



Connecting radios all over the world

3132/02

Mimer InfoServer

Technical description and setup instructions



Rev E

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A Mimer SoftRadio system can be configured in many ways. This paper describes the basics of setting up a **Mimer InfoServer**.

Please also refer to the standard setup instructions for SoftRadio and to the information provided on the web pages.

www.lse.se

www.lse.se/info-server

Alternative hardware

The frontpage picture shows the standard hardware delivered. Varying delivery times has given the need to also have an alternative hardware, shown in the picture below. The two boxes have very similar performance, it is mainly the exterior and the connectors that are different.



Alternative hardware

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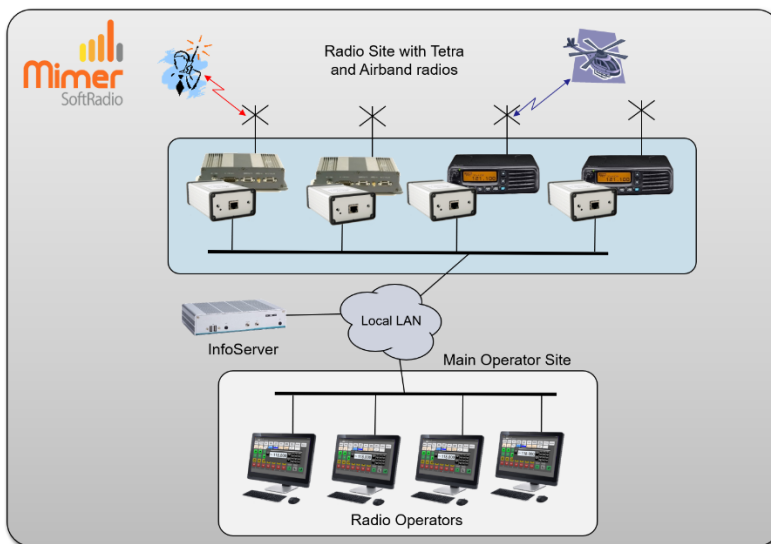
1 General

Mimer InfoServer is a component in the Mimer family of products for network operated 2-way radios.

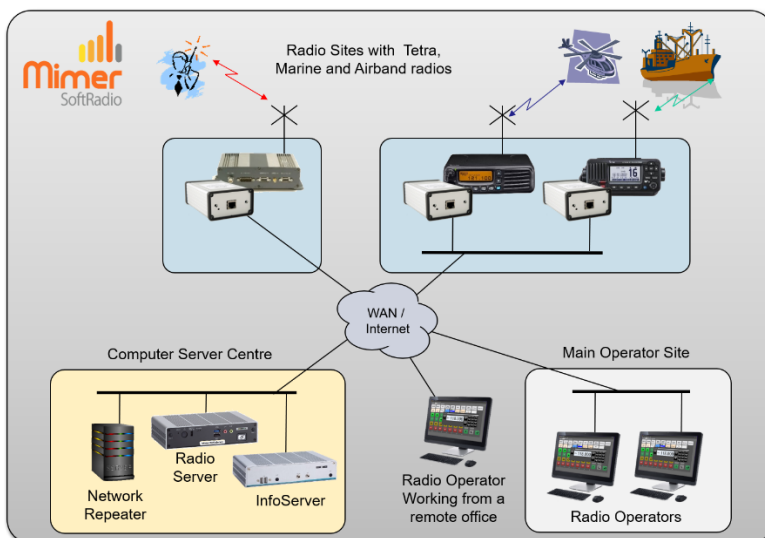
The InfoServer is used to monitor the system health.

Most faults that might occur in a SoftRadio system are indicated in the operator GUI so that the operator can either solve the problem or call for technical help.

With an **InfoServer** in the system, it will monitor the complete system and report the system health and faults found as SNMP messages. These can then be gathered by other IP systems.



Local system with all radios and operators in the same LAN



Mixed type of radio system, with an InfoServer at the server centre.

