Carrier VoIP

Core and Billing Manager 850 Accounting

NN10363-811

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Contents

CS 2000 Core Manager Core and Billing Manager 850 Accounting

Purpose

This document describes the function and features of the SuperNode Billing Application and contains the procedures used for setting up and maintaining the billing system on the CBM.

Unless you are otherwise instructed, all of the procedures in this document are performed on the active node of the CBM 850 cluster.

ATTENTION

The following ports are required by the core manager in order to receive billing records from the core. Do not open these ports for other purposes.

- SBA_MGR 6502/tcp
- SBA_STREAM 6503/tcp
- SBA_FILE_MGR_INT 6504/tcp
- SBA_SCH_MGR 6505/tcp
- SBA_MIBS 6511/tcp
- SBA_RTB 7010/tcp
- AMA_SDM_CM 9542/udp
- AMA_CM_SDM 7775/udp

New in this release for CS 2000 Core Manager Core and Billing Manager 850 Accounting in SN09U

Feature changes

The following feature-related changes have been made in the documentation:

- With the addition of new role groups, the CBM user group improvements feature allows you to perform CBM maintenance procedures without having to be the root user. The CBM user group improvements feature

required changes to the procedures that require new authorization level and access:

— addition of a statement in the prerequisites section indicating the authorization level required to complete the procedure

— if non-restricted shell access is required to complete the procedure, addition of a statement in the prerequisites section indicating that non-restricted shell access is required

— addition of a table in the prerequisites section listing procedures relating to authorization level and access

- The Passphrase Protected Keys for SSH feature required additions/changes to the following procedures:

  — "Configuring SBA outbound connection security" (page 30)

  — "Configuring the outbound file transfer schedule" (page 23)

Preparing for SBA installation and configuration

Configuring SBA streams

Purpose

An overview of the SBA stream configuration is provided in the following paragraphs and diagram.

Application

ATTENTION

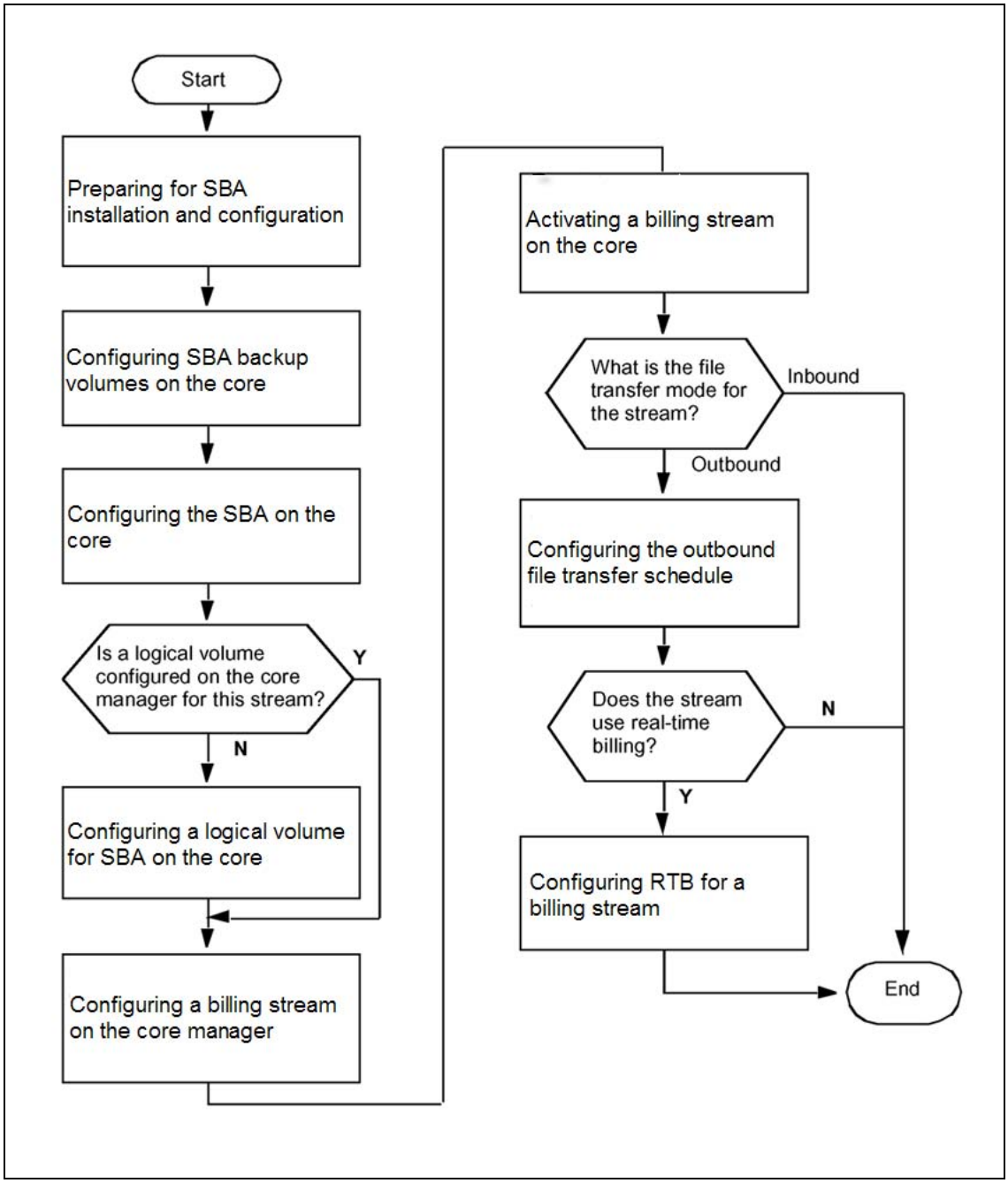
You must ensure that the links between the core manager and the Core are in service before you configure SBA.

ATTENTION

SBA does not support the configuration of more than one billing stream at a time from multiple workstations. The last billing stream that is configured is the one that is saved.

The following flowchart shows a high-level overview for the configuration of SuperNode Billing Application (SBA) streams.

Summary of configuring SBA streams



Configuring the SBA on the core

Purpose

Use the following procedure to configure the SBA application and backup disks on the Core.

Application

ATTENTION

For XA-Core systems running on CSP16 or later, backup volumes can only be configured on IOP disks.

The following procedures are referenced in this procedure. Ensure that you have access to these procedures if required.

- "Preparing for SBA installation and configuration" (page 7)
- "Configuring the outbound file transfer schedule" (page 23)
- "Configuring SBA backup volumes on the core" (page 62)
- Querying a billing stream

Datafill requirements

Location of datafill procedures by PCL

PCL	NTP reference
Local Exchange Carrier (LEC)	*297-8001-351 DMS-100 Family NA100 Customer Data Schema Reference Manual*
Local Exchange Carrier/TOPS (LET)	*297-8021-351 DMS-100 Family NA100 Customer Data Schema Reference Manual*
International	*297-9051-351 DMS-100 Family MMP Customer Data Schema Reference Manual*

Use the procedures in the NTPs listed in the appropriate table when performing step 2 of this procedure.

Billing formats supported

The table "Billing formats supported by SBA" (page 11) lists the billing formats supported by SBA. Refer to the appropriate NTP in the table before performing this procedure.

Billing formats supported by SBA

Format	NTP reference
AMA	*297-1001-830 DMS-100 Family Bellcore Format Automatic Message Accounting Reference Guide*
Universal AMA	*297-9051-800 DMS-100 Family DMS-100 MMP AMA Reference Guide*
DMS-300 CDR (formats 09, 14 and 15)	*297-2301-119 Digital Switching Systems DMS-300 Call Detail Recording Description*
GSP CDR	*297-2651-119 Digital Switching Systems DMS-Global Services Platform Billing Records Reference Manual*
SMDR	*297-2071-119 North American DMS-100 Station Message Detail Recording Reference Guide*
Sprint DMS-250 CDR	*297-2611-119 DMS-250 Call Detail Record Reference Manual*
UCS DMS-250 CDR	*297-2621-395 Digital Switching Systems UCS DMS-250 Billing Records Application Guide*

Instructions for entering commands in the following procedure do not show the prompting symbol, such as #, >, or $, displayed by the system through a GUI or on a command line.

Configuring SBA on the Core

Step Action

At the MAPCI

1 Log into the Core using your login id and password.

2 Define the billing stream.

If you are defining	Do
multiple billing streams	step 5
a single billing stream	step 6

3 Set the NUM_CALLREC_STREAMS parameter in table OFCENG to a value that equals or exceeds the number of streams to be configured.

This parameter defines the highest number of billing streams that the switch supports.

4 Configure disk volumes for each stream on the Core for backup purposes. To configure disk volumes, refer to the procedure "Configuring SBA backup volumes on the core" (page 62).

After you have configured the backup volumes, return to this procedure and go to step 7.

These volumes are used in situations where the Core is temporarily unable to pass billing data to the core manager.

SBA does not support the configuration of more than one billing stream at a time from multiple workstations. The last billing stream that is configured is the one that is saved.

5 Access table OFCVAR:

```
table ofcvar
```

6 Position on office parameter EDGE_SWITCH:

```
pos edge_switch
```

7 Enter the change command:

```
cha
```

The system displays a prompt asking you to confirm whether you want to proceed with the change.

If you	Type
want to proceed with the change	`y` step 11
do not want to proceed with the change	`n`

8 At the system prompt, set the value to **Y**:,

```
y
```

The system displays a prompt asking you to confirm the value.

If you	Type
want to confirm the value	`y` step 12.
do not want to confirm the value	`n`

9 You have completed this procedure.

—End—

Configuring a billing stream on the core manager

Purpose

Use this procedure to add, change, or delete a billing stream on the core manager.

Prerequisites

You must be a user in a role group authorized to perform accounting-manage actions.

For information on how to log in to the CBM as an authorized user or how to display information about a user or role group, review the procedures in the following table.

The following prerequisites apply to this procedure:

- The SBA must be in service when this procedure is performed.
- During this procedure, SuperNode Billing Application (SBA) will prompt you for information based on the task you are performing and the type of billing stream. This information is available in the configuration questionnaire completed during the procedure "Preparing for SBA installation and configuration" (page 7).

  The table lists the information from the questionnaire that may be required during this procedure.

Instructions for entering commands in the following procedure do not show the prompting symbol, such as #, >, or $, displayed by the system through a GUI or on a command line.

Procedure

Configuring a billing stream on the core manager

Step	Action
	At any workstation or console
1	

ATTENTION
SBA logical volume needs to be created before configuring a stream.

ATTENTION
SBA does not support the configuration of more than one billing stream at a time from multiple workstations. The last billing stream that is configured is the billing stream that is saved.

Access the core manager as a user authorized to perform accounting-manage actions.

2 Access the BILLMTC interface:

```
billmtc
```

Example response

BILLMTC opens at the main level.

3 Access the CONFSTRM level:

```
confstrm
```

If you want to	Do
add a billing stream	step 4
change the configuration of a billing stream	step 13
delete a billing stream	step 17

4 Add a stream:

```
add <stream_name>
```

where

<stream_name> is the name of the billing stream you want to add

5 Follow the prompts to add each value for the billing stream. Refer to table for more information.

6 Edit the displayed values:

```
edit
```

7 Correct the values as necessary.

8 Save the displayed values:

```
save
```

Example response:

```
Saving stream
Configuration of stream is now complete.
Press Return to continue.
```

9 Press the Enter key to return to the CONFSTRM level.

If you	Do
want to add another billing stream	step 4
do not want to add another billing stream	step 20

10 Change the configuration for a particular billing stream:

change <stream_name>

where

<stream_name> is the name of the billing stream to change

11 Follow the prompts on the screen to change the value of the fields. Refer to table for more information.

12 Save the displayed values:

save

Example response:

```
Saving stream
Configuration of stream is now complete.
Press Return to continue.
```

13 Press the Enter key to return to the CONFSTRM level.

If you	Do
want to change the configuration of another billing stream	step 13
do not want to change the configuration of another billing stream	step 20

14

ATTENTION

You must turn off (deactivate) the billing stream from the Core before you can delete the stream on the core manager. A billing stream can only be turned off if there is no ClosedNotSent files, and no backup files in the core backup volume. The "Stream Running Status" in billmtc;confstrm level should show "No".

Delete the billing stream:

delete <stream_name>

where

<stream_name> is the name of the billing stream to delete

15 Follow the prompts on the screen to change the value of the fields.

16 Confirm the delete command:

```
yes
```

If you	Do
want to delete another billing stream	step 17
do not want to delete another billing stream	step 20

17 Exit the CONFSTRM level:

```
quit
```

18 You have completed this procedure.

—End—

Configuring a DMS-GSP CDR billing stream

Purpose

Use this procedure to configure a DMS-GSP CDR billing stream.

Prerequisites

You must be a user in a role group authorized to perform accounting-manage actions.

For information on how to log in to the CBM as an authorized user or how to display information about a user or role group, review the procedures in the following table.

Procedure	Document
Logging in to the CBM	*Core and Billing Manager 850 Security and Administration*, NN10358-611
Displaying actions a role group is authorized to perform	*Core and Billing Manager 850 Security and Administration*, NN10358-611

Complete the procedure "Configuring a billing stream on the core manager" (page 14) before you continue with this procedure.

Instructions for entering commands in the following procedure do not show the prompting symbol, such as #, >, or $, displayed by the system through a GUI or on a command line.

Procedure

Configuring a DMS-GSP CDR billing stream

Step	Action
	At the core manager
1	Log in to the core manager as a user authorized to perform accounting-manage actions.
2	Set the typeOfCDR Mib to GSP: `mib cdr set typeofcdr gsp`
3	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.
4	You have completed the procedure.

—End—

Activating a billing stream on the Core

Purpose

Use the following procedure to activate a billing stream on the Core.

Application

If you change a billing stream that is set to *on* or *both* to *off*, billing to the core manager stops and billing records are no longer sent to the core manager for that billing stream.

If the DIRP system is unable to receive any billing records, all billing records generated while the billing stream is set to *off* are lost.

When you set the billing stream to *on*, you have chosen to send the billing records to the core manager only. When you set the billing stream to *both*, you have chosen to send the billing records to the core manager and to the Core.

Prerequisites

Procedure	Document
Logging in to the CBM	*Core and Billing Manager 850 Security and Administration*, NN10358-611
Displaying actions a role group is authorized to perform	*Core and Billing Manager 850 Security and Administration*, NN10358-611

Copy the values for the stream_name and sba_stream_state from "Preparing for SBA installation and configuration" (page 7) into the following table.

Question	Explanation
stream_name	
sba_stream_state	

Instructions for entering commands in the following procedure do not show the prompting symbol, such as #, >, or $, displayed by the system through a GUI or on a command line.

Procedure

Activating a billing stream on the Core

Step	Action

At the MAPCI

1 Access the SDMBIL level:

```
mapci;mtc;appl;sdmbil;post <stream_name>
```

where

<stream_name> is the stream name value entered in the table

2

CAUTION
Possible loss of service
If you change a billing stream that is set to *on* or *both* to *off*, billing to the core manager stops and billing records are no longer sent to the core manager for that billing stream.

ATTENTION
The option to set a billing stream to *both* only provides a temporary path while you are performing maintenance and alarm clearing tasks. The option to set a billing stream to the *both* mode on a permanent basis is not supported.

ATTENTION
MTX XA-Core systems generating more than 175,000 CDRs per hour do not support the *both* or *off* modes. File transfer limitations of DIRP and IOM/EIU prevent MTX core billing rates higher than 175,000 CDRs per hour.

Activate the billing stream:

```
sdmbctrl <stream_name> <sba_stream_state>
```

where

<stream_name> is the stream name value from step 1
<sba_stream_state> is the SBA stream state (*both* or *on*) value from step 1

The `on` state sends billing records to the core manager, the `both` state sends billing records to the core manager and the DIRP system on the Core. However, the core manager does not verify that the DIRP system is functioning properly. Also, when you use the **`both`** state, this causes a real-time impact to the Core.

3 Verify that the billing records are being processed. To verify the records, refer to Querying a billing stream of this document.

4 You have completed this procedure.

—End—

Configuring the outbound file transfer schedule

Purpose

Use this procedure to perform the following functions for outbound file transfer for a billing stream:

- add a schedule tuple
- change the schedule tuple
- delete a schedule tuple

Prerequisites

You must be a user in a role group authorized to perform accounting-manage actions.

For information on how to log in to the CBM as an authorized user or how to display information about a user or role group, review the procedures in the following table.

Procedure	Document
Logging in to the CBM	
Displaying actions a role group is authorized to perform	

This procedure requires a configured billing stream. Perform the procedure "Configuring a billing stream on the core manager" (page 14). The billing stream must support DIRP record format and outbound file transfer.

This procedure requires information from the configuration questionnaire completed during the procedure "Preparing for SBA installation and configuration" (page 7). SBA will prompt for the appropriate information, based on the task you are performing and the type of billing stream. The following table "Required information" (page 23) lists the information from the questionnaire that may be required during this procedure.

