Mimer SoftRadio

Connecting radios all over the world

Mimer RadioServer

Technical description and set-up instructions

Rev J

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A Mimer SoftRadio system can be configured in many ways. This paper describes the basic use of a **Mimer RadioServer** and how to set it up.

There are two versions of the Mimer RadioServer; standard and satellite version. Both of these can be delivered ready to run in the standard box, or they can be delivered as a Virtual Service software package.

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

www.lse.se

1   Table of Contents

2   General

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

The RadioServer is used to allow many operators to remotely connect to one or more Mimer radios at a single site via TCP-connections. This can be used to allow access from users at different locations to radio resources at a single site, like a remote radio site or a command centre with local radios.

A standard Mimer Network interface allows only one user to connect remotely via TCP. If another user tries to connect he will get the alternating message "Trying to connect"/"Not connected" because there is no free TCP server socket to connect to.
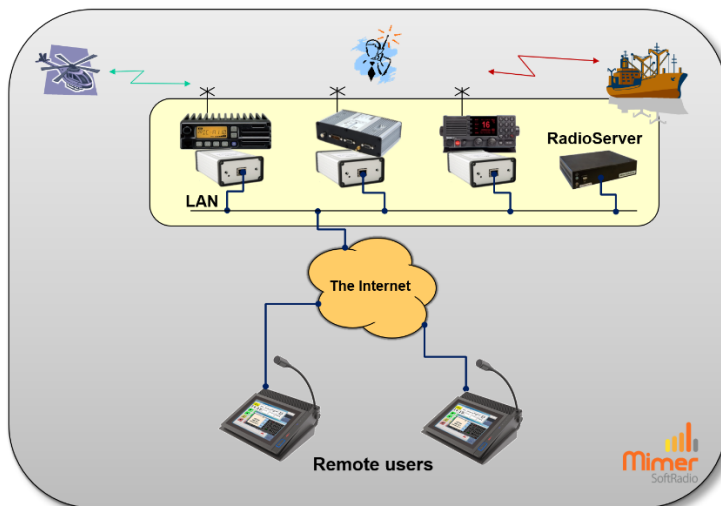
Typical setup where a RadioServer is needed, with three radios offshore and two remote operators at different places.

Mimer Radio Server solves this situation by allowing many simultaneous operator connections for each radio attached to the server. The RadioServer can handle up to 32 locally placed radios and up to 32 operators. However a total of max 64 connections are allowed.

2 radios x 32 operators
4 radios x 16 operators
8 radios x 8 operators
16 radios x 4 operators
32 radios x 2 operators

The RadioServer has two Ethernet connections. This means it can serve as a router to the Internet connection. By default the local network connection

has a static IP address and the WAN connection uses dynamic IP address assignment, but this can be changed if needed.

The RadioServer can also be used in an existing Local Area Network (LAN) which has a router towards the Internet. In this case only the Local network connection on the RadioServer needs to be used.

3   The RadioServer

The Radio Server is basically a computer that runs a Debian based Linux operating system. It hosts an Http-server so that all settings can be done from a standard web browser.

The Radio Server also has an ssh server and an ftp server enabling access to configuration files via ssh/ftp.

3.1   Settings in the RadioServer

From version 1.29 of the software and forward all settings are made through a standard web browser. Earlier versions needs the use of an ssh client like PuTTY or similar. This is not described in this manual.

After logging on to the server you can change what radios to connect to, the IP-settings, password etc.