2 The InfoServer

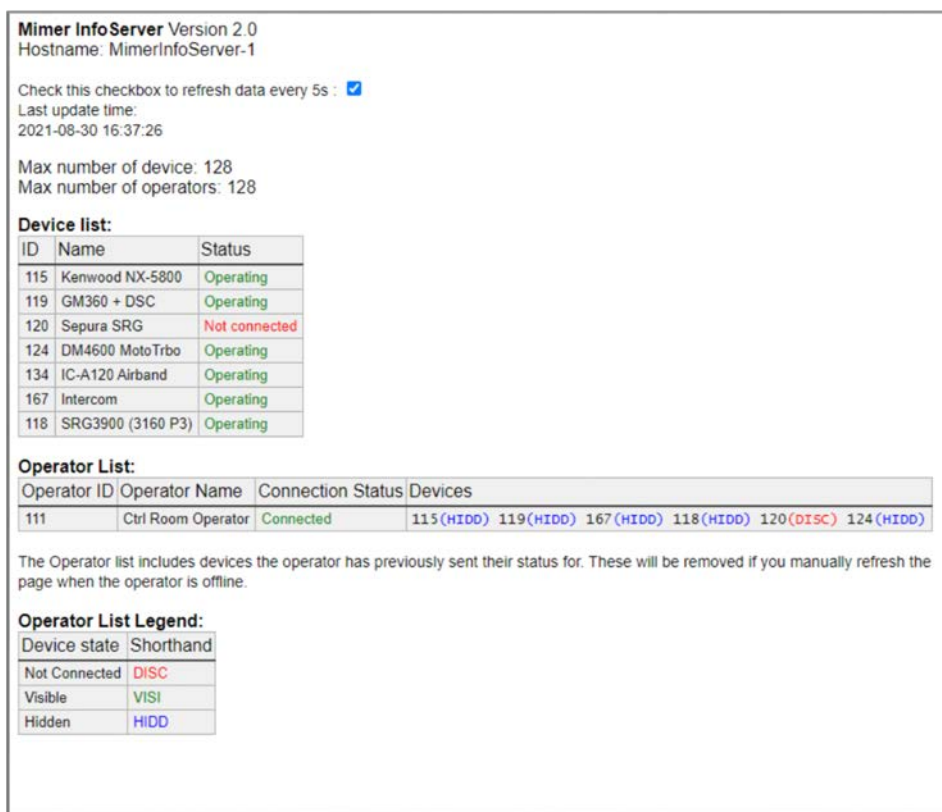
The InfoServer is based on a rugged industrial x86 PC that runs a Debian based Linux operating system.

It can alternatively be delivered as a VDMK-file to be run on another hardware platform. See separate setup instructions.

2.1 Available Information

The InfoServer software is designed to collect information about radio units and other devices in a Mimer SoftRadio system and about the operators and the connections they have.

The information is displayed on a HTML page by connecting a web-browser to the IP-address of the InfoServer.



Mimer InfoServer Version 2.0
Hostname: MimerInfoServer-1

Check this checkbox to refresh data every 5s :

Last update time:
2021-08-30 16:37:26

Max number of device: 128
Max number of operators: 128

Device list:

ID	Name	Status
115	Kenwood NX-5800	Operating
119	GM360 + DSC	Operating
120	Sepura SRG	Not connected
124	DM4600 MotoTrbo	Operating
134	IC-A120 Airband	Operating
167	Intercom	Operating
118	SRG3900 (3160 P3)	Operating

Operator List:

Operator ID	Operator Name	Connection Status	Devices
111	Ctrl Room Operator	Connected	115(HIDD) 119(HIDD) 167(HIDD) 118(HIDD) 120(DISC) 124(HIDD)

The Operator list includes devices the operator has previously sent their status for. These will be removed if you manually refresh the page when the operator is offline.

Operator List Legend:

Device state	Shorthand
Not Connected	DISC
Visible	VISI
Hidden	HIDD

Example of the InfoServers web browser page

For each connected device there will be information about ID, IP address, Name and the current status.

Device List

The devices listed here are those configured in the Web interface settings, and are locally accessible, that is, they send UDP status in the local subnet because they are either placed locally, or their status messages are provided via a Network Repeater in the local subnet.

Operator List

For clients (SoftRadio operators) there will be ID, Name and a list of available radio- and phone devices at the operator. These devices can be both local UDP connected devices and remote TCP connected devices.

The list of client devices is divided in three parts:

VIEWED devices. These are the devices that are visible on the current tab at the operator.

HIDDEN devices. These are the devices that are active at the operator but are hidden on a non-selected tab.

