MBSC NMS User Manual

For

Fiber Intergraded Distributed Antenna System

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The “**mBSC NMS**” is designed to operate according to the specification of this User Manual.

Improper installation and operation of this software beyond the installation procedures, beyond the designed operating specifications, and not in compliance with regulatory requirements will revoke any warranty.

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1 Introduction

mBSC Network Monitor System("NMS") is used to monitor and manage the system operational parameters at the mBSC units. NMS consists of NMS Server, NMS Web Client(s) and mBSC units.

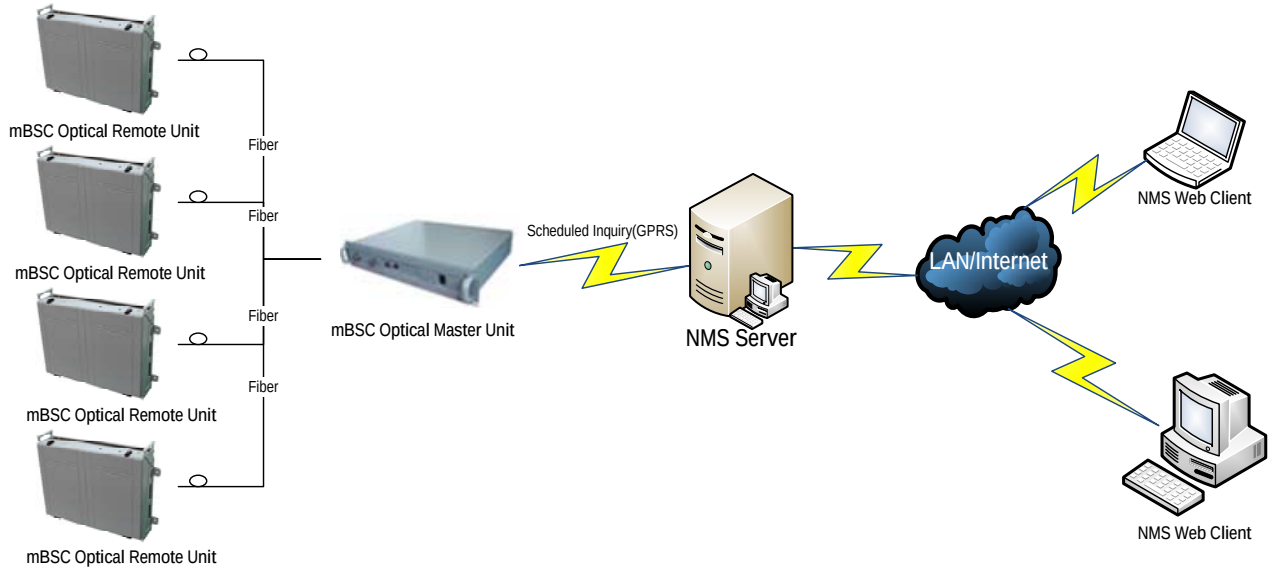


Figure 1 NMS(Network Monitoring System) Deployment

mBSC NMS can realize the monitor function for the whole system. It can also get convenient and high efficiency monitor and configuration function by changing parameter configuration. The device monitor and parameter setting solutions provided highly improved the security guarantee of system.

Note:

1. While using MBSC network monitor client, different users have different access limit to guarantee the whole system working properly.
2. Before setting any parameter, the NMS users should have a good understanding on functions and configurations of NMS system and be familiar with the settings and function of every parameter. Due to some parameters will affect the normal operation of device directly; therefore the users must be very cautious before such operating. NMS will record each event into the log database for check in future. Please check <9 Log Management> for detail. And the function of parameters modification is open to the senior users only.
3. Users should keep the user ID and password safely to avoid any unauthorized user(s) login the NMS system, and the system being damaged caused by misoperation.
4. Before any re-configuration of the mBSC net, make sure the administrator know well both of the net and operation. Otherwise the NMS system will be in mess and can't present the real mBSC net as well.

2 Install the NMS Software

The following steps describe how to correctly set up the NSM Server.

Step 1: Obtain the latest NMS installation zipped file, and unzip the file.

Step 2: Install the NMS software on the local computer using the “setup.exe” file. Then follow the below steps to finish the whole installation process.

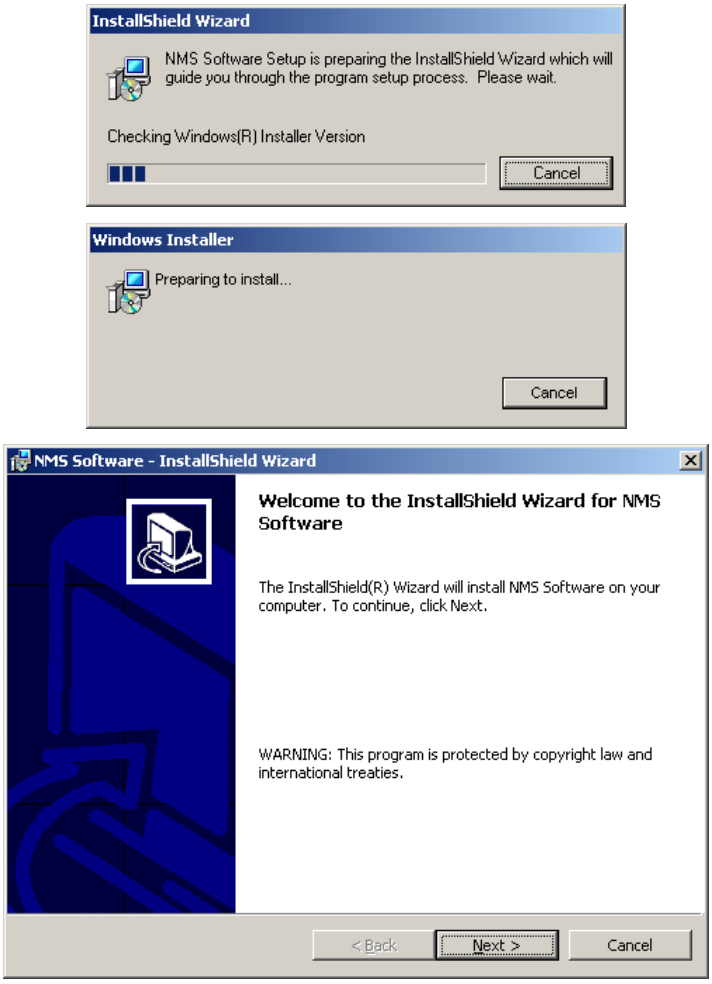


Figure 2 Installation Wizard

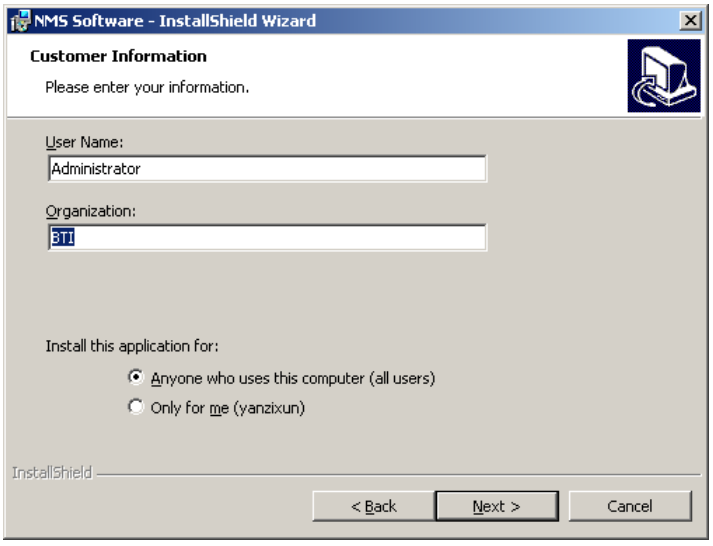


Figure 3 Installation Registration

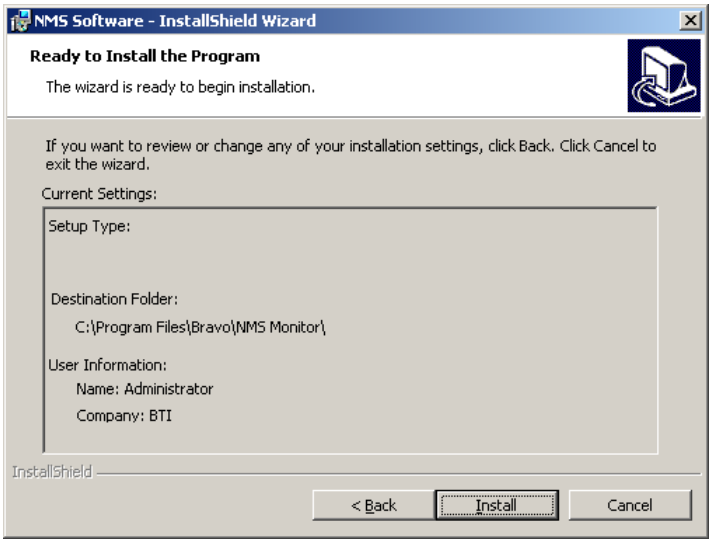


Figure 4 Installation Path Confirmation

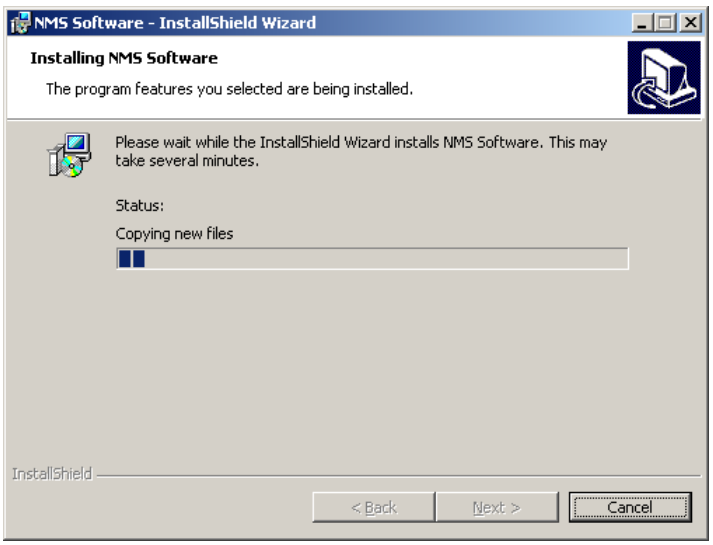


Figure 5 Installation in Process

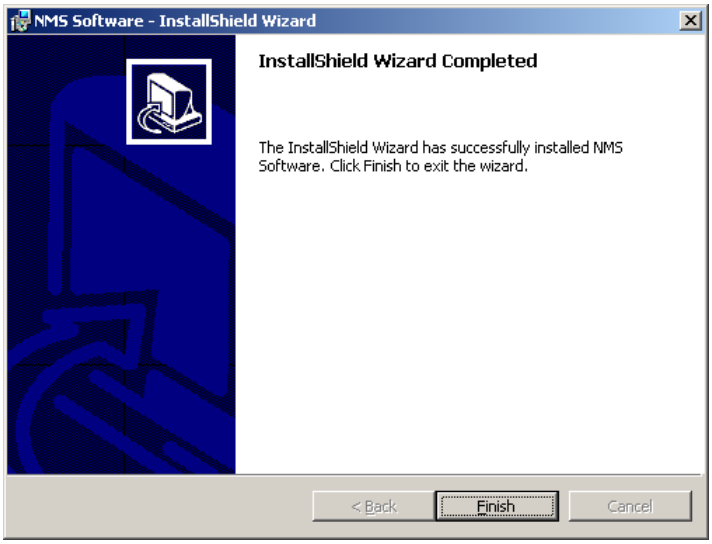


Figure 6 Installation Completed

While the installation is finished, there's a shortcut icon of "NMS Software" in the computer's desktop like below:

3 System Configuration

System configuration refers to the parameters settings of system operation environment, which include language selection, connection mode, record storage time, alarm voice, monitor time, command repeat, frequent alarm and modem overtime.

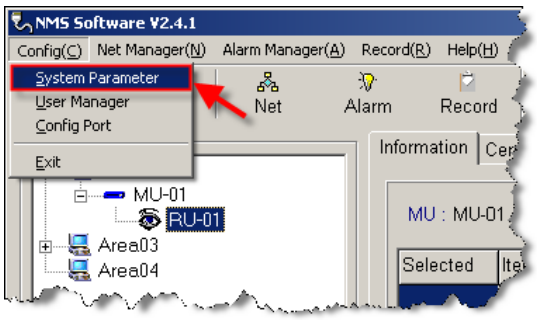


Figure 7 Menu-System Parameter

3.1 Language

NMS nowadays supports both English and Chinese.

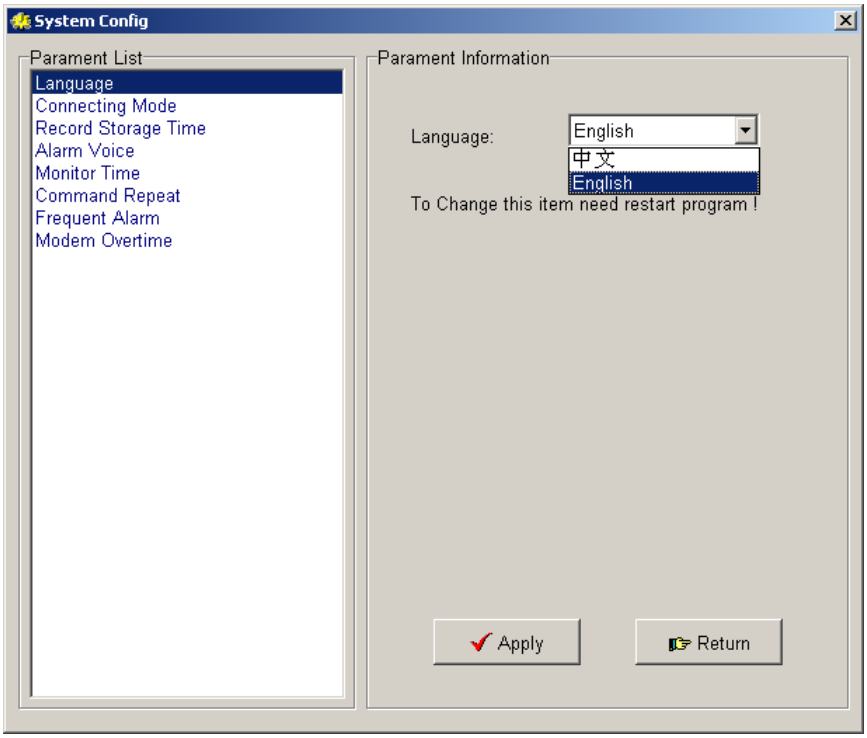


Figure 8 System Config-Language

3.2 Connection Mode

NSM provides 2(two) access types: Network and Serial port.

‘Network’: NMS client connects NMS server through IP address over LAN/Internet.

'Serial port': NMS client connects NMS server by using serial port directly.

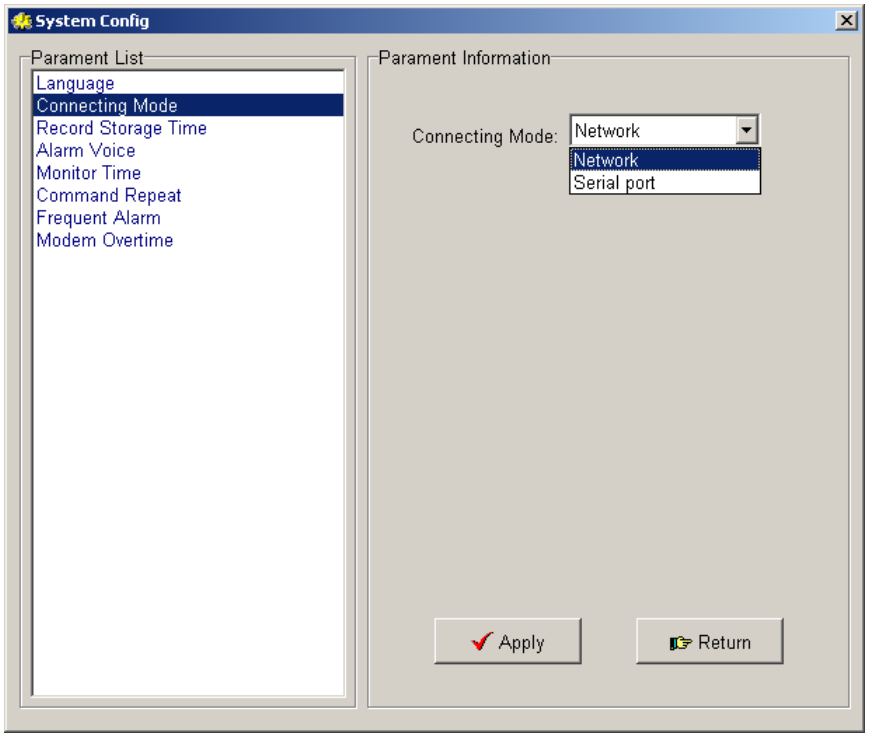


Figure 9 System Config-Connecting Mode

3.3 Record Storage Time

NMS will keep all the alarm & system logs for the specified period. All the overdue record will be deleted automatically.

