	primary_destination
38	What is the Port for the IP address of the primary destination for this stream?	The primary destination requires the Port for the IP address where SBA will login and transfer the billing files Type: String Range: 21, 1025 to 65535 Default: 21 Example: 21	primary_port

#	Question	Explanation	Answer
23	What is the IP address of the alternate destination for this stream?	The alternate destination is the IP address where SBA will login and transfer the billing files if SBA encounters problems connecting to the primary destination. If there is no alternate, make the alternate identical to the primary. Type: IP Address Range: 0.0.0.0 - 255.255.255.255 Example: 47.202.35.189	alternate_destination
39	What is the Port for the IP address of the alternate destination for this stream?	The alternate destination requires the Port for the IP address where SBA will login and transfer the billing files Type: String Range: 21, 1025 to 65535 Default: 21 Example: 21	alternate_port
24	What is the login into the downstream destination for this stream?	This login is the user id of the account which SBA will use to login to the downstream destination to transfer the billing files. Type: String Range: 1 to 20 characters Default: none Example: amadns Case sensitive.	remote_login
25	What is the password for the login ID in Question 24 for this stream?	The password is that associated with the login which SBA will use to login to the downstream destination and transfer the billing files. Type: String Range: 1 to 20 characters Default: none Example: abracadabra Case sensitive.	remote_password

#	Question	Explanation	Answer
26	What is the path to the directory for storing the billing files on the downstream destination?	This is the full path to the directory on the downstream destination where SBA will transfer the billing files. The FTP State Machine does not issue the change working directory command if this parameter is set to the value of a single period “.” Type: String Range: 1 to 255 characters. Example: /users/amadns/billing Case sensitive.	remote_storage_directory
27	What is the desired field separator for this stream?	This is a single character which is used by SBA to separate the components of billing file names when they are transferred to the downstream destination. If the downstream destination is Unix, then the recommended field separator is a ‘.’ (period), resulting in a file name such as 020001.030002.00001.01.2. If the downstream destination is VMS, then the recommended field separator is an ‘_’ (underscore) resulting in a file name such as 020001_030002_00001_01_2. Type: Character Range: any printable character Default: ‘.’ period Case sensitive	field_separator

#	Question	Explanation	Answer
28	What is the desired filename extension for this stream?	This is a short character string which will be appended to the billing file names by SBA when they are transferred to the downstream destination. If the downstream destination is Unix, then it is recommended that there be no filename extension. If the downstream destination is VMS, then the recommended filename extension is ‘PRI’. Type: String Range: 0 to 3 characters Default: blank (0 chars) Case sensitive	file_extension

Outbound file transfer protocol questionnaire

The following table contains a list of configuration questions relating to transferring files from SBA to the downstream destination. This table specifically addresses configuration information concerning limits, that control how the SBA reacts when it encounters problems connecting to the downstream destination. Record your answers in the spaces provided

#	Question	Explanation	Answer
29	What is the maximum time in seconds that can elapse without a response from the downstream destination before the session is forced to close by SBA for this stream?	Type: Number Units: Seconds Range: 1 - 300 Default: 30	protocol_timeout
30	What is the maximum number of times SBA will attempt to complete a failed session with the downstream destination for this stream?	Type: Number Range: 0 - 10 Default:3	protocol_max_retries
31	What is the maximum time in seconds that SBA should wait to attempt reconnection to the downstream destination after a failed session for this stream?	Type: Number Units: Seconds Range: 1 - 60 Default:1	protocol_retry_wait_time

Outbound file transfer schedule questionnaire

The following table contains a list of stream configuration questions relating to transferring files from SBA to the downstream destination. This table specifically addresses configuration information concerning when SBA initiates a connection to the downstream destination to transfer billing files. Record your answers in the spaces provided.

#	Question	Explanation	Answer
32	Are scheduled file transfers desired for this stream?	This controls whether SBA will automatically initiate file transfers to the downstream destination. If set to Yes, SBA will automatically transfer files to the downstream destination at the times defined by the following three answers (31, 32, 33). Manual file transfers using the sendfile command are possible even when this value is set to No. Type: Boolean Range: Yes, No Default: No If No, use ‘0:00’ for Answers 31 and 32 and ‘120’ for Answer 33	schedule_active
33	When should SBA start initiating file transfers to the downstream destination each day?	This defines the beginning of a window of time during each day when file transfers to the downstream destination will be initiated by SBA. See the examples following this table for more information. Type: Time of Day Units: Hours:Minutes Range: 00:00 - 23:59 Default: none	schedule_start_time

#	Question	Explanation	Answer
34	When should SBA stop initiating file transfers to the downstream destination each day?	This defines the end of a window of time during each day when file transfers to the downstream destination will be initiated by the SBA. See the examples following this table for more information. Type: Time of Day Units: Hours:Minutes Range: 00:00 - 23:59 Default: none	schedule_stop_time
35	How often are the scheduled file transfers to the downstream destination for this stream desirable?	This controls how often SBA will initiate transferring billing files to the downstream destination. This interval is only active during window of time defined by the start and stop times. See the examples following this table for more information. Type: Number Units: Minutes Range: 5 - 1440 Default: 120	schedule_interval

The following are some examples that show different answers to questions for the start time (question 31), stop time (question 32), and the interval (question 33) and the resulting SBA file transfer times.

> ***Note:*** If your start time and stop time are identical, then SBA is setup for 24 hour outbound file transfer at datafilled interval.

Example 1

Start Time: 0:00
Stop Time: 0:00
Interval: 240

The SBA transfers files every four hours, at the beginning of the hour, starting at midnight.

Results in SBA initiating file transfers at:

12:00 midnight, 4:00 am, 8:00 am, 12:00 noon, 4:00 pm, and 8:00 pm

Example 2

Start Time: 22:10
Stop Time: 2:00
Interval: 30

The SBA transfers files every thirty minutes at 10 minutes and 40 minutes after the hour, between 10:10 p.m and 2 a.m.

Results in SBA initiating file transfers at:

10:10 pm, 10:40 pm, 11:10 pm, 11:40 pm, 12:10 am, 12:40 am, 1:10 am, and 1:40 am

Example 3

Start Time: 3:15
Stop Time: 3:15
Interval: 300

The SBA transfers files every five hours at 15 minutes after the hour, starting 3:15 a.m.

Results in SBA initiating file transfers at:

3:15 am, 8:15 am, 1:15 pm, 6:15 pm,11:15 pm

Appendix F: SBA CDR file information

This appendix provides SuperNode Data Manager Carrier (SDMC) SuperNode Billing Application (SBA) specific Call Detail Recording (CDR) file information applicable to the Universal Carrier Switch (UCS) DMS-250 switch. For detailed information about UCS DMS-250 billing system, refer to the *UCS DMS-250 Billing Records Application Guide.*

SDMC SBA CDR Event Records

SDMC SBA generates two event records that contain FLEXCDR format information. These records are the CDR Parameter Record (CPR) and the Template Record (TPR).

The generation of CPR and TPR records is optional. If the records are to be generated and included into billing files, you can also indicate whether these records are to be included in every file or only when a specific event occurs.

When configured to be included into billing files, these records are created in the following situations:

- Each time the UCS CDR SBA Primary Stream is started or restarted (the records appear only in the first file opened for the newly started/restarted stream)
- When the SDM detects a version change in the CDR template indicating an UPGRADE or RESTORE command has been issued from the CM (the current file is closed and the records appear only in the newly opened file)

SBA also generates a FHR (File Header Record) record (AMADNS format only). This record is similar to the DIRP BHR record except that, since the AMADNS format does not use fixed 2K blocks, it has none of the block information contained in the BHR. The FHR appears once for each file after the AMADNS file header.

CDR Parameter Record (CPR)

Table 1 describes the CDR Parameter Record (CPR) format.

Table 1 CDR Parameter Record format

Field name	Size (bits)	Field contents	Offset (bits)
RECCD	16	Record Code (contains an EBCDIC “FG”)	0
TPLTTS		The timestamp of when the current template version became active.	
Minute	6	00 to 59	16
Month	4	01 to 12	22
Year	6	00 to 63 (years since 1976)	26
Second	6	00 to 59	32
Hour	5	00 to 23	38
Day	5	01 to 31	43
FCDR_BHR_SIZE	8	The FLEX CDR BHR record size indicates the size of the formatted block header event record. If the value is greater than 12, null characters are used to pad the BHR stored.	48
FCDR_GSR_SIZE	8	The FLEX CDR GSR record size indicates the size of the formatted graceful start event record. If the value is set to zero, then graceful start records are not included in the DIRP file block. If the value is greater than 12, null characters are used to pad the GSR stored.	56
FCDR_GER_SIZE	8	The FLEX CDR GER record size indicates the size of the formatted graceful end event record. If the value is set to zero, then graceful start records are not included in the DIRP file block. For values between 8 and 23, null characters are used to pad the graceful end record stored. If the value is set to 24 or larger, then the DIRP filename is also included in GER record. If the value is greater than 24, null characters are used to pad the GSR stored.	64

Table 1 CDR Parameter Record format

Field name	Size (bits)	Field contents	Offset (bits)
FCDR_ESR_SIZE	8	The FLEX CDR ESR record size indicates the size of the formatted emergency start event record. If the value is set to zero, then emergency start records are not included in the DIRP file block. If the value is greater than 5, null characters are used to pad the ESR stored.	72
FCDR_SRR_SIZE	8	The FLEX CDR SRR record size indicates the size of the formatted system restart event record. If the value is set to zero, then emergency start records are not included in the DIRP file block. If the value is greater than 5, null characters are used to pad the SRR stored.	80
FCDR_CCR_SIZE	8	The FLEX CDR CCR record size indicates the size of the formatted clock change event record. If the value is set to zero, then clock change records are not included in the DIRP file block. If the value is greater than 6, null characters are used to pad the ESR stored.	88
FCDR_OSR_SIZE	8	The FLEX CDR OSR record size indicates the size of the formatted operator services event record. This value can be used to match the defined size of the CDR record. If the value is greater than 38, null characters are used to pad the BHR stored.	96
CPR_SIZE	8	The size of the CPR event record. Range:0, 10-128 (words). If the value is greater 10 then null characters are used to pad the record.	104
FCDR_CDR_SIZE		The FLEX CDR call detail record size office parameter indicates the size of the formatted CDR record. This parameter is valid only if the METHOD field is set to FIXED. If the METHOD field is set to FIXED, then the LENGTH field is datafilled with the fixed size of the formatted CDR. If the METHOD field is set to VARIABLE, then the size of the CDR event records formatted is dependent on the template used.	
length_range	8	FCDR_CDR_SIZE (Length Range)	112
fr	1	FCDR_CDR_SIZE (Method Field Range)	120
FILLER	1		121

Table 1 CDR Parameter Record format

Field name	Size (bits)	Field contents	Offset (bits)
LOG600	1	This office parameter corresponds to FCDR_GEN_600_LOG.	122
LOG601	1	This office parameter corresponds to FCDR_GEN_601_LOG.	123
F	1	The new CDR field format used, which is either left-to-right (value of 1) o right-to-left (value of 0).	124
ACTIDX	3	The active CDR index, which indicates which group of CDR templates is the active group.	125
FCDR_CDR_TMPL		This identifies the template algorithm used in formatting the CDR records (FIXED, VARIABLE, INTERNAL), the template range and the use edited version bit.	
MFR	2	Method field range {FIXED,VARIABLE,INTERNAL}	128
Range	6	Template range.	130
TPR_SIZE	8	The size of the TPR record. Range: 0, 68 - 128 (words). If the value is set to zero then TPRs are not included in billing files. If the value is greater then 68, then null characters are padded to the records	136
FHR_SIZE	8	The size of the FHR records (11 to 128 words)	144
TMPLTCNT	8	This identifies the number of active CDR templates and is used to determine how many TPR records will be stored in our billing file.	152

Table 2 describes the CDR Parameter Record (CPR) layout.

Table 2 CDR Parameter Record layout

	MSB															**LSB**
WORD/ BIT	15	14	13	12	11	10	09	08	07	06	05	04	03	02	01	00
00	RECCD															
1	TPLTTS (Year)						TPLTTS (Month)				TPLTTS (Minute)					
2	TPLTTS (Day)					TPLTTS (Hour)					TPLTTS (Second)					
3	FCDR_GSR_SIZE								FCDR_BHR_SIZE							
4	FCDR_ESR_SIZE								FCDR_GER_SIZE							
5	FCDR_CCR_SIZE								FCDR_SRR_SIZE							
6	CPR_SIZE								FCDR_OSR_SIZE							
7	ACTIDX			F	LOG 601	LOG 600	FILL	fr	length_range							
8	TPR_SIZE								Range						MFR	
9	TMPLTCNT								FHR_SIZE							
10-128	FILLER															

Template Record (TPR)

Table 3 describes the Template Record (TPR) format.

Table 3 Template Record format

Field name	Size (bits)	Field contents	Offset (bits)
RECCD	16	Record Code (contains an EBCDIC “FH”)	0
TMPLTID	7	The FLEXCDR Template Indicator, which is the index into table CDRTPLT.	16
CDRFLDCNT	8	The number of valid CDR fields contained in the CDRFLDFLIST field	23
FILLER	1	Hex AA	31
CDRFLDLIST	1024	A CDR field list	32
TPRSIZE	8	The size of the TPR record. Range: 0, 67 -128 (words). If the value is set to zero then TPRs are not included in billing files. If the value is greater then 67, then null characters are padded to the records	1056
FILLER	8	Hex AA	1064

Table 4 describes the Template Record (TPR) layout.

Table 4 Template Record layout

<table>
<tr><td></td><td>MSB</td><td colspan="14"></td><td>LSB</td></tr>
<tr><td>WORD/ BIT</td><td>15</td><td>14</td><td>13</td><td>12</td><td>11</td><td>10</td><td>09</td><td>08</td><td>07</td><td>06</td><td>05</td><td>04</td><td>03</td><td>02</td><td>01</td><td>00</td></tr>
<tr><td>00</td><td colspan="16">RECCD</td></tr>
<tr><td>01</td><td>FILLER</td><td colspan="7">CDRFLDCNT</td><td colspan="8">TMPLTID</td></tr>
<tr><td>02-65</td><td colspan="16">CDRFLDLIST</td></tr>
<tr><td>66</td><td colspan="8">FILLER</td><td colspan="8">TPRSIZE</td></tr>
<tr><td>67-128</td><td colspan="16">FILLER</td></tr>
</table>

File Header Record (FHR)

Table 5 describes the File Header Record (FHR) format.

Table 5 File Header Record format

Field name	Size (bits)	Field contents	Offset (bits)
RECCD	16	Record Code (contains an EBCDIC “FF”)	0
CRTTIME	32	Date/time of the File Header Record (FHR)	16
SWITCHID	48	Switch Identification (EBCDIC)	48
SOFTWREL	48	The Software release level (EBCDIC).	96
F	1	Field format indicating if CDR records are to be read from left-to-right (value of 1) or from right-to-left (value of 0).	144
ACTIDX	3	The Active index.	145
F/V	1	The Fixed/Variable field indicating if CDR records contained within the file are variable length records (value of 1) or fixed records (value of 0).	148
CDRSIZE	8	The size of CDR records contained within this file (3-128 words). This field is valid only if the Fixed/Variable field is set to FIXED(0).	149
FILL	3	Hex AA	157
FHRSIZE	8	The size of the FHR records (11 to 128 words)	160
OSRSIZE	8	The size of the OSR records	168

Table 6 describes the File Header Record (FHR) layout.

