

# Alcatel USBS Application

## Tutorial for Billing Server Application

**USBS**

**HP ProLiant / HP cc3310**



Status Released

Change Note

**Short Title** UG L01

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## About this Document

**Scope** The Alcatel 1330 Unified Service for Billing Systems (USBS) realizes reception of raw billing data from a Core Network Element, storage, preprocessing and distribution of billing data.

This document covers several configuration variants of the Alcatel 1330 USBS. Therefore, not all the information given in this document will apply to your system configuration.

This tutorial does not contain any installation information. Installation and start-up of the Alcatel 1330 USBS is described in the *Software Installation Guide*. The *Check List for the Functional Test* provides a description of procedures for checking the hardware and software of the Alcatel 1330 USBS.

Possibilities for analyzing errors and process administration are described in the *Troubleshooting Guide*.

**Readership** This document is provided for the system administrator of the Billing Server. The objective of the tutorial is to give an overview of the function and operation of the Alcatel 1330 USBS.

**Validity** This document is valid for the Alcatel 1330 USBS based on the HP ProLiant ML3xx and HP cc3310 technology with Red Hat ES 3.0 Linux.

- Contents in Brief**
- Chapter 1: Overview of the Alcatel 1330 USBS*  
This chapter provides an overview of the system configuration.
- Chapter 2: Common Concepts of the Graphical User Interface*  
This chapter describes the basic features of the graphical user interface.
- Chapter 3: Billing Data: Collection and Administration*  
This chapter describes the handling of billing data.
- Chapter 4: Alcatel 1330 USBS Operation*  
This chapter explains how the Alcatel 1330 USBS is operated via the graphical user interface.

- Conventions and Terminology**
- This document uses the following typing conventions:
- Menu (item)** and command **button** names are printed in boldface.
- Parameter names* are represented in *italics* or `Courier` font.
- “Window names” and “Form names” are represented in double quotation marks.
- The term “Billing Server” is frequently used instead of Alcatel 1330 USBS.
- The term “Near Real Time Billing” is synonymous with “Hot Billing”.

- Trademark Information**
- The following trademark information has to be known:
- ▶ HP ProLiant is a trademark of Hewlett–Packard Company.
  - ▶ HP cc3310 is a trademark of Hewlett–Packard Company.
  - ▶ X Window System is a trademark of X Consortium, Inc.
- All other products or services mentioned in this document are identified by the trademarks or service marks of their respective companies or organizations.



- Referenced Documents**
- Software Installation Guide*  
3DJ 10150 AAAA RJZZA
  - Troubleshooting Guide*  
3DJ 10149 0001 REZZA
  - Checklist for the Functional Test*  
3DJ 10152 0001 ASZZA

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# 1 Overview of the Alcatel 1330 USBS

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This chapter provides some general information on the Alcatel 1330 USBS (system configuration, hardware, software, etc.).

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## 1.1 System Overview

The Alcatel 1330 USBS is connected to the Core Network Element by an exclusive Ethernet (LAN).

The Alcatel 1330 USBS provides transmission of billing data to the Billing Center via File Transfer Protocol (FTP) and (if applicable) to the Hot Billing (Near Real Time Transfer) Center via Remote Procedure Call (RPC) or FTP (see Figure 1).

The operator can access the Graphical User Interface (GUI) of the Alcatel 1330 USBS via X-Terminal or via an Alcatel 1360 Switch Management Center (SMC) or an Alcatel 1300 Convergent Network Management Center (CMC).

Figure 1 provides an overview of the Alcatel 1330 USBS, summing up all data transmission variants that may be applicable.

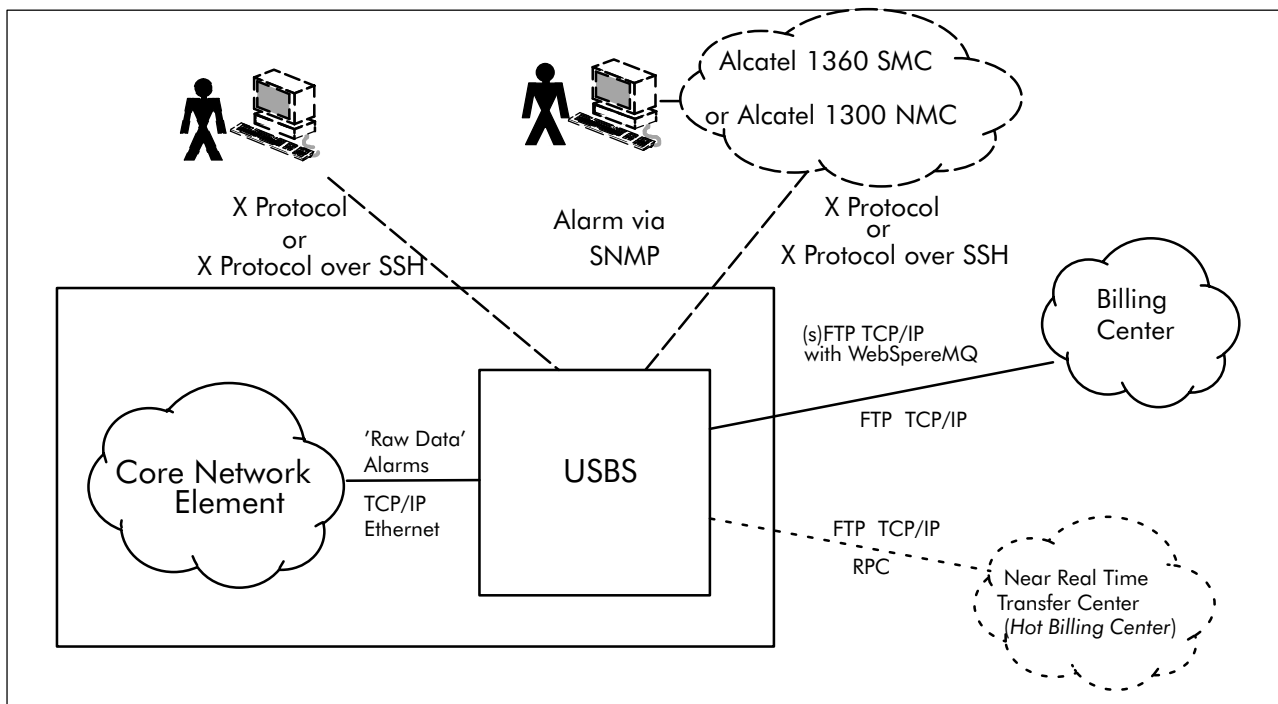


Figure 1 Overview of the Alcatel 1330 USBS Application

## 1.2 Functionality of the Billing Server

**Billing Data** The billing data is directly transmitted from the Core Switch to the Billing Server where it is saved as 'raw data'. The Core Switch holds this data as long as it is not stored on the Alcatel 1330 USBS disks.

The data is proceeded as follows:

- ▶ Hot Billing data is immediately transmitted to the Hot Billing (Near Real Time Transfer) Center.

If the transfer is not possible, the records are stored in the Billing Server.

- ▶ Detailed Billing Data is prepared and, on request of the Billing Center, these records are transmitted.

There is only one Billing Center for detailed billing and one for Hot Billing.

## 1.3 Operational Aspects

The alarm handling of the Billing Server depends on the connected exchange.

- ▶ Alcatel1000 S12

The Billing Server is completely integrated into the Alarm Handling system of the Core Switch. All the Billing Server alarms are transmitted to the Core Switch and processed by its alarm handling. The integration of the Billing Server alarms into the Core Switch is described in detail in Section 4.3.

- ▶ Alcatel1000 E10

All the Billing Server alarms are transmitted via Simple Network Management Protocol (SNMP) to the Alcatel1360 SMC / Alcatel 1300 CMC. The integration of the Billing Server alarms into the Core Switch is described in detail in Section 4.3.

The operator gets access to the GUI of the Billing Server via a local workplace. It is also possible to operate the Billing Server from the Alcatel1360 SMC / Alcatel 1300 CMC.

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## 1.4 Hardware Architecture

The Billing Server is equipped with a duplicate set of hardware for switching to the secondary unit in case of a failure in the primary unit.

### Co-located Alcatel 1330 USBS

The hardware is located in a dedicated rack. Because the connection between Billing Server and Core Switch is realized via a duplicated Ethernet LAN, the rack for the co-located Billing Server must be located within 100 meters of the Core Switch.

Figure 2 shows the hardware architecture of a co-located Alcatel 1330 USBS for Alcatel 1000 S12 markets.

The Alcatel 1330 USBS is connected to the Alcatel1000 S12 Core Switch via Extended Peripheral Module Billing System (EPBS) and local Ethernet. There is a 1:1 relationship between the Core Switch and the Alcatel 1330 USBS.

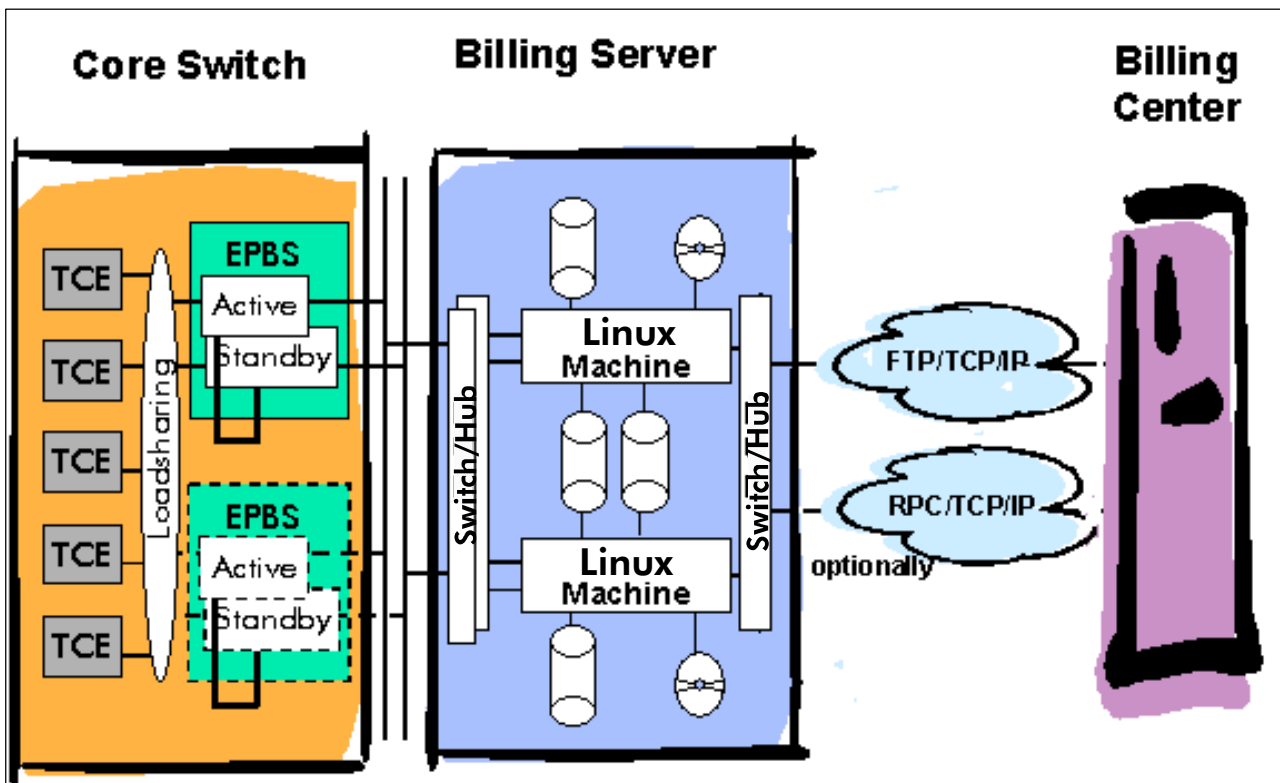


Figure 2 Hardware Architecture of the Billing Server co-located with the Alcatel 1000 S12 Core Switch

Figure 3 shows the hardware architecture of a co-located Alcatel 1330 USBS for Alcatel 1000 E10 markets.