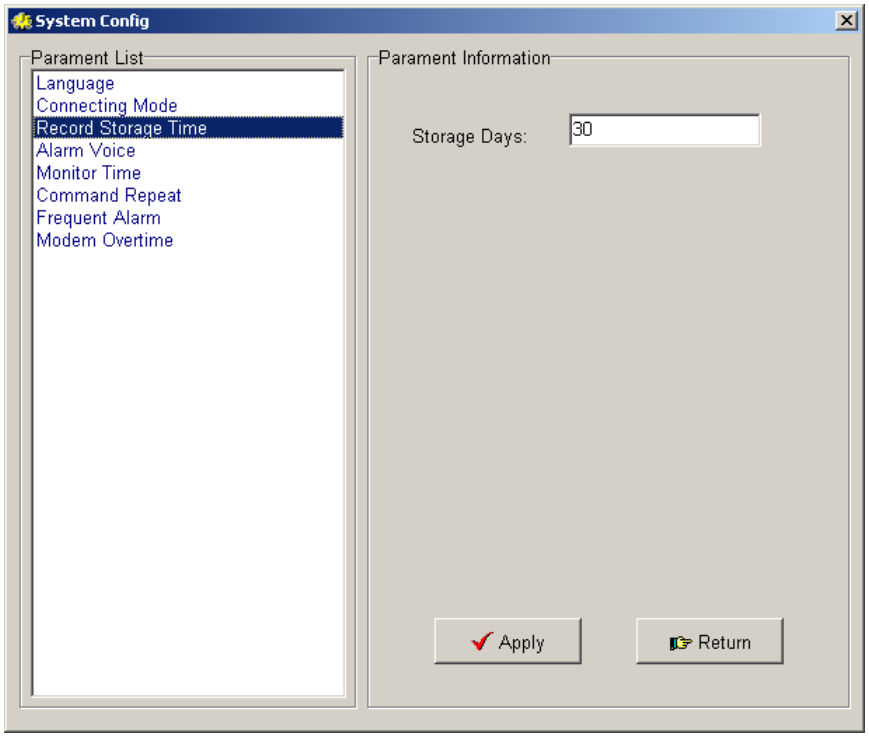


Figure 10 System Config-Record Storage Time

3.4 Alarm Voice

In the event of any fault occurring, the NMS is able to alert with necessary audio alarm. This feature could be disabled.

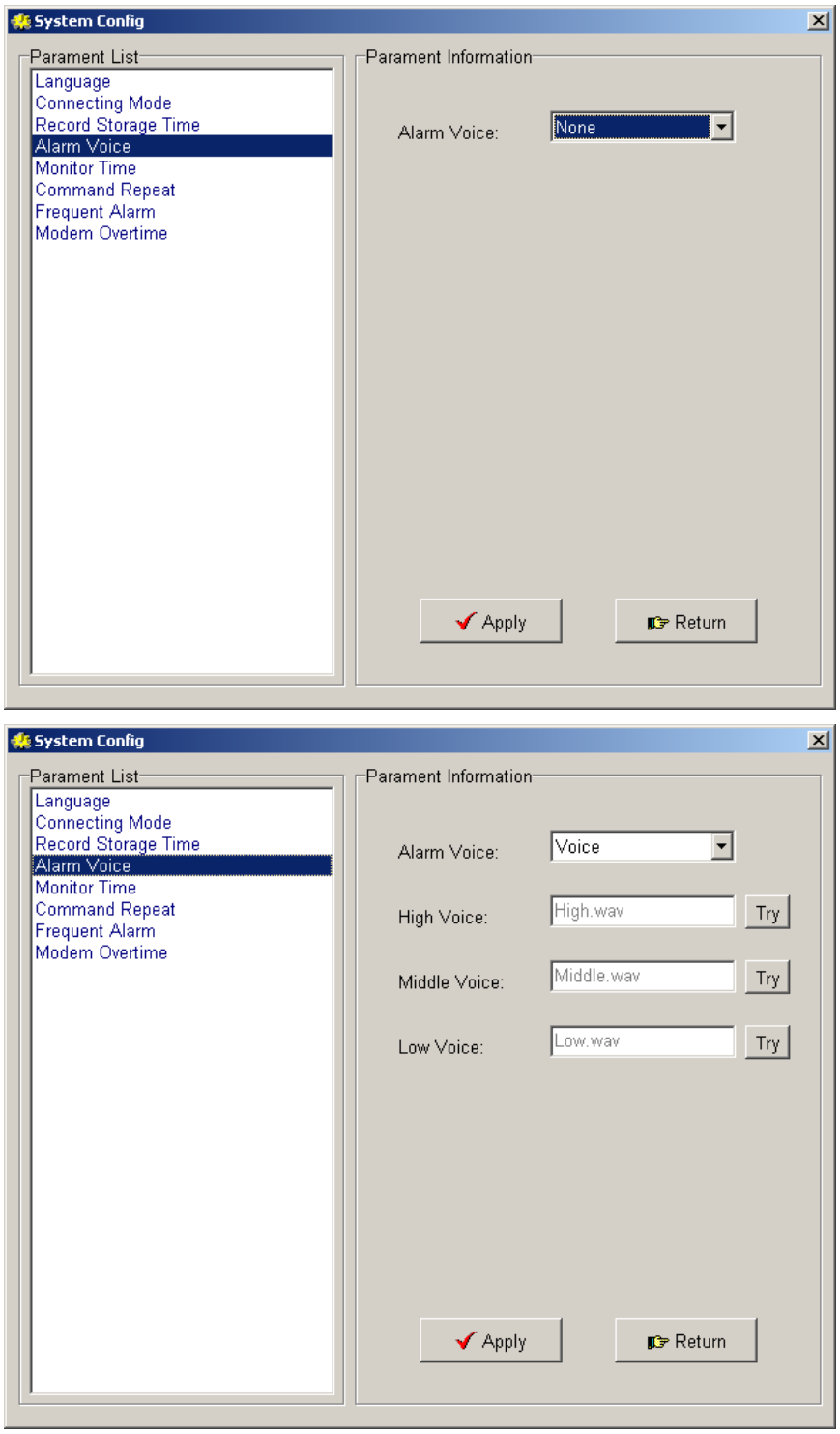


Figure 11 System Config-Alarm Voice

3.5 Monitor Time

It means the polling function which can be activated manually and automatically with pre-defined time(s) to check the status of the devices. The periodical time can be set to 4, 8, 12, 16, 20 and 24 hours.

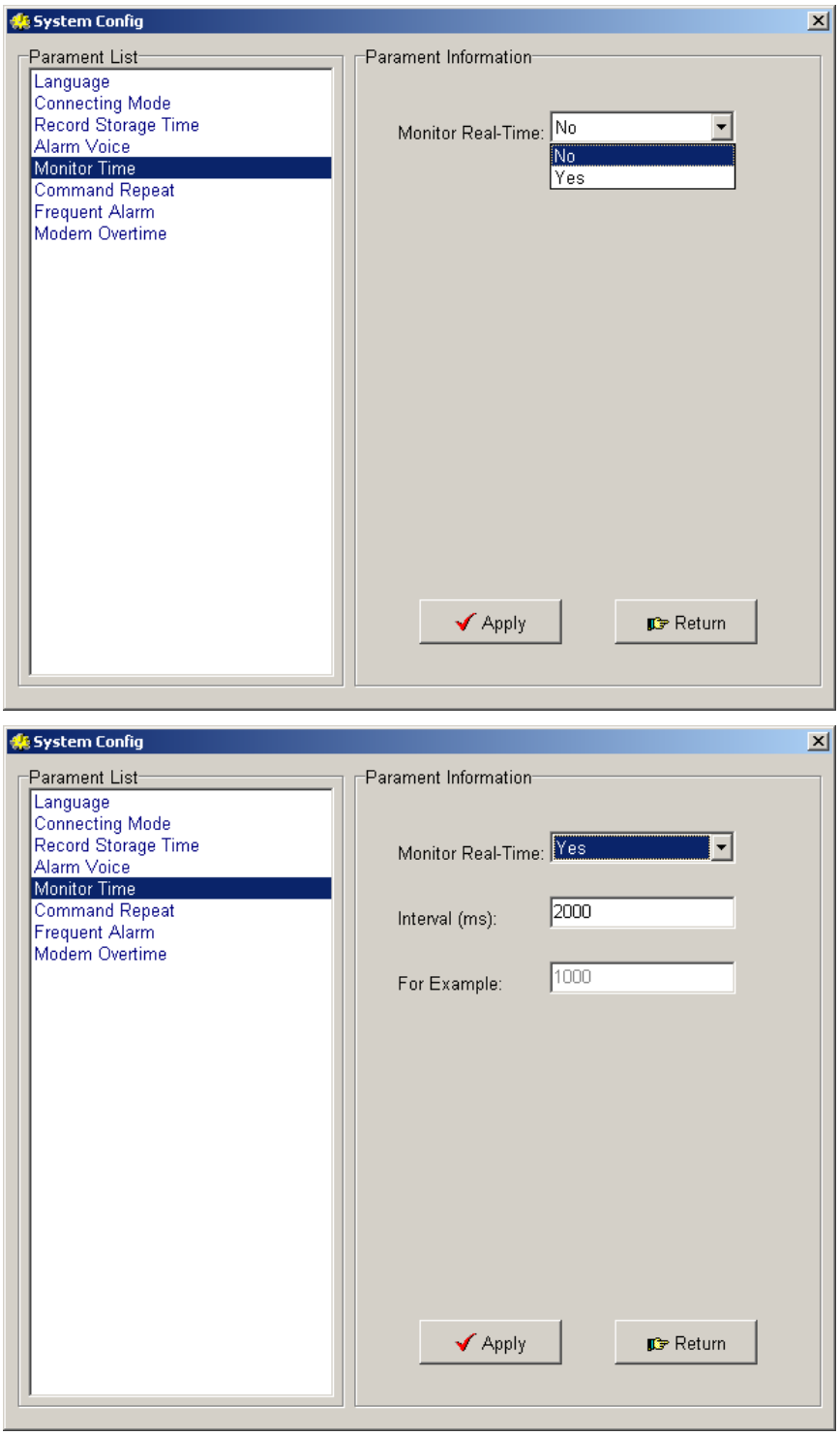


Figure 12 System Config-Monitor Time

3.6 Command Repeat

In case there's no ACK back from mBSC units, NMS will resend the command at the pre-defined times and interval.

'Repeat Number' means the repeat times while the command is being sent.

'Repeat Interval(ms)' means the interval time(millisecond) between the command sending.

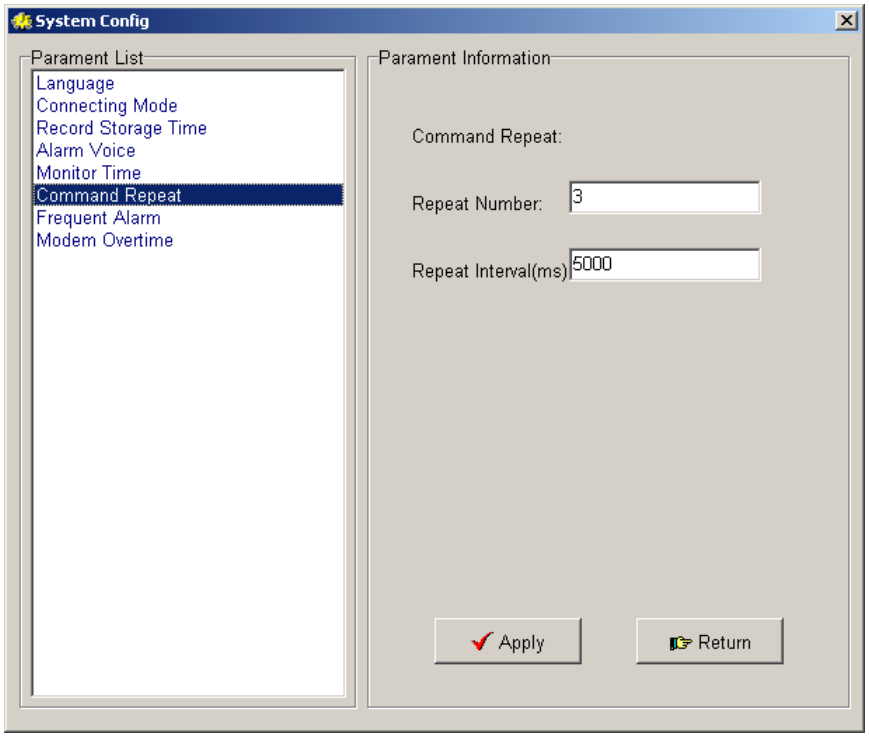


Figure 13 System Config-Command Repeat

3.7 Frequent Alarm

In 'Frequent Alarm' the administrator may configure the lasting time of the alarm, and the alarm times sent by the system in this period.

'Time' means the alarm lasting time which could be set as 1, 2, 3, 4, 5 and 6 hours.

'Number' means how many times that the alarm message will be sent in the certain time.

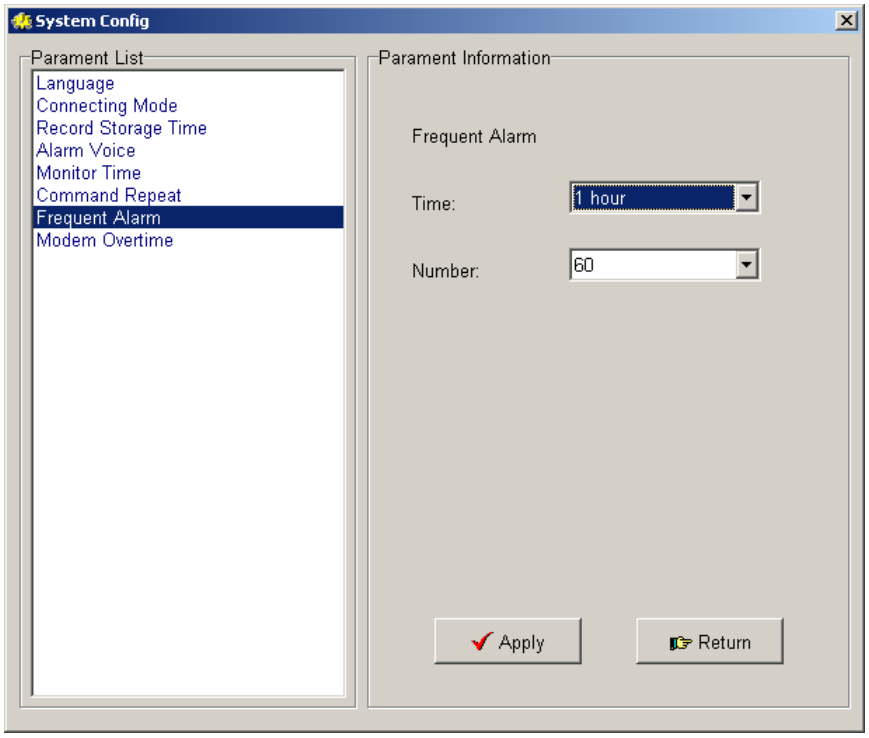


Figure 14 System Config-Frequent Alarm

3.8 Modem Overtime

Here, administrator can set the overtime of the modem connection as well as the reconnection time interval while the system will dial up automatically.

‘Modem Overtime’ means the modem nonresponse lasting time witch the system will close the connection and start reconnect.

‘Reconnect Time(s)’ means the time later while the modem will restart the connection.

