Xcor MHV Client User Guide

MHV-CUG-v.1.0.2

July 2010

This document details the functionality of the MHV Client software program. It is intended to be a Quick Start guide for using the system, and provides information on the program's features and their use.

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Introduction

The MHV Support System comprises a higher level Xcor monitoring and control tool for multiple hubs.

The system is based on dedicated software used for collecting and storing current hub status reports from remote Xcor sites. These reports include vital information about the return path, such as:

- CPD and it's statistics
- CNR impact and it's statistics
- Impairment consistence
- Outage alarm and their statistics/total outage time/map location
- Xcor hardware and software status
- Users activity overview

The data is collected and stored in a Firebird database. This data is then used for various return path health analysis and for creating current and historical trend graphs. Information can be sorted by different filtering criterion such that it is easy for viewing and interpretation.

Data reports are sent a couple times every hour and are only a few kilobytes in size. This prevents overloading internet connections with unnecessary traffic.

The system additionally allows for remote changing of various Xcor hub settings for connected hub sites, should it become necessary to change any monitoring thresholds or frequencies.

Access to the program is achieved through a client-server architecture. Unlimited number of users can work with the MHV Client program simultaneously.

The MHV server also performs as a safe place for calibration, i-Scout distribution and scan intervals. The Xcor hubs store this vital information on the MHV server hard drive for additional safety. The client-server architecture also ensures security of the programs.

The server program is designed to be installed on a dedicated server PC.

More detailed information about system operation can be found on the website at **www.arcomdigital.com**.

MHV system composition

The system is composed of several parts:

- A server program with a Firebird Database installed on a dedicated server PC connected to Internet or Intranet
- Single or Multiple MHV Client programs installed on remote operator's PCs which include a Firebird Database
- Multiple Xcor Hunter hub site servers are registered in the MHV server for sending reports to it

MHV Client program hardware requirements

For normal operation of the MHV client the following is required:

- Windows XP/2003/Vista/7 operating system;
- Processor Pentium IV 1500 or later versions;
- >10 MB free disk space for installation;
- Min. 512 MB RAM

Setup and installation

To Install the MHV Client program, install Firebird database server first, then run the MHV Client_setup x.x.x.exe program as supplied by Arcom Digital.

Installation of the Firebird database server:
A Firebird server *(version 2.0.3 or higher)* is required for proper operation of the program.

To install the Firebird server launch the file *Firebird-2.0.3.12981-1-Win32.exe* and then follow the setup instructions.

Installation of the MHV client:

The installation package consists of a single file, *MHVClient_setup_.exe*.

In order to install the program simply launch the file MHVClient_setup_.exe and follow the instructions. The program is placed in the ("Programs") folder of the path "ARCOM DIGITAL\MHV Client\".

Xcor Hubs settings data recovery files location

The Xcor hubs can store the following data on the MHV Server hard drive for additional safety. It is recommended to archive the same data at another safe location as well, such as a back up drive.

Calibration data files location

\Database\XcorCalibrations\HUB_NAME, the filename contains the hub name and time stamp; file name ex. Hub_1_03.05.09.clbv

Scan intervals data files location

\Database\XcorIntervals\HUB_NAME, the filename contains the hub name and time stamp; file name ex. Hub_26_03.05.09.sidf

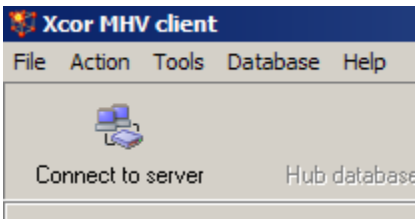
i-Scout distribution data file location

\Database\XcoriScouts\Hub_ NAME, the filename contains the hub name and time stamp; file name ex. Hub_26_03.05.09.ildf

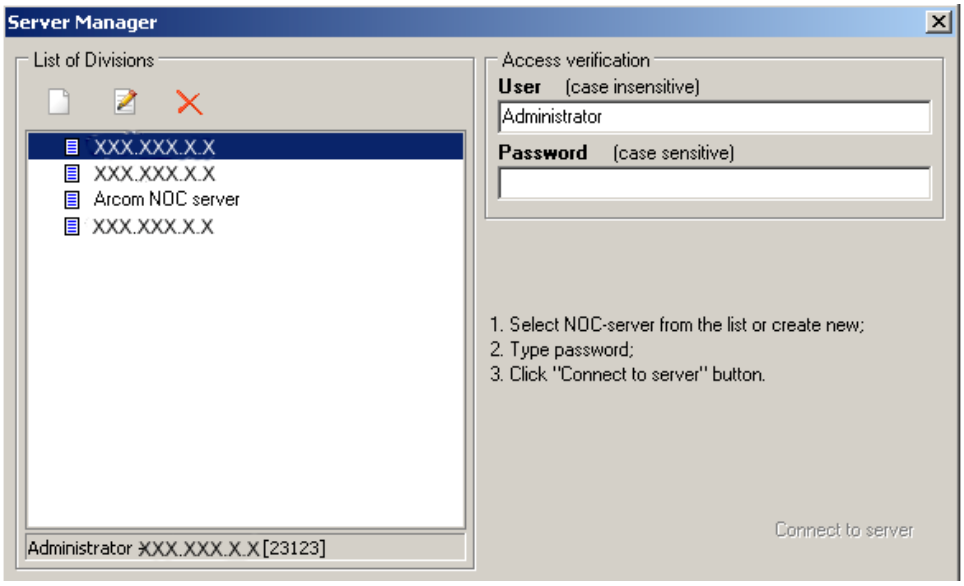
MHV Client program start and settings

Program start and initial setup

After launching the Xcor Client at the sign-on screen, click on *Connect to Server* to access hub sites.



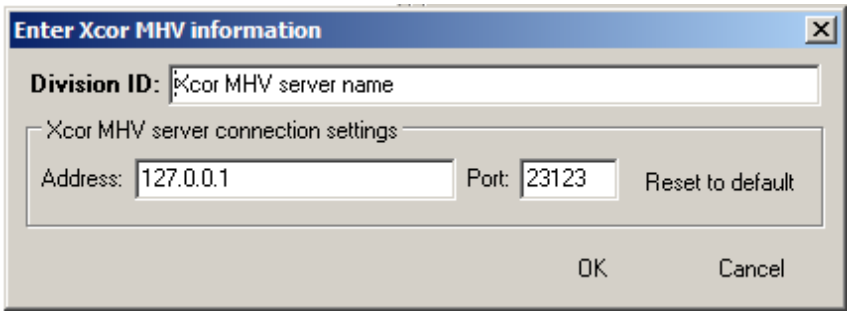
The Server Manager window appears as shown here.



If you need to create a new hub or change information about an existing hub (such as an IP address that has changed), press the ***F1 key*** to access the software help file that includes specific instructions on managing the hub site.

The *Create*, *Edit*, and *elete* buttons  are located below the list of Divisions.

Click  button to open the settings screen:



In the MHV information settings screen enter MHV server name (Division ID) and the IP address or MHV server domain name.
Do not change the port number.

To edit MHV server information, highlight the Division on the list and click  icon and edit information in the fields, then click OK to save settings.

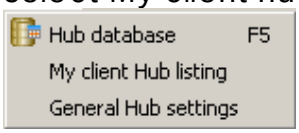
To connect with a MHV server, highlight the Division name you wish to connect to in the Server Manager window, type in the user name and password, then click on the *Connect to Server* button on the bottom right portion of the window. Once connected the other icons on the menu and toolbars will become visible and you can start working with the program.

If the program is started for the very first time, the list of hubs that need to be monitored ***must be configured*** before the program is able to display data.

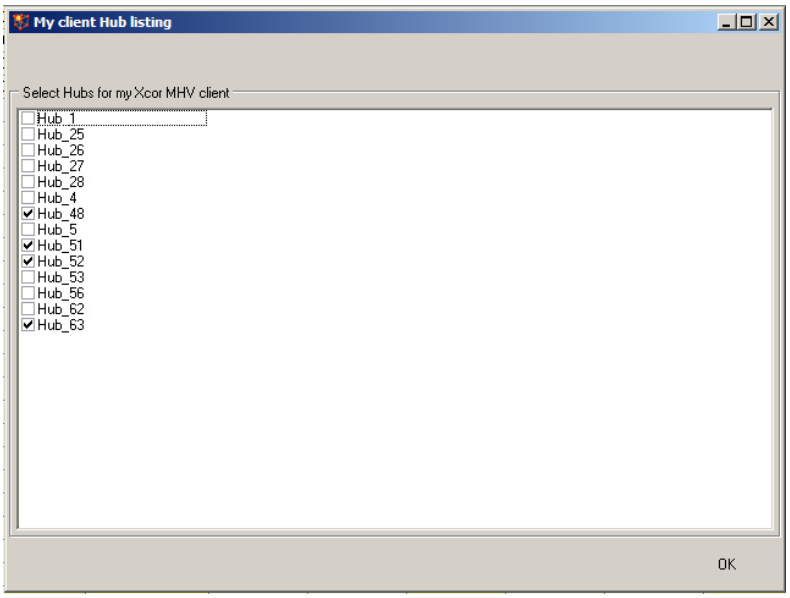
Selecting Xcor Hunter hubs for monitoring

When the program is launched for the first time, it is necessary to select the hub sites that will be included in the monitoring and statistics creating process.

Select My client hub listing in the Action menu:.

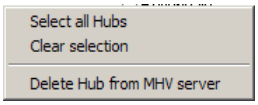


In the following screen, select the hubs that need to be monitored:



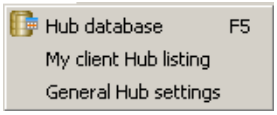
The MHV Client program will display the status of the selected hubs.

The following quick selection menu is also available, and can be accessed by a right button mouse-click any place inside the *My client Hub list* screen.



Menus and quick access icons

"Action" Menu



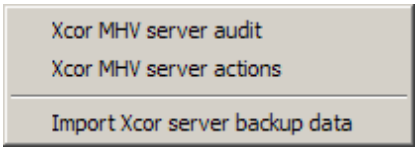
This menu contains the following commands:

- *Hub database* – opens a window with access to hub summary information; their device counts, location on the map, system settings

- *My client Hub listing* – access to select the hubs that will be controlled by the current Client program

- *General Hub settings* – access to the tools allowing Xcor hub settings transfer into multiple hub sites

"Tools" Menu



This item of the menu contains helpful tools**:**

- *MHV server audit* – allows viewing historical information on server program's internal actions

- *MHV server actions* – allows viewing historical information on user actions
- *Import Xcor server backup data* – allows storing of vital HUB server data at the MHV server. This includes Calibration data, i-Scout placement data and Scan Interval data

"Database" Menu

This menu allows access to the tools for analysis of historical impairment data**.**

- *Hub history F9 (hot key F9)* – opens a window with access to the tools for historical impairment data analysis

"Help" Menu

This menu contains the user manual and associated help screens, as well as, the software license and version information.