The Alcatel 1330 USBS is connected to the Alcatel 1000 E10 Core Switch via internal switches/hubs and local Ethernet. There is a 1:1 relationship between the Core Switch and the Alcatel 1330 USBS.

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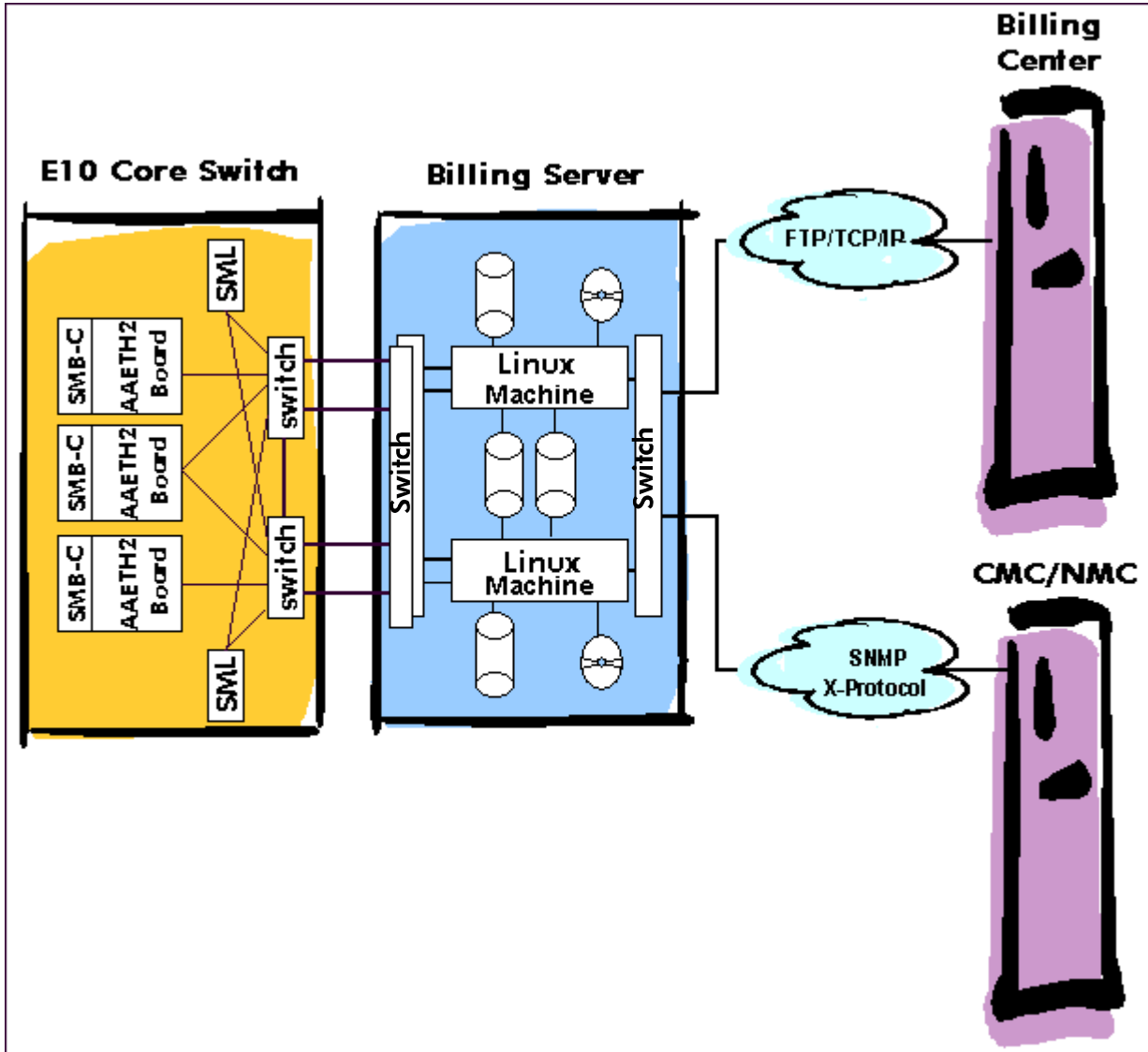


Figure 3 Hardware Architecture of the Billing Server co-located with the A1000 E10 Core Switch

**Regional Alcatel 1330 USBS**

The regional Alcatel 1330 USBS is connected to one co-located Core Switch and in addition to one or more remote Core Switches via Wide Area Network (WAN). Consequently, there is a 1:n relationship between Alcatel 1330 USBS and Core Switch.

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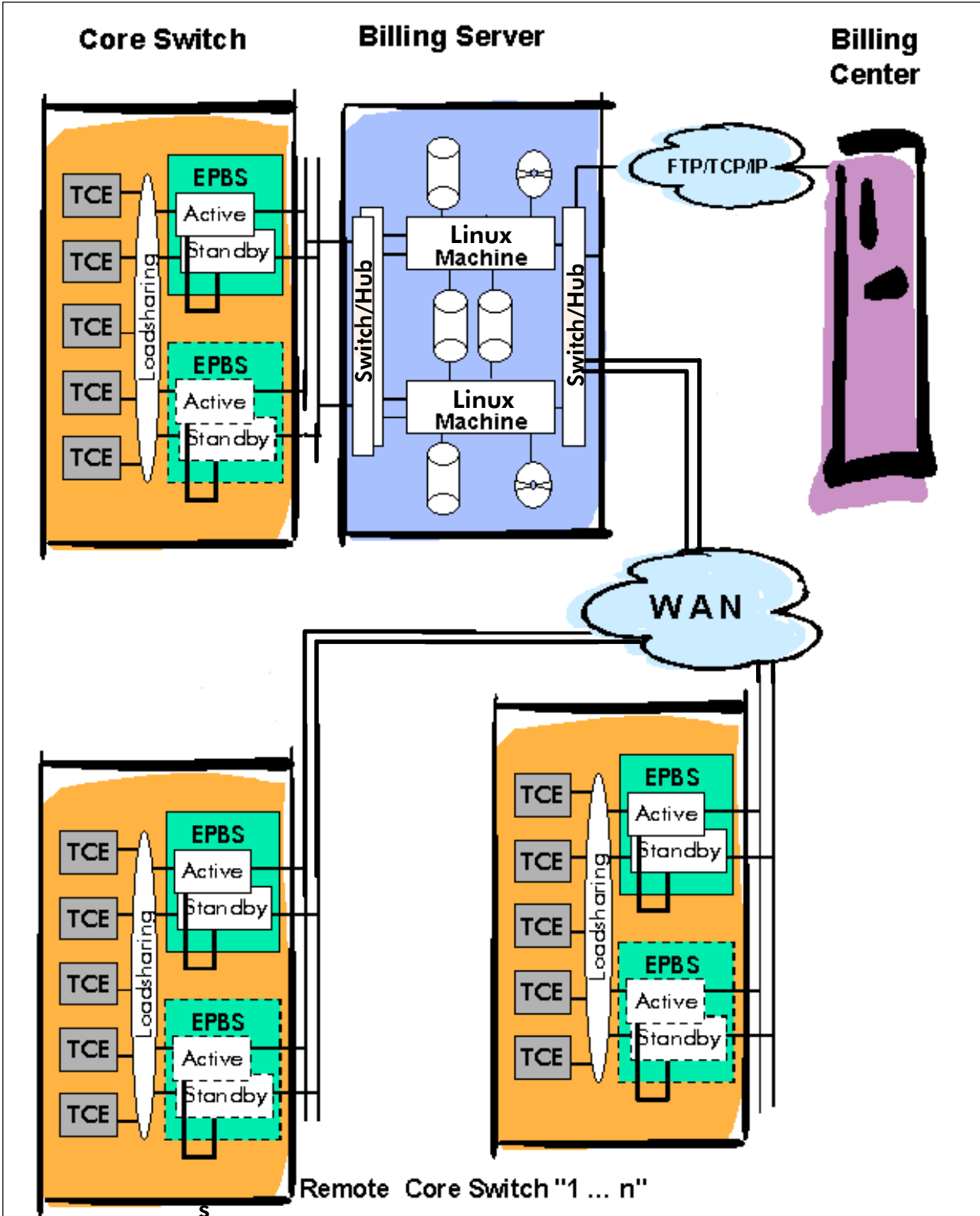


Figure 4 Regional Billing Server Architecture



To be able to discriminate the data provided by the different Core Switches, a unique “exchange identification” is expected by the Alcatel 1330 USBS.

For a Regional Alcatel 1330 USBS all Core Switches, including the co-located Switch must provide this identification.

A pair of raw record format an output (cooked data) format is identified by a so-called filter. The Alcatel 1330 USBS supports parallel processing of multiple (at least two) filters. This allows a sequential package replacement of all remote Core Switches.

During a package replacement, or when a new Core Switch shall be connected to the regional Alcatel 1330 USBS, a new filter version has to be assigned per Core Switch. See Section 4.2 for the GUI used for the handling of these filters.

## 1.5 High Availability

The Billing Server has been designed as a high availability system. This includes the hardware as well as the software.

### 1.5.1 Hardware

The hardware works on the principle of 'No Single Point of Failure', which means that the breakdown of a single hardware component does not lead to a complete breakdown of the Billing Server. The high availability feature is realized using the following techniques:

- ▶ Duplicated hardware
- ▶ Substitution
- ▶ High Mean Time Between Failure (MTBF) of components and low Mean Time To Repair (MTTR).

The following duplication strategies are used:

- ▶ The Billing Server is configured as an primary/secondary pair of two identical computers. Each computer is provided with a CPU, duplicated system disks, duplicated interface cards and one DVD RW drive. If one computer fails the other computer takes over the complete functionality of the Billing Server.
- ▶ The LAN connection, including switches / hubs between Billing Server and Core Switch, is duplicated so that data exchange is possible even if one LAN connection or one switch / hub fails.
- ▶ The power supply, controller and the SCSI connections to the computers are duplicated.

In addition to the duplication of the identified hardware components, a third technique (high MTBF and low MTTR of components) is implemented:

- ▶ Billing data is stored in a Circular Database (CDB).
- ▶ It is possible to write billing data to DVD at any time.

### 1.5.2 Software

To achieve High Availability (HA) of the software, the following techniques are implemented:

- ▶ High-availability software in the runtime system
- ▶ 3rd-party-software.

#### High-availability Software

The Alcatel 1330 USBS uses Linux Heartbeat to realize a cluster architecture and to provide flexible failover in case of failure.

The processes are summarized in packages. These packages run distributed on both computers. In case of a hardware error Linux Heartbeat first is supposed to solve the problem at a local level using the duplicated hardware, e.g. interface card. If this solution is not successful, Linux Heartbeat stops the corresponding package and restarts it on the second computer.

In case of software problems, the corresponding process is restarted by the "package monitor process" (PMONIP). It's assumed that a high number of restarts will not cause any improvements, so after a predefined number of restarts, the PMONIP of the corresponding package terminates itself and all processes of this package. Thereafter Linux Heartbeat starts the whole package on the other computer.

Without manual intervention the package cannot be restarted on the first computer. This manual intervention requirement is indicated by an alarm.

### **3rd-Party-Software:**

Where possible, 3rd-party-software is used, because the world wide use of such software gives the advantage of a low number of undetected errors and a high quality standard.