Required information

Prompt	Values	Question # from questionnaire
Enter stream	stream_name	1
Enter file_format_type	file_format	4
Enter destination	destination	15
Enter protocol	protocol	16

Prompt	Values	Question # from questionnaire
Enter primary_destination	primary_destination	17
Enter primary_port	primary _port	18
Enter alternate_destination	alternate_destination	19
Enter alternate_port	alternate_port	20
Enter start_time	schedule_start_time	29
Enter stop_time	schedule_stop_time	30
Enter interval	schedule_interval	31
Enter remote_storage_ directory	remote_storage_directory	23
Enter remote_login	remote_login Special characters may not work in all operating environments. Use special characters only when necessary for outbound file transfer schedules.	21
Enter remote_password	remote_password If KSFTP protocol is selected it will not prompt for password, it directly enters the next step.	22
Enter maximum_retries	protocol_max_retries	26
Enter retry_wait_time	protocol_retry_wait_time	27
Enter file_extension	file_extension	25
Enter field_separator	field_separator	24
Enter active	schedule_active	28

Instructions for entering commands in the following procedure do not show the prompting symbol, such as #, >, or $, displayed by the system through a GUI or on a command line.

ATTENTION

Special instruction after the customer upgrades the SDM/CBM from a previous release to release:

During the upgrade, after the upgraded node has become active, you are advised to not configure or re-configure SBA or RTB file transfer schedules, or OMDD file transfer destinations. Performing a fallback will not preserve these changes, and these applications will fail.

Procedure

Configuring the outbound file transfer schedule

Step	Action

At any workstation or console

1 Log into the core manager as a user authorized to perform accounting-manage actions.

2 Access the billing maintenance level:

```
billmtc
```

3 Access the schedule level:

```
schedule
```

4 Determine schedule tuple action.

If you are	Do
adding a schedule tuple	step 5
changing a schedule tuple	step 12
deleting a schedule tuple	step 17

5 Add a schedule tuple for a billing stream:

```
add
```

ATTENTION

Do not configure multiple schedule tuples with the same destination, directory, file format, and file extension. Collisions between billing file names can occur.

6 Follow the prompts to each value for the schedule tuple. Refer to the table at the start of the procedure for more information. Press the Enter key after entering each value.

If you select SFTPW/KSFTP protocol, for secure outbound data transfer, you must first complete the following tasks:

- OpenSSH must be installed on the core manager
- you must manually accept the known host key for the downstream OSS destination, by performing the procedure "Configuring SBA outbound connection security" (page 31)

When you have completed all fields, SBA displays the values that you entered.

Example response when FTPW protocol is selected

7 Verify that the values displayed are the correct values.

If the values displayed are	Do
not correct	step 8
correct	step 10

8 Press the Enter key to edit the tuple.

9 Enter the name of the field to change, or enter "all" and enter the corrected information for the appropriate field or fields.

10 Save the schedule tuple:

```
save
```

Example response:

```
Schedule tuple saved
Press Return to Continue
```

11 Press the Enter key to return to the schedule level.

If you	Do
want to add another schedule tuple	step 5
do not want to add another schedule tuple	step 20

ATTENTION

You can not change the stream name, file format, and destination fields in a schedule tuple.

If the schedule tuple supports real time billing (RTB), you can not change the value of the protocol.

12 Change the value of one or more fields in the schedule tuple for a particular stream:

`change <stream_name>`

where

`<stream_name>` is the name of the billing stream associated with the schedule tuple you want to change

If you select to change the protocol field, the primary and alternate ports is re-prompted.

If you	Do
receive the following warning	step 13
do not receive the following warning	step 14

Example of warning

```
Warning:  Do not delete this Schedule tuple or proceed
with the current modification if there exists a
configured RTB destination which depends on it.
```

13 Offline and delete the corresponding RTB destination before continuing with this procedure.

> **ATTENTION**
> Do not configure multiple schedule tuples with the same destination, directory, file format, and file extension. Collisions between billing file names can occur.

14 Follow the prompts on the screen to change the value of the desired fields.

If you select SFTPW/KSFTP protocol, for secure outbound data transfer, you must first complete the following tasks:

- OpenSSH must be installed on the core manager
- you must manually accept the known host key for the downstream OSS destination, by performing the procedure "Configuring SBA outbound connection security" (page 31)

When you have completed all fields, SBA displays the values that you entered.

15 When prompted, save the changed schedule tuple:

```
save
```

Example response:

```
Schedule tuple saved
Press Return to Continue
```

16 Press the Enter key to return to the schedule level.

If you	Do
want to change another schedule tuple	step 12
do not want to change another schedule tuple	step 20

ATTENTION

When the schedule tuple for a stream has a corresponding tuple with the same destination, you must delete the RTB tuple before you delete the schedule tuple.

If the schedule tuple associated to an RTB tuple is removed while the corresponding RTB tuple is still active (INSV), the RTB will go into the SYSB state. When the problem that forced the RTB into the SYSB state is resolved, the RTB Bsy and Rts commands can be used to bring RTB into service.

17 Delete the schedule tuple for the billing stream:

`delete <stream_name>`

where

`<stream_name>` is the name of the billing stream associated with the schedule tuple to delete

If you	Do
receive the following warning	step 18
do not receive the following warning	step 19

Example of warning

```
Warning:  Do not delete this Schedule tuple or proceed
with the current modification if there exists a
configured RTB destination which depends on it.
```

18 Offline and delete the corresponding RTB destination before continuing with this procedure.

19 Confirm the delete command:

`yes`

If you	Do
want to delete another schedule tuple	step 17
do not want to delete another schedule tuple	step 20

20 Exit the billing maintenance menu:

`quit all`

You can test the file transfer settings by executing a manual file transfer by using the **`Sendfile`** command and checking that the billing file is transferred to the correct directory of the downstream destination. You can find the **`Sendfile`** command at position 7 of the FILESYS level from the BILLMTC menu.

If you perform an action on the downstream server, for example, shut down the server. This action makes the ftp service on the server unavailable to the core manager. Always delete the associated schedule tuple on the core manager first. If you do not, an FTPW alarm is generated on the CM. Refer to procedure Clearing an FTPW alarm in the core manager documentation, to clear the alarm.

21 You have completed this procedure.

—End—

Configuring SBA outbound connection security

Purpose

The SBA outbound connection security feature provides secure outbound file transfer using the OpenSSH SFTP (secure file transfer protocol) client. The SFTP client protects all data, including sensitive users' passwords, by encrypting the data before it leaves the core manager and decrypting the data after it arrives at the downstream OSS destination. The SFTP client also provides data integrity checking to ensure that the data has not been tampered with during the transfer.

Both password-based authentication and key-based (public key) authentication are supported for secure outbound file transfers using the OpenSSH SFTP.

Prerequisites

The following prerequisites apply to the SBA outbound connection security feature:

- You must be the root user to perform this procedure.
- An SSH sftp server (SFTP server subsystem) that is compatible with the OpenSSH sftp client must be running on the downstream Operations Support System (OSS) in order for the SBA to transfer data with the OpenSSH sftp client.
- OpenSSH software, version 3.7.1p2 or later, and any dependent software must be installed on the core manager in order for SFTPW/KSFTP (Secure File Transfer Protocol wrapper) protocol for outbound file transfer to be used. There is no explicit check performed by the SBA software to determine whether this package or fileset is installed when the SFTPW/KSFTP is being configured. Thus, if the SBA SFTPW/KSFTP application fails to find the sftp program, an SFTPW/KSFTP alarm is raised and the application terminates any transfer event it is attempting to perform.
- For the CBM, the SBA outbound connection security feature depends on the OpenSSH packages as well as NTutil.
- For the , the SBA outbound connection security feature depends on the SDM_OpenSSH.base fileset, which must be installed manually, and the SDM_BASE.util fileset.
- The initial host key acceptance of the downstream processor should be performed manually in order for the SFTPW/KSFTP to be used for file transfer from the core manager. The .ssh/known_hosts file in the maint home directory is edited by SSH software to include the host key. After this is completed, sftp can be used to send files to the downstream OSS.

This step must be performed for each downstream destination prior to schedule tuple configuration for SFTPW/KSFTP.

Limitations and restrictions

The following limitations and restrictions apply to the SBA outbound connection security feature:

- The SBA outbound connection security feature does not secure data transfer for the RTB application.
- SBA secure outbound file transfer (SFTPW/KSFTP) cannot re-send ClosedSent files when ClosedSent files already exist on the target directory in the downstream system. Therefore, it is important that existing ClosedSent (or processed) files at the downstream system be either moved to another directory or re-named before an attempt is made to re-send ClosedSent files from the core manager to the downstream system.
- Automatic dumping of the public key file on the remote system is not supported. Users have to manually dump the contents of the public key file into the user's authorization file on the remote system.

  If the remote system is running OpenSSH server, the public key should be appended to .ssh/authorized_keys or .ssh/authorized_keys2 file.
- The user SHELL (cshrc or bash) startup script at the downstream system must not contain ANY echo or print statements which will interfere the handshaking between sftp client and sftp-server. The symptom is that the sftp session terminated pre-maturely and the message "Received message too long <a long num> is printed".

Procedure

To configure secure data transfer to a downstream OSS destination, it is necessary to first accept the known host key for the downstream OSS destination. Steps 1 through 10 of this procedure enable you to perform this task. This task must be performed whenever the destination downstream OSS is rebooted or whenever the SFTPD server on the OSS is restarted.

Instructions for entering commands in the following procedure do not show the prompting symbol, such as #, >, or $, displayed by the system through a GUI or on a command line.

Configuring SBA outbound connection security

Step	Action
	At the PC or UNIX workstation
1	Establish a telnet connection to the core manager by completing the following substeps.

a. Open a terminal window that is VT100 compatible.

b. Log onto the core manager from the terminal window prompt:

ssh -l root <ip address>

where

<ip_address> is the IP address of the core manager

c. When prompted, enter the password for the root user.

2 Change directory to the maint home directory:

cd ~maint

3 Look in the maint directory for the ".ssh" directory:

ls -lad .ssh

If	Do
the .ssh file does not exist	step 4
the .ssh file does exist	step 8

4 Create the .ssh directory:

mkdir .ssh

5 Change the .ssh directory ownership:

chown maint:maint .ssh

6 Change the permissions associated with the .ssh directory:

chmod u+rwx .ssh

7 Change to the maint user:

su maint

8 Run the ssh client to the downstream OSS destination by providing a "maint" user name and IP address for the ssh client, by performing the following steps:

a. Type

ssh -l maint <nn.nn.nn.nn>

where

<nn.nn.nn.nn> is the IP address of the ssh client

Example of response

The authenticity of host '10.10.10.10' can't be established.

RSA key fingerprint is 3a:d5:d7:6e:ee:6b:45:fc:b9:0b:92:a7:1c:d8:f1:be.

Are you sure you want to continue connecting (yes/no)?

b. Type

yes

Example of response

Warning: Permanently added '10.10.10.10' (RSA) to the list of known hosts.

9 Enter the password for the password prompt. Otherwise, press ctrl + C to terminate the program.

10 Exit the telnet session:

```
exit
```

11 Configure the outbound file transfer schedule for secure data transfer. The protocol used for secure data transfer is SFTPW (secure file transfer protocol wrapper) for password-based authentication, or KSFTP for key-based authentication. For the procedure on how to configure an outbound file transfer schedule, refer to "Configuring the outbound file transfer schedule" (page 23).

12 For KSFTP, if the downstream machine is running OpenSSH Server, append a public key to authorized_keys of the user on the downstream machine. Use the following commands:

On SDM/CBM:

```
login:  root

root Password:  xxxx

cd ~maint/.ssh

ssh user@47.135.214.66 'cat >> .ssh/authorized_keys'
< id_rsa.pub

Password:
```

13 You have completed this procedure.

—End—

Troubleshooting

Possible error scenarios that may occur when you are performing this procedure and the steps to perform in addressing these problems are listed in the following:

- Connection refused

This error causes a "Down" status for the SSH Collector Status parameter.

Example
Error : ssh; connect to host <hostname/hostip> port 22:
Connection refused
Connection closed.

To resolve this problem:

— Verify that the host machine is on the network.

— Verify that the SSH server on the host machine is running and that the configuration is correct (such as, the port number and fingerprint).

- SSH not found

  This error is caused by the ssh not being installed on the core manager.

  Example
  Error: /bin/ksh: ssh: not found.

  To resolve this problem:

  — Verify that the OpenSSH package is installed on the system.

  If your core manager is an AIX-based SDM or , you can verify whether the OpenSSH package is installed by checking for the package at the SWIM level of the sdmmtc user interface.

  If the package is not installed, contact your Nortel service representative for assistance in installing the OpenSSH package provided by Nortel.

  You should not install the OpenSSH package downloaded from the web unless you are instructed to do so by your Nortel service representative.

- known_hosts file cannot be datafilled

  This error is caused by the non-existence of, or incorrect permissions for, the /home/maint/.ssh (AIX-based SDM) or /cbmdata/users/maint/.ssh (CBM) directory.

To resolve this problem:

— Verify that you are logged in as the root user and that you switched user (su) to the maint user.

— Verify that the directory /home/maint/.ssh (AIX-based SDM) or /cbmdata/users/maint/.ssh (CBM) is present and has read/write permissions set for the maint user. If the directory doesn't exist, create it.

— Verify that the correct IP address is used for host key acceptance.

- SSH server's host key has changed

  If the server's host key has changed, the client will notify you that the connection cannot proceed until the server's host key is deleted from the known_hosts file using a text editor. Before performing this task, you must contact the system administrator of the SSH server to ensure that the server operation will not be compromised.

  To resolve this problem:

  — Try to create an ssh connection to a different machine. If you receive an error message about a changed or incorrect public key, it is probably due to the host changing its public key. Edit the file /home/maint/.ssh/known_hosts using a text editor and delete any line containing the name of that host.

  — Try to create an ssh connection to that host again and then accept a new public key for the host.

- SSH warns about "man-in-the-middle attack"

  This problem is caused either by someone eavesdropping on your connection or by the host key having been changed.

  To resolve this problem:

  — Contact your system administrator to determine whether the host key has been changed or whether the ip address of the client has been changed.

  — Edit the file /home/maint/.ssh/known_hosts using a text editor and delete any line containing the name of that host.

  — Datafill the known_host keys with new information.

- sftp session terminated pre-maturely with the message "Received message too long <a long num>".

  Ensure that the user SHELL (cshrc or bash) startup script at the downstream system does not contain any echo or print statements which will interfere the handshaking between sftp client and sftp-server.

Configuring RTB for a billing stream

Real Time Billing Overview

Real Time Billing (RTB) allows billing records to be available for transfer from the core manager 30 seconds after the time the billing records are 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 core manager. RTB uses file transfer protocol (FTP) through an Ethernet connection to deliver the records.

Terminology

To understand how the SBA processes and routes the billing records it receives for RTB, the following terminology must be understood:

- **Stream** - A stream, or billing stream, can be conceptualized as a pipeline through which billing records received from the core pass. For each stream component that exists on the core, a corresponding stream component exists on the core manager. Billing records created by calls pass through the stream from their point of origination on the core to the core manager, where they are stored on disk.
- **Sub-stream** - A stream is further divided into Primary and Recovery sub-streams. The Primary sub-stream handles the current records being sent by the core. The Recovery sub-stream is only active after the SBA is unable to transfer records from the core to the core manager and temporarily stores the records on the core. When the core is once again able to re-establish the connection to the core manager, the stored records are sent to the core manager in a Recovery sub-stream while, concurrently, the current records are sent in the Primary sub-stream.
- **Active** file state - When records are written to a file that is open on the core manager, the file name on the core manager is prefixed with an "A", which means "active". When a billing file's content is being written to a file on a downstream processor, the name of the file on the downstream processor is also prefixed with an "A".
- **Unprocessed** file state - After the file on the core manager receives all of its billing records, the file is closed and the name of the file is prefixed with a "U", which means "unprocessed". In the same manner, after the file content has been transferred to a downstream processor, the file receiving this content on the downstream processor is also prefixed with a "U".
- **Processed** file state - When a billing file on the core manager is closed and its content has been received by all designated downstream destinations, the file is then eligible for removal in order to free up disk

space. The file name prefix then changes from "U" to "P", meaning "processed".

SBA file transfer subsystem

The SBA file transfer system uses a schedule tuple for scheduled file transfers. This schedule tuple is specified by stream name, file format, and destination. For each tuple, different file transfer parameters can be specified, such as start time, stop time, and file transfer interval. There can be only one tuple for each combination of stream, file format, and destination.

The tuple contains a field indicating whether it is active. Scheduled file transfers occur only when the tuple is active. An interval setting in the schedule tuple determines how often SBA checks to see whether there are unprocessed files waiting to be sent downstream. When this interval is exceeded, the files are transferred downstream.

Real Time Billing file transfer

The RTB rts (return to service) command, which is issued from the billing maintenance interface (billmtc), is used to initiate the transfer of open billing files to the downstream customer site. The command specifies the stream, file format, and destination. RTB uses the appropriate fields in the schedule tuple corresponding to this stream. 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. For the procedure used to perform this command, see "Returning RTB stream instance to service" (page 46).