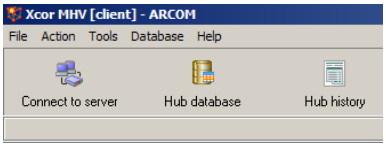
- *Program help F1 (hot key F1)* – Opens the help screens
- *User manual Ctrl+F1 (hot key Ctrl+F1)* – Opens this user's manual
- *License* – Opens the license agreement.
- *About* – Displays information about the program, the version, the developer etc.

It also contains information on the software license agreement.

To exit this screen, double click at the information window.

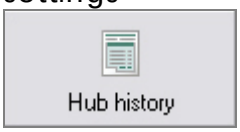
Quick access icons on the toolbar

The toolbar is intended for quick access to the frequently used program components.

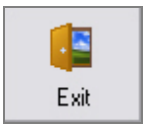


- Opens the connection manager window. Used to create, remove, and change Hub connection parameters.

- opens a window with access to hubs summary information; their device counts, location on the map, system settings



- opens a window with access to the tools for historical impairment data analysis



- Exits the program

Information on the Status line

The program status line displays parameters for the current connection to the MHV server. It may also contain tips for using the program.

The status line contains these fields:

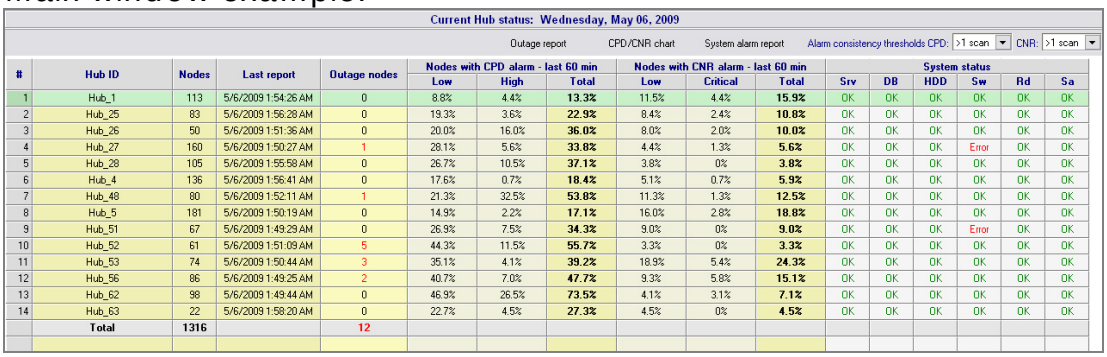
- IP address of the currently connected server;
- Name of the connected user;
- Last update of online statistics;
- Tool tip for the item under the mouse cursor;

Working with the program

Main window user interface

The main window of the user interface displays the current hubs status according to the reports received in the last 60 minutes. The screen refreshes every 30 sec. automatically. The clock icon  appears in the left upper corner of the main screen for the duration of data refreshing.

Main window example:



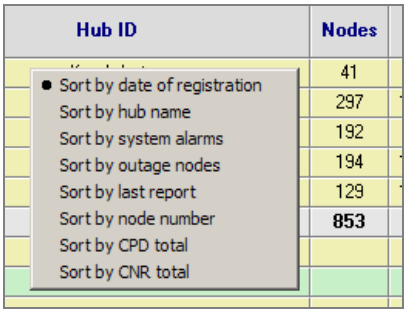
Current Hub status: Wednesday, May 06, 2009

Outage report | CPD/CNR chart | System alarm report | Alarm consistency thresholds CPD: >1 scan | CNR: >1 scan

#	Hub ID	Nodes	Last report	Outage nodes	Nodes with CPD alarm - last 60 min			Nodes with CNR alarm - last 60 min			System status					
					Low	High	Total	Low	Critical	Total	Srv	DB	HDD	Sw	Rd	Sa
1	Hub_1	113	5/6/2009 1:54:26 AM	0	8.8%	4.4%	**13.3%**	11.5%	4.4%	**15.9%**	OK	OK	OK	OK	OK	OK
2	Hub_25	83	5/6/2009 1:56:28 AM	0	19.3%	3.6%	**22.9%**	8.4%	2.4%	**10.8%**	OK	OK	OK	OK	OK	OK
3	Hub_26	50	5/6/2009 1:51:36 AM	0	20.0%	16.0%	**36.0%**	8.0%	2.0%	**10.0%**	OK	OK	OK	OK	OK	OK
4	Hub_27	160	5/6/2009 1:50:27 AM	1	28.1%	5.6%	**33.8%**	4.4%	1.3%	**5.6%**	OK	OK	OK	Error	OK	OK
5	Hub_28	105	5/6/2009 1:55:58 AM	0	26.7%	10.5%	**37.1%**	3.8%	0%	**3.8%**	OK	OK	OK	OK	OK	OK
6	Hub_4	136	5/6/2009 1:56:41 AM	0	17.6%	0.7%	**18.4%**	5.1%	0.7%	**5.9%**	OK	OK	OK	OK	OK	OK
7	Hub_48	80	5/6/2009 1:52:11 AM	1	21.3%	32.5%	**53.8%**	11.3%	1.3%	**12.5%**	OK	OK	OK	OK	OK	OK
8	Hub_5	181	5/6/2009 1:50:19 AM	0	14.9%	2.2%	**17.1%**	16.0%	2.8%	**18.8%**	OK	OK	OK	OK	OK	OK
9	Hub_51	67	5/6/2009 1:49:29 AM	0	26.9%	7.5%	**34.3%**	9.0%	0%	**9.0%**	OK	OK	OK	Error	OK	OK
10	Hub_52	61	5/6/2009 1:51:09 AM	5	44.3%	11.5%	**55.7%**	3.3%	0%	**3.3%**	OK	OK	OK	OK	OK	OK
11	Hub_53	74	5/6/2009 1:50:44 AM	3	35.1%	4.1%	**39.2%**	18.9%	5.4%	**24.3%**	OK	OK	OK	OK	OK	OK
12	Hub_56	86	5/6/2009 1:49:25 AM	2	40.7%	7.0%	**47.7%**	9.3%	5.8%	**15.1%**	OK	OK	OK	OK	OK	OK
13	Hub_62	98	5/6/2009 1:49:44 AM	0	46.9%	26.5%	**73.5%**	4.1%	3.1%	**7.1%**	OK	OK	OK	OK	OK	OK
14	Hub_63	22	5/6/2009 1:58:20 AM	0	22.7%	4.5%	**27.3%**	4.5%	0%	**4.5%**	OK	OK	OK	OK	OK	OK
	Total	**1316**		12												

Data filtering in the main window

Information about the hubs in the main window can be sorted based on any of the available parameters, accessible via a right button mouse click. Menu of available choices are shown on the screenshot below:



Once the option is selected the hub that comply with selected rules the most will show up at the top of the column.

Display of impairment information

On the main screen, information is displayed in numerical form as the percentage of nodes in the hub, indicating the CPD, CNR alarm detections and outage status. The number of nodes affected in a particular hub in the last 60 minutes form the last received report is shown in a clear form.

- Hub ID - hub ID or name
- Nodes - the number of nodes in the hub
- Last report - recent report time stamp
- Outage nodes - the number of nodes in outage condition
- Nodes with CPD alarm - last 60 min | Low | High | Total - nodes # with CPD alarm
- Nodes with CNR alarm - last 60 min | Low | Critical | Total - nodes # with CNR alarm

For each impairment type the information is also available in a form of graphs and charts for simplified analysis.

Remote Xcor hub – hardware and software status

Any irregularity in the hardware and software operation at the remote Xcor Hunter hubs is reported in this screen part as "Error" text in red color. To see more detailed description of the problem, any of the following options can be selected.

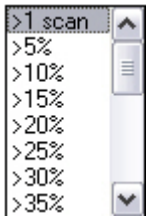
- Srv - server status
- DB - database status
- HDD - hard drive space status
- Sw - return path switch status
- Rd - radar unit status
- Sa - spectrum analyzer unit status

In case an error is detected, detailed information is accessible via System alarm report action button.

Data filtering adjustment

The nature of the impairment may be such that it may not be recorded at each scan of the node at the Xcor Hunter site. The frequency of impairments detection is called Alarm consistency here, and is expressed in the percentage of the node scans that report impairment presence.
The minimum number of alarms in the nodes to be taken into account when calculating statistics on the screen can be changed through the following screen.

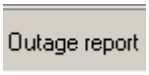
Thresholds selection:



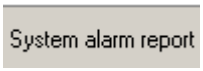
The minimum number of scans required for reporting impairment presence is selected via the drop-down list, respectively for CPD and CNR.

For counting those nodes in calculating statistics that have encountered even a single impairment record, select the “>1 scan” in the Threshold selection. For counting only those nodes that indicate impairment presence at each scan, select “all scans” under the list. By using various thresholds, relevant information can be filtered by the user.

Reports and Charts access

- *Outage report*: 

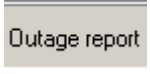
Click to access more information about outages in highlighted hub. This feature can also be accessed by using Shift+F7 keystroke.
- CPD/CNR chart: 

Click to access CPD and CNR charts for highlighted hub for the last hour. This feature can also be accessed using Shift+F6 keystroke.
- System alarm report: 

Click to access more detailed information about the system error in highlighted hub in the last hour. This feature can also be accessed using Shift+F5 keystroke.

These reports are explained in more detail in the following sections.

Real time Outage report

The real time outage report presents information about the outage in the highlighted hub during the last 60 minutes. The window can be opened from the Main window by either Shift+F7 keystroke or clicking the 

button.

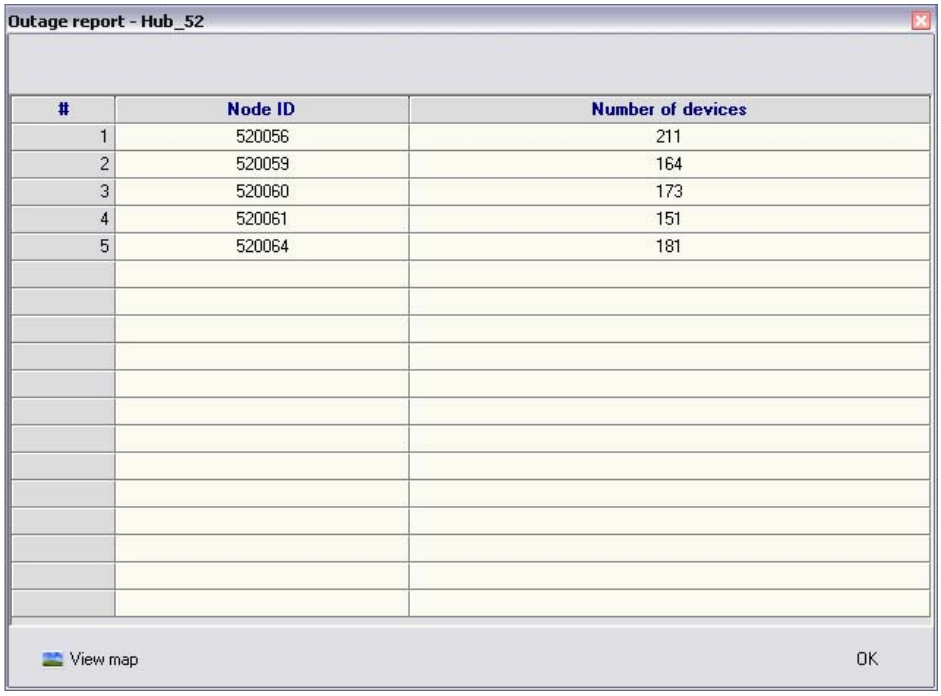


Figure: Outage report example

The list contains the affected node ID and the number of devices in the affected node. The number of devices is related to the outage indication accuracy, the nodes smaller than 100 devices may look like an outage for example at night in business districts.