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## 2 Common Concepts for the Graphical User Interface

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This chapter describes the basic features of the GUI.

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## 2.1 Overview

**Login** The GUI is based on OpenMotif and follows the OSF/Motif Styleguide. An operator can access the GUI of the Billing Server via a local workplace and from the Alcatel 1360 SMC or the Alcatel 1300 CMC:

- ▶ It is possible to log in on the Billing Server via a LAN connected workplace. First a login window requesting the user name and the password is displayed. After successful login, the main menu of the Billing Server appears on the screen (see Figure 5).
- ▶ The Alcatel1360 SMC and the Alcatel 1300 CMC provide for each Core Network Element the possibility to connect to the Billing Server. The related user documentation includes a description of how to establish a connection. After a successful login, the main menu of the Billing Server appears on the screen (see Figure 5).

**Note** Depending on your system configuration the menu will not necessarily be exactly the same as shown in the example in Figure 5.

During the login, time and date of the user's last successful login and the amount of unsuccessful login attempts since the last successful login are displayed in an information window.

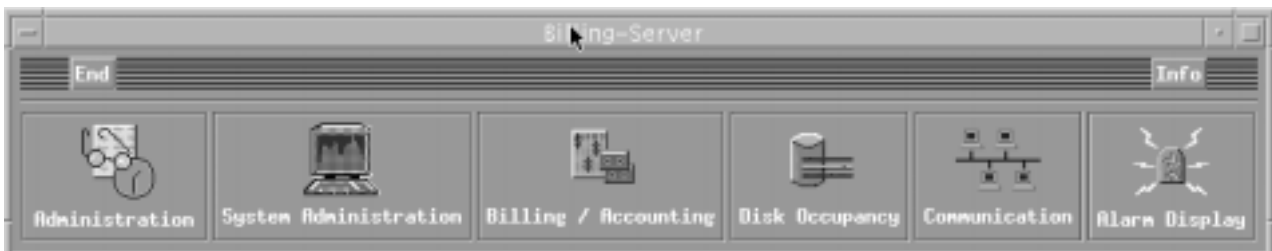



Figure 5 Example for Billing Server Main Menu

**Logout** The logout procedure is triggered with the  button of the

Billing Server Main menu.

When logged in via Alcatel 1360 SMC / Alcatel 1300 CMC, the Billing Server application is closed after pressing this button. When logged in at a local workplace, the Billing Server application as well as the X session are terminated and the user is logged out.

## 2.2 Calling of a Form

After the selection of an entry in the main menu a pull down menu is displayed. In this menu several entries are offered. Entries that represent a cascade menu are marked with an arrow on the right margin of this entry. Each entry is the start point of a form. By clicking on the entry, a form is selected and displayed.

**Note** In the following sections starting a special form is described in the following format:

**<Main Menu> ⇒ <Pull Down Menu> ⇒ (<Cascade Menu>) ⇒ <Entry>**

## 2.3 Structure of a Form

All forms of the Billing Server are structured in the same way. In Figure 6 the form "Export" is used as an example for the general structure. A form consists of the three following parts:

- ▶ Menu Bar
- ▶ Button "Scheduled Job"
- ▶ Parameter Area.

In the regional Alcatel 1330 USBS configuration several forms have an additional pulldown menu to select the switch for which the requested action should be executed. Figure 7 shows the form "Export" in regional Alcatel 1330 USBS configuration as an example.

### 2.3.1 Menu Bar

Within each form the menu bar is located at the top. The menu **Action** is located on the left end of the menu bar. Activating this menu will cause the display of a pull down menu which has **Close** as the last entry. Depending on the form this pull down menu can contain several other entries.

On the right end of the menu bar you find the menu **Help**. Activating this menu will cause the display of a pull down menu which offers online help topics for this form and the online help on the general use.

Some forms provide additional menus in the menu bar. The functions of these menus are described in the online help for these forms.

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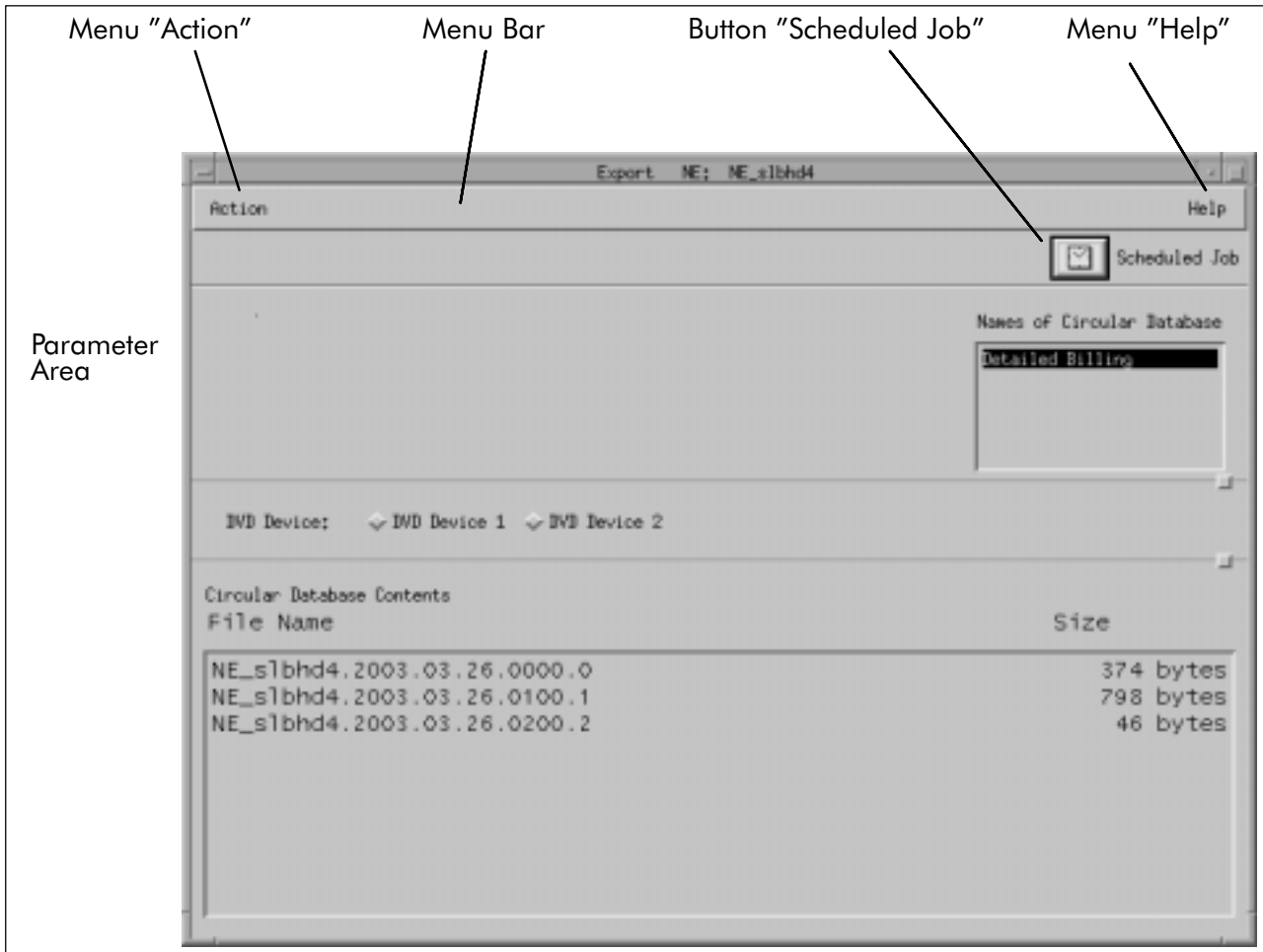


Figure 6 Example for the layout of a Form in co-located Alcatel 1330 USBS configuration



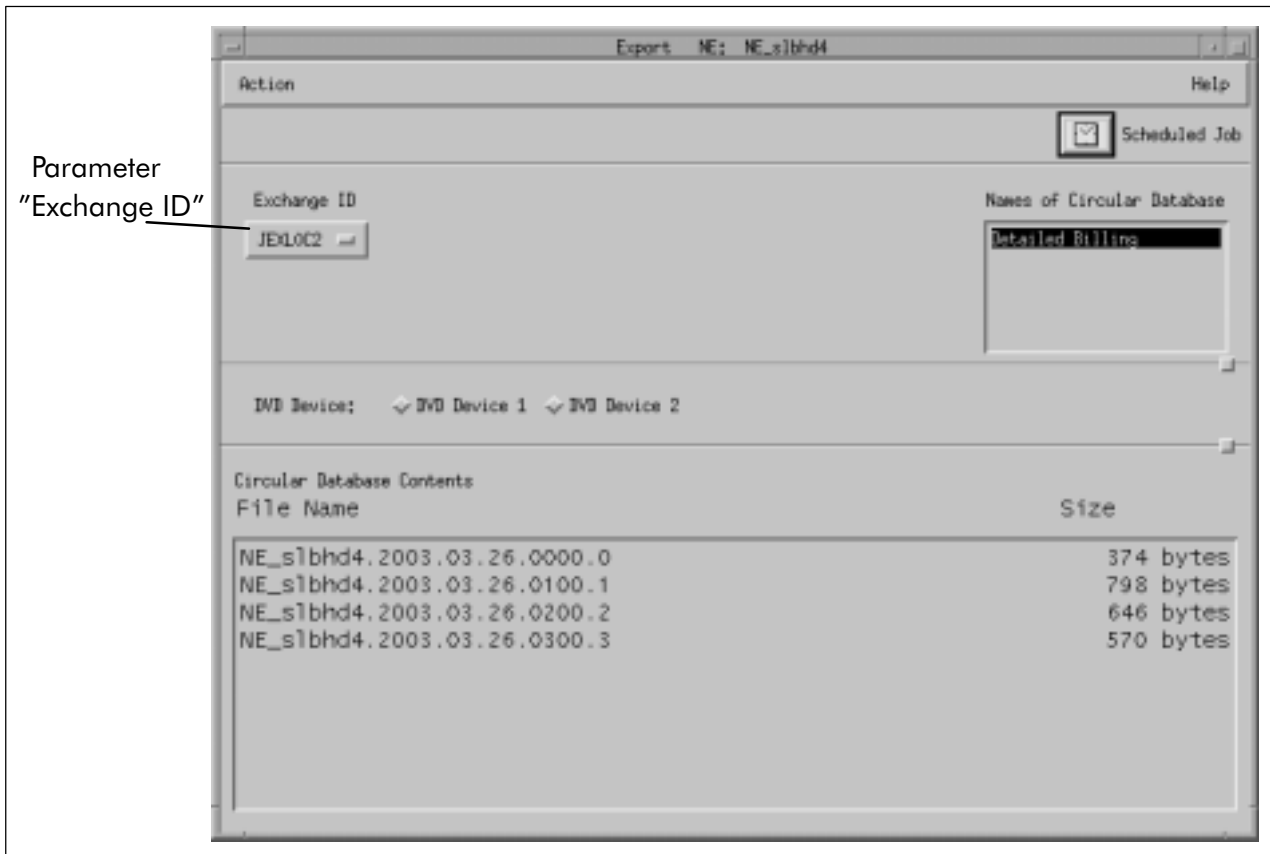


Figure 7 Example for the Layout of a Form in regional Alcatel 1330 USBS configuration

### 2.3.2 Scheduled Job Button

Below the menu bar the button **Scheduled Job** is located. The button can be set to *active* or *not active*. The status *not active* can be recognized by a blue clock on the button and the status *active* by a red clock on the button. By clicking on the button the status can be changed from *active* to *not active* or vice versa. The default status of the button is *not active*.