While RTB is transferring an open file, on the downstream processor the file name is prefixed with an "A" indicating an open, "active" file. When the file transfer is complete, the file prefix on the downstream processor is changed to a "U", the same file prefix used when scheduled file transfers succeed.

When RTB is in service (InSV), the RTB Bsy (busy) command stops the current open file transfer by first closing the current open file on the core manager, sending the remainder of the file downstream, and then closing the FTP connection with the downstream processor. The procedure used for querying the current operational state of RTB is "Querying the status of RTB for a billing stream" (page 48).

The schedule tuple must be active for a stream in order for the stream to be processed. When the two file transfer applications, scheduled transfer and Real Time Billing, are configured both must acknowledge an unprocessed file ("U" file prefix) before the file can become processed ("P" file prefix). Thus, after RTB transfers a file, the file state will remain "unprocessed" until the next scheduled transfer event. When that transfer 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" file state after a successful transfer. The files that have been transferred by RTB are moved directly to the "processed" file state without retransmission.

Nortel suggests to set the Outbound File Transfer active status to 'Yes' when configuring Real Time Billing.

Connection management

In normal operation, open files transferred by Real Time Billing are sent only 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 is closed. RTB will be tried again on the next open files based on the RTB MIB value RTBMaxConsecutiveFailures. After all file transfers allowed by the RTBMaxConsecutiveFailures RTB MIB value have been attempted, a critical alarm is raised, a log is issued, and RTB is moved to the SYSB state. In this state, open file transfer is not 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, attempts to re-transmit the file are repeated until the number of retries is exhausted. The retry attempts alternate between the primary and alternate destinations indicated in the schedule tuple. In the case of an RTB transfer, however, RTB will not attempt to re-transmit the file since that impacts the ability to send current records. Thus, RTB closes the file and retries transfer on the next file opened. In addition, unlike scheduled transfer, RTB only uses the primary destination.

When RTB closes billing files, it cannot send the billing files downstream. The billing files are, however, automatically transferred from the core manager during the next scheduled transfer when the schedule tuple is active. The billing files can also be transferred manually. For the procedure used to transfer the billing files manually, see "Sending billing files from disk" in NN10363-811, in the *Accounting* document for your core manager.

Manual intervention is required to restore RTB when it is in the SYSB state. The problem can often be attributed to a network connection that is no longer functioning properly. The RTB IPTest command can be used to "ping" the primary downstream address indicated in the schedule tuple to determine this. A SYSB state may also occur if the protocol has been changed in the schedule tuple to something other than RFTPW, the required protocol for RTB. When the problem that forced RTB into the SYSB state is resolved, the RTB Bsy and Rts commands can be used to bring RTB into service.

Alarms

For information about RTB alarms, refer to *Core and Billing Manager 850 Fault Management*, NN20000-324.

Purpose

Use this procedure to perform the following real time billing (RTB) functions:

- add RTB to a billing stream
- change the RTB configuration for a billing stream
- delete RTB from a billing stream

Prerequisites

This procedure has the following prerequisites:

- Configure the billing stream. Perform the procedure "Configuring a billing stream on the core manager" (page 14). RTB requires outbound file transfer and DIRP file format.
- Configure outbound file transfer for the stream. Perform the procedure "Configuring the outbound file transfer schedule" (page 23). RTB only supports Real-time File Transfer Protocol Wrapper (RFTPW)

This procedure requires the following information:

- maximum number of retry attempts after RTB fails to transfer a billing file before RTB raises a critical alarm
- directory location on the data processing and management system (downstream OSS) of the RTB test file and partial file

You must be a user in a role group authorized to perform accounting-manage actions.

For information on how to log in to the CBM as an authorized user or how to display information about a user or role group, review the procedures in the following table.

Procedure	Document
Logging in to the CBM	*Core and Billing Manager 850 Security and Administration*, NN10358-611
Logging in to the CBM	*Core and Billing Manager 850 Security and Administration for CDMA*, NN20000-320
Logging in to the CBM	*Core and Billing Manager 850 Security and Administration for GSM/UMTS*, NN20000-321

Procedure	Document
Displaying actions a role group is authorized to perform	*Core and Billing Manager 850 Security and Administration*, NN10358-611
Displaying actions a role group is authorized to perform	*Core and Billing Manager 850 Security and Administration for CDMA*, NN20000-320
Displaying actions a role group is authorized to perform	*Core and Billing Manager 850 Security and Administration for GSM/UMTS*, NN20000-321

Logging on to the CS 2000 Core Manager

You must be a user authorized to perform security-admin actions in order to perform this procedure.

For information on how to log in to the CS 2000 Core Manager as an authorized user or how to display other information about a user or role group, review the procedures in the following table.

Procedure	Document
Logging in to the CS 2000 Core Manager	*CS 2000 Core Manager Security and Administration*, NN10170-611
Displaying information about a user or role group	*CS 2000 Core Manager Security and Administration*, NN10170-611

Procedure

Instructions for entering commands in the following procedure do not show the prompting symbol, such as #, >, or $, displayed by the system through a GUI or on a command line.

Configuring RTB for a billing stream

Step	Action

At any workstation or console

1 Log into the core manager as a user authorized to perform accounting-manage actions.

2 Access the BILLMTC interface:

```
billmtc
```

Example response:

The BILLMTC interface opens at the main level.

3 Access the schedule level:

schedule

Example response:

```
BILLMTC accesses the SCHEDULE level.
```

4 Display and verify the schedule tuple:

list <stream_name>

where

<stream_name> is the name of the configured billing stream

Verify the following fields:

- File_Format_Type: DIRP
- Protocol: RFTPW
- Active: No

Before configuring RTB ensure that the fields contain the values shown in this list.

5 Access the RTB level:

rtb

Example response:

```
BILLMTC accesses the RTB level.
```

6 Access the CONFRTB level:

confrtb

Example response:

```
BILLMTC accesses the CONFRTB level.
```

If you want to	Do
add RTB to a billing stream	step 7
change the RTB configuration for a billing stream	step 15
delete RTB from a billing stream	step 23

7 Add RTB to a billing stream:

add <stream_name> <file_format> <destination>

where

<stream_name> is the name of the configured billing stream
<file_format> is the file format of the configured billing stream
<destination> is the destination that SBA will transfer the billing files

Scheduled outbound file transfer and real time billing (RTB) allow for multiple destinations for a single billing stream.

Example response:

```
Please enter the RTBMaxConsecutiveFailures (0...10 [3]:
```

You are unable to abort from this command until a value is provided for the preceding prompt.

8

ATTENTION

If auto recovery is turned on, do not configure multiple RTB destinations with the same Test File Location or Partial File Location on the DPMS.

Enter the desired maximum retry attempts before RTB raises a critical alarm, and press the Enter key.

The default value is 3.

Example response:

```
Please enter the RTBRemoteTestFileLocation:
```

9 Enter the directory on the DPMS where the RTB test file will reside and press the Enter key.

The default directory is the Remote_Storage_Directory as configured in the Schedule tuple for this stream.

Example response:

```
Please enter the RTBRemotePartialFileLocation
```

10 Enter the directory on the DPMS where the RTB remote partial file resides, and press the Enter key.

The default directory is the Remote_Storage_Directory as configured in the Schedule tuple for this stream.

Example response:

```
You entered:
RTB Max Consecutive Failures:  5
RTB Remote Test File Location:  /sba/autorec
RTB Partial File Location:  /sba/autorec
Commit?  [Save] {Save Edit Abort}:
```

If the displayed values are	Do
not correct	step 11
correct	step 12

11 Edit and correct the displayed values:

edit

12 Save the information you entered:

save

13 Activate the schedule tuple for the stream by performing "Configuring the outbound file transfer schedule" (page 23)

14 Use the following table to determine your next action.

If you	Do
want to add RTB to another billing stream	step 7
do not want to add RTB to another billing stream	step 26

15 Before performing this step, ensure the RTB schedule tuple is in the OFFL state.

Change the RTB configuration for a billing stream:

change <stream_name> <file_format> <destination>

where

<stream_name> is the name of the configured billing stream
<file_format> is the file format of the configured stream
<destination> is the billing file transfer destination

Example response:

```
Please enter the RTBMaxConsecutiveFailures (0...10 [3]:
```

You are unable to abort from this command until a value is provided for the preceding prompt.

16

ATTENTION
If auto recovery is turned on, do not configure multiple RTB destinations with the same Test File Location or Partial File Location on the DPMS.

Enter the desired maximum retry attempts before RTB raises a critical alarm, and press the Enter key.

The default value is 3.

Example response:

```
Please enter the RTBRemoteTestFileLocation:
```

17 Enter the directory on the DPMS where the RTB test file resides, and press the Enter key.

The default directory is the Remote_Storage_Directory as configured in the Schedule tuple for this stream.

Example response:

```
Please enter the RTBRemotePartialFileLocation
```

18 Enter the directory on the DPMS where the RTB remote partial file resides, and press the Enter key.

The default directory is the Remote_Storage_Directory as configured in the Schedule tuple for this stream.

Example response:

```
You entered:
RTB Max Consecutive Failures:  5
RTB Remote Test File Location:  /sba/autorec
RTB Partial File Location:  /sba/autorec
Commit?  [Save] {Save Edit Abort}:
```

If the displayed values are	Do
not correct	step 19
correct	step 20

19 Edit and correct the displayed values:

```
edit
```

20 Save the information you entered:

```
save
```

21 Activate the schedule tuple for the stream by performing "Configuring the outbound file transfer schedule" (page 23)

22 Use the following table to determine your next action.

If you	Do
want to change the RTB configuration on another billing stream	step 15
do not want to change the RTB configuration on another billing stream	step 26

23 Deactivate the schedule tuple for the stream by performing "Configuring the outbound file transfer schedule" (page 23)

24 Before performing this step, ensure the RTB schedule tuple is in the OFFL state.

Delete the RTB configuration from a billing stream:

delete <stream_name> <file_format> <destination>

where

<stream_name>	is the name of the configured billing stream
<file_format>	is the file format of the configured stream
<destination>	is the billing file transfer destination

Example response:

```
Are you sure you want to delete the RTB tuple?  (Y/N).
```

25 Confirm the delete command:

Y

If you	Do
want to delete RTB from another billing stream	step 23
do not want to delete RTB from another billing stream	step 26

26 Quit the BILLMTC interface:

quit all

27 You have completed this procedure.

—End—

Returning RTB stream instance to service

Purpose

Use this procedure to return real-time billing (RTB) stream instance to service from a ManB (manual busy) state

Instructions for entering commands in the following procedure do not show the prompting symbol, such as #, >, or $, displayed by the system through a GUI or on a command line.

Prerequisites

You must be a user in a role group authorized to perform accounting-manage actions.

For information on how to log in to the CBM as an authorized user or how to display information about a user or role group, review the procedures in the following table.

Procedure	Document
Logging in to the CBM	*Core and Billing Manager 850 Security and Administration*, NN10358-611
Displaying actions a role group is authorized to perform	*Core and Billing Manager 850 Security and Administration*, NN10358-611

Procedure Document

Procedure

Returning real-time billing to service

Step	Action
	At the core manager
1	Log into the core manager as a user authorized to perform accounting-manage actions.
2	Access the billing maintenance interface: `billmtc`
3	Access the schedule level: `schedule`
4	Access the RTB level: `rtb`

5 Return real-time billing for a stream to service:

```
rts <stream> <file_format> <destination>
```

where

`stream` is the name of the stream
`file_format` is the format of the files in the stream
`destination` is the name of the destination that receives the stream

All parameters for this command are mandatory.

6 You have completed this procedure.

—End—

Querying the status of RTB for a billing stream

Purpose

Use this procedure to query the status of the real-time billing (RTB) application for a specific billing stream. The status can be

- InSv (in service)
- SysB (system busy)
- ManB (manually busy)
- OffL
- IsTb

Instructions for entering commands in the following procedure do not show the prompting symbol, such as #, >, or $, displayed by the system through a GUI or on a command line.

Prerequisites

You must be a user in a role group authorized to perform accounting-view actions.

For information on how to log in to the CBM as an authorized user or how to display information about a user or role group, review the procedures in the following table.

Procedure	Document
Logging in to the CBM	*Core and Billing Manager 850 Security and Administration*, NN10358-611
Displaying actions a role group is authorized to perform	*Core and Billing Manager 850 Security and Administration*, NN10358-611

Procedure

Querying RTB status for a stream

Step	Action
	At any workstation or console
1	Log into the core manager.
2	Log into the core manager as a user authorized to perform accounting-view actions.
3	Access the billing maintenance interface:

```
billmtc
```

4 Access the schedule level:

```
schedule
```

5 Access the RTB level:

```
rtb
```

6 Query the status of RTB configured for a specific billing stream:

```
query <streamname>
```

where

streamname is the SBA billing stream configured with the RTB

The system displays the status of the RTB.

7 You have completed this procedure.

—End—

Setting RTB Schedule Tuple to a Manual Busy State

Purpose

Use this procedure to set real-time billing (RTB) stream instance to a ManB (manual busy) state, from either service or offline state.

Instructions for entering commands in the following procedure do not show the prompting symbol, such as #, >, or $, displayed by the system through a GUI or on a command line.

Prerequisites

You must be a user in a role group authorized to perform accounting-manage actions.

For information on how to log in to the CBM as an authorized user or how to display information about a user or role group, review the procedures in the following table.

Procedure Document

Procedure

Returning real-time billing to service

Step	Action
	At the core manager
1	Log into the core manager as a user authorized to perform accounting-manage actions.
2	Access the billing maintenance interface: `billmtc`
3	Access the schedule level: `schedule`
4	Access the RTB level: `rtb`

ATTENTION

Busying a RTB stream instance that is in service state will stop RTB transfers for the instance, including the current open file being transferred. This action also closes the current active file.

5 Set real-time billing for a stream to manual busy:

```
bsy <stream> <file_format> <destination>
```

where

`stream` is the name of the stream
`file_format` is the format of the files in the stream
`destination` is the name of the destination that receives the stream

All parameters for this command are mandatory.

6 You have completed this procedure.

—End—

Setting RTB Schedule Tuple to an Offline State

Purpose

Use this procedure to set real-time billing (RTB) stream instance to an Offl (offline) state, from the ManB state.

Instructions for entering commands in the following procedure do not show the prompting symbol, such as #, >, or $, displayed by the system through a GUI or on a command line.

Prerequisites

You must be a user in a role group authorized to perform accounting-manage actions.

For information on how to log in to the CBM as an authorized user or how to display information about a user or role group, review the procedures in the following table.

Procedure Document

Procedure

Returning real-time billing to service

Step	Action
	At the core manager
1	Log into the core manager as a user authorized to perform accounting-manage actions.
2	Access the billing maintenance interface: **`billmtc`**
3	Access the schedule level: **`schedule`**
4	Access the RTB level: **`rtb`**
5	Set real-time billing for a stream to offline: **`offl <stream> <file_format> <destination>`** where **`stream`** is the name of the stream

file_format is the format of the files in the stream
destination is the name of the destination that receives the stream

All parameters for this command are mandatory.

6 You have completed this procedure.

—End—

Turning auto-recovery on

Purpose

Use this procedure to turn on real time billing (RTB) auto-recovery.

Prerequisites

You must be a user in a role group authorized to perform accounting-manage actions.

For information on how to log in to the CBM as an authorized user or how to display information about a user or role group, review the procedures in the following table.