In a situation when outage monitoring for clean nodes with rare data traffic is not necessary, the node can be excluded from monitoring using the Xcor Admin program.

The outages data summary is available in the Hub history.

View map - click to view the outage node location on the Hub map

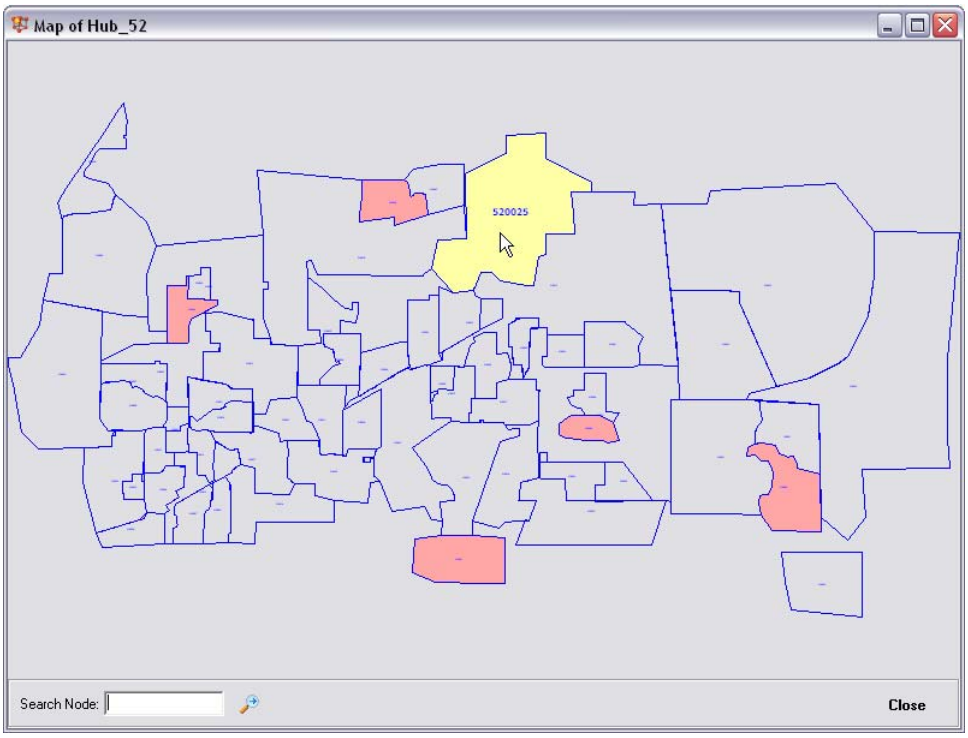


Figure: Map example

The affected node area is highlighted in RED color. Move the mouse pointer to the desired node to enlarge the node ID. Once the affected node is selected using the mouse click, the color changes from RED to YELLOW and the node's ID is magnified.

- *Node search tool:* 

Enter node ID and click the magnifying glass icon to find the desired node on the map.

Real time CPD/CNR chart

The CPD/CNR chart shows current situation in the selected hub. Information about the impairment magnitude, consistence and their correlation in the nodes for selected alarm consistency is presented. Historical and information for a whole day is processed in Hub history section.

- 

- button for opening the charts screen
-

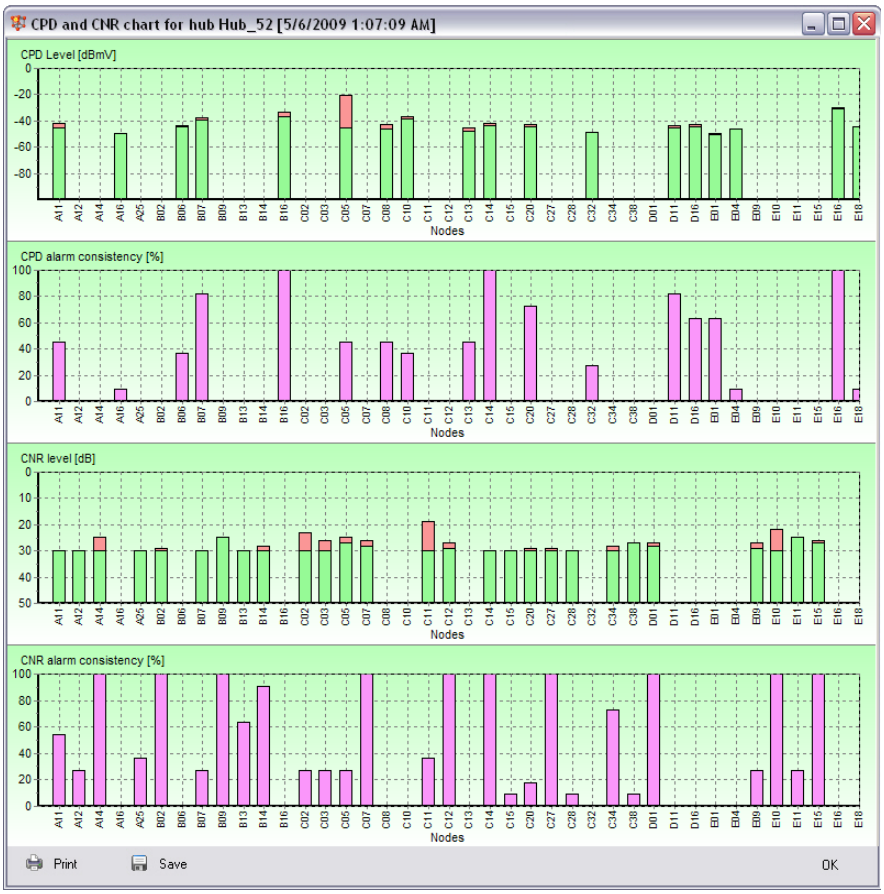
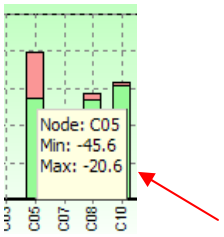


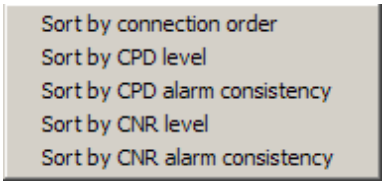
Figure: Chart screen example

To see details of the node impairment data, simply point the vertical bar with mouse and left click.



Node impairment data

Information in the chart can be sorted according to several conditions.
Right click anywhere on the chart screen to open the sorting menu shown below. Select the desired information order.



Screen saving and printing

- Save

  Click to save the chart screen into *\MyDocuments\Xcor\Data\Chart* folder. The file is saved as TIME_STAMP.wmf

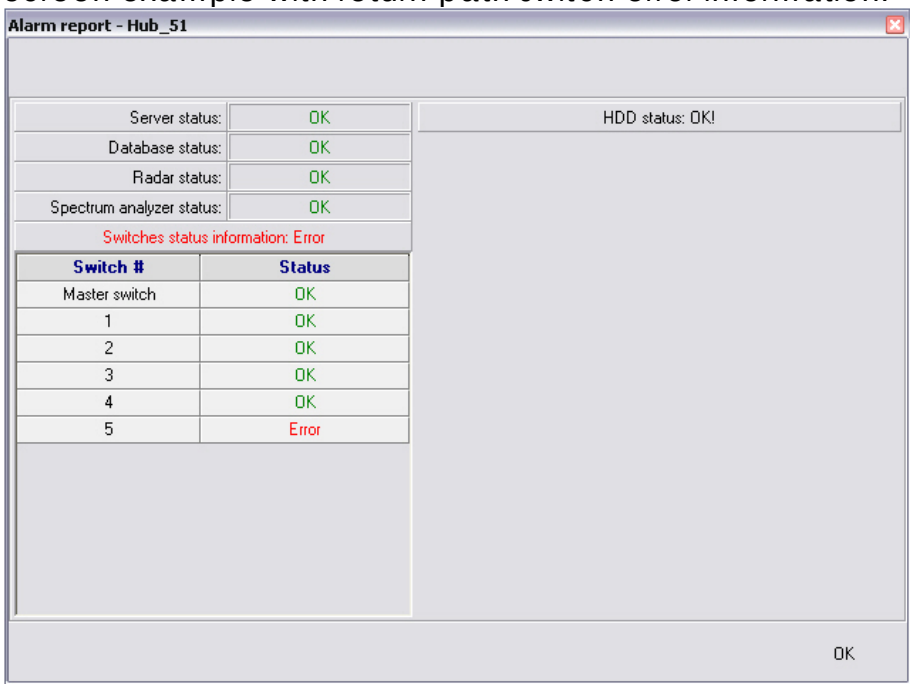
- Print

  Click to print the chart screen

Real time System alarm report

The System alarm report window contains detailed information about the Xcor hub hardware and software status in the recent 60 minutes from the time the last report was received.

Screen example with return path switch error information:



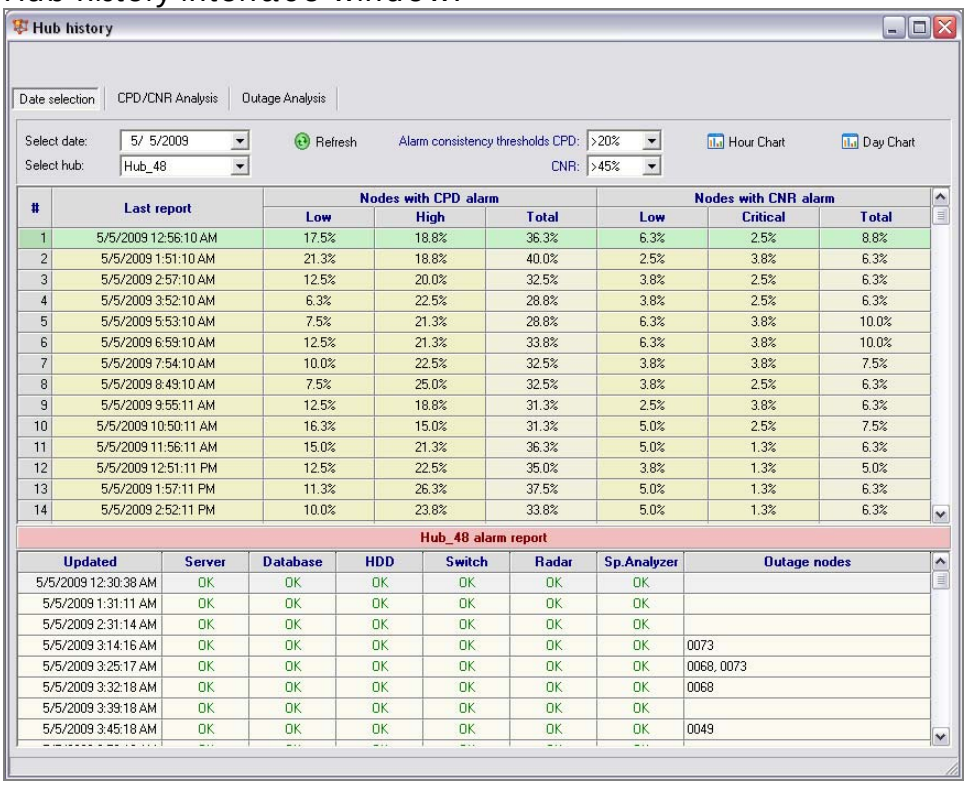
Hub history

The Hub history is accessed by clicking the 

icon.