If the button **Scheduled Job** has the status *active*, functions that can not be performed as scheduled jobs are locked. Forms that do not provide the possibility for creating a scheduled job have no **Scheduled Job** button.

### 2.3.3 Parameter Area

In the parameter area are displayed all input and output parameters that are necessary to perform the function associated with the form.

Inputs are immediately checked for their syntax, that is, invalid characters entered while specifying a date, for example, are rejected immediately. A semantic check of several parameters is performed after the function is activated.

## 2.4 Activating a Function

The button **Scheduled Job** must have the status *not active* if a function is to be performed immediately.

The **Action** menu is used to select a function. All parameters that are needed for the performance of this function are checked. If an error is detected (missing or wrong parameter), a corresponding message is displayed.

After the correct input of all values, the action is started immediately. The result of the action is displayed in a message window when the action is finished.

## 2.5 Registration of a Scheduled Job

To register a function as a scheduled job the button **Scheduled Job** must have the status **active**.

The **Action** menu is used to select a function. All parameters that are needed for the performance of this function are checked. If an error is detected (missing or wrong parameter), a corresponding message is displayed.

After the correct input of all values, the form "Scheduled Job" is opened. In this form, the starting date and time of an action can be specified. Optionally a repetition period can be specified, if an action shall be executed periodically. When the action **save** is selected all parameters are checked. If no errors have been detected, the scheduled job is registered and the form is closed.

At the specified time, the action will be performed. The result can be viewed via the form "Result Display" (see Section 4.5).

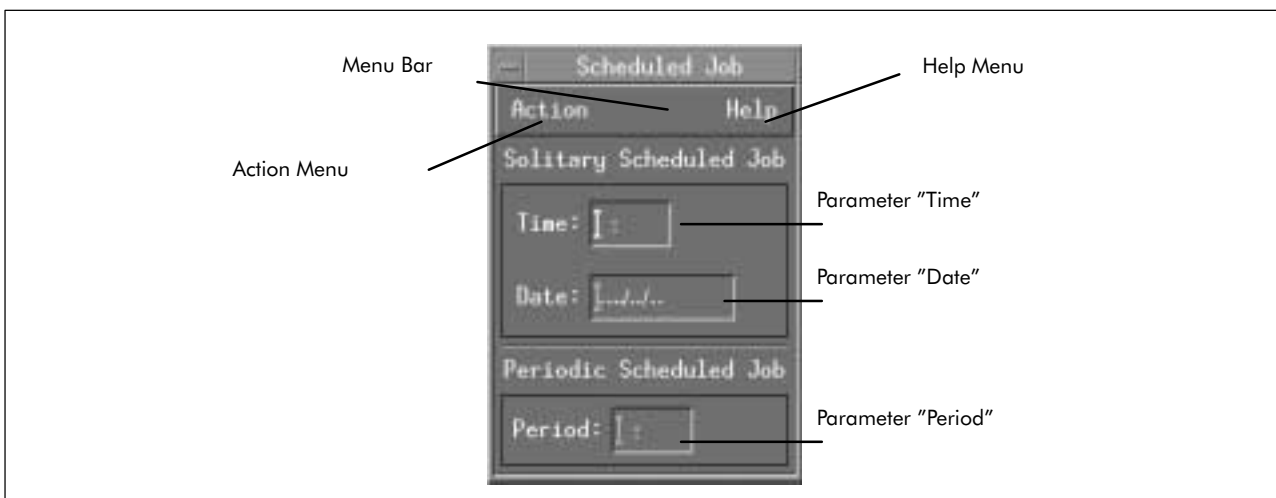


Figure 8 Form "Scheduled Job"

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## 3 Billing Data: Collection and Administration

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This chapter describes the data that is handled by the Billing Server:

- Call Detail Records
    - and (if applicable) –
  - Hot Billing Records (Near Real Time Data)
-

## 3.1 Overview

### Detailed Billing

The raw data is converted into Call Detail Records (CDRs). These are collected in transfer files stored in record stores that are organized as circular database.

Depending on the system configuration there can be several record stores holding different types of billing records. The CDRs from different switches are stored in separate files in different subdirectories. One file contains only records from one particular switch.

Each transfer file contains all billing data received from the core switch within a defined interval (for example, 1 h).

To avoid a loss of the newest data there are two ways of automatic deletion possible within the CDB:

- ▶ As soon as the remaining storage capacity on the CDB is smaller than a defined percentage, the oldest transfer file in the database is deleted to provide storage capacity for the newest.
- ▶ At midnight, all files which are older than a defined number of days (normally 60 days) are deleted.

If option GEN\_OPTION\_CORR is enabled, there is a Correlation Database (CORRDB) available, where the pre-correlated charging data is buffered for further processing. There is an own subdirectory for each data type available in the CORRDB.

### Hot Billing / Near Real Time Billing

Records for Hot Billing (resp. Near Real Time Billing) are collected in Hot Billing blocks. Depending on the system configuration these blocks are either provided as files for transfer via FTP or immediately transferred to the Hot Billing Center via DCE-RPC. If immediate transfer is not possible, Hot Billing blocks are stored in the Alcatel 1330 USBS until the transfer is possible again.

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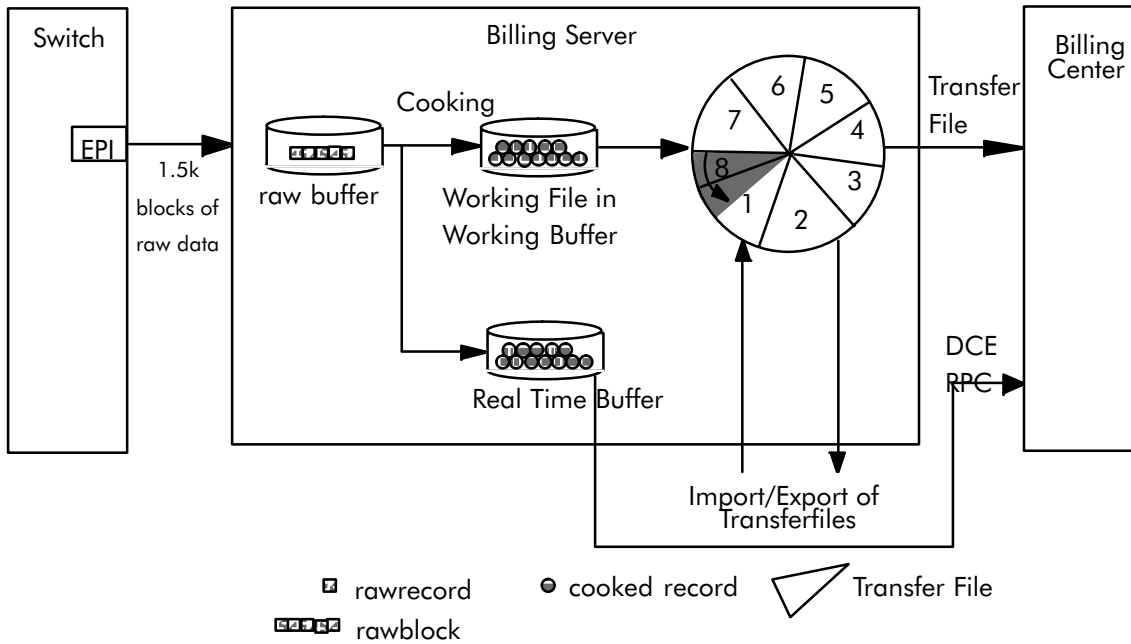


Figure 9 Example for Storage and Output of Billing Data without correlation database

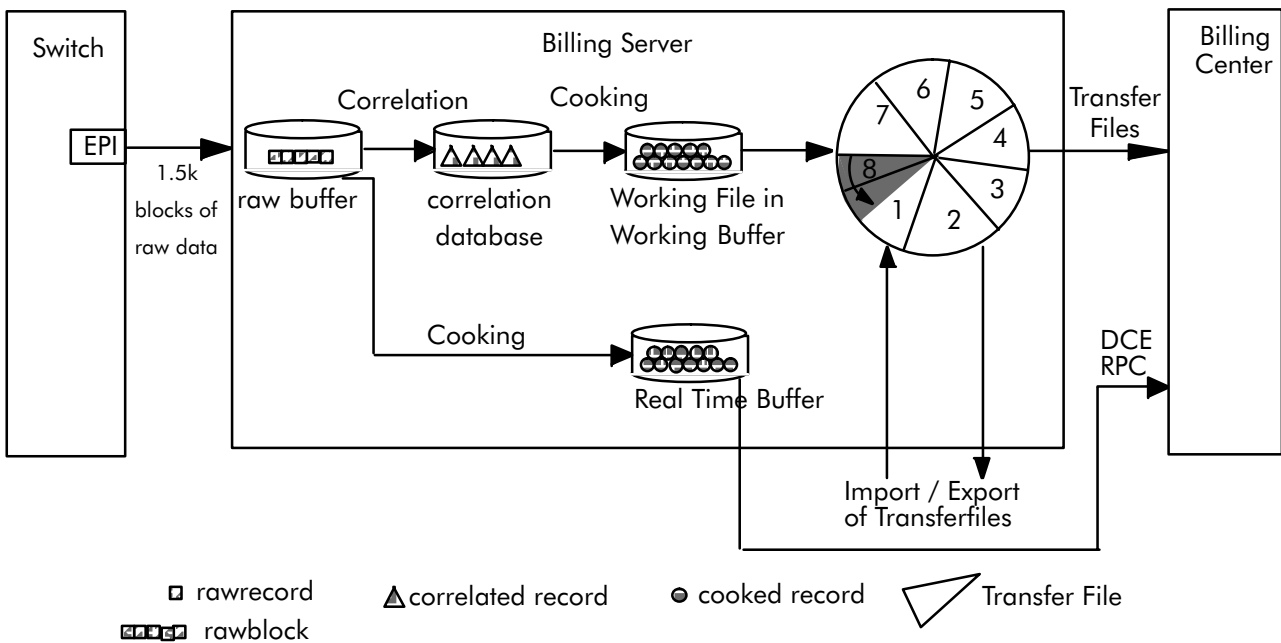


Figure 10 Example for Storage and Output of Billing Data with correlation database

The storage procedure works automatically without any operator intervention.

**Regional USBS**

In the Regional Billing Server configuration the CDRs from different core switches are stored in separate files in different subdirectories for each exchange ID in the corresponding record stores. One file contains only records from one particular core switch. A separate transfer file is created for each core switch. The Billing Center can identify data from different core switches by the subdirectory name. One transfer file contains only records of one single filter, i.e. records of one record format. If the filter ID changes, the transfer file is closed and a new transfer file is opened.

For the Regional Billing Server configuration Hot Billing resp. Near Real Time Billing is not provided.



## 3.2 Correlation Database

**File Store Supervision** If correlation is enabled in the Billing Server, there is one disk partition, containing one subdirectory for the correlated files of each input data format. Raw data from the different connected NEs will be pre-correlated and buffered in the correlation database for further processing.

The Billing Server provides two levels of supervision of the file store:

- ▶ Warning level
- ▶ Alarm level

The threshold values for these levels are set by OCD variables `CDBC_DISK_WARNING_LEVEL` and `CDBC_DISK_ALARM_LEVEL`.

By default, these values are '0', which means, the feature is switched off. However it is possible to change these thresholds to each desired value between 1 and 100 (1 to 100 percent).

## 3.3 Circular Database

**File Store Supervision** There is one single file store (i.e. disk resp. disk partition), containing all configured individual record stores. The Billing Server provides two levels of supervision of the file store:

- ▶ Warning level
- ▶ Alarm level

The user interface provides the possibility to:

- ▶ Read/modify the alarm level of the file store in percentage
- ▶ Read/modify the warning level of the file store in percentage
- ▶ Read/modify the warning repetition level of the file store in percentage
- ▶ Interrogate the current occupancy level of the individual record stores.