3.2   Connections

The radios that are in the same LAN as the RadioServer connects with UDP. The operators that connect through the Internet connects with TCP.
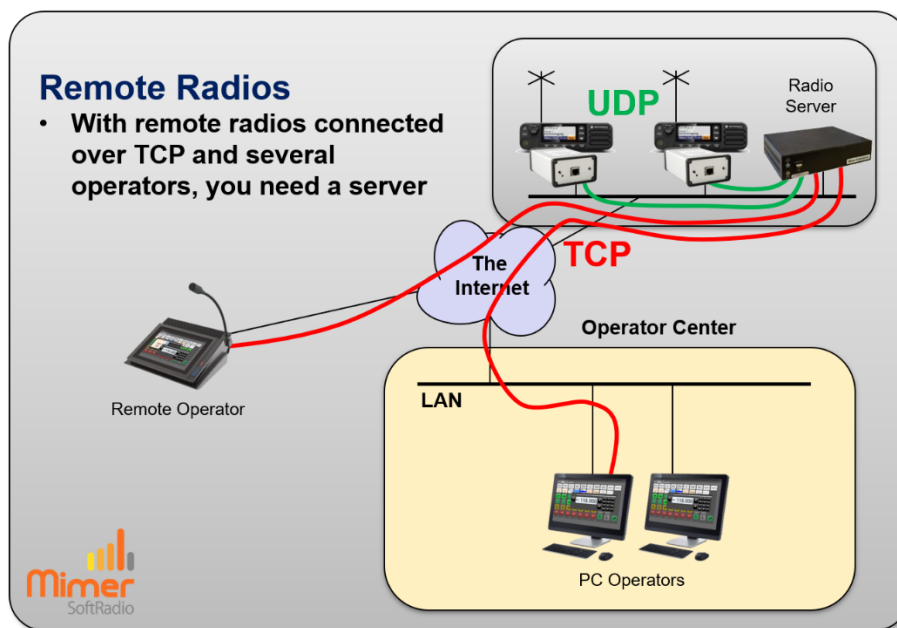
The RadioServer links local radios to remote operators.

4   Connecting to the RadioServer

4.1   Connect your PC

Connect your PC to the RadioServer through either LAN-port. Use your favourite web browser and enter 192.168.0.28:8080.

192.168.0.28 is the default IP address that the RadioServer is delivered with. This may be changed during the setup. If so, please don´t forget to make a note of your changes, it might otherwise be hard to reconnect to the RadioServer.

4.2   Login

On the first page, log on with the name and password delivered with the RadioServer.

The password may be changed during the setup. If so, please don´t forget to make a note of your changes, it might otherwise be hard to reconnect to the RadioServer.
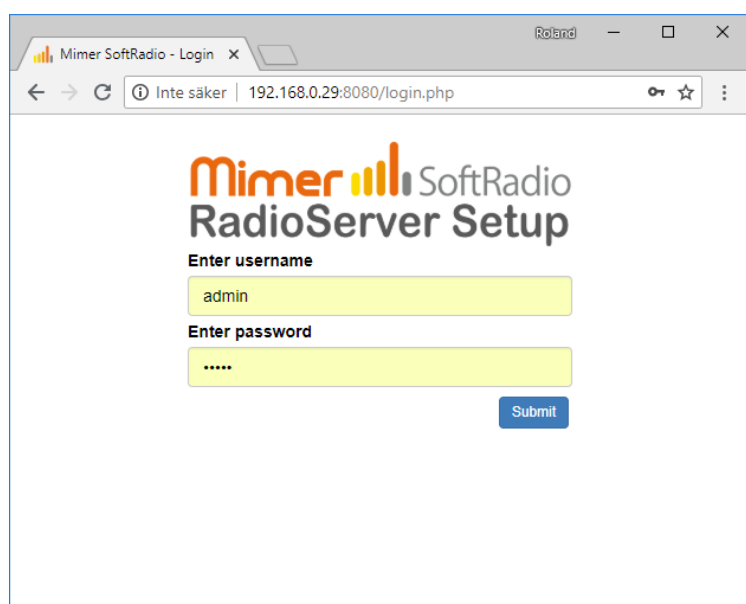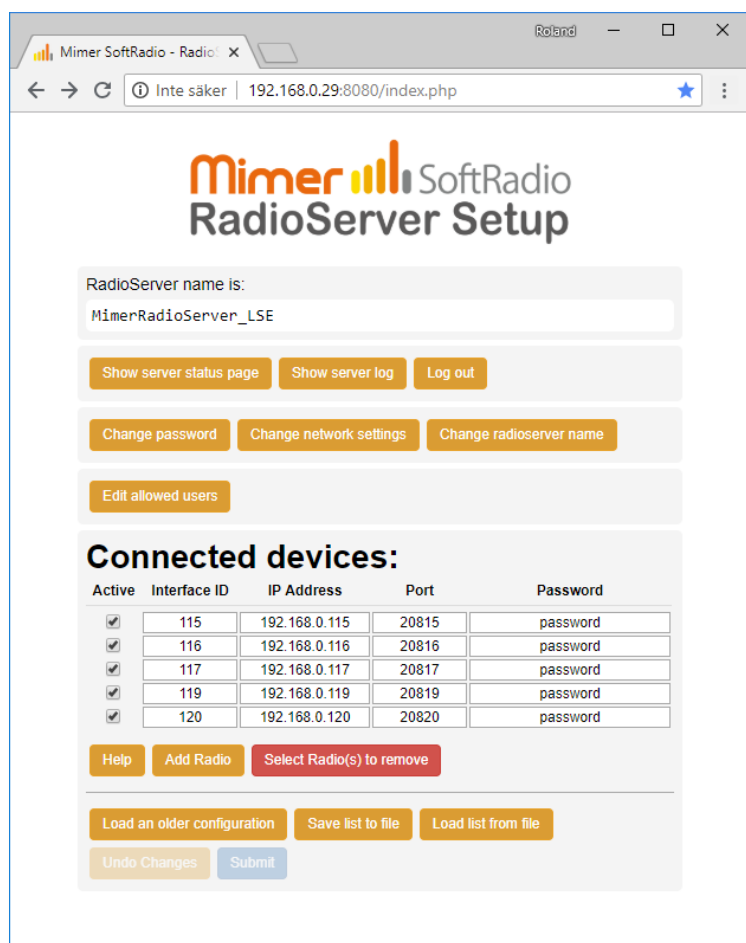