Table 6 File Header Record layout

	MSB														**LSB**
WORD/ BIT	15	14	13	12	11	10	09	08	07	06	05	04	03	02	01	00
00	RECCD															
01-02	CRTTIME															
03-05	SWITCH ID															
06-08	SOFTWARE RELEASE															
09	FILLER			CDRSIZE								F/ V	ACTIDX			F
10	OSRSIZE								FHRSIZE							
11-128	FILLER															

SDMC SBA CDR DIRP file format

DIRP billing files are composed of fixed 2K blocks, as specified by the CDR DIRP file format.

In Figure 47, CPR and TPR records are not to be included as part of any CDR DIRP files. Both files begin with the first 2K block containing a BHR and a GSR. Each following 2K block starts with the BHR followed by CDRs or OSRs. The GER is the last record in the file.

In Figure 48, CPR and TPR records are included only when specific events occur. File 1 begins with a BHR, followed by a GSR and null characters(#AA) to pad the block. After two CDRs, an UPGRADE (or RESTORE) has occurred. After inserting a GER, the current file is closed so that it contains only records using the old active CDR format information. File 2 is opened with a BHR and a GSR in the first 2K block. This file contains CDRs using the new active CDR format information. To communicate the format change to the downstream processor, the CPR and *N* TPRs are inserted (to the next block) which contain the new active Office Parameters and the new active CDR templates, respectively. The remainder of the block is padded with null characters. File 2 could also be the result of the CDR SBA Primary Stream starting or restarting since the TPR and CPR are also included in those cases.

In Figure 49, CPR and TPR records included in every CDR DIRP file. Both File 1 and File 2 begin with the first 2K block containing the BHR, GER and padded null characters. The second 2K block contains the BHR as the first record, followed by the CPR and TPR records (followed by null characters to pad the block). The number of TPR records included in the file is the number of active CDR templates of the active version.

Figure 47 SDMC SBA CDR DIRP file structure (no CPR/TPR)

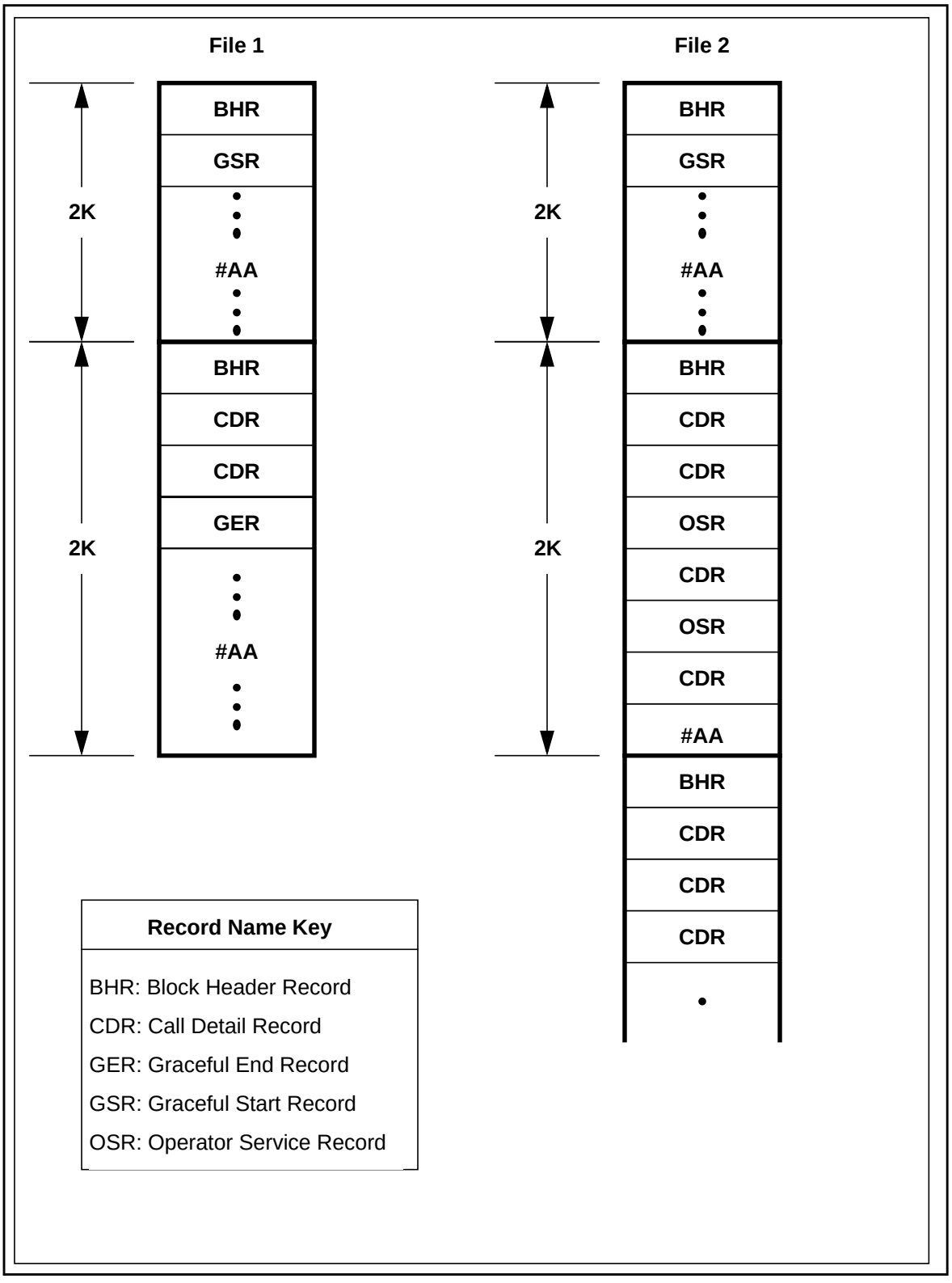


Figure 48 SDMC SBA CDR DIRP file structure (CPR/TPR included after event)

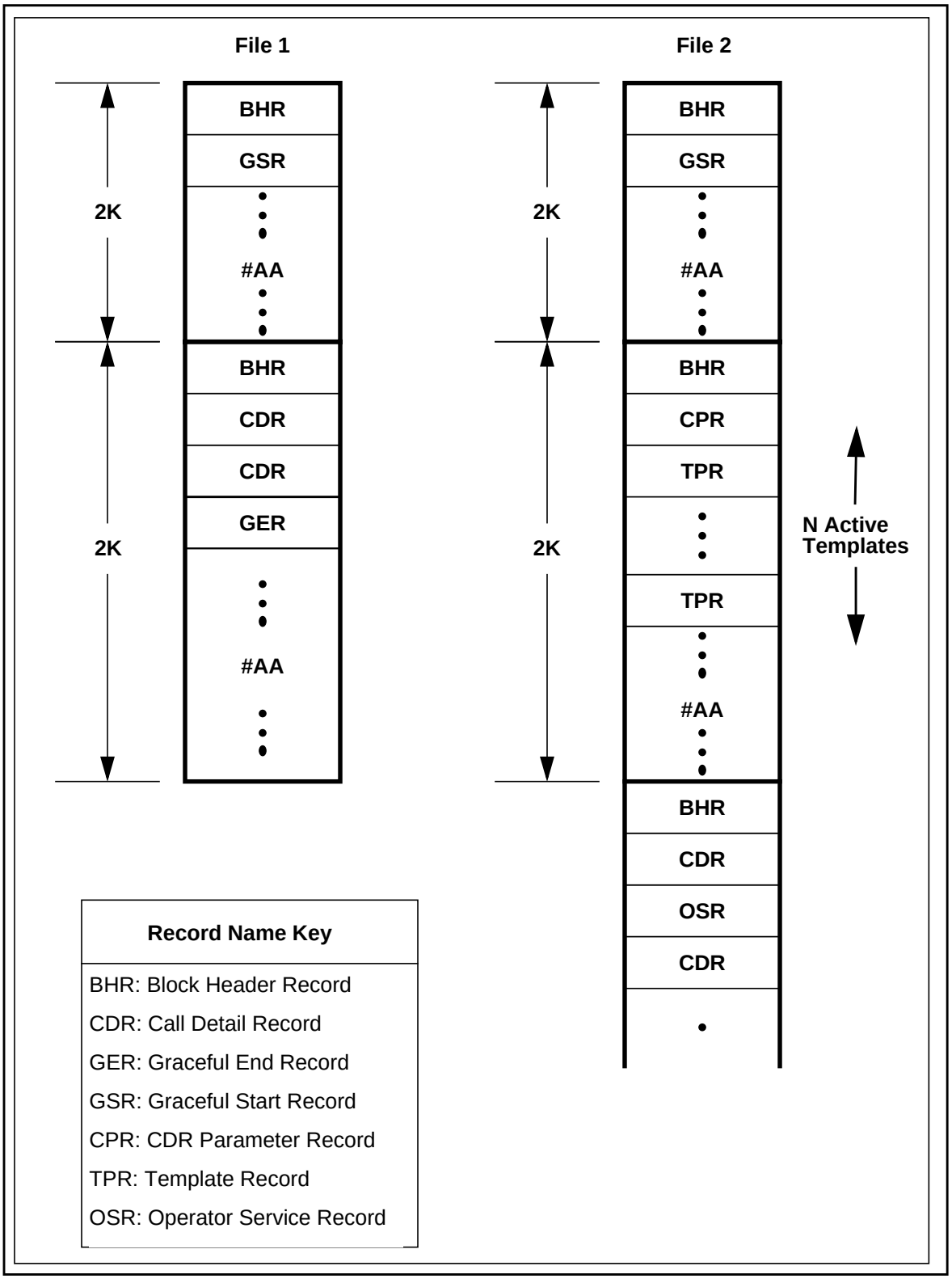
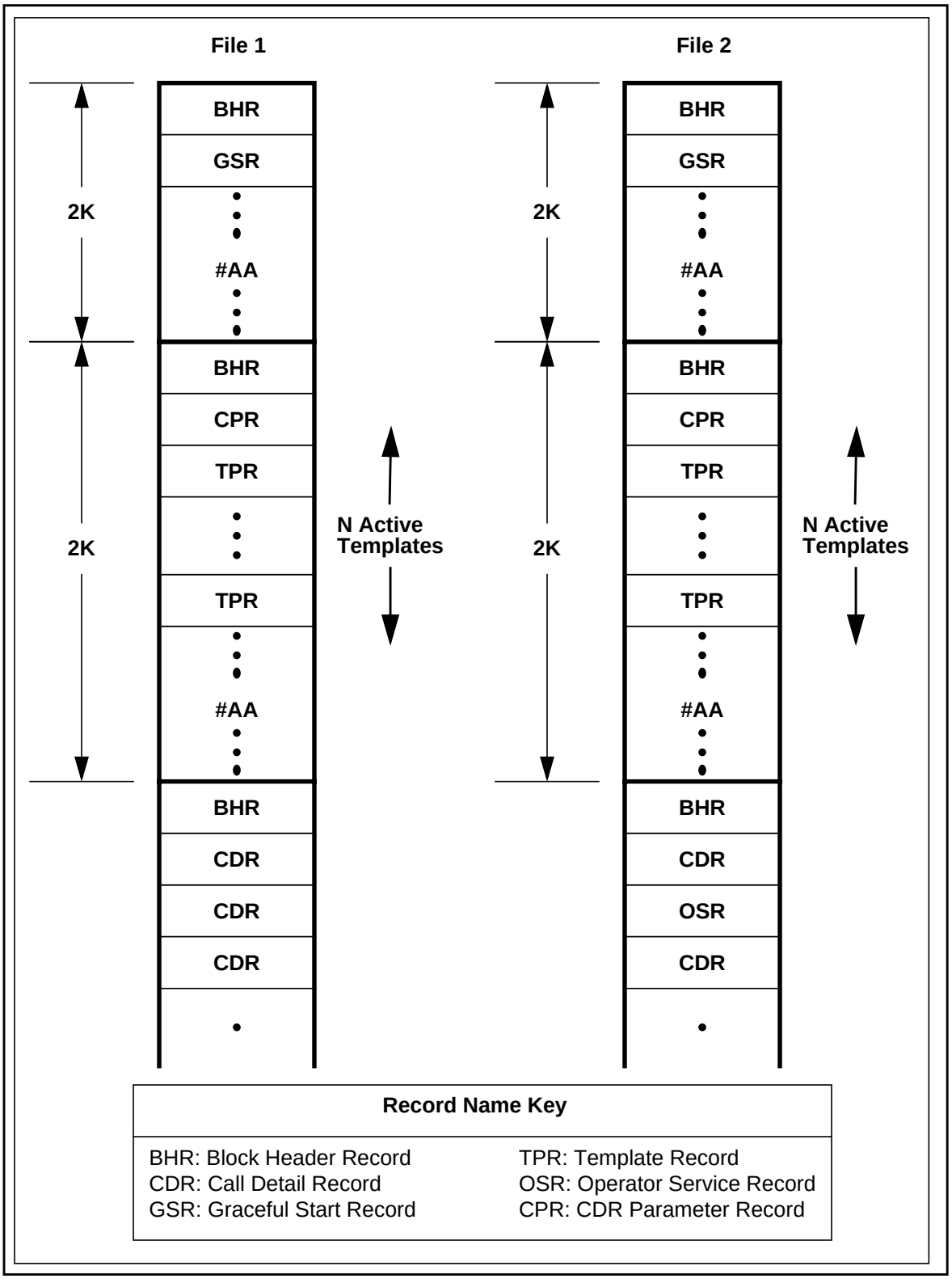


Figure 49 SDMC SBA CDR DIRP file structure (CPR/TPR in every file)



SDMC SBA CDR AMADNS file format

Examples of the CDR AMADNS file structure are shown in Figure 50, Figure 51, and Figure 52.

Each record in the CDR AMADNS file, with the exception of the AMADNS Header, is actually a Record Descriptor Word (RDW) / Formatted Record(FR) pair. The RDW is a length indicator. It contains its own length (four bytes) plus the length of the record (in bytes) that follows. As each CDR record contains its own size, the RDW provides a sanity check on the sizes of records. RDW/FR pairs are placed contiguously after each other.

If CPR and TPR records are to be included in the file, they are placed immediately after the GSR record. CDRs and OSRs are written to the file after TPR records.

If CPR and TPRs are not to be included, CDRs and OSRs immediately follow the GSR record.

If CPR and TPR records are to be included in the file only when the information is useful to the downstream component, they are included when the FLEXCDR UPGRADE or RESTORE occurs and when the CDR Primary stream is started/restarted.

