



# WatchDog

The Fraud Detection System

User manual

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All window shots and examples are based on example data.

## **Document version**

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## About This Guide

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The Watchdog - User Manual is a reference and a training material for WatchDog users. It describes how to work with the alarms, analysis tools, reports, etc.

All chapters in this manual have the same disposition, as described below.

- A short introduction (overview).
- A screen shot, showing the user interface.
- A detailed description of the functionality.

### Prerequisite knowledge

Users of WatchDog are expected to have attended a WatchDog training held by Basset Telecom Solutions or by a local trainer that have attended the WatchDog training.

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*Chapter**1*

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# Application Overview

## Overview

### Introduction

This chapter gives a general description of the WatchDog alarms and analysis functionality.

### In this chapter

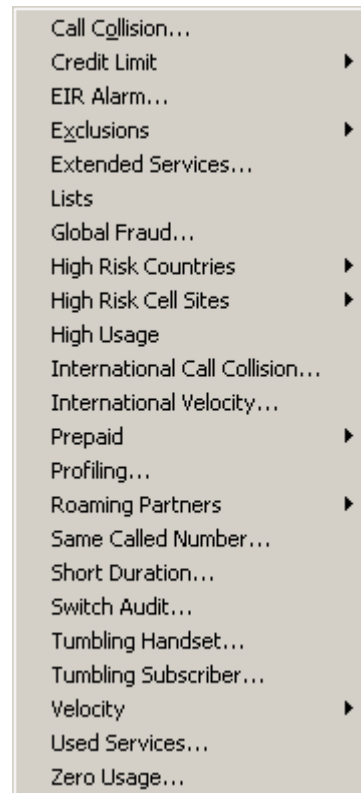
This chapter is organized as follows.

Topic
The WatchDog Alarms
Features
Analysis Functionality
Reporting

# The WatchDog Alarms

## The alarms

The **Alarms Settings** menu includes the following commands.



All alarm settings are described in detail in the following sections.

### Call collision

The call collision alarm detects situations where two calls are being made at the same time from the same handset. This is an indication of cloning.

### Credit Limit

The Credit Limit alarm is used to detected subscribers that have exceeded their credit limit or parts of the credit limit. The Credit Limit alarm uses the credit limit from the subscriber file in combination with the calls made and fixed monthly charges. The Credit Limit alarm is executed manually for a specific bill cycle from the Admin – Action – Credit Limit Alarm.

### EIR alarm

The EIR alarm is specific for GSM networks. An EIR, Equipment Identity Register, is used to prevent calls from stolen or unauthorized handsets. The switches will list call attempts from handsets that are not valid according to the EIR. WatchDog can collect these lists and display them for the user.

**Exclusions**

It is possible to exclude values from some alarm analyses. This concerns subscribers from the high usage alarm and handsets from the hot list alarm.

**Extended services**

This alarm detects subscriptions with a high usage of extended services relative to the total usage. Extended services include services such as call forwarding, call waiting, and three party calls. Via this command it is possible to activate alarms for different services and sets thresholds for each service.

**Lists: Blacklist**

It is possible to blacklist telephone numbers (A numbers), telephone units, and cell sites. This means that WatchDog will generate alarms each time any of the listed items are being used. This alarm can be used for investigating the behaviour of a certain subscriber or to survey the traffic from a certain area.

**Lists: Hotlist**

It is possible to hotlist telephone numbers (B numbers), telephone units, and cell sites. This means that WatchDog will generate alarms each time a call is made to any of the listed items. This alarm can be used e.g. to investigate which subscribers that are using a certain service.

**Global fraud**

This alarm is generated if a subscriber calls more than a specified number of different countries within a specified period of time.

**High-risk countries**

This alarm is a complement to the high usage alarm, enabling lower thresholds for calls to certain countries. The settings include a list of all countries that should be considered as high-risk countries, and thresholds for each item.

**High-risk cell sites**

This alarm is a complement to the high usage alarm, enabling lower thresholds for calls from certain cell sites. The settings include a list of all cell sites that should be considered as high-risk cell sites, and thresholds for each item.

**High usage**

The high usage alarms detect subscribers making calls representing high amounts of money. The number of time periods is flexible, as the duration of each period. The high usage alarm can be based on different quantitative units, such as monetary value, duration, number of calls, and percentage of total monetary value.



**International call collision**

As the call collision alarm, this alarm detects situations where two calls are being made at the same time from the same handset. This is an indication of cloning. This alarm does however analyse roaming data to detect cloned phones that are used abroad.

**International velocity**

As the velocity alarm, this alarm detects situations where two calls are being made from the same handset, and the distance between the locations where the calls have been made is abnormal considering the time span between the calls. This is an indication of cloning. This alarm does however analyse roaming data to detect cloned phones that are used abroad.

**Prepaid**

WatchDog offers the following prepaid alarms.

**Prepaid audit.** This alarm is generated if a prepaid customer, who is not activated in the prepaid platform, is making calls.

**Internal prepaid fraud.** This alarm is generated if a prepaid customer makes calls that are not being registered in the prepaid platform. This is an indication of that the subscriber is activated in the switch and not in the prepaid platform.

**Multiple loading of prepaid account.** This alarm is generated if a prepaid customer loads his account more times than the alarm threshold.

**High amount on prepaid account.** This alarm is generated if a prepaid customer's account balance exceeds the alarm threshold.

**Load several accounts with same voucher.** This alarm is generated if several prepaid accounts have been loaded using the same voucher (PIN code).

**Profiling**

The profiling functionality is analysis tools intended to detect two types of events, cloning and known fraudsters that return to the network. Cloning can be detected by comparing the calling pattern for one subscriber but during two different time periods. The known pattern analysis compares a subscriber's calling pattern to known fraudsters' calling patterns.

**Roaming partners**

This command controls high usage settings for visiting roamers. The settings include a list of the roaming partners, and functionality to automatically send information to them about their subscriber's usage.

**Same called number**

This alarm is generated if a subscriber calls the same number more than a specified number of times and within a specified period of time.

**Short duration calls**

If a subscriber exceeds a number of short duration calls, an alarm will be generated.

**Switch audit**

This alarm detects subscribers that are activated in the switch but not in the billing system.

**Tumbling**

The tumbling alarm detects situations of two types. Tumbling handset means that one subscriber (MIN/IMSI) is using many different handsets (ESN/IMEI). Tumbling subscriber means that one handset (ESN/IMEI) is being used by many different subscribers (MIN/IMSI).

Note:

IMSI = International Mobile Subscriber Identity - GSM

IMEI = International Mobile Equipment Identity - GSM

MIN = Mobile Identification Number – Analogue

ESN = Equipment Serial Number – Analogue

**Velocity**

The velocity alarm detects situations where two calls are being made from the same handset, and the distance between the locations where the calls have been made is abnormal considering the time span between the calls. This is an indication of cloning.

**Used services**

An alarm will be generated if a subscriber is using services that are not included in the subscription.

**Zero usage**

As opposed to the high usage alarm, WatchDog offers a zero usage alarm. If a subscription is not used for a specified period of time, an alarm will be generated.

## Features

The following features and analysis functionality are included in WatchDog.

**Flexibility**

- Any number of users can work with the system at the same time. The connections to the WatchDog server are via your standard LAN or WAN.
- The alarm settings can be changed and adjusted at preferable time by your system administrator.
- The alarm settings can be adjusted per individual customer. Every individual subscriber has five “multipliers” which are adjustable. WatchDog can recommend suitable multipliers for each single user and alarm type. The multipliers make it

possible to adjust each subscriber's alarm thresholds, without changing the global alarm parameters.

- WatchDog enables the operator to change any of the system settings and parameters included in WatchDog – without help from Basset Telecom Solutions.
- Additional parameters are included in the alarm setting windows. These parameters enables customisation of the alarm settings, and the customisation can be adjusted per individual operator, at any time, by the System Administrators.
- It is possible to set different alarm thresholds for different roaming partners, e.g. USD 100 for visiting subscribers from Sweden and USD 200 for visiting subscribers from Taiwan. The example is using USD, but you would use your local currency.
- It is possible to set different alarm thresholds for different hotlisted countries, e.g. maximum USD 100 during 24 hours for subscribers calling to Sweden and USD 200 for subscribers calling to Taiwan. The example is using USD, but you would use your local currency.

### **Flexible Alarm Presentation**

- Possibility to see every single alarm or all alarms summarized per customer. This makes it possible to create cases for each subscriber. The user can choose the layout he or she prefers.
- All alarms are associated to a customer's name and address. This is possible since WatchDog is collecting customer data from your customer database.
- Sorting of the alarms. All alarms included in the alarm list can be sorted, separately by any WatchDog user. The sorting can be based on any parameter included in the alarms (telephone number, alarm value, severity level, monetary value of the alarm, user working with the alarm, alarm type, etc.).
- Filtering of the alarms. All alarms included in the alarm list can be filtered, separately by any WatchDog user. The filtering can be based on any parameter included in the alarms (telephone number, alarm value, severity level, monetary value of the alarm, user working with the alarm, alarm type, etc.).
- The System Administrator can delete several alarms, simultaneously, e.g. after a long weekend when a lot of alarms have been generated and the agents do not have the time to handle the low priority alarms. The deleting can be based on type of alarm, user assigned to the alarm, age of the alarm, etc.

### **Rating of all Calls**

All calls are rated in your local currency. The rating engine is very flexible and the System Administrator can change the settings at

desired time. Different rating tables can be used for different types of subscribers.

## Analysis Functionality

### **Detailed information window about the customer that has triggered an alarm**

This window includes a lot of information, which is extracted from your customer database, such as address, date of contract signing, number of unpaid bills, etc. It also includes a log including actions performed in WatchDog on the specific subscriber, and comments made by the users.

### **A selectable number of days' calling pattern profiling, including all calls made by a specific subscriber**

All calls are separated into local calls, long distance calls, international calls, roaming calls, and calls made to premium rate numbers. The information can be displayed in money (your local currency) or in time (minutes).

### **WatchDog does also include a selectable number of days of aggregated calling graph**

The graph can be displayed in money (your local currency) or in time (minutes).

### **A selectable number of days of detailed calling information**

The information is presented per separate call, and every post in the presentation list includes information such as; used telephone unit, called number, used operator (for roaming calls), used cell site, used switch, start of the call, end of the call, value of the call (in your local currency), total call length, service invoked, etc.

### **Detailed information about call collision (cloning) cases**

This window includes detailed information about the two calls that have collided.

### **Detailed information about velocity (cloning) cases**

This window includes information about the involved calls, and the required speed to travel between the used cell sites.

### **Detailed information about international velocity (cloning) cases**

This window includes information about the involved calls in different countries, and the required speed to travel between the used countries.

### **Detailed information about tumbling cases**

Different windows make it possible to further investigate the tumbling of telephone units and/or telephone numbers. All available information is presented, and a summary of used

numbers and telephone units is presented in an easy to understand manner.

**Same called number**

This window includes information about the involved calls for each number that has been alarmed on as same called number.

**EIR Analysis**

This window includes information call attempts made with grey and blacklisted handsets from the EIR.

**Prepaid voucher analysis**

Displays all vouchers used by a subscriber for charging the prepaid account.

## Reporting

**Advanced reporting functionality**

All included reports in WatchDog can be viewed on the screen, printed on paper, or saved as a file (rich text, Excel, text and, HTML formats).

**Advanced statistics functionality**

Any statistical report in WatchDog can be viewed on the screen or printed on paper.

**Automatic sending of e-mails containing roaming (high usage) reports to your roaming partners**

Your users can neglect the roaming alarms, and the reports will be e-mailed to the correct roaming partner without any work required by your staff anyway.

**Automatic printing of letters to your subscribers**

WatchDog includes a functionality that makes it possible for you to include a number of different pre-defined letters that can be sent to chosen subscriber using the network. This makes it possible to semi-automatically send letters to disconnected subscribers or subscribers that you want to make payments before they are allowed to continue calling in the network.

**I2 Link**

With the flexible report tool, WatchDog also includes an interface for extracting alarm- and calling information to external analysis tools, e.g. the analysis tool “Link” from I2 in the UK.

# *Chapter* **2**

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## **Work With WatchDog**

### **Overview**

#### **Introduction**

This chapter gives a description of the daily work with WatchDog.

#### **In this chapter**

This chapter is organized as follows.

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#### **Topic**

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Log On And Log off

---

The Main Window

---

General Functionality

---

## Log On And Log Off

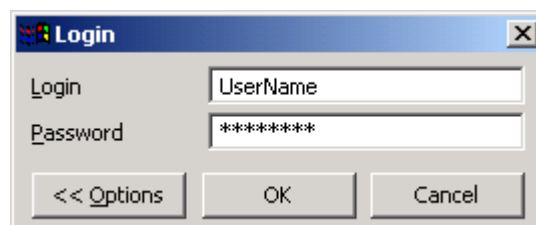
This section describes how to log on to, and log off from, WatchDog. If there would be any problems with the logon procedure, please contact your system administrator.

If a user is added with windows authentication the login in screen will not appear since the user is verified by windows login procedure.

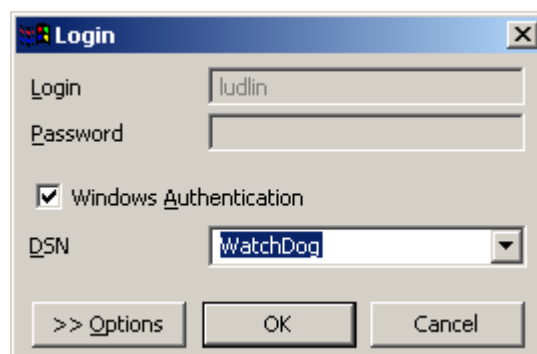
### Log On

To log on to WatchDog, follow these steps.

1. Start WatchDog on the WatchDog server or via a WatchDog client. The following window appears.



2. Enter your user name.
3. Enter your password.
4. Click **OK**.



If Windows authentication is used check the Windows authentication button. With the Windows authentication means that Windows grants the permission to WatchDog if the user is added as user to logon with Windows authentication.

DSN stands for Data Source Name, and is the connection between the client application and the WatchDog server. The DSN name is also visible in the title bar of the application. This is useful for clients that either administrates more then one system or clients that is using a test server and a live server.



Application Name (DSN Name)

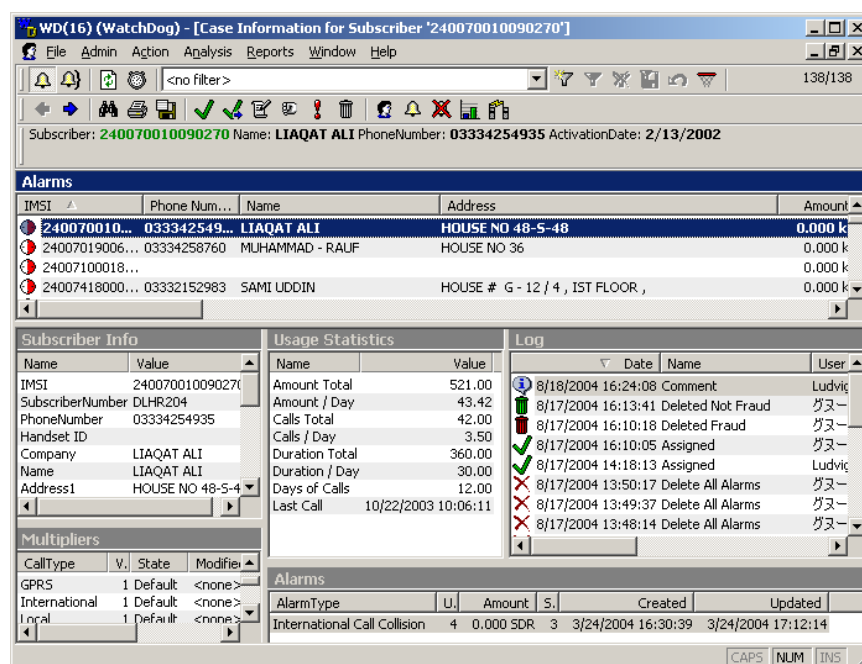
## Log Off

To log off from WatchDog, click **Exit** on the **File** menu.