Procedure Document

Application

Auto-recovery allows RTB to automatically recover from a billing transfer failure with the data and processing management system (DPMS) after exceeding the allowable number of retry attempts. Auto-recovery performs the following functions:

- sends a 10 MB test file to the DPMS to analyze the cause of the file transfer failure
- moves some of the *.tmp* files on the DPMS to a temporary file directory

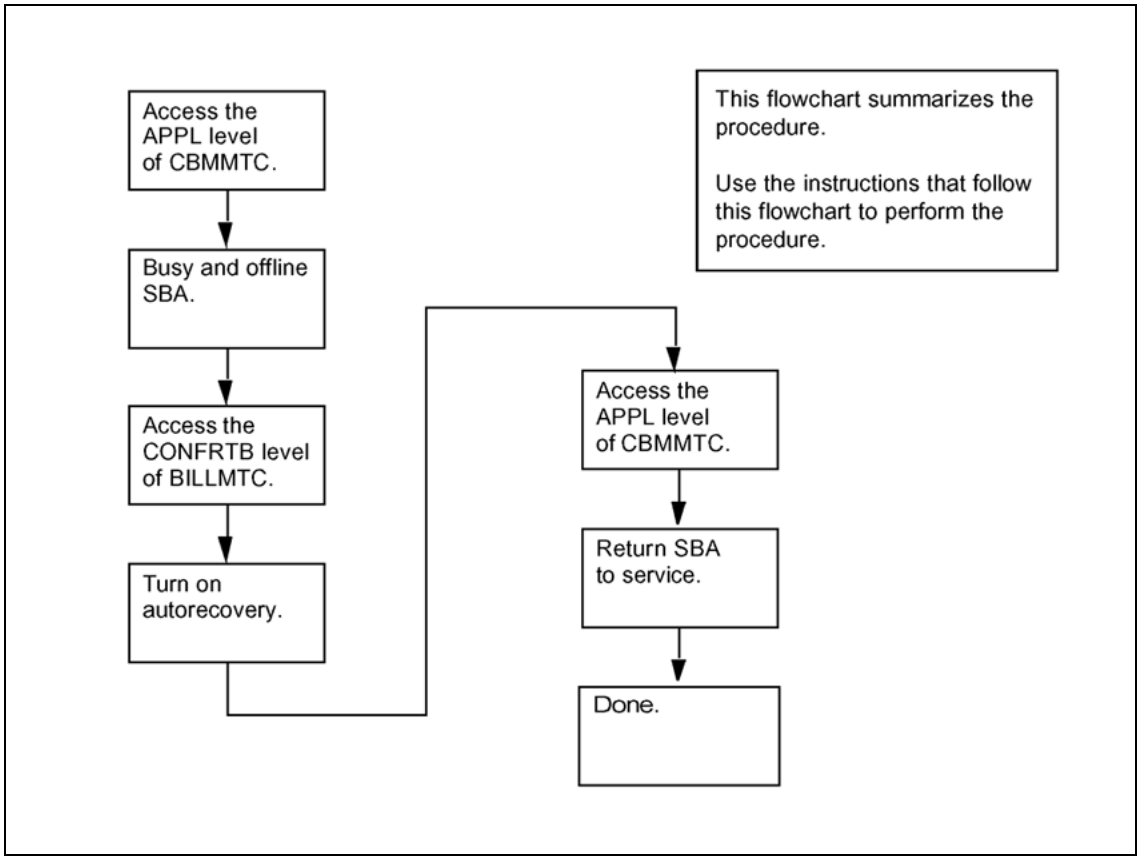
This procedure manually busies SuperNode Billing Application (SBA), which generates the following actions:

- SBA operates in backup mode.
- MAPCI displays a major SBACP alarm under the SDMBIL banner.

Procedure

The following flowchart summarizes this procedure.

Summary of procedure



Instructions for entering commands in the following procedure do not show the prompting symbol, such as #, >, or $, displayed by the system through a GUI or on a command line.

Turning on auto-recovery

Step	Action
	At any workstation or console
1	Access the core manager as a user authorized to perform accounting-manage actions.
2	Access the APPL level of the CBMMTC interface: `cbmmtc appl` CBMMTC accesses the APPL level
3	Use the Up and Down commands to scroll through the list of displayed applications and locate the SBA application.
4	Busy SBA:

bsy <n>

where

<n> is the number of the SBA application

CBMMTC displays the following prompt:

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

5 Confirm the command:

y

SBA changes state to ManB.

6 This is an optional step. Offline SBA:

offl <n>

where

<n> is the number of the SBA application

SBA changes state to OffL.

7 Quit the CBMMTC interface:

quit all

The display returns to the command prompt.

8 Access the BILLMTC interface:

billmtc

BILLMTC opens at the main level.

9 Access the Schedule level:

schedule

BILLMTC shows the Schedule level.

10 Access the RTB level:

rtb

BILLMTC shows the RTB level.

11 Access the CONFRTB level:

confrtb

BILLMTC shows the CONFRTB level.

12 Turn auto-recovery on:

autorec on

Example response:

```
"auto-recovery has been turned on."
```

13 Quit the BILLMTC interface:

quit all

The display returns to the command prompt.

14 Access the APPL level of the CBMMTC interface:

cbmmtc appl

CBMMTC accesses the APPL level

15 Use the Up and Down commands to scroll through the list of displayed applications and locate the SBA application.

16 If you placed SBA offline in step 6, busy SBA:

bsy <n>

where

<n> is the number of the SBA application

SBA changes state to ManB.

17 Return SBA to service:

rts <n>

where

<n> is the number of the SBA application

SBA returns to service.

18 You have completed this procedure.

—End—

Turning auto-recovery off

Purpose

Use this procedure to turn off Real Time Billing (RTB) auto-recovery for all configured RTB destinations.

This procedure manually busies SuperNode Billing Application (SBA), which generates the following actions:

- SBA operates in backup mode.
- MAPCI displays a major SBACP alarm appears under the SDMBIL banner.

Prerequisites

You must be a user in a role group authorized to perform accounting-manage actions.

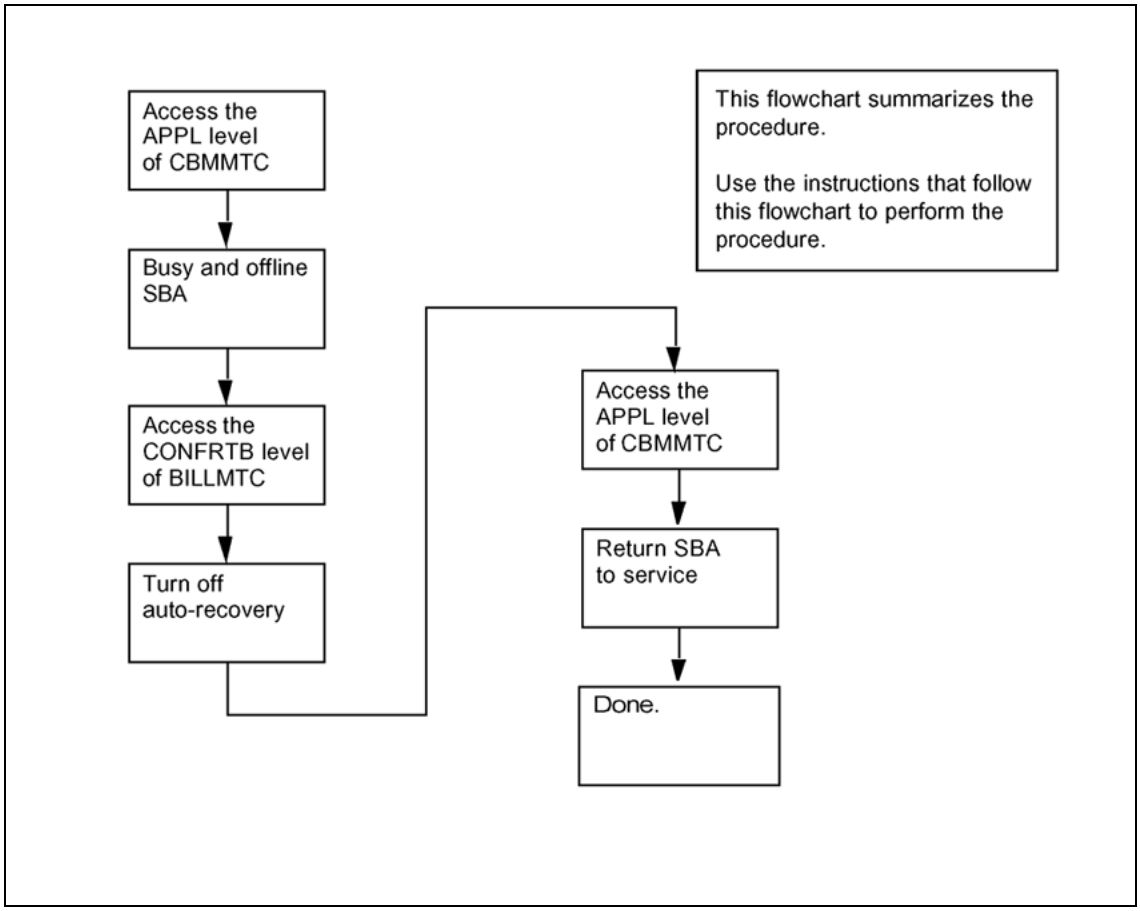
For information on how to log in to the CBM as an authorized user or how to display information about a user or role group, review the procedures in the following table.

Procedure Document

Procedure

The following flowchart summarizes this procedure. Perform the steps that follow the flowchart to perform the procedure.

Summary of procedure



Instructions for entering commands in the following procedure do not show the prompting symbol, such as #, >, or $, displayed by the system through a GUI or on a command line.

Turning off auto-recovery

Step	Action
	At any workstation or console
1	Access the core manager as a user authorized to perform accounting-manage actions.
2	Access the APPL level of the CBMMTC interface: `cbmmtc appl` CBMMTC accesses the APPL level
3	Use the Up and Down commands to scroll through the list of displayed applications and locate the SBA application.

4 Busy SBA:

bsy <n>

where

<n> is the number of the SBA application

CBMMTC displays the following prompt:

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

5 Confirm the command:

y

SBA changes state to ManB.

6 This is an optional step. Offline SBA:

offl <n>

where

<n> is the number of the SBA application

SBA changes state to OffL.

7 Quit the CBMMTC interface:

quit all

The display returns to the command prompt.

8 Access the BILLMTC interface:

billmtc

BILLMTC opens at the main level.

9 Access the Schedule level:

schedule

BILLMTC shows the Schedule level.

10 Access the RTB level:

rtb

BILLMTC shows the RTB level.

11 Access the CONFRTB level:

confrtb

BILLMTC shows the CONFRTB level.

12 Turn auto-recovery off:

```
autorec off
```

BILLMTC turns off autorecovery for all configured RTB destinations.

13 Quit the BILLMTC interface:

```
quit all
```

The display returns to the command prompt.

14 Access the APPL level of the CBMMTC interface:

```
cbmmtc appl
```

CBMMTC accesses the APPL level

15 Use the Up and Down commands to scroll through the list of displayed applications and locate the SBA application.

16 If you placed SBA offline (OffL) in step 6, busy SBA:

```
bsy <n>
```

where

<n> is the number of the SBA application

SBA changes state to ManB.

17 Return SBA to service:

```
rts <n>
```

where

<n> is the number of the SBA application

SBA returns to service.

18 You have completed this procedure.

—End—

Configuring SBA backup volumes on the core

Purpose

The following table lists the disk drive backup volumes that you can configure for the XA-core platforms.

XA-core (for releases prior to SDM16 or CS2E03)	DDU or IOP
XA-core (for SDM16 or CS2E0 and higher)	IOP

Prerequisites

Prior to starting this procedure, you must be aware of the following:

- you must configure additional backup storage to prevent a temporary problem that forces the SBA into long-term backup mode
- the billing stream is aware that the replaced volumes exist, and recovers files from both the swapped-out and swapped-in sets of volumes as part of the recovery process
- the billing stream loses track of swapped-out volumes when a switch of activity (SwAct) or a restart is performed on the DMS or Communication Server 2000 prior to the completion of the recovery of the files
- there is a risk of losing some billing records when you reconfigure or swap-out backup volumes of a stream that is in backup mode during the transition process
- you must allow recovery to complete prior to a switch outage when you choose to swap out an active backup volume during an emergency situation. If not, the billing stream does not recognize the swapped-out volumes.

  If you are using or migrating to a XAC16 system, your backup volumes must be on IOP volumes. If your current backup volumes are on SLM or DDU volumes and you are running a previous release, you must migrate to IOP volumes before upgrading to this release.

ATTENTION

Ensure the size for backup volumes is sufficient.

Refer to Disk space requirements (Calculation of DMS Switch Disk Space Requirements) in procedure "Preparing for SBA installation and configuration" (page 7). The absolute minimum size for backup volumes is 30MB.

ATTENTION

Backup volumes must be configured evenly across the available disks of the same disk type in your system.

Procedures

Use the following procedures to configure SBA backup volumes on the core.

Instructions for entering commands in the following procedures do not show the prompting symbol, such as #, >, or $, displayed by the system through a GUI or on a command line.

Calculate disk space to contain backup volumes

Step	Action

At your system

1 Write down the dms_disk_space value from the procedure "Preparing for SBA installation and configuration" (page 7) (answer 31), which shows the amount of disk space required for the backup volumes.

2 Determine the amount of disk space of each disk type in your system to be used for storing the backup volumes. Divide the value you recorded in step 1 by the maximum volume size supported for the appropriate disk types for your system, obtained from the following table. Record these values.

Disk type	Maximum disks per core	Maximum volumes per device	Maximum volumes configurable for SBA	Maximum volume size
IOP	2	32	64	2GB
3PC	2	32	64	2GB
DDU	10	32	69	64MB
SLM	2	32	64	

3 Ensure that the backup volumes can fit on the disks in your system. Compare the values that you recorded in step 2 with the maximum number of volumes supported for the disk types in your system, obtained from the table in step 2. Determine the next step to perform:

If the number of volumes obtained in step 2	Do
is less than or equal to the maximum number allowed	step 4
is greater than the maximum number allowed	contact the next level of support

4 Determine the next steps to perform.

To configure disk type	Use this procedure
DDU	"Configuring DDU disk drive backup volumes" (page 64)
IOP	"Configuring IOP disk drive backup volumes" (page 68)
SLM	"Configuring SLM disk drive backup volumes" (page 70)

—End—

Configuring DDU disk drive backup volumes

Step Action

At the MAP

1 Post the billing stream:

```
mapci;mtc;appl;sdmbil;post <stream_name>
```

where

<stream_name> is the name of the billing stream

2 Obtain information about the existing backup volumes for the billing stream:

```
conf view <stream_name>
```

where

<stream_name> is the name of the billing stream

SBA does not support configuring more than one billing stream at a time from multiple workstations. The last billing stream that is configured is the one that is saved.

The system displays the name of each backup volume in the stream. Record each backup volume name for future reference.

3 Quit out of the MAPCI level:

```
quit all
```

4 Display and record the size of a volume and its number of free blocks:

```
dskut;sv <volume name>
```

where

<volume name> is the name of one of the volumes that you obtained and recorded in step 2

5 Repeat step step 5 for each volume name that you recorded in step 2.

6 Create an eight-character, alphanumeric name for each of the new backup volumes that you determined in the procedure, "Calculate disk space to contain backup volumes" (page 63) and record each of these names for future reference.

DDU volume names can be up to eight alphanumeric characters in length, with the first four characters reserved for the disk prefix.

Logical volumes must be configured evenly across the disks.

7 Access the IOD level:

```
mapci;mtc;iod
```

8 Locate the DDUs:

```
listdev ddu
```

9 Record the DDU numbers and their respective IOC, CARD, and PORT locations for future reference.

10 Begin to busy a DDU:

```
ioc <ioc>
```

where

<ioc> is the IOC controlling the respective DDU

11 Display the DDU card:

```
card <ddu_card>
```

where

<ddu_card> is the DDU card number

12 Complete the busy process:

```
bsy
```

13 Confirm the DDU card number that you selected in step 11 indicates a status of ManB.

14 Display the free space for this DDU:

```
dskalloc <ddu #>
```

where

<ddu #> is the DDU card number

Record the free space amount from the dskalloc command that is displayed, for future reference.

15 Determine DDU disk space availability.

If you have	Do
located a DDU with sufficient disk space for the new backup volumes	step 19
not located a DDU with sufficient disk space for the new backup volumes	step 16

16 Return the DDU to service:

```
rts
```

17 Return to the IOC level:

```
quit
```

18 Repeat step 10 through step 17 until you locate a DDU with sufficient space for the new backup volumes.

19 Create a new logical volume:

```
add <volume> <blocksize>
```

where

<volume> is the backup volume name
<blocksize> is the size of the volume. Calculate this by multiplying the maximum volume size allowed for the DDU disk, which is shown in the table in step 2 of the procedure "Calculate disk space to contain backup volumes" (page 63), by 1024.

Example
add AMA8 51200
This example prompts the system to create the logical volume D000AMA8, consisting of 51200 1024-byte blocks (50 Mbyte) of available disk space.

If you receive an error message while updating the last DDU volume with 64 Mbyte, this volume must be configured with a size less than 32767 blocks.

20 Verify the names of the volume identifiers:

```
display
```

21 Add an allocation volume to the root directory:

```
diradd <backup_volume>
```

where

<backup_volume> is the backup volume name

22 Update the volume identifiers:

```
update
```

23 Repeat step 19 through 22 until each new logical volume has been created.

24 Exit the disk administration level:

```
quit
```

25 Return the DDU to service:

```
mapci;mtc;iod;ddu <#> ;rts
```

where

<#> is the DDU disk drive number (0 or 1) that you busied in step 12

26 Return to the MAPCI level:

```
quit
```

27 Configure the billing stream of the logical volumes you created in step 19 through 23 once you receive confirmation that the files are successfully created. Performing the procedure, "Configuring SBA backup volumes on a billing stream" (page 74).

28 Exit back to the command prompt:

```
quit all
```

You must alert all operating company personnel who work on the core, and provide the names of the old and new backup volumes and the procedure you used to swap the volumes. They must understand that any restarts or activity switch (SwAct) that occurs before the billing stream returns to normal mode can cause a loss of billing records.

It is imperative that the mode of the billing stream must be closely monitored to ensure that it returns to normal mode without an intervening RESTART or SwAct.