Figure 50 SDMC SBA CDR AMADNS file structure (no CPR/TPR)

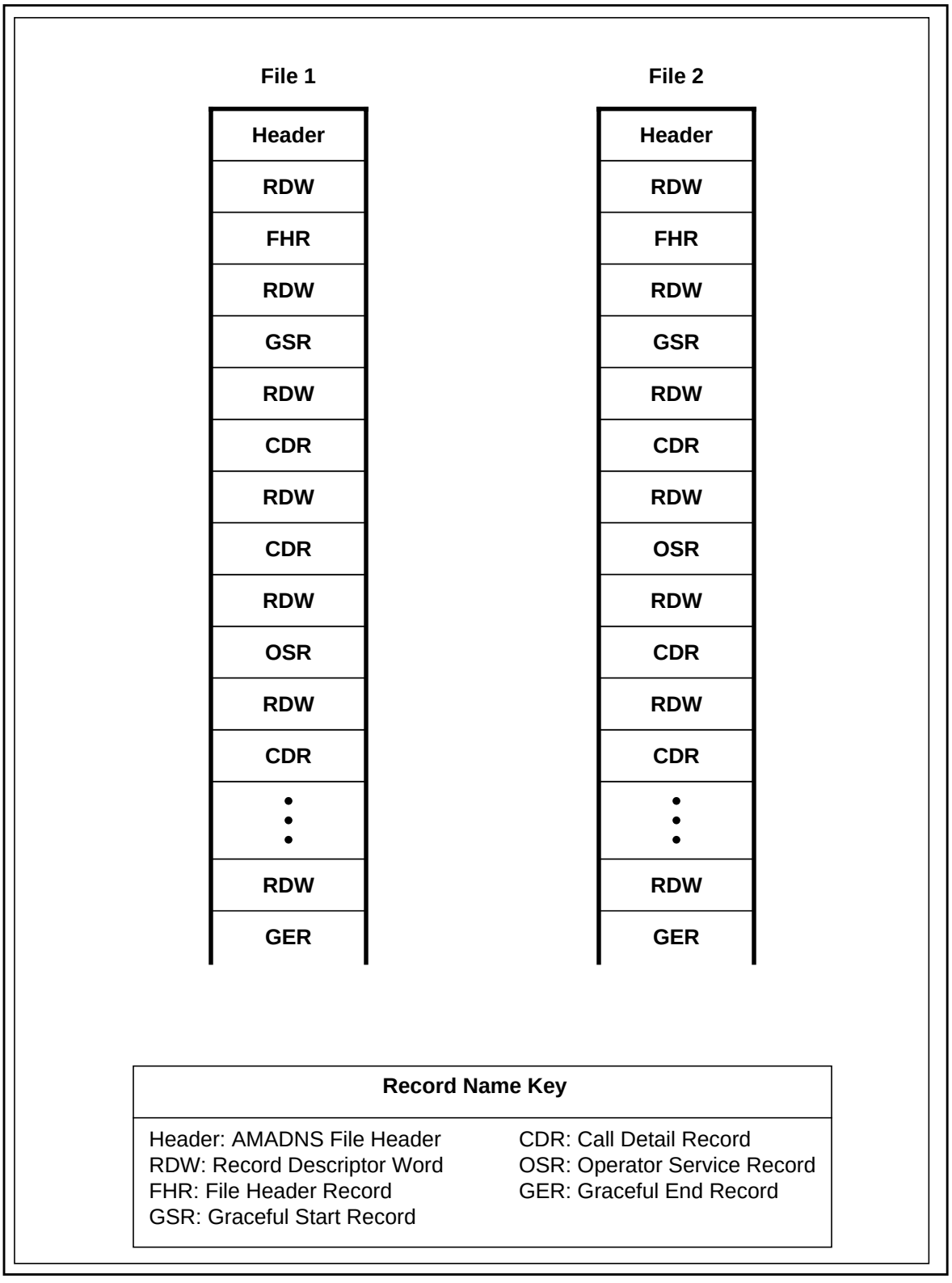


Figure 51 SDMC SBA CDR AMADNS file structure (CPR/TPR included after event)

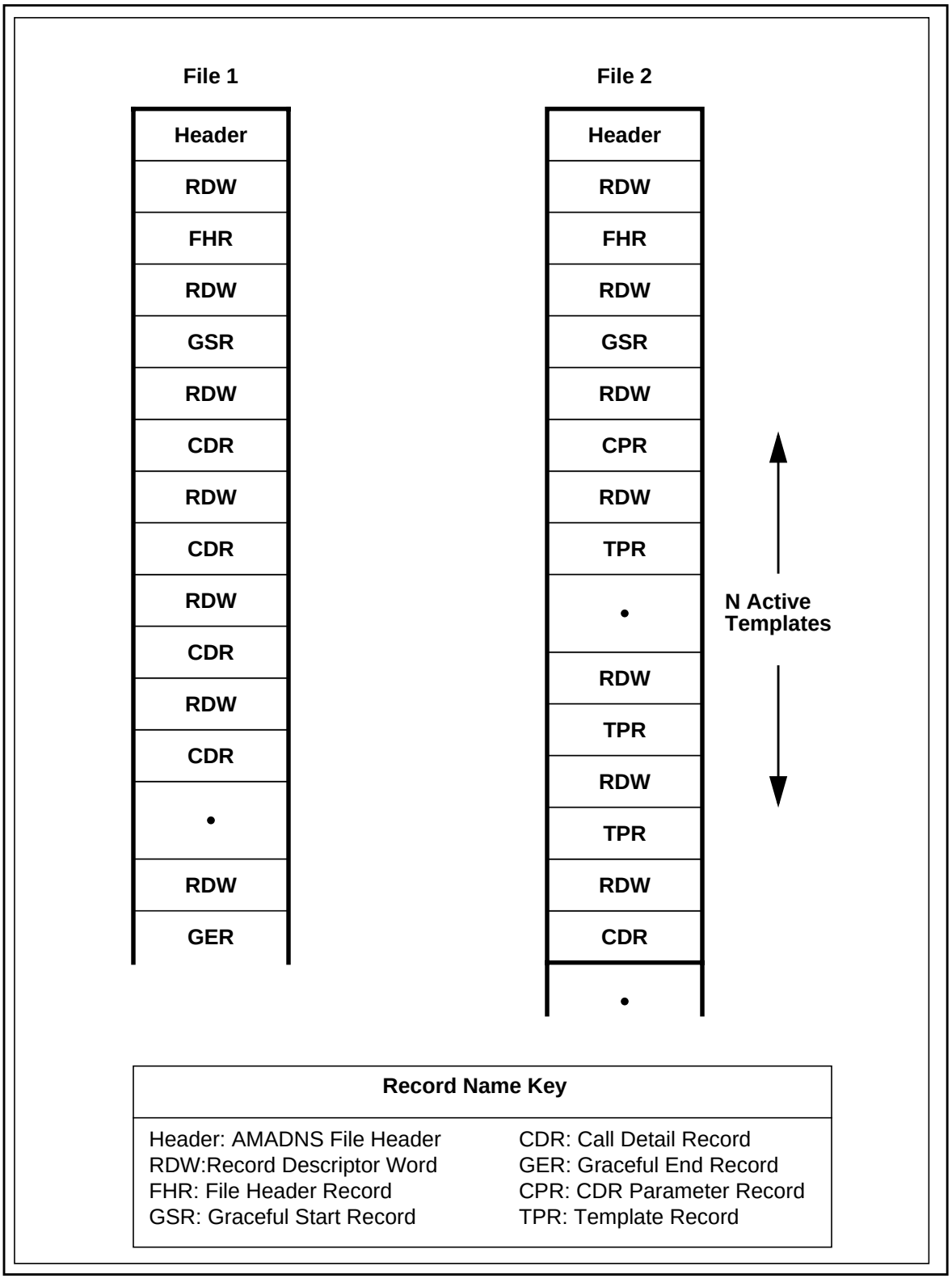
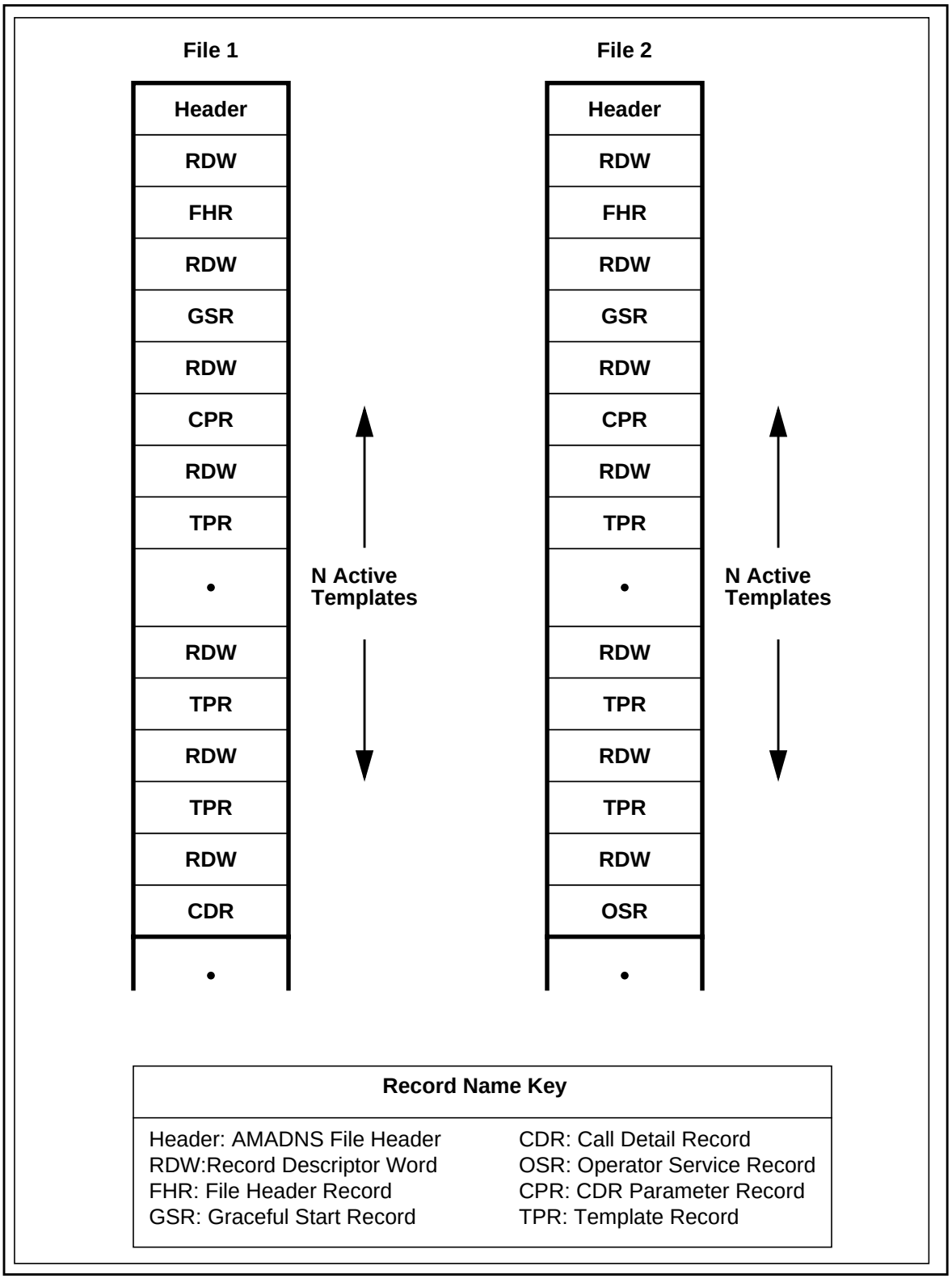


Figure 52 SDMC SBA CDR AMADNS file structure (CPR/TPR in every file)



Appendix G: Real Time Billing

SuperNode Data Manager-Carrier (SDMC) Supernode Billing Application (SBA) Real Time Billing (RTB) is a data communications application which allows billing records to be available for transfer from the SDM thirty (30) seconds from the time the record is generated. RTB downloads a small group of records to the DIRP billing file at the downstream destination as they are added to the open billing file on the SDM. RTB uses File Transfer Protocol (FTP) through an Ethernet connection to deliver the records.

Note: RTB does not provide software to receive and read the file on the downstream processor(s). The transfer time of records from the SDM port to the downstream processor depends on the network configuration.

Terms

The following terminology is used throughout this section:

DIRP (Device Independent Recording Package)

A DIRP file is a billing file consisting of 2K byte blocks. Refer to the Billing Records Application Guide applicable to your DMS switch for DIRP file details.

Stream

A Stream, also known as a billing stream, can be conceptualized as a pipeline through which CM generated billing records pass. For each stream component that exists on the CM, a corresponding stream component exists on the SDM. Billing records created by calls pass through the stream from their point of origination on the CM to the SDM where they are stored on disk.

SubStream

A Stream is further divided into Primary and Recovery substreams. The Primary substream handles the current records being sent by the CM. The Recovery substream is only active after SBA was unable to transfer records from the CM to the SDM and had to temporarily store the records on the CM

(backup mode). When the CM recovers from backup mode by reestablishing the connection to the SDM, the backup records are sent to the SDM side in the Recovery stream while, concurrently, the current records are sent in the Primary substream.

Real Time Billing (RTB) transfers records on the Primary substream only since Recovery substream records are, by definition, not current records.

File States on SDM

Open

Records are written to the SDM file. If RTB is ON, records are also transferred to the active billing file downstream immediately after they are written to the SDM file. The file name on the SDM is prefixed with an “A”. While the file is being written to on the downstream processor, that file name is also prefixed with an “A”.

Unprocessed

The file is closed, but the file is awaiting processing. Unprocessed files are prefixed with a “U” on the SDM. After transfer is done, the prefix of the file on the downstream processor will also change from “A” to “U”.

Processed

The file is closed and has been received (for example; processed) by all the downstream destinations and is therefore eligible for removal by volume management when disk space needs to be freed. This is a state change meaningful on the SDM only. So the corresponding file name prefix change from “U” to “P” is done on the SDM but not on the downstream processor.

Since the schedule tuple must be active for the stream, there are two applications (Scheduled Transfer and RTB) involved in the transferring of files so both must acknowledge the Unprocessed file before it can become Processed. Therefore, after RTB transfers the file, the file state will remain Unprocessed until the next scheduled transfer event. When that event occurs, the scheduler examines all Unprocessed files and treats them according to whether they have already been transferred by RTB. The files that have not been transferred by RTB are transferred and moved to the Processed state after a successful transfer. The files that have been transferred by RTB are moved directly to the Processed state without retransmission.

SBA File Transfer Subsystem Description

The file transfer subsystem uses a schedule tuple for scheduled file transfers. These tuples are specified by stream name, file format, and destination. For

each tuple, different file transfer parameters can be specified (for example; start time, stop time, file transfer interval, etc.). There can only be one tuple for each combination of stream, file format, and destination.

The tuple contains a field indicating if it is active. Scheduled file transfers occur only if the tuple is active. An interval in the schedule tuple indicates how often SBA checks to see if there are Unprocessed files waiting to be sent downstream. When this interval is exceeded, the list of files is transferred downstream.

Real Time Billing

The RTB Rts (return to service) command, issued from the billing RMI, is used to initiate the transfer of an open billing file to the downstream customer site.

Note: Only the Primary substream can use RTB.

The command must specify the stream, file format, and destination. RTB uses the appropriate fields in the schedule tuple corresponding to this stream.

Note: To enable RTB, the protocol must be Real-time File Transfer Protocol Wrapper (RFTPW) and schedule file transfer mode must be Outbound.

RTB attempts to transfer records to the active billing file at the primary destination IP address of the downstream destination specified in the Schedule tuple.

While RTB is transferring the open file, on the downstream processor the file name will begin will an “A” indicating an open file. When the file transfer is complete the file prefix on the downstream processor will be changed to a “U”. This is the file prefix also used when scheduled file transfer succeeds.

When RTB is InSV, the RTB Bsy command will stop the current open file transfer by first closing the current open file on the SDM, sending the remainder of the file downstream and closing the FTP connection with the downstream processor.

The RTB Query command will show the user the current status of RTB on a per stream basis.

For more information about RTB commands, refer to Chapter 6, "SBA Commands".

File Transfer Scheduling

File Transfer Schedule tuple fields are briefly described below.

Note: The data contained in the schedule tuple is used by the RTB application, scheduled file transfers, and the SendFile command. To activate RTB for a stream, a Schedule Tuple must exist for that stream.