DISCONNECTED devices. These are the devices that are listed in the Connections Setup, but the connection currently fails.

3 Settings of Devices

Most settings for the InfoServer are made using a web-interface.

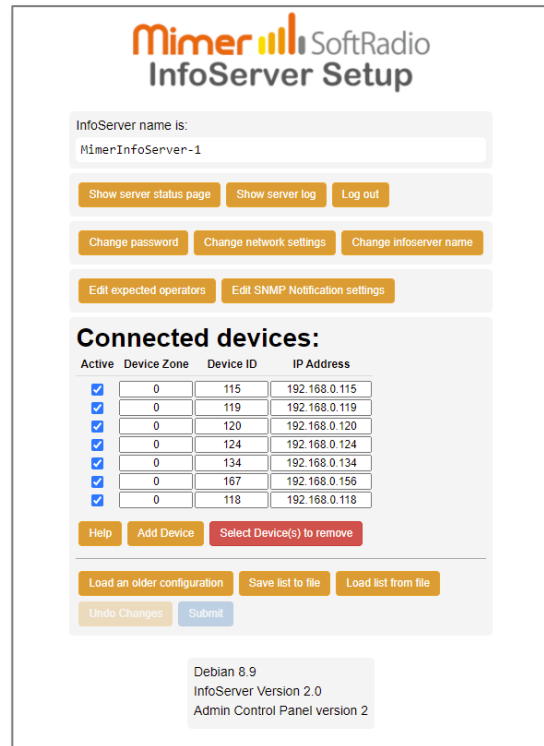
This is accessed by logging in from a WEB browser by entering the IP of the server and port: 8080, for example 192.168.0.27:8080.

Log in for the web interface user is “admin” and the password as noted in the documentation included with the delivery of the server.

The settings include a list of all expected radios, a list of all expected operators, IP address and Name of the InfoServer and authentication and IP settings for the SNMP notifications that are defined in the MIMER-INFOSERVER-MIB.

All further described below.

Note: authentication and user settings for SNMP requests and notifications for system events are not set in the web-interface. These are instead defined in the SNMP-daemon settings in the Debian OS, see chapter 7-8 below.



3.1 Setting up connections to the devices

The first page is the list of devices that shall be monitored by the InfoServer. This can be radios, phones, intercoms, VoiceLog and other types of devices in the Mimer SoftRadio system.

The server will listen for communication from the devices over UDP in the local LAN.

First click the button “Add Device” so that the number of lines corresponds with the number of devices that you would like to connect.

3.2 Device Zone

The Zone number is used in large system connecting over 240 nodes. For all standard systems the zone number shall be “0”.

3.3 Device ID

This is the ID number used in the Mimer SoftRadio system for the device. In Mimer SoftRadio every device and every operator need to have a unique ID

number between 10-240. It is common practice for the SoftRadio clients to have numbers from 10-99 and all other devices numbers from 100-240.

Enter the ID number of all devices that you need to monitor.

3.4 IP Address

This is the IP address used in the local LAN by the device that is being monitored by the InfoServer.

Instead of an IP address a URL can be used if you have an IP setup that allows local URL's.

If the devices are local, in the same LAN subnet, you shall enter the IP to each device. If the devices are remote and connected through a NetworkRepeater, you shall enter the IP to the NetworkRepeater. This will then be the same IP for all devices.

3.5 Submit changes

After entering your changes in the list of devices you need to click [Submit] to store them as the new InfoServer configuration. A confirmation window will show that the InfoServer has accepted the new settings.

If you don't want to submit the changes, you can just click the [Undo changes] button.

3.6 Save and Load from file

The buttons [Save list to file] and [Load list from file] gives you the possibility to have several different settings in files on your PC that you easily can switch between.

3.7 Configuration history

The button [Load an older configuration] will present a list of older settings with time and date for setup. Any of these settings can be opened for review by selecting them. They will not be used until the [Submit] button is clicked again.

4 Settings of operators

4.1 Edit Expected Operators

You need a list of expected operators so that the InfoServer will know which operators to monitor, and can show which ones are not online.

4.1.1 Zone

The Operator Zone is only used in large systems, normally enter "0".