## The Main Window

This section gives an overview of the functionality of the main window. From the main window it is possible to get access to the alarms and to the reports.

When WatchDog is started, the following window appears.



The Alarms list is the starting point when working with WatchDog. This list always appears when WatchDog is started. On the main window you can also find a number of menus and tools.

## Menus

The following menus are available. Many of the commands in the menus are available also via icons. All commands that are relevant for the WatchDog user are described in detail later in this manual.

- File** This menu includes commands e.g. for logging off.
- Admin** This menu includes commands for system settings and system administration. It is available only for users with Administrator rights.
- Action** This menu includes commands for taking actions with the alarms, such as deleting them or put them on hold.
- Analysis** This menu includes analysis tools that provide detailed information about alarms and calls.





<b>Reports</b>	This menu includes commands to create reports and statistics.
<b>Window</b>	This menu includes commands to make changes to the appearance of the user interface.
<b>Help</b>	This menu includes information about WatchDog.




## Icons

The following types of icons are available. Many of the commands are available also in the menus. Please refer to more detailed descriptions of each command in the rest of the manual.






**Navigation** These icons are used to navigate in the alarms list.

		<b>Previous subscriber</b>	Moves the selection up in the alarm list.
		<b>Next subscriber</b>	Moves the selection down in the alarm list.



**Edit** These icons include actions to search and print in lists.





	<b>Find</b>	This command makes it possible to search for a certain item in the selected list.
	<b>Print</b>	This command makes it possible to print the contents in the selected list.
	<b>Export</b>	This command makes it possible to export the contents in the selected list.

**Analysis** These icons include analysis tools that provide detailed information about alarms and calls.

	<b>Case details</b>	Displays the Case details for a subscriber.
	<b>Alarms</b>	Displays current alarms for a subscriber.
	<b>Old alarms</b>	Displays old alarms for a subscriber.
	<b>Profiling</b>	Displays the graph for a subscriber showing all call per call type.
	<b>All calls</b>	Displays all calls made by a subscriber.

**Actions** These icons include commands for taking actions with the alarms, such as deleting them or put them on hold.

	<b>Assign</b>	Assigns the currently logged in user to an alarm.
	<b>Assign</b>	Allows a user to assign




	<b>other Comment</b>	another user to an alarm. Allows the currently logged in user to write a comment to the selected alarm.
	<b>Hold</b>	Allows the currently logged in user to put the selected alarm on hold.
	<b>Reminder</b>	Allows the currently logged in user to put the selected alarm on reminder.
	<b>Delete</b>	Allows the currently logged in user to delete the selected alarm.

## General functionality

This section describes functionality that is general for different parts of the application.

### Updating item lists

WatchDog includes a number of item lists used for system settings such as the high-risk countries list. These lists are used e.g. to administer hot lists and black lists. When editing these lists, the list edit tools should be used. The following tools are available. They all appear on the tool bar when a list is opened.

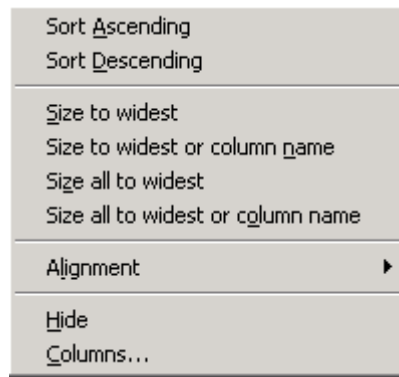
	<b>Add</b>	Click this symbol when you want to add an item to the list.
	<b>Edit</b>	Click this symbol when you want to edit an item in the list.
	<b>Delete</b>	Click this symbol when you want to delete an item from the list.

### Sorting of lists

All lists of system data, such as the **Alarms** list and the **All calls** list, can be sorted. To change the sorting order, click the column heading for the column to sort on. Click again and the list will be sorted in reversed order.

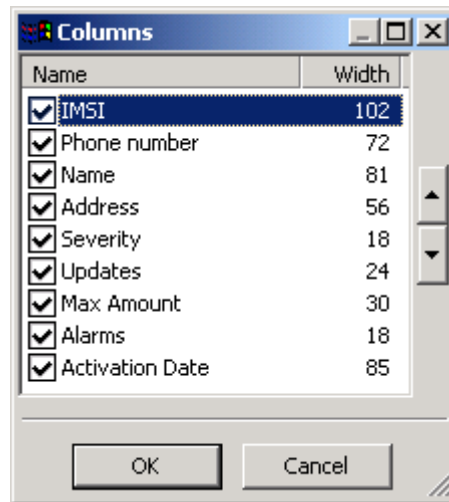
### The column header menu

It is possible to change the appearance of the WatchDog system data lists in a number of ways. Right-click a column header and the following menu appears.



The following commands are available.

<b>Sort Ascending</b>	Select this command to sort the column that was right-clicked in ascending order.
<b>Sort Descending</b>	Select this command to sort the column that was right-clicked in descending order.
<b>Size to widest</b>	Select this command to change the size of the column that was right-clicked after the widest value.
<b>Size to widest or column name</b>	Select this command to change the size of the column that was right-clicked after the widest value or, if the column header is wider, the column header.
<b>Size all to widest</b>	Select this command to change the size of all columns after the widest respective value.
<b>Size all to widest or column name</b>	Select this command to change the size of all columns after the widest respective value or, if the column header is wider, the column header.
<b>Alignment</b>	Select this command to align the contents in the column that was right-clicked. The contents can be left aligned, centred, and right aligned.
<b>Hide</b>	Select this command to hide the column that was right-clicked. This means that the column will not appear in the list. Please refer to the <b>Columns</b> command for making columns visible again.
<b>Columns</b>	Select this command to make hidden columns visible in the list. When the command is selected, a list with the available columns appear, see example below.



Select the columns that should be visible in the list and click **OK**.

## Usage of short cut keys

Buttons and alternatives on a window can (where applicable) be invoked by shortcut keys.

WatchDog specific

- |                 |                               |
|-----------------|-------------------------------|
| <b>CTRL + F</b> | Find an item in the list.     |
| <b>CTRL + P</b> | Opens the print list screen.  |
| <b>CTRL + E</b> | Opens the export list screen. |

General shortcuts

- |                 |                              |
|-----------------|------------------------------|
| <b>CTRL + A</b> | Selects all items in a list. |
|-----------------|------------------------------|

*Chapter**3*

---

## The Alarms List

### Overview

**Introduction**

This chapter describes the analysis part of WatchDog in general and for each analyse window of the system.

**In this chapter**

This chapter is organized as follows.

---

**Topic**

---

Work With The Alarms

---

## Work With The Alarms

The alarm analysis is the main WatchDog function. This is where you decide whether a subscriber should be classified as a fraudster or not. In some cases the analysis may be delicate, and more than one analysis feature may be required to make a decision.

All analysis windows allow the user to switch to the next or previous subscriber in the alarms list, without having to go back to the original alarms list.

### The Alarms List

The **Alarms** list always appears when WatchDog is started. It looks as follows.

Alarms								
	IMSI	Updates	Severity	Alarm type	Amount	Name	First Call for Alarm	Phone N
	240300100030109	1	2	High Usage - Short Premium Rate	33.000 kr	Bob Craigin	11/10/2003 13:32:25	9010505
	240300100030109	1	5	High Usage - Short Roaming	44.000 kr	Bob Craigin	11/10/2003 13:32:25	9010505
	240300100030109	1	5	Long Duration	1.000 kr	Bob Craigin	11/10/2003 13:32:25	9010505
	666666789012345	3	3	OME Blacklist	0.000 SDR		1/5/2005 08:27:50	
	666666999912345	3	3	OME Blacklist	0.000 SDR	RASHID AKBAR	1/5/2005 08:27:50	0333214
	666666689012345	3	3	OME Blacklist	0.000 SDR		1/5/2005 08:27:50	
	240300100030109	1	2	Prepaid Internal Fraud	1.000 kr	Bob Craigin	11/10/2003 13:32:25	9010505
	412200100129131	1	1	Reminder	0.000 SDR		12/8/2004 10:25:57	
	240300100030109	1	2	Switch Audit	220.000 kr	Bob Craigin	11/10/2003 13:32:25	9010505
	240300100030109	1	4	Velocity	1.000 kr	Bob Craigin	11/10/2003 13:32:25	9010505
	<b>412200100072762</b>	<b>1</b>	<b>3</b>	<b>Visiting Roamer</b>	<b>0.000 SDR</b>		<b>8/30/2004 17:59:22</b>	
	228014118350061	2	3	Visiting Roamer	101.000 SDR		8/30/2004 07:48:14	
	412200100068725	1	3	Visiting Roamer	2.000 SDR		8/30/2004 08:30:43	
	412200100068725	5	3	Visiting Roamer	2.000 SDR		8/30/2004 08:30:43	
	412200100068725	1	3	Visiting Roamer	2.000 SDR		8/30/2004 08:30:43	
	412200100068725	1	3	Visiting Roamer	2.000 SDR		8/30/2004 08:30:43	

### Alarms view options

The alarms can be presented in two different views. Click the view icons to select view.



#### View all alarms

The alarms are presented per alarm type. There will be several rows for the subscribers that have more than one alarm. The client remembers last selected mode (View all alarms or View alarms per telephone number) used for alarm list between user sessions.



#### View alarms per telephone number

The alarms are presented per telephone number. There will be one row for each subscriber, regardless of the number of alarms.

The client remembers last selected mode (View all alarms or View alarms per telephone number) used for alarm list between user sessions.



#### Refresh alarm list

The alarms list is refreshed and any new alarms that WatchDog has generated since the list was opened is displayed.

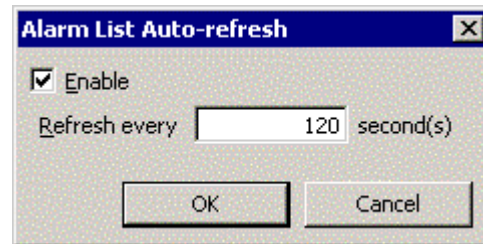


#### Set auto refresh

To set WatchDog to automatically display new alarms in the alarm list enable the auto

**refresh  
interval**

new alarms in the alarm list enable the auto refresh function by checking the enable button.



Enter in seconds how often WatchDog should update the alarms list with new alarms.

**Alarm Information – Per Single Alarm (View all alarms)**

The following columns are included in the **Alarms** list when the alarms are presented per single alarm.

<b>Subscriber ID</b>	The subscriber's IMSI (GSM) or MIN (analogue).
<b>Phone number</b>	The subscriber's telephone number.
<b>Name</b>	The name of the subscriber. "Unknown" means the name has yet not been imported from your billing system.
<b>Address</b>	The address of the subscriber. "Unknown" means the address has yet not been imported from your billing system.
<b>Activation date</b>	The subscriber's activation date in the network.
<b>Alarm type</b>	The name of the alarm triggered by the subscriber.
<b>Amount</b>	The value (local currency) of the calls included in the alarm (may be more than one call). The highest value is presented if the subscriber has triggered more than one (1) alarm, belonging to the same alarm type.
<b>Info</b>	Additional information about the generated alarm, e.g. the called number if it is a "hotlist" alarm.
<b>First alarm date</b>	The date and time when the subscriber's first alarm (for this alarm type) was generated.
<b>Update date</b>	The date and time when the subscriber's alarm was updated (if applicable).
<b>Severity</b>	The grade of importance for the alarm.
<b>User name</b>	The name of the user working with the alarm, if any.

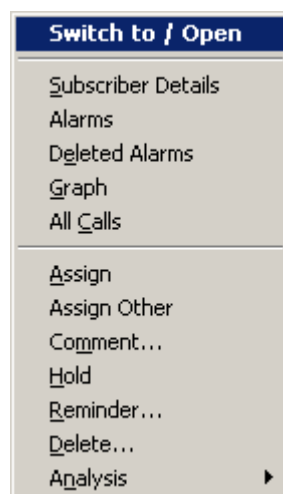
**Update count** If the same alarm has been generated several times for the same subscriber, only one alarm will appear but the number of times the alarm has been generated will however be indicated by this value.

#### Included Alarm Information – Summarized per Subscriber

The following columns are included in the alarm window when the alarms are summarised per telephone number (analogue) or IMSI (GSM).

<b>Subscriber ID</b>	The subscriber's IMSI (GSM) or MIN (analogue).
<b>Phone number</b>	The subscriber's telephone number.
<b>Name</b>	The name of the subscriber. "Unknown" means the name has yet not been imported from your billing system
<b>Address</b>	The address of the subscriber. "Unknown" means the address has yet not been imported from your billing system
<b>Act. Date</b>	The subscriber's activation date in the network.
<b>Sev. Sum</b>	The total severity for the alarms created by the subscriber (the sum).
<b>Total hits</b>	Total number of hits (may be more than one per alarm type) for all alarms created for the subscriber.
<b>Alarms</b>	The total number of alarms triggered by the subscriber.

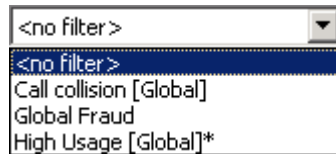
By right click in the alarm list it is possible to open a menu to access analysis screen and action commands.





## Alarm filters

It is possible to filter the alarms list to show only a subset of the alarms. The filters can be stored for future use by the user created the filter or make the filter available for all users.



All available filters are listed in the filters list box. Filters that are available for all users are named with <FilterName> [Global]. If changes have been made to a filter that is not saved, the filter name is showing an asterix sign after the filter name.

To open the **Set Alarm Filter** window, click the **Set** button. To deactivate an active filter, click **Deactivate**.

- |                                                                                     |                     |
|-------------------------------------------------------------------------------------|---------------------|
|    | New filter          |
|    | Edit filter         |
|    | Delete filter       |
|   | Save filter         |
|  | Reset filter        |
|  | Show filtered items |

When **Set** is clicked, the following window appears.

**Edit Alarm Filter**

Name:  ☒ Global

☐ ANumber

☐ Subscriber ID

☐ Subscriber Type

☐ Last update From  to

☐ Severity From  to

☐ Updates From  to

☒ Amount From  to

☐ Act. Date From  to

☐ User

☐ Alarmstatus

☒ Alarmtype

On this window it is possible to decide exactly which alarms to show, based on any of the included filters. The filters can be used in combination with each other.

Note! It is not possible to set any of the parameters until the specific filter has been activated (the “on” checkbox to the left has to be selected).


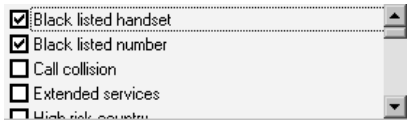
You can only set the filters that belong to columns that are shown in the alarm window in the current view (not all columns are shown in both display modes – “all alarms” and “alarms summarised per subscriber”).

The following parameters can be set.

- Name** The name of the filter that will be visible in the filter dropdown list.
- Global** The global option sets if the filter is available only for the user created it or for all users that access the system. By checking the Global checkbox the filter is available for everyone.