Table 1 Schedule Table fields

Parameter	Value	Definition
Stream	1 to 4 character ascii string	This parameter identifies the stream associated with the RTB. This is a string that matches the stream name in table SDMBIL and CRSFMT on the DMS CM. The combination of the values for stream name, file format type, and destination acts as the key to the schedule tuple.
File_Format_Type	DIRP	This parameter identifies the file format type of the stream associated with the RTB. At this time, only DIRP file format is supported for RTB. The combination of the values for stream name, file format type, and destination acts as the key to the schedule tuple.
Destination	1 to 15 characters alphanumeric string	This parameter identifies the destination to which the billing files are transferred from the SBA. Destination must not contain unprintable characters or white spaces. The combination of the values for stream name, file format type, and destination acts as the key to the schedule tuple.
Protocol	RFTPW	This parameter identifies which protocol is used for RTB. The RTB protocol is RFTPW.
Primary_Destination	000.000.000.000 to 255.255.255.255	This parameter identifies the IP address of the primary destination for RTB.
Primary_Port	21, 1025 to 65535	The primary destination requires the Port for the IP address.
Alternate_Destination	000.000.000.000 to 255.255.255.255	This parameter identifies the IP address of the alternate destination for RTB (used when the primary destination is unavailable).

Parameter	Value	Definition
Alternate_Port	21, 1025 to 65535	The alternate destination requires the Port for the IP address.
Start_Time	00:00 to 23:59 (hh:mm)	This defines the beginning of a window of time during each day when file transfers to the downstream destination are initiated by SBA.
Stop_Time	00:00 to 23:59 (hh:mm)	This defines the end of a window of time during each day when file transfers to the downstream destination are initiated by the SBA.
Interval	5 to 1440 minutes	This controls how often SBA initiates transferring billing files to the downstream destination. This interval is only active during window of time defined by the start and stop times.
Remote_Storage_Directory	1 to 255 character string	This is the full path to the directory for storing the billing files on the downstream destination. The FTP State Machine does not issue the change working directory command if this parameter is set to the value of a single period "."
Remote_Login	1 to 20 character string	This is the login id of the account which SBA uses to login to the downstream destination.
Remote_Password	1 to 20 character string	This is the password that is associated with the login which SBA uses to login to the downstream destination.
Timeout	1 to 300 seconds	This is the maximum time in seconds that can elapse without a response from the downstream destination before the session is forced to close by SBA.
Maximum_Retries	0 to 10	This is the maximum number of times SBA attempts to complete a failed session with the downstream destination.

Parameter	Value	Definition
Retry_Wait_Time	1 - 60 seconds	This is the maximum time in seconds that SBA will wait to attempt reconnection to the downstream destination after a failed session.
Field_Separator	any printable character	This is a single character which is used by SBA to separate the components of billing file names when they are transferred to the downstream destination. If the downstream destination is UNIX, then the recommended field separator is a '.' (period), resulting in a file name such as 020001.030002.00001.01.2. If the downstream destination is VMS, then the recommended field separator is an '_' (underscore) resulting in a file name such as 020001_030002_00001_01_2.
Filename_Extension	0 to 3 character string	This is a short character string which is appended to the billing file names by SBA when they are transferred to the downstream destination. If the downstream destination is UNIX, then it is recommended that there be no filename extension. If the downstream destination is VMS, then the recommended filename extension is 'PRI'.
Active	Yes, No, Y, or N	This parameter identifies whether the schedule tuple is active. It is recommended that you set this parameter to Yes if you intend to use RTB. Value is not case sensitive.

Connection Management

In normal operation, open files transferred by RTB are only sent to the Primary IP destination specified in the Schedule tuple for each destination. If a problem occurs with that destination and open file transfer fails, the current file will be closed. RTB will be retried on the next open file(s) based on the RTB MIB value RTBMaxConsecutiveFailures (range from 0 to 10, default 3). Each time there is a failure, the current file will be closed and RTB attempted on a newly opened file until RTBMaxConsecutiveFailures file transfers have been attempted. At that point, a critical alarm will be raised, a log will be printed and RTB will be moved to the SYSB state. While in this state, open file transfer will not be active.

The retry behavior of RTB differs from that of a scheduled transfer. In the case of a scheduled transfer the primary address is tried first and if it fails it attempts to retransmit the file until the number of retries are exhausted. The retry attempts will alternate between the primary and alternate destinations indicated in the schedule tuple. However, RTB will not attempt to re-transmit the file since that impacts the ability to send current records. Instead it closes that file and "retries" on the next file opened. Unlike scheduled transfer, RTB only uses the primary destination.

> ***Note:*** Files closed by RTB when it cannot send the file downstream will still be transferred from the SDM automatically during the next scheduled transfer since the schedule tuple is Active. They may also be transferred manually with the Sendfile command.

Therefore, the retry limit indicated by RTBMaxConsecutiveFailures is used to disable RTB to prevent the creation of a large number of very small billing files.

Manual intervention is required to restore RTB once it is in the SYSB state. The trouble is often a network connection that is no longer functioning properly. The craftsperson can use the RTB IPTest command, which "pings" the primary downstream address indicated in the schedule tuple, to determine this. The network connection may require maintenance or the craftsperson may decide to change the primary address in the schedule tuple to a functioning network connection. A SYSB state may also occur if the protocol has been changed in the Schedule Tuple to something other than RFTPW.

When the problem that forced RTB to the SYSB state appears to be resolved, the RTB Bsy and Rts commands can be issued to bring RTB into service. When "Bsy'ed", the RTB Critical alarm will be removed. If the problem has been fixed, RTB will return to service when the Rts command is issued. Otherwise, RTB will be moved back to the SYSB state.

Issuing the RTB BSY command places RTB in the MANB state and removes all alarms.

Connection Request

The SDM File Transfer Subsystem makes a TCP/IP request to the well known FTP server port 21 at the downstream processor located at the Primary IP address specified in the Schedule tuple.

The UserID and Password located in the Schedule tuple are used to login to the downstream processor. If either of these 1 to 20 character strings are invalid, the connection will be refused.

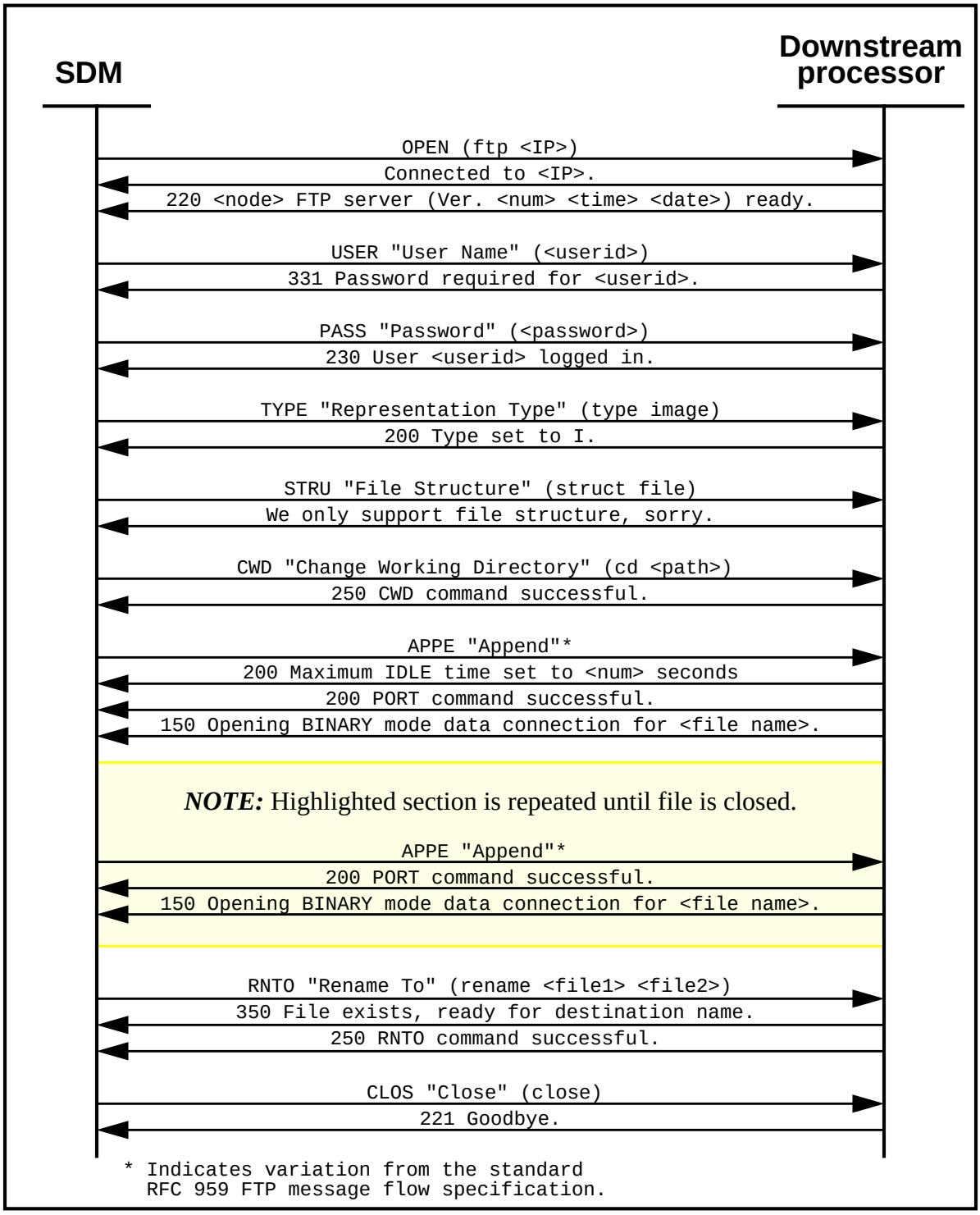
Message Protocols

The SBA platform uses an FTP client for open file transmission between SBA and the customer's remote locations. For more information, please refer to Figure 53, "RTB FTP message sequence diagram," on page 572.

Restrictions/limitations

- After the last record of the open file has been transferred downstream, the file is renamed on the downstream side, which indicates that the current open file is finished transferring. The renaming of the file is not a problem on UNIX based systems, but may be a problem for non-Unix based systems.
- If a file transfer is interrupted just after renaming a file to indicate that it is processed, but before the File Manager process on the SDM has been notified, the downstream processor considers the file to be transferred but the SDM will not. The file will therefore remain in the unprocessed state on the SDM. Since the schedule tuple is active, the file will be re-transmitted at the next scheduled interval.
- RTB open file and Scheduled file transfers may fail to complete under some circumstances (for example; a broken connection, an inaccurate login Id or password, etc.) In some cases, completion of a scheduled file transfer session (event) may not successfully transfer all the files that it should. Automated recovery of such conditions is not provided for in this release. However, since the schedule tuple is active, an attempt to re-transmit any unsent files will occur at the next scheduled file transfer interval.

Figure 53
RTB FTP message sequence diagram



Appendix H: CDR to BAF conversion

The SuperNode Data Manager-Carrier (SDMC) Call Detail Record (CDR) to Bellcore Automatic Message Accounting (AMA) Format (BAF) conversion feature (CDR to BAF) provides the capability to convert Universal Carrier Services (UCS) CDR stream records to BAF format.

SDMC SBA CDR to BAF conversion

CDR to BAF performs the following tasks:

- receives formatted billing records from the Computing Module (CM) and moves them to the SDM
- identifies specific records (CDR with the specified CDR template ID and Clock Change Record (CCR)) and performs necessary conversion to a specified BAF format
- generates audit records to monitor data integrity
- makes the records available as billing files to the operating company's downstream processor.

Note 1: CDR to BAF supports the AMADNS format only.

Note 2: If you change the BAFSuppression Mib value after the stream is turned on, you will not be able to use AMADUMP to view files that were created before the change. AMADUMP will only view files that were created while the BAFSuppression Mib was set to the same value as the value at the time the command is issued.

The CDR to BAF feature parses the CDR stream buffers received from the CM into records. The parsed records are then viewed to determine the record type. Specific record types (CDR and CCR) are candidates for conversion from a CDR format into an AMA format.

The DMS-250 UCS adds fields to the CDR to provide the information required for the supported AMA formats. The rest of the information needed is

provided using existing fields in the CDR or default parameters contained within MIB fields. These MIB fields allow you to set default values for your particular needs.

The MIB command is described in Chapter 6, "SBA Commands".

MIB fields are described in detail in Appendix B, "Management information base variables".

Not all of the necessary fields in the CDR have a one-to-one mapping with the AMA format fields. Some AMA information needs to be derived from multiple CDR fields. Refer to the *UCS DMS-250 Billing Records Application Guide* for more information.

> ***Note:*** The CDR template specified for use on the CM must contain all the CDR fields required for conversion to BAF. Refer to the *UCS DMS-250 Billing Records Application Guide* for a sample UCS CDR template layout containing all necessary CDR fields required for BAF conversion.

Structure Code

A CDR record is converted into an AMA format which varies depending on the type of call which generated the CDR. The CDR AMA format used is associated with a Structure Code.

CDR to BAF builds the BAF record using the structure code received. The structure code is used to determine which BAF fields to include in the record. The BAF fields are then used to determine which CDR fields and MIB fields are used and how the fields are converted.

The following table specifies the AMA Call Code/Structure Codes that are supported.

Table 1 Supported call codes/structure codes

Call Code	Structure Code	Identification
119	625	Terminating Access Record with ANI/CPN
119	653	Terminating Access Record without ANI/CPN
141	360	IC Number Services (Toll-free calls transported by an IC)
142	364	LEC Number Services (Toll-free calls transported by a LEC)
720	625	Connecting Network Access Incoming Record with ANI/CPN
720	653	Connecting Network Access Incoming Record without ANI/CPN

Module Codes

In addition to providing the Structure Code information in the BAF record, certain types of calls can require that additional information be provided by means of a Module which is appended to the Structure Code information.

The following table specifies the Module Codes that are supported.

Table 2 Module codes

Module Number	Description
022	Long Duration
720	LNP Connecting Network Access Record

The following table identifies which BAF modules can be appended to each of the supported AMA Call Codes/Structure Codes.

Table 3 Possible appended module codes

Call Code	Structure Code	Modules
119	625	022, 720
119	653	022, 720
141	360	022, 720
142	364	720
720	625	022, 720
720	653	022, 720

For more details on the AMA Structure Codes and Modules please refer to the *Bellcore Automatic Message Accounting Format (BAF) Requirements Specification* (GR-1100-CORE) and the *UCS DMS-250 Billing Records Application Guide*.

Clock Change Record (CCR) Conversion

As CDR to BAF parses the CDR stream buffer from the CM, it identifies a CCR record and converts the record into an AMA Time Change Record. The Time Change Record is AMA structure code 9000. A CCR record contains all the necessary fields needed to populate an AMA Time Change Record. Refer to the *UCS DMS-250 Billing Records Application Guide* for more information.

BAF Suppression

CDR to BAF writes the converted AMA records to the current opened billing file in the Automatic Message Accounting Data Networking System (AMADNS) format. Within the AMADNS format, you can suppress specific BAF table information using the MIB field BAFSuppression. The BAF tables you can suppress include:

- Sensor Type
- Sensor Identification
- Recording Office Type
- Recording Office Identification

CDR to BAF modifies information within the AMADNS File Header Record when suppression is specified. The fields which are modified within the File Header Record are File Header Length, Field Suppression Type, Record Source Type, and Record Source Identification Number.

Audit Records

CDR to BAF is responsible for the generation of hourly audit records. Various pieces of information are tracked and stored in the MIB and used to provide audit records. The audit records supported are the Hourly AMA Audit Record (AMA Structure Code 9102) and the Primary Tracer Record (AMA Structure Code 9042). These records are placed in the Billing files for reception by the Host Office Collector.