4.1.2 Operator ID

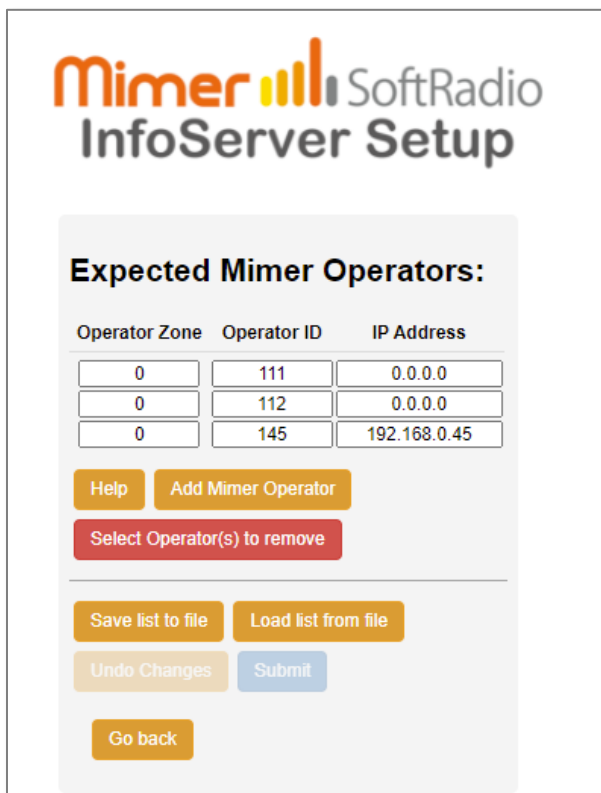
Enter the operator ID as set in each operator's "Connections Setup".

4.1.3 IP Address

Enter the IP address of each operator PC. The IP and the ID needs to match otherwise the server will ignore any data from that Operator ID.

Leaving the setting with 0.0.0.0 will allow any IP (dynamic IP) for the operator PC.

For operators that are remote, enter their public IP. Or leave the setting with 0.0.0.0.



The screenshot shows the 'Mimer SoftRadio InfoServer Setup' interface. The main section is titled 'Expected Mimer Operators:' and contains a table with three columns: 'Operator Zone', 'Operator ID', and 'IP Address'. Below the table are several buttons: 'Help', 'Add Mimer Operator', 'Select Operator(s) to remove', 'Save list to file', 'Load list from file', 'Undo Changes', 'Submit', and 'Go back'.

Operator Zone	Operator ID	IP Address
0	111	0.0.0.0
0	112	0.0.0.0
0	145	192.168.0.45

InfoServer – Expected Mimer Operators menu

5 Change network settings

The standard settings delivered with the InfoServer are:

- Eth0 – Static IP address, used for the local LAN to the devices.
- Eth1 – DHCP-mode. Normally not used.

Mimer SoftRadio
InfoServer Setup

Eth0
Device connected
DHCP-Mode active
IP address
192.168.0.27
Netmask
255.255.255.0
Default gateway

Eth1
Device not connected
DHCP-Mode active

Go back Submit

InfoServer - IP setup page

After you have done your changes, click the [Submit] button.

5.1 Static IP – DHCP-Mode not active

Unticking the box means that you will use a Static IP, and that you define all the settings for the IP address yourself.

5.1.1 IP address

The static IP address of the InfoServer. You can change this to any address that suits your net. If you change the subnet part (often the three first groups) you must remember to also change the Mimer Network Interfaces accordingly.

5.1.2 Netmask

Defines what part of the address that is the subnet address. The standard setting 255.255.255.0 tells that the first three groups are the subnet address. In this case it is 192.168.0.

If you only want to change the IP, you normally do not need to change this setting.

5.1.3 Gateway

This is the address of your gateway out of the local subnet, normally the address of the Internet router. This field must usually be cleared if you use DHCP on the other Ethernet interface – see 5.3.

5.2 Dynamic IP – DHCP-Mode active

Ticking the box means that you will use a Dynamic IP, and the network you connect to have a DHCP-server that can assign an address and all IP settings to a computer that connects to it. The DHCP-server has a range of addresses that are assigned to a client when it sends a request. This is called dynamic address assignment.