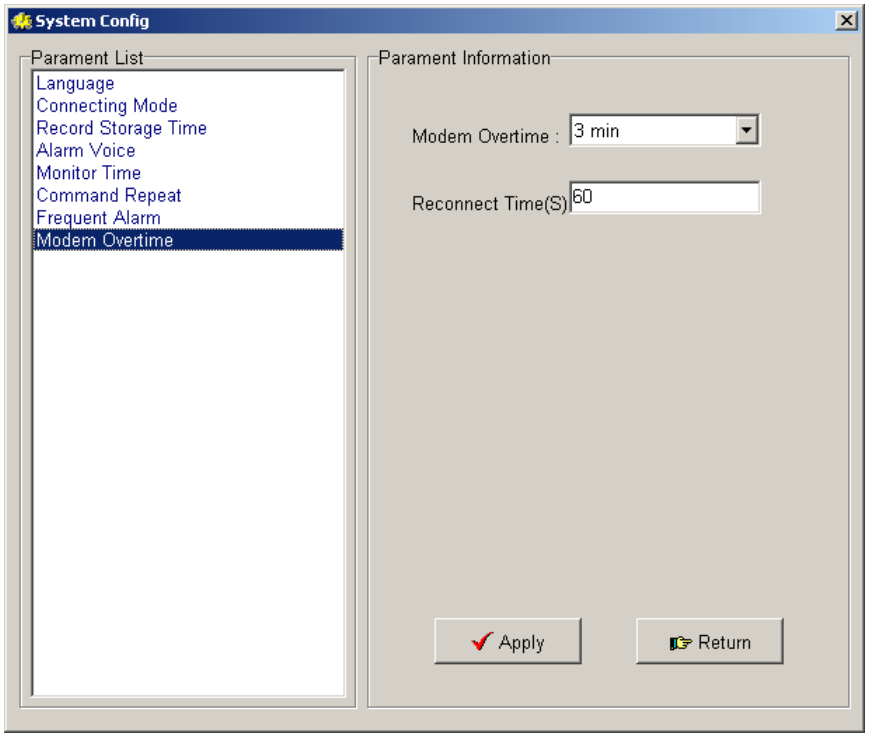
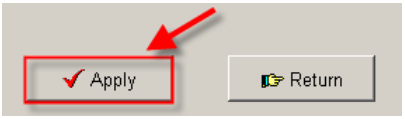


Figure 15 System Config-Modem Overtime

Whatever setting is changed, do not forget clicking ”Apply” button to save the settings, or click “Return” to quit the “System Config” window to keep all the original settings.



4 Port Configuration

Before running the NMS, we need to the set the communication port between the NMS Server and mBSC Master Units. Open the 'Config Port' window as below to assign the target IP address and port.

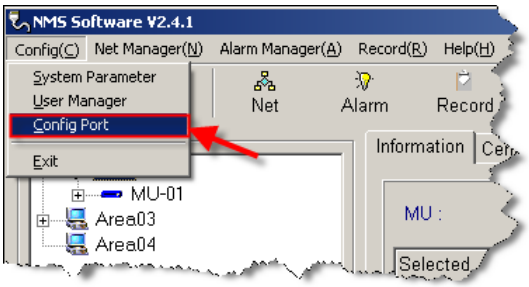


Figure 16 Menu-Config Port

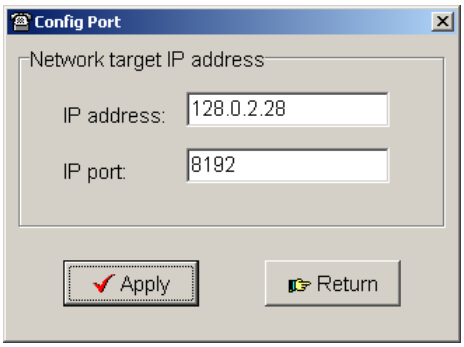


Figure 17 Port Setting Interface

5 User Management

There are 2(two) user levels in NMS, senior user and normal user. Senior user is the administrator o f the system, and they have no limit of access and operation. Normal user is defined by the senior user, their operation is restricted most for browse the devices status only. Normal users can not set the parameters, edit the active units, or add new users etc. All the NMS users are deployed with user ID(identification) and password. All data held within the NMS are protected from access by unauthorized users.

When normal user comes up with problem while using, he should report this problem to the senior user. If senior still can't solve the problem, please contact BTI support team directly.

The operating interface is shown below.

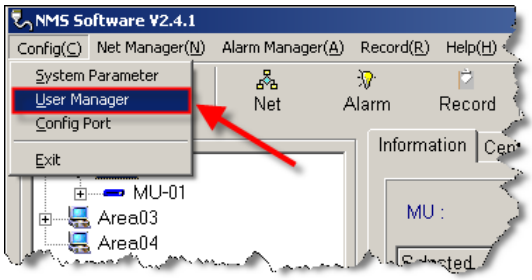


Figure 18 Menu-User Management

5.1 Senior User Authorization

NMS offers 2 default user IDs for senior user and normal user each.

User ID	Password	User Level
Manager	1	Senior User
User	1	Normal User

Click the 'Advance' checkbox in the login window, login with the default senior user ID.

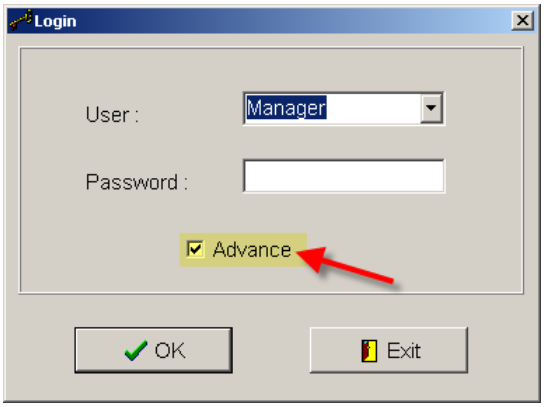


Figure 19 Login Window-Senior Users

In the "User Manager", administrators are able to view and edit all the users' information.

5.1.1 Add New User

Input the new user's ID, password and level information in the 'User Information' section, click the 'Add' button, then a new user is created in NMS system successfully.

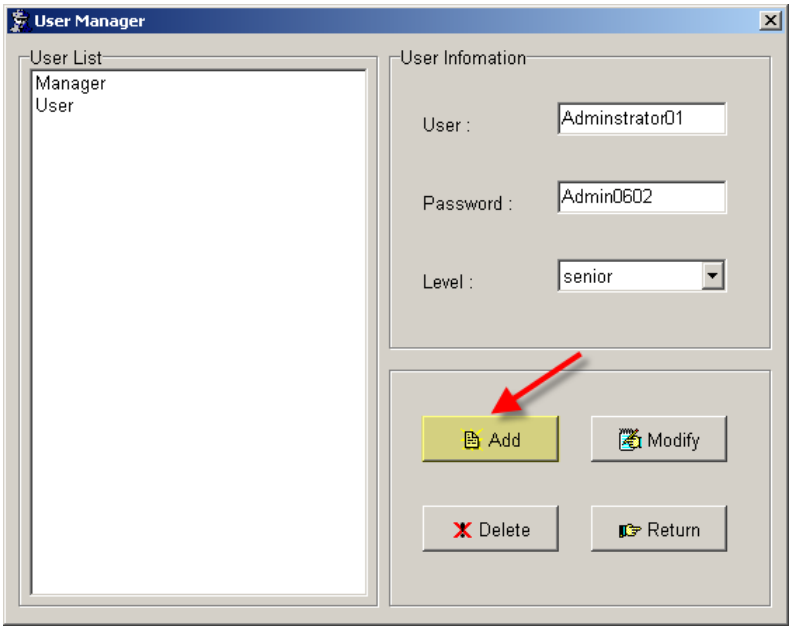


Figure 20 Add New User

5.1.2 Edit User

Senior users can edit the users' authorization information, which includes its user ID, password and its access level. You can modify all of the three items at one time or either of them as needed.

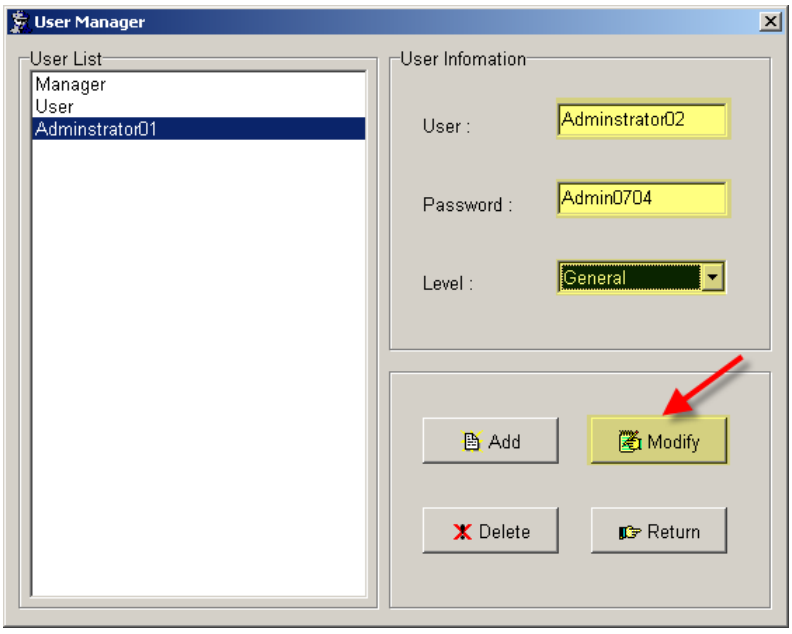


Figure 21 Edit User

5.1.3 Delete User

Senior users are able to delete the unuseful user account(s). Select the user ID in the left 'User List', click the 'Delete' button. Then this user ID will be removed from the system, and you can not see it in the 'User List'. Also nobody is able to login the NMS with this ID.

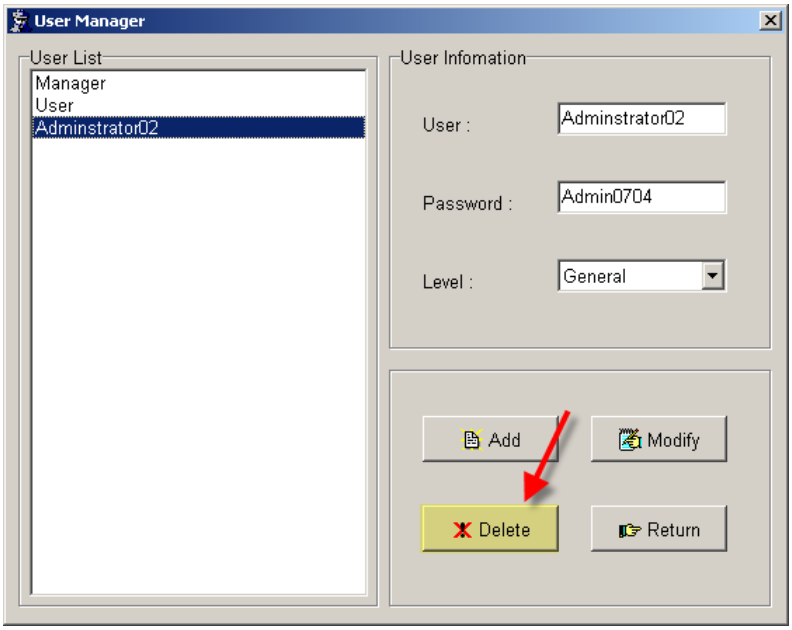


Figure 22 Delete User

5.2 Normal User Authorization

Unclick the ‘Advance’ checkbox, login by using the normal user ID to enter the pre-defined limited information windows.

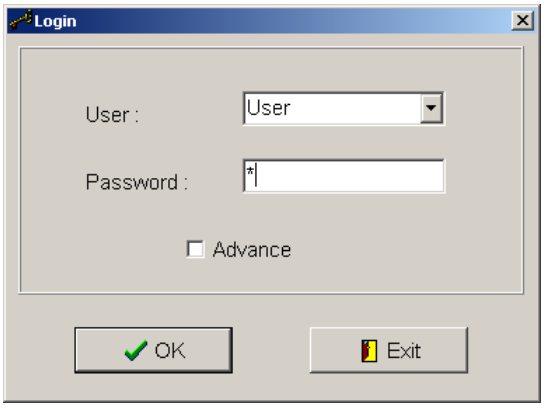


Figure 23 Login Window-Normal Users

For normal users, they can only see their own ID in the ‘User Manage’ window. Also they have no right to add or delete any user IDs. But normal users are able to change their password as needed.

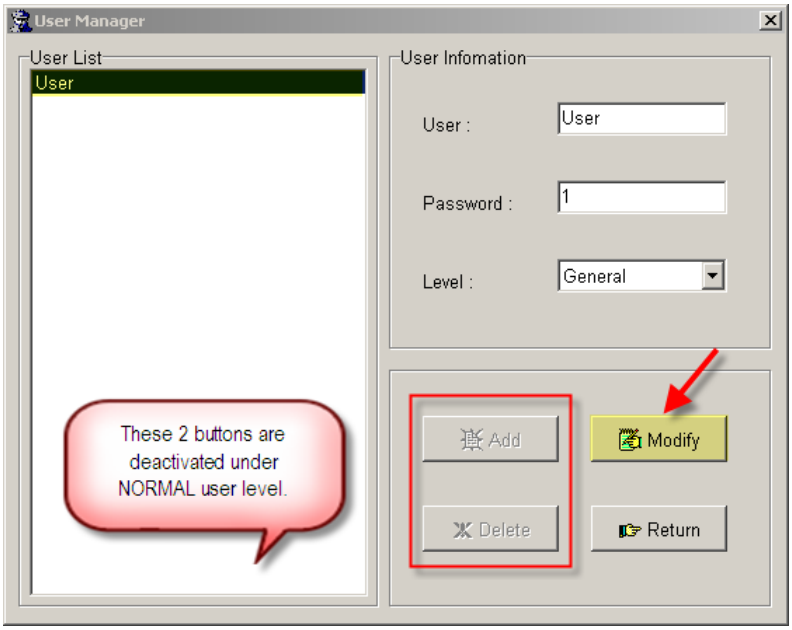


Figure 24 Normal Users-Limit Access

6 mBSC Units Net

NMS is able to monitor all the activated mBSC units. Therefore first of all, the administrator needs to setup the mBSC units' properties in the NMS 'System Net' window.

Login the NMS system by using either senior user ID. Go to the menu and select 'Net Manager' to open the mBSC Units' Net configuration window.

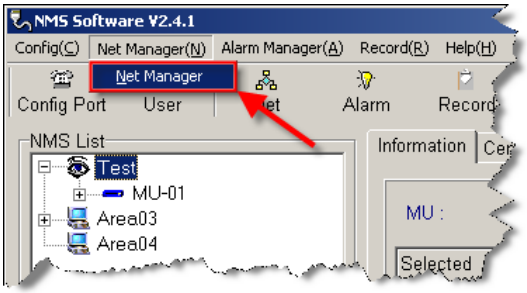


Figure 25 Menu-Net Manager

There're two parts in the 'System Net' window, the left is the mBSC units' net tree map, and the relevant district and site information is in the right. Only the Senior Users can edit all the properties of the location and site. Before NMS runs for the whole mBSC net monitoring, all the active mBSC units need to be setup in 'System Net'.

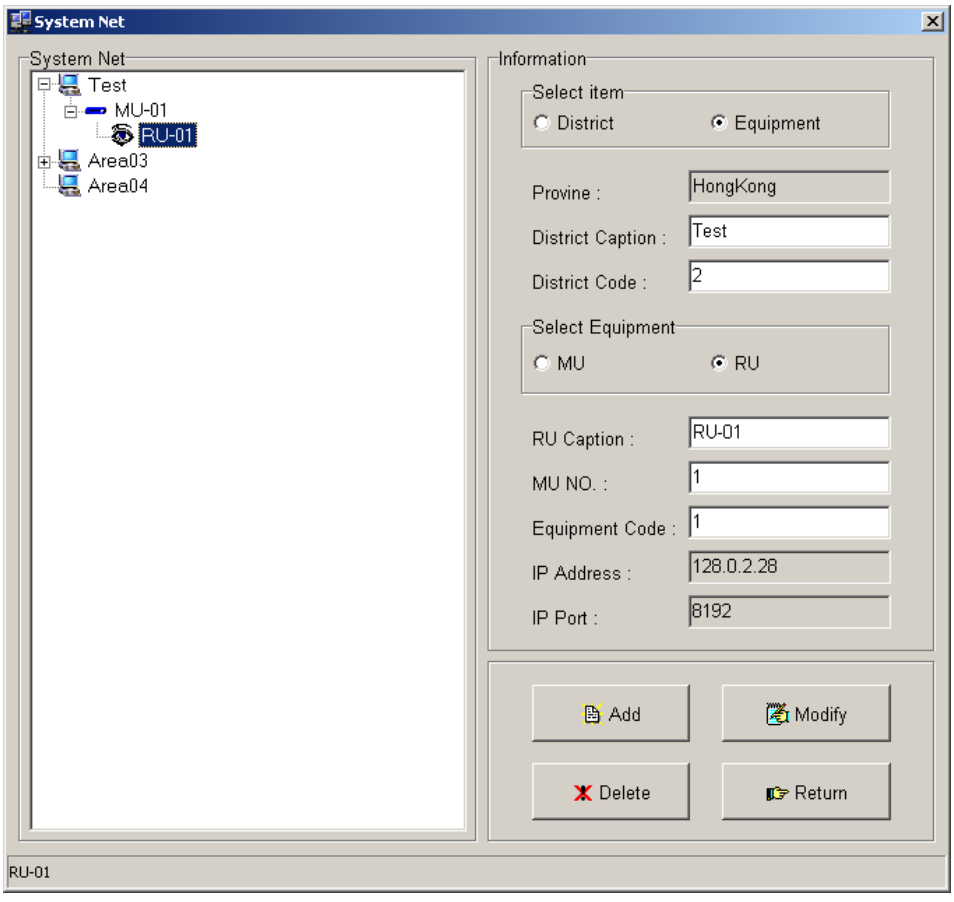


Figure 26 System Net

6.1 Edit District

If the mBSC units are located in different areas, so you need to set up the district to identify these units.