The generation of the Hourly AMA Audit Record and Primary Tracer Record are controlled through the use of the EnableAudit MIB parameter. This field is used to enable or disable the generation of the audit records. When this field is enabled, both of the previously mentioned audit records are generated every hour on the hour.

Management Information Base (MIB)

MIB stores and allows access to SBA configuration and operation information. CDR to BAF requires additional information that is stored within the MIB. MIB fields are used to provide default values used for conversion and for values associated with the hourly audit records.

MIB fields are described in detail in Appendix B, "Management information base variables". The MIB command is described in Chapter 6, "SBA Commands".

CDR to BAF is turned on by the MIB field CDR2BAFactive. If the CDR2BAFactive MIB field is not turned on, the default SDM CDR Billing functionality is used.

> ***Note:*** If you change the CDR2BAFActive, CurrentTmpltID, EnableAudit, or BAFSuppression Mib values after the stream is turned on, you must BSY, then RTS the SBA application to activate the changes to the Mib.

Logs and Alarms

Logs associated with CDR to BAF are described in Chapter 5, "SDMC SBA logs". Alarms associated with CDR to BAF are described in Chapter 4, "SDMC SBA alarms and maintenance".

Configuring a CDR stream for BAF conversion

Refer to Chapter 3, "Configuring the SDMC SBA" for detailed instructions for configuring CDR streams for BAF conversion.

Note 1: When CDR to BAF is turned on, all CDR streams configured to accept CDR250 records and generate billing files of the DIRP file format must be turned OFF. Failure to do so will cause the CDR stream to fail initialization.

Note 2: The EDGE_SWITCH office parm on the DMS switch must be set to "Y" for the proper CDR fields to be available for conversion.

Note 3: The FCDR_CDR_WORD_LAYOUT office parm on the DMS switch must be set to "NORMAL" for the proper CDR fields to be available for conversion.

Note 4: If you change the CDR2BAFActive, CurrentTmpltID, EnableAudit, or BAFSuppression Mib values after the stream is turned on, you must BSY, then RTS the SBA application to activate the changes to the Mib.

Appendix I: DMS-300 CDR formats

This appendix describes SuperNode Data Manager Carrier (SDMC) SuperNode Billing Application (SBA) support for Call Detail Recording (CDR) billing records which are produced by the DMS-300 switch. Table 1 summarizes DMS-300 record support provided by SDMC SBA.

Table 1 DMS-300 records supported by SDMC SBA

Record format name	Code	Generated
DMS-300 CDR Format 9	09	DMS-300
DMS-300 CDR Format 14	14	DMS-300
DMS-300 CDR Format 15	15	DMS-300
DMS-300 CDR extension record 11	11	DMS-300
DMS-300 CDR extension record 12	12	DMS-300
DMS-300 Block Header Record	02	SDM
DMS-300 File Rotation Record (start of file)	03	SDM
DMS-300 File Rotation Record (end of file)	04	SDM
DMS-300 File Rotation Record (restart of file)	05	(unused)
DMS-300 Clock Change	06	DMS-300
DMS-300 Restart Record	07	DMS-300
DMS-300 DATAS Synchronization	1B	DMS-300
DMS-300 Data Group Block Header	C2C2	SDM
DMS-300 Data Group Translator	K	SDM
DMS-300 Data Group Termination	E	SDM

For complete descriptions of DMS-300 CDR formats, associated extension records, and non-call records, please refer to the *DMS-300 Call Detail Recording Description*.

Supported formats

The SDMC SBA supports the following formats:

- DMS-300 CDR Format 9
- DMS-300 CDR Format 14
- DMS-300 CDR Format 15

The DMS-300 switch supports many types of DMS-300 CDR formats, but the switch can only use one format at a time.

The DMS-300 CDR format is selected by datafill in the first field of the GATEWAY_CDR_RECORD_ID parameter in table OFCOPT. The first field in the DMS-300 CDR, called the record code, uniquely identifies the format of the DMS-300 CDR.

Extension records

SDMC SBA includes the capability of handling the following records:

- DMS-300 CDR extension record 11
- DMS-300 CDR extension record 12

Immediately following the generation of DMS-300 CDR Format 14 or 15 an extension record may be generated.

DMS-300 extension record 11 records the number of trunk seizures for a single call. It is generated when there is more than one trunk seizure for a call.

When supplementary services have been requested for a call, the DMS-300 extension record 12 is generated to store the ISDN service or supplementary service associated with the call.

Like a DMS-300 CDR, the first field of the extension record is used to uniquely identify it.

Non-call related CDR records

SDMC SBA also provides the capability to handle or generate the following non-call related CDR records produced by the DMS-300 switch:

- DMS-300 Block Header Record
- DMS-300 File Rotation Record
- DMS-300 Clock Change
- DMS-300 Restart Record

- DMS-300 DATAS Synchronization
- DMS-300 Data Group Block Header
- DMS-300 Data Group Translator
- DMS-300 Data Group Termination

The Block Header Record and File Rotation Records are generated by the SDMC SBA and are in the same format as if they had been generated by the DMS-300.

The Data Group Block Header, Data Group Translator, and Data Group Termination records are generated by the SDMC SBA from TRKNAME data transported using the Table Access Interface (TAI), and also are in DIRP format.

Similar to the DMS-300 CDR, the first field in the non-call related record is called the record code. The SDMC SBA supports record codes 02, 03, 04, 06 and 07, 1B, C2C2, K and E. The generation of record codes 1B, K and E is controlled by the GWCDR_OPT parameter.

Restrictions and limitations

- The *DMS-300 Call Detail Recording Description* directs that a manual file rotation be performed on a DMS-300 after the cold restart following a CDR format change. The SDM performs such a rotation automatically and unconditionally.
- A CM load containing CSP11 or higher (GATEWY005 or higher) is required.
- Large-scale provisioning of table CLLI (upon which table TRKNAME depends) using DMOPRO (or other means faster than the typing of a craftsperson) is incompatible with the operation of the data record (K and E) delivery. If more than a few tuples are to be changed in table CLLI, it is recommended to BSY both the SBA and the TAI until the datafilled is complete.
- When the values of the office parameters which control the operation of this feature are changed, a subsequent file rotation must occur on the SDM before the changes take effect on that platform. The exception is when a CDR-format change (for example, 09 to 15) is specified. The presentation to the SDM of the first records of the new type will trigger an automatic rotation. Any other office parameter changes desired to take effect at the same time should be datafilled before the format change.
- A CDR and its extension records (if any) are placed into DIRP blocks atomically by the SDM. This function is dependent on the automatic delivery of these records to the SDM by the CM.

- AMADUMP will operate on an open file, but only as long as the file stays open. A rotation will cause AMADUMP to lose access to the file.
- When AMADUMP is used on an open file, only those complete records in the file at time of invocation will be dependably visible. Other records may become visible during the same invocation, depending on activity in the billing stream. Record codes 11 and 12 at the current end of a file are visible only when they are at their maximum possible sizes, or when another record follows.

Appendix J: DMS-GSP CDR support

This appendix describes SuperNode Data Manager Carrier (SDMC) SuperNode Billing Application (SBA) support for Call Detail Recording (CDR) billing records produced by the DMS-GSP switch.

This SDMC SBA feature runs on the SDM and performs the following tasks:

- receives DMS-GSP Call Data Record (CDR) and associated extension records and supported Switch Event Records (SERs) generated by the DMS-GSP switch
- generates supported SERs, which are file-specific
- stores records in files in DIRP format
- searches for and displays records in DIRP billing files

Table 1 summarizes DMS-GSP record support provided by SDMC SBA. For complete descriptions of DMS-GSP CDR formats, please refer to the *DMS-Global Services Platform Billing Records Reference Manual*.

Table 1
DMS-GSP records supported by SDMC SBA

Record format name	Code (HEX, 1 byte)	Generated by	Size (bytes)
DMS-GSP CDR	F0	DMS-GSP	128
DMS-GSP CDR INAP extension record	F2	DMS-GSP	128
DMS-GSP CDR IAA extension record	F3	DMS-GSP	128
DMS-GSP Block Header Record (BHR)	F1	SDM	64
DMS-GSP Graceful Start Record (GSR)	FA	SDM	64
DMS-GSP Graceful End Record (GER)	FB	SDM	64
DMS-GSP Clock Change Record (CCR)	FE	DMS-GSP	64
DMS-GSP Filler Switch Record (FSR)	EA	SDM	64

Table 1
DMS-GSP records supported by SDMC SBA

Record format name	Code (HEX, 1 byte)	Generated by	Size (bytes)
DMS-GSP Hourly Switch Record (HSR)	EB	DMS-GSP	64
DMS-GSP Daylight Change Switch Record (DSR)	EC	DMS-GSP	64
DMS-GSP End Block Record (EBR)	ED	SDM	64
DMS-GSP Date Change Record (DCR)	EE	DMS-GSP	64
DMS-GSP Blank Switch Record (BSR)	EF	SDM	64

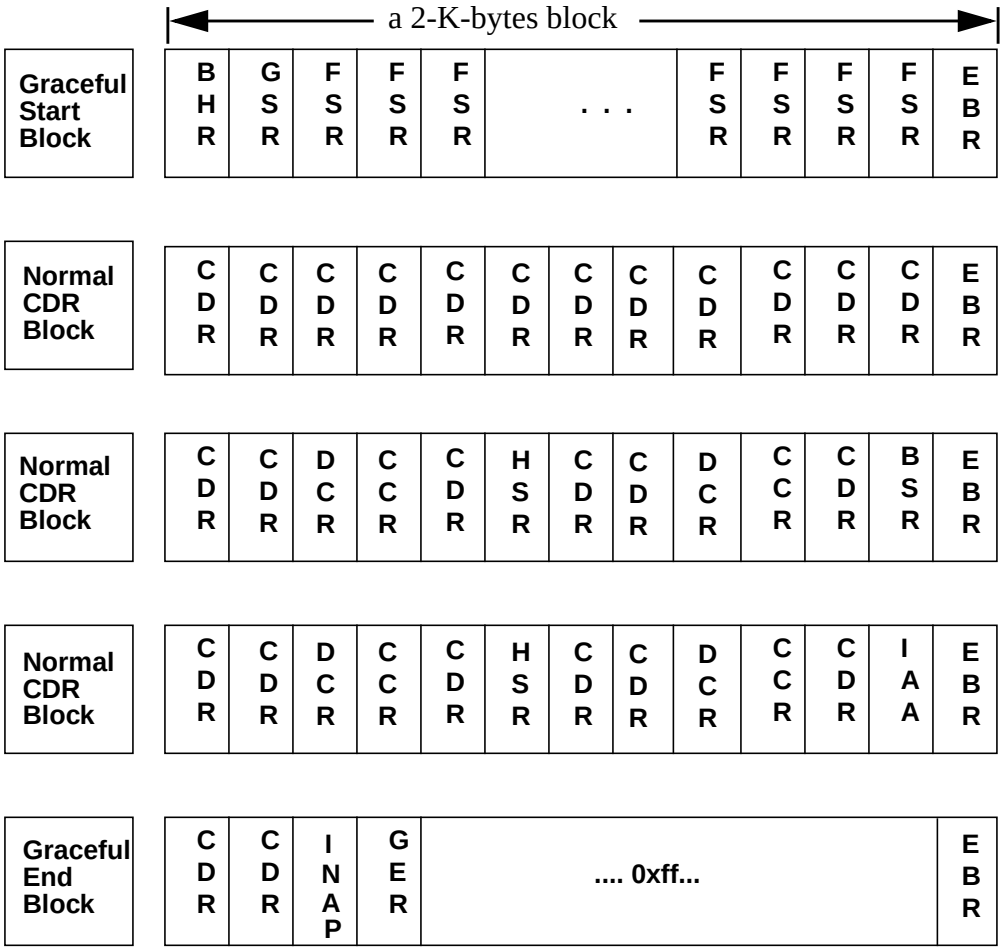
As the file is an implicit interface to the downstream process, files are built according to the following (DIRP) semantics.

- This feature registers for all records delivered from the CM.
- File rotation occurs when a file size or time-open limit is reached.
- Blocks are 2048 bytes long.
- Event records (e.g., BHR) are created on the SDM using local information (e.g., time.)
- Event records created on the SDM are padded to a length of 64 bytes. The value 0x5 is used to pad an unused tuple of an event record.
- All records from the CM are written in the order received and stored in files as are, without padding.
- This feature will be unaware of any non-call records generated on the CM that are not inserted into the billing stream.
- Files written by the SDM are of the same form as files written by DIRP on the GSP-CM. However, there is no guarantee that any file written on the SDM will have the same exact contents as a file written in/over the same period of time by DIRP on the CM.

DMS-GSP DIRP format file structure

Files generated by the SDM for the DMS-GSP product do not contain ESRs or SRRs, but are otherwise identical in structure and format to CM-generated files, and parse similarly. Refer to Figure 1 for the layout of a normal DIRP file.

Figure 1 Typical DMS-GSP DIRP Files



Acronyms
CDR - Call Detail Record INAP - Intelligent Network Application Part BHR - Block Header record GSR - Graceful Start Record GER - Graceful End Record CCR - Clock Change Record FSR - Filler Switch Record HSR - Hourly Switch Record DSR - Daylight change Switch Record EBR - End Block Record DCR - Date Change Record BSR - Blank Switch Record 0xff - HEX value for block fillers IAA -Inter-Administrative Accounting record

Restrictions and limitations

The restrictions and limitations of this feature follow:

- The feature supports only the DIRP file format and the records listed in Table 1. You are not prevented from configuring the stream to support AMADNS fileformat, but if the stream is configured with a file format other than DIRP, this feature will not function.
- This feature is dependent on TAI (table access interface) to retrieve the SWITCH_ID office parameter from table OFCVAR on the switch. The switch-ID is needed to create some of the supported event records.
- When AMADUMP is used on an open file, only those complete records in the file at the time of invocation will be visible. Other records will become visible during the same AMADUMP session with successive DUMP sub-commands (the rest of partial record will be available as well as other new complete records.) Refer to Chapter 6, "SBA Commands" for more information about the AMADUMP command.
- The SWITCH_ID value on the DMS-GSP switch is propagated to the SDM by the TAI. Because of inherent latencies in the TAI, synchrony of this value (the NODE_ID field in CDRs and SERs) between CDRs and SERs in a single file cannot be guaranteed. Furthermore, a new switch-id is in a new file. That means, all file-event records (e.g., BHR and EBR) contain the same switch-id within a file. If the switch-id is changed, it will be in file-event records in a next file.
- The content of any one file generated on the SDM cannot be guaranteed to be identical to the content of a file generated by DIRP on the switch, even though the complete set of CDRs and extension records written to files is identical. That is, neither the partitioning of records into files, nor the value of file-specific sequence numbers assigned to individual file-event records, can be guaranteed to be identical.
- DMS-GSP software release based on CSP10 or later is required on the CM.
- This feature only supports GSP06, GSP07, and GSP08 releases under the following conditions. If any of these conditions is not met, the feature only supports GSP06 billing record formats, because the Record Parsing Engine (RPE) database was created based on GSP06.
  - — The CDR record format is not changed. That means its number of fields and field definitions are the same as in GSP06.
  - — The SER record formats are not changed. That means the number of fields and field definitions in each are the same as in GSP06.
  - — The headers of extension records (INAP and IAA) are not changed. That means a) the INAP header (REC_CODE, FCINUM,

RECODE_ID, LAST, SEQ_NUM) format and b) the IAA header (REC_CODE, PARMNUM, EXTNUM, LAST, SEQ_NUM, LENGTH) format are the same as in GSP06.