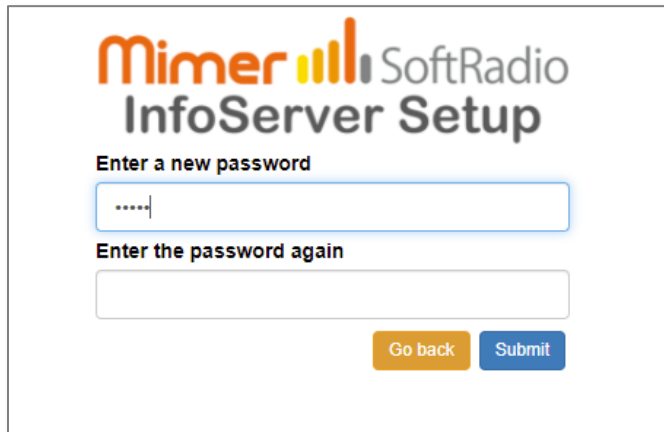
5.3 Important note regarding gateway settings

Typically only one ethernet port (eth0) is used on the server. However, if using both ethernet ports, only one of them shall have a gateway assigned (when it is set to DHCP it gets a gateway automatically). Leave the Gateway field of the other ethernet port blank.

6 Other Settings and Commands

6.1 Change password

Pushing the “Change password” button will lead you to this page.



The screenshot shows the 'Mimer SoftRadio InfoServer Setup' interface. It features the Mimer logo at the top left. Below the logo, the text 'Enter a new password' is followed by a text input field containing four asterisks. Underneath, the text 'Enter the password again' is followed by another empty text input field. At the bottom of the form, there are two buttons: a yellow 'Go back' button and a blue 'Submit' button.

InfoServer – Change password

If you wish to change your password for the admin account of the InfoServer, just enter the new password in both boxes and push “Submit”.

If you change the password, please don't forget to make a note of your changes, it might otherwise be hard to reconnect to the InfoServer.

6.2 Show server status page

This leads to the status page described above.

6.3 Show the server log

The server has a built-in log function that can show eventual errors, for use when troubleshooting. This can be useful when setting up a system or when fault finding a system.



The screenshot shows the 'Mimer SoftRadio InfoServer Setup' interface with the 'Server log' window open. The log window displays a list of system events, including the start and stop of the InfoServer service, and the closing of connections. The log entries are as follows:

```
Server log:
-- Logs begin at Fri 2021-08-27 18:50:38 CEST, end at Tue 2021-08-31 12:58:42 CEST. --
Aug 27 18:50:40 MimerInfoServer-1 systemd[1]: Starting Mimer InfoServer...
Aug 27 18:50:40 MimerInfoServer-1 systemd[1]: Started Mimer InfoServer.
Aug 27 18:50:40 MimerInfoServer-1 Infoserver[452]: Infoserver Version 2.0
Aug 27 18:50:40 MimerInfoServer-1 Infoserver[452]: Started
Aug 27 19:36:53 MimerInfoServer-1 systemd[1]: Stopping Mimer InfoServer...
Aug 27 19:36:53 MimerInfoServer-1 Infoserver[452]: closing connections...
Aug 27 19:36:53 MimerInfoServer-1 Infoserver[452]: Mimer Infoserver is closed
Aug 27 19:36:53 MimerInfoServer-1 systemd[1]: Starting Mimer InfoServer...
Aug 27 19:36:53 MimerInfoServer-1 systemd[1]: Started Mimer InfoServer.
Aug 27 19:36:53 MimerInfoServer-1 Infoserver[811]: Infoserver Version 2.0
Aug 27 19:36:53 MimerInfoServer-1 Infoserver[811]: Started
Aug 27 19:40:40 MimerInfoServer-1 systemd[1]: Stopping Mimer InfoServer...
Aug 27 19:40:40 MimerInfoServer-1 Infoserver[811]: closing connections...
Aug 27 19:40:40 MimerInfoServer-1 Infoserver[811]: Mimer Infoserver is closed
Aug 27 19:40:40 MimerInfoServer-1 systemd[1]: Starting Mimer InfoServer...
Aug 27 19:40:40 MimerInfoServer-1 systemd[1]: Started Mimer InfoServer.
Aug 27 19:40:40 MimerInfoServer-1 Infoserver[855]: Infoserver Version 2.0
Aug 27 19:40:40 MimerInfoServer-1 Infoserver[855]: Started
Aug 27 19:41:19 MimerInfoServer-1 systemd[1]: Stopping Mimer InfoServer...
```

InfoServer log window

6.4 Change InfoServer name

The name of the InfoServer can be changed by entering the “Change InfoServer name” menu.