**A number** Enter the telephone number you want to include in the alarm list.

**Subscriber** Enter the subscriber ID (IMSI) you want to

<b>ID</b>	include in the alarm list.
<b>Subscriber type</b>	Allows to only display alarms from certain subscriber types, the values can either be selected from the list or written in the text box. 
<b>Last update</b>	Enter the first (starting) and last (end) date of the alarms you want to have included in the alarm list.
<b>Severity</b>	Choose the first (lowest) and the last (highest) of the severity levels you want to display. (Only active when the All alarms view is set.)
<b>Updates</b>	Most subscribers have different number of hits (one alarm may have more than one hit) in the alarm list. Enter the first (minimum) and last (maximum) number of hits you want to be included in the alarm list. (Only active when the Alarms per Telephone number option are set.)
<b>Amount</b>	Select the minimum and the maximum amount to display from the alarm list.
<b>Act. Date</b>	Select the activation date for the subscribers to be visible in the alarm list.
<b>User</b>	Choose a specific user to display only the alarms assigned to him or her.
<b>Alarm status</b>	Choose the alarm status to display only alarms with the corresponding alarm status. One or more items can be selected from the list.
<b>Alarm type</b>	Choose the alarms you want to display. One or more items can be selected from the list. 
<b>OK</b>	Activates the chosen alarm filters.
<b>Cancel</b>	Ignore any changes
<b>Clear</b>	Clears all settings in the edit filter screen.

### Number of alarms in list

On the top of the **Alarm** window it is possible to see how many alarms there are in the system in total, and also how many alarms that are displayed on the alarm window (after filtering, sorting, etc.).

This part of the window looks as follows.



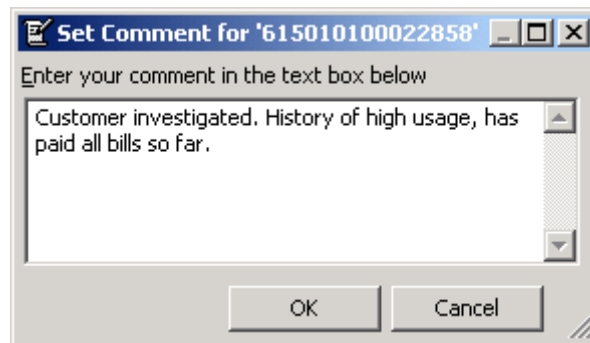
In the example, the **Alarms** list currently displays 7 alarms of the 12 alarms that exist in the database.

### Setting a subscriber comment

Sometimes it can be useful to make notes about a certain subscriber. In the **Set Comment** dialog box, comments can be connected to an IMSI number. Comments set here will appear in the **Log** section of the **Subscriber Info** window and can work as a reminder when the subscriber appears in the alarms list.

To make a comment about a subscriber, follow these steps:

1. Select a subscriber in the **Alarms** list.
2. On the **Action** menu, click **Comment...** and this dialog box appears.



3. Type the comment.
4. Click **OK**.

*Chapter**3*

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**Alarm Analysis****Overview****Introduction**

This chapter describes how to analyse the alarms that are generated by WatchDog, i.e. how to find the most important alarms and then how to decide whether each alarm should give rise to any kind of action. First this manual suggests a strategy for how to find the most important alarm. The following sections describe the commands in the Analysis menu.

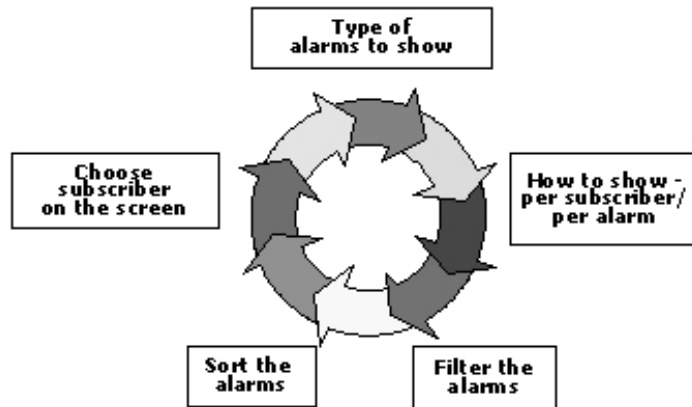
**In this chapter**

This chapter is organized as follows.

<b>Topic</b>
An Analysis Workflow
Case details
Alarms
Old alarms
Profiling
All Calls
List Analysis
Tumbling Subscriber
Tumbling Handset
Call Collision
Velocity
EIR Analysis
Cloning Profiling
Known Pattern Profiling

## An Analysis Workflow

It is important to find an efficient method to select which alarms to work with without missing the most severe cases. The picture below describes a workflow that can be used in the fraud analysis work.



Follow the steps below. Details about how to perform each step, and which tools that can be used, are described in other parts of this manual.

### Select which type of alarms to analyze

- Active alarms
- Alarms on hold
- Alarms on reminder
- All alarms
- Roaming alarms

### Choose how you want to view the alarms

- All alarms
- Alarms per telephone number

### Filter the alarms

Apply a filter if you only want to analyse a subset of the alarms. Filter e.g. on alarm type, alarm status, and alarm dates.

### Sort the alarms

Use the list sorting functionality to find the most severe alarms, e.g. in terms of amount, update count, or severity level.

### Select subscriber

Now your list of potential fraudsters is created and it is time to analyse. Select a subscriber.

### Get more information

Use the analysis tools to support your final decision about each alarm.

## Case details

When an alarm has been selected, the next step normally is to view the additional information about the subscriber. The subscriber information appears either when double-clicking an alarm or clicking the **Case details** icon on the tool bar. The following information is available.

### Subscriber Info

This information is provided from an external source, such as the billing system. The content of this area varies from installation to installation since this is a flexible area, which presents the information that each operator has provided. Examples of useful information may be name, address, age, customer category, payment status, and account balance.





The **Subscriber Info** area is accessed either by double-clicking an alarm or clicking the **Case details** icon on the tool bar.

The **Subscriber Info** area looks as follows. Please note that the appearance varies between different installations of WatchDog, depending on the information that each operator provides.

Subscriber Info	
Name	Value
Subscriber ID	615010100020309
Phone Number	9040454
Handset ID	
Company	YENTOUMI
Name	YENTOUMI
Address	
Zipcode	
City	
Country	Togo
Account ID	Y0000001
Subscriber Type ID	PRV
Tariff Plan	PRV
Services	PRV
Activation Date	1/27/2002
Bill Cycle	CYC1

### Subscriber Log

The **Log** area presents historical information about the subscriber in respect of actions that have been taken. The subscriber log may look as follows.

Log			
	Date	Name	User
	8/18/2004 16:24:08	Comment	Ludvig
	8/17/2004 16:13:41	Deleted Not Fraud	グヌー
	8/17/2004 16:10:18	Deleted Fraud	グヌー
	8/17/2004 16:10:05	Assigned	グヌー

Examples of information that is included in this log are actions, such as assignments and deletions of previous alarms. Also comments can be made that will appear here.

## Usage statistics

The usage statistics is aggregated information that assists the analyst to get the whole picture of the subscribers calling behaviour.

The information shown is based on amount, number of calls and duration of calls.

The usage stats window looks like this:

Usage Statistics	
Name	Value
Amount Total	521.00
Amount / Day	43.42
Calls Total	42.00
Calls / Day	3.50
Duration Total	360.00
Duration / Day	30.00
Days of Calls	12.00
Last Call	10/22/2003 10:06:11

- Amount Total**      The total amount displays the total amount the subscriber called for from now and the number of days back specified in Days of Calls.
- Amount / Day**      The amount / day displays the total amount the subscriber called for divided per number of days from now and the number of days back specified in Days of Calls.
- Calls Total**      The total calls displays the total number of calls the subscriber done for from now and the number of days back specified in Days of Calls.
- Calls / Day**      The calls / day displays the total number of calls the subscriber called for divided per number of days from now and the number of days back specified in Days of Calls.
- Duration Total**      The total duration displays the total duration the subscriber called for from now and the



the subscriber called for from now and the number of days back specified in Days of Calls.

<b>Duration / Day</b>	The duration / day displays the total duration the subscriber called for divided per number of days from now and the number of days back specified in Days of Calls.
<b>Days of Calls</b>	The days of call show on how many days the usage statistics is based on.
<b>Last call</b>	Last call shows date and time when the last call was made; this is updated for each call. If the subscriber has not made any calls in 4 hours, the information is automatically updated to avoid misleading statistics.

## Multipliers

This area presents the multiplier settings for the current subscriber. Please refer to the WatchDog – Administrator Manual for more information about the multiplier functionality.

Multipliers		
Call Type	Multiplier	Info
Fixed net	1.0	Default
International	1.0	Default
Local	1.0	Default
Long Distance	1.0	Default
Premium rate	1.0	Default
Roaming	1.0	Default

The following information is available.

<b>Call type</b>	The type of call the current multiplier applies to.						
<b>Multiplier</b>	The current multiplier setting for the subscriber and call type.						
<b>Info</b>	Information about the update status of the settings item. Possible values are: <table> <tr> <td><b>Default</b></td><td>The system default multiplier is used.</td></tr> <tr> <td><b>Type</b></td><td>The multiplier is set for the current subscriber's subscriber type.</td></tr> <tr> <td><b>User</b></td><td>The multiplier is set specifically for the current subscriber.</td></tr> </table>	<b>Default</b>	The system default multiplier is used.	<b>Type</b>	The multiplier is set for the current subscriber's subscriber type.	<b>User</b>	The multiplier is set specifically for the current subscriber.
<b>Default</b>	The system default multiplier is used.						
<b>Type</b>	The multiplier is set for the current subscriber's subscriber type.						
<b>User</b>	The multiplier is set specifically for the current subscriber.						

To change a value, double-click the item and the following dialog box appears.



Click **Reset** to change the multiplier to the system default value or set a value and click **OK**.

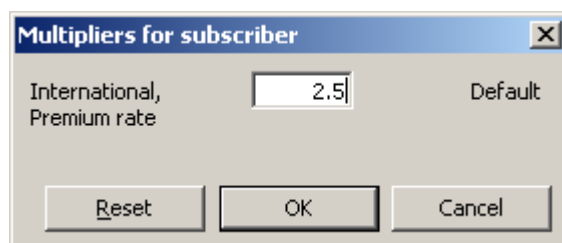
Click the suggest button to allow WatchDog to calculate an appropriate multiplier for the subscriber. WatchDog is using the subscribers calling behaviour in relation to the high usage threshold setting to perform the calculation.

### Change more then one multiplier

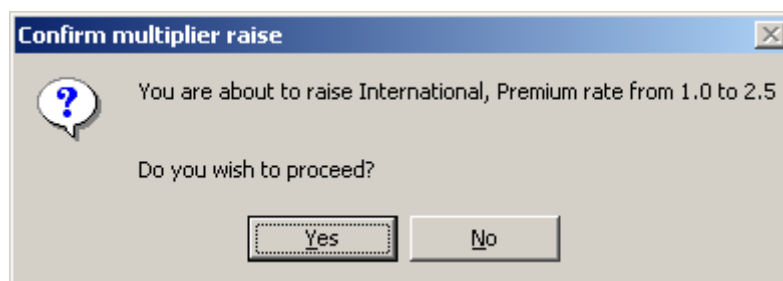
To change more then one multiplier at once, select two or more from the list and press the enter button on the keyboard.

Multipliers			
CallType	Value	State	Modified by
Fixed net	1	Default	<none>
GPRS	1	Default	<none>
International	1	Default	<none>
Local	1	Default	<none>
Long Distance	1	Default	<none>
Premium rate	1	Default	<none>
Roaming	1	Default	<none>

After the Enter button is pressed the change multipliers screen appears, where the multiplier can be set.



After the change has been made, a confirmation screen is displayed. Press Yes to commit the multiplier change.



## Alarms

This area presents all alarms that are active for the current subscriber.

Alarms					
AlarmType	HitCount	Amount	Severity	Created	Updated
Call Collision	1	0	3	12/27/2002 15:59:12	12/27/2002 16:04:33

The following information is available.

<b>Alarm type</b>	The type of alarm the item applies to.
<b>HitCount</b>	The number of times the alarm threshold has been exceeded since the alarm was first generated.
<b>Amount</b>	The total value of the calls that have cused the alarm. This value is relevant only for alarms that are based on quantitative thresholds.
<b>Severity</b>	The grade of importance for this type of alarm.
<b>Created</b>	The date and the time when the alarm was first created.
<b>Updated</b>	The date and the time when the alarm was last updated.

This view provides shortcuts to the alarms analysis tools when applicable. Double-click the alarm items to access these tools.

## The Analysis Menu

The **Analysis** menu includes a number of commands to get more information in general or about specific alarms.

Case Details
Alarms
Old Alarms
Profiling
All Calls
List Analysis
Tumbling Subscriber
Tumbling Handset
Call Collision
Velocity
International Velocity
Same Number
EIR Analysis
Prepaid Voucher Analysis
Cloning Profiling
Known Pattern Profiling

The following analysis commands are available.

<b>Case details</b>	This command presents the subscriber information.
<b>Alarms</b>	A presentation of all alarms triggered by the subscriber, and yet not deleted by any

	user.
<b>Old alarms</b>	Includes all alarms triggered by one subscriber, which has been deleted by a WatchDog user.
<b>Profiling</b>	This window includes a Profiling that shows the subscriber's calling behaviour. The information can be presented either as a monetary value (your local currency), time (minutes), or call count (number of calls).
<b>All calls</b>	Includes detailed information about every single call made (and in most cases also "received") by the subscriber.
<b>List analysis</b>	This command provides information about the black lists and the hot lists.
<b>Tumbling subscriber</b>	Includes analysis information about one specific handset that has been used by more than one subscription.
<b>Tumbling handset</b>	Includes analysis information about the handsets used by one specific subscriber.
<b>Call collision</b>	Includes detailed information about calls from one subscriber that have "collided" during calling. Call collision is a good indication of cloning.
<b>Velocity</b>	Includes analysis information about the physical speed that a subscriber must have had to be able to make telephone calls at different locations. Extremely high speed is an indication of cloning.
<b>Same number</b>	This command provides more information about the Same Called Number alarm.
<b>EIR analysis</b>	Can only be used for GSM operators having an Equipment Identity Register (EIR). This window presents subscribers that have tried to make phone calls on handsets that are blacklisted in the EIR, and also subscribers that have made phone calls on grey listed handsets.
<b>Cloning profiling</b>	This window compares a subscriber's calling profile with the subscriber's old calling profile. A mismatch is a strong indication on cloning (the subscriber's calling pattern has changed dramatically).
<b>Known pattern profiling</b>	This window compares the subscriber's calling pattern with the calling patterns of fraudsters already found in WatchDog. A

match strongly indicates that a known fraudster is re-appearing in the network.

All analysis commands are described in detail in the following sections. Please note that some of the Analysis commands also are available as icons on the tool bar. A third way to access the analysis tools is to right-click in the **Alarms** list and select the **Analysis** command.

## Alarms

The **Alarms** list lists all active alarms for the current subscriber. The list looks as follows.

Seve...	Alarm type	IMSI	Name ▾	Amount
	3 International Call Collision	240074180000924	WATTE-RA, ...	0.00 kr
	3 Call Collision	240074180000924	WATTE-RA, ...	0.00 kr
	4 High Usage - Short All	240074290013425	Sandra Best	123.00 kr
	3 High Usage - Short All	240074290013426	Peter Smith	214.00 kr
	3 International Call Collision	240071000186760	<unknown>	0.00 kr

The following information is available for each alarm.