- This feature does not support the TOPS Detail Record (TDR).
- The DMS-GSP and UCS DMS-250 products both use CDR250 as their record-formats. Therefore, this feature can not run concurrently with the UCS CDR Support feature. To make sure that the appropriate feature is in operation, a new MIB parameter, typeOfCDR, is added by this feature indicating the type of switch the SDM is connecting to. Refer to Appendix B, "Management information base variables" for more information on the typeOfCDR MIB parameter.
- It is a known CM limitation that CDR and its associated extension records (INAPs and IAAs) can span over two consecutive files. This limitation applies on the SDM as well. In addition, if the billing system/stream goes into the Backup mode after sending the CDR and some of the extension records to the SDM resulting in the rest of the extension records sent to SLM disk on the CM, this feature does not guarantee that CDR and all its associated extension records will be in two consecutive files when the system/stream recovers from the Backup mode.
- Due to the fact that some SERs are generated on the SDM and thus contain the SDM's local timestamp, there may appear to be a date/time inconsistency within a billing file should the date/time on the SDM differ from the date/time on the DMS-GSP. Synchronizing the time/date of the DMS-GSP with the SDM is the operator's responsibility.

Appendix K: Multiple destination billing

The SuperNode Data Manager-Carrier (SDMC) Supernode Billing Application (SBA) provides a distributed, high capacity and scalable generic billing system which receives billing records from the CM, creates files containing the records and makes the files available to the operating company's downstream processor(s).

Prior to the SDMC12 release, the pushed (OUTBOUND file transfer) transfer of billing data could only be initiated from the SDM Remote Management Interface (RMI). There also could be only one downstream destination for each stream. Each destination corresponded to a schedule tuple, and although the schedule tuple contained a primary and secondary address, the conceptual destination was still the downstream billing processor.

The SDMC multiple destination per billing stream feature allows multiple external clients to register for pushes of billing data on a per stream basis. Scheduled file transfer and Real Time Billing (RTB) commands allow for multiple destinations for a single billing stream. Multiple destination capability can be active on multiple billing streams. The billing data sent to the downstream destination is unfiltered.

Multiple destination capability can also be activated by logging onto the SDM's RMI and datafilling scheduled file transfer and/or RTB as desired. In this case the security is provided by limiting access to the SDM.

A remote registration interface will also be included to allow applications such as the ERM (Event Record Manager) to register for pushes of billing data over the Ethernet lan without logging in to the SDM. Security for this functionality will be provided by the customers DCE (Distributed Computing Environment) network. It should be noted that since the Remote Registration System (RRS) depends on DCE to provide security, DCE is required by the RRS.

DCE is not presently required by the SBA application. Therefore, pains have been taken to insure that a dependency is not created by this feature. The portions of the remote registration interface that provide for a secure login to the SDM are packaged in the Remote Registration System(RRS) application

and not in the SBA application. Both the SBA and RRS applications must be installed for the remote registration for billing data to function.

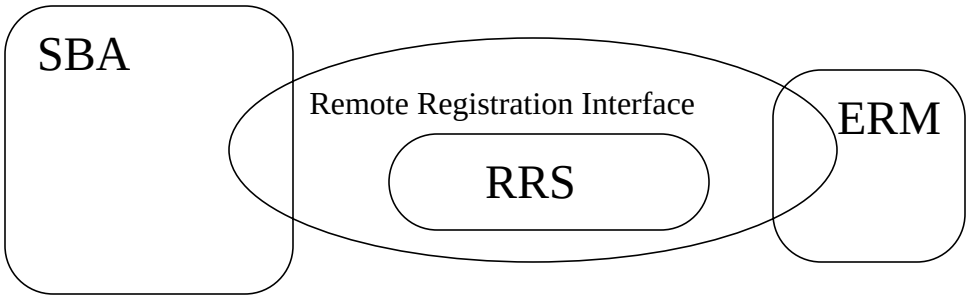
The RTB application is delivered in the SDMC load and the RRS application that provides remote registration for the SBA will also be in SDMC due to its dependence on RTB. Therefore, this feature's enhancements to RTB and the new remote registration interface to SBA will only be available in the SDMC load.

Functional description

This feature can be divided into two basic components; multi-destination support, and the remote registration interface. The multi-destination support can be further broken down into support for scheduled file transfer and support for RTB.

The Remote Registration System (RRS) allows the a downstream collector to register for billing data remotely. In SDMC12, only the ERM uses this interface.

Figure 1 Remote Registration Interface



Multi-destination Scheduled File Transfer

The file transfer subsystem uses a schedule tuple to specify scheduled file transfers. These tuples contain all the data needed to execute a file transfer event. In previous releases the key to this tuple was a combination of stream and file format. Although the craftsperson was able to datafill a primary and alternate address, the alternate address would only be used if the file could not be transmitted to the primary address. A schedule tuple would therefore correspond to a single redundant destination pair.

This feature adds a destination string as a third part of the schedule tuple key. For each combination of these three fields (stream, file format, and destination) different file transfer parameters can be specified. Table 1 provides descriptions of schedule tuple parameters.

Table 1
Schedule tuple parms

Field Names	Descriptions
Stream	Part of the key which identifies the stream for which this schedule tuple applies.
File_Format_Type	Part of the key which identifies the file format that the stream is using.
Destination	This is a new part of the key added by this feature. It is a string between one and fifteen characters long that represents the destination of this schedule tuple.
Protocol	Specifies the file transfer protocol that this scheduled event will use to transfer billing files.
Primary_Destination	The primary IP address to which billing files are sent.
Primary_Port	The port on which the remote application is listing on the primary remote client.
Alternate_Destination	If there is a second IP address to send data to this destination (The remote application has redundancy), it is specified here. This address is only used if billing data can not be sent to the primary address. RTB does not support retrying the file transfer in the event of a failure, so RTB will never use this information.
Alternate_Port	The port on which the remote application is listing on the alternate remote client. RTB does not support retrying the file transfer in the event of a failure, so RTB will never use this information.
Start_Time	The time of day to start triggering file transfer events to this destination.
Stop_Time	The time of day to stop triggering file transfer events to this destination.
Interval	The number of minutes between each file transfer event triggered between the start time and the stop time.
Remote_Storage_Directory	The directory to store billing files in the remote client machine.
Remote_Login	The login id to use when making the FTP connection to the remote client.

Table 1
Schedule tuple parms

Remote_Password	The password to be used by FTP when login into the remote client.
Timeout	Time in seconds that the SDM will wait for a response from FTP, except during the actual file transfer.
Maximum_Retries	The number of times the SDM will retry the file transfer in the event an error is encountered. Scheduled file transfer will toggle between the primary and alternate destination addresses during these retries. RTB does not support this type of retry behavior. Instead RTB will close the current file and attempt transfer on the next file.
Retry_Wait_Time	Number of seconds to wait before retrying the file transfer. RTB does not support this type of retry behavior. Instead RTB will close the current file and attempt transfer on the next file.
File_Extension	This extension, if specified, is added to the name of the billing file on the downstream processor.
Field_Separator	Character used to separate the file name from the extension.
Active	Indicates if this schedule tuple is active. The file transfer event describe be the tuple will be triggered only if the schedule tuple is active.

Figure 2 illustrated a possible scenario with multiple destination billing. In this figure, billing data for a stream (OCC) is being sent to three destinations. Two of these destinations, DOWNSTREAM and FRAUDDETECTOR, have built in redundancy and if one of the machines goes down the other can take over the processing of billing data. The destination OSS does not have this redundancy.

Table 2 gives an example of the datafill for this scenario. The values of interest in this table are the key values and the values for Primary_Destination and Alternate_Destination. The other values would be selected based on the requirements of the individual destinations.

Figure 2 Multiple destinations

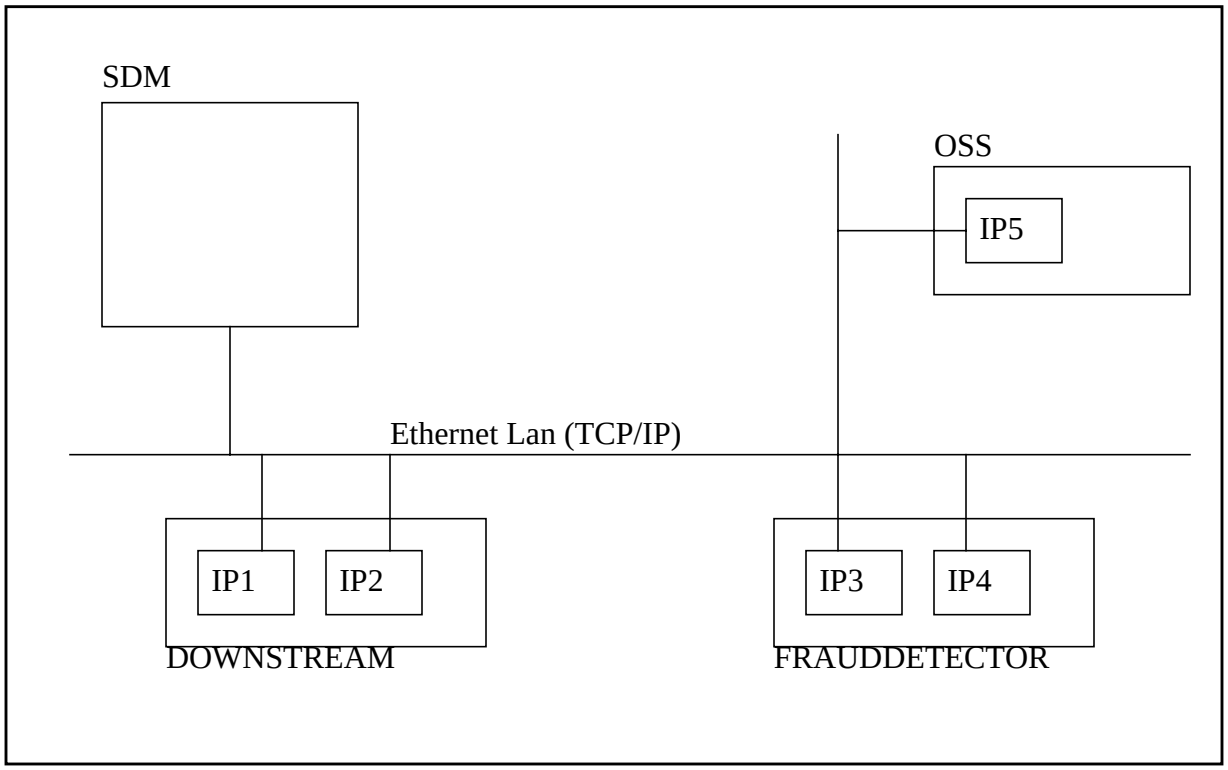


Table 2
Example Multi-destination datafill

FIELD NAMES	ERM DATA	DOWNSTREAM DATA	FRAUDDETECTOR DATA
Stream	OCC	OCC	OCC
File_Format_Type	DIRP	DIRP	DIRP
Destination	OSS	DOWNSTREAM	FRAUDDETECTOR
Protocol	RFTPW	RFTPW	RFTPW
Primary_Destination	IP5	IP1	IP3
Primary_Port	21	21	21
Alternate_Destination	IP5	IP2	IP4
Alternate_Port	21	21	21
Start_Time	0:00	0:00	0:00
Stop_Time	23:59	23:59	23:59
Interval	5	5	5

Table 2
Example Multi-destination datafill

Remote_Storage_Directory	/pathname	/pathname	/pathname
Remote_Login	myLogin	myLogin	myLogin
Remote_Password	password	password	password
Timeout	30	30	30
Maximum_Retries	3	3	3
Retry_Wait_Time	1	1	1
File_Extension			
Field_Separator	.	.	.
Active	Yes	Yes	Yes

Multi-destination RTB

RTB transfers the currently open billing file as the records are being written to disk, providing minimal delay from the time the record was first created to the time the billing data is transferred to the downstream destination.

In previous releases, the key to the RTB tuple was the stream name. With this key it was possible to match the RTB tuple to a schedule tuple since a stream will only support one file format. In this feature the file format and the destination are added to the key. This will allow the RTB tuples to map to a single schedule tuple and provide the ability to run multiple instances of RTB on a single stream.

Many of the data items in the schedule tuple are used by RTB to perform the file transfer. For RTB to be activated requires that a schedule tuple be present, that the file format be DIRP and that the protocol must be RFTPW. The schedule tuples in the illustration above would support RTB.

To activate RTB it is necessary to datafill an RTB tuple (see Table 3 for a description of the fields). The key to the tuple must correspond to an existing schedule tuple key. Once the RTB tuple which describes an RTB instance is datafilled, the RTB instance can be “BSYed” (busyed) and “RTSed” (returned to service).

Table 3
RTB Tuple

Field Names	Descriptions
Stream Name	Name of the stream to which this tuple applies. Used in conjunction with the file format and the destination to match to a specific schedule tuple.
File Format	Name of the file format to which this tuple applies. Used in conjunction with the stream and the destination to match to a specific schedule tuple.
Destination	Name of the destination to which this tuple applies. Used in conjunction with the stream and the file format to match to a specific schedule tuple.
MaxConsecutiveFailures	When RTB encounters an error transferring a billing file, the file will be closed and RTB will attempt to transfer the next open billing file. This parm controls how many times this can happen on consecutive files before the RTB instance is placed in the SYSB state.

Multiple destination billing Interactions

Scheduled file transfer events occur only if the tuple is active (the active field set). Activating a schedule tuple has the effect of notifying the file manager that the scheduled file transfer event specified by this schedule tuple is interested in processing billing files in the closedNotSent state. Once the scheduled file transfer event has finished processing the billing file (sending it downstream), the file manager is notified that file transfer is no longer interested in the file. When all the parties registered with the file manager as being interested in the file have declared themselves complete, the file manager will change the state of the file to closedSent making the file available for deletion. Therefore, if multiple schedule tuples are active, the file will not make the state transition to closedSent until the file has been transferred to all the destinations.

Usage Notes:

- Schedule Tuple Active Restriction.

  It is therefore essential that all destinations that require guaranteed receipt of all billing data have an active schedule tuple corresponding to that destination. Having an active tuple will insure that the file remains on the disk in the closedNotSent state until it has been successfully transferred.

  This is important with respect to RTB. For example, if RTB were active on two destinations A and B without the schedule tuple being active and

the file transfer to destination A failed, the file transfer to B could still complete successfully and the file would transition to the closedSent state without ever being transferred to destination A. If, however the schedule tuples had been active, the file would remain in the closedNotSent state until the new scheduled file transfer event, at which time the file would be transferred to destination A (assuming the problem had been corrected) and transition to the closedSent state.

Having the schedule tuple active and RTB INSV does not result in the file being transmitted twice. The scheduled file transfer event can detect that the file was successfully transferred by RTB and indicate to the file manager that it has completed processing the file without retransmitting the file to the same downstream processor.

- Schedule tuple must be datafilled for RTB to be configured.

  For an RTB instance to be started a corresponding schedule tuple must already be datafilled. RTB will use information in the schedule tuple in executing its own file transfer events.

- RTB causes a file rotation if an error occurs.

  An error occurring in RTB will cause the billing file for the stream to rotate even if there is more than one RTB instance transferring files for that stream (billing is being sent to more than one destination).

Background information

The pushed transfer of billing data can, currently, only be initiated from the RMI. There also can be only one conceptual destination for each stream. Each destination corresponds to a schedule tuple, and although the schedule tuple contains a primary and secondary address, the conceptual destination is still a single downstream billing processor.