The screenshot shows the Mimer SoftRadio InfoServer Setup interface. At the top, the logo 'Mimer SoftRadio' is displayed in orange and grey, followed by 'InfoServer Setup' in bold black text. Below the logo, the text 'Enter a new InfoServer name' is shown. A text input field contains the value 'MimerInfoServer-1'. To the right of the input field are two buttons: 'Go back' (orange) and 'Submit' (blue).

Change server name menu

6.5 Edit SNMP Notification settings

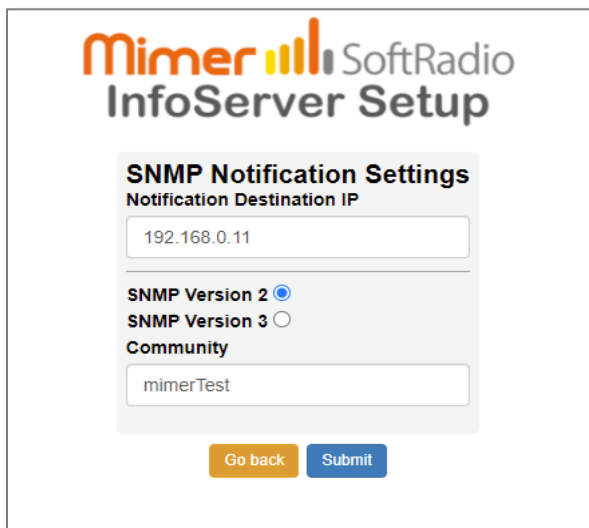
Here you configure the authentication settings for SNMP notifications.

6.5.1 Notification Destination IP

This will set where the SNMP notifications are sent.

6.5.2 SNMP Version

Here you can select SNMP version 2 or 3. The page will show the relevant settings fields depending on which version you choose. Please refer to your SNMP Trap Receiver's configuration to determine which version to use and the appropriate values to configure.



The screenshot shows the Mimer SoftRadio InfoServer Setup interface for 'SNMP Notification Settings'. The title 'Mimer SoftRadio InfoServer Setup' is at the top. Below it, the section 'SNMP Notification Settings' is highlighted. Under this section, there are three fields: 'Notification Destination IP' with the value '192.168.0.11', 'SNMP Version 2' which is selected with a radio button, and 'SNMP Version 3' which is unselected. Below these is a 'Community' field with the value 'mimerTest'. At the bottom of the settings area are two buttons: 'Go back' (orange) and 'Submit' (blue).

SNMP version 2 Notifications settings

7 SNMP

7.1 Standard SNMP requests

The InfoServer implements an SNMP agent that supports SNMP v2c and v3.

It is configurable to respond to all standard requests supported by a standard Debian Linux system's SNMP daemon (including the System objects from RFC-1213).

7.2 Additional SNMP requests

The InfoServer also has Mimer-specific objects, as described in the MIB file MIMER-INFOSERVER-MIB.

These include, but are not limited to:

- number of expected devices
- number of devices with failing connection
- number of expected operators
- number of devices not visible at any operator
- number of devices not connected to any operator

7.3 SNMP notifications (previously called traps)

SNMP notifications for events such as devices going offline or online or losing connection to any operators can be generated and these are also described in the MIB file.

8 SNMP daemon settings in the Debian OS

SNMP requests are handled directly by the snmp daemon in the Debian OS. User and authentication settings for this are made in the file:

`/etc/snmp/snmpd.conf`

Also, if you wish to configure SNMP notifications for monitoring the Debian system that runs the InfoServer, such as disk space notification, then these must be defined in the file.

Please refer to the net-snmpd manuals online for more information on how to configure the snmp daemon and how to create SNMP users.

The configuration can either be viewed and changed by using the “nano” editor to edit the file, or by using the various snmp command line tools that are available in Debian.

The InfoServer comes with default configurations for the snmp daemon that should be analysed and changed manually in any new setup.