<b>Alarm type</b>	The type of alarm the item applies to.
<b>HitCount</b>	The number of times the alarm threshold has been exceeded since the alarm was first generated.
<b>Amount</b>	The total value of the calls that have cused the alarm. This value is relevant only for alarms that are based on quantitative thresholds.
<b>Severity</b>	The grade of importance for this type of alarm.
<b>Created</b>	The date and the time when the alarm was first created.

## Old alarms

The **Old Alarms** list lists all previous alarms for the current subscriber, i.e. alarms that have been deleted. This window looks as follows.

Old Alarms for Subscriber '240070000049929'									
AlarmType	Amount	Created	Updated	Severity	UserName	Updates	AlarmStatus	DeleteDate	DeleteReason
No records found									

The following information is available for each alarm.

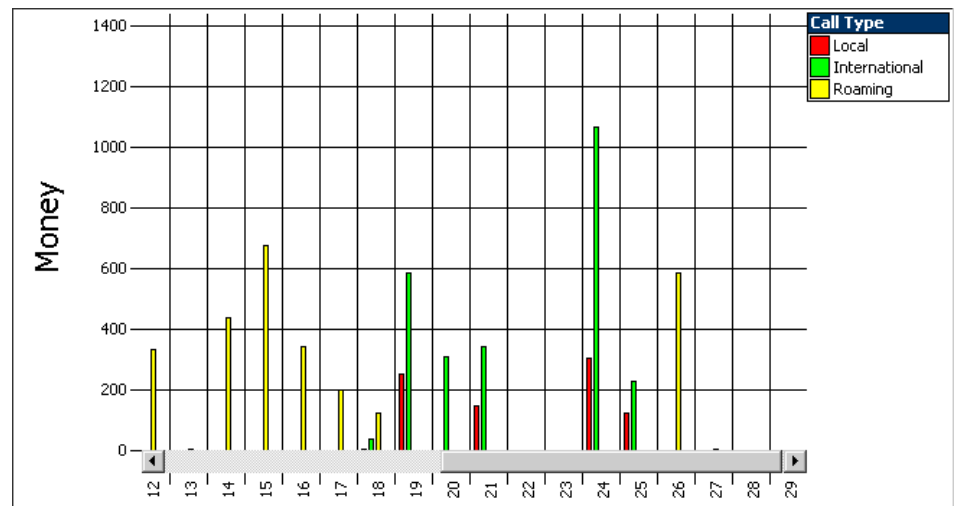
<b>Alarm type</b>	The type of alarm the item applies to.
<b>Amount</b>	The total value of the calls that have caused the alarm. This value is relevant only for alarms that

are based on quantitative thresholds.

<b>Created</b>	The date and the time when the alarm was first created.
<b>Updated</b>	The date and the time when the alarm was last updated.
<b>Severity</b>	The grade of importance for this type of alarm.
<b>User name</b>	The user who latest updated the alarm.
<b>Updates</b>	The number of times the alarm threshold has been exceeded since the alarm was first generated.
<b>Alarm status</b>	The status of the alarm, e.g. Open or Assigned.
<b>Delete date</b>	The date when the alarm was deleted.
<b>Reason</b>	The reason why the alarm was deleted. Possible values are Fraud and Not fraud.
<b>Delete reason</b>	The comment that was made when the alarm was deleted.

## Profiling

This command allows the user to view the alarms for a specific subscriber graphically. This may be a helpful tool to see how the calls are spread over time. Below is an example of an alarms graph.






### Profiling options



There are a number of ways to view the alarms in the graph. The different options are selected in the graph tool bars. They are all described in the following sections. The graph options are saved between a user sessions.

### Time periods

The alarms can be presented based on the following time units.

-  **Weeks** The units in the graph are weeks, i.e. each bar indicates the call amount for one week.
-  **Days** The units in the graph are days, i.e. each bar indicates the call amount for one day.
-  **Hours** The units in the graph are hours, i.e. each bar indicates the call amount for one hour.

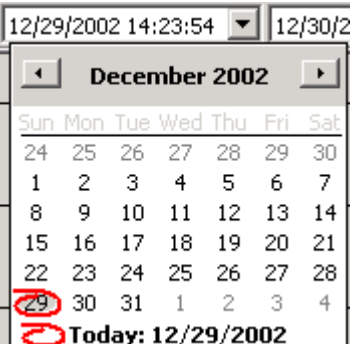
If the graph is presented per hours, it is possible to switch day by using the arrows on the tool bar.

-  Present the calls for the next day.
-  Present the calls for the previous day.

The time period is set in the time period fields. They look as follows.






The time period can be entered either by typing the appropriate values in the date fields or by selecting a date from the calendar. The calendar is accessed by clicking the arrows to the right in each date text box.










### Quantitative units

The alarms can be presented based on the following quantitative units.

-  **Time** The graph information represents the total duration of the calls.
-  **Money** The graph information represents the total value of the calls.
-  **Call count** The graph information represents the total number of calls.

### Call types

The alarms can be presented based on the following call type units. The graph can include one or several call types. Click the call type icons to select or deselect each call type.


	<b>Green</b>	International calls
	<b>Red</b>	Local calls
	<b>Blue</b>	Long distance calls
	<b>Magenta</b>	Premium rate calls
	<b>Yellow</b>	Roaming calls
	<b>Turquoise</b>	Fixed line calls
		All call types

### Lock call type selection

 Click this icon to lock the call type selection.


### Aggregation

The calls can be viewed either as single values per time criteria or aggregated over time.

 Click this icon to present the calls in an aggregated format.

### Update the graph

If any of the graph criteria has been changed, the graph has to be updated.

 Click this icon to update the graph.

### SDR conversion

This option allows converting the local money into SDRs, the SDR rate used is the one specified in roaming partner settings.


 Click this icon to convert local money to SDR.

## All calls

One of the most important information sources in the alarms analysis is the **All calls** list. This view lists all calls a subscriber has made during the last period of time as decided by the system settings. The typical time period is 30 days.

The **All calls** list looks as follows.

Call Data										Selected Row	
Call Type	A Hand...	A Number	B Nu...	Coun...	Start of Call	D...	Amount	ServicesIn		Name	Value
Premium rate	11111111	041319208	222222	Sweden	12/4/2003 14:10:37	6:23	0.060 kr	MobilNet		Call Type	Premium rate
Premium rate	11111111	041319208	222222	Sweden	12/4/2003 14:08:45	6:23	0.800 kr	MobilNet		A Handset	11111111
Premium rate	11111111	041319208	222222	Sweden	12/4/2003 14:13:47	6:24	0.800 kr	MobilNet		A Number	041319208
Premium rate	11111111	041319208	222222	Sweden	12/4/2003 15:31:38	6:25	0.410 kr	sms.telitas		B Number	222222
Premium rate	11111111	041319208	222222	Sweden	12/4/2003 15:30:45	6:25	0.030 kr	sms.telitas		Country	Sweden
Premium rate	11111111	041319208	222222	Sweden	12/4/2003 15:29:23	6:25	0.030 kr	sms.telitas		C Number	
Premium rate	11111111	041319208	222222	Sweden	12/4/2003 15:27:42	6:25	0.410 kr	sms.telitas		Classification	edr
Premium rate	11111111	041319208	222222	Sweden	12/5/2003 07:56:16	6:28	0.800 kr	WapOnline		Start of Call	12/4/2003 14:10:37
Premium rate	11111111	041319208	222222	Sweden	12/8/2003 13:57:34	7:20	0.410 kr	Eurobate:1		Duration	6:23
										Amount	0.060 kr
										Volume 1	

The left pane includes a list of all the calls and by pressing the  button located to the right top of the Call Data list, it is possible to hide and show the selective row pane.



The following information is available in the list.


<b>Call type</b>	Call type for the list item, such as local, long distance, international, roaming, or premium rate.																
<b>A Handset</b>	The subscriber's handset ID, i.e. IMEI in GSM networks and ESN in analogue networks.																
<b>A Number</b>	The subscriber's telephone number.																
<b>B Number</b>	The called telephone number.																
<b>Country</b>	The called country (international calls only).																
<b>C number</b>	The called number in case the list item concerns e.g. a three-party call or call forwarding.																
<b>Classification</b>	Detailed description of the call. Examples of values are: <table> <tr> <td><b>In</b></td><td>Incoming call.</td></tr> <tr> <td><b>Out</b></td><td>Outgoing call.</td></tr> <tr> <td><b>SMS</b></td><td>SMS call.</td></tr> <tr> <td><b>PP</b></td><td>Prepaid call.</td></tr> <tr> <td><b>R</b></td><td>Roaming all.</td></tr> <tr> <td><b>VM</b></td><td>Call to voice mail.</td></tr> <tr> <td><b>CF</b></td><td>Call forwarding.</td></tr> <tr> <td><b>CW</b></td><td>Call waiting.</td></tr> </table>	<b>In</b>	Incoming call.	<b>Out</b>	Outgoing call.	<b>SMS</b>	SMS call.	<b>PP</b>	Prepaid call.	<b>R</b>	Roaming all.	<b>VM</b>	Call to voice mail.	<b>CF</b>	Call forwarding.	<b>CW</b>	Call waiting.
<b>In</b>	Incoming call.																
<b>Out</b>	Outgoing call.																
<b>SMS</b>	SMS call.																
<b>PP</b>	Prepaid call.																
<b>R</b>	Roaming all.																
<b>VM</b>	Call to voice mail.																
<b>CF</b>	Call forwarding.																
<b>CW</b>	Call waiting.																
<b>Start of call</b>	Date and time when the call started.																
<b>Duration</b>	The length of the call (hours, minutes, and seconds).																
<b>Amount</b>	The value of the call (in local currency).																
<b>Org site</b>	The cell where the call started (originated).																
<b>Term site</b>	The cell where the call ended (terminated).																
<b>Incoming route</b>	The trunc group for an incoming call.																
<b>Outgoing route</b>	The trunc group for an outgoing call.																
<b>Exchange ID</b>	The ID of the switch that handled the call.																
<b>Misc 1</b>	Additional field for operator specific information.																
<b>Misc 2</b>	Additional field for operator specific information.																
<b>Misc 3</b>	Additional field for operator specific information.																

## Selective Row

The selected row list displays all the information of the selected call in all calls in vertical list.

Selected Row	
Name	Value
Call Type	Premium rate
A Handset	11111111
A Number	041319208
B Number	222222
Country	Sweden
C Number	
Classification	edr
Start of Call	12/4/2003 14:10:37
Duration	6:23
Amount	0.060 kr
Volume 1	

### Source file information

By pressing the button  in the title bar of the selected row it is possible to hide and show the source file information. The source file information contains the following information.

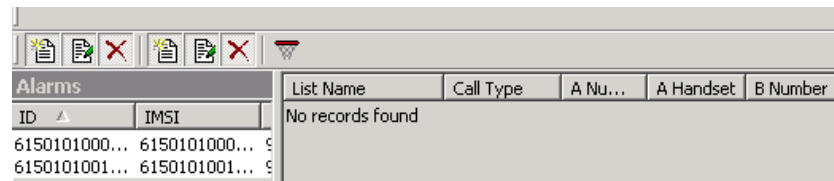
File ID	2
File Name	20030904_AKOM...
File Date	8/9/2004 14:54:58
File Size	1494
File Start	8/9/2004 14:48:14
File End	8/9/2004 14:48:15
File Records	7
File Recs/Sec	225
File Errors	0

- File ID** The unique file id of the file from where the Call is coming from.
- File Name** The name of the file.
- File Date** The date of the file.
- File Size** The size of the file.
- File Start** Date and time when WatchDog started reading the file.
- File End** Date and time when WatchDog finished reading the file
- File Records** The number of records in the file.
- File Recs/Sec** The number of records/second, which the file was inserted into the database.
- File Errors** Display any error that has been generated.

## List analysis

The **List analysis** command is used to get more information about subscribers that have alarms due to the settings in the hot lists and black lists.

All information is presented in one list. This list looks as follows.



ID	IMSI	List Name	Call Type	A Nu...	A Handset	B Number
6150101000...	6150101000...					
6150101001...	6150101001...					
No records found						

### Selection criteria

The list presents information from six different sources. There is a tool bar that can be used to filter the list for a better view. Click the icons for the information that should be presented.



Hotlisted numbers



Hotlisted handsets



Blacklisted numbers



Blacklisted handsets

### List contents

The following information is available.

**List name** This field indicates which list that has generated the alarm.

**Call type** Detailed description of the call. Examples of values are:

**In** Incoming call.

**Out** Outgoing call.

**SMS** SMS call.

**PP** Prepaid call.

**R** Roaming all.

**VM** Call to voice mail.

**CF** Call forwarding.

**CW** Call waiting.

**A Number** The subscriber's telephone number.

**A Handset** The subscriber's handset ID, i.e. IMEI in GSM networks and ESN in analogue networks.

**B Number** The called telephone number.

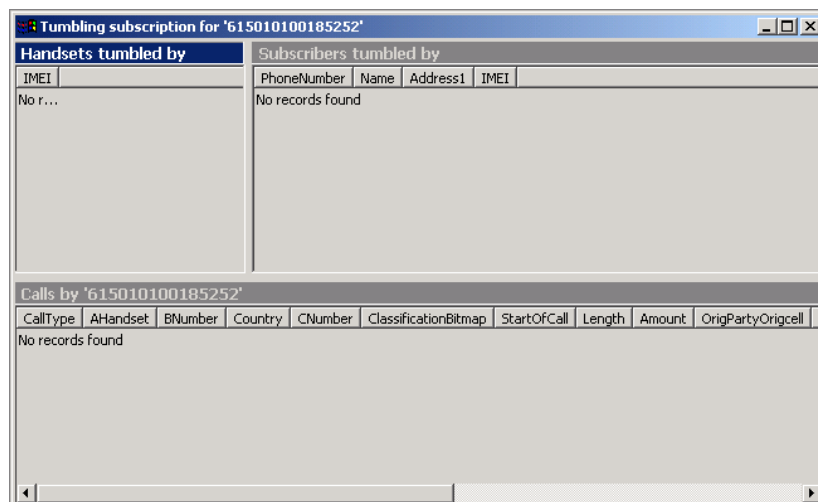
**Country** The called country (international calls only).

<b>C Number</b>	The called number in case the list item concerns e.g. a three-party call or call forwarding.
<b>Start of call</b>	Date and time when the call started.
<b>Duration</b>	The length of the call (hours, minutes, and seconds).
<b>Amount</b>	The value of the call (in local currency).
<b>Company</b>	If the call is made in another network or country, the name of the used operator is indicated here.
<b>Org site</b>	The cell where the call started (originated).
<b>Term site</b>	The cell where the call ended (terminated).

## Tumbling subscriber

The **Tumbling subscriber** analysis command is used to get more information about subscribers that have alarms due to subscription tumbling. Examples of this information are which subscriptions that have used a handset and the calls that have been made.

The **Tumbling subscription** window looks as follows.



This window includes the following information.

### Handsets tumbled by

This area lists the handsets that have been used by the subscriber.

**IMEI** The handset ID. In analogue networks, this field contains the ESN.

### Subscribers tumbled by

This area lists the subscribers that have used each handset in the handset list. Click a handset to update this list.

<b>Phone number</b>	The subscriber's phone number.
<b>Name</b>	The subscriber's name.
<b>Address</b>	The subscriber's address.
<b>IMEI</b>	The subscriber's subscriber ID.

### **Calls**

This area lists all calls that have been made by the subscriber. The following information is available.