6.1.1 Add New District

If there's no district which the mBSC unit belongs to, you need to first create the district. Select the 'District' in the right top, input the caption and code name of the new district, then click Add to save as shown below:

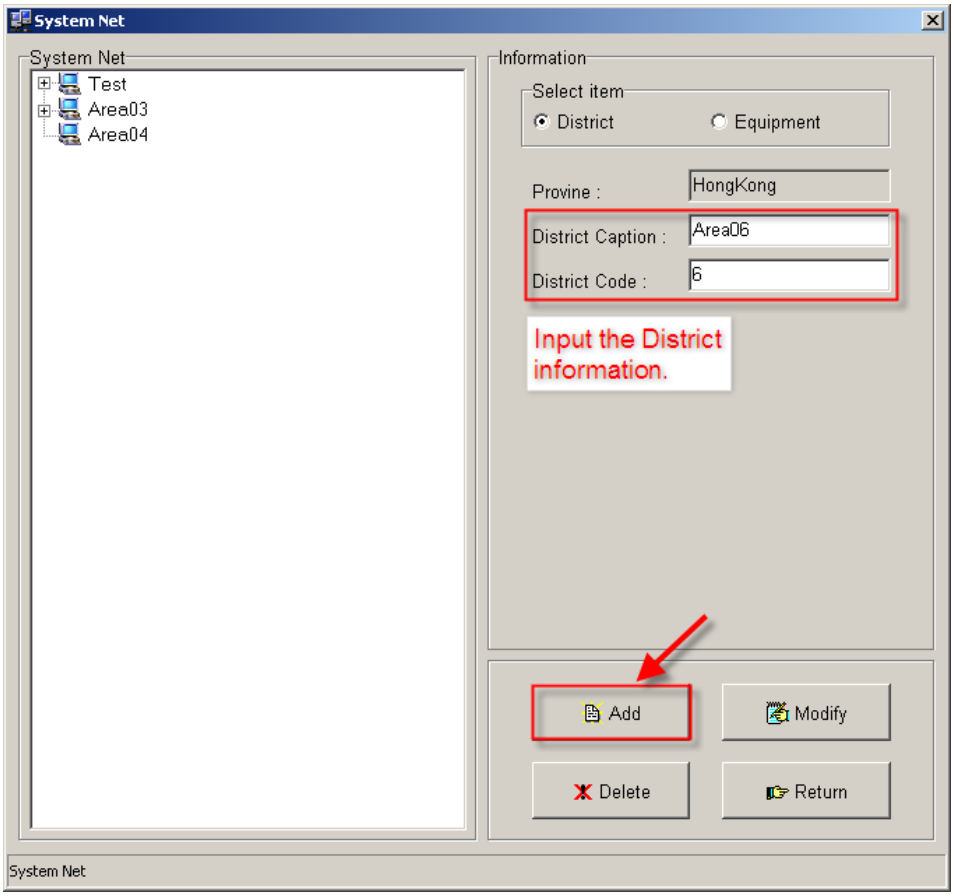


Figure 27 System Net-Add District

6.1.2 Modify District

According the changes of the district, its caption and code information is allowed to be modified by the senior user. Select the district name, then input the updated information and click Modify to save the changing.

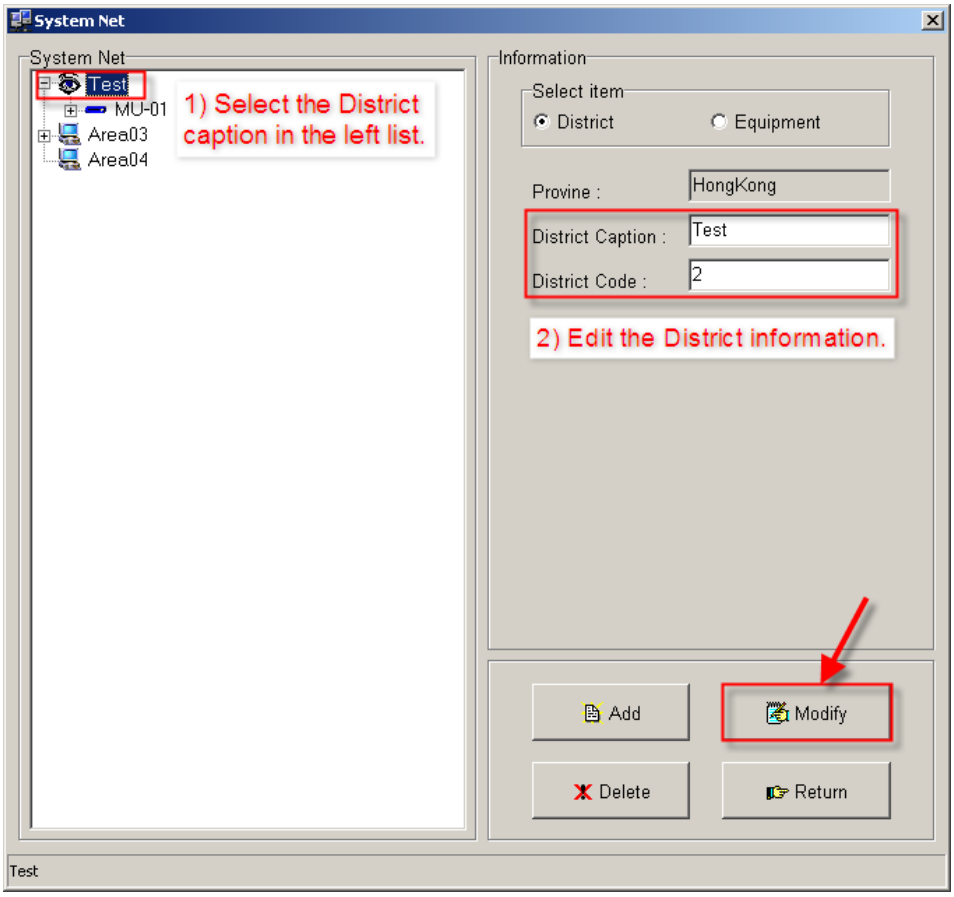


Figure 28 System Net-Edit District

6.1.3 Delete District

To delete the district in the tree, just select the target district name then click 

button. Please note all the site under the district will be removed at the same time with the district deletion.

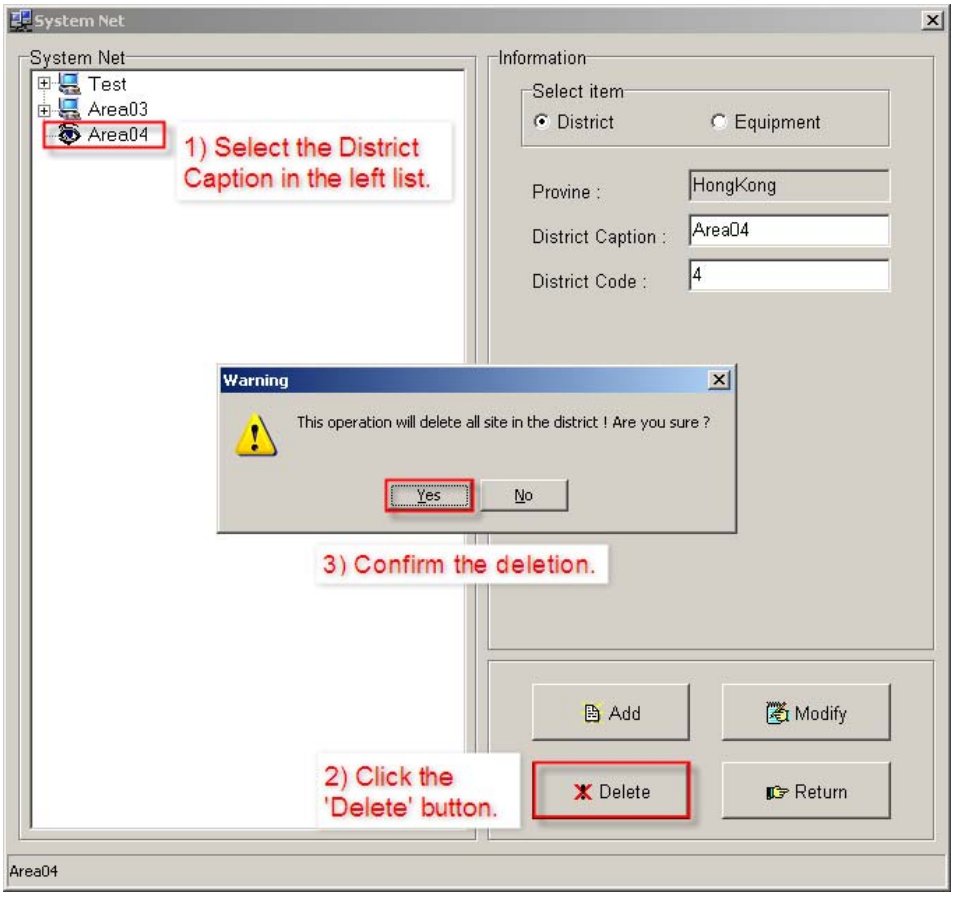


Figure 29 System Net-Delete District

6.2 Edit Equipment

After the setup of the District, the senior users may add the information of the equipments.

6.2.1 Add New Equipment

Go to the main menu bar and click ‘Net’ to enter the Equipment configuration window as below. The MU(Master Unit) need to be added first, otherwise the RU(Remote Unit) is not able to be created.

6.2.1.1 Add New MU

In the ‘System Net’ window,

1. Select the district name in the left ‘System Net’ section which the site is located;
2. Select the ‘Equipment’ radio box in the right top ‘Select Item’ section or click the equipment name directly under the District caption in the left menu tree;
3. Select the radio box of ‘MU’, and then input the MU Caption, MU No. and MU IP address.
4. After confirmation, click 

button to save and finish the new MU creation.

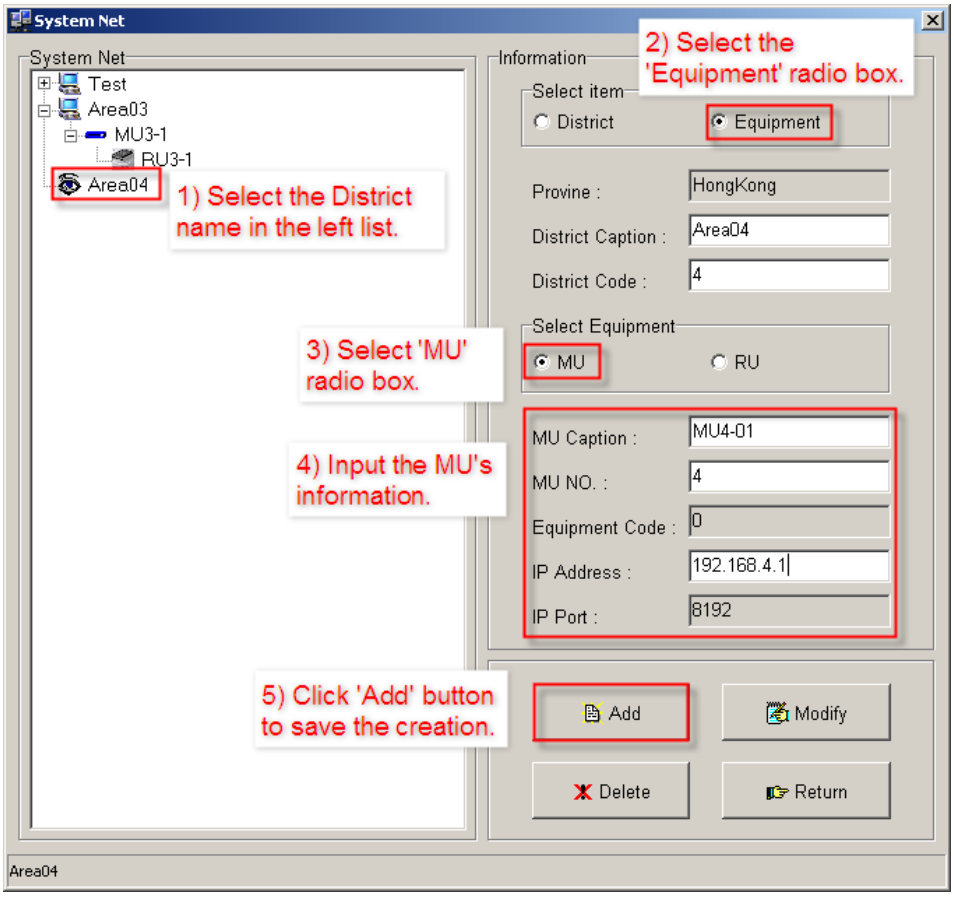


Figure 30 System Net-Add New MU

6.2.1.2 Add New RU

After the MU is created, you can add the RU carried by the MU.

1. Select the MU name in the left ‘System Net’ section;
2. Select the ‘RU’ radio box;
3. Input the information of the RU which includes RU Caption, RU No. and Equipment code;
4. Click 

button to save the addition.

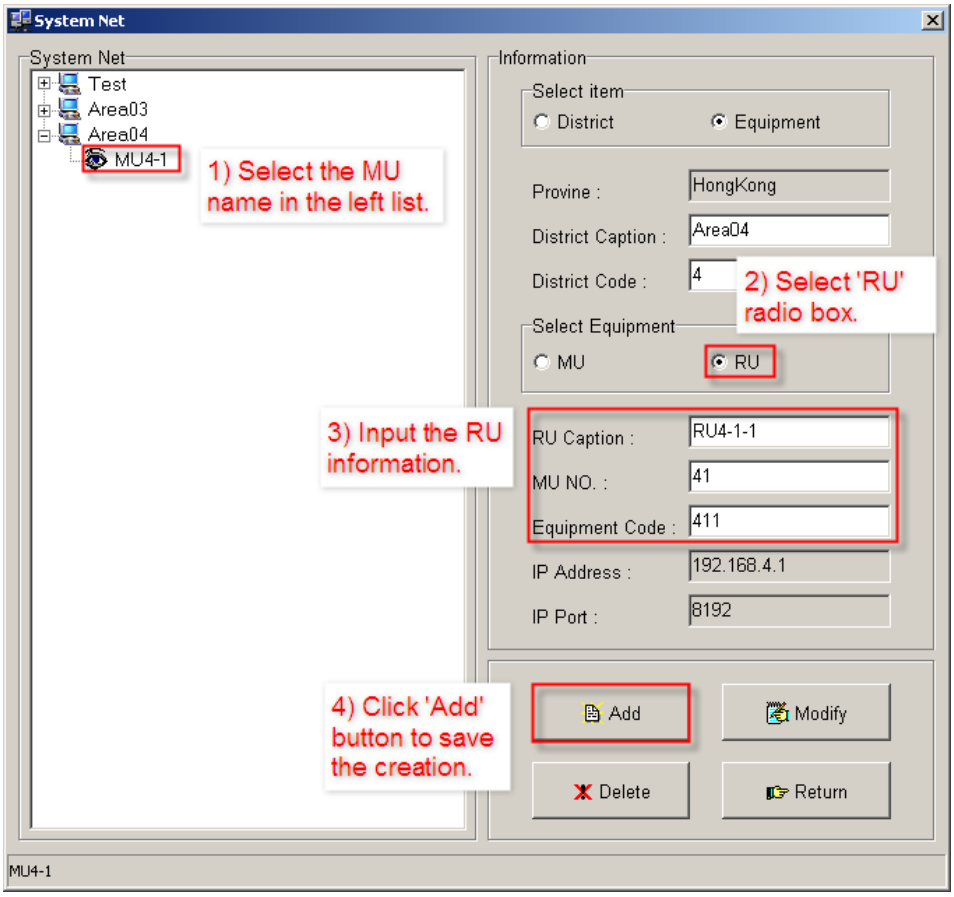


Figure 31 System Net-Add New RU

6.2.2 Modify Equipment

Also, the administrator can change the site properties of the equipment. Go to select the MU or RU name in the ‘System Net’ list, and input the updated relevant information in the right form as shown below. Finally, click ‘Modify’ button to save all the changes.

6.2.2.1 Modify MU

Go to the ‘System Net’ window as shown below,

1. Select the MU caption in the left list tree;
2. Edit the MU information in the right form;
3. Click the 

button to save the changes.