Multiple destinations would be allowed by this feature. Thus, multiple monitoring applications such as ERM can register for billing file pushes through the use of a new remote registration interface over the Ethernet link to the LAN/WAN.

- The remote client uses the remote registration interface to communicate with RTB and scheduled file transfer components of the SBA using the same proxy interfaces that the RMI uses.
- Scheduled File Transfer uses schedule tuples to organize and schedule file transfer events. Each schedule tuple contains a key which is a unique combination of stream and file format. This feature will enhance this key to be a unique combination of stream, file format, and destination. The destination will be a string between one and fifteen characters long with no white space.

- RTB creates and maintains a process for each open file transfer. Currently, RTB can be activated on a per stream basis. This feature will enhance the functionality of RTB so that an instance of RTB can be activated for each valid combination of stream file format and destination. Such a combination is considered to be valid if there exists a schedule tuple with a key with the same combination.
- The File Transfer Controller provides a uniform interface to RTB and Scheduled File Transfer for initiating file transfer events. It also runs the correct state machine object based on the protocol datafilled in the schedule tuple.
- The File Transfer Protocol component is a wrapper for an FTP implementation (FTPW in the figure below). It controls the actual commands sent to the FTP client and handles the responses. It should be noted that this FTP client is not part of the SBA but is provided by the AIX operating system.
- The RFTPW component is RTB's protocol state machine which has been modified to support open file transfer and to use a modified version of the FTP client that will handle open file transfer and is part of the SBA.
- Some of the schedule RMI commands (add and change) will be enhanced to take the destination into account when communicating with the Scheduled File Transfer component. The RTB RMI commands will be enhanced to take the file format and the destination into account when communicating with the RTB controller.
- The Log Alarm and Trap(LAT) component maintains and distributes information about logs, alarms and traps for all the components in the SBA application. Currently alarms are maintained on a per stream and per application basis. This is not sufficient for the needs of this application since alarms could be raised on a per destination basis as well as per stream and application. This component will therefore be enhanced to maintain an ID for each alarm raised. This feature will use this ID to store the destination so that conflicts between destinations on the same stream can be resolved.

Billing files are sent to the remote client via FTP over the Ethernet link provided by the SDM. The state machine and FTP client are used for the transfer depends on the protocol datafilled in the schedule tuple. If RFTPW is datafilled the real time billing state machine and the modified FTP client is used. RTB can only be active if the protocol in the schedule tuple is RFTPW. When the FTPW protocol is selected the base state machine and the FTP client provided by AIX are used.

SBA base RMI changes

Description

Currently, the scheduled file transfer is done based on the information stored as schedule tuples in the base MIB. The schedule tuple, which contains all the data required by FTP to transfer the file, uses a stream name and file format as the key when storing the information in the base MIB. Under the RMI schedule level, users datafill any configured stream with scheduling information through the use of schedule add and change commands.

Since currently a schedule tuple corresponds to only one destination per stream, billing files can only be sent to one destination per stream at one time.

This feature adds the new capability for a single stream to send billing files to multiple destinations. As such a requirement, a single stream now can have multiple schedule tuples with different destinations, and they are stored separately in the base MIB. In order to achieve this enhancement, the interface of schedule and sendfile commands needs to be changed to accept a new destination parameter. Below are the schedule and sendfile commands which require modifications except the schedule delete and list since they work with the stream name only.

- **Add <stream> <fileformat> <destination>** : Adds new scheduling information for a configured stream to a base Mib.
- **Change <stream> <fileformat> <destination>** : Changes the existing schedule tuple in the base MIB.
- **Sendfile <stream> [dest <dest>] ....** : Manually sends billing files to a specified destination or to all datafilled destinations in schedule tuples. This command resides in the FILESYS level.

Real Time Billing

Currently RTB handles everything on a per stream basis. In this feature we will be introducing the concept of an RTB instance which will consist of a stream name, a file format and a destination. The logic for configuring, controlling and maintaining these instances will remain the same.

RTB uses two types of lock files (zero length files) to coordinate the file transfer activities initiated by RTB and those initiated by Scheduled File Transfer.

These files have the format of <stream><filelabel>.InUse and <stream> <fileLabel>.RtbDone.

The .InUse lock file is created by RTB when a file transfer event is initiated. When the billing file is closed and moves to the closedNotSent state, a

Scheduled File Transfer event could fire before RTB has completed transferring the file. In this case the Scheduled File Transfer state machine will skip this file since RTB is still transferring the file, but the billing file is maintained in its list of registered files so that if RTB fails to transfer the billing file Schedule File Transfer can send it in the next scheduled event.

When RTB has successfully completed the transfer of the billing file the .InUse file is renamed to an .RtbDone file if Scheduled file transfer is active. If Scheduled File Transfer is not active the .InUse file is deleted by RTB.

If Scheduled File Transfer is initiated and the state machine finds an .RtbDone file corresponding to a file label contained in its transfer list, the file is removed from the list of registered files and the .RtbDone file is deleted.

This feature will alter the format for these file to <stream> <destination> <filelabel>.InUse and <stream><destination> <filelabel>.RtbDone.

RTB RMI changes

The Real Time Billing application, which transfers the open file billing in real time, is created and partially based on the information which is stored as a schedule tuple in base Mib. But apart from that, RTB has its own MIB in which RTB state and number of consecutive failures are stored as a tuple. In SDMC12 release, Multi-Destination feature introduces new capabilities of open file transfer in which billing files of a stream can be sent, in real time, to several destinations simultaneously.

In this new feature, multiple destinations per stream leads to the enhancement of RTB tuple's key which supports multiple RTB tuples per stream. The new RTB tuple's key contains two extra fields of file format and destination.

To handle new multiple destination capabilities, the RTB commands under both RTB and CONFRTB levels, except for the RTB query command, require changes to accept the extra parameters of file format and destination in the command line. The first stream name parameter is still optional if the set command has been previously used. In addition to the changes in the RTB and CONFRTB's command lines, the tuple in RTB MIB will be expanded to take the two extra fields of file format and destination.

To simplify the use of a three field key, a new class called RTBInstance is created to handle combinations of stream name, file format, destination as a single object. Furthermore, from now on, the RTB commands will use RTBInstance, instead of a stream name, as a key to access RTB tuple or to call RTBController's methods. When expanding a stream from single state to multiple states, there is a need to enhance RTB query command to display all the RTB states of that stream.

In this release, a new query command is added to the CONFRTB level menu to show which destinations of the stream has been RTB configured. In fact, both query commands of RTB and CONFRTB levels use the same executable. In supporting of this enhanced query's operation, a new RTBController's rtbTupleList() is created for the purpose to retrieve all the RTB configured tuples.

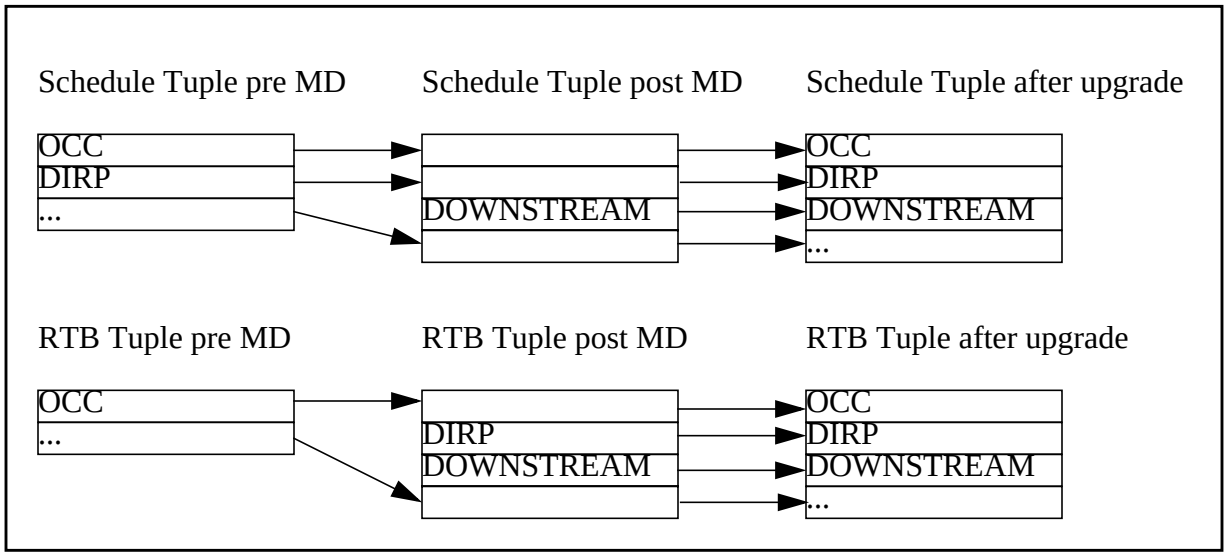
Transition to a new SBA load

The Destination string is added to the base MIB and the destination and the file format are added to the RTB MIB. We need to ensure that the initial values for these fields are reasonable and that a one to one correspondence is maintained between the RTB tuples and the schedule tuples. This is accomplished by giving the first sixteen schedule tuples in the base MIB (the maximum possible before this feature) a default destination value of DOWNSTREAM. In the RTB MIB the values of file format and destination for the first sixteen tuples (the maximum possible before this feature) are given values of "DIRP" and "DOWNSTREAM" respectively. The assumption of DIRP is possible because it is currently the only value of file format supported by RTB.

The following figures illustrate how this works for a pre multi-destination to a post multi-destination upgrade as well as a post multi-destination to a post multi-destination upgrade.

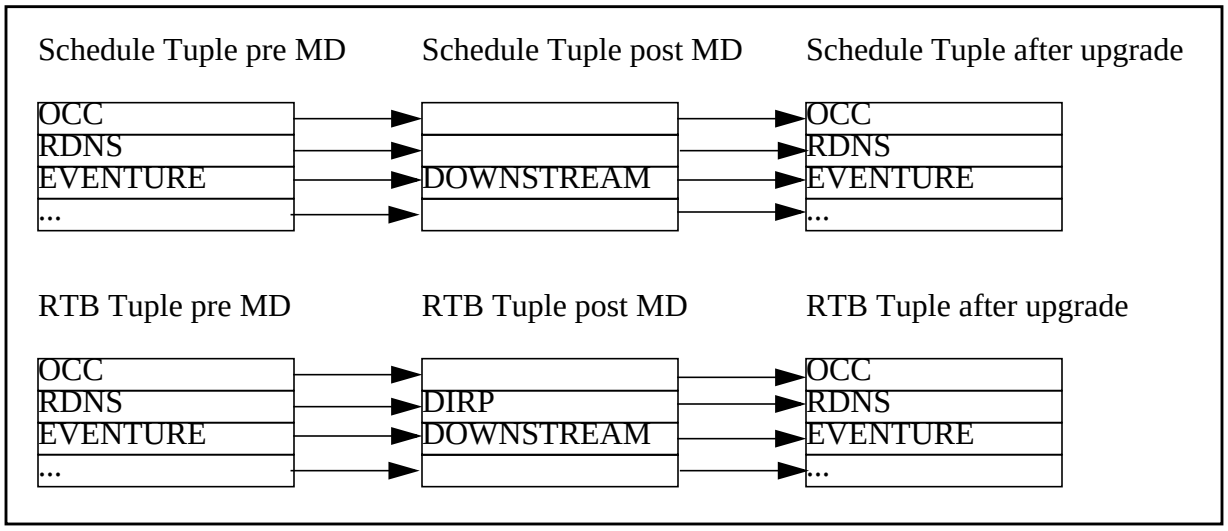
In the pre to post case the default values provide the additional datafill needed to be valid with the changed code.

Figure 3 A pre multi-destination load to a post multi-destination load



In the post to post case the default datafill is overwritten with the correct datafill.

Figure 4 A post multi-destination load to a post multi-destination load



Limitations and restrictions

The following additional restrictions apply to the SDMC12 release of this feature:

- To insure that all billing data is transferred to a specific destination, it is necessary that the corresponding schedule tuple be active.
- An error occurring in RTB will cause the billing file for the stream to rotate even if there is another RTB instance transferring files for that stream (billing is being sent to more than one destination).
- ERM is the only application that is making use of the remote registration interface in SDMC12. To send billing data to other destinations, the craftsperson must datafill the destination using the RMI.

Appendix L: SDM SBA Filtering

Introduction

The SuperNode Data Manager(SDM) SuperNode Billing Application (SBA) Real Time Filtering feature (referred to as SBA filtering in this document) allows you to select various subsets of billing records and schedule them for transfer to different locations.

SBA filtering provides a new *filtered* stream which contains a subset of the records that are in an associated CM billing stream. From the perspective of the SDM, filtered streams are the same as normal streams, and represent a subset of the records that are delivered in a single CM billing stream. Features such as Real Time Billing and Multi-destination will function on filtered streams in the same way as they would a CM billing stream.

Filtered streams cannot be datafilled on the CM. Filtered streams are only visible on the CM in terms of logs and alarms generated by SBA. Logs and alarms generated by a filtered streams that are sent to the CM will be sent under the name of the corresponding CM billing stream. The name of the filtered stream will be included in the text of the log or alarm. When a filtered stream alarm is viewed on the SDM it will have the same format as an alarm generated by a CM billing stream.

The following semantics apply for filtered streams:

- Every billing stream may have multiple filtered streams observing or handling its records.
- Every filtered stream is associated with only one CM billing stream. There is no relationship between filtered streams. Each filtered stream is configured independently of any others.
- Each CM billing stream receives all records in the stream, regardless of the presence or activity of filtered streams.
- Every record is guaranteed to go to at least one stream.
- You can configure the set of records handled by a filtered stream.

- Any filtered stream may be configured to handle all records in the billing stream.
- More than one filtered stream may handle a given record.
- No special mechanism is provided to guarantee explicit mutual exclusion among filtered streams. This is intentional, as there may be cases where it is perfectly reasonable and desirable that subsets of billing records handled by different filtered streams overlap. Mutual exclusion may be achieved by the careful use of criteria, but is not explicitly supported. In particular, all records are in any case received by the existing CM billing stream.
- Filtering occurs at a point before records are to be written to files. There is no guarantee that non-call/non-billing records in a file generated in a filtered stream will conform to the filtering criteria applied to that stream. (An example might be timestamps in a DIRP BHR that, to be correct, might reflect a later time than specified by a criterion.)
- BAF billing streams may contain tracer records only meaningful or correct in the context of the entire set of records in the stream. There is no guarantee that such records will be meaningful or correct in respect of a filtered subset; in most cases they are almost guaranteed NOT to be. Additional criteria may be applied to remove such records from a filtered substream. These records will continue to be correct for the CM billing stream.

In the SDMC13 release, the following types of billing streams are supported:

- UCS CDR250 in DNS
- UCS CDR250 in DIRP

and

- EBAF in DIRP
- EBAF in DNS

CONFSTRM level commands

When a filtered stream is activated, it reads a criteria expression from a file. This criteria will be used to filter the billing stream. You must specify this filter criteria file when you create the filtered stream using the CONFSTRM->ADD command.

The SBA filtering feature introduced the following new CONFSTRM level commands:

- ACT - activates a filtered stream
- DEACT - deactivates a filtered stream

- UPDATE - reevaluates the filter criteria for a filtered stream
- STOP - stops records from being sent to a filtered stream (required to deactivate an active filtered stream)
- START - resumes activity of a filtered stream (after stop)

To change the criteria for a filtered stream, you must change the filter criteria file name using the CONFSTRM->CHANGE command. Then you must update the filtered stream using the CONFSTRM->UPDATE command.