The following principles apply:

- ▶ Individual record stores are defined depending on the record type.
- ▶ Depending on the deletion policy defined at installation time Billing Server operator and Billing Center are allowed to delete transfer files or not:
  - a) If deletion is allowed, occupancy information of the file store can be retrieved and alarm and warning thresholds can be set.
  - b) If deletion by the operator or the Billing Center is not allowed, the CDB with all record stores is always 100% filled. The Billing Server automatically deletes the oldest file from the appropriate CDB directory, when there is not enough disk space available to store a new file.

The transfer of billing data towards the Billing Center is not supervised by the Billing Server. The Billing Center is responsible for triggering the transfer of billing data as long as it is stored on the CDB.

See Section 4.1.3 for the management of the occupancy alarm thresholds. The occupancy of the record stores (CDBs) can be checked with this form also.

The following information about the records currently stored is available:

- ▶ Calender days of billing records
- ▶ Number of records per day
- ▶ Earliest record time (time of last record stored on a per day basis)
- ▶ Latest record time (time of first record stored on a per day basis).

See Section 4.1.1 for the CDB information and Section 3.4 for the Hot Billing buffer resp. Near Real Time buffer.

**Transfer Files** Usually billing data is transferred to the Billing Center via File Transfer Protocol (FTP). The billing data can also be copied to DVD. The Billing Server provides the following possibilities for the handling and administration of Call Detail Records:

- ▶ Prepare CDRs for the Circular Database (CDB)
- ▶ CDR transfer via FTP
- ▶ Export CDRs to DVD

### 3.3.1 Prepare Transfer Files

The Billing Center can allow the operator to get the most recent billing records. This is necessary in case of, for example, a malfunction of a network element, an emergency situation, maintenance, package replacement, etc. In those cases, the Billing Center can not wait for the expiration of the Billing Server internal timer for pulling the next Transfer File.

The operator can use the "Prepare Transfer File" command via GUI to force the generation of an extra Transfer File at once.

**Billing Server ⇒ Billing/Accounting ⇒ Circular Database ⇒ Action: Prepare**

=> See also Section 4.1 and Figure 20 for procedural information on the handling of the form "Circular Database".

### 3.3.2 Output of CDRs to the Billing Center

The Billing Server allows the operator to prepare a new transfer file in order to get the most recent Billing Records.

The file-oriented output of CDRs to the Billing Center is initiated by the Billing Center. FTP on top of TCP/IP is used as transport protocol. As a consequence of this:

- ▶ data must be ready to get transferred when stored in the Database
- ▶ it is not possible for the USBS to determine whether an FTP transfer to the Billing Center was successful.
- ▶ triggering of data transfer by the USBS via alarm message is not possible.

The Billing Center can access the Circular Databases (Transfer Files, intermediate Transfer Files, if existing).

Files from either Circular Database (Transfer Files, intermediate Transfer Files) may be transferred to the Billing Center. Files may be transferred multiple times; it is the responsibility of the Billing Center not to charge one and the same billing record twice.

### 3.3.3 Output of CDRs to DVD

The Billing Server supports data storage to the backup storage medium DVD. Currently support for DVD+RW and DVD+R media is available.

=> See Section 4.1.2 and Figure 21 for procedural information on the form "Export".

The Billing Server provides a successful/unsuccessful completion message about the last export request. This message is displayed on the terminal.

If the space on a DVD is not sufficient to store a file as a whole, a new DVD medium with sufficient storage space has to be used to save the complete file. Follow-up DVDs are supported for collections of files, whose total size extends the capacity of one DVD. In this case the file collection is splitted to several DVD media which the user has to insert one after another as prompted by the Billing Server application.

### 3.3.4 Compression of CDRs

If this option is applicable individual types of CDRs can be selected for transfer file compression with the form **Billing Server** ⇒ **Billing / Accounting** ⇒ **Compression**.

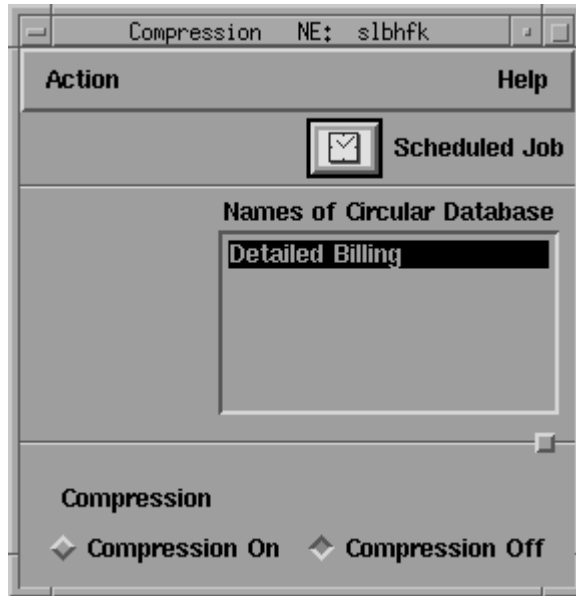


Figure 11 Form "Compression"

You can switch the compression feature on or off for a specific record type with the corresponding option and the action **Save**.

The new compression value will become valid with the next transfer file.

### 3.3.5 Use of WebSphere MQ

If the Messaging and Queuing (MQ) Software 'WebSphere MQ' is used for the file management the Billing Server distinguishes several states of the transfer files:

- ▶ Successfully transferred to, and acknowledged by the Billing Center, and either:
  - younger than 'k' days or
  - older than 'k' days
- ▶ Not yet successfully transferred, and either:
  - not acknowledged or
  - negatively acknowledged.

Figure 12 shows the Transfer File handling with WebSphere MQ.

There are two messages used on the interface between the Billing Server and the Billing Center:

- ▶ The function 'FA' is used by the Billing Server to indicate that a new transfer file is ready for transfer
- ▶ The function 'RS' is used by the Billing Center to inform the Billing Server about the transfer result, which is indicated by the value of the Revision Code (RC)
  - RC=0 indicating successful transfer and
  - RC is not 0 indicating negative acknowledgement.

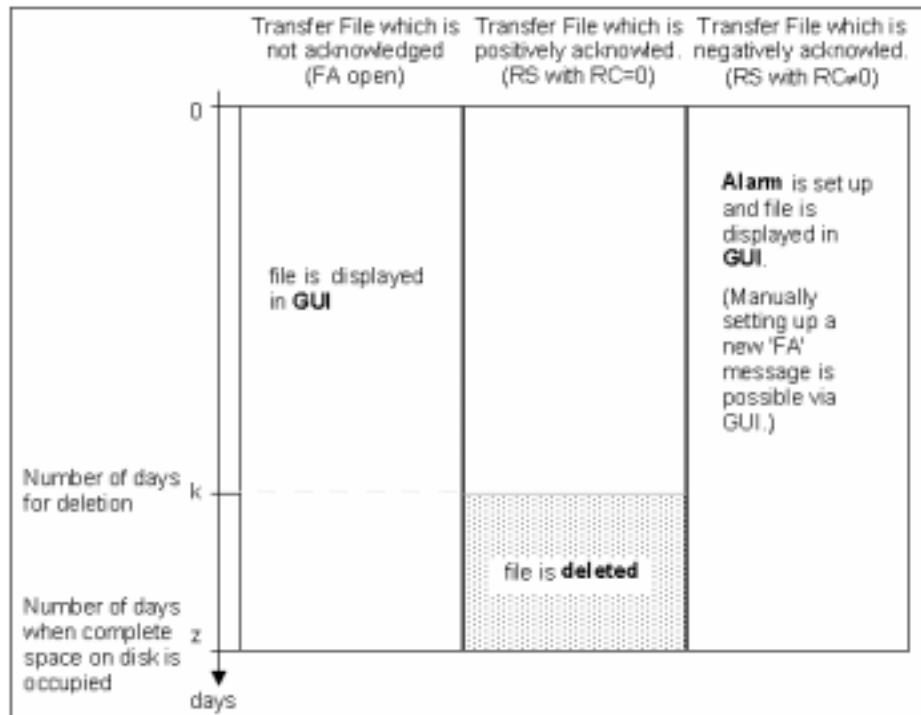


Figure 12 File Handling with WebSphere MQ

The Form

**Billing Server** ⇒ **Billing/Accounting** ⇒ **MQSeries File Control**

provides information on the file transfer status via:

- ▶ a list of all transfer files that have not been acknowledged, and
- ▶ a list of the files that have been negatively acknowledged.

With the option 'Initiate FA–Message' in the **Action** menu a new function 'FA' for one or several negatively acknowledged transfer files can be set up. Those files will then appear in the list of not acknowledged files (see Figure 13).

Note that there is no list for successfully transferred files.

When a file transfer has been negatively acknowledged, an alarm is sent to the Core Network Element.



Figure 13 Form "MQSeries File Transfer Control"

### 3.4 Hot Billing (Near Real Time Billing)

Hot Billing means that each CDR is immediately transferred to the Hot Billing (Realtime Transfer) Center via Remote Procedure Call (RPC) or via FTP.

If the connection to the Hot Billing Center is disturbed, a corresponding alarm is activated on the Core System. This alarm will be deactivated after the next confirmation from the Hot Billing Center of receipt of a Hot Billing record. The Hot Billing records are saved until the connection is re-established.

The disk occupancy for Hot Billing records is supervised. When the defined threshold is reached, a disk occupancy alarm is sent to the Core System. If the disk occupancy reaches again a value lower than the set threshold after the connection has been re-established, the alarm is deactivated on the Core System.

The Alarm threshold is set in the form "Hot Billing Disk Occupancy". This form provides information on the occupancy of the Hot Billing Buffer.

The form can be opened via menu selection

**Billing Server** ⇒ **Disk Occupancy** ⇒ **Hot Billing Disk Occupancy**.

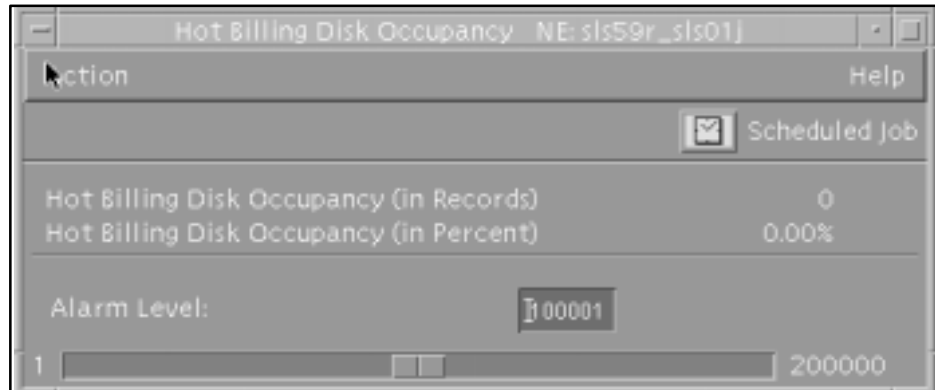


Figure 14 Form "Hot Billing Disk Occupancy"

### Scenario: Changing thresholds for Hot Billing Disk Occupancy

#### Initial Situation:

The threshold for the disk occupancy is set to 200,000. This value is so high that in the case of a breakdown of the connection, there will not be enough time to react to this breakdown.

#### Task:

The disk occupancy alarm shall be sent after 5,000 Hot Billing records have been stored.

#### 1 Call the form "Hot Billing Disk Occupancy":

##### Billing Server ⇒ Disk Occupancy ⇒ Hot Billing Disk Occupancy

- The form "Hot Billing Disk Occupancy" is displayed on the screen with the current occupancy values and threshold settings.