<b>Call type</b>	The type of call, e.g. SMS, Out.
<b>A Handset</b>	The subscriber's handset ID (IMEI).
<b>B Number</b>	The called telephone number.
<b>Country</b>	The called country (international calls only).
<b>C Number</b>	The called number in case the list item concerns e.g. a three-party call or call forwarding.
<b>Start of call</b>	The date and time when the call was made.
<b>Length</b>	The length (duration) of the call.
<b>Amount</b>	The value of the call.

## **Tumbling handset**

The **Tumbling handset** analysis command is used to get more information about subscribers that have alarms due to handset tumbling. Examples of this information are which handsets that have been used and the calls that have been made.

The **Tumbling handset** window looks as follows.

Tumbling handset for '615010100185232'

Handsets tumbled by '615010100185232'

A Number	Handset	Tumblings	Duration	Amount	
		8	3:50	0 CFA	
9144022		83	7:57:17	485,646.67 CFA	

Calls by '615010100185232'

Handset	Called Number	Start of Call	Duration	Orig Cell	Term Cell	
	9020978	12/27/2002 16:07:18	19			
	33624014030	12/27/2002 16:17:03	15			
	33624014030	12/27/2002 16:17:26	8			
	33624014030	12/27/2002 16:17:53	7			
	33624014030	12/27/2002 16:24:27	38			
	96331427946	12/27/2002 16:25:41	3			
	33624014030	12/27/2002 16:31:49	35			
	96331429860	12/27/2002 16:33:04	40:32			
	9014153	12/27/2002 17:13:58	14			
	33624014030	12/27/2002 17:15:50	21			
	9613715681	12/27/2002 17:18:02	10:53			
	9014153	12/27/2002 17:31:03	57			
	9031919	12/27/2002 17:33:00	1:14			
	9031919	12/27/2002 17:34:48	19			
	96352436298	12/27/2002 17:38:32	1:51			

This window includes the following information.

#### Handsets tumbled by

This area lists the handsets that have been used by the subscriber.

<b>A Number</b>	The subscriber's phone number.
<b>Handset</b>	The handset ID. In analogue networks, this field contains the ESN.
<b>Tumblings</b>	The number of calls with the current combination of A number and handset ID.
<b>Duration</b>	The total duration of the calls with the current combination of A number and handset ID.
<b>Amount</b>	The total value of the calls with the current combination of A number and handset ID.

#### Calls

This area lists all calls that have been made by the subscriber. The following information is available.

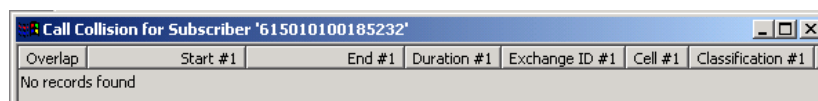
<b>Handset</b>	The handset that has been used (IMEI).
<b>Called number</b>	The number that has been called.
<b>Start of call</b>	The date and time when the call was made.

<b>Duration</b>	The duration of the call.
<b>Orig cell</b>	The cell site where the call started.
<b>Term cell</b>	The cell site where the call ended.

## Call collision

The **Call collision** analysis command is used to get more information about call collision alarms. Examples of this information are which calls that have caused the collision and when and from where they have been made.

The **Call collision** window looks as follows.



Overlap	Start #1	End #1	Duration #1	Exchange ID #1	Cell #1	Classification #1
No records found						

The following information is available.

<b>Overlap</b>	The time span during which the two calls have been going on simultaneously.
<b>Start #1</b>	The date and time when the first call started.
<b>End #1</b>	The date and time when the first call ended.
<b>Duration #1</b>	The duration of the first call.
<b>Exchange ID #1</b>	The switch that handled the first call.
<b>Cell #1</b>	The cell site where the first call was made.
<b>Classification #1</b>	The type of the first call, e.g. outgoing international.

The corresponding information is indicated for the other call.

## Velocity

The **Velocity** analysis command is used to get more information about velocity alarms. Examples of this information are which calls that have caused the alarm and when and from where they have been made.

The **Velocity** window looks as follows.

IMSI	Cell 1	Start1	Cell 2	Start2	Duration	Distance	Velocity	Limit
615010100166027	Seminaire2	2003-04-06 03:37:43	Patriks testsite	2003-04-06 03:44:45	7:01	2 343.6	20 040.32	950
615010100166027	Seminaire2	2003-04-06 03:44:27	Patriks testsite	2003-04-06 03:44:45	5	2 343.6	1 687 395.23	950
615010100166027	Seminaire2	2003-04-06 03:45:18	Patriks testsite	2003-04-06 03:44:45	45	2 343.6	187 488.36	950

This window includes the following information.

<b>IMSI</b>	The ID of the subscription that has generated the alarm.
<b>Cell 1</b>	The cell site where the first call started.

<b>Start 1</b>	Date and time when the first call started.
<b>Cell 2</b>	The cell site where the second call started.
<b>Start 2</b>	Date and time when the second call started.
<b>Duration</b>	The difference in time between the two calls.
<b>Distance</b>	The distance between the cell sites where the two calls have been made.
<b>Velocity</b>	The speed required to move the distance indicated in <b>Distance</b> within the time indicated in <b>Duration</b> .
<b>Limit</b>	The maximum speed allowed according to the alarm settings.

## Prepaid vouchers

The **Prepaid voucher** screen is used to display charges done to a prepaid account and to make the analysis process easier for the user. The information displayed is collected from the voucher files delivered to Watchdog.

The **Prepaid voucher** window looks as follows:

Voucher Number	Load Time	Amount	Charged Amount
13245	2003-09-03 12:15:22	48 kr	25 kr
13648	2003-09-04 14:35:21	98 kr	50 kr

The window lists all charges a subscriber has done to its prepaid account. The following information is available:

<b>Voucher number</b>	The ID of the actual voucher payment.
<b>Load time</b>	The date and time when the voucher charged was performed.
<b>Amount</b>	The amount on the prepaid account after it was charged.
<b>Charge amount</b>	The amount of the prepaid voucher.

## EIR analysis

The **EIR** analysis command is used to get more information about call attempts made with barred handsets. Please note that



this is not an alarm generated based on CDR:s. The information is collected from OME files.

The **EIR Analysis** window looks as follows.

EIR Analysis for '240071010178786'

Call (attempts) by subscriber '240071010178786'

Handset	Phonenumber	Exchange Name	ExchangeID	Time	List
123456789012345	9010707	MSC1	A001	4/1/2003 13:21:20	Black

Usage for selected handset

Subscriber	Phonenumber	Exchange Name	ExchangeID	T	List
No records found					

This window lists the handsets in the EIR that has been involved in call attempts. The following information is available.

#### Call attempts by subscriber

This area lists the listed handsets that have been used by the current subscriber.

<b>Handset</b>	The ID of the handset that has been used.
<b>Phone number</b>	The phone number that has been used.
<b>Exchange name</b>	The name of the switch that has recorded the call attempt.
<b>Switch ID</b>	The ID of the switch that has recorded the call attempt.
<b>Time</b>	The date and time of the call attempt.
<b>List</b>	Indicates if the handset has been included in the black or grey list.

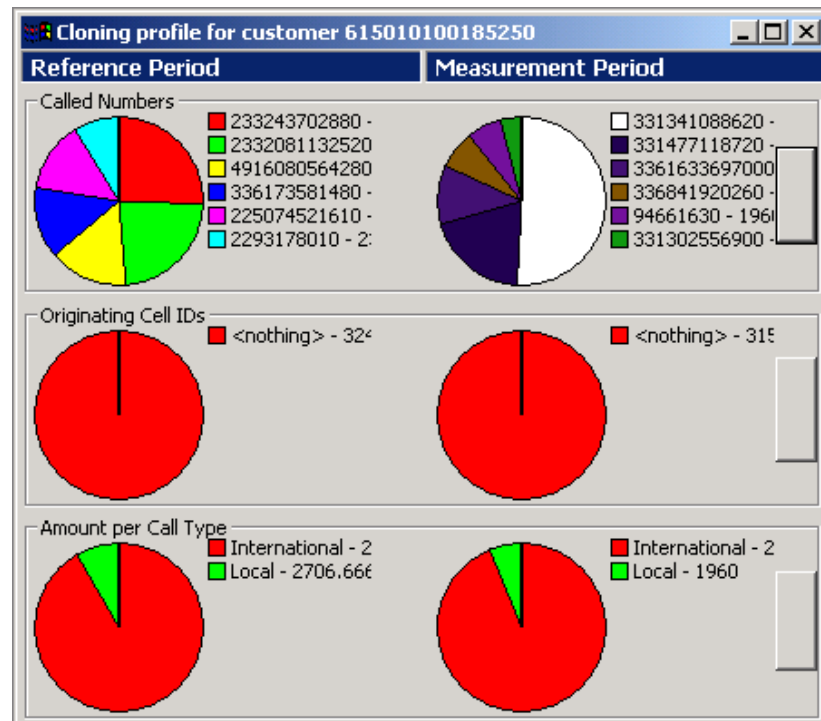
#### Usage for selected handset

This area lists the calls that have been made with each handset. Click a handset to update this list.

<b>Subscriber</b>	The ID of the subscriber that has used the handset.
<b>Phone number</b>	The phone number that has been used.
<b>Exchange name</b>	The name of the switch that has recorded the call attempt.
<b>Exchange ID</b>	The ID of the switch that has recorded the call attempt.
<b>Time</b>	The date and time of the call attempt.
<b>List</b>	Indicates if the handset has been included in the black or grey list.

## Cloning profiling

The **Cloning profile for customer** window shows a subscriber's calling pattern during the last number of days, and compares it with the preceding days.



This window includes the following information.

<b>Reference period</b>	Information about the “normal” calling pattern for the specific subscriber (in the example above during 25 days).
<b>Measurement period</b>	Call information regarding the last period (in the example above during the last 3 days).
<b>Called numbers</b>	Called numbers including the amount per number.
<b>Originating cell IDs</b>	The cell IDs that have been used, including the cell site IDs and the called amount per cell site.
<b>Amount per call type</b>	The type of calls that have been made, including the name of the call types and the called amount per call type.
<b>List</b>	A written list of the information in the pie charts.
<b>Reference</b>	The number of days to include in the reference period (the old calls).
<b>Measurement</b>	The number of days to include in the measurement period (last days of

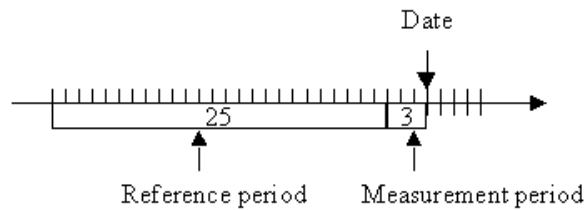
calling).

**Date**

The last day in the calculation.

**Update**

Updates the pie charts, using the date and number of days you have entered into the text fields described above.



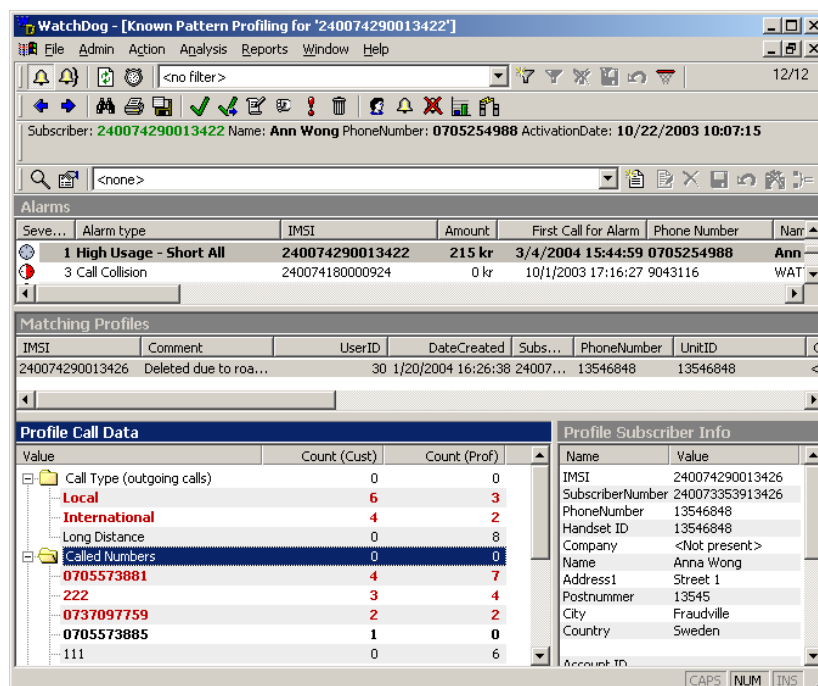
## Known pattern profiling

When an alarm is deleted and the status is set to a reason that is configured for storing subscriber profiles i.e. Fraud, WatchDog saves the most subscriber information and usage for example phone numbers and cell sites. This information serves as a “fingerprint” for the subscriber. A fraudster will most probably return to the network and the **Known Pattern Profiling** tool is intended to detect this. When the fraudster returns, he may have a new identity but the behaviour will be the same. If a subscriber’s calling pattern matches the pattern of a known fraudster, it is likely we are dealing with the same person and hence we want to find and disconnect this person as soon as possible.

Default settings for this tool are made via the **Known Pattern Profiling screen** and the Properties window. These settings include the amount of information that should be stored for each fraudster and criteria for what should be considered as a match.

The **Known Pattern Profiling screen** also allows comparing the internal list of known fraudsters in WatchDog with an external data source. This allows for detecting suspicious subscribers from other systems than WatchDog.

The **Known Pattern Profiling** window looks as follows.

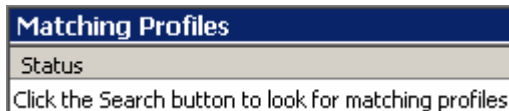


This window includes the following information.

### Search



When opening the Known Pattern profiling screen the Matching profiles, Profile Call Data and Profile Subscriber Info is empty.



When pressing the Search button WatchDog compares the currently selected subscriber in the alarms list and displays all matching profiles in the Matching profiles list. If no match can be done “No records found is displayed in the list.



### Matching profiles

After pressing the search button WatchDog is comparing the selected subscriber in the alarm list with all fraudster in the database, all matching profiles are then displayed in matching profiles, by selecting the fraudster in the Matching Profiles list, the Profile Call Data and Profile Subscriber is updated for analysis.



The information displayed in the Matching profiles list is customer specific depending on what information that is available in the subscriber file.

### Profile call data

When selecting a profile in the Matching Profiles list, the profile call data compares the selected subscriber in the alarm list with the fraudster selected in the matching profiles list.

Profile Call Data		
Value	Count (Cust)	Count (Prof)
Call Type (outgoing calls)	0	0
<b>Local</b>	<b>6</b>	<b>3</b>
<b>International</b>	<b>4</b>	<b>2</b>
Long Distance	0	8
Called Numbers	0	0
<b>0705573881</b>	<b>4</b>	<b>7</b>
<b>222</b>	<b>3</b>	<b>4</b>
<b>0737097759</b>	<b>2</b>	<b>2</b>
<b>0705573885</b>	<b>1</b>	<b>0</b>
111	0	6
0705573882	0	2
0705573883	0	2
0737097760	0	2
333	0	2
Cell Site (outgoing calls)	0	0
<b>263C: Stockholm North</b>	<b>5</b>	<b>5</b>
<b>373B: KingsStreet West</b>	<b>4</b>	<b>6</b>
<b>263A: Queensroad</b>	<b>1</b>	<b>0</b>
356A: Sundbyberg	0	5

Colour coding in Profile Call Data list.

- Red**           The profiling item is matching both the subscriber and the profile
- Bold**         The profiling item is matching the subscriber.
- Normal         The profiling item is matching the profile.