29 You have completed this procedure.

—End—

Configuring IOP disk drive backup volumes

Step	Action

At the MAP

1 Post the billing stream:

```
mapci;mtc;appl;sdmbil;post <stream_name>
```

where

<stream_name> is the name of the billing stream

2 Obtain information about the existing backup volumes for the billing stream:

```
conf view <stream_name>
```

where

<stream_name> is the name of the billing stream

SBA does not support the configuration of more than one billing stream at a time from multiple workstations. The last billing stream that is configured is the one that is saved.

The system displays the name of each backup volume in the stream. Record each backup volume name for future reference.

3 Quit out of the MAPCI level:

```
quit all
```

4 Display and record the size of a volume and its number of free blocks:

```
diskut;lv <volume name>
```

where

<volume name> is the name of one of the volumes that you obtained and recorded in step 2

5 Repeat step 4 for each volume name that you recorded in step 2.

6 Create an alphanumeric name, consisting of a maximum of twelve characters, for each of the new backup volumes that you determined in the procedure "Calculate disk space to contain backup volumes" (page 63). Record each of these names for future reference.

IOP volume names on the IOP disks can be up to twelve alphanumeric characters in length, with the first four characters reserved for the disk prefix.

Logical volumes must be configured evenly across the disks.

7 Access the disk administration level:

diskadm <disk prefix>

where

<disk prefix> is one of the prefixes assigned to the two disks; for example, F02L or F17D.

8 Determine the free disk space:

dd

9 Note the following example, which is a response to the command performed in step 8, choosing the F02L disk name.

```
Disk drive information for F02L

Date last formatted              :  2000/01/01 01:00:50.145 THU.
Date last modified               :  2001/09/26 11:22:38.587 WED.
Total space for volumes          :  4095 Mbytes
Total free space                 :  1014 Mbytes
Size of largest free segment     :  1014 Mbytes
Total number of volumes          :  14

1 Block = 512 bytes
```

10 Determine the size of the largest free segment.

If the size of the largest free segment is	Do
greater than or equal to the maximum allowable volume size for the IOP disk type	step 11
less than the maximum allowable volume size for the IOP disk type	contact your next level of support before proceeding with this procedure

11 Create a new logical volume:

cv <volume> <size> ftfs

where

<volume> is the backup volume name
<size> is the size of the volume. Compare the size recorded in step 1 of the procedure "Calculate disk space to contain backup volumes" (page 63), with the allowable size for the IOP disk type (obtained from the table under step 2 of the same procedure. The lesser of the two values must be entered as this size.

Example
cv AMA8 50 ftfs

This entry prompts the system to create the logical volume F17LAMA8, consisting of 50 Mbyte (102400 512-byte blocks) of available disk space.

12 Exit the disk administration level at the prompt:

```
quit
```

13 Repeat step 7 through 12 until all new logical volumes have been created.

14 Exit to the command prompt:

```
quit all
```

15 Configure the billing stream of the logical volumes you created in step 11 through 14 once you receive confirmation that the files are successfully created. Perform the procedure "Configuring SBA backup volumes on a billing stream" (page 74).

16 Exit back to the command prompt:

```
quit all
```

You must alert all operating company personnel who are associated with the DMS switch. Provide the names of the old and new backup volumes and the procedure you used to swap the volumes. They must be made aware of that any RESTARTs or SwActs that occur before the billing stream returns to normal mode can cause a loss of billing records.

Also, it is imperative that the mode of the billing stream must be closely monitored to ensure that it returns to normal mode without an intervening RESTART or SwAct.

17 You have completed this procedure.

—End—

Configuring SLM disk drive backup volumes

Step	Action

At the MAP

1 Post the billing stream:

```
mapci;mtc;appl;sdmbil;post <stream_name>
```

where

`<stream_name>` is the name of the billing stream

2 Obtain the names of the existing backup volumes for the billing stream:

```
conf view <stream_name>
```

where

<stream_name> is the name of the billing stream

SBA does not support the configuration of more than one billing stream at a time from multiple workstations. The last billing stream that is configured is the one that is saved.

The system displays the name of each backup volume in the stream. Record each backup volume name for future reference.

3 Quit out of the MAPCI level:

```
quit all
```

4 Display and record the size of a volume and its number of free blocks:

```
diskut;lv <volume name>
```

where

<volume name> is the name of one of the volumes that you obtained and recorded in step 2

5 Repeat step 4 for each volume name that you recorded in step 2.

6 Create an eight-character, alphanumeric name for each of the new backup volumes that you determined in the procedure "Calculate disk space to contain backup volumes" (page 63). Record each of these names for future reference.

SLM volume names on the SLM disks can be up to eight alphanumeric characters in length for the core manager, with the first four characters reserved for the disk prefix.

Logical volumes must be configured evenly across the disks.

7 Busy SLM 0:

```
mapci;mtc;iod;slm 0;bsy
```

8 Access the disk administration level:

```
diskadm <disk prefix>
```

where

<disk prefix> is one of the prefixes assigned to the two disks; for example, S00D or S01D

9 Determine the free disk space:

```
dd
```

10 Note the following example, which is a response to the command you performed in step 9, choosing the S00D disk name.

```
Disk drive information for S00D
Drive name:  S00D
Vendor Information              :  SEAGATE  ST31051N 9470
Date last formatted             :  2000/01/01 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
```

If the size of the largest free segment is	Do
greater than or equal to the maximum allowable volume size for the SLM disk type	step 11
less than the maximum allowable volume size for the SLM disk type	contact your next level of support

11 Create a new logical volume:

cv <volume> <volume_size> std

where

<volume> is the backup volume name

<volume_size> is the size of the volume. Compare the size recorded in step 1 of the procedure "Calculate disk space to contain backup volumes" (page 63) with the allowable size for the IOP disk type (obtained from the table under step 2of the same procedure. The lesser of the two values must be entered as this size.

Example
cv AMA8 50 std
This entry prompts the system to create the logical volume S00DAMA8, consisting of 50 Mbyte (102400 512-byte blocks) of available disk space.

12 Exit the disk administration level at the prompt:

quit

13 RTS the SLM 0 disk drives that you busied in step 7 to an InSv state:

mapci;mtc;iod;slm 0;rts

14 Exit to the command prompt:

```
quit all
```

15 Repeat 7 to 14 until all volumes have been created.

16 Configure the billing stream of the logical volumes you created in step 11 through 14 once you receive confirmation that the files are successfully created, by performing the procedure "Configuring SBA backup volumes on a billing stream" (page 74)

17 Exit back to the command prompt:

```
quit all
```

You must alert all operating company personnel who are associated with the DMS switch. Provide the names of the old and new backup volumes and the procedure you used to swap the volumes. They must be made aware of that any RESTARTs or SwActs that occur before the billing stream returns to normal mode can cause a loss of billing records.

Also, it is imperative that the mode of the billing stream must be closely monitored to ensure that it returns to normal mode without an intervening RESTART or SwAct.

18 You have completed this procedure.

—End—

Configuring SBA backup volumes on a billing stream

Purpose

Use this procedure either to add new SBA backup volumes to a billing stream or to remove SBA backup volumes from a billing stream.

Instructions for entering commands in the following procedure do not show the prompting symbol, such as #, >, or $, displayed by the system through a GUI or on a command line.

Procedure

Configuring SBA backup volumes on a billing stream

Step	Action
	At the MAP
1	Access the billing level by typing **`mapci;mtc;appl;sdmbil`** and pressing the Enter key.
2	Determine the next step to perform.

To	Do
Add volumes to a billing stream	step 3
Remove volumes from a billing stream	step 4

3	Add volumes by typing **`addvol <stream_name> <volume1> ... <volume5>`** and pressing the Enter key. where **`<stream_name>`** is the name of the billing stream **`<volume1> ... <volume5>`** is the volume name. Up to five volumes (with each entry separated from the preceding entry or succeeding entry by spaces) can be added at one time. **Example** To add five volumes, the command would appear as: addvol AMA S00DAMA1 S01DAMA2 S00DAMA3 S01DAMA4 S00DAMA5

Repeat this step until all of the volumes have been added to the stream, and then proceed to step 5.

4 Remove volumes by typing

`remvol <stream_name> <volume1> ... <volume5>`

and pressing the Enter key.

where

`<stream_name>` is the name of the billing stream

`<volume1> ... <volume5>` is the volume name. Up to five volumes (with each entry separated from the preceding entry or succeeding entry by spaces) can be removed at one time.

Example
To remove five volumes, the command would appear as:
remvol AMA S00DAMA1 S01DAMA2 S00DAMA3 S01DAMA4 S00DAMA5

Repeat this step until all of the volumes that you wish to remove have been removed from the stream, and then proceed to step 5.

5 You have completed this procedure.

—End—

Retrieving billing files for a stream set to inbound file transfer mode

Purpose

Use this procedure to:

- retrieve the billing files in a billing stream that has been configured for inbound file transfer, and
- rename the files to indicate successful retrieval of the billing files.

Prerequisites

You must be a maint user to perform this procedure.

Application

The FTP "mget" command can retrieve multiple files. For example: "mget *.pri" will retrieve all files ending in ".pri". FTP prompts the user for each file unless "prompt off" is entered before the get command.

However, there are risks when using the mget command. For example, if the FTP session is interrupted while retrieving files, file renaming (see step 7), may not be performed. This can result in duplicate files on the target machine.

Procedure

Instructions for entering commands in the following procedure do not show the prompting symbol, such as #, >, or $, displayed by the system through a GUI or on a command line.

Retrieving billing files for a stream set to inbound file transfer mode

Step	Action
	At the downstream terminal
1	Log in as the "maint" user and, using the tool of your choice, retrieve the billing files in a billing stream set for inbound file transfer.

If you want to use	Refer to the following for instructions
FTP	"Using an FTP client" (page 79)
SFT (not applicable for CBM)	**Transferring and retrieving files using SFT**, in the *Security and Administration* NTP for your core manager.

If you want to use	Refer to the following for instructions
SFTP	"OpenSSH overview" (page 81)
SCPO	"OpenSSH overview" (page 81)

Steps 2to 9provide an example for retrieving files using FTP.

2 FTP into the core manager:

```
ftp <core manager's IP address>
```

3 Change directory to the stream directory from which files are to be retrieved:

```
cd ftpdir/<stream name>
```

4 Set the FTP session to retrieve the files in binary format:

```
bi
```

5 List the files:

```
ls
```

Files with the extensions:

- ".unp" are unprocessed files, and
- ".pro" indicates processed files for streams in DIRP file format.

6 Retrieve the desired file:

```
get <filename.extension>
```

7 Rename the files that you have just retrieved:

- for DIRP files, if the file was "unprocessed" (.unp extension), rename the file to have the ".pro" (processed) extension to indicate successful retrieval.

You must perform step 7to ensure the reliability of the SBA. Without having the file marked as retrieved, it cannot be considered for removal when the disk reaches capacity and, in that event, billing data can be lost.

An authorized user can retrieve the billing files from the closedNotSent and closedSent directories. However, this action affects the integrity of the billing system, since the files are not get marked "closed sent" and storage problems will occur.

a. Rename a DIRP "unprocessed" file that you retrieved to have the ".pro" extension:

```
rename <filename>.unp <filename>.pro
```

8 After all desired files are renamed, exit FTP:

```
bye
```

9 You have completed this procedure.

—End—

Using an FTP client

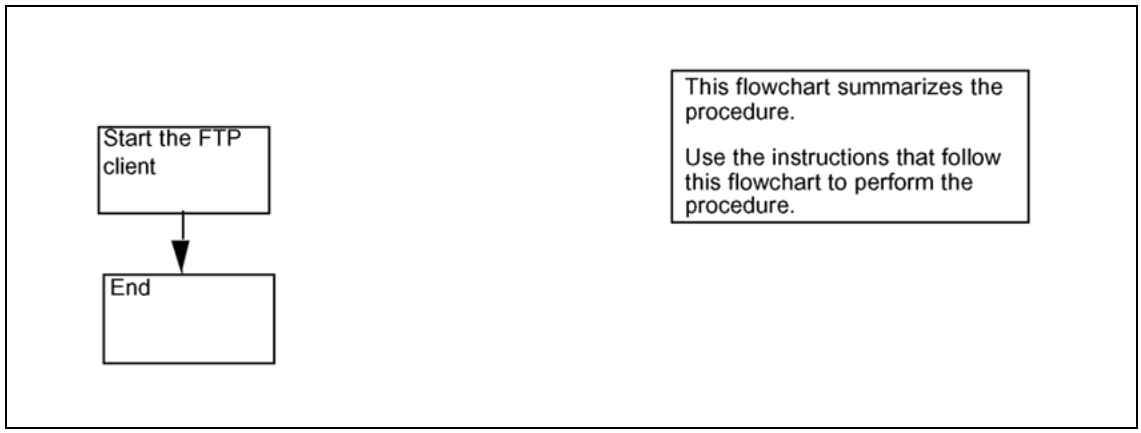
Starting an FTP client

The following procedure describes how to start an FTP client.

Nortel recommends that you use the SFT client. FTP userIDs and passwords are passed unencrypted across the network. Standard FTP cannot determine which users are allowed to transfer files to and from the CM.

To complete the procedure for starting an FTP client, perform the step-action procedures that follow the flowchart.

Summary of Starting an FTP client



Instructions for entering commands in the following procedure do not show the prompting symbol, such as #, >, or $, displayed by the system through a GUI or on a command line.

Starting an FTP client

Step	Action

At a UNIX prompt:

1 Start the FTP client workstation:

```
ftp <address>
```

where

`<address>` is the IP address, or the DNS address of the FTP server.

The location of the FTP client varies.

2 You have completed this procedure.

For additional instructions on FTP client usage, refer to the documentation of the client application. For instructions on using CM FTP, refer to section "CM FTP server" (page 80).

—End—

CM FTP server

SFT clients and FTP clients can both access the CM FTP server: SITE CM.You can use standard FTP commands with some exceptions. A list of exceptions follows.

Command limits and restrictions

The following describes limits to standard FTP commands when accessing the CM FTP server.

- The user command is intercepted and disallowed by the SFT server. A user does not have to log in manually.
- The mkdir and rmdir commands are not supported by the CM FTP server. The CM file system only contains volumes. It does not support directory hierarchies within the volume.
- Files transferred to SFDEV are owned by the user $$SYS$$.
- SFT performs a clean-up routine after the SFT application is returned to service. If you attempt to use the SITE CM command immediately after the RTS command is issued, you may experience a delay of about 20 seconds before access to the CM is given.
- File names and volume names are case respective. Volume names are always in uppercase, for example, S01DVOL1. File names are usually in uppercase.

For more information on commands, refer to the commands glossary.

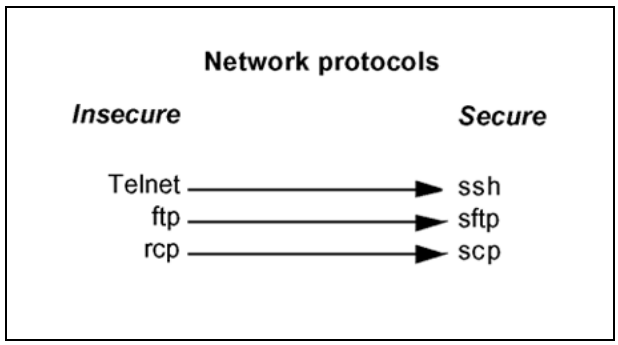
OpenSSH overview

Functional description

ATTENTION

This document is an overview only of the OpenSSH functionality. Nortel does not provide any detailed usage information or client installation procedures. For this information, refer to the official OpenSSH website located at http://www.openssh.com/.

OpenSSH is an open source version of the Secure Shell (SSH) protocol suite of network connectivity tools. Secure Shell is a program to log into another computer over a network, to execute commands in a remote machine, and to move files from one machine to another. OpenSSH is a suite of tools that provides strong authentication and secure communications over unsecure channels.



The suite of OpenSSH tools is as follows:

- SSH (secure shell) - a replacement for telnet

  Using SSH, you can log in to the core manager from a remote system or log in to a remote system from the core manager. You can also execute commands on a remote system. SSH connects and logs into the specified hostname. You must provide your identity to the remote machine. You can also establish a secure CM session from a remote system through the core manager using SSH.

  Access to some functions requires the use of SSH-compatible client software for access to secure telnet and ftp services (using the SSH standard). SSH clients are bundled with some operating systems, but

can to be obtained separately. The following table lists some sources for SSH clients (sources are not limited to those listed in this table).

Sources for SSH clients

Source	Type
PUTTY	freeware
OpenSSH	freeware
SSH Inc.	commercial
Secure CRT	commercial
WinSCP	freeware

- scp (secure copy) - improved (secure) functionality of rcp (remote copy)

  Using scp, you can securely copy files to and from the core manager or a remote system. scp uses ssh for data transfer, and uses the same authentication and provides the same security as SSH.

- sftp (secure file transfer program) - a replacement for ftp

  Using sftp, you can perform secure file transfers. sftp is an interactive program that connects and logs into the specified host, then enters an interactive command mode.