#### 2 Set the slider control of the parameter *Alarm Level* to approximately '5,000' (the exact value can be adjusted with the arrow keys) or enter the value in the corresponding text field.

#### 3 Start the function **Save** in the **Action** menu.

- In the area of the form the mouse pointer changes its appearance to a clock.
- After **Save** has finished, a dialogue window with the result message appears on the screen.

#### 4 Press **OK** for confirmation.

- The mouse pointer resets its appearance to a pointer.
- The message window is closed and the action is finished.



## 3.5 Near Real Time Block GUI Process

The menu selection

**Billing Server** ⇒ **Disc Occupancy** ⇒ **Hot Billing Block**

provides a form that supports the administration of the block size of cooked records and time out parameters.

Parameters of a Near Real Time Block can be displayed and changed.

The **Time out** parameter is the maximum time interval between two messages sent to the Billing Center.

**Block size** specifies the maximum size (in Kbytes) of a message sent to the Billing Center.

The values for these two parameters can be entered by using the slider control for the parameter or entering the value in the text field of the parameter.

As soon as one of these two parameters is reached, a message is sent to the Billing Center.

The changing of both parameters can be performed as a scheduled job.

Figure 15 Form "Near Real Time Block"

## 3.6 Corrupt Record Alarm GUI

The menu selection

**Billing Server** ⇒ **Disc Occupancy** ⇒ **Corrupt Record Alarm**

displays the alarm threshold of the corrupted raw records.

If the number of corrupted raw records received during 5 minutes is greater than the **Alarm Level** threshold, an alarm is raised to the operator.

This value can be changed by the input field or by the slider.

**Note** The alarm is disabled if the value is set to '0'.

Choosing action Current Configuration will cause the display of the last saved value for alarm threshold.

If the button **Scheduled Job** is active, the action can be performed as a scheduled job at any time later than <current time> + 5 min.

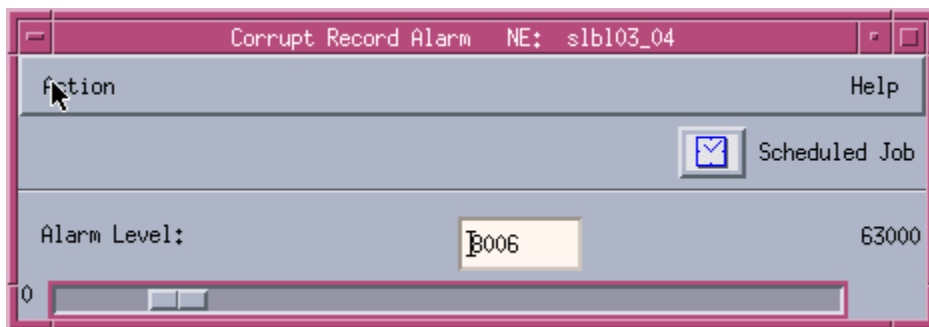


Figure 16 Form "Corrupt Record Alarm"

## 3.7 Suppression of CDRs

If applicable, the processing of certain CDRs can be suppressed. The filter criteria can be defined via GUI.

**Suppression** With the form **Billing Server** ⇒ **Billing/Accounting** ⇒ **Suppression** (see Figure 17) the suppression settings can be specified. The record types, which shall be suppressed, can be customized for each record store or, in case of a Regional BS, for each existing record store of each installed filter. Hot Billing (if applicable) is treated as a separate record store. The parameter field shows in each case only those suppression items, which are valid for the selected record store respectively, in case of a regional BS, for the selected combination of core switch and record store.

It depends on the system configuration, which types of records can be suppressed on a particular Billing Server. Therefore the form shown in Figure 17 has to be seen as an example.

The Billing Server supports suppression of the following record types:

- ▶ Unsuccessful Calls
- ▶ MTSMS (Mobile Terminated Short Message Service)
- ▶ Tax Free Calls
- ▶ Mobile Terminated Calls for own network subscriber
- ▶ SCI (Subscriber Controlled Input) for own network subscriber
- ▶ SCI Barring for own network subscriber
- ▶ Password Registration for own network subscriber
- ▶ SCI for foreign network subscriber
- ▶ SCI Barring for foreign network subscriber
- ▶ Password Registration for foreign network subscriber.
- ▶ MOSMS-IN

With the parameter *record entry* individual elements of records can be selected for suppression:

- ▶ Location Area Code
- ▶ Cell-Identification
- ▶ MSCClassMark
- ▶ MSRN (Mobile Station Roaming Number).
- ▶ Trunk Group Identifier

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Figure 17 Form "Suppress Detailed Billing"

## 3.8 Communication with the Billing Center

Prepared CDRs are fetched by the Billing Center via FTP from the Circular Database.

The interface is based on standard FTP, with the Billing Server as the FTP server and the Billing Center as the FTP client.

### Change IP Address

For Hot Billing the form **Billing Server** ⇒ **Communication** ⇒ **Billing Centre Addresses** (see Figure 18) the IP address of the Billing Center can be announced to the Billing Server application. This address is given in the standard notation with dots (e.g. 123.45.67.89).

Figure 18 Form "Change IP Address" (Change IP Address of the Hot Billing Center)

### Billing Centre User

Depending on your system configuration the form "Billing Centre User" (see Figure 19) may be available. It can be accessed via the menu selection **Billing Server** ⇒ **Communication** ⇒ **Billing Centre User**.

This form is used for the administration of users who perform transfer tasks towards the Billing Center.

You can create and modify users, and assign access rights for the individual record stores.



Figure 19 Form "Billing Centre User"

## 4 USBS Operation

---

This chapter explains how the Billing Server is operated via the menu items and forms offered by the graphical user interface. This covers the following areas:

- File and Data Management for Billing Data
  - Exchange Filter Administration
  - Alarm Administration
  - User Administration
  - Scheduled Jobs
  - Backup and Restore
  - Statistics (if applicable).
-

## 4.1 File and Data Management for Billing Data

The CDRs that are generated from the raw data from the core switch are temporarily stored in a working file. As soon as either a predefined delay timer has expired or a predefined file size is reached the working file is closed and converted into a transfer file that is then moved into the record store.

The following user actions can be performed via the menu **Billing/Accounting**:

- ▶ Occupancy of the Record Store
- ▶ Prepare records for transfer to the Billing Center
- ▶ Export records to DVD
- ▶ Exchange Filter Administration

### 4.1.1 Record Store Information

- 1** Open the Form "Circular Database":  
**Billing Server** ⇒ **Billing / Accounting** ⇒ **Circular Database**
- 2** **Only in Regional Billing Server configuration:** Select an exchange identification from the "Exchange ID" list.
- 3** Select a Record Store from the field "Names of Circular Database", for example, "Detailed Billing".
- 4** Select menu option **Current Configuration**.  
A list of all records available in the database is displayed.



The screenshot shows a window titled 'Circular Database' with a menu bar containing 'Action' and 'Help'. Below the menu bar is a 'Scheduled Job' button. The main area contains an 'Exchange ID' field with the value 'JED002'. To the right is a 'Names of Circular Database' list with 'Detailed Billing' selected. Below this, summary statistics are displayed: 'Number of Days in the Circular Database: 14', 'Number of Records in the Circular Database: 619214', 'Oldest Record in the Circular Database: 2003/02/11 15:43', and 'Youngest Record in the Circular Database: 2003/02/27 13:08'. At the bottom is a table with columns 'Day', 'Counter', 'Oldest', and 'Youngest'.

Day	Counter	Oldest	Youngest
2003/02/27	1	2003/02/27 13:08	2003/02/27 13:08
2003/03/03	2957	2003/02/11 15:43	2003/02/25 09:32
2003/03/05	185856	2003/02/11 15:43	2003/02/19 17:51
2003/03/06	311980	2003/02/11 15:43	2003/02/19 14:24
2003/03/07	120120	2003/02/11 15:43	2003/02/19 14:24

Figure 20 Example for Form "Circular Database"

The form displays the following information on the occupancy of the database:

- globally for the entire database:
  - number of days covered
  - number of records
  - date and time of oldest record
  - data and time of youngest record.
- for each day covered:
  - date
  - number of records
  - date and time of oldest record
  - data and time of youngest record.

## 4.1.2 Prepare, Export and Delete a Transfer File

- Prepare Transfer File** 1 Select menu option **Prepare** from the menu **Action** of the form

**Billing Server** ⇒ **Billing / Accounting** ⇒ **Circular Database**

A transfer file containing the most recent data will be created.

If prepare has already been started by another user or by the normal preparation cycle, a corresponding message is displayed and the action is aborted.

**Export Transfer File**

- 1 Open Form "Export":  
**Billing Server** ⇒ **Billing / Accounting** ⇒ **Export**

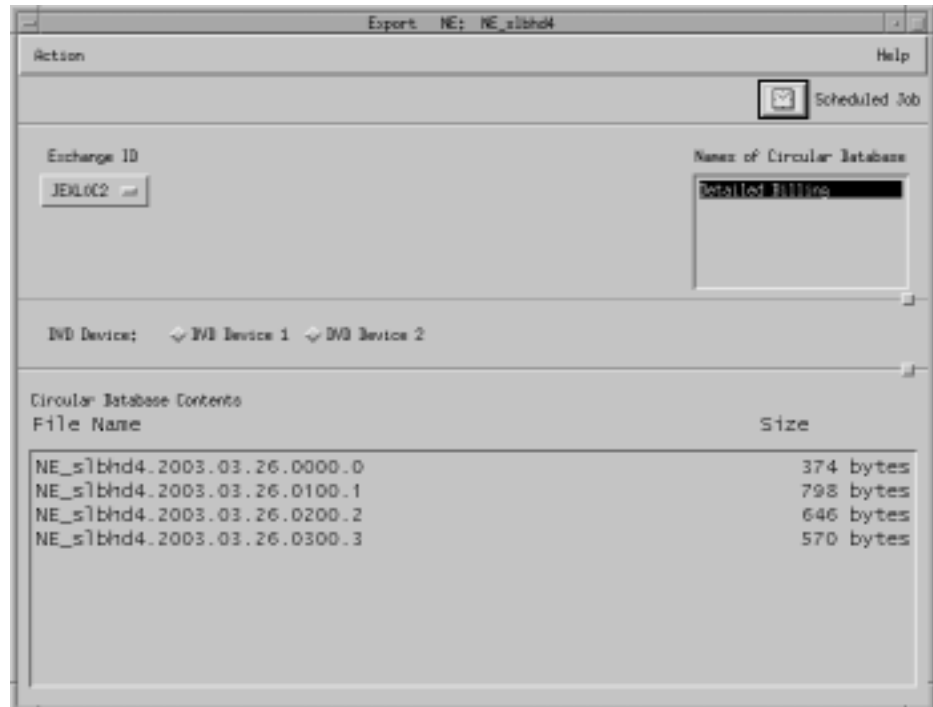


Figure 21 Example for the Form "Export"

- 2 **Only in Regional Billing Server configuration:** Select an exchange identification from the "Exchange ID" list.
- 3 Select a Record Store name from the field "Names of Circular Database", e.g., "Detailed Billing".
- 4 Select option **Current Configuration** from the menu **Action** to update the database contents display.
- 5 Select a DVD device.
- 6 Select the transfer file(s) to be exported from the database contents file list.
- 7 Select option **Export** from the action menu to dump the selected files to the selected export medium. Be sure that a medium is inserted in the chosen device!

If the delete option is available you can delete files from the CDB.