By analyzing the subscriber with the known fraudster and compare the calling pattern it is possible to determine if the subscriber actually is a fraudster that have come backed to the network but under a new identity.

### Profile subscriber info

When selecting a profile in the Matching Profiles list, the profile subscriber data is displayed in the profile subscriber info screen, all information available when deleting the alarm is presented.

Profile Subscriber Info	
Name	Value
IMSI	240074290013426
SubscriberNumber	240073353913426
PhoneNumber	13546848
Handset ID	13546848
Company	<Not present>
Name	Anna Wong
Address1	Street 1
Postnummer	13545
City	Fraudville
Country	Sweden
Account ID	
Kundtyp	Private
Tariff Plan	Private
Activation Date	
10/22/2003 10:07:15	
Bill Cycle	
Credit Limit	50

## External Known Pattern Profiling analysis

### Overview

WatchDog contains unique information about the subscribers and their behaviour in combination with advanced analysis by the WatchDog users.

With External Known Pattern Profiling analysis is it possible to compare all known fraudsters or a subset with an external data source. By specifying the file format of the external data source and link one or more columns between the external source and known fraudster WatchDog can display which subscribers that exists in the external data source that matches the subscribers in the known pattern profiling database.

Chapter

4

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# Alarm Actions

Overview

**Introduction**

This chapter describes each action that can be taken for an alarm.  
The actions can be found in the **Action** menu or in the toolbar.

**In this chapter**

This chapter is organized as follows.

Topic
Start Action
Actions Included In WatchDog
Assign
Assign Other
Comment
Hold
Reminder
Delete
Find And List Items
Find...
Close

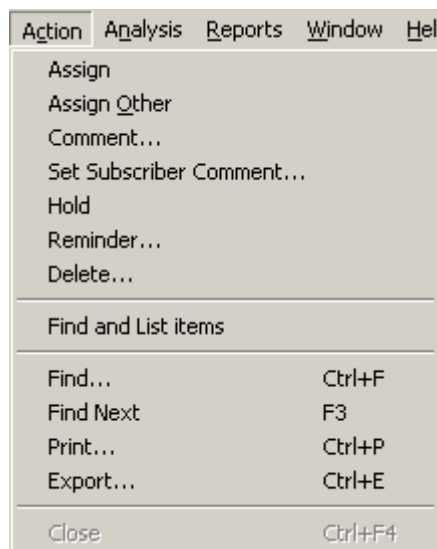
## Start Action

The **Alarm Action** commands can be selected either from the **Action** menu or by using the tool bar.



## Actions Included in WatchDog

The **Action** menu looks like follows.



The following actions are available.

<b>Assign</b>	Assign makes you responsible for the analysis of the subscriber's alarms.
<b>Assign Other</b>	Assign Other allows you to set a another person responsible of an alarm.
<b>Comment</b>	Makes it possible for you to write a comment in the subscriber's log.
<b>Set Subscriber Comment</b>	The set subscriber comment allows give comments to one or more subscribers a comment that is in or not in the alarms list.
<b>Hold</b>	Hold "hides" the subscriber's alarm, but they are displayed again as soon as the subscriber triggers a new alarm.
<b>Reminder</b>	Deletes the subscriber's alarms temporarily, and makes them active again after a number of days as specified by the user. A reminder alarm is also generated after the chosen number of days.



<b>Delete</b>	This action deletes all alarms belonging to the subscriber.
<b>Find and list items</b>	This command lists all telephone numbers called by the current subscriber. It is possible to hotlist any of these numbers from this window.
<b>Find...</b>	Makes it possible to search for any value in the alarm list.
<b>Close</b>	Closes the current window.

## Assign

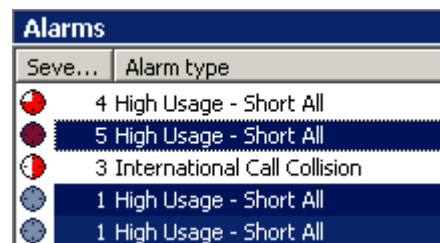
Before taking any actions to an alarm, the user has to be assigned to it. This also indicates for other users that someone is working on the alarm, hence reducing the risk that different people work on the same issues.

To assign yourself to an alarm, select the alarm and then click the **Assign** command.

The name of the user that is assigned to an alarm will be visible in the alarms list. This action will also be logged and indicated in the **Log** list, along with date and time for the action.

### Multi assign

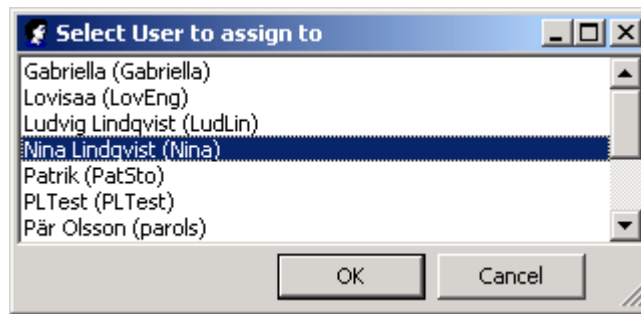
By selecting more than one row in the alarm list, it is possible to perform the action on several alarms at the same time by pressing the assign button.



## Assign Other

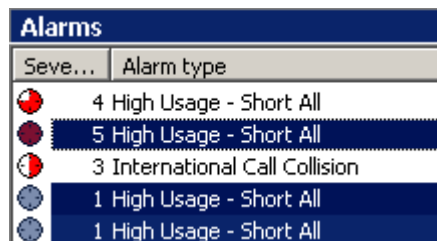
**Assign Other** allows a user to assign an alarm to another user. The user who wants to assign an alarm to another user does not need to be assigned to the alarm.

When the **Assign Other** option is clicked, the following screen appears. Select the user in the list that should be responsible of the alarm.



### Multi assign other

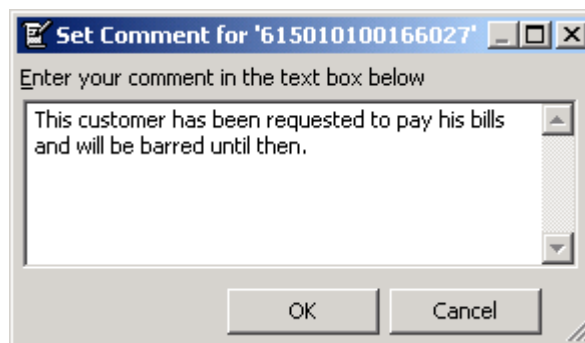
By selecting more then one row in the alarm list, it is possible to perform the action on several alarms at the same time by pressing the assign other button.



### Comment

It is possible to add a comment to the subscriber's log.

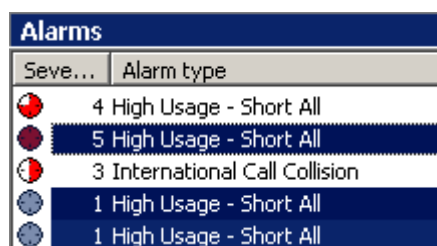
When selecting the **Comment...** command, this dialog appears.



Enter a comment and click **OK**.

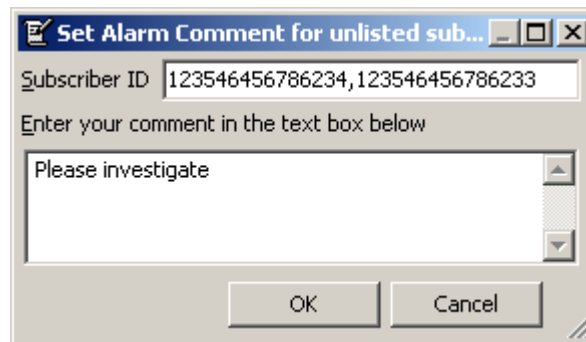
### Multi comment

By selecting more then one row in the alarm list, it is possible to perform the action on several alarms at the same time by pressing the comment button.



## Set Subscriber Comment

The set subscriber comment allows give comments to one or more subscribers a comment that is in or not in the alarms list.



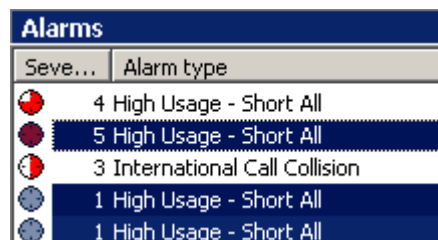
## Hold

The **Hold** command changes an alarm's status from Open/Assigned to Hold. This enables a temporary removal of the alarm from the **Alarms** list by using a filter. If a new alarm is generated for the same customer, the alarm status will however change to Open/Assigned again and it will reappear in the list.

To put on alarm on hold, select the alarm and select the **Hold** command.

### Multi hold

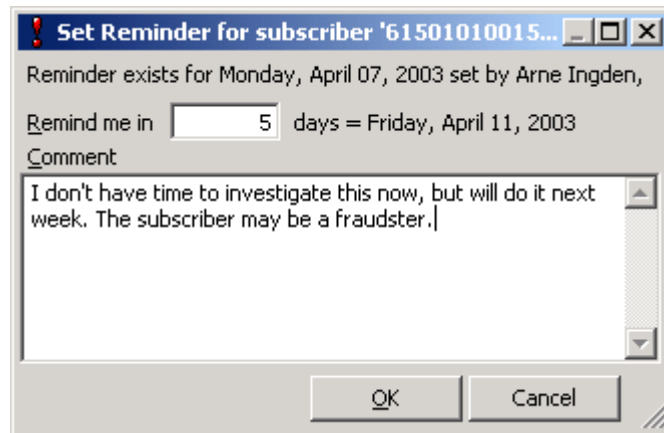
By selecting more then one row in the alarm list, it is possible to perform the action on several alarms at the same time by pressing the hold button.



## Reminder

The **Reminder** command changes an alarm's status from Open/Assigned to Reminder. This enables a temporary removal of the alarm from the **Alarms** list by using a filter. After a set number of days, the alarm status will however change to Open/Assigned again and it will reappear in the list

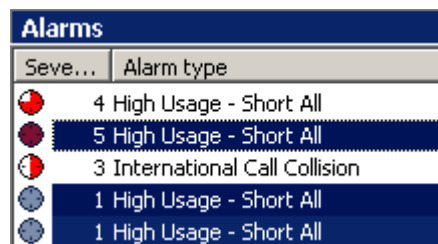
To put on alarm on reminder, select the alarm and select the **Reminder** command. This dialog box appears.



Set the number of days until the status should be changed back, type a comment, and click **OK**.

### Multi reminder

By selecting more then one row in the alarm list, it is possible to perform the action on several alarms at the same time by pressing the reminder button.



## Delete

All alarms have to be deleted from the list. This can be done via the **Delete All Alarms...** command or one by one from the **Alarms** list.

To delete an alarm from the **Alarms** list, select the alarm and select the **Delete** command. The following window appears.

**Delete Alarms for subscriber '615010100032469'**

Reason: Not fraud Letter: Barr subscription

Comment: Subscription may be used as switch, extensive usage of call forwarding.

☐ Don't warn about Zero Usage for this subscriber ever again

**Black and Hot Lists**

Name	Value	Autoremove
<input checked="" type="checkbox"/> Hotlisted Number	2289012865	2003-04-11
<input type="checkbox"/> Blacklisted Number	2289012865	2003-04-11
<input type="checkbox"/> Hotlisted Handset		2003-04-11
<input type="checkbox"/> Blacklisted Handset		2003-04-11

Reason for Hot-/Blacklisting: Check who are using the servie in case this subscription is used as a switch.

OK Cancel






This window contains the following settings.

<b>Reason</b>	<p>The following alternatives can be selected from the drop-down list box.</p> <p><b>Not fraud</b> The alarms belonging to this subscriber will be removed from the database.</p> <p><b>Fraud</b> The alarms belonging to this subscriber will be removed from the <b>Alarms</b> list but information about the subscriber will be stored in the database.</p>
<b>Letter</b>	A letter can be printed e.g. to inform the subscriber on the situation. The letters that have been defined can be selected from the drop-down list box.
<b>Comment</b>	Type a comment about the deleted alarms. This comment will be added in the alarms information, and also be included in the subscriber log.
<b>Don't warn for Zero Usage for this subscriber ever again</b>	This check box is active only when deleting zero usage alarms. If WatchDog should stop warning about zero usage for this subscriber, select this check box.

- Black and Hotlists** The subscribers can be added to any of these lists when deleting alarms. Please note that this function has to be activated in the **Lists** alarm settings.
- Reason for Hot-/Blacklisting.** Type a reason why the subscriber is added to a list.

### Multi delete

By selecting more than one row in the alarm list, it is possible to perform the action on several alarms at the same time by pressing the delete button.

Alarms	
Seve...	Alarm type
	4 High Usage - Short All
	5 High Usage - Short All
	3 International Call Collision
	1 High Usage - Short All
	1 High Usage - Short All

**Please note:** When deleting more than one alarm it is not possible to black list or hot list the alarms or check the zero usage button on the delete screen.


## Find And List Items

This command lists all the numbers that the selected subscriber has called or all handsets that have been used. Each number or handset can then be added to either the hot list or the black list.

To do this, select a subscriber and select the **Find and list items** command. The following window appears.

B Number ▾	Duration	Amount	CallCount	List
9192806	22	165 CFA	1	None
9044679	3:45	825 CFA	6	None
9044352	1:16	165 CFA	2	None
9039403	1:27	495 CFA	3	None
9035456	2:10	495 CFA	2	None
9023257	1:10	220 CFA	1	None
9020279	1:35	275 CFA	1	None

The list lists either called numbers or used handsets. To change the contents, use the drop-down list box in the tool bar.

BNumber	▾	
BNumber		
Handset		
Cell Site		

To add an item to a list, select it and click the **Add** icon to the right of the list box. The following dialog box appears.

The following parameters are available.

- |                      |                                                                          |
|----------------------|--------------------------------------------------------------------------|
| <b>Add to List</b>   | Select the list the item should be added to.                             |
| <b>Add to Expiry</b> | Set an expiry date for when the list alarms should stop to be generated. |
| <b>Reason</b>        | Type a reason why the item is listed.                                    |

## Find...

This command makes it possible to search for a certain item in the **Alarms** list.

Select the **Find...** command and the following dialog box appears.

The search functionality searches the list by using wildcards as standard, for example search word is Ann it will search for \*Ann\*.

The following parameters are available.

- |                   |                                                                                                                    |
|-------------------|--------------------------------------------------------------------------------------------------------------------|
| <b>Expression</b> | Type the value to search for.                                                                                      |
| <b>Columns</b>    | Select the column where this value should exist. <all columns> means that WatchDog will search in the entire list. |
| <b>Direction</b>  | WatchDog can search in previous or following list items.                                                           |

following list items.

**Case sensitive**

Select this check box if WatchDog should search only for items that exactly match the search criteria in respect of upper case and lower case characters.

**Match whole string only**

Searches for occurrences that are whole words and not part of a larger word. When you use wildcards, this function does not apply.

**Close**

Click **Close** to close the window you are currently using.



# Chapter 5

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## Reports

### Overview

#### Introduction

This chapter describes how to work the reports in WatchDog and gives a description of the various reports that are available.