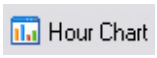
This program module provides tools for analyzing hub impairment data in selected time frames. The graphs and charts can be generated here and the data can be saved as screenshots and as text file for further use in other software applications.
After opening the main Hub history screen, select the date hub ID and click Refresh button to populate fields with data

Hub history interface window:

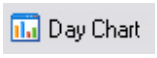


The *Hub history* window displays information about the stauts of the impairments and alarms for selected date and alarm consistency threshold parameters. It offers access to the Day and Hour charts.
The upper screen part is dedicated to the return path impairment reports while the lower part refers to the system status of the remote Xcor Hunter sites.

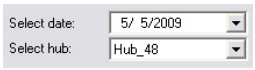
Action buttons:

- 

Opens the chart displaying statistics for the highlighted last hour report

- 

Opens the chart displaying statistics for the whole selected day

- 

The relevant Hub ID and date for data analysis can be selected here.

- 

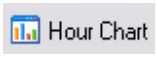
Refreshes data upon each click after modifying any of the parameters or when red

- 

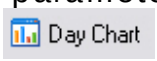
The minimum number of scans reporting impairment presence that are used for calculating statistics, can be selected here.

CPD/CNR Hour/Day chart

The Hour or Day charts of the selected hub are accessible by clicking the *Hour Chart* or *Day Chart* icons:

- 

Displays chart for the highlighted hour report, using parameters set in the main Hub history window

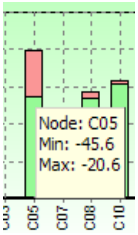
- 

Displays chart for a whole day; using parameters set in the main Hub history window

The chart screen example:

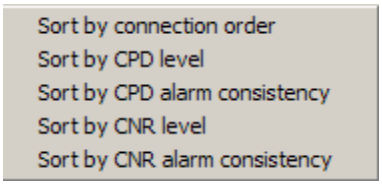
The chart screen displays the impairment absolute level and its consistency indication. The consistency indication refers to the percentage of the total number of scans that report the presence of a particular impairment. Information can be either sorted by the impairment level or by its consistency for analyzing correlations and detecting the most problematic nodes.

Information accessible on the chart



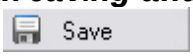
- The GREEN part of the bar refers to the lowest amplitude recorded while the RED refers to highest level. The numbers are displayed by a left button mouse click on the relevant bar.

Right click anywhere on the chart screen to open the sorting menu.

- 

The information can be sorted by any of the available parameters

Screen saving and printing

- 

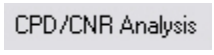
Click to save the chart screen into *\MyDocuments\Xcor\Data\Chart* folder. The file is saved as TIME_STAMP.wmf

- 

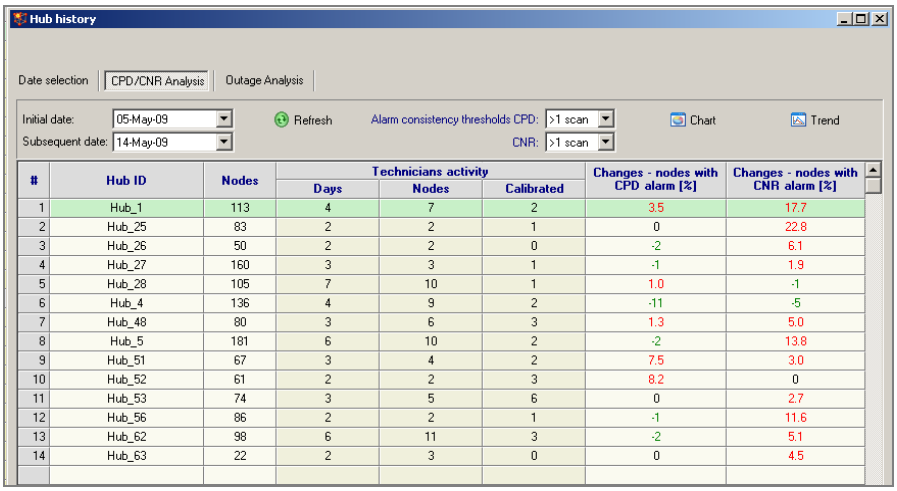
Click to print the chart screen

CPD/CNR status and trend analysis

Status changes between two selected dates form the past and trends in observed impairments within selectable periods, as well as, system usage can be visualized here.

Click Hub history tab 

to open the CNR/CPD analysis screen



#	Hub ID	Nodes	Technicians activity			Changes - nodes with CPD alarm [%]	Changes - nodes with CNR alarm [%]
			Days	Nodes	Calibrated		
1	Hub_1	113	4	7	2	3.5	17.7
2	Hub_25	83	2	2	1	0	22.8
3	Hub_26	50	2	2	0	-2	6.1
4	Hub_27	160	3	3	1	-1	1.9
5	Hub_28	105	7	10	1	1.0	-1
6	Hub_4	136	4	9	2	-11	-5
7	Hub_48	80	3	6	3	1.3	5.0
8	Hub_5	181	6	10	2	-2	13.8
9	Hub_51	67	3	4	2	7.5	3.0
10	Hub_52	61	2	2	3	8.2	0
11	Hub_53	74	3	5	6	0	2.7
12	Hub_56	86	2	2	1	-1	11.6
13	Hub_62	98	6	11	3	-2	5.1
14	Hub_63	22	2	3	0	0	4.5

Figure: CNR/CPD analysis screen example

Select two dates for statistics comparison, select required alarm consistency thresholds and click Refresh to populate fields with data.

The CNR/CPD analysis screen provides a statistics comparison between two selected dates for selected alarm consistency thresholds for the highlighted Hub. The information is displayed in numerical form.

The action buttons offer access to the windows where comparison Charts and Trend graphs can be created.

- 

Click to access the comparison Chart window

- 

Click to access the Trend graph window

- 

Window for selecting the analysis period

- 

Click to refresh when it turns RED for refreshing data display once some of the parameters have been modified.

The minimum number of scans reporting impairment presence that are used for calculating statistics, can be selected here.

Window content information:

- Hub ID - name or ID of the hub
- Nodes - the number of nodes in the associated hub
- System usage - information on how many activity Days in the system were recorded, number of Nodes that were put into the scan scheduler, number of Calibrated nodes
- Changes - difference in percentage of the CPD/CNR alarm records between selected dates

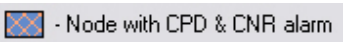
CPD/CNR comparison chart

- action button opens graphical presentation of data displayed in the CNR/CPD analysis screen

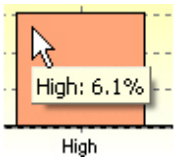
History Chart screen example:

The display screen shows a comparison of the CPD and CNR statistics between two selected dates. The vertical bars represent the numbers recorded in the statistics database for the selected dates. The bottom part of the screen shows difference in the statistics numbers between the two dates.

- 

tool for changing vertical scale information on the screen.
- 

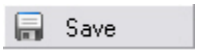
Pattern of the CNR chart bars indicating the percentage portion of the situations when CNR and CPD alarms both are present in the nodes at the same time

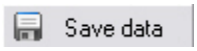
- 

Single left click on the bar displays precise information of the represented impairment level

Data saving and printing

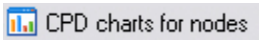
- 

- to print the current chart
- 

- to save the chart as *.WMF file in \My Documents\Xcor\Data\Chart folder, filename contains time stamp
- 

- to save data used for drawing the chart into a text file located in \My Documents\Xcor\Data\Text folder, filename contains time stamp

CPD/CNR level and consistence charts

- 

- opens the CPD chart screen for the two dates

Chart screen example:

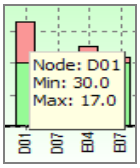
This screen displays CPD level and alarm consistency chart for two selected dates.

The CNR charts for nodes action button opens the CNR chart screen for the two dates.

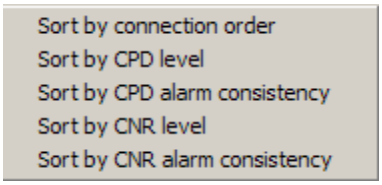
CNR chart screen example:

This screen displays CNR level and alarm consistency chart for two selected dates.

Information accessible on the charts:

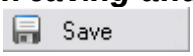


The GREEN part of the bar refers to the lowest amplitude recorded while the RED refers to highest level. The numbers are displayed by a left button mouse click on the relevant bar.
Right click anywhere on the chart screen to open the sorting menu.