The state of the filtered stream is not dependent on the state of the CM billing stream that it is filtering. The filtered stream can be activated before the corresponding CM billing stream. A filtered stream can ether be active or inactive. The state of the CM billing stream does not affect the associated filtered streams.

AMADUMP

AMADUMP allows you to save and restore filtering criteria to a file. It is recommended that you use AMADUMP to refine and test the filter criteria on existing billing files before you assign the criteria to a filtered stream. After you refine and test the criteria, you can save it to a file (using the filter save command). You can also list or remove existing files.

WARNING

Saving a criteria to a file will overwrite the previous contents of the file.

System performance

Additional overhead is required to apply the filtering expressions of all filtered streams to each and every record in the billing stream. Additional time is required for a file manager to manipulate the matched record.

Cost of filtering expressions application

The total filtering processing time for each record depends on:

- the number of filtered streams
- the complexity of the filtering expression
- the total number of search fields

- the complexity of the field comparisons

For filtered streams, performance will be degraded the least if the following conditions are met:

- The number of filtered streams is as low as possible
- Each record is claimed by only one stream, or as few as possible
- Expressions consist of simple (preferably single) predicates
- Terms of predicates are values, not functions
- Predicates apply each against a single field (preferably integers)

Cost of record manipulation

The additional cost of handling each matched record in a filtered stream is not expected to exceed the cost of filtering the record.

Limitations and restrictions

The following restrictions apply to SBA filtering:

- Any Tracer or Audit records received from the CM will be invalid in the filtered streams unless the criteria is such that all records are matched. These records will only be valid in the filtered stream if that stream is datafilled to accept all records coming from the CM, or in the primary stream.
- Records that have a logical association such as a CDR/OSR pair must both meet the matching criteria for them to be included in a filtered stream. This means that the OSR will not be placed in the filtered stream simply because the associated CDR was matched. In future releases this will also be true for streams that have extension records associated with there primary billing records. This does not apply to BAF modules, since they are a part of the record.
- A maximum of sixteen streams can be datafilled on the SDM. This number consists of a total of all CM billing and all filtered streams. This means that if five filtered streams are datafilled, only eleven CM billing streams can be datafilled on the SDM.
- Filtering occurs at a point before records are to be written to files. There is no guarantee that non-call/non-billing records in a file generated in a filtered stream will conform to the filtering criteria applied to that stream. (An example might be timestamps in a DIRP BHR that, to be correct, might reflect a later time than specified by a criterion.)
- A filtered stream can only be added against a CM billing stream, not against another filtered stream.

- The complexity of the filter criteria applied will impact capacity.
- A single filtered stream can use only one criteria expression, although the expression may be arbitrarily complex (within the 1000-character limit).

Criteria Expression Syntax and Semantics

Each filtered stream captures records matching some criterion or criteria expressed as a string of text. Filter strings are captured by the AMADUMP user interface as described elsewhere in this document. When captured, a string is sent to the expression compiler, which attempts to statically validate and compile it into an executable filter. If the compiler is successful, the string source is stored for repeated use either by AMADUMP or by a filtered stream. If the compiler is unsuccessful, compilation terminates at the point of difficulty, and an error message is returned to the user.

Basic syntax rules and inherent semantics

A filtering expression consists of at least one comparison between a field name and a constant or between two field names. A filtering expression must obey the following rules:

- Acceptable characters are *alphanumeric*, the set { &, |, =, !, <, >, ,, *, \, ., (,), ', " }, the *TAB* character and the *SPACE* character.
- The ‘#’ character may appear only in a string, as delimited by single or double quotes.
- The characters ‘\’, ‘*’, and ‘.’ may only appear in a regular expression string, as delimited by double quotes or doubled single quotes, for example, “<expression>’’.
- Strings are case-sensitive. Plain-text is case-insensitive.
- Expressions consist only of simple or multiple comparisons, suitably linked by conjunctions or disjunctions, and ordered by parentheses where required.
- These are the only defined operators: && (logical conjunction - “AND”), || (logical disjunction - “OR”), ! (logical negation - see next bullet), ==, !=, <, >, <=, >= .
- The ‘!’ operator is defined to be the negation of a predicate and must be immediately followed by an open parentheses, namely !(.
- These are the only defined keywords:
  - FROM
  - COUNT
  - NULL

- Field names (synonymous with variables) must be entered as plain text as they appear in the NTP.
- Field names never begin with a numeral.
- Constants may be integers, strings, regular expressions (please see section on regular expressions), or NULL.
- NULL is a constant that matches the absence of a named field in the current record.
- Integers are entered as plain-text digit strings, base 10.
- Integers may also be specified in hex format, using the syntax of a leading '0x'.
- String constants are entered between single quotes.
- Regular expressions are entered between double quotes (") or consecutive single quotes (‘’).
- BCD, BIT, EBCDIC, NUMBYTES and TBCD values are *STRINGS*, not integers.

  Note: The NUMBYTES field is composed of an array of eight bit integer values. This type only occurs in the CDRFLDLIST[1 -4] fields in the TPR record in CDR250 streams.
- BCD, BIT, EBCDIC, NUMBYTES and TBCD variables are presented to the user in array order ([0]...[n]) from *left* to *right*.
- A slice of a *string* variable (not a constant) may be specified by the syntax <field name> FROM <0-based index into the left-justified field> COUNT <integer>.
- Constants appear only on the right-hand side of comparison operators.
- Variables are compared only with variables or constants.
- Junctions (AND or OR operators) are allowed only to connect other junctions or the results of comparisons.
- Arithmetic and bitwise operations are not allowed.

Additional semantics

General

- The symbols `=', `&' and `|' are reserved.
- A match of the criterion/criteria includes the record into the selected set.
- Criteria are satisfied by “match any” semantics. In other words, for a record with multiple instances of the same field name in the expression, a match on any instance will include the record in the set. (Of course, this assumes that any other required criteria are also met for the same record.) For

example, if a record contained two instances of the MODULECODE field, the expression MODULECODE == ‘720’ would be true if either instance of MODULECODE was equal to 720.

- The compiler will attempt to create a short-circuiting compiled expression, but is *not guaranteed* to do so in all cases.
- Parentheses have their normal algebraic meaning.
- The compiler is not required to notify the customer that a syntactically-correct expression may not be valid for the specific field name at run time. For example, a slice requested that was out-of-bounds for the given field is a syntactically correct expression that is not valid at run time.
- For this release, at least, comparisons are allowed only between fields that are logically *exactly* the same type. In particular, comparisons are not allowed between BCD and TBCD fields. Such comparisons are not currently encountered in supported billing streams anyway, but would be prohibitively expensive to convert at runtime.
- The compiler is not required to make cross-type translations (such as recognizing an unquoted BCD constants) even where it is possible to do so unambiguously.
- Only single expression strings (which may be very complex) may be applied to a single filtered stream.

“NULL == NULL” AND “NULL!=CONST”

If an expression is of the form FIELDNAME1 == FIELDNAME2 and neither field is present in the record, the record WILL be included into the set, because “NULL” will be returned for both field name values, and the expression will be TRUE for those values.

This is also the case of FIELDNAME!=CONST. If the field is not present in the record NULL will be returned and the record will be included in the set.

Precedence and order of evaluation

- Evaluation of an expression is from left to right, both at parsing and at runtime.
  - — Tokens are parsed from left to right, as presented.
  - — At runtime, the left operand of the comparison farthest left is evaluated first.
  - — Operations short-circuit where possible.
- An unparenthesized expression containing several AND (&&) and OR (||) operators is treated as having “natural” parentheses grouping to the left about each AND or OR sub-expression. (This is similar to algebraic

meaning.) For example, f1 < f2 && f3 == f4 || f5 > f6 && f7 > f8 is evaluated as (((f1 < f2) && (f3 == f4)) || (f5 > f6)) && (f7 > f8).

String fields and slicing

- String fields are presented to the user in order 0 to n-1 from *left* to *right*. This may seem natural for fields representing, say, telephone numbers, but may seem counter-initiative for bitfields.
- The elements in a field are indexed from 0 to n-1.
- Slicing is defined for string fields only.
- Constants may not be sliced, as the required elements may be simply literally declared for constants.
- It may seem obvious, but slices are *contiguous* subsets of field elements. Extraction of individual elements (say, from a bitmask) may require multiple slice requests.
- Slices are defined by the first included index and the number of elements to include. Thus, a slice defined 'FROM 1 COUNT 3' includes the second, third, and fourth elements of the field, from the left, as the field is presented by AMADUMP to the user.

Comparisons against regular expressions entered as string constants.

- A string field may be compared to a regular expression presented in the form of a string constant delimited by double quotes (or doubled single quotes).
- A regular expression entered in the AMADUMP dump command, must use the double single quote method. If the filter add command is used, either method will work.
- In general, regular expression so used may be constructed similarly to regular expressions used in Perl or in Emacs. The following specific rules apply:
  - — The regular expression is contained within a pair of double quotes or a pair of doubled single quotes and may contain no double or single quotes.
  - — The following rules match single characters:
    - – The following are special characters: +, *, ?, ., [,], ^, $.
    - – Any character not defined as a special character matches itself.
    - – A backslash (\) followed by a special character matches the literal special character.
    - – The period (.) matches any single character.

  - A set of characters enclosed in brackets ([]) matches any single character in the set (for example, [amz] matches 'a' or 'm' or 'z')). A set of characters that is a range may be signified by a dash (for example, [a-z]). A leading carat negates the match (e.g [^amz] matches any character EXCEPT 'a' or 'm' or 'z').
- The following rules extend those above to match multiple characters.
  - An asterisk (*) appended to a construction above matches zero or more occurrences of qualifying characters.
  - A plus (+) appended to a construction above matches ONE or more occurrences of qualifying characters.
  - A question mark (?) signifies that the construction may occur once or not at all in the string (for example, ab?c matches abc or ac).
  - Single character regular-expression constructions as above may be concatenated (for example, [A-Z][a-z]* matches capitalized words).
- The special characters '^' and '$' must be escaped with the backslash to be matched literally. However, their customary use as anchors of a regular expression to the beginning or end of a line is out of context in a filtering expression; the results of such usage are undefined.
- Similarly, use of the customarily-defined escape codes (such as newline) is out of context in a filtering expression. Again, results of such usage are undefined.

- To be compared in this way, the string field is converted at runtime to its printable representation. This conversion can be expensive, especially when the field elements are narrower than a byte (such as bits or TBCDs). This expense is in addition to the considerable expense of executing the regular expression evaluation.

Partitioning into Sets

Partitioning into sets is not directly supported by this feature.

- Every record is guaranteed to be accepted by the default billing stream, whether filtered or not.
- Partitioning (the guarantee of each record being accepted by only one filtered stream) is not explicitly supported.
- Absolute partitioning (the guarantee of each record being accepted by either the default billing stream or only one filtered stream) cannot be obtained with this feature. The default billing stream will accept *all* records.

- A complete partitioning into some number of subsets can usually be achieved by the careful use of mutually-exclusive criteria of the filtered streams, ignoring the default billing stream.
- Where multiple instances of a field used in a filtering expression are possible in a single record, “match any” semantics apply. Explicit negation may be required to achieve partitioning. For example, one filter captures records satisfying the criterion (MODULECODE == ‘720’) and another captures !(MODULECODE == ‘720’).

Handling of multiple field instances

Multiple occurrences of same-named fields within a record are possible, especially in BAF streams. The following semantics apply when such a field is included in a comparison. Please note that the results of multiple-instance comparisons are sometimes counter-intuitive.

- “Match any” semantics apply.
- At runtime, a variable name is expanded to up to a list of all occurrences of the field in the record. Thus, field names can resolve to SETS of fields.
- There is no way to specify the n_{th} such field in a record in the expression.
- Members of such a set of fields are compared against the criteria until a match is found or until the set is exhausted.
- Since a field name may resolve at run time to a set of fields, you cannot simply replace the negation of a field comparison with the opposite of the comparison operator. For example, !(MODULECODE == ‘720’) is not guaranteed to match the same set of records as (MODULECODE != ‘720’). !(MODULECODE == ‘720’) will match those records that do not have ANY MODULECODE fields that are equal to ‘720’. (MODULECODE != ‘720’) will match those records that have at least one MODULECODE field that is not equal to ‘720’. A record that contains modules 720 and 022 would match both (MODULECODE == ‘720’) and (MODULECODE != ‘720’).
- It is possible to compare a variable against another variable. If each variable can represent a set of fields, the comparison complexity is bounded by the size of the cross-product. Comparing a variable that has three instances against another variable that has 2 instances will take up to 6 times (3 times 2) as long as a single comparison.

The semantic behavior of such multiple-to-multiple comparisons is that of two nested FOR loops (although this may or may not be the implementation). In such cases, the inner-loop (more-frequently evaluated) behavior accrues to the *RIGHT-HAND* operand of the comparison.

The same field may be included on both sides of a comparison (for example, perhaps sliced one way on one side and a different way on the other).

Performance considerations

- The expressions created by the expression compiler will short-circuit as follows:
  - — The AND (&&) will short circuit when the left-hand operand is FALSE.
  - — The OR (||) will short circuit when the left-hand operand is TRUE.
- Comparisons of a variable to a constant usually runs faster than comparisons of two variables.
- Usually, slicing a string costs time.
- Comparison of a string field to a regular expression may incur a real-time penalty of *one to three orders of magnitude* over comparison of the same field to a string constant.
- Comparisons of multiply-occurring fields generally take more time.
- Keeping several related records together in a single filtered stream may require a more complex (more time-consuming) expression than to capture all of them individually.
- The runtime cost of running one or more filters is not the only cost of filtering a stream. In particular, the operation of multiple filtered streams can result in the replication of large numbers of records, depending, of course on the filtering criteria of each. Some of these records may be replicated several times. This can result in significantly increased disk usage and file-transfer traffic, and a corresponding increase of resource-management process activity.
- These costs are additional to those of other billing streams and file transfers.

Good filtering practices

Use the following guidelines to create expression strings:

- Keep it simple.
- Wherever possible, make comparisons against a constant value.
- Use a string constant instead of a regular expression where possible.
- If there is a test for the record code, make it the first comparison in the expression.
- Where possible, use a single filtered stream and test a single field.
- When using multiple filtered streams, test against the same fields where possible.
- In general, test integer fields before (to the left of) string fields. Remember that BCD, BIT, EBCDIC, NUMBYTE and TBCD are STRING fields.

- When AND'ing comparisons (using the && operator), make the comparisons that are more likely to *fail* first.
- When OR'ing comparisons (using the || operator), make the comparisons that are more likely to *succeed* first.
- Avoid comparisons of multiply-occurring fields where possible. In particular, avoid comparisons of one such variable against another where possible.
- Where such comparisons cannot be avoided, put the simpler operand (shorter, unsliced, or likely-to-be-fewer-instances) on the RIGHT of the comparison operator.
- When a comparison against a regular expression is necessary, try to place that comparison to the right of a less-costly comparison that may short-circuit.
- Keep in mind the actual subsets of billing records you will be generating. Ensure that overlap occurs only where required by the semantics of your task. You may want to balance slightly increasing the complexity of a filter against unnecessary replication of records.
- Use AMADUMP to test your expressions against existing files, and verify the filtered subset of each expression you write.

Digital Switching Systems

SuperNode Data Manager Carrier

SuperNode Billing Application Guide

Document number: 297–2667–328
Document issue: 04.02
Document status: Standard
Date: May 2000
Published in the United States of America

NORTEL NETWORKS