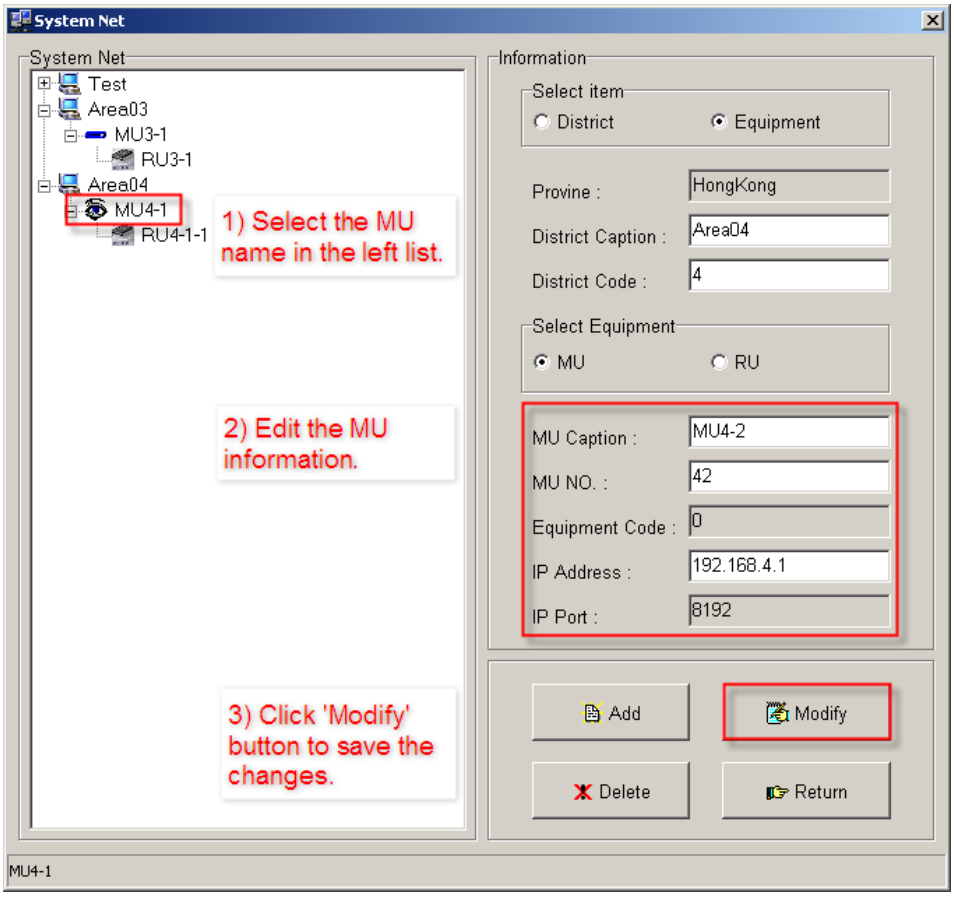


Figure 32 System Net-Modify MU

6.2.2.2 Modify RU

Go to the ‘System Net’ window as shown below,

1. Select the RU caption in the left list tree;
2. Edit the RU information in the right form;
3. Click the 

button to save the changes.

You can not change the MU NO. here in RU modification.

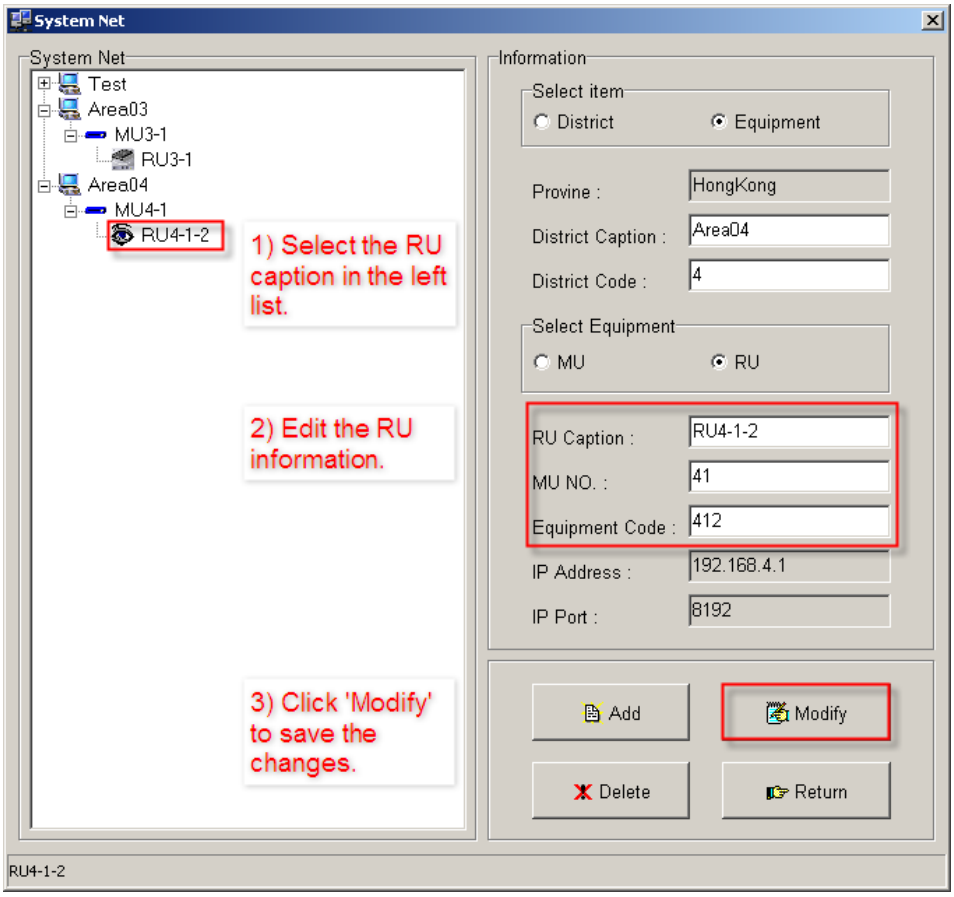


Figure 33 System Net-Modify RU

6.2.3 Delete Equipment

Same, in the 'System Net' window, the site could be removed from the list by the administrator as below steps:

1. Go to select the MU or RU name in the left section;
2. Click 

button.

Please note the deleted site is not able to be retrieved only after you create a new site. Also, all the RU(s) under the certain MU will be removed while this MU is deleted.

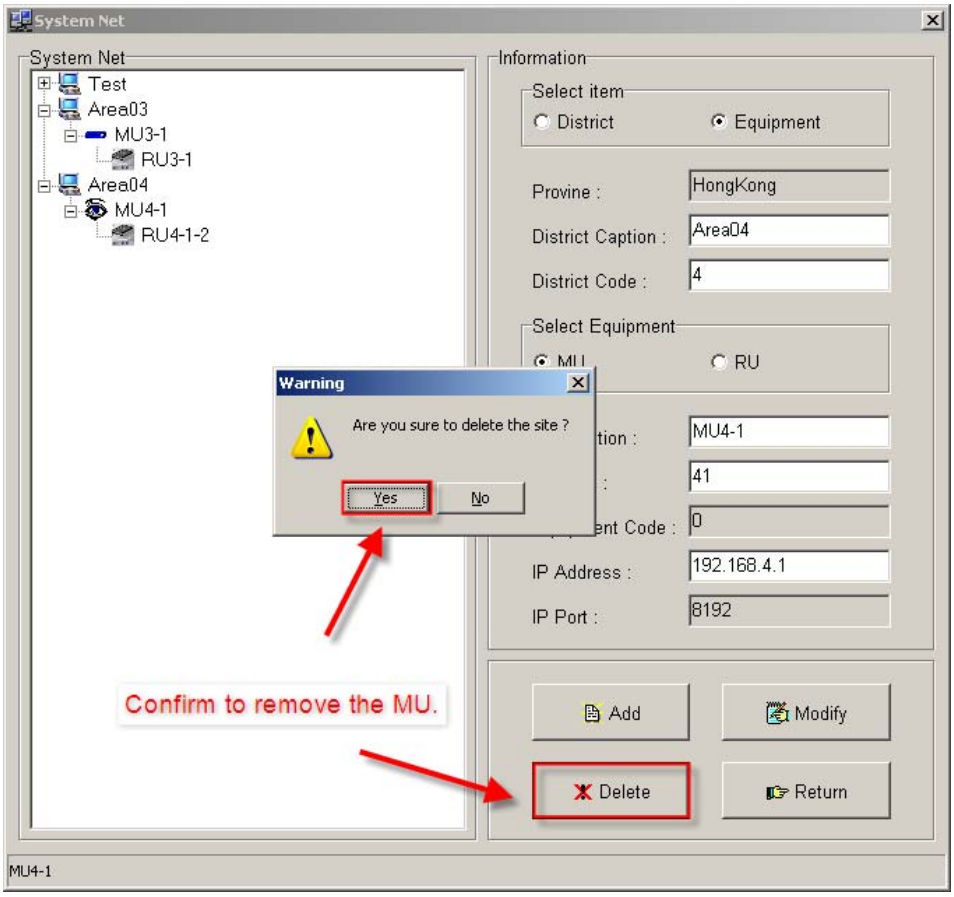


Figure 34 System Net-Delete Equipment

7 Device Monitoring & Configuration

NMS provides detailed and complete mBSC system status monitoring in the main window.

The NMS Monitor Centre offers the mBSC units status in 6(six) categories:

Figure 35 Device Monitoring & Configuration Pages

Following are the function property:

#	Category	Function Property
1	Information	Read
		Set (only in the connection mode of 'Serial port')
2	Center Parameter	Read
		Set
3	Alarm Status	Read
		Report
4	Alarm Enabled	Read
		Set
5	Parameter	Read
		Set
6	Sampling	Read only

7.1 Information

Information displays the device information of the selected unit. The device information items are same both for MU and RU.

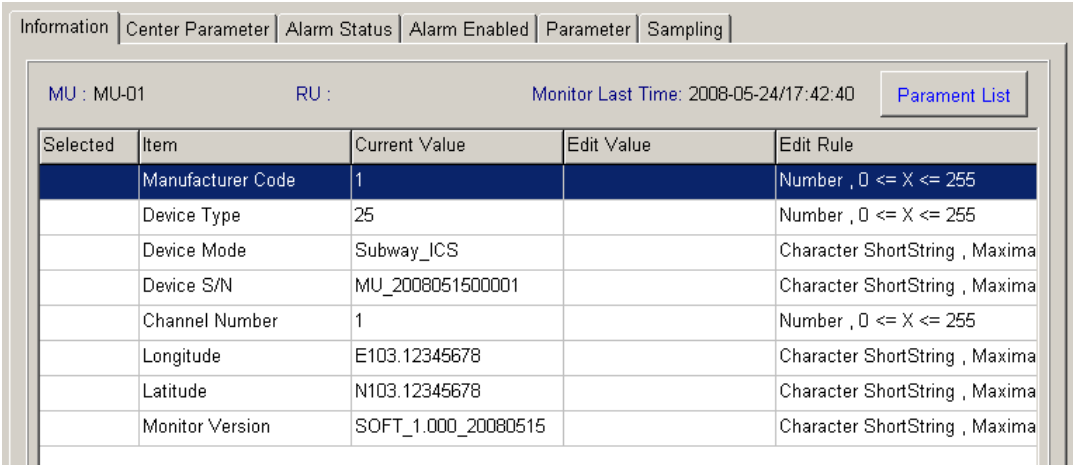


Figure 36 Device Information

There's a button 

in the right top in blue words. After a new mBSC unit(MU or RU) is added into the whole net. The administrator has to press this button manually to trigger the data connection between the NMS system and the unit. It's only used once at the beginning, thereafter the system will get the device's state information automatically.

And these items are able to be edit only in the Connection Mode of 'Serial port'.

Edit steps:

1. Select the target item and click Select button;
2. Click Edit button;
3. Input the new value in the 'Edit Value' form. (Please refer to rule description in the right 'Edit Rule' column);
4. Click Set button to save the change.

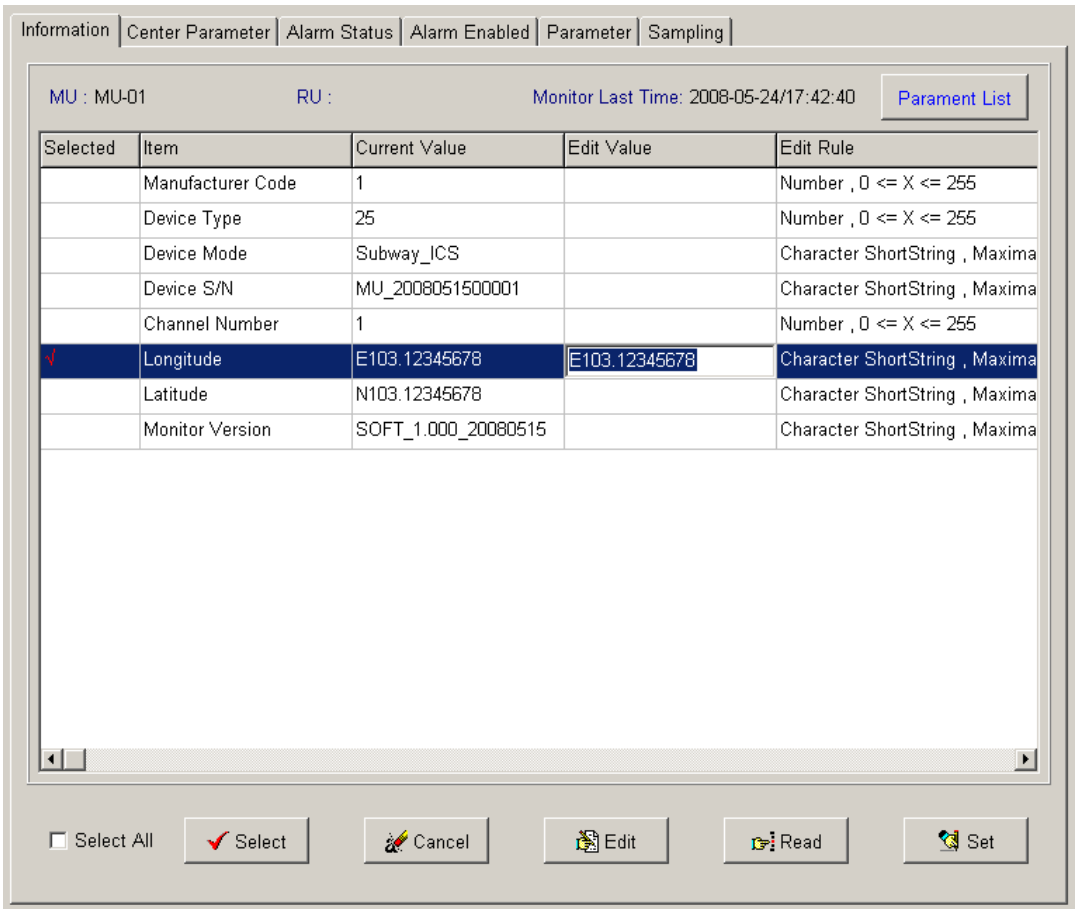


Figure 37 Device Information Items Editing

7.2 Center Parameter

Center Parameter displays the site and device number, IP address and port of the monitor center and the date format.

MU has the information of IP address.

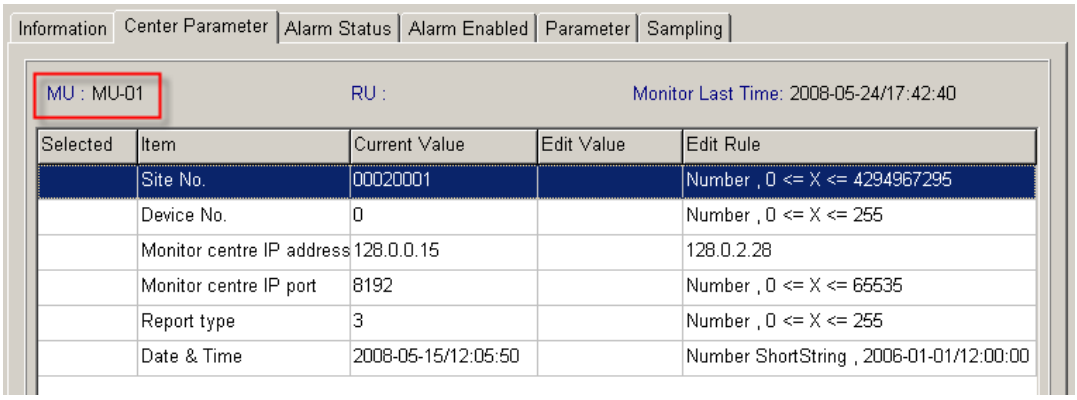


Figure 38 Center Parameter-MU

But there's no IP address for RU.

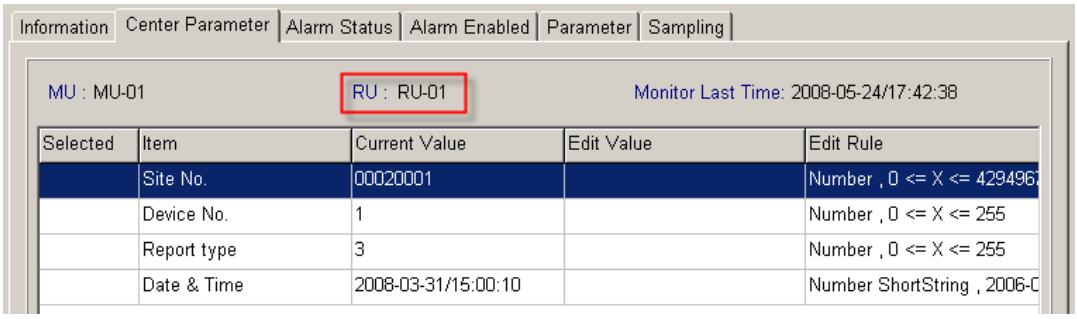


Figure 39 Center Parameter-RU

The Center Parameter items are able to be changed. Please refer to <7.1 Information> for the Edit Step.