- 

The information can be sorted by any of the available parameters

Screen saving and printing

- 

Click to save the chart screen into *\MyDocuments\Xcor\Data\Chart* folder. The file is saved as TIME_STAMP.wmf

- 

Click to print the chart screen

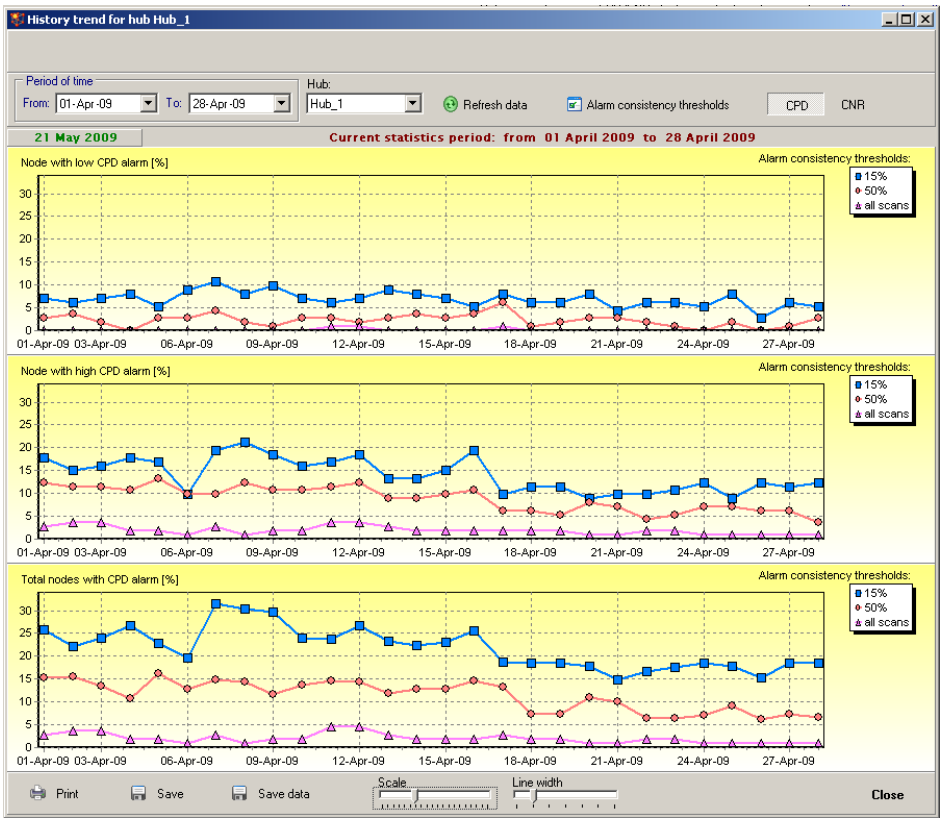
CPD/CNR trend

This screen shows impairment behavior in the selected period of time, for selected nodes within selected alarm consistency thresholds. Analysis is accessible for CNR and CPD in separate screens switchable with two action buttons.

Click the 

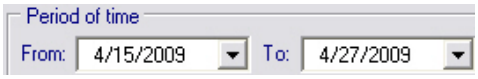
button from CPD/CNR analysis tab in the Hub history screen to access the Trend graph window

Screen Example:



Creating trend graphs

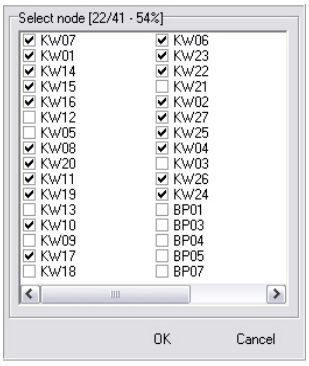
To create the graphs, select the period of time for which the graph is created:

- 

- selects analyzed period of time

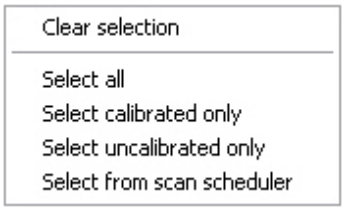
Selecting the nodes for which the graph is created.

Click Node list to open the node list:



Select nodes by checking the boxes next to the node IDs that will be considered in the analysis.

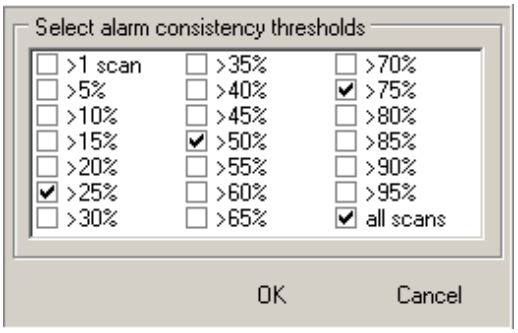
Right click to access quick selection menu:



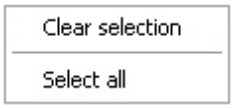
Tip: if you choose Select from scan schedule, the analysis is made for the nodes that were of concern of the technical crew and that were probably fixed, this way you can easily see the improvements in the nodes worked.

Select the alarm thresholds for filtering the number of impairment detections that are taken into account when calculating statistics.

Click the Alarm consistency thresholds button to open a threshold selection screen:



Only the nodes that display impairment presence above the selected criteria are counted in calculations; several options can be selected, for each condition a curve is prepared.
The "all scans" option implies nodes that display impairment presence at each scan are included in the calculations.

- 

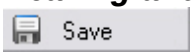
Quick selection menu opened by a right mouse button click on the Threshold selection screen
- Use 

tool to change vertical scale and make viewing of the curve comfortable.
- The 

tool changes the curve line width.
- The 

action buttons allow for switching the screen content between the CPD and CNR trend graphs.

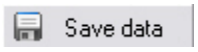
Screen saving and printing

- 

Click to save the chart screen into *\MyDocuments\Xcor\Data\Chart* folder. The file is saved as TIME_STAMP.wmf

Data saving and printing

- 

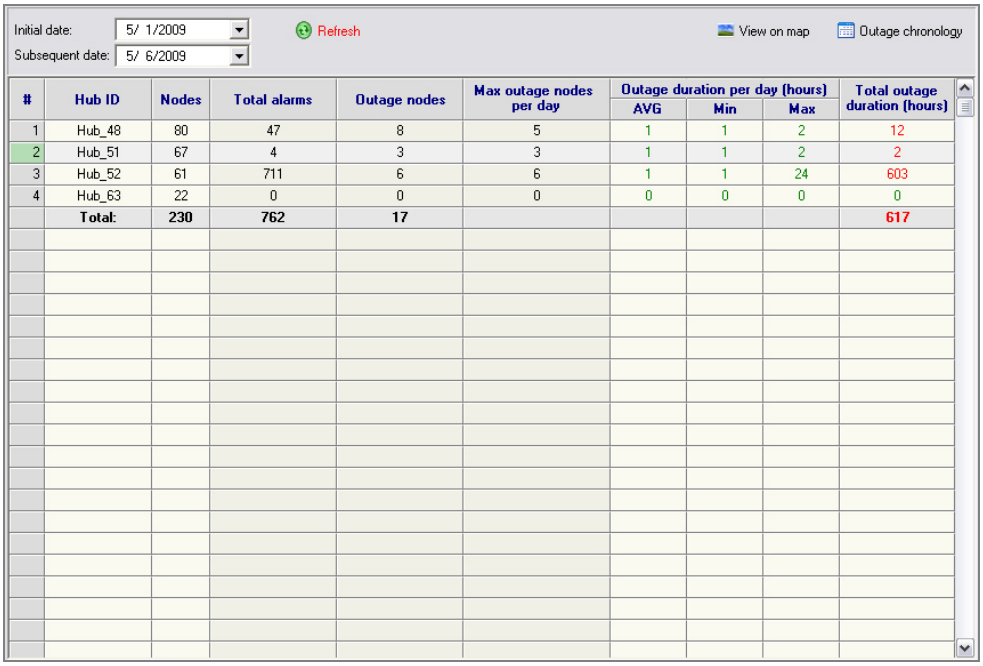
- print the current chart
- 

- to save data used for drawing the chart into a text file located in \My Documents\Xcor\Data\Chart folder, filename contains time stamp

Outage analysis

Click the 

tab from the Hub history window to open Outage analysis screen.

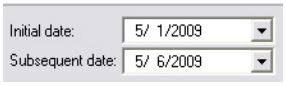


#	Hub ID	Nodes	Total alarms	Outage nodes	Max outage nodes per day	Outage duration per day (hours)			Total outage duration (hours)
						AVG	Min	Max	
1	Hub_48	80	47	8	5	1	1	2	12
2	Hub_51	67	4	3	3	1	1	2	2
3	Hub_52	61	711	6	6	1	1	24	603
4	Hub_63	22	0	0	0	0	0	0	0
	Total:	**230**	**762**	**17**					**617**

Figure: Outage analysis screen example

This screen display statistics and summary for the Outage alarms recorded in monitored hubs for the selected time period.

To display a report for selected period, adjust the start and stop dates:

- 

- tool for selecting period for data analysis

REMARK: subsequent date must be always selected as a complete day before the current date on the computer

Click 

to populate field with data or refresh display.

Information on the screen:

- Hub ID - hub name or ID
- Nodes - the number of node is the Hub
- Total alarms - total number of alarms recorder during the analyzed period
- Outage nodes -; the number of nodes affected by the outage
- Max. outage nodes per day - max number of nodes in a Hub that were affected by the outage
- Outage duration per day (hours) outage duration time statistics expressed in round hours) - numbers for AVG- average, Min., Max.

- Total outage duration (hours) - total number of outage hours in a hub and all the monitored hubs

Action buttons:

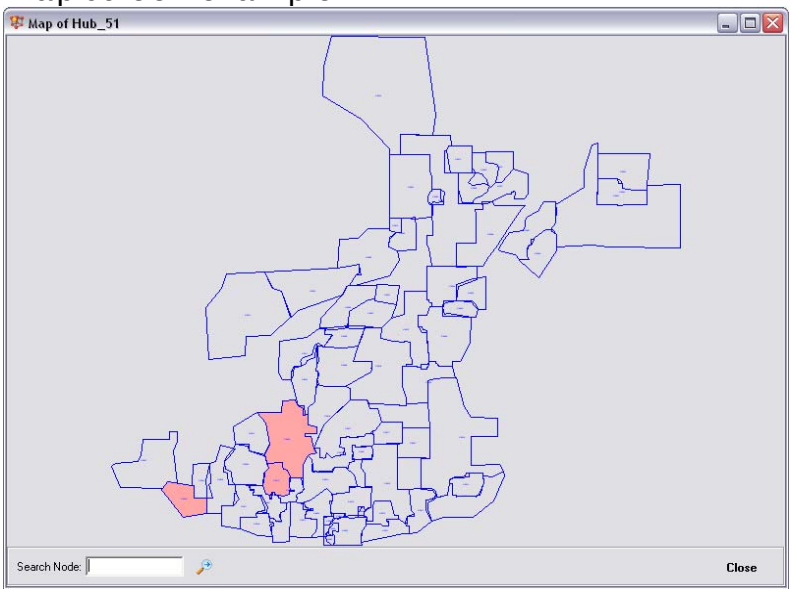
- View on map - opens map screen showing the outage node location
- Outage chronology - opens outage chronology screen with information about outages day by day

Outage map

The nodes affected by the outage are marked on the hub map.

To view the map click View on map map access button on the Outage analysis screen

Map screen example:

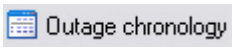


The affected node area is highlighted in RED color. Move the mouse pointer to the desired node to enlarge the node ID. Once the affected node is selected using the mouse click, the color changes from RED to YELLOW and the node's ID is magnified.