**Delete Transfer File**

- 1** Open Form "Export":  
**Billing Server** ⇒ **Billing / Accounting** ⇒ **Export**
- 2** **Only in Regional Billing Server configuration:** Select an exchange identification from the "Exchange ID" list.
- 3** Select a Record Store name from the field "Names of Circular Database".
- 4** Select option **Current Configuration** from the menu **Action** to update the database contents display.
- 5** Select the transfer file(s) to be deleted from the database contents file list.
- 6** Select option **Delete** from the menu **Action**.

**Note** Only transfer files previously exported to DVD can be deleted!

If a Transfer File that is about to be deleted to make room for a new one is currently being transferred (or exported, or searched) the deletion is delayed until the previous file access has been finished.

**4.1.3 File Store Occupancy**

The menu selection

**Billing Server** ⇒ **Disk Occupancy** ⇒ **Occupancy File Store**

provides a form in which alarm and warning thresholds for monitoring the occupancy of the partition that contains all record stores can be defined.

The following occupancy values can be displayed and defined:

▶ Alarm level

Disk occupancy of the record store partition in percent. If the disk occupancy reaches the specified value, an alarm is issued. The value can range from 1-100, 100% meaning that the alarm function is disabled.

▶ Warning level

If the disk occupancy reaches the specified value, a warning is issued.

► Warning repetition level

Specifies the disk occupancy increment value for further warnings to be issued after the warning threshold has been reached (e.g., if the warning threshold is set to 30 %, and the repetition level to 5%, a new warning will be issued when 35%, 40%, etc. occupancy is reached).

The menu option **Current Configuration** from the **Action** menu displays the current setting for the thresholds.

New settings have to be saved via menu option **Save**.

The screenshot shows a window titled "Occupancy of Circular Database" with a menu bar containing "Action" and "Help". Below the menu bar is a "Scheduled Job" button. The main area is divided into two sections: "Thresholds of Disk" and "Current Occupancy".

**Thresholds of Disk:**

- Alarm Level: A slider set to 80%.
- Warning Level: A slider set to 90%.
- Warning Repetition Level: A slider set to 100%.

**Current Occupancy:**

Free space on disk (in kB)

Record Store	Size: (kB)	(%)
ISDN	108872	1.23
N	34237	0.39
IN	8013	0.09

Figure 22 Example for the Form "Occupancy of Circular Database"

## 4.2 Exchange Filter Administration

This form is used for the administration of the different filters installed in the Alcatel 1330 USBS and their assignment to the connected core switches. It can be accessed via menu **Billing Server** ⇒ **Billing / Accounting** ⇒ **Exchange Filter Administration**.

Exchange ID	Filter	Remark
JEXLOC7	EEP 7.4	
SCBML07	EEP 7.4	
TEST	EEP 7.4	
TEST2	EEP 7.4	
unknown		autodetected

Exchange ID: JEXLOC7

Names of Filter: EEP 7.4

Figure 23 Form "Exchange Filter Administration"

New filter assignments can be added, and existing ones can be modified or deleted with this form (Figure 23).

To create a new filter assignment, the name of the Exchange ID of the core switch has to be entered in the field "Exchange ID" and the filter which shall be assigned to that switch has to be selected from the pulldown menu "Names of Filter". The new switch is created via menu option **Create**.

To modify an existing filter assignment, a core switch from the offered list has to be selected. A new filter can be selected from the pulldown menu "Names of Filter" and is assigned to the selected switch via menu option **Modify**.

To confirm an autodetected filter, the Exchange ID with the remark "autodetected" can be selected from the offered list and the filter can be confirmed via menu option **Confirm**. This action is only selectable, if an Exchange ID with an autodetected filter has been selected.

To delete an existing filter assignment, the switch has to be selected from the offered list and will be deleted via menu option **Delete**.

## 4.3 Alarm Administration

If the Billing Server detects a serious error, a corresponding alarm is set to "On". If this failure is fixed, the corresponding alarm is set to "Off". The alarms detected by the Alcatel 1330 USBS are always routed

- ▶ to the co-located core switch, if an Alcatel1000 S12 is configured resp.
- ▶ to Alcatel 1300 CMC, if an Alcatel1000 E10 is configured.

This applies also to the regional configuration with more than one core switch.

If Billing Server is configured for Alcatel1000 S12, and there is a Alcatel 1360 SMC / Alcatel 1300 CMC connected, then the Billing Server Alarms and the Alarms of the S12 can be handled by Alcatel 1360 SMC / Alcatel 1300 CMC as well.

The Billing Server includes the form "Alarm Display", which can be used to display the Billing Server alarms and reports independent of an existing connection to the Core System. This form is accessed via the menu **Billing Server** ⇒ **Alarm Display**.

The screenshot shows a web-based interface titled "Alarm Display: No: 1330usbs\_alarm". It contains two tables:

**Alarm Table**

Alarm Id	Alarm Name	Node Id	Node Name	State	Transmission State	Date	Time
0001FATL	AAG-AL_HB_FAILURE	25	FTB	ON	confirmed	2001/02/21	15:10
0002FATL	AAG-AL_HB_FAILURE	25	FTB	ON	confirmed	2001/02/21	15:10

**Report Table**

Report Name	Node Id	Node Name	State	Transmission State	Date	Time
AAG-RP_WRING_SAW_DATA_FIRPMI	1	FTB	ON	confirmed	2001/02/21	21:06
AAG-RP_WRING_SAW_DATA_FIRPMI	1	FTB	ON	confirmed	2001/02/20	00:32
AAG-RP_WRING_SAW_DATA_FIRPMI	1	FTB	ON	confirmed	2001/02/18	08:09
AAG-RP_WRING_SAW_DATA_FIRPMI	1	FTB	ON	confirmed	2001/02/17	22:40

Figure 24 Form "Alarm Display"

The form "Alarm Display" can not be used to activate or deactivate alarms!

The form offers two lists. One for displaying all active alarms, the other for displaying reports. For each alarm and report the operator has the possibility to display corresponding detailed information. By clicking on the alarm/report entry, individual alarm/reports can be selected. After choosing the menu option **Alarm Description** or **Report Description** the alarm/report text, a detailed description and recommended actions are displayed in a separate window (see Figure 25).



Figure 25 Example for an Alarm Description



## 4.4 User Administration

### 4.4.1 Change Password

Users can change their own password with the “Change Password” form.

Figure 26 Form “Change Password”

In the Billing Server main menu the form “Change Password” is called via menu selection:

**Administration ⇒ Change Password**

Changing passwords of other users requires special administration rights. Authorized users can change passwords of other users via the form “User Administration”.

### 4.4.2 Administration of Users

Figure 27 Form “User Administration”

In the Billing Server main menu the form “User Administration” is called via menu selection:

## Administration ⇒ User Administration

The following nine different user groups are defined for the Billing Server:

OMC_MAN:	OMC-Management
ADMIN:	Agency-Administrator
OC:	Operation Control
COC:	Central Operation Control
ALCATEL:	System Supplier (Remote Diagnostics & SW-Installation)
CCC:	Access Administration (Central Charging Comparison)
NM:	Central Network Management
ICEP:	Interception
EMERG	Emergency Administrator

When a user is registered at the Billing Server, this user is assigned to one user group.

Each user group has its own set of forms that can only be accessed by users registered to this group, for example, the form "User Administration" is attached to the user groups ADMIN and COC. This form cannot be accessed by a user attached to the user group OMC\_MAN. Refer to appendix A for the allocation of forms to user groups.

The main menu of the Billing Server is adjusted in a way that when a user logs on, only those forms associated with the user group the user belongs to are accessible.

At the first registration of a user, the associated account name and password are identical. When this user logs on for the first time, the form "Change Password" appears automatically.

Restrictions regarding user accounts:

- ▶ The user account *smc\_adm* is not allowed for the Billing Server.
- ▶ The user accounts *nobodyV, uucpa, auth, cron, tcb, ris, wnn, uce\_ins, a3ccadm, ccadm, root, sys, adm, uucp, daemon, bin, lp, nuucp, Xkeytest, hpdb, informix, log\_ftp, nobody, rbadm, opc\_op, account, ovdb, smc\_adm, uce\_smc, oftuid, uce\_mmc, mqm, games, ftp, gopher, halt, mail, mailnull, news, nfsnobody, nsd, ntp, operator, pcap, rpc, rpcuser, rpm, shutdown, smmsp, sshd, sqm\_ftp, sync, vcsa, bill\_ftp, hbil\_ftp, bill\_config, quagga* and *xfs* are not allowed as common users.

## Changing Access Rights of a User

A user attached to the user group ADMIN has the possibility to change the access rights of other users.

### Task:

The task area of a user is to be changed from group ADMIN to the user group EMERG.

- 1 Call the form "User Administration":  
**Billing Server** ⇒ **Administration** ⇒ **User Administration**
- 2 Choose the function **Select User** from the **Action** menu.
  - The form "User Selection" is displayed.
  - All user names of the Billing Server are listed under *Items*.
- 3 Select a user in the parameter *Items*.
  - The selected name is displayed in the field *Selected User*.
- 4 Press **OK**.
  - The window "User Selection" is closed.
  - In the form "User Administration" the selected name is displayed in the parameter *User Name*.
  - The button **ADMIN** in the parameter *User Group* is active.
  - In the list "Registered Scheduled Jobs" all scheduled jobs are displayed that are registered by the selected user.
- 5 Click the button **EMERG** in the parameter *User Group*.
  - Within the parameter *User Group*, the button **ADMIN** is no longer active but the button **EMERG** is active instead.
- 6 Choose the function **Modify** from the submenu **User** of the **Action** menu.
  - In the area of the form, the mouse pointer changes its appearance to a clock.
  - At the end of the action, a dialogue window with the result message appears on the screen.
- 7 Press **OK** for confirmation.
  - The mouse pointer resets its appearance.
  - The message window is closed and the action is finished.

### 4.4.3 Reset a User's Password / Reactivate a blocked User

The password of any Billing Server user may be reset by the administrator, for example if a user forgot his password, or the account is blocked because it was not used for a longer time.

After a password has been reset by the administrator, the USBS requests that the user changes the password on first access.

Action	Help
User Name: <input type="text" value="user1"/>	
New Password: <input type="password"/>	
Confirm Password: <input type="password"/>	

Figure 28 Form "User Administration: Reset Password"

#### Task:

Reset the password of a user resp. reactivate a blocked user (administrator rights are necessary for this task!).

- 1 Call the form "User Administration":  
**Billing Server** ⇒ **Administration** ⇒ **User Administration**
- 2 Enter the name of the user, whose password has to be resetted, into the field *User Name* or select the user by choosing the function **Select User** from the **Action** menu.
- 3 Choose the function **User** ⇒ **Reset Password** from the **Action** menu (only available for users with administrator rights).
  - The form "User Administration: Reset Password" is opened. The name of the selected user is inserted in the parameter field *User Name*.
- 4 Enter the new password for the selected user into the field *New Password*. Confirm the new password in the field *Confirm Password*.
- 5 Select function **Save** from the **Action** Menu.
  - In the area of the form, the mouse pointer changes its appearance to a clock.

- At the end of the action, a dialogue window with the result message appears on the screen.
- 6** Press **OK** for confirmation.
- The mouse pointer resets its appearance.
  - The message window is closed and the action is finished.

#### 4.4.4 Complex Passwords / Account blocking (optional)

**Password Complexity** Passwords are checked for their complexity while changing the password via menu selection:

**Administration** ⇒ **Change Password**

resp.

**Administration** ⇒ **User Administration** ⇒ **User** ⇒ **Reset Password**.

A warning is given, if the password does not fulfill the complexity rules, and the password is not changed in this case.

**Password Aging** Users are forced to change their password every 60 days (default value – configurable via OCD). After this time span the user gets the information that the password is expired and that he has to change the password immediately.