- sshd (OpenSSH SSH daemon) - the server-side daemon

  sshd is the daemon program for SSH. Together these programs provide secure encrypted communications between two hosts over an insecure network.

The functionality of OpenSSH does not interfere with existing networking services, such as telnet, FTP, DCE, NTP, or SFT.

The implementation of OpenSSH on the CS 2000 Core Manager provides three authentication methods:

1. password
2. keys (when you are creating the key, you are asked to add an encrypted password associated with this key)
3. combination of keys and password

The SDM/CBM/CS 2000 Core Manager and the client system administrator must be familiar with the key authentication method, before using it. For detailed instructions on the use of key authentication, refer to the official OpenSSH website http://www.openssh.com/.

The basic utilities of OpenSSH are:

- ssh-add - adds RSA or DSA identities to the authentication agent

- ssh-agent - authentication agent
- ssh-keygen - authentication key generation, management and conversion
- sftp-server - an sftp server subsystem

For detailed instructions on the use of key authentication, refer to the official OpenSSH website http://www.openssh.com/.

Because the man command is not supported on the SDM, it is not available from SSH shell level.

Related procedures

Refer to the procedure "Installing OpenSSH" in the applicable component Upgrades document to install the OpenSSH fileset.

For additional information, refer to the following web sites:

- http://www.openssh.com/ - for Sun, HP, Linux and AIX
- http://www.chiark.greenend.org.uk/%7Esgtatham/putty/ - a free Win32 Telnet/SSH client for Windows

Activating or deactivating secondary file processing

Purpose

Use the following procedure to activate or deactivate secondary file processing.

ATTENTION

You can activate or deactivate secondary file processing only when the SuperNode Billing Application (SBA) is either manually busy (ManB) or offline (Offl). Activation or deactivation takes effect when SBA is returned to service (RTS). Because busying the SBA places it into backup mode on the switch, be sure that adequate space is configured on the Core to prevent loss of billing.

ATTENTION

Data Process and Management System (DPMS) changes may be required to recognize and appropriately handle AMA records when secondary file processing is activated.

Prerequisites

You must be a user in a role group authorized to perform accounting-admin actions.

For information on how to log in to the CBM as an authorized user or how to display information about a user or role group, review the procedures in the following table.

Procedure	Document
Logging in to the CBM	*Core and Billing Manager 850 Security and Administration*, NN10358-611
Displaying actions a role group is authorized to perform	*Core and Billing Manager 850 Security and Administration*, NN10358-611

Procedure

Instructions for entering commands in the following procedure do not show the prompting symbol, such as #, >, or $, displayed by the system through a GUI or on a command line.

Activating or deactivating secondary file processing

Step	Action
	At the CBM

1 Log into the core manager as a user authorized to perform accounting-admin actions.

2 Access the Application level:

```
cbmmtc appl
```

3 Busy the SuperNode Billing Application:

```
bsy <x>
```

where

<x> is the number next to the SBA fileset

4 Quit the Maintenance level:

```
quit all
```

5 Access the Billing Maintenance level:

```
billmtc
```

6 Access the Application level:

```
appl
```

7 Access the Secondary File Processing (SFP) level:

```
sfp
```

Use the following table to determine your next step.

If you want to	Type
verify whether secondary file processing is either activated or deactivated	> **query**, and press the Enter key. Use the **act** or **deact** command, as directed in this table, to either activate or deactivate secondary file processing.
activate secondary file processing	> **act**, and press the Enter key, then> **y** or > **yes** to confirm, and press the Enter key. Continue to step 8.
deactivate secondary file processing	> **deact**, and press the Enter key, then> **y** or > **yes** to confirm, and press the Enter key. Continue to step 8.

8 Quit the Billing Maintenance level:

```
quit all
```

9 Access the Maintenance level:

```
cbmmtc appl
```

10 Return the SuperNode Billing Application to service:

```
rts <x>
```

where

<x> is the number next to the SBA fileset

Secondary file processing is either activated or deactivated when SBA returns to service.

11 You have completed this procedure.

—End—

Copying billing files to DVD using SBADVDWRITE

Purpose

Use this procedure to back up billing files of a particular stream on to a DVD. The procedure backs up: 1. the entire content of the directory that you select (closedNotSent, closedSent or both); or 2. The individual billing file(s) within the selected stream. The files are written to the DVD in the following directory formats: 1. , "/<stream name>/<directory name>/files"; or 2. "/<stream name>/INDIVIDUAL/files".

This procedure does not move files from ClosedNotSent to ClosedSent state.

If you are used to backing up billing files to tape (applicable to core managers on the FX platform), you may notice that the backup to DVD of smaller amounts of data may take comparatively longer to complete. Backup of larger amounts of data may, however, take less time to complete.

A critical alarm may be raised under the SYS and CBM banners of the cbmmtc user interface, and log SPFS350 may be generated, when either the /tmp/.iso directory or the /tmp/.tar directory is backed up. This system response is expected and does not require any corrective action.

Prerequisites

In order to perform this procedure, you must have the following authorization and access.

- You must be a user in a role group authorized to perform accounting-admin actions.
- You must obtain non-restricted shell access.

For more information on how to log in to the CBM as an authorized user, how to request a non-restricted shell access, or how to display actions a role group is authorized to perform, review the procedures in the following table.

Procedure	Document
Logging in to the CBM	*Core and Billing Manager 850 Security and Administration*, NN10358-611

Procedure	Document
Requesting non-restricted shell access	*Core and Billing Manager 850 Security and Administration*, NN10358-611
Displaying actions a role group is authorized to perform	*Core and Billing Manager 850 Security and Administration*, NN10358-611

The following prerequisites should be observed to ensure a successful backup:

- Ensure that you have an adequate supply of blank DVDs before starting the backup procedure. At least one DVD is required for each stream. A DVD can contain, at most, only one stream worth of billing files. Because a maximum of 2 Gbytes of data can be backed up per DVD, additional DVDs are required for streams that exceed 2 Gbytes in size. The backup program that you run in the procedure will alert you about the number of DVDs that are required for the stream that you are backing up.
- Ensure that the DVDs you are using for the backup are blank, that is, the content is erased. If you are re-using DVD-RW (erasable) DVDs, the content of the DVDs can be erased by performing the procedure Preparing a DVD-RW for use on page 249.
- The procedure can be performed only when you are logged in as the root user or a user in a role group authorized to perform accounting-admin actions. It should be performed only during non-peak hours.

Files are not locked while they are being copied to DVD.

If a SwAct occurs on a CBM850 platform during any part of this procedure, the entire procedure must be performed on the newly-active node.

Procedure

Instructions for entering commands in the following procedure do not show the prompting symbol, such as #, >, or $, displayed by the system through a GUI or on a command line.

Copying billing files to DVD using SBADVDWRITE

Step	Action
	At the CBM
1	Log into the core manager as a user authorized to perform accounting-admin actions.
2	Ensure that a DVD is present in the DVD drive by typing

```
/usr/bin/cdrw -l
```

If	Go to
a message displays indicating that there is no device (DVD) in the drive	step 3
a message displays indicating that a device (DVD) is present in the drive	step 4

3 Insert a DVD into the drive as follows:

a. Open the DVD drive tray by pressing the eject button located on the front of the DVD drive.

b. Insert a blank DVD into the drive tray.

c. Press the drive tray to the closed position.

d. Go to step 5.

4 Insert a DVD into the drive as follows:

a. Open the DVD drive tray by typing

```
/usr/bin/eject cdrom
```

If the DVD drive tray does not open, either the DVD is already in use or your current directory location is the "cdrom" directory. If the DVD drive is in use, you must wait until it is no longer in use before proceeding to the next step in this procedure. If your current directory location is "cdrom", change your directory location to another, such as your home directory, by using the change directory (cd) command
Example
cd home

If the DVD drive tray will still not open after you have determined that the DVD drive is not busy and is not being read from or written to, enter the following commands at the UNIX prompt:
/etc/init.d/volmgt stop
/etc/init.d/volmgt start
Then, retry the eject cdrom command.

b. When the DVD drive tray opens, press the tray to the closed position.

5 Start the backup program by typing

```
sbadvdwrite
```

6 In response to the system prompt, either

Proceed with the backup by pressing the Enter key

or

Stop the backup by typing

Abort

If	Go to
you are proceeding with the backup	step 7
you are stopping the backup program	step 15

7 The system will display any configured streams that are available for backing up.

If no configured streams are available for backup, the system will display an error message and will then abort the backup.

Example response:

```
Billing Data DVD Backup Stream Display
----------------------------------------------
The following streams are available to be backed up.
AMA
OCC
SMDR
Billing Data DVD Backup Stream Selection
----------------------------------------------
```

Select a stream to back up as follows:

a. Type the name of the stream to backup

b. Press the Enter key

8 In response to the system prompt, either

Proceed with the backup by pressing the Enter key

or

Stop the backup by typing

Abort

If	Go to
you are proceeding with the backup	step 9
you are stopping the backup program	step 15

9 The system will prompt you to select the directories, or individual billing files, you want to back up.

Example response:

```
Billing Data DVD Backup Directory Selection
-------------------------------------------
Enter the number corresponding to the directory(s) that
you want backed up and hit return:
1  -ClosedSent
2  -ClosedNotSent
3  -Both ClosedSent and ClosedNotSent
4  -Individual billing files within the
<stream name> stream
```

The <stream name> in the preceding example will be populated with the actual stream name that was selected in the previous step.

Select the directories, or individual billing files, that you want backed up as follows:

a. Type the number in the list corresponding to the directory, or directories, that you want backed up

b. Press the Enter key

10 If you chose to backup individual billing files within a specified stream, enter the exact names of the individual billing files you want to back up and press return.

> ***Note:*** Skip this step if you did not choose to backup individual billing files.

You must enter all files names on ONE LINE and ensure that each file in the line is separated by a single space.

-> <billing file 1> <billing file 2> ... <billing file n>

You have requested to back up the following files:

<billing file 1>

<billing file 2>

...

<billing file n>

Press Enter to proceed, or type Abort to abort.

The <billing file n> are the various individual billing files in the chosen stream to be backed up (they can be either closedNotSent and/or ClosedSent files within the chosen stream).

> ***Note:*** If any of the user-specified billing files were not found in the given streams closedNotSent or closedSent directories, then

the user will be informed and the tool will exit without backing up any billing files. The user will then be told to re-execute the sbadvdwrite command after checking the files they wish to backup.

11 In response to the system prompt, either

Proceed with the backup by pressing the Enter key

or

Stop the backup by typing

Abort

If	Go to
you are proceeding with the backup	step 11
you are stopping the backup program	step 15

12 The system will advise you as to the number of DVDs that are required in order to back up the selected directories or files.

In response to the system prompt, either

Proceed with the backup by pressing the Enter key

or

Stop the backup by typing

Abort

If	Go to
you are proceeding with the backup	step 12
you are stopping the backup program	step 15

13 The backup then begins. As the backup proceeds, the system displays the status of the backup activity. As additional DVDs are required, the system will automatically open the DVD tray and ask you to insert another DVD. As you remove each DVD, it is recommended that you label it using a CD/DVD safe pen.

Example response:

```
creating scratch /tmp/.tar 2046m d97
creating scratch /tmp/.iso 2048m d98
Looking for CD devices...
Checking for media...
```

```
Please insert a blank cd and hit <enter> OR type
<abort>:
Checking for media...
Media is blank
Start cdwrite of /tmp/.tar/billingdir/, iso_space=/t
mp/.iso.
Please wait...
executing /usr/bin/mkisofs -r -J -o tmp/.iso/iso.img/t
mp/.tar/billingdir/
Using P0403021.000;1 for /tmp/.tar/billingdir/closedSen
t/P040302182716AMA (P040302182715AMA)
Using P0403021.001;1 for /tmp/.tar/billingdir/closedSen
t/P040302182715AMA (P040302182614AMA)
Using P0403021.002;1 for /tmp/.tar/billingdir/closedSen
t/P040302182614AMA (P040302181113AMA)
.
.
.
35.63% done, estimate finish Wed Mar 3 16:29:21 2004
71.26% done, estimate finish Wed Mar 3 16:29:21 2004
Total extents actually written=14049
Total translation table size:0
Total rockridge attributes bytes:2364
Total directory bytes:6144
Path table size(bytes):42
Max brk space used c000
14049 extents written (27 Mb)
Looking for CD devices...
Initializing device...done.
Preparing to write DVD
Writing track 1...done.
Finalizing (Can take up to 4 minutes)...done.
write /tmp/.tar/billingdir/ succeeds
cdwrite exiting with return code 0
removing scratch /tmp/.tar d97
removing scratch /tmp/.iso d98
Billing Data DVD Backup Finished
-------------------------------------------
you have now completed the DVD backup operation.
Please ensure all requested files have been written to
the DVD(s)
```

14 Verify the backup was successful as follows:

a. Change your directory location to the directory on the DVD containing the backed-up billing files by typing

`cd cdrom/cdrom0/ <stream name> / <directory name>`

where

`<stream name>` is the stream you selected in step 7

<directory name> is the directory you selected in step 9

b. List the content of the DVD by typing

```
ls -lA
```

The system responds by listing the content of the DVD. Examine this list, paying close attention to the file names and file sizes. Compare this listing with the file listing that the system provided you as the backup was being performed (see step 12). If there is a difference between the two listings, you should re-run the file backup again.

To ensure that all of the files in a directory were captured in the backup, carefully examine the contents of all DVDs used for the backup. The files in a given directory may span two DVDs.

15 You may remove the DVD by typing

```
/usr/bin/eject cdrom
```

After you have removed the DVD, it is recommended that you label it using a CD/DVD safe pen.

If the DVD drive tray will not open after you have determined that the DVD drive is not busy and is not being read from or written to, enter the following commands at the UNIX prompt:
/etc/init.d/volmgt stop
/etc/init.d/volmgt start
Then, retry the eject cdrom command.

16 You have completed this procedure.

—End—

Copying billing files to DVD manually

Purpose

Use this procedure to back up specific billing files of a particular stream on to a DVD. This procedure should be used only when individual billing files in a stream are to be backed up. For regular billing file backups, use procedure "Copying billing files to DVD using SBADVDWRITE" (page 88).

This procedure does not move files from ClosedNotSent to ClosedSent state.

Prerequisites

The following prerequisites should be observed to ensure a successful backup of the files you have selected:

- Ensure that the DVD you are using is blank, that is, the content is erased. .
- The procedure can be performed when you are logged in as the root or emsadm user.

  Files are not locked while they are being copied to DVD.

  If a SwAct occurs on a CBM850 platform during any part of this procedure, the entire procedure must be performed on the newly-active node.

Procedure

Instructions for entering commands in the following procedure do not show the prompting symbol, such as #, >, or $, displayed by the system through a GUI or on a command line.

Copying billing files to DVD manually

Step	Action
	At the CBM
1	Log into the CBM as root or emsadm user.
2	Ensure that a DVD is present in the DVD drive by typing

```
/usr/bin/cdrw -l
```

If	Go to
a message displays indicating that there is no device (DVD) in the drive	step 3
a message displays indicating that a device (DVD) is present in the drive	step 4

3 Insert a DVD into the drive as follows:

a. Open the DVD drive tray by pressing the eject button located on the front of the DVD drive.

b. Insert a blank DVD into the drive tray.

c. Press the drive tray to the closed position.

d. Go to step 5.

4 Insert a DVD into the drive as follows:

a. Open the DVD drive tray by typing

```
/usr/bin/eject cdrom
```

If the DVD drive tray does not open, either the DVD is already in use or your current directory location is the "cdrom" directory. If the DVD drive is in use, you must wait until it is no longer in use before proceeding to the next step in this procedure. If your current directory location is "cdrom", change your directory location to another, such as your home directory, by using the change directory (cd) command.

Example
cd home

If the DVD drive tray will still not open after you have determined that the DVD drive is not busy and is not being read from or written to, enter the following commands at the UNIX prompt:
/etc/init.d/volmgt stop
/etc/init.d/volmgt start
Then, press the eject button located on the front of the DVD drive.

b. When the DVD drive tray opens, press the tray to the closed position.

5 Determine whether all of the files that you want to back up will fit on the DVD in the DVD drive as follows:

a. Change your directory location to the directory containing the files you want to back up by typing

cd <directory>

where

<directory> is a directory path name, such as "/export/billingfiles/closedSent"

b. List the contents of this directory by typing

/usr/bin/ls -l

The system responds by displaying the file contents of the directory.

Example response:

```
-rw-r--r-- 1 maint maint 7034800 Feb 3 16:56 data1
-rw-r--r-- 1 maint maint 4915002 Jan 26 18:55 data2
-rw-r--r-- 1 maint maint 10000000 Feb 2 15:21 data3
-rw-r--r-- 1 maint maint 57590000 Jan 23 11:59 data5
```

c. Determine the total size of the files to be backed up by adding together the sizes of these files shown in the listing. In the preceding example, the file sizes are "7034800", "4915002", "10000000", and "57590000". If the total size of the files you want to back up does not exceed 2 Gbyte (2000000000 bytes), only one DVD is required. If the size exceeds 2 Gbyte, additional DVDs will be required.