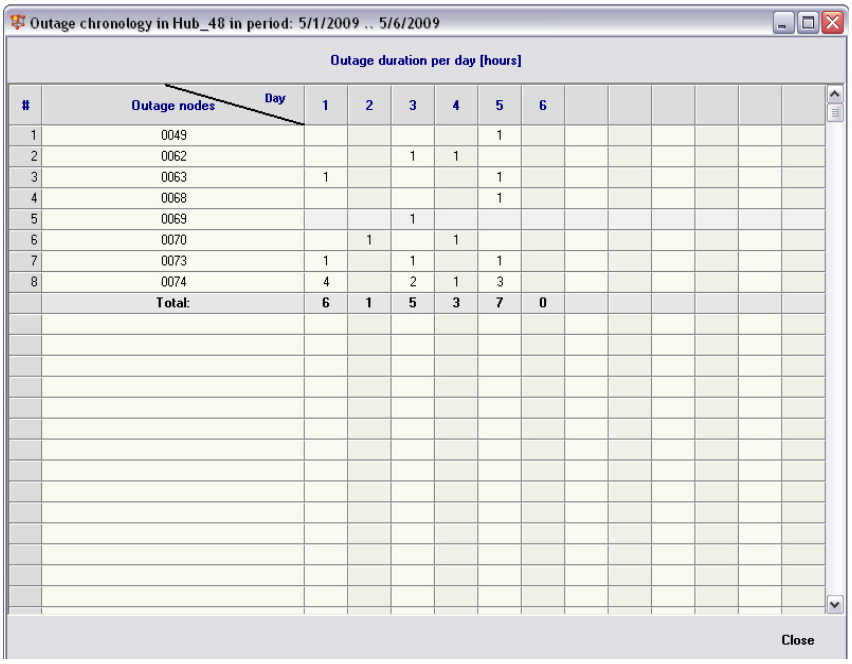
- Search Node:
  To search a particular node, type in the node ID and click icon to highlight node on the map

Outage analysis - Chronology

Detailed Information about the days when the outage alarms were recorded in the nodes, and their duration is available in tablular format.

Click the 

button to open the Outage chronology window.

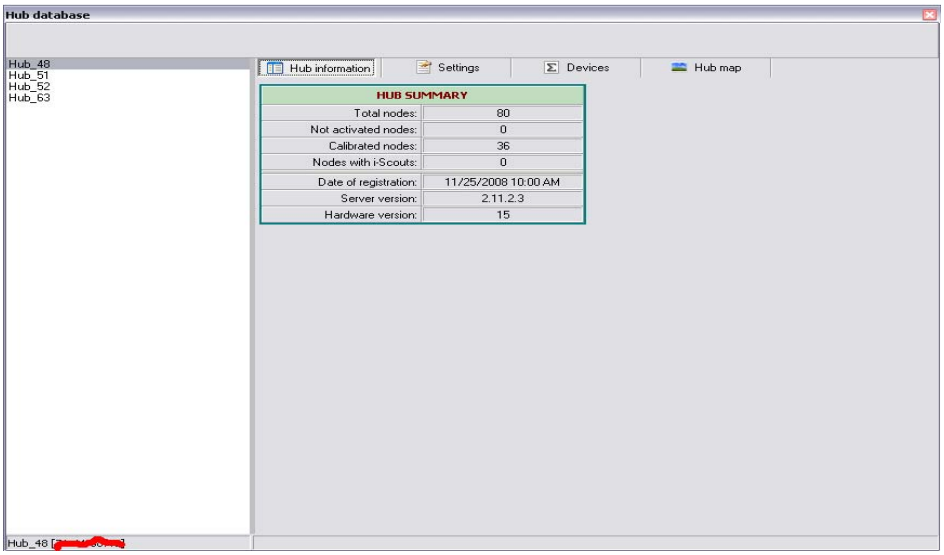


#	Outage nodes \ Day	1	2	3	4	5	6
1	0049					1	
2	0062			1	1		
3	0063	1				1	
4	0068					1	
5	0069			1			
6	0070		1		1		
7	0073	1		1		1	
8	0074	4		2	1	3	
	Total:	**6**	**1**	**5**	**3**	**7**	**0**

Figure: Outage chronology screen example

Hub Database

The Hub database provides access to information about each hub registered in the MHV Client. The list of registered hubs is displayed on the left side of the window.



The Hub information tab 

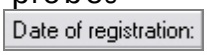
shows Hub Summary for a highlighted hub including:

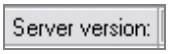
- 

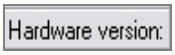
- Total number of nodes in the hub
- 

- The number of nodes that are excluded from the outage reporting
- 

- The number of calibrated nodes
- 

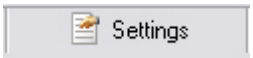
- The number of nodes with installed i-Scout probes
- 

- The date the Hub was connected for the first time to the MHV server
- 

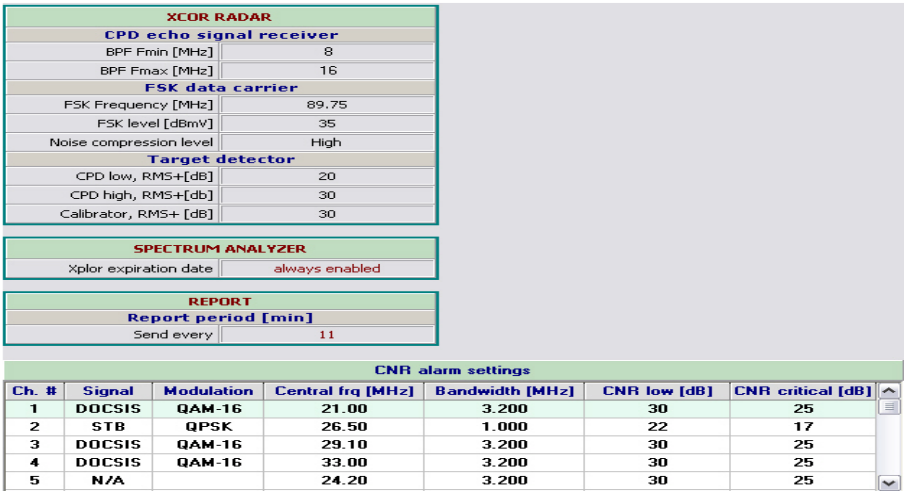
- Xcor Hunter server program version
- 

- Radar unit firmware version

Settings view

The Hub database Settings tab 

opens a window with highlighted hub information about the Radar and Spectrum analyzer settings and alarm thresholds.
This tab is for informational purposes only – NO setting changes can be made in this window.
To make changes, use the Xcor Admin program or General hub settings feature of the MHV Client.



XCOR RADAR	
CPD echo signal receiver	
BPF Fmin [MHz]	8
BPF Fmax [MHz]	16
FSK data carrier	
FSK Frequency [MHz]	89.75
FSK level [dBmV]	35
Noise compression level	High
Target detector	
CPD low, RMS+[dB]	20
CPD high, RMS+[db]	30
Calibrator, RMS+ [dB]	30

SPECTRUM ANALYZER	
Xplor expiration date	always enabled

REPORT	
Report period [min]	
Send every	11

CNR alarm settings

Ch. #	Signal	Modulation	Central frq [MHz]	Bandwidth [MHz]	CNR low [dB]	CNR critical [dB]
1	DOCSIS	QAM-16	21.00	3.200	30	25
2	STB	QPSK	26.50	1.000	22	17
3	DOCSIS	QAM-16	29.10	3.200	30	25
4	DOCSIS	QAM-16	33.00	3.200	30	25
5	N/A		24.20	3.200	30	25

Xcor Radar settings

CPD echo signal receiver

The echo receiver of the CPD radar settings contains a software controlled variable bandpass filter. The user can select a band that is not affected by strong CW like carriers that disturb the correlation processing of the signals.

- *BPF Fmin [MHz]* - the lower frequency of the filter band can be switched between 8, 9, 10.5 and 12 MHz as shown on the following screenshot:

CPD echo signal receiver	
BPF Fmin [MHz]	8
BPF Fmax [MHz]	16

- *BPF Fmax [MHz]* - the higher frequency of the filter band is fixed to
  16 MHz.
- FSK data carrier
- *Frequency band [MHz]* - shows current frequency band of the FSK transmitter.
- *FSK frequency [MHz]* - shows frequency of the FSK transmitter, resolution is 50kHz. Working range of the FSK transmitter, and also software frequency tuning range are factory set.
- *Level [XX dBmV]* - signal level at FSK transmitter output.
- FSK output - turns ON or OFF the FSK transmitter.

- Noise compression level - the level of signal samples accumulated in the CPD channel. Default to "Standard". "High" will provide the best possible noise reduction in that channel, but scanning time is increased.
- Target detector settings
- *CPD low, RMS+ [dB]* - shows the threshold level that defines low level CPD for that hub.
- *CPD high, RMS+ [dB]* - shows the threshold level that defines high level CPD for that hub.
- *Calibrator, RMS+ [dB]* - shows the threshold level that defines when Calibration signals are displayed.

Spectrum analyzer

Indicates Xplor module status.

- Report - indicates how often the Hub is sending status reports to the MHV sever.

CNR alarm settings

- *Signal* - the data carrier signal type.
- *Modulation* - modulation format.
- *Central frequency [MHz]* - sets the central frequency of the data carrier – accuracy of this data is important for proper CNR measurement.
- *Bandwidth [MHz]* - sets the signal bandwidth - accuracy is important for proper CNR measurement.
- *CNR threshold low [dB]*- sets the CNR level used for alarming for too low CNR for selected signal. For DOCSIS signals use parameters recommended by DOSCIS specification.
- *CNR threshold critical [dB]* - sets the CNR level used for alarming for critically low CNR for selected signal. DOCSIS signals use parameters recommended by DOSCIS specification.

Hub devices

This tab shows device count summary for the selected hub.