#### In this chapter

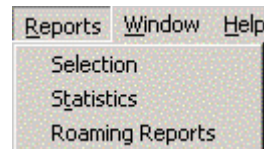
This chapter is organized as follows:

Topic
Access The Reports
Print A Report
Available Reports
Included Statistics
Roaming Reports
All Calls Data Report

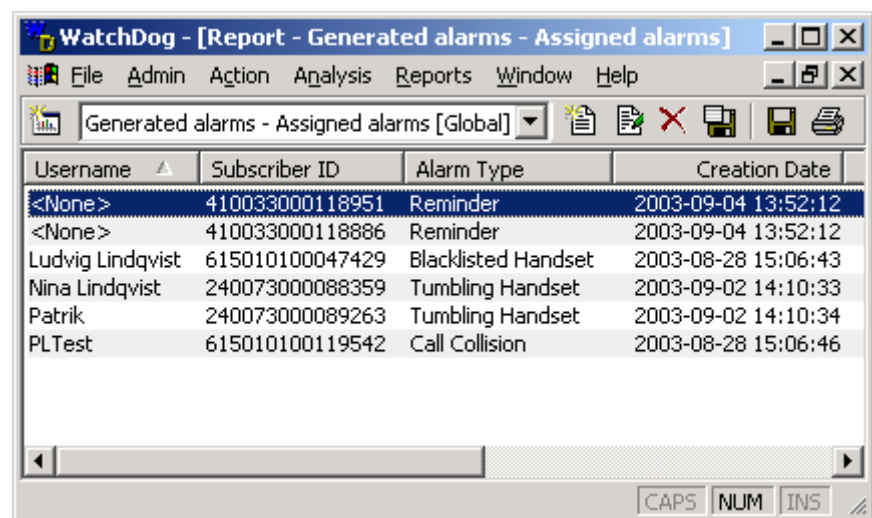
## Access the Reports

WatchDog includes standard reports and statistics that are possible to print at any moment. It is also possible to create new reports ad hoc with the report tool. Reports can be saved as files.

Reports can be configured as global to be used by other users, reports not set to be global is only visible for the user created the report.



To run a report, select the **Selection** command in the **Reports** menu. The following window appears.



When first started the window is empty since no report is chosen. The report window contains the following buttons and options.



### New window

The new window allows the user to open more than one report at the same time. From the Window menu it is possible to arrange the open windows.

### Report list

The report list contains all configured reports in the system, global reports is stated by the [Global] after the report name.



Select a report to be displayed on screen.



### **Generate Report**

When a report is selected in the drop down menu the report is generated with the Generate Report button or CTRL + G or the pressing Enter in the available reports list.



### **New Report**

Click the New Report to create a new report. For details see Create a report for details.



### **Edit Report**

Click the Edit Report to create edit the selected report. For details see Create a report for details.



### **Remove Report**

Click the Remove Report to delete the selected report. Only users with users right to Global reports, statistics and filter can remove global reports.



### **Save Report Configuration**

If changes has been made to a report click the Save Report Configuration to store the changes.



### **Export Report To File**

Allows a report to be saved to file, please see Export a report for details.



### **Print a Report**

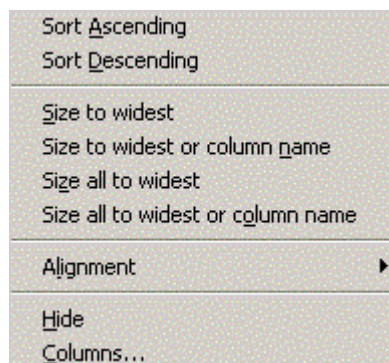
Allows a report to be printed, please see Print a report for details.

## View a report

To view a report on screen, select the report from the report list and the report will be generated.

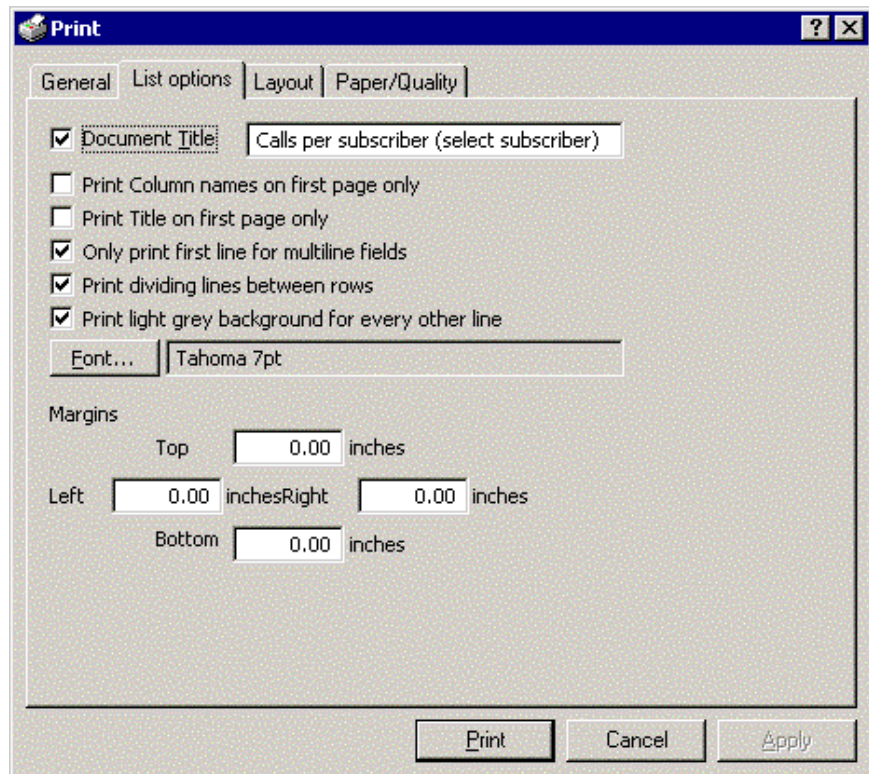
Username	Subscriber ID	Alarm Type	Creation Date
<None>	410033000118951	Reminder	2003-09-04 13:52:12
<None>	410033000118886	Reminder	2003-09-04 13:52:12
Ludvig Lindqvist	615010100047429	Blacklisted Handset	2003-08-28 15:06:43
Nina Lindqvist	240073000088359	Tumbling Handset	2003-09-02 14:10:33
Patrik	240073000089263	Tumbling Handset	2003-09-02 14:10:34
PLTest	615010100119542	Call Collision	2003-08-28 15:06:46

For a report it is possible to reorder columns, hide columns, size the columns etc. All functionality is accessed by right click on the column headers.



## Print a report

To print a report click the print button or the CTRL + P shortcut. The printing procedure is as in any windows program, except from the below screen that is unique to WatchDog. Please find a description below:

**Document Title**

The default report title is the report name, by changing the document title a new title for the report is created.

**Print column names on the first page only**

If checked only the first page will include the column names

**Print title on first page only**

If checked the document title will only be printed on the first page.

**Only print first line for multi line fields**

If checked fields that containing more then one row for example alarm comments is only displayed with the first row and the rest of the field is removed.

**Print dividing lines between rows**

If checked each row will be divided by a line.

**Print light grey background for every other line.**

If checked each other row will have a light grey background.

**Font...**

Press the font button to select font, font style and size.

**Margins**

Format the report by stating the margins of the report. The unit used for margins are same as standard unit set in Windows.

## Create a report

Reports can be created from within the WatchDog interface. When the New Report button is clicked the following screen is displayed.

The screen contains the following fields.

- Name** The name of the report.
- Global** The global option sets if the report is available only for the user created it or for all users that access the system. By checking the Global checkbox the report is available for everyone.
- Source** The source sets what data that should be included in the report.

The following sources are available in standard WatchDog.

- Alarms** Allows creating reports on the current alarms.
- AlarmsOld** Allows creating reports on deleted alarms, fraud and not fraud.
- Calls** Allows to create reports on the calls history for

on the calls history for subscribers that has generated alarms.

Please note:

When generating reports on a calls history please specify one or more IMSI's as criteria's otherwise report generation can take some time.

**FileLog** Allows creating reports on system file input.

**Log** Allows creating reports on system log.

**Roaming Report** Allows creating reports on roaming report data.

If other data sources may be needed please contact Basset.

**Available** The available list displays the field that can be used for the selected report source. Double click on a field to include it in the report.

**Selected** Displays the fields that have been chosen to be included in the report. Double click on an item to remove it from the available list.



Allows moving a field up in the list.



Allows moving a field down in the list.

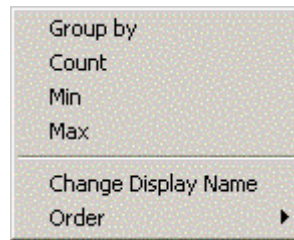


### Field properties

The field properties are displayed by click the button or by right click on a field.

If the aggregate checkbox is not checked the following option are available.

Change Display Name

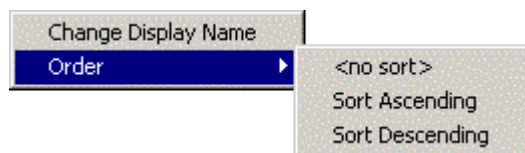


Please see aggregation below for details.

- Aggregate** If checked it is possible to aggregate report data. Please see to **Aggregation** below for details.
- Criteria** Specifies if any criteria should be used for the report. Please see **Criteria** below for details.

## Sorting

To sort the report right click on a field in the selected list and choose order.

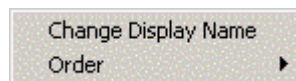


Please note that if sorting is to be done on several columns the order of the columns must be in so that the column to be sorted primary on is placed before the other columns.

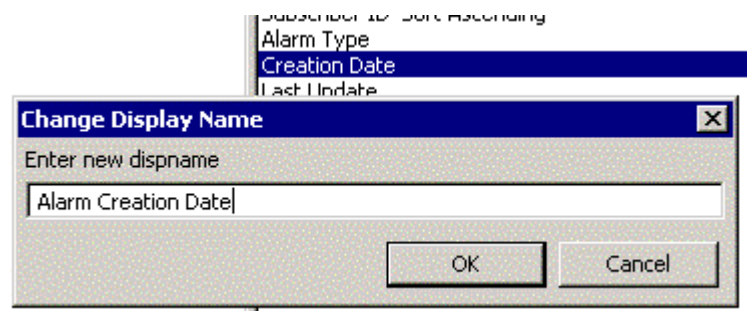
The sorting order is reset when a report is reloaded.

## Change Display Name

Change display name is used to set a new name to a column.



When **Change Display Name** is the below screen is displayed.





## Aggregation

To allow calculating the result in a report the Aggregate must be checked. When checked it is possible to select the following functions used on numeric fields

- Average
- Sum
- Count
- Min
- Max

An aggregated field is displayed as:

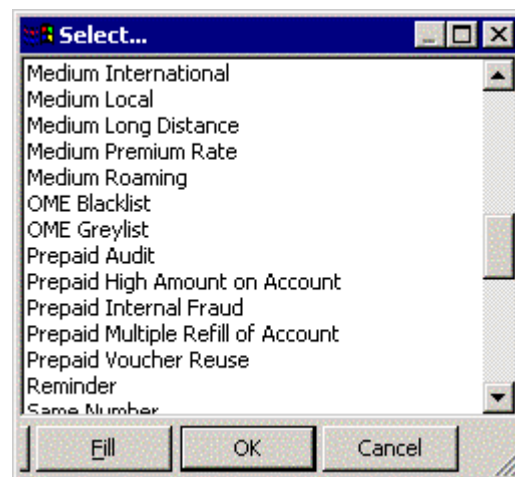
SUM(Amount)

## Criteria

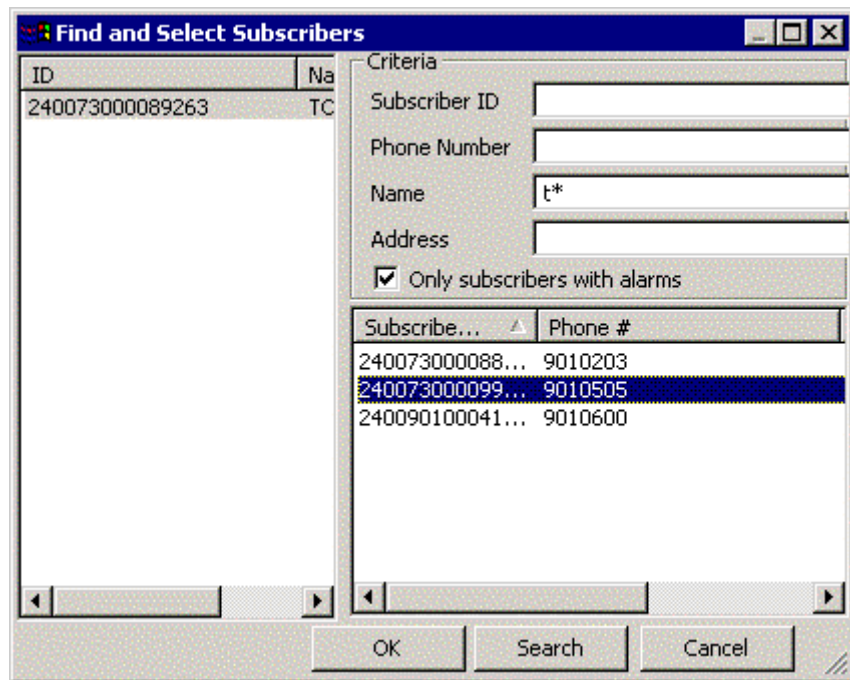
To only display a subset of the data it is possible to set one or more criteria's to a report.

A screenshot of a 'Criteria' dialog box. It contains two rows for criteria. Row #1 has a red 'X' icon, a dropdown menu showing 'Alarm Type [Reference]', and a button with three dots followed by a dropdown arrow. Row #2 has a dropdown menu showing '<none>' and a button with three dots followed by a dropdown arrow.

Select the field to which criteria should be set depending on the type of field different criteria's can be used. Fields marked with reference can use the button marked ... to set the criteria from a screen for example:

A screenshot of a 'Select...' dialog box. It features a list box with the following items: Medium International, Medium Local, Medium Long Distance, Medium Premium Rate, Medium Roaming, OME Blacklist, OME Greylist, Prepaid Audit, Prepaid High Amount on Account, Prepaid Internal Fraud, Prepaid Multiple Refill of Account, Prepaid Voucher Reuse, Reminder, and Same Number. At the bottom are three buttons: Fill, OK, and Cancel.

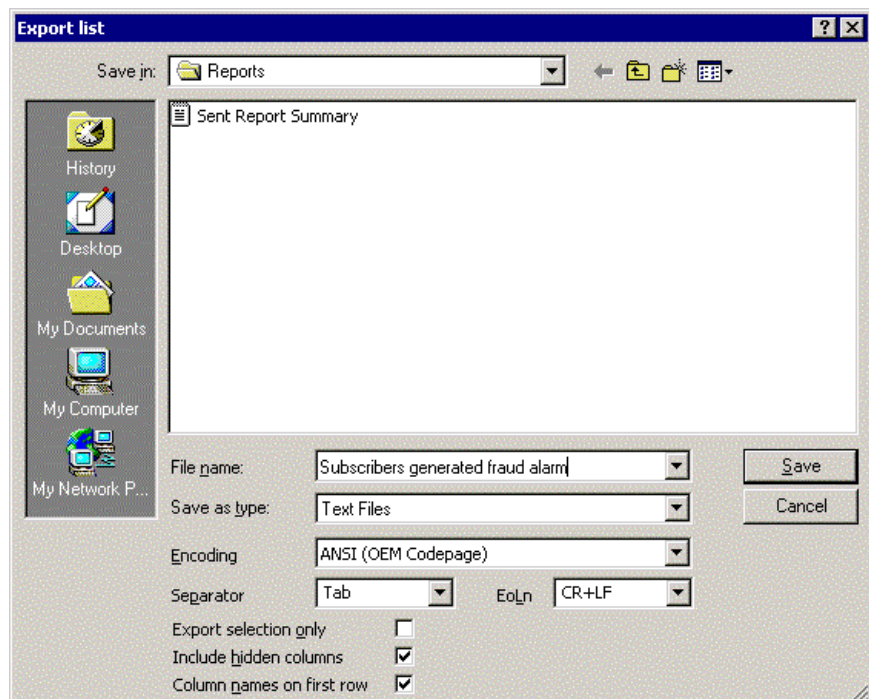
For subscriberID the following screen is displayed.