It is recommended that you distribute the files backed up over multiple DVDs in such a way as to ensure the most efficient use of each DVD.

6 Create an ISO9660 file system from the files you intend to back up by typing

/usr/bin/mkisofs -o <destination file> -A -J -L -R <pathspec> (the command is typed on one line, with each of the individual command elements separated by a single space)

where

<destination> is the name of the binary file that contains the ISO9660 file system
<pathspec> is the full path name of the files that are to be backed up.

Ensure that the directory in which you are creating the ISO9660 binary file contains at least 2 Gbyte of free space.

The total size of the files specified in <pathspec> must not exceed 2 Gbyte.# /usr/bin/mkisofs -o export/home/maint/tmatt/tempiso -A -J -L -R /export/billingfiles/closedSent/data1 /export/billingfiles/closed-Sent/data2

In this example, the <destination> file "export/home/maint/tempiso" is created from <pathspec>, the two files "/export/billingfiles/closed-Sent/data1" and "/export/billingfiles/closedSent/data2". Note that the full pathnames of the two files are separated by a single space in the command.

7 Write the binary file you created in step 6 to the DVD by typing

`/usr/bin/cdrw -C -i <ISO9660 file>`

where

`<ISO9660 file>` is the ISO9660 file system you created in step 6

Example
/usr/bin/cdrw -C -i export/home/maint/tmatt/tempiso

8 Delete the ISO9660 file system you created in step 6 to free the disk space it occupies, by typing

`/usr/bin/rm <ISO9660 file>`

where

`<ISO9660 file>` is the ISO9660 file system you created in step 6

9 Verify that the backup was successful as follows:

a. Change your directory location to "cdrom0" by typing

`cd cdrom/cdrom0`

b. List the contents of the DVD by typing

`ls -l`

The system responds by listing the contents of the DVD. Examine this listing, paying close attention to the file names and file sizes. Compare this listing with the file listing that you obtained in step 5. If there is a difference between the two listings, you should re-run the file backup again.

10 You may wish to remove the DVD at this time by typing

`/usr/bin/eject cdrom`

After you have removed the DVD from the drive tray, it is recommended that you label it using a CD/DVD safe pen.

If the DVD drive tray will not open after you have determined that the DVD drive is not busy and is not being read from or written to, enter the following commands at the UNIX prompt:
/etc/init.d/volmgt stop
/etc/init.d/volmgt start
Then, press the eject button located on the front of the DVD drive.

11 You have completed this procedure.

—End—

Preparing a DVD-RW for use

Application

Use this procedure to verify the DVD-RW is ready for use when using it for the first time, or when you want to erase the contents of a used DVD-RW to use it again.

Prerequisites for Core and Billing Manager 850

All users with non-restricted shell access are authorized to perform this procedure.

You require root-user access, or must be a user in a role group authorized to perform config-admin actions, if an error occurs when ejecting a DVD.

For more information about how to log in to the CBM as an authorized user, how to request non-restricted shell access, or how to display actions a role group is authorized to perform, review the procedures in the following table.

Related procedures

Procedure	Document
Logging in to the CBM	*Core and Billing Manager 850 Security and Administration for GSM/UMTS, NN20000-321*
Requesting non-restricted shell access	*Core and Billing Manager 850 Security and Administration for GSM/UMTS, NN20000-321*
Displaying actions a role group is authorized to perform	*Core and Billing Manager 850 Security and Administration for GSM/UMTS, NN20000-321*

Action

Perform the following steps to complete this procedure.

Step	Action
	At the server
1	Insert the DVD into the drive. Only rewriteable media can be erased. Verify that the DVD you are attempting to erase is a DVD-RW before inserting it into the drive.
	At your workstation
2	Log in to the server by typing `> telnet <server>` and pressing the Enter key.

where

server is the IP address or hostname of the SPFS-based server

3 When prompted, enter your user ID and password.

4 Use the following table to determine your next step.

If the DVD is	Do
new	step 5
used	step 6

5 Verify the DVD is ready for use by typing

```
$ cdrw -l
```

and pressing the Enter key

If the system response	Do
provides the CD device	step 11
indicates "No CD writers found or no media in the drive"	step 6

6 Erase the contents of the DVD by typing

```
$ cdrw -b all
```

and pressing the Enter key

ATTENTION

Erasing a DVD-RW can take over two hours. You can also use the "fast" and "session" arguments. For more details, refer to the man pages by typing **man cdrw**

7 Reinsert the DVD into the drive.

8 Verify the DVD is ready for use by typing

```
$ cdrw -l
```

and pressing the Enter key

If the system response	Do
provides the CD device	step 11
indicates "No CD writers found or no media in the drive" or "Media in the device is not erasable"	step 9

9 Eject the DVD from the drive as follows:

a. Ensure you are at the root directory level by typing

```
$ cd /
```

and pressing the Enter key.

b. Eject the DVD by typing

```
# eject cdrom
```

and pressing the Enter key.

If the DVD drive tray will not open after you have determined that the DVD drive is not busy and is not being read from or written to, enter the following commands:

```
# /etc/init.d/volmgt stop
```

```
# /etc/init.d/volmgt start
```

Then, re-try the "eject cdrom" command.

c. Remove the DVD from the drive.

10 Obtain another DVD and repeat the process starting with step 4.

11 Proceed to use the DVD.

You have completed this procedure.

—End—

Querying a billing stream

Purpose

Use this procedure to display the status and information for a specific SuperNode billing application (SBA) billing stream or all SBA billing streams.

Application

The MAP displays the following information at the Query command:

- State values:
  RBsy, InSv, SysB or Off for the primary substream. If applicable, a secondary, or recovery, substream is also displayed.
- Records within the open files:
  the number of billing records in open files (records other than ClosedNotSent)
- ClosedNotSentFiles available:
  the number of ClosedNotSent files on the stream's logical volume.
- Records within the ClosedNotSent files:
  the number of billing records contained in the ClosedNotSent files on the stream.
- Date of last file sent:
  the last date and time that a ClosedNotSent file on the stream was made into a ClosedSent file.

Prerequisites

Refer to the prerequisites for the product you are using.

Prerequisites for the CS 2000 Core Manager

You must be a user authorized to perform security-admin actions in order to perform this procedure.

For information on how to log in to the CS 2000 Core Manager as an authorized user or how to display other information about a user or role group, review the procedures in the following table.

Procedure	Document
Logging in to the CS 2000 Core Manager	*CS 2000 Core Manager Security and Administration*, NN10170-611
Displaying information about a user or role group	*CS 2000 Core Manager Security and Administration*, NN10170-611

Prerequisites for the Core and Billing Manager 850

You must have the root user ID and password to log into the server.

Procedure

Instructions for entering commands in the following procedure do not show the prompting symbol, such as #, >, or $, displayed by the system through a GUI or on a command line.

Querying a billing stream

Step	Action

At the core manager

1 Log into the core manager. Refer to Prerequisites for details.

2 Access the billing maintenance interface:

```
billmtc
```

3 Determine if you want to query a specific SBA stream or all of the SBA streams.

If you	Do
want to query one SBA stream	step 4
want to query all of the SBA streams	step 5

4 Query an SBA billing stream:

```
query <streamname>
```

where

`streamname` is the SBA billing stream you want to query, for example AMA and OCC

5 Query all of the streams:

```
query all
```

6 You have completed this procedure.

—End—

Searching and viewing billing records

Purpose

Use this procedure to search for and view billing records stored in AMADNS and DIRP file formats, using the AMADUMP tool.

Application

ATTENTION
AMADUMP does not support CDR billing records based on Edit templates. AMADUMP only supports CDR billing records based on Active templates.

You can display all of the records, or you can create filters that allow you to display only records matching a specific criteria. You view the results of AMADUMP on your screen.

The AMADNS file format supports the AMA, UCS CDR, and SMDR, record formats.

The DIRP file format supports the AMA, UCS CDR, Sprint CDR, and MCI Worldcom CDR record formats.

The UCS software on the Core supports user-defined Call Detail Record (CDR) templates for North American Universal Carrier Services (UCS). When activating the CDR templates on the switch, the core manager and Core clocks must be synchronized. For more information about CDR template creation, refer to "*UCS DMS-250 Billing Records Application Guide*, 297-2621-395."

AMADUMP uses the template information to search and display CDR records from billing files associated with UCS switches. AMADUMP does not process billing files if the file creation timestamp of the core manager billing files is older than the timestamp of the active set of CDR templates on the switch. In this case, the active set of templates may have been altered after the billing file was generated. Obtain timestamps as shown table "Obtaining a timestamp" (page 105).

Obtaining a timestamp

If you want to obtain a timestamp	Do
for billing file creation	procedure "Listing billing files" (page 115)
on the active set of templates on the Core	from the CI prompt, enter `> ctmplt;status`

AMADUMP limitations

The following limitations pertain to the operation of the AMADUMP tool.

Impact from changing CDR templates on the switch

SDM AMADUMP is unable to display all records from billing files containing a mixture of records generated using different CDR templates. This problem is transitional, that is, it may occur for the first billing file after the CDR template is changed on the switch. To help prevent this problem from occurring, changing templates during periods of high call traffic should be avoided. Templates should be changed only during maintenance periods, when call traffic is at a minimum.

If the problem does occur, however, manually rotate the billing file to the closedNotSent state by performing the procedure, "Closing billing files" (page 120). This will minimize the number of records that are not displayed using the SDM AMADUMP tool. Then, to view the billing file, enter the following "octal dump" command on the command line: **`od -x <full pathname of billing file>`**

Prerequisites

Refer to the prerequisites for the product you are using.

Prerequisites for the CS 2000 Core Manager

You must be a user authorized to perform security-admin actions in order to perform this procedure.

For information on how to log in to the CS 2000 Core Manager as an authorized user or how to display other information about a user or role group, review the procedures in the following table.

Procedure	Document
Logging in to the CS 2000 Core Manager	*CS 2000 Core Manager Security and Administration*, NN10170-611
Displaying information about a user or role group	*CS 2000 Core Manager Security and Administration*, NN10170-611

Prerequisites for the Core and Billing Manager 850

You must have the root user ID and password to log into the server.

Procedure

Instructions for entering commands in the following procedure do not show the prompting symbol, such as #, >, or $, displayed by the system through a GUI or on a command line.

Searching and viewing billing records

Step	Action

At any workstation or console

1 Log into the core manager. Refer to Prerequisites for details.

2 Access the billing maintenance level:

```
billmtc
```

3 Access the tools level:

```
tools
```

4 Access the amadump level:

```
amadump <streamname>
```

where

<streamname> is the name of the billing stream

Example

```
amadump ama
```

5 You can set the search criteria for the dump command, using one or more of the following commands:

Entering each of these commands, provides you with a list of valid parameters for the command.

command	purpose
filter	add one or more filters (maximum of 20), which can be used with the dump command to search and display records - to define a filter, refer to "Guidelines for defining filters" (page 111) Use the listfields command to obtain a list of possible field names when you are adding a filtered string.
numblk	set the block number from which to start the search This applies to DIRP file format only. If the file format is AMADNS, the system ignores this value.
numsrch	set the maximum number of records to search for (1 to 500000)
numout	set the maximum number of records to display (1 to 500000)

MTX XA-Core systems do not support volumes higher than 175 000 CDRs per hour.

When you set numblk, numsrch, and numout, their value is used in subsequent dump commands for the current session. However, if you specify numblk, numsrch, or numout as parameters with the dump command, you override their value.

For UCS CDR, you can query and reset the parameters that are currently defined as follows:
Query the search parameters that are currently defined:

```
AMADUMP>> reinit -q
```

Reset the search parameters to their default value:

```
AMADUMP>> reinit -r
```

6 Display the billing records using the dump command and one or more of its parameters. The dump command syntax is as follows:

```
AMADUMP>> dump <display_mode> [sum] [numout
<numout_value>] [numsrch <numsearch_value>]
[numblk <numblock_value>] [filter <filter_string>
or <%filter_number>] [fname <filename>] [btime
<start_time>] [etime <end_time>]
```

You can use either the filename parameter or the time parameters, but not both.

The dump command can take up to a few hours to complete depending on the number of files to be scanned. For this reason, you must be selective when you specify the set of files to dump to prevent any unwanted delays.

Parameter	Description
<display mode> {HEX, DETAILS, NODETAILS, NOSHOW} This is a required parameter.	HEX displays billing records in their raw (hexadecimal) form
	DETAILS displays billing records with individual fields and field names preceding the fields Prior to executing the dump command with the details mode, enter the following command if you want to display more records on the screen: `AMADUMP>> set display compact` This command enables compact display for the current session.

Parameter	Description
	NODETAILS displays billing records with individual fields but no field names preceding the fields
	NOSHOW displays no billing record information. Often used with the "sum" option to display the number of records in the file.
-s *or* sum	displays a summary of the dump: • filenames • total records in each file • total records matched (or selected) from each file • total of all the records in this specific dump • total records matched in this particular dump, and • search criteria used
-no <numout_value> *or* numout <numout_value>	specifies the maximum number of records to display (1 to 1 638 400)
-ns <numsearch_value> or numsrch <numsearch_value>	specifies the maximum number of records to search for (1 to 1 638 400)
-nb <numblock_value> *or* numblk <numblock_value>	specifies the starting block number for the search This applies to DIRP file format only. If the file format is AMADNS, the system ignores the value.
-ft <filter_string> *or* -ft <%filter_number> *or* filter <filter_string> *or* filter <%filter_number>	specifies the filter to be used to search and display the records - to define a filter, refer to "Guidelines for defining filters" (page 111)

Parameter	Description
-fn <filename> *or* fname <filename>	specifies the file or files to be displayed o specify multiple files, enter the file list within double quotes and separate each file name with a space.
-b <start_time> *or* btime <start_time>	specifies the start date and time of the records to be searched and displayed
-e <end_time> or etime <end_time>	specifies the end date and time of the records to be searched and displayed You can use the start and end time parameters individually, or together. The start and end time parameters are based on the creation date and time of the files, not the date and time contained within the files.

For AMADNS file format, you can use either hyphenated or non-hyphenated options, but not a combination of both. For DIRP file format, you can only use non-hyphenated options.

You can obtain the filename, and creation date and time of the files using the following command at the core manager prompt:

```
# listfile &lt;streamname>
```

The start time, end time, and filter options are not supported for SMDR record formats.

The record count for the AMADUMP "sum" option and listfile commands may not match for SMDR and CDR file formats.

For SMDR, the AMADUMP record count includes all call records and extension records. However, the listfile record count only includes call records.

For UCS CDR in DIRP format, the value of the RECORD_COUNT field in GER is one less than the total number of records (call records and event records) shown by AMADUMP summary.

If you want to scroll through all the records, enter "s" when the "more" prompt appears on the screen rather than using the carriage return to see individual records.

The filename displayed in the GER record may be different from the filename used in the "dump" command. AMADUMP always displays the filename stored in the GER record as it was created on the core manager (that is, like an active file).

AMADUMP>> dump details sum fname U020510095947OCC
.....
DIRPFNAME A020510095947OCC

7 You have completed this procedure.

—End—

Guidelines for defining filters

A filter allows you to search and display a sub-set of the billing records. A filter string is used to specify logical and comparison operations between constants and variables. A constant can be an actual number (up to 19 digits), or a string in quotes; a variable is a field name. You can obtain a list of available fields, which can be used as variables in a filter string, using the listfields command.

Variables and string constants are case sensitive. A string constant is anything enclosed in single quotes.

You can define a maximum of 20 filter strings, and specify them as "%<filter_number>" when you use the dump command to display the billing records.

The table "Filter operators" (page 111) provides the operators for filters.

Filter operators

Operator	Symbol
parenthesis	( )
Slice a variable	from <int> count <int>. • from <int> starts indexing from 0 • count <int> returns a count of 0 to a variable size of 0 The slice operation is a ternary operation (state of three) that only works on variables. The result of a slice is a temporary variable.

Operator	Symbol
Multiplication	*
Division	/
Addition	+
Subtraction	-
Greater than	>
Less than	<
Greater than or equal	>=
Less than or equal	<=
Equal to	= (for SMDR) == (for OCC and AMA)
Not equal to	!= or <>
And, Or (both logical and bit-wise)	&, | (SMDR) &&, || (OCC and AMA)

The operands are binary, except for the parenthesis, which holds other expressions.

For comparison operations, the result is either true (1) or false (0). A comparison is considered true if it evaluates to a value other than zero (0).

When a string constant is compared to a variable, it can only be used as a regular expression string. For example, string constants can only be used in an equality operation with the other operand being a variable.

For regular expressions, only "equal to" and "not equal to" operations are valid. All other characters are invalid.

Filter syntax

The filter command consists of different syntax for different data types. The data types are

- EBCDIC
- TBCD
- BCD
- BIN
- BIT
- BOOLEAN
- HEX

Filter syntax for EBCDIC Use single or double quotes for EBCDIC digits.