7.3 Alarm Status

Alarm Status displays the mBSC units alarm information. In the MU's Alarm Status page, you may check the FDDI transmit state to the linked RUs. All the alarm item value is in RED letters to be recognised easily and quickly.

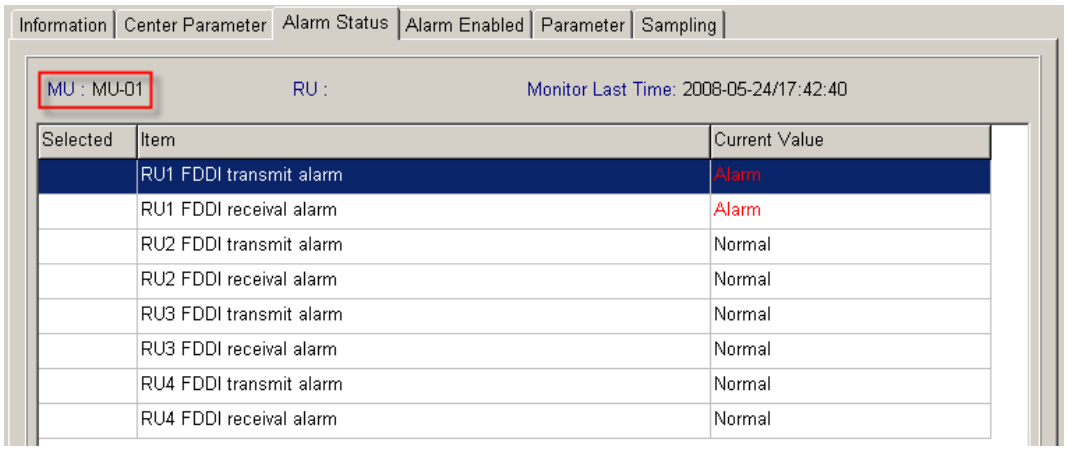


Figure 40 Alarm Status-MU

For the RUs, system offers the following items alarm status:

#	Alarm Item	Value	Description
1	DC fail alarm	Normal | Alarm	DC power supply status
2	Entrance guard alarm	Normal | Alarm	It alarms while the front door is open.

3	Downlink OverDrive alarm	Normal | Alarm	This alarm occurs while the system input power is over the defined value.
4	Downlink OverPower alarm	Normal | Alarm	It alarms while the output power of the downlink PA is over the limit.
5	Uplink OverPower alarm	Normal | Alarm	It alarms while the output power of the uplink PA is over the limit.
6	Downlink VSWR alarm	Normal | Alarm	Generally, Over VSWR alarm and shut down @ 5.0 Over VSWR restart @ 3.0
7	Downlink OverTemperature alarm	Normal | Alarm	Over temperature alarm and shut down power amplifier: ⩾95° C Over temperature restart @ 75°C
8	Uplink OverTemperature alarm	Normal | Alarm	Over temperature alarm and shut down power amplifier: ⩾95° C Over temperature restart @ 75°C

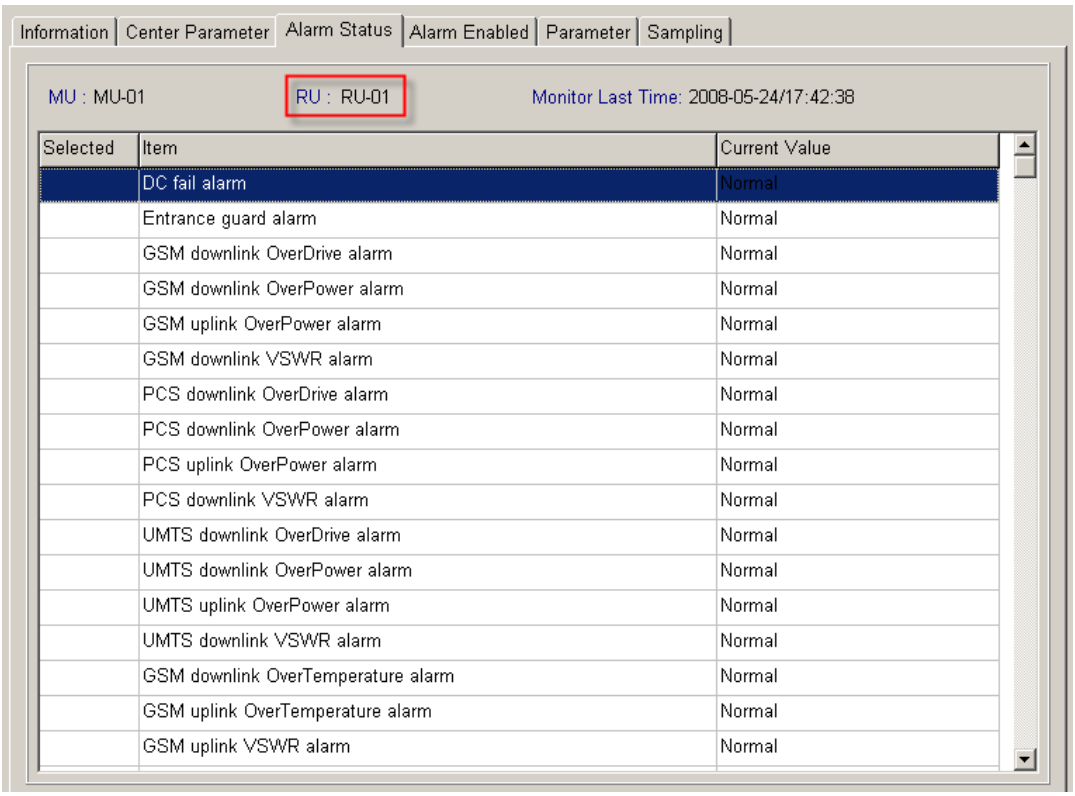


Figure 41 Alarm Status-RU

7.4 Alarm Enabled

Alarm Enabled displays the working status of the alarm items. Here the administrator can enable or disable the alarm items. Only the enabled alarm items could be checked in the Alarm Status page. Please refer to <7.1 Information> for the Edit Step.

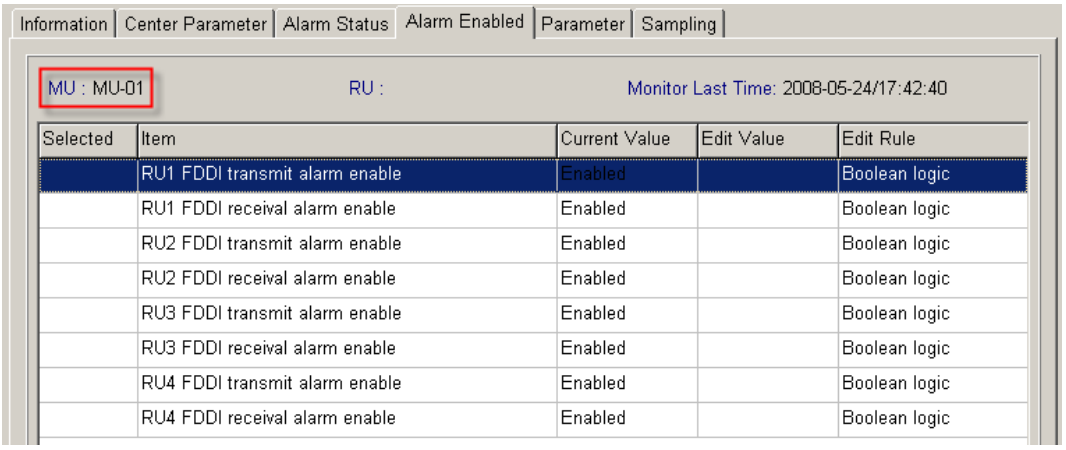


Figure 42 MU's Alarm Items Setting Screen

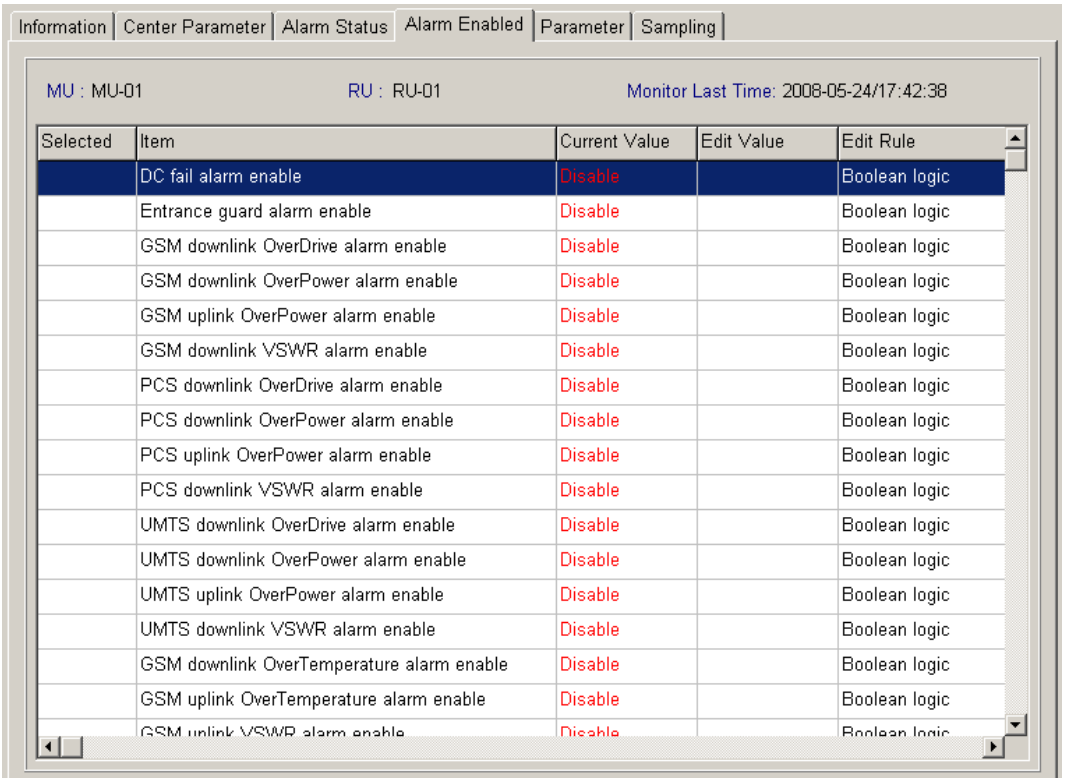


Figure 43 RU's Alarm Items Setting Screen

7.5 Parameter

Parameter displays the mBSC devices' parameters values and working status. Parameter page is only available for RU.

The RU's parameters are as below:

#	Parameter Item	Value
1	Uplink PA	Enabled | Disabled
2	Downlink PA	Enabled | Disabled
3	Uplink Attenuation	**dB
4	Downlink Attenuation	**dB
5	Downlink OverDrive alarm threshold	**dBm

6	Downlink OverPower alarm threshold	**dBm
7	Uplink OverPower alarm threshold	**dBm
8	Downlink VSWR alarm threshold	**.*
9	Downlink OverTemperature alarm threshold	**°C
10	Uplink OverTemperature alarm threshold	**°C
11	Uplink OverPower alarm threshold	**.*
12	Remote control power ON/OFF	Enabled | Disabled

Please refer to <7.1 Information> for the Edit Step.

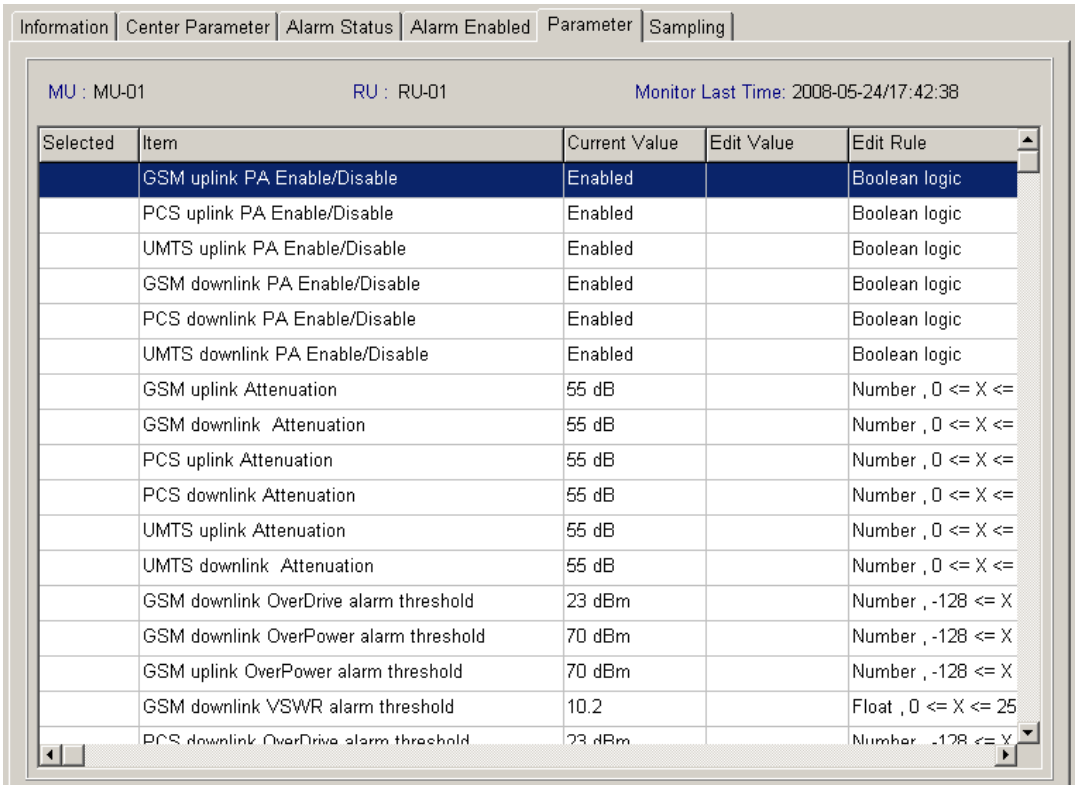


Figure 44 Device Parameters

7.6 Sampling

Sampling page displays the remote units' functions parameters which are requested manually. Administrator can check either of the list items or all the items at one time.

1. Select the parameter item and click 

button;
2. Then click 

button, the NMS will get the up to date value from the designated unit.

Also, you can ask to display either function parameter values of the multiple bands or all by choosing the band radio box before the above steps.

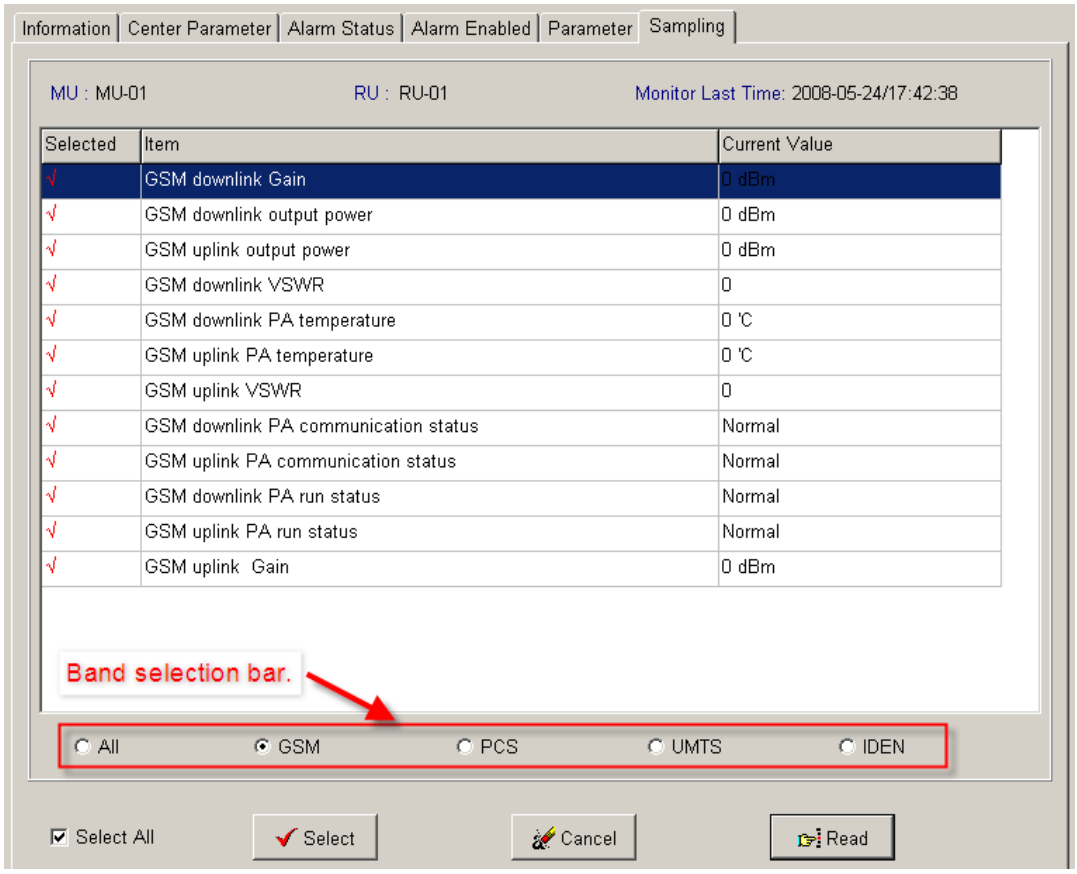


Figure 45 Monitoring State Sampling

8 Alarm Management

Alarm management provides detailed and complete system alarm inquiry. Administrator can check the alarm status freely by different filtering conditions and then manage the operation status of all devices in the system.