From where it is possible to search for subscribers and add one or several as an criteria.

## Export a report

A report can be exported to a file by using the export button or the CTRL + E shortcut. When the export command is pressed the following screen appears.



The following settings can be set when exporting a report to a file.

<b>File name</b>	State the name of the file to where the report should be exported.
<b>Save as type</b>	Select to what type of file the exported report should be exported to.
	<p><b>Text files</b> The file will automatically get the *.txt file extension.</p> <p><b>All files</b> The file can be saved with any file extension.</p>
<b>Encoding</b>	The encoding setting states what language support the report should have.
<b>Separator</b>	The separator specifies what character that should be used to separate each field; this is useful when importing data into another program.
	<p><b>Tab</b> Each field is separated with a Tab character.</p> <p><b>For example:</b></p> <p>Name                  Address</p> <p><b>Comma</b> Each field is separated with a comma character.</p> <p><b>For example:</b></p> <p>Name,Address</p> <p><b>Semi colon</b> Each field is separated with a semi colon character.</p> <p><b>For example:</b></p> <p>Name;Address</p> <p><b>Pipe</b> Each field is separated with a pipe character.</p> <p><b>For example:</b></p> <p>Name   Address</p>
<b>EoLn</b>	The EoLn stands for End Of Line and states what character each line/record should end with. This is useful when importing data into another program.
	<p><b>CR+LF</b> The end of each line should be Carrige return and Line Feed.</p> <p><b>CR</b> The end of each line should be Carrige return.</p> <p><b>LF</b> The end of each line should be Line Feed.</p>

<b>Export selection only</b>	If checked only the rows selected will be exported to a file.
<b>Include hidden columns</b>	If checked any column that has been hidden by right click on the column names and set to be not visible is included in the exported file.
<b>Column names on first row</b>	If checked the column names will be in the first row of the exported file.



## Roaming Reports

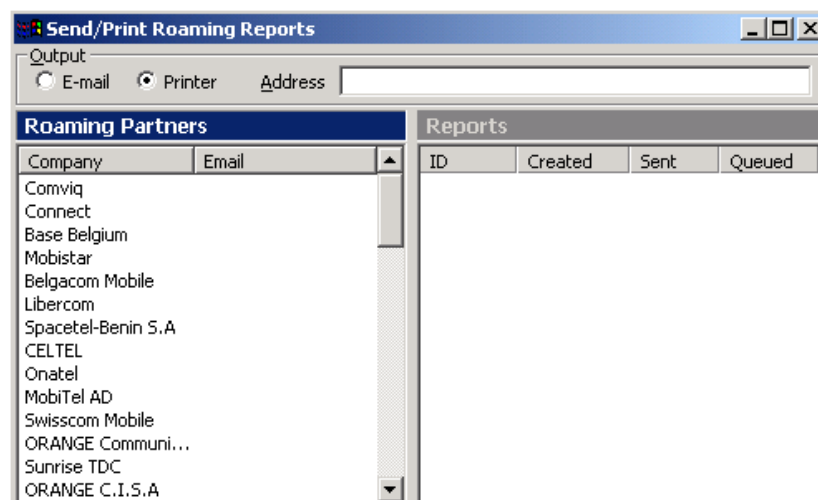
The **Reports** menu also includes the reports that are created based on the roaming partner settings. These reports list information about visiting roamers, i.e. foreign subscribers that have made calls in our own network.

### Roaming Reports

The roaming reports are normally sent automatically to the roaming partners. It is also possible to print or send the reports manually.

To run a roaming report, select the **Roaming Reports** command in the **Reports** menu. The following window appears.

-  **Refresh roaming report list** The roaming report list is refreshed and any new reports that WatchDog have created since the list was opened is displayed.
-  **Print** This command makes it possible to queue a report either for resend by email or re print depending on roaming partner setting.



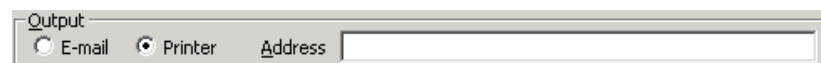
The next step is to select a report in the list. The next step is to send the report to a printer or to create e-mail.

Each roaming report in the list is displayed with the following information.

<b>Report ID</b>	Unique ID for each report.
<b>Created</b>	The date and time when the report was created.
<b>Sent</b>	The date and time when the report was sent.
<b>Queued</b>	Displays Yes if a report is manually queued from the roaming report screen.
<b>Queued on</b>	The date and time when the report was queued.
<b>Queued by</b>	The user name of the user that queued the report.
<b>Amount</b>	The amount of the report.
<b>Duration</b>	The duration of the report.
<b>Call Count</b>	The call count of the report.

### Output options

The following output options are available.



<b>E-mail</b>	The report will be included in an e-mail message and sent to the address as set in the roaming partner list or the address specified in the <b>Address</b> text box.
<b>Printer</b>	The report is printed on the default printer on the client.
<b>Address</b>	If the report should be sent in an e-mail, and the e-mail address in the roaming partner list should not be used, type the address here.

## All Calls Data Report

The All Calls Data Report allows extracting call details for subscribers that have not generated any alarms. The source for this report is the InfoGate database.

UniqueRe...	IMSI	Call Type	A Number	B Number	Classific...	Start of Call	Amount
321 557 652	240076800000141	Local	041319208	86846452	edr	12/4/2003 14:10:37	0.060 kr
321 557 653	240076800000141	Local	041319208	86484652	In, edr	12/4/2003 14:08:45	0.800 kr
321 557 654	240076800000141	Long Distance	041319208	55646888	PP, Out	12/4/2003 14:13:47	0.800 kr
321 557 655	240076800000141	Premium rate	041319208	84868648	edr	12/4/2003 15:31:38	0.410 kr
321 557 656	240076800000141	International	041319208	64654645	PP, Out	12/4/2003 15:30:45	0.030 kr
321 557 657	240076800000141	Long Distance	041319208	54684846	In	12/4/2003 15:29:23	0.030 kr
321 557 658	240076800000141	Premium rate	041319208	54868488	Out	12/4/2003 15:27:42	0.410 kr
321 557 664	240076800000141	Premium rate	041319208	56746466	edr	12/5/2003 07:56:16	0.800 kr
321 557 794	240076800000141	Premium rate	041319208	54646878	edr	12/8/2003 13:57:34	0.410 kr

The All Calls Data Report contains the following parameters:

<b>Start Date</b>	Start date of the first call.
<b>Start Time</b>	Start time of the first call.
<b>End Date</b>	End date of the last call.
<b>End Time</b>	End time of the last call.
<b>Subscriber ID</b>	The IMSI for GSM and A-Number for fixed networks.

#### Available data

The available data section displays the date of the first call in the database and last call in the database, the numbers within the parentheses is the number of days between the first call and the last call in the database.

9/2/2003 - 7/9/2004 (311)

# Chapter

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# Automail

# 6

## Overview

### Introduction

The Automail function makes it possible to have e-mail messages automatically generated and sent upon certain alarms. This chapter describes the contents of these messages and how to make good use of them. For information about the Automail settings, see the Administrator manual.

### In this chapter

This chapter is organized as follows:

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#### Topic

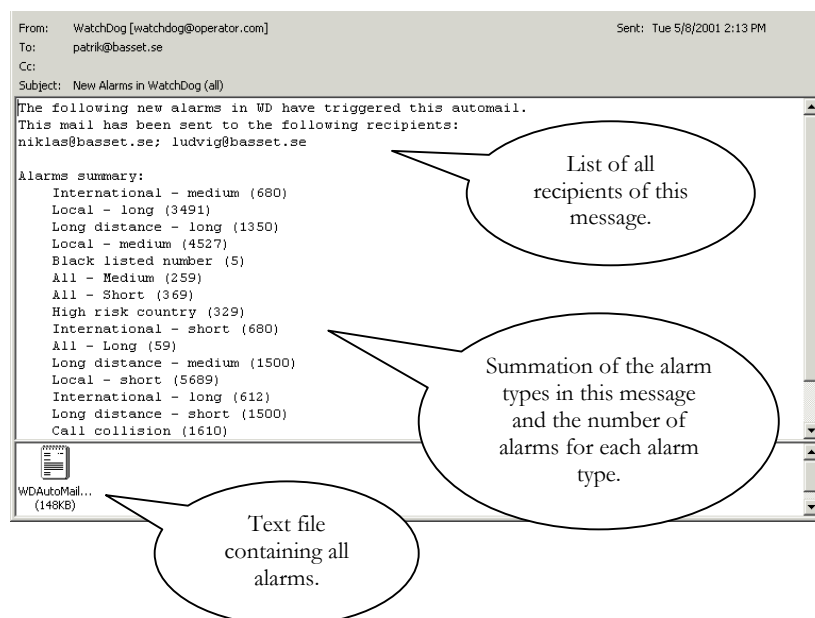
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The Automail Message

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## The Automail message

Below is an example of how the e-mail message generated by WatchDog can look like.



The message displays a summation of the included alarms. Details about the alarms are included in a text file attached to the message. The information in this file looks as follows.

Alarm Status	Alarm Type	Subscriber ID	Name	Company	Phone Number	Unit ID
Start of Call	Threshold 1					
Threshold 2	Amount	Multiplier	Severity			
4/11/2001 12:06:57 PM	A11 - Long	410032000000140	Unknown	Unknown	923335117221	520095510244180
128	1	3	99			
12:04:20 PM	A11 - Long	410032000000427	Unknown	Unknown	923335116874	4/11/2001
1	3	129	99			
4/11/2001 12:28:15 PM	A11 - Long	410032000000500	Unknown	Unknown	923335116599	332129358621500
771.54	1	3	99			
4/11/2001 12:13:11 PM	A11 - Long	410032000000641	Unknown	Unknown	923335115777	449269409323830
1277.55	1	3	99			
12:09:39 PM	A11 - Long	410032000000737	Unknown	Unknown	923335115613	4/11/2001
1	3	384	99			
4/11/2001 12:07:17 PM	A11 - Long	410032000000765	Unknown	Unknown	923335111280	490542209863390
2556	1	3	99			
4/11/2001 12:10:06 PM	A11 - Long	410032000000773	Unknown	Unknown	923335111298	449123890579290
13132.822	1	3	99			
4/11/2001 12:28:22 PM	A11 - Long	410032000000845	Unknown	Unknown	923335115661	520063616934030
16514.932	1	3	99			
4/10/2001 11:32:01 AM	A11 - Long	410032000000955	Unknown	Unknown	923335117210	490533616027850
129	1	3	99			
4/10/2001 11:51:18 AM	A11 - Long	410032000001921	Unknown	Unknown	923335117425	448903402556520
110.49	1	3	99			
4/11/2001 12:24:02 PM	A11 - Long	410032000002000	Unknown	Unknown	923335117498	449142801989600
5964.805	1	3	99			
	A11 - Long	410032000002058	Unknown	Unknown	923335115006	448896305274130

To make the best use of the attached information, it's a good idea to import the data to a spreadsheet such as Microsoft Excel. That gives a good overview of the information and also gives further possibilities to analyse the data.



Microsoft Excel - Book2											
File Edit View Insert Format Tools Data Window Help											
Paste All Items											
H64 4/11/2001 12:19:03 PM Arial											
	A	B	C	D	E	F	G	H	I	J	K
1	Alarm Status	Alarm Type	Subscriber ID	Name	Company	Phone Number	Unit ID	Start of Call	Threshold 1	Threshold 2	Amount
2	All - Long		410032000000140	Unknown	Unknown	923335117221	520095610244180	4/11/2001 12:06	99		
3	All - Long		410032000000427	Unknown	Unknown	923335116874		4/11/2001 12:04	99		
4	All - Long		410032000000500	Unknown	Unknown	923335116699	33212936621500	4/11/2001 12:28	99		77
5	All - Long		410032000000641	Unknown	Unknown	923335115777	449269409323830	4/11/2001 12:13	99		127
6	All - Long		410032000000737	Unknown	Unknown	923335115613		4/11/2001 12:09	99		
7	All - Long		410032000000765	Unknown	Unknown	923335111280	490542209863390	4/11/2001 12:07	99		2
8	All - Long		410032000000773	Unknown	Unknown	923335111280	449123890679290	4/11/2001 12:10	99		13132
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10	All - Long		410032000000955	Unknown	Unknown	923335117210	490633616827850	4/10/2001 11:32	99		
11	All - Long		410032000001921	Unknown	Unknown	923335117425	448903402556520	4/10/2001 11:51	99		116
12	All - Long		410032000002000	Unknown	Unknown	923335117498	449142801369600	4/11/2001 12:24	99		5964
13	All - Long		410032000002058	Unknown	Unknown	923335115006	448896305274130	4/11/2001 12:10	99		8
14	All - Long		410032000002299	Unknown	Unknown	923335116352		4/11/2001 12:19	99		5964
15	All - Long		410032000002612	Unknown	Unknown	923335115175		4/11/2001 12:05	99		
16	All - Long		410032000002619	Unknown	Unknown	923335118551	457016670595590	4/11/2001 12:16	99		127
17	All - Long		410032000002635	Unknown	Unknown	514427964	448617180867230	4/11/2001 12:08	99		
18	All - Long		410032000002638	Unknown	Unknown	923335118799	332135530657370	4/11/2001 12:05	99		
19	All - Long		410032000002915	Unknown	Unknown	923335118061	449125562630780	4/11/2001 12:08	99		13132
20	All - Long		410032000003334	Unknown	Unknown	923335117990	449269408829950	4/11/2001 12:09	99		304
21	All - Long		410032000003733	Unknown	Unknown	512006456	520047710695350	4/11/2001 12:25	99		38
22	All - Long		410032000003795	Unknown	Unknown	923335106977	332129356655240	4/11/2001 12:28	99		4
23	All - Long		410032000003828	Unknown	Unknown	923335118189	332200356625670	4/11/2001 12:13	99		8
24	All - Long		410032000003852	Unknown	Unknown	923335118196	448835406217790	4/11/2001 12:16	99		394
25	All - Long		410032000003906	Unknown	Unknown	923335115283	448903881745240	4/11/2001 12:16	99		1287
26	All - Long		410032000004165	Unknown	Unknown	3335108171		4/11/2001 12:22	99		5
27	All - Long		410032000004396	Unknown	Unknown	923335117786	520034711033080	4/11/2001 12:26	99		8
28	All - Long		410032000004441	Unknown	Unknown	923335118973		4/11/2001 12:27	99		6585
29	All - Long		410032000004788	Unknown	Unknown	923335119713	448674548145760	4/11/2001 12:21	99		8775
30	All - Long		410032000004880	Unknown	Unknown	923335111790	449269408964300	4/11/2001 12:26	99		15
31	All - Long		410032000004891	Unknown	Unknown	514430178	332200353721870	4/11/2001 12:08	99		688
32	All - Long		410032000005060	Unknown	Unknown			4/11/2001 12:28	99		967
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Ready											

Some tips when importing the data to Microsoft Excel: The columns in the text file are separated by tabs. Set the column data format option in the Text Import Wizard to “Text” for the subscriber id, phone number and unit id columns. Otherwise it will appear as an exponential expression.