- 

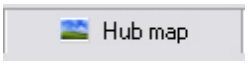
- left click opens device count list

List example:

N	Device	Device ID	Total in Hub	AVG per Node
1	AMPLIFIER	AMxxxx	2808	57
2	DIRECTIONAL COUPLER	DCxxxx	2168	44
3	EQ DEVICE	EQxxxx	429	9
4	FIBER NODE	FNxxxx	49	1
5	POWER DEVICE	PWxxxx	378	8
6	SPLICE	SCxxxx	431	9
7	SPLITTER DEVICE	SPxxxx	1464	30
8	TERMINATOR	TMxxxx	4700	96
9	TAP DEVICE	TPxxxx	19223	392
	Total in Hub (nodes: 56/49)		**31650**	**646**

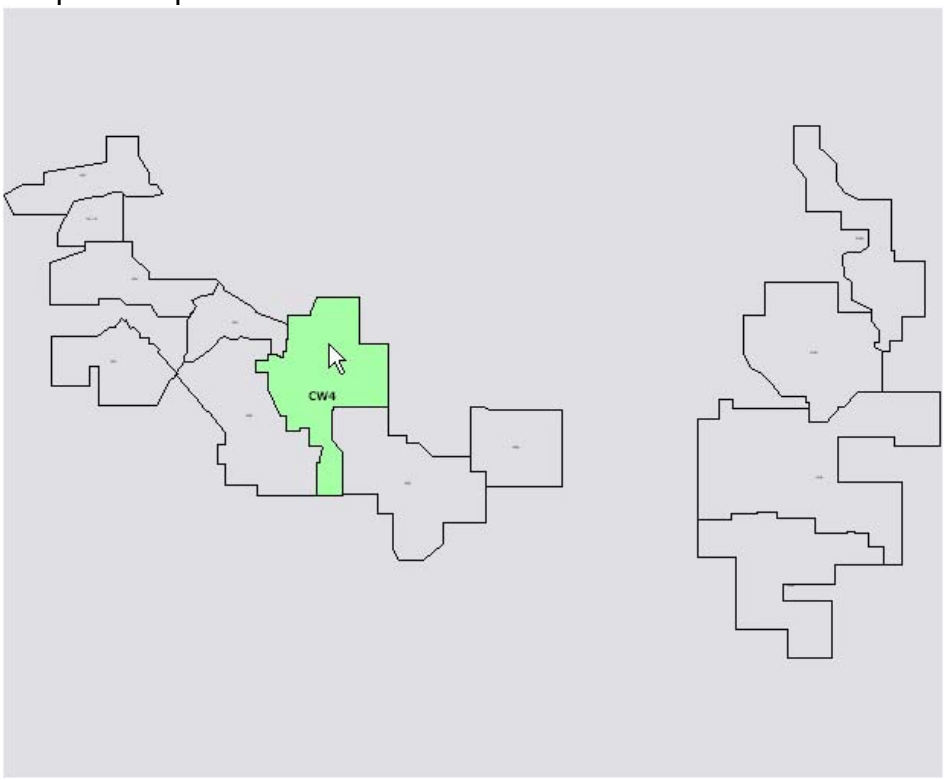
Hub map

This tab shows the hub location on the map.

- 

- left click to open the map

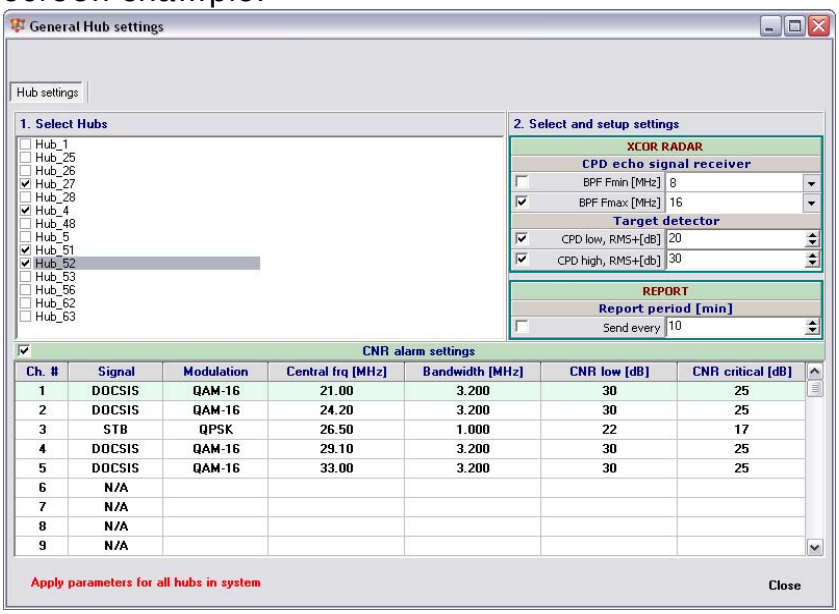
Map example:



General Hub settings

Important software and hardware settings can be applied remotely to selected hubs at once. This function is available in General Hub settings accessible from the Action menu on the main screen toolbar.

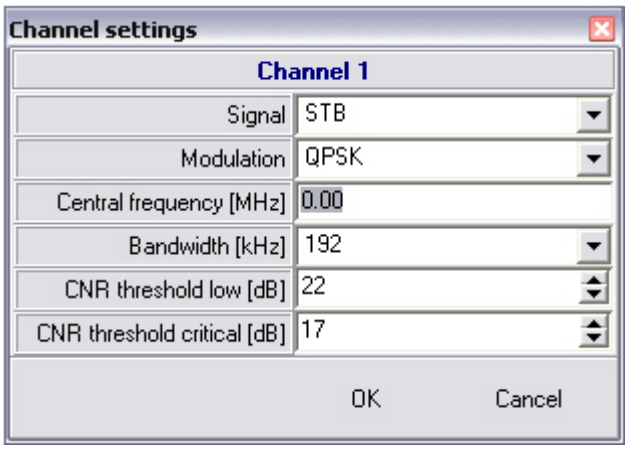
Screen example:



Screen content and function description

- Select Hubs - the checked hubs will receive updated settings data
- Select and setup settings/Xcor Radar - select which parameters should be applied to the selected hubs by checking the box on the left side of the parameter, and change the parameter value to the desired setting. Refer to Xcor Admin program manual on how to select parameters properly.
- Select and setup settings/Report - check the box if the report transfer period is to be changed. The time can be adjusted.
- CNR alarm settings - check the box for applying CNR alarm monitoring and threshold parameters to the selected hubs.

CNR alarm parameters change menu (Channel settings) appears after a double right click on highlighted Ch.# row:

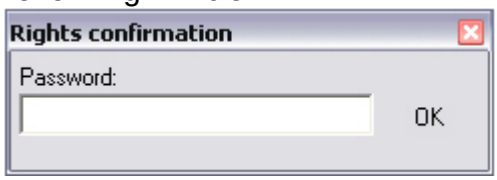


- *Signal* - the data carrier signal type can be selected here.
- *Modulation* - modulation format can be selected here.
- *Central frequency [MHz]* - sets the central frequency of the data carrier – accuracy is important for proper CNR measurement.
- *Bandwidth [MHz]* - sets the signal bandwidth - accuracy is important for proper CNR measurement.
- *CNR threshold low [dB]* - sets the CNR level used for alarming for too low CNR for selected signal. For DOCSIS signals use parameters recommended by DOSCIS specification.
- *CNR threshold critical [dB]* - sets the CNR level used for alarming for critically low CNR for selected signal. DOCSIS signals use parameters recommended by DOSCIS specification.

Once parameters were changed the 

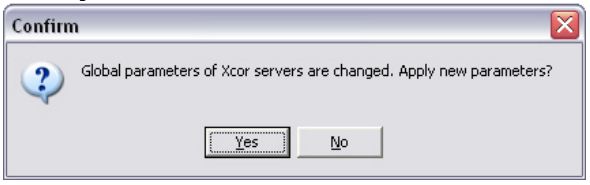
button turns RED, left lick this button to start the parameters change approval session.

The system will ask for Rights confirmation by displaying the following window:



Enter password and click OK to authorize transfer of the new parameters to the selected Hubs.

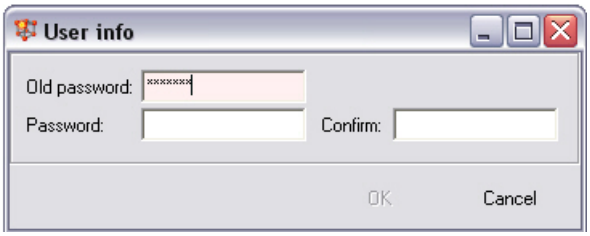
The system asks for confirmation of action again:



Please, think twice when making these changes and answer YES ONLY WHEN YOU are sure that the new parameters are correct and can be used at selected hubs.

General hub settings authorization password change

It is recommended to change the factory preset password. To change the password, use Shift+CTRL+F6 keystroke while General hub setting screen is open. The User info screen appears where the change can be done.



Type in the old password, then type in the new password and repeat it in the Confirm box.

MHV server audit

All important server actions are recorded into a log. The log contains information about server programs stop and start events, and the server internal mode starts and stops. Detailed information about events is also displayed in a provided field if such information is available.

The MHV server audit can be open from the main screen menu Tools.

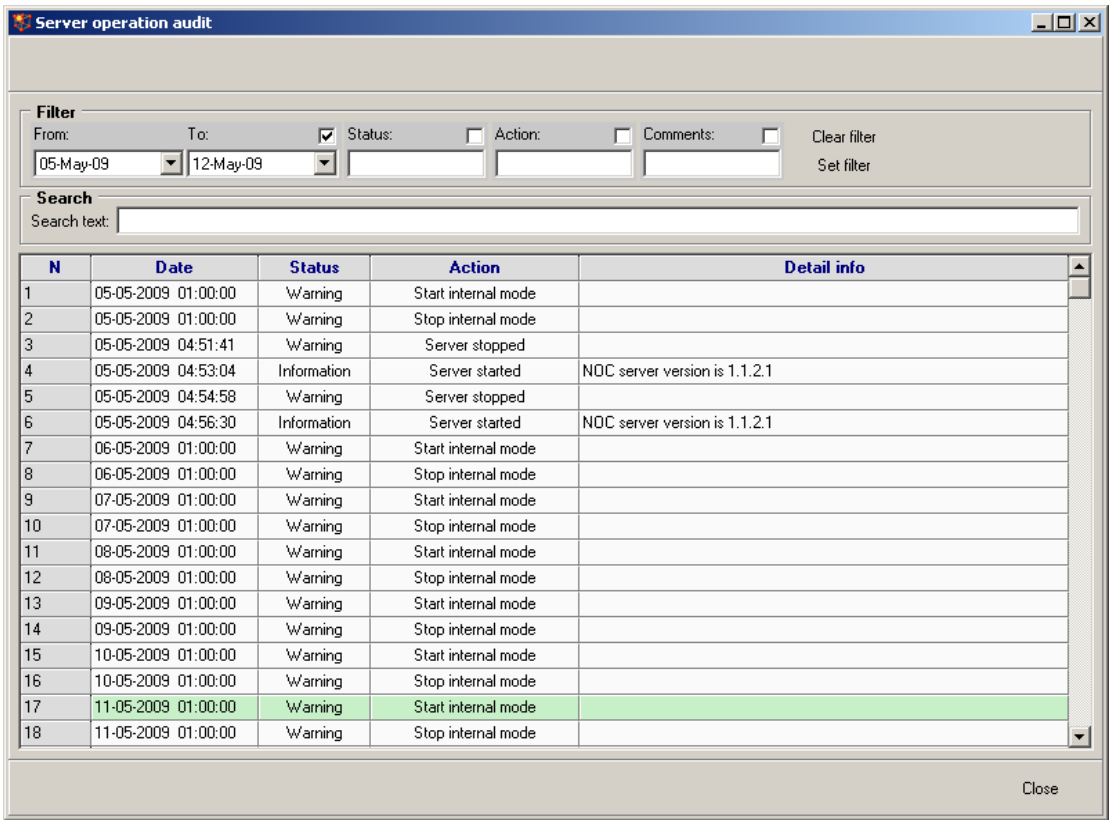
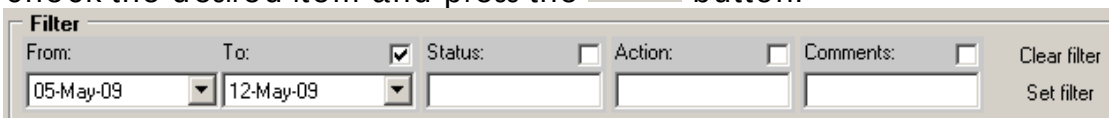


Figure: "MHV server operation audit" window

Filtering of list

Information in the window can be filtered.
For filtering the list by the given parameters, in the "Filter" area check the desired item and press the Set filter button.