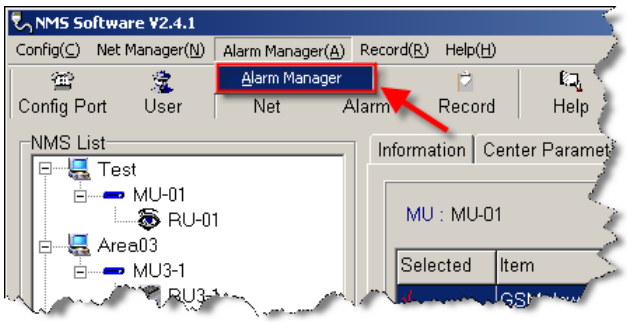


Figure 46 Menu-Alarm Manager

Alarm management consists of 6(six) pages about Active Alarm, Cleared Alarm, Frequent Alarm, Query Alarm, Statistic Alarm and Level Custom.

Figure 47 Alarm Pages

8.1 Active Alarm

Active Alarm page displays all the current alarms in the whole mBSC net.

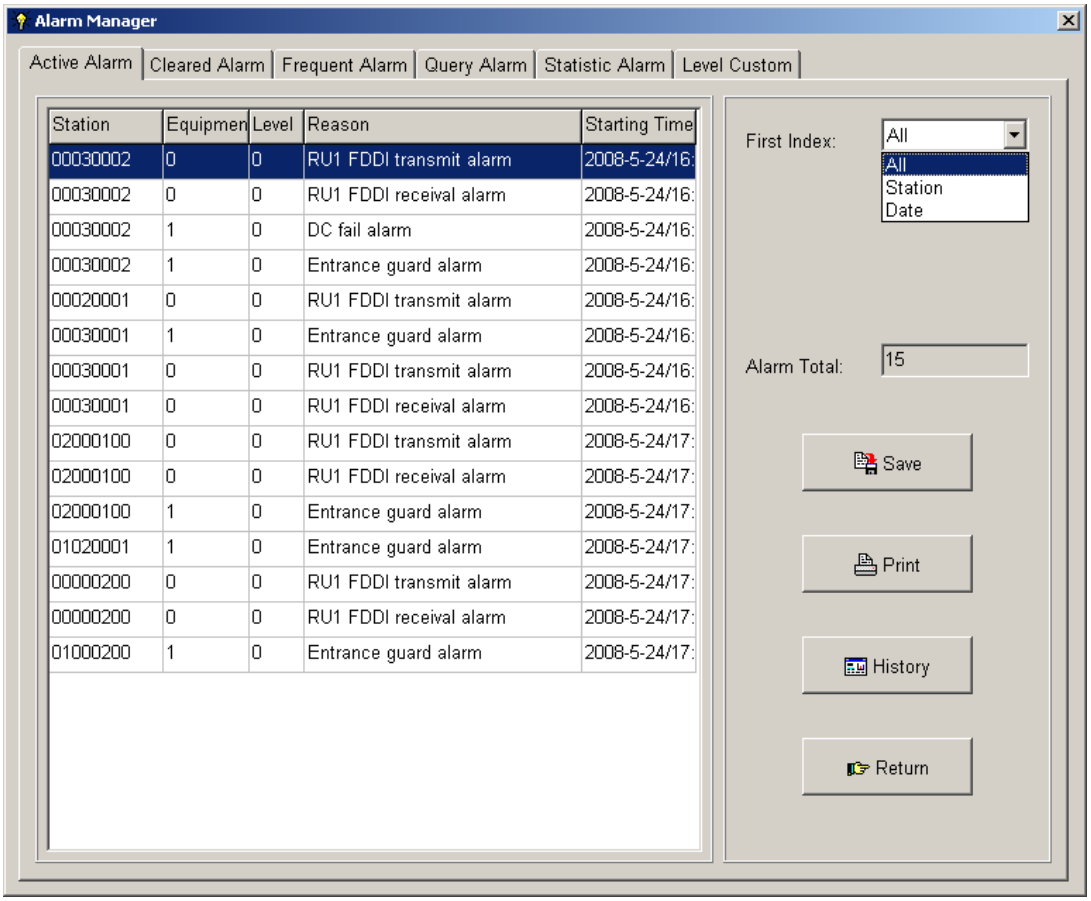


Figure 48 Active Alarm

8.1.1 Data Sort

All the active alarm data could be sorted by Station or Date. In the sort of Station, there're still 3(three) sub-level to sort the data much more accurately.

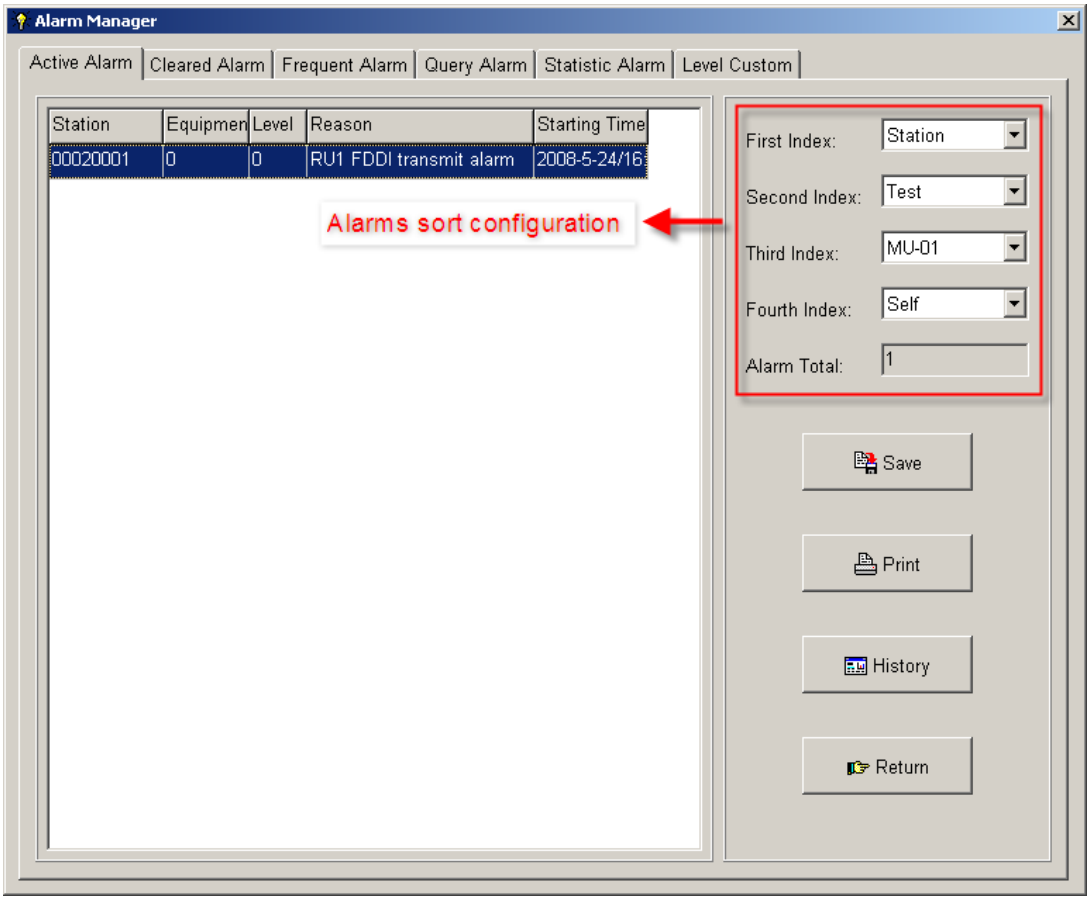
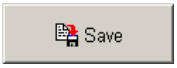


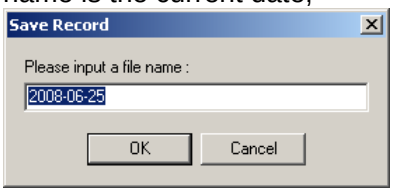
Figure 49 Alarm Sort

8.1.2 Data Saving

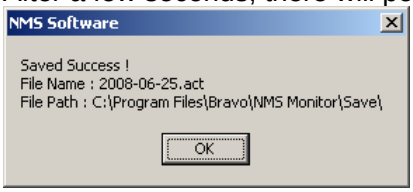
Administrator(s) can save the active alarm data manually.

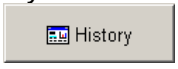
1. Sort the active alarms as needed;
2. Click 

button, input the file name in the popup window below, the default file name is the current date;



3. After a few seconds, there will popup the saving result window with the file information.



4. If you want to check the saved active alarms record(s), go into the Active Alarm page and click 

button to open the saved file(s) before.

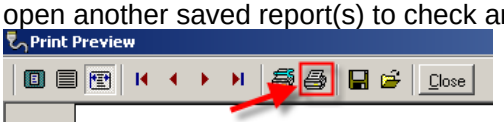
8.1.3 Data Printing

Except saving the active alarms, the data can be also printed out.

1. Sort the active alarms as needed;
2. Click 

button, the system will popup the Print Review window as shown below. You can check and zoom the reviewed page(s);

3. Click the print icon in the Print Review window. Here you can save the output printed active alarms report to whatever storage disk(like hard disk, memory stick, flash memory etc.), or open another saved report(s) to check and/or print;



4. Click ‘Close’ button to quit the Print Review window without printing.

8.2 Cleared Alarm

Cleared Alarm page displays all the alarm events witch are restored in the whole mBSC net.

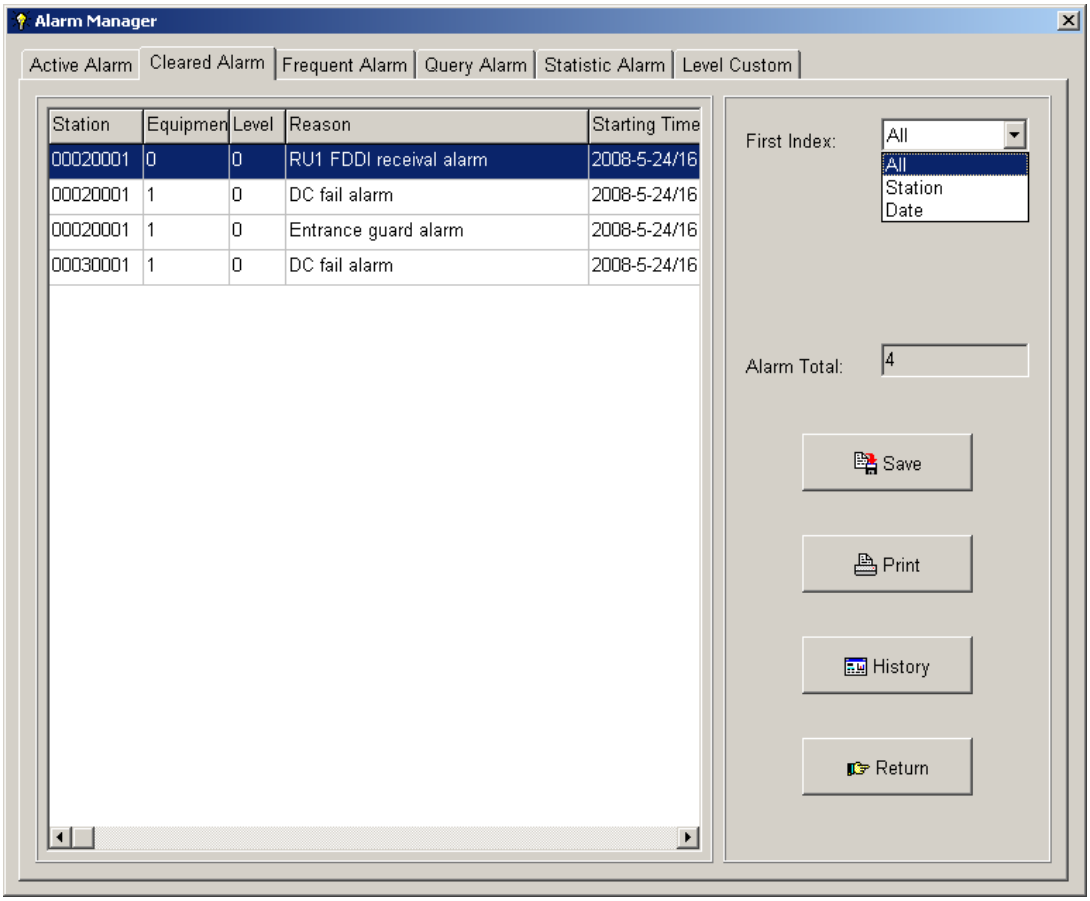


Figure 50 Cleared Alarm

Same, all the Cleared Alarm data can be sorted, saved, printed. Please refer to <8.1 Active Alarm> for the operation in detailed.

8.3 Frequent Alarm

Frequent Alarm page displays the alarms which are occurred frequently in the system.

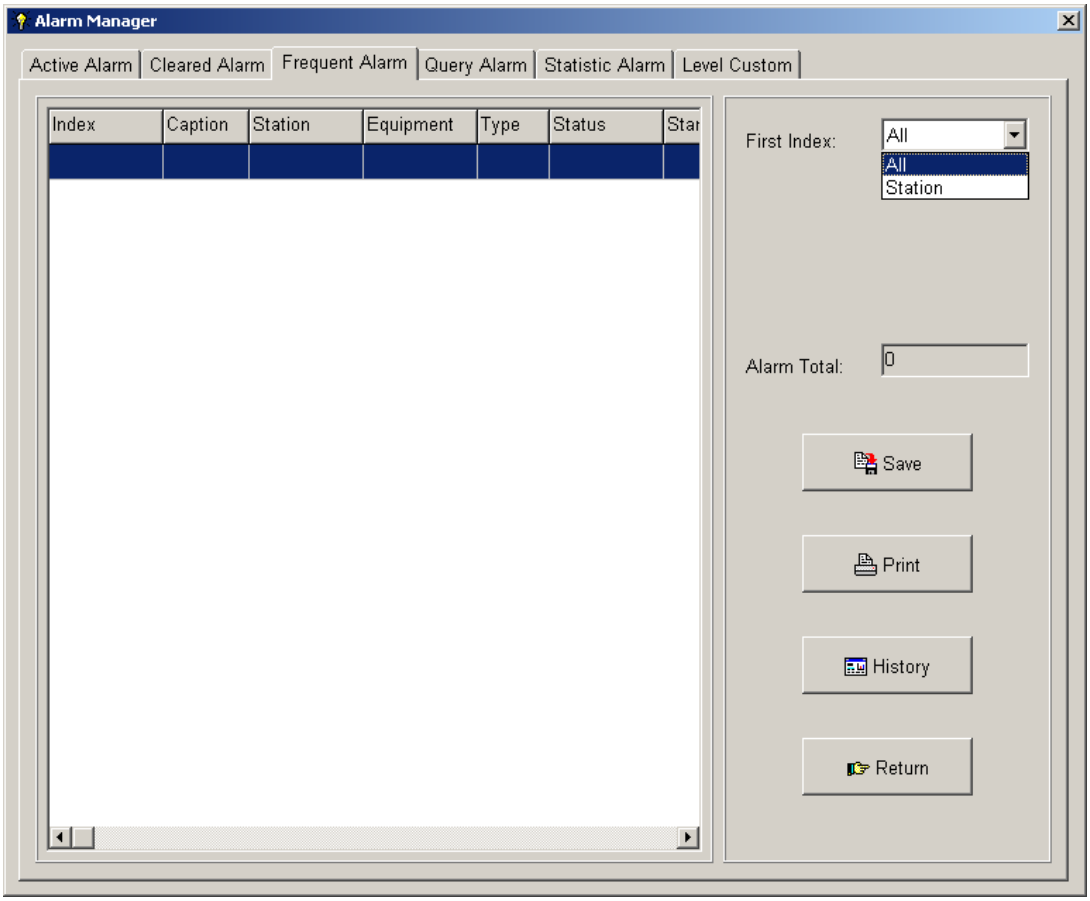


Figure 51 Frequent Alarm

Same, all the Cleared Alarm data can be sorted, saved, printed. Please refer to <8.1 Active Alarm> for the operation in detailed.