The GUI access to the Billing Server is blocked as long as the password was not changed.

From another 7 days before password expiration, the user gets an information while login, how many days are left until password expiration.

After 90 days (default value – configurable via OCD) the account is completely blocked. The user can't login anymore. After this the account has to be unblocked by the administrator (see chapter 4.4.3).

**Password History** A password history is supported. The new password either changed via form **Change Password** or via form **Reset Password** has to differ from the last 5 passwords previously used for this user.

A warning is given, if a password is re-used, and the password is not changed in this case.

**Retry Policy** The user's account will be blocked after 6 successive login failures (maximum 3 on each node). After this the account has to be unblocked by the administrator (see chapter 4.4.3).

**Automatic Deletion of unused accounts** The user's account will be deleted automatically if it is not used for a longer time (default value 6 month, configurable via OCD).

#### 4.4.5 Unblocking a blocked user manually

Users are usually unblocked via GUI **Administration** ⇒ **User Administration** ⇒ **User** ⇒ **Reset Password**, but sometimes it can be necessary to unblock a blocked user manually.

To unblock a user manually, execute the following commands:

**Note**      **The following steps have to be done on both nodes.**

- 1** Login as root to the Billing Server Node.
- 2** Unblock the user by entering the following command:

```
# /usr/bin/faillog -u <username> -r
```

Example for user named "user1":

```
# /usr/bin/faillog -u user1 -r
```

The user is now unblocked and able to login again at this node.. Repeat the command on the other node.

End of procedure

## 4.5 Scheduled Jobs

Nearly all the functions that can be started immediately can also be registered as scheduled jobs. One exception to this rule is, for example, the action "Change Password". The registration of scheduled jobs is described in Section 2.5.

Display scheduled jobs and the deletion of own scheduled jobs is possible via the form "Scheduled Jobs":

**Billing Server** ⇒ **Administration** ⇒ **Scheduled Jobs**  
⇒ **Created Jobs**

**Note** Only users attached to the user group ADMIN have access to the scheduled jobs of other users. For members of this user group the form "User Administration" provides the option of display and deletion of any scheduled job of any user.

**Billing Server** ⇒ **Administration** ⇒ **User Administration**

### Administration of Results

The result of scheduled jobs can be displayed and deleted via the form "Result Display":

**Billing Server** ⇒ **Administration** ⇒ **Scheduled Jobs** ⇒ **Results**

This form displays a list of the results of scheduled jobs that have been registered by the user. Single results can be selected by clicking on the corresponding entry in the list. Choosing the entry "Description" in the menu "Display" will cause a detailed description of the selected result to be displayed in the parameter *Result Description*. The action "Delete" and "Delete All" can be used to delete selected or all results.

A user attached to the user group "User Administration", can view and delete results of other users via this form.

Figure 29 shows an example of a result display.

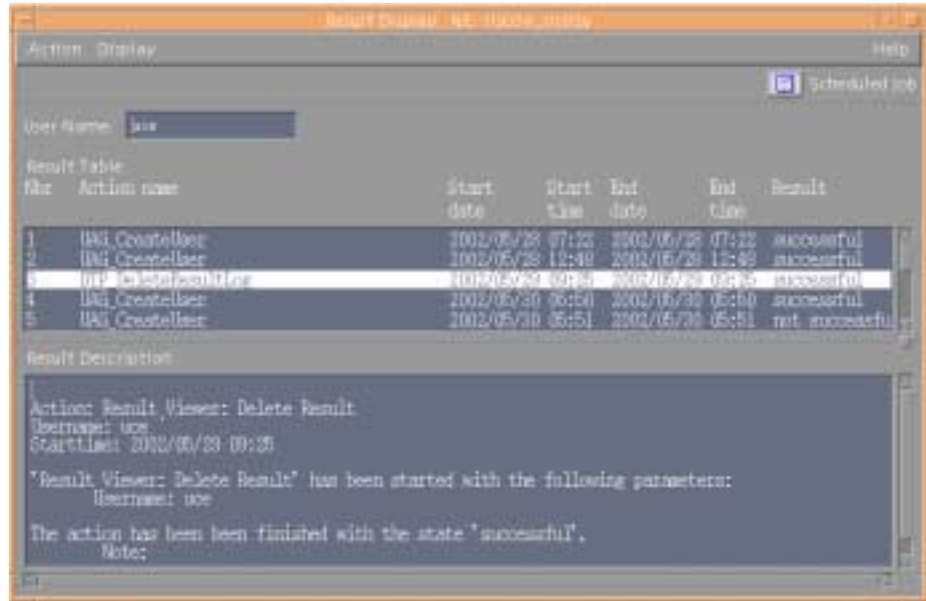


Figure 29 Form "Result Display"



## 4.6 Backup/Restore

**Backup** A user attached to the user group "ADMIN" is authorized to perform a backup and restore activity. For initiating a system backup the following forms are used:

**Billing Server** ⇒ **System Administration** ⇒ **Backup**

Within this form, a backup can be started immediately or as a scheduled job. Details of this action can be found in the *Troubleshooting Guide*.



Figure 30 Form "Backup"

**Restore** A detailed description of a system restore can be found in the *Troubleshooting Guide*.

## 4.7 Statistics

If available, the menu selection

**Billing Server** ⇒ **Statistics** ⇒ **Search**

offers the form “Search”, where search criteria for searching billing records in the working file and all transfer files can be specified.

The search criteria have to be entered into the text input fields in the middle part of the form. The use of asterisks as wildcards is not allowed. The criterion for the parameters *Charging Date* and *Charging Time* is a range [from (smaller value) ... to (larger value)].

The search results are stored in statistics files that can be displayed and deleted.

In the lower part of the form all statistic files are displayed by size, status and name. Files with the status *ready* can be viewed and deleted via the **Action** menu.

CDB	Name	Size(bytes)	Status
Detailed Billing	slbba_hbb.2003.03.28.1832.001	6258	ready

Figure 31 Form “Statistics”

## 4.8 Measurement GUI Process

The menu selection

**Billing Server** ⇒ **Statistics** ⇒ **Measurement**

provides a form that supports the setting of measurement time periods.

Immediately after saving the measurement time periods and after the expiration of this time period, a row of measurement counters is written in a log file.

This row consists of a time—flag, date/time and the measurement counters itself.

Choosing action **Current Configuration** will cause the display of the current value for the measurement time period.

If the button **Scheduled Job** is active, the action can be performed as a scheduled job at any time.

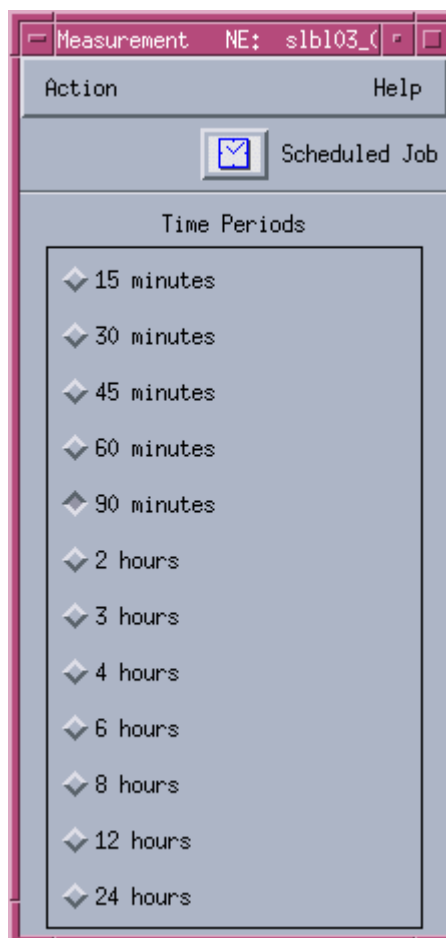


Figure 32 Form "Measurement"

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## Abbreviations

CDB	Circular Database
CDR	Call Detail Record
CMC	Alcatel 1300 Convergent Network Management Center
CORRDB	Correlation Database
CPU	Central Processing Unit
DVD RW	Digital Versatile Disc – ReWritable
EPBS	Extended Peripheral Module Billing System
FTP	File Transfer Protocol
GUI	Graphical User Interface
HA	High Availability
LAN	Local Area Network
MQ	Messaging and Queuing
MTBF	Mean Time Between Failure
MTR	Mean Time To Repair
OSF	Open Software Foundation
PMONIP	“package monitor process”
RC	Revision Code
RPC	Remote Procedure Call
SCSI	Small Computer Systems Interface
SMC	Switch Management Center
SNMP	Simple Network Management Protocol
TCP/IP	Transmission Control Protocol/Internet Protocol
USBS	Alcatel 1330 Unified Service for Billing Systems
WAN	Wide Area Network

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## Appendix A Attachment of Access Rights to Forms

Note that name and availability of the menu items depend on the customization of the Billing Server and whether it is accessed locally or via Alcatel 1360 SMC / Alcatel 1300 CMC (names).

### A.1 Menu "Administration":

Menu "Administration"	OMC_MAN	ADM IN	OC	COC	AL-CA-TEL	CCC	NM	ICEP	EMERG
Change Password	x	x	x	x	x	x	-	-	x
User Administration	-	x	-	-	-	x	-	-	x
Scheduled Job: Results	-	x	x	x	x	x	-	-	x
Scheduled Job: Created Jobs	-	x	x	x	x	x	-	-	x

### A.2 Menu "System Administration":

Menu "System Administration"	OMC_MAN	AD MIN	OC	COC	AL-CA-TEL	CCC	NM	ICEP	EMERG
UNIX Window	x	x	x	x	x	-	-	-	x
Backup	-	-	x	x	x	-	-	-	x

### A.3 Menu "Billing/Accounting":

Menu "Billing/Accounting"	OMC_MAN	AD MIN	OC	COC	AL-CA-TEL	CCC	NM	ICEP	EMERG
Circular Database	-	-	x	x	x	-	-	-	x
Export	-	-	x	x	x	-	-	-	x
Suppression	-	-	x	x	x	-	-	-	x
Compression	-	-	x	x	x	-	-	-	x
Exchange Filter Administration	-	-	x	x	x	-	-	-	x
MQSeries File Transfer Control	-	-	x	x	x	-	-	-	x

**A.4 Menu "Disk Occupancy":**

Menu "Disk Occupancy"	OMC_MAN	ADM IN	OC	COC	AL-CA-TEL	CCC	NM	ICEP	EMERG
Occupancy File Store	-	-	x	x	x	-	-	-	x
Corrupt Record Alarm	-	-	x	x	x	-	-	-	x
Hot Billing Buffer	-	-	x	x	x	-	-	-	x
Near Real Time Buffer	-	-	x	x	x	-	-	-	x
Hot Billing Block	-	-	x	x	x	-	-	-	x
Near Real Time Block	-	-	x	x	x	-	-	-	x

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**A.5 Menu "Communication":**

Menu "Communication"	OMC_MAN	ADM IN	OC	COC	AL-CA-TEL	CCC	NM	ICEP	EMERG
MQSeries Addresses	-	-	x	x	x	-	-	-	x
Billing Center User	-	-	x	x	x	-	-	-	x
Hot Billing IP Address	-	-	x	x	x	-	-	-	x

**A.6 Menu "Alarm":**

Menu "Alarm"	OMC_MAN	ADM IN	OC	COC	AL-CA-TEL	CCC	NM	ICEP	EMERG
Alarm Display	x	x	x	x	x	-	-	-	x

**A.7 Menu "Statistics":**

Menu "Statistics"	OMC_MAN	ADM IN	OC	COC	AL-CA-TEL	CCC	NM	ICEP	EMERG
Search	-	-	x	x	x	-	-	-	x
Measurement	-	-	x	x	x	-	-	-	x



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