Filter settings:

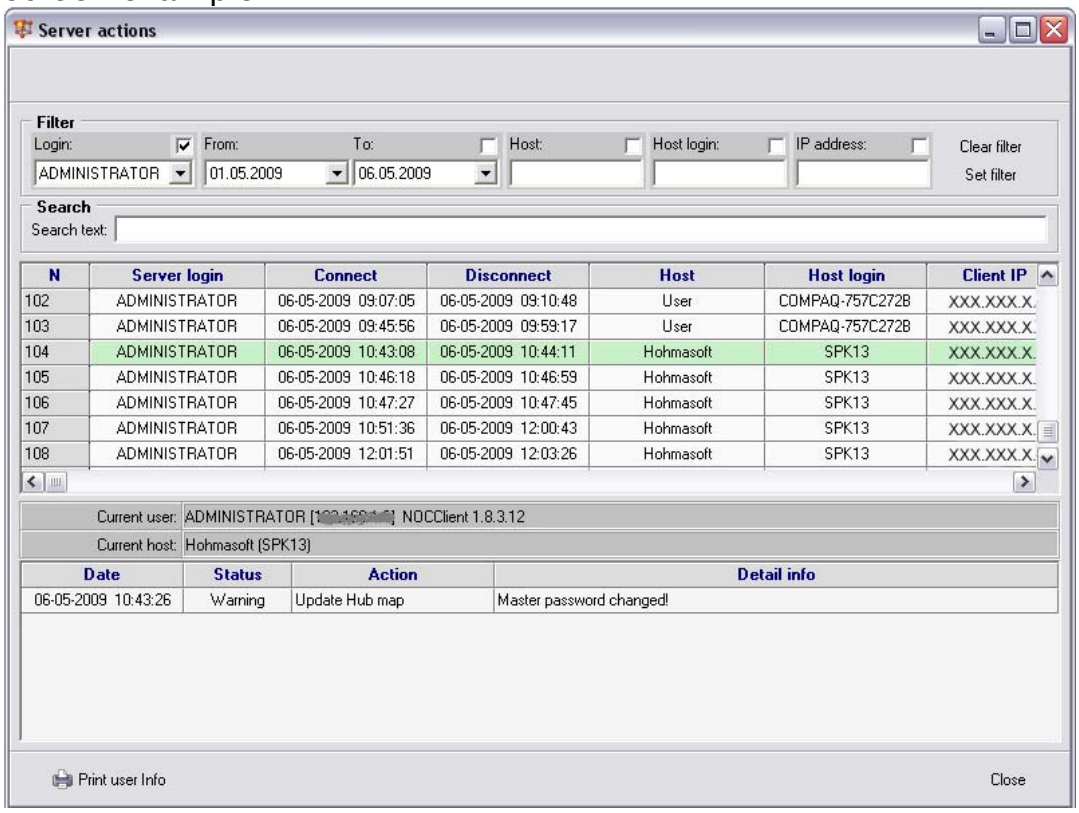
- From - To - filter by the time of connection;
- Status - filter by the status type of the message;
- Action - filtering by the action type of the message;
- Comments - filtering by comments.
- For clearing the filter press Clear filter button.

MHV server actions

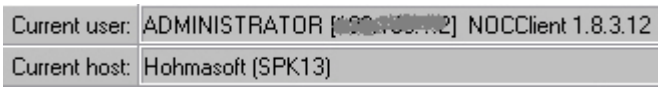
The user actions related to work with the server are recorded in the log.
The log can be viewed in MHV server actions window. This window can be opened from the main screen Tools menu.

The window displays information on user connections and conducted actions that were taking place.

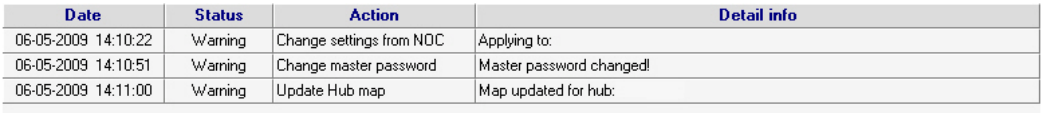
Screen example:



Available information on the screen

- 

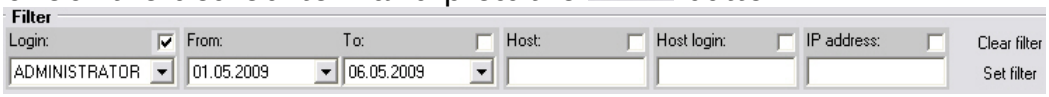
This window displays current connection information

- 
Date	Status	Action	Detail info
06-05-2009 14:10:22	Warning	Change settings from NOC	Applying to:
06-05-2009 14:10:51	Warning	Change master password	Master password changed!
06-05-2009 14:11:00	Warning	Update Hub map	Map updated for hub:

This window details all the actions that have taken place so far with their corresponding time stamp.

List filtering

For filtering the list by the given parameters, in the "Filter" area check the desired item and press the Set filter button.



Filter settings:

- Login - filter by user login (logins are selected from the list of those permitted);
- From - To - filter by the time of connection;
- Host - filter by the computer name from which the user was accessing the server;
- Host login - filtering by user login on the computer from which the connection was made;
- IP address - filtering by IP address of the user's computer.
- For clearing the filter press Clear filter button.

Searching for records in the list

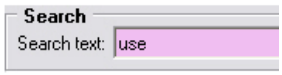
Record searching is possible only in the user connections (disconnection) list.
Information search criterion is set by the text entered in the search line.

Search is register-independent.

If a line, which satisfies the search condition, is found, then it becomes activated and highlighted in the table.

N	Server login	Connect	Disconnect	Host	Host login	Client IP
75	ADMINISTRATOR	05-05-2009 11:17:16	05-05-2009 11:17:36	User	ANTON	XXX.XXX.X.X
76	ADMINISTRATOR	05-05-2009 11:18:18	05-05-2009 11:20:23	User	ANTON	XXX.XXX.X.X
77	ADMINISTRATOR	05-05-2009 11:21:29	05-05-2009 11:21:51	Hohmasoft	SPK13	XXX.XXX.X.X
78	ADMINISTRATOR	05-05-2009 11:21:51	05-05-2009 11:22:19	User	ANTON	XXX.XXX.X.X
79	ADMINISTRATOR	05-05-2009 11:21:54	05-05-2009 11:22:03	Hohmasoft	SPK13	XXX.XXX.X.X
80	ADMINISTRATOR	05-05-2009 11:22:41	05-05-2009 11:23:19	Hohmasoft	SPK13	XXX.XXX.X.X
81	ADMINISTRATOR	05-05-2009 11:41:02	05-05-2009 11:41:28	User	COMPAQ-757C272B	XXX.XXX.X.X

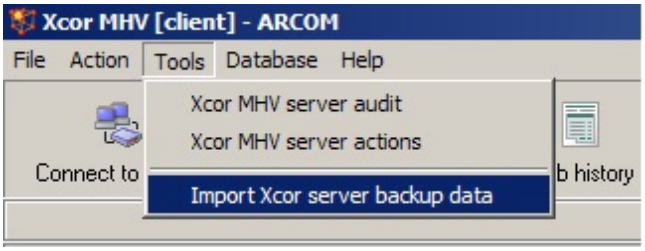
In other case, the search text line color will stay pink (when no records are found):



One should remember that the search is conducted only along the fields of "Client IP", "Server login", "Host" and "Host login" in the indicated order.

Importing Xcor Hub data backup files

The local Xcor hubs can store the following data on the MHV Server hard drive for additional safety. It is also recommended to backup the data in another safe location too. In order to save local Hub settings data on the MHV server, the data import feature must be started from Tools in the following window:



After launching the Import procedure, follow the instructions on screen to select the data files that need to be imported. The files will be stored in the locations listed below.

The relevant files are located in the following directories

- *Calibration data files location*
  \Database\XcorCalibrations\HUB_NAME, the filename contains the hub name and time stamp; file name ex. Hub_1_03.05.09.clbv

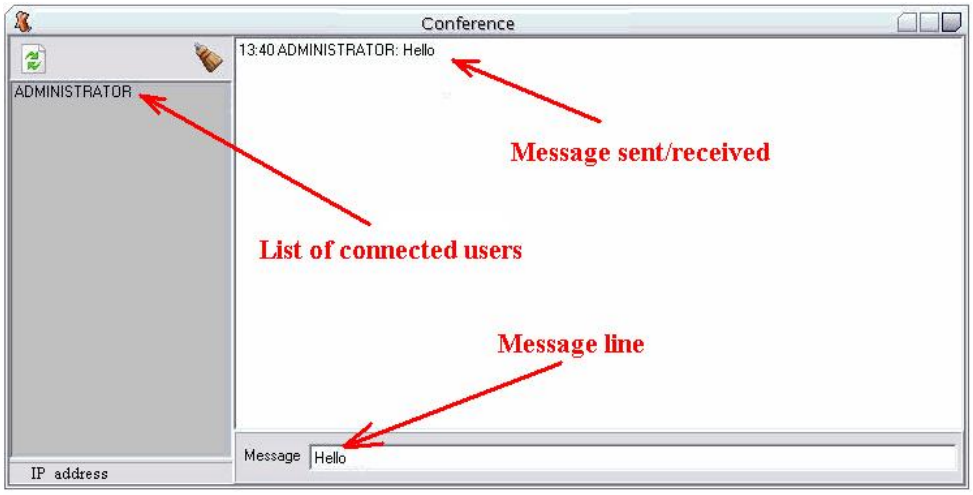
- *Scan intervals data files location*
  \Database\XcorIntervals\HUB_NAME, the filename contains the hub name and time stamp; file name ex. Hub_26_03.05.09.sidf

- *i-Scout distribution data file location*
  \Database\XcoriScouts\Hub_ NAM, the filename contains the hub name and time stamp; file name ex. Hub_26_03.05.09.ildf

Communication with other active database users

Users who are connected to the same MHV server can use the Conference mode to communicate with each other via text messages, which will be displayed automatically on the selected addressee's screen.

To send a message click on the Tools icon on the toolbar first and then select Conference. The following screen will show up:



Where buttons:

- refresh connected user list
- clear message window

Only users in the active list can send messages to each other. For sending a message it is necessary to select the addressee (from the list in the left window), type in text in a message line and to hit Enter key. The sent message text will appear in the communication window.

It is recommended to use the Conference window to check which other users are active when changing important system parameters or making certain features temporarily unavailable to other users - for example before starting Signal analyzer mode.