The configuration files have the following Mimer InfoServer-specific modifications, that must be preserved:

1. In the file **/etc/snmp/snmp.conf** (obs, not `snmpd.conf`) there is an “include” of the MIB file `/etc/mimer/MIMER-INFOSERVER-MIB.mib` in order to parse our own MIB. Do not change this!
2. There is a “passthrough” defined in the file **/etc/snmp/snmpd.conf**, in order to make the InfoServer respond to SNMP requests. The passthrough is set to call a python script that fetches and parses the information from the InfoServer according to the definitions in `MIMER-INFOSERVER-MIB`. Do not change this!

Important Notes:

The configuration files also have a test-community and a test-user that you can use for evaluation but must remove before deployment in order to not allow unauthorized access:

3. There is a predefined SNMP v2 community with full read access to our LS-Elektronik MIB tree named "**mimerTest**" configured in the file **/etc/snmp/snmpd.conf**.
4. There is a predefined SNMP v3 user, named "**mimerTest**" that is configured for both authentication and encryption (using SHA and DES respectively), with both authentication and encryption **passphrases set to "mimerTest"**.

The user access definition for this user is in **/etc/snmp/snmpd.conf**, while the user authentication definition is in the file:
/var/lib/snmp/snmpd.conf

These are only for evaluation and testing purposes and should be removed before deploying the InfoServer. Simply delete the relevant lines in the two files and replace with your own preferred definitions as needed.

If you wish to use SNMP v3 with encryption you shall define your own new user with a strong password. Please refer to Net-SNMP manuals and guides online for information on how to create a new user.

Even if you only intend to use SNMP v2, you should still remove the "**mimerTest**" user.

9 Settings in the operator PC

The operator PC needs to be set up so that it reports its connections etc to the InfoServer. This is done in two steps.

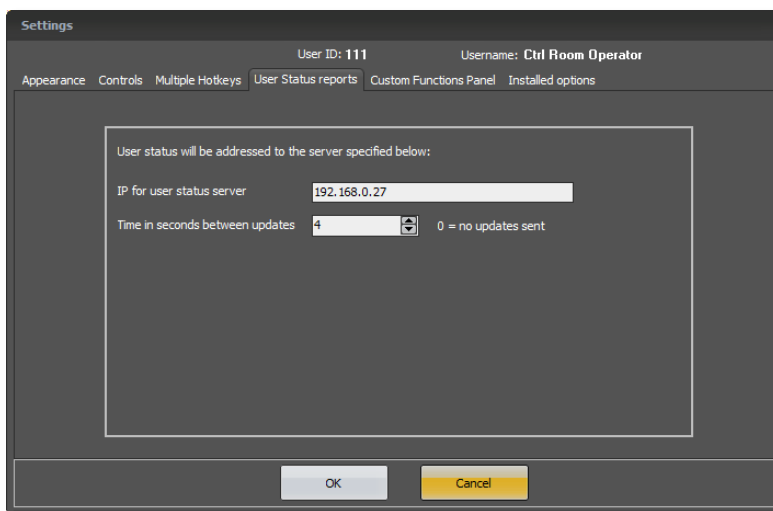
9.1 Installing the option

After setting up SoftRadio XL, also install the option “Mimer User Status Reports”.

Note. The option only works with the XL-version of SoftRadio.

9.2 Settings

Under Settings in SoftRadio you will find a new tab called “User Status Reports”. Here you need to set the IP-address to the InfoServer and how often you would like reports to be sent.



Settings tab in SoftRadio

9.2.1 Operator in local LAN

When the operator PC is in the same local LAN as the InfoServer, enter the IP address of the server.

9.2.2 Remote operator

When the operator PC is remote, enter the public IP address (or WAN address) of the InfoServer. You can also use a URL.

Please note that if the InfoServer is hidden behind a router, as seen from the network of the remote operator, that router needs a port forwarding to be set, so port 20005 is forwarded to the local IP of the InfoServer.

10 Mimer InfoServer summary:

Dimensions	200x120x50mm Plus connectors
Power supply	11-15VDC 3,5Amp. Mains adapter included.
Network connections	Two 10/100MB Ethernet RJ45 connections
Remote access	SSH
Operating system	Linux (Debian)

10.1 Power failure

If power is lost to the InfoServer no damage will be done. There are no files that needs to be saved before shut down.

When power is restored the InfoServer will automatically boot up in about 1-2 minutes.



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