Example
For BAF records:
```
AMADUMP>> filter add 4 RECCD ==’F0’
AMADUMP>> filter add 4 RECCD =="F0"
```

Example
For CDR records:
```
AMADUMP>> filter add 4 STRUCTURE_CODE =="00079C"
```

Example
For SMDR records:
```
AMADUMP>> filter add 4 "RECORD_CODE_SM =’D1’"
```

Filter syntax for TBCD Use single or double quotes for TBCD digits. However, when you use a sub-set of TBCD digits in a filter string, you must use double quotes.

Example
For TBCD digits:
```
AMADUMP>> filter add 17 ANISP ==’5124599628’
AMADUMP>> filter add 17 ANISP =="5124599628"
```

Example
For a sub-set of TBCD digits:
```
AMADUMP>> filter add 17 ANISP =="51245996"
```

Filter syntax for BCD Use single or double quotes for BCD digits. However, when you use a sub-set of BCD digits in a filter string, you must use double quotes.

Example
For BCD digits:
```
AMADUMP>> filter add 4 STRUCTURE_CODE ==’00001C’
AMADUMP>> filter add 4 STRUCTURE_CODE =="00001C"
```

Example
For a sub-set of BCD digits:
```
AMADUMP>> filter add 4 STRUCTURE_CODE =="00001"
```

Filter syntax for BIN Use double quotes or no quotes for BIN digits. However, when you use a sub-set of BIN digits in a filter string, you must use double quotes.

Example
For BIN digits:
```
AMADUMP>> filter add 8 CALLDUR == 1310720
AMADUMP>> filter add 8 CALLDUR == "1310720"
```

Example
For a sub-set of BIN digits:
```
AMADUMP>> filter add 8 CALLDUR == "13107"
```

Filter syntax for BIT Use single or double quotes for BIT digits. However, when you use a sub-set of BIT digits in a filter string, you must use double quotes.

Example
For BIT digits:
```
AMADUMP>> filter add 15 WBCKTS == '1101000000000111110100
01100111101'
AMADUMP>> filter add 15 WBCKTS == "1101000000000111110100
01100111101"
```

Example
For a sub-set of BIT digits:
```
AMADUMP>> filter add 15 WBCKTS == "1101000000000111110100
11001111"
```

Filter syntax for BOOLEAN Use only double quotes for BOOLEAN digits.

Example
For BOOLEAN digits:
```
AMADUMP>> filter add 17 VARLNGTH == "N"
```

Filter syntax for HEX Use double quotes for HEX digits, however do not use any quotes if you are entering the value in decimal equivalent.

Example
For HEX digits:
```
AMADUMP>> filter add 11 SCPBILL == "fe17700b"
AMADUMP>> filter add 11 SCPBILL == 4262948875
```

Example of filter usage

The following example shows a dump of the AMA stream, selecting records where the call code is greater than 006, or the structure code is less than 00076. The dump command specifies the "or" logical relationship (||) that is to exist between the filters, and specifies the file name.

Example
```
> amadump ama
amadump>> filter add 5 CALL_CODE > '006C'
amadump>> filter add 6 STRUCTURE_CODE < '00076C'
amadump>> set display compact
amadump>> dump details sum filter "%5 || %6" fname
<filename>
```

Listing billing files

Purpose

Use this procedure to list all files currently stored for a specified SuperNode Billing Application (SBA) stream.

Application

You can specify additional criteria for listing files using optional parameters described in the table that follows this procedure.

Procedure

Listing billing files

Step	Action

At the core manager

1 Log into the core manager.

2 Access the billing maintenance interface:

```
# billmtc
```

3 Access the file system level:

```
> filesys
```

4 List the files currently stored in an SBA stream:

```
> listfile <stream_name> <optional_parameters>
```

where

<stream_name> is the name of the billing stream. This parameter is mandatory.

<optional_parameters> is one or more of the optional parameters described in the table that follows this procedure

Example

To list all secondary files in the AMA stream, type

```
> listfile ama state secondary
```

(general file formats)

or

```
> listfile ama -s
```

(AMADNS file format)

5 You have completed this procedure.

—End—

The following table describes <optional parameters> available for the listfile command.

Parameter	Value	Definition
For AMADNS file format:		
-a		lists all files (open, closedNotSent, and closedSent).
-b	hh[:mm[:ss]][.mm[/dd[/[yy]yy]]	Use this parameter (begin time) to list only the files that were created at this specific time and later.
	examples:	
	8:00	
	1/12/03	
	12:00:00.2/23/03	
-e	[hh[:mm{:ss]][.mm[/dd[/[yy]yy]]	Use this parameter (end time) to list only those files created before and up to, but not including, this specific time.
	examples:	
	8:00	
	1/12/03	
	12:00:00.2/23/03	
-f	file name	specifies the file to list. The file name is in standard AMA format: [source component identifier].[destination component identifier].[file sequence number].[file type].[file sequence number restart indicator].
-o		lists all open files.
-p		lists all primary files currently stored.

Parameter	Value	Definition
-q	integer	Use this parameter (sequence number) to list only those files with a sequence number matching the specified value, or within the range of values stated by <value, value>.
-r <priority>	an integer from 1 to 4 representing DNS priority	List only the files with this priority.
-s		lists all secondary files.
-y <filetype>	an integer (0 to 32)	list only those files with this file type value. Default values are 1 for Standard AMA files, and 2 for Error files.
For general file formats:		
STATE (or state) <value>	PROCESSED, UNPROCESSED, PRIMARY, OPEN, or SECONDARY	Specifies the file state in the stream to be 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 1/12/03 12:00:00.2/23/03	Use this parameter (begin time) to list only the files that were created at this time and later.
ETIME (or etime) <value>	[hh[:mm{:ss]][.mm[/dd[/[yy]yy]] examples: 8:00 1/12/03 12:00:00.2/23/03	Use this parameter (end time) to list only those files created before, but not including, the specified time.

Parameter	Value	Definition
SEQNUM (or seqnum) <value, value>	integer, integer defines a range or integers that represent file sequence numbers	Use this parameter to list only those files with a sequence number matching the specieid value, or falling in the range of values stated by <value, value>.
FNAME (or fname) <filename>	file name	Use this parameter to list only this one file with the specified file name. The exact file name must match the string entered.
FTYPE (or ftype) <filetype>	an integer (0 to 32)	Use this parameter to list only those files with this file type value. Default values are 1 for Standard AMA files, and 2 for Error files.
PRIO <priority>	an integer between 1 and 4	Use this parameter to list only the files with this priority.

Listing billing streams

Purpose

Use this procedure to list the configuration information about a billing stream.

Procedure

Listing a billing stream

Step	Action

At any workstation or console

1 Log into the core manager.

2 Access the billing maintenance interface:

```
# billmtc
```

3 Access the configuration stream level:

```
> confstrm
```

4 Display the detail information about a stream:

```
> list {<stream_name> | ALL}
```

where

<stream_name> is the name of the specific billing stream

ALL indicates that you want to display the configuration information about all configured billing streams

5 You have completed this procedure.

—End—

Closing billing files

Purpose

Use this procedure to manually close the current billing files.

Application

This procedure changes the state of the current files from open to closedNotSent.

Procedure

Closing billing files

Step	Action

At the core manager

1 Log into the core manager

2 Access the billing maintenance interface:

```
# billmtc
```

3 Access the file system level:

```
> filesys
```

4 Close active billing files:

```
> closec <stream_name>
```

where

<stream_name> is the name of the billing stream from which the files are to be closed

Example

```
> closec ama
```

If the closec command	Do
returns a list of files it acted on	go to step 6
does not return a file name	go to step 5

5 List the primary files to verify that all files are closed. For instructions, refer to procedure "Listing billing files" (page 115), which is located in this NTP.

6 You have completed this procedure.

—End—

Sending billing files from disk

Purpose

Use this procedure to transfer billing files from the core manager to one or more destinations.

Application

This procedure applies to billing streams configured for outbound file transfer (OFT) mode, secure outbound file transfer (SFTPW), or real time billing (RTB).

Procedure

Instructions for entering commands in the following procedure do not show the prompting symbol, such as #, >, or $, displayed by the system through a GUI or on a command line.

Sending billing files

Step	Action

At the core manager

1 Log into the core manager.

2 Access the billing maintenance interface:

```
billmtc
```

3 Access the file system level:

```
filesys
```

4 Send the files downstream:

```
sendfile <stream_name> [<optional_parameters>]
```

where

<stream_name> is the name of the billing stream. This parameter is mandatory.

[<optional_parameters>] is one or more of the optional parameters described in the table that follows this procedure

The <stream_name> parameter must be first, but the order of the other parameters is not significant.

If you do not specify the destination (an optional parameter), the files are sent to all destinations for the stream.

5 Refer to the following table to determine your next step.

If the sendfile command	Do
is successful	go to step 7
is not successful	go to step 6

6 If the system indicates that incorrect parameter values were entered, re-enter the command with the correct parameter values. Otherwise, observe the SDMB logs on the CM in logutil to determine why the sendfile command is not successful. If logs or alarms, or both are generated, refer to the SDM Fault Management document NN10081-911 for a corrective action procedure.

7 You have completed this procedure.

—End—

The following table describes <optional parameters> available for the sendfile command.

Parameter	Value	Definition
For AMADNS file format:		
-d <destination>	alphanumeric string (up to 15 characters)	Specifies the name of the destination to which the billing files are sent. When the destination option is not specified, billing files are sent to all destinations under the same stream.
-b	hh[:mm[:ss]][.mm[/dd[/[yy]yy]]	Use this parameter (begin time) to send only the files that were created at this specified time, and later.
	examples:	
	8:00	
	1/12/03	
	12:00:00.2/23/03	

Parameter	Value	Definition
-e	[hh[:mm{:ss]][.mm[/dd[/[yy]yy]]	Use this parameter (end time) to send only those files created before, but not including, this time.
	examples:	
	8:00	
	1/12/03	
	12:00:00.2/23/03	
-f	file name	Specifies file to transmit. The file name is in standard AMA format: [source component identifier].[destination component identifier].[file sequence number].[file type].[file sequence number restart indicator].
-p		Sends all primary files.
-q	integer	Use this parameter (sequence number) to send only those files with a sequence number matching the value, or within the range of values stated by <value, value>.
-r <priority>	an integer between 1 and 4 representing DNS priority	Use this parameter to send only the files with the specified priority.
-s		Sends all secondary files.
-y <filetype>	0 to 32	Use this parameter to send only those files with this file type value. Default values are 1 for Standard AMA files and 2 for Error files.
new_file_state	SENT or NOTSENT	Represents the new file state after it is sent. The default for this parameter is sent. A file with the state closedNotSent changes to closedSent once the file is transferred. If you enter notsent on the command line, the file state does not change to closedSent after the file is transferred. This is only applicable for files in the closedNotSent state (for example, primary or unprocessed).

Parameter	Value	Definition
For general file formats:		
DEST <destination>	alphanumeric string (up to 15 characters)	Specifies the name of the destination for the billing files are sent. When the destination option is not specified, billing files are sent to all destinations under the same stream.
STATE (or state) <value>	PROCESSED, UNPROCESSED, PRIMARY, or SECONDARY	Specifies which files in the stream are to be sent. For example, PROCESSED means that all processed files are sent. For limitations and restrictions pertaining to secure outbound file transfer (SFTPW) of processed or secondary files, refer to the procedure Configuring SBA outbound connection security.
BTIME (or btime) <date-time>	hh[:mm[:ss]][.mm[/dd[/[yy]yy]] examples: 8:00 1/12/03 12:00:00.2/23/03	Use this parameter (begin time) to send only the files that were created at this time and later.
ETIME (or etime) <value>	[hh[:mm{:ss]][.mm[/dd[/[yy]yy]] examples: 8:00 1/12/03 12:00:00.2/23/03	Use this parameter (end time) to send only those files created before and up to this time, but not including this time.

Parameter	Value	Definition
SEQNUM (or seqnum) <value, value>	integer, integer defines a range or integers that represent file sequence numbers	Use this parameter (sequence number) to send only those files with a sequence number matching the value, or within the range of values stated by <value, value>.
FNAME (or fname) <filename>	file name	Use this parameter to send only the specified file name. The exact file name must match the string entered.
FTYPE (or ftype) <filetype>	an integer between 0 and 32	Use this parameter to send only those files with this filetype value. Default values are 1 for Standard AMA files, and 2 for Error files.
PRIO (or priority)	an integer between 1 and 4	Use this parameter to send only the files with this priority.
new_file_state	SENT or NOTSENT	Represents the new file state after it is sent. The default for this parameter is sent. A file with the state closedNotSent changes to closedSent once the file is transferred. If you enter notsent on the command line, the file state does not change to closedSent after the file is transferred. This is only applicable for files in the closedNotSent state (for example, primary or unprocessed).

Performing a cutover of billing from the core to the core manager

Purpose

Use the following procedure to perform a cutover of billing from the core to the core manager.

Prerequisites

You must be a user in a role group authorized to perform accounting-manage actions.

For information on how to log in to the CBM as an authorized user or how to display information about a user or role group, review the procedures in the following table.

Procedure	Document
Logging in to the CBM	*Core and Billing Manager 850 Security and Administration*, NN10358-611
Displaying actions a role group is authorized to perform	*Core and Billing Manager 850 Security and Administration*, NN10358-611

When the procedure should be performed

Perform this procedure only during a low-traffic period.

System requirements

The following steps must be completed before this procedure is performed:

- Access the DIRP subsystem table (DIRPSSYS), and in the tuple for the billing stream ensure that the ROTACLOS parameter is set to BOTH.
- Ensure that SBA configuration has been completed on both the core and the core manager.
- Ensure that DIRP logical volumes have been created and mounted on the core.

Procedure

ATTENTION

In the following procedure, sdm billing control (sdmbctrl) is changed briefly from ON to BOTH mode. During normal operation, however, sdm billing control should remain in ON mode since extended use of BOTH mode can result in SBA performance problems.

ATTENTION

Instructions for entering commands in this procedure do not show the prompting symbol, such as #, >, or $, displayed by the system through a GUI or on a command line.

Performing a cutover of billing from the core to the core manager

Step	Action

At the MAPCI

1 Access the SDMBIL level:

```
mapci;mtc;appl;sdmbil
```

2 Set sdm billing control to BOTH mode to ensure that the billing is going both to the DIRP system and to the core manager. While sdm billing control is set to BOTH mode, any billing collected on the core manager is used only for testing. The DIRP billing files will still be polled by network data collection (NDC) for billing.

```
sdmbctrl <stream_name> both
```

At the core manager

3 Verify that billing records are being processed by performing Querying a billing stream.

At the MAPCI

4 For billing streams with BC format (AMA), access the AMA options table (AMAOPTS) and ensure that the CRSEQNUM (call record sequence number) parameter is set to ON. This option adds an incremental sequence number to every AMA record, using Module Code 042.

5 Access the SDMBIL level:

```
mapci;mtc;appl;sdmbil
```

6 Set sdm billing control to OFF mode. In the OFF mode, billing records are transferred only to the DIRP system.

```
sdmbctrl <stream_name> off
```

At the core manager

7 Ensure that there are no files in the open directory on the core manager by performing Sending billing files from disk.

At the MAPCI

8 Start the cutover from the core to the core manager by setting sdm billing control to ON mode. This will stop the transfer of AMA billing

records to the DIRP system and will start the transfer of the records to the core manager.

```
sdmbctrl <stream_name> on
```

Once you have set sdm billing control back to ON mode, do not change it either to BOTH mode or to OFF mode unless directed to do so by Nortel customer support personnel.

9 Flush the billing buffers on the core:

```
amadumpb <stream_name>
```

At the core manager

10 To make the first file on the core manager as small as possible, rotate the active stream on the core manager by performing Closing billing files.

At the MAPCI

11 Access the DIRP level:

```
mapci;mtc;iod;dirp
```

12 Close the active billing stream on the core:

```
close <stream_name> active
```

13 Have NDC pull the last of the core billing files and then verify that the table DIRPHOLD is empty.

14 Check the DIRP logs to find the last rotated file.

```
logutil
```

```
open dirp
```

15 Obtain the call record sequence number (Module Code 42) for the last rotated file.

Ensure that the CRSEQNUM parameter in the AMAOPTS table is set to ON before entering the following commands.

```
amadump bc <filename>
```

where

<filename> is the name of the file that you obtained in step 14

```
dump call summary
```

This command will provide the block number for use with the next command.

```
dump call details <block number>
```

where

block number is the next-to-last block number

16 Check for the first AMA record. This should be the first call record following the last sequence number in the last DIRP file. Verify that the call record sequence number (Module 42) has been incremented by 1 from the last AMA record.

```
amadump <stream_name>
```

```
dump details sum fname <file_name>
```

17 Access the AMAOPTS table and ensure that the CRSEQNUM parameter is set to OFF.

18 Request NDC polling of the core manager. When NDC has confirmed successful manual polling of the core manager, resume NDC automatic polling of the core manager.

19 You have completed this procedure.

—End—

Carrier VoIP

Core and Billing Manager 850 Accounting

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