8.4 Query Alarm

In the Query Alarm page, you can check all the current the alarm queries in the NMS. It also supports sorting, saving and printing. Please refer to <8.1 Active Alarm> for the operation in detailed.

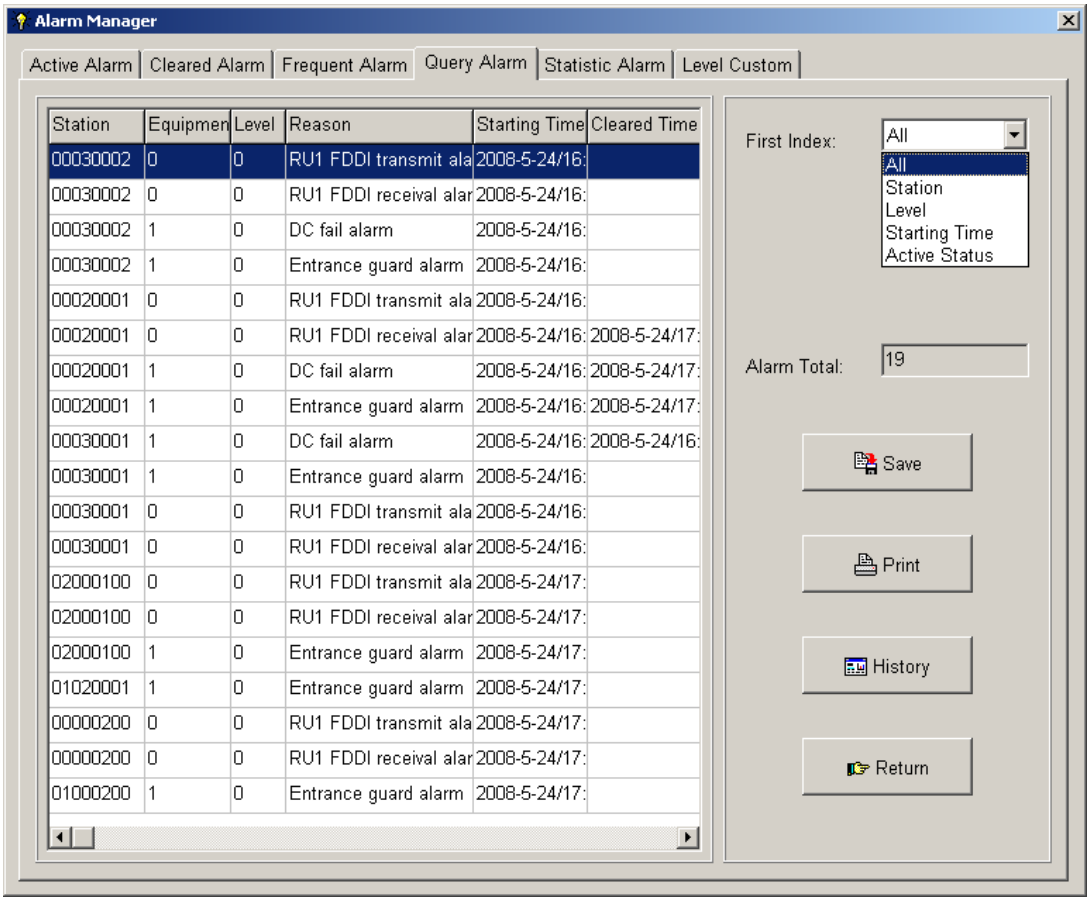


Figure 52 Query Alarm

8.5 Statistic Alarm

NMS provides the alarm statistics chart and output. Go to the Statistics Alarm page in Alarm Manager as shown below. There's the chart in line with data markers. In the right panel, you can change the chart X, Y range and choose the alarm types which need to be collected in the chart.

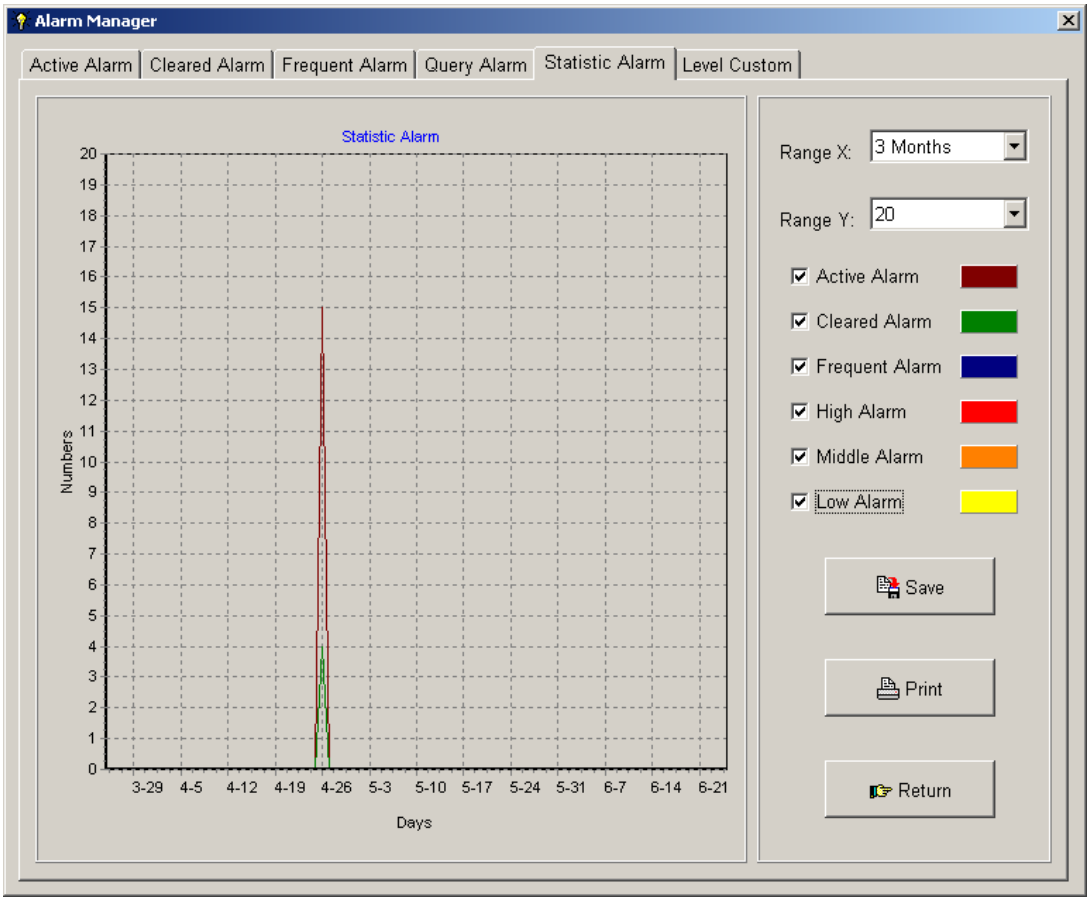


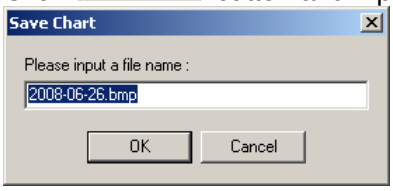
Figure 53 Statistic Alarm

8.5.1 Chart Saving

Pursuant the following steps to save the alarm statistic chart:

1. Set the chart X,Y range
2. Select the alarm types;
3. Click 

button and input the chart image file name in the popup window below;



4. The system will save the chart screen in .bmp image in the path of C:\Program Files\Bravo\NMS Monitor\Save.

8.5.2 Chart Printing

The line chart could be printed out directly by click 

button. You will get the WYSWG chart as same as the saved image.

9 Log Management

NMS records all the users operations and system events in the database. Go to the menu and select 'Record' to enter the log window.

Figure 54 Menu-Record

The administrator can check, sort, save and print the log information.

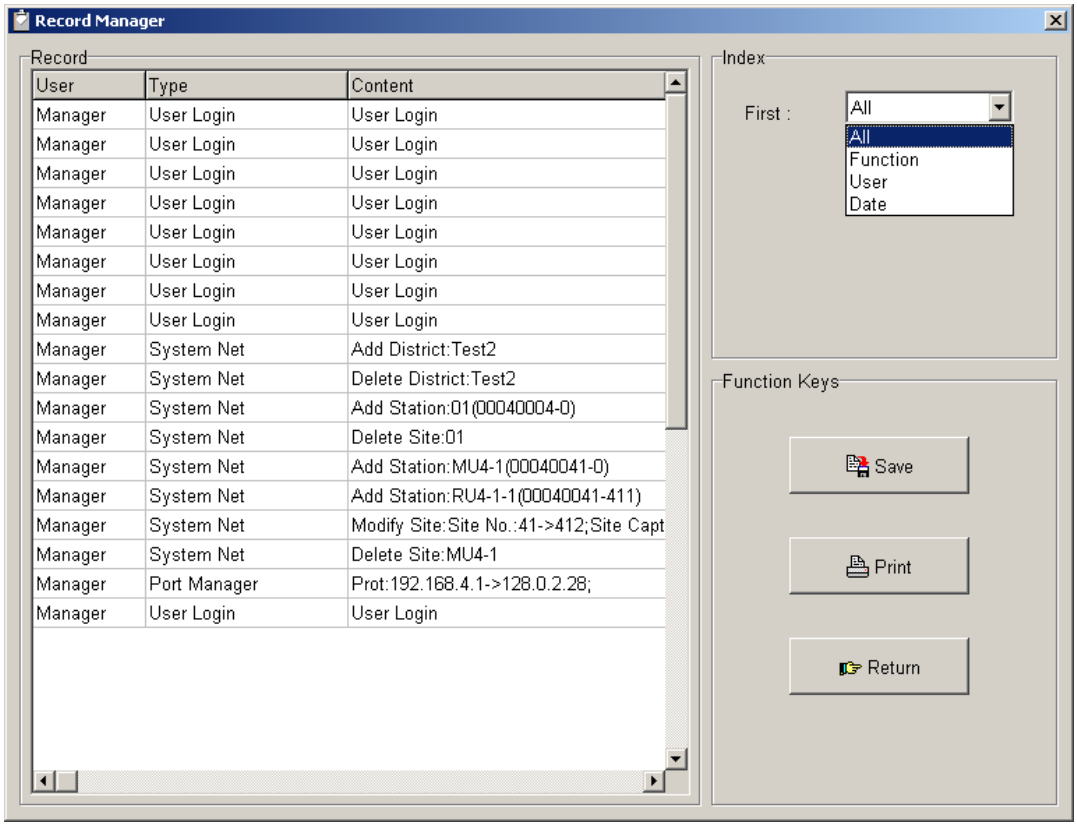


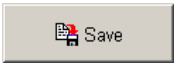
Figure 55 Record Manager

9.1 Log Saving

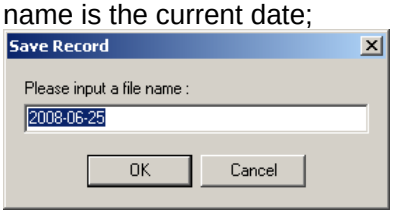
NMS will keep the log data as the defined time, please refer to <3.3 Record Storage Time> for the setting. The overdue logs will be deleted automatically in the system. Therefore timely manual storage is recommended.

9.1.1 Saving as System Format(.rcd)

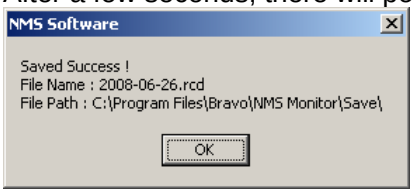
1. Sort the logs as needed;

2. Click 

button, input the file name in the popup window below, the default file name is the current date;



3. After a few seconds, there will popup the saving result window with the file information.

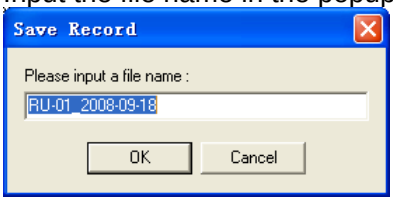


4. The log data file will be saved in the default path. You'd better keep it in some other safe place as record.

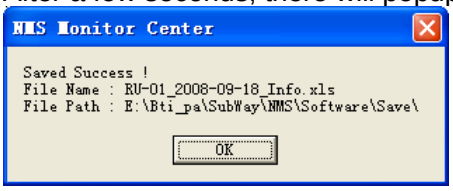
9.1.2 Saving as Excel Format(.xls)

1. Select 'Save As Excel' in the main menu of 'Record';

2. Input the file name in the popup window below, the default file name is the current date;



3. After a few seconds, there will popup the saving result window with the file information.



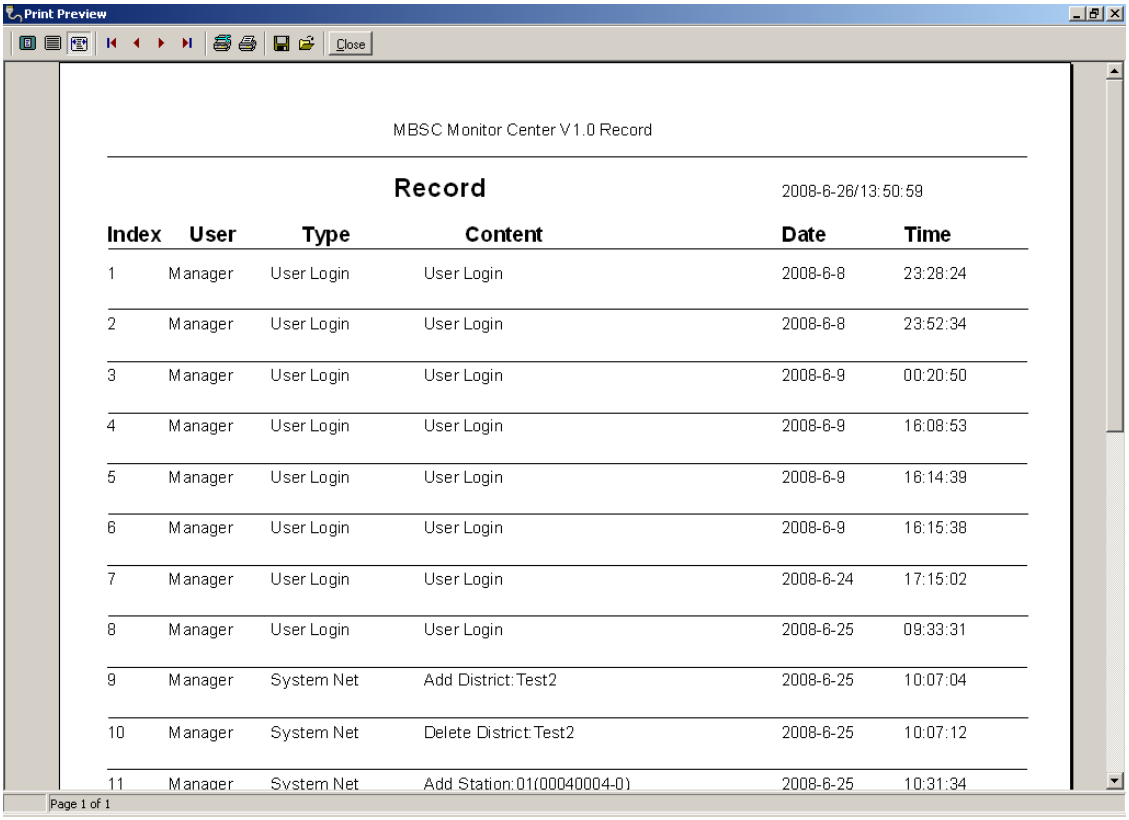
4. The log data file will be saved in the default path. You'd better keep it in some other safe place as record.

9.2 Log Printing

The log data can be also printed out as well.

1. Sort the logs as needed;
2. Click 

button, the system will popup the Print Review window as shown below. You can check and zoom the reviewed page(s);



3. Click the print icon in the Print Review window. Here you can save the output printed active alarms report to whatever storage disk(like hard disk, memory stick, flash memory etc.), or open another saved report(s) to check and/or print;

4. Click ‘Close’ button to quit the Print Review window without printing.

10 Abbreviations

Abbreviation	Definition
DC	Direct Current
C°	Degree Celsius
COM	Serial Communication Port
dBm	Power measurement referenced to the specific power level of one watt
FDDI	Fiber Distributed Data Interface
GSM	Global System for Mobile Communication
MU	mBSC Optical Master Unit
NMS	Network Monitoring System
PA	Power Amplifier
PCS	Personal Communication Service
RF	Radio Frequency
RU	mBSC Optical Remote Unit
UMTS	Universal Mobile Telecommunications System
VSWR	Voltage Standing Wave Ratio
WYSWG	What You See, What You Get