RadioServer – Login page

5 Setting up connections to the devices

The first page is the setting of what devices that shall be connected to the RadioServer. This can be radios, phones, intercoms and other types of devices in the Mimer SoftRadio system.

The devices will be connected locally through UDP over a LAN.

First push the button "Add Radio" so that the number of lines corresponds with the number of devices that you would like to connect.

RadioServer – Setup page

5.1 Interface ID

This is the ID number used in the Mimer SoftRadio system for the device. In Mimer SoftRadio every device and every operator needs to have a unique ID number between 10-240. Usually the SoftRadio clients have numbers from 10-99 and all other devices numbers from 100-240.

The ID number of a device is determined by the setting in the NetworkInterface.

5.2 IP Address

This is the IP address used in the local LAN connecting the device to the RadioServer.

The IP Address is determined by the setting in the Network Interface.

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

5.3 Port

The port number is the TCP port used on the WAN side of the RadioServer to forward the SoftRadio clients to the correct device.

The corresponding port will need to be set up as port forward in the WAN´s fire wall pointing at the IP address of the RadioServer.

You also set up the same port number in the SoftRadio client.

(The port number in the Network Interface is not used since it is connected local through UDP.)

5.4 Password

This is the password entered in the SoftRadio client setup.

The password in the Network Interface is not used since it is connected local through UDP.

5.5 Submit changes

After entering your changes in the list of devices you need to submit them to the RadioServer.

This is done by pushing the blue "Submit" button. A confirmation window will show that the RadioServer has accepted the new settings.

If you don´t want to submit the changes, you can just push the "Undo changes" button.

5.6 Save and Load from file

The keys "Save list to file" and "Load list from file" gives you the possibility to have several settings lists on your PC that you easily can change between.

5.7 Configuration history

The key "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 pushed again.

6   Change network settings

The standard settings delivered with the RadioServer are:

- Eth0 – Static IP address, used for the local LAN to the devices.
- Eth1 – Dynamic IP address, used for the WAN/Internet to the
  SoftRadio clients (might also be delivered as blank)

RadioServer - IP setup page

After you have done your changes, push the "Submit" button.

6.1   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.

6.1.1   IP address
The static IP address of the RadioServer. 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.

6.1.2   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 192.168.0. This is called a class C net. If you only want to
change the IP, you normally do not need to change this setting.

6.1.3   Gateway
This is the address of your gateway out of the local subnet, normally the
address of the Internet router.

6.2   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

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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.

6.3 Important note regarding Gateways

When using both LAN ports, only the WAN port shall have a gateway assigned (when it is set to DHCP it gets a gateway automatically). Leave the other LAN ports Gateway field blank.

7   Other commands

7.1   Change password

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

RadioServer – Change password

If you wish to change your password for the RadioServer, 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 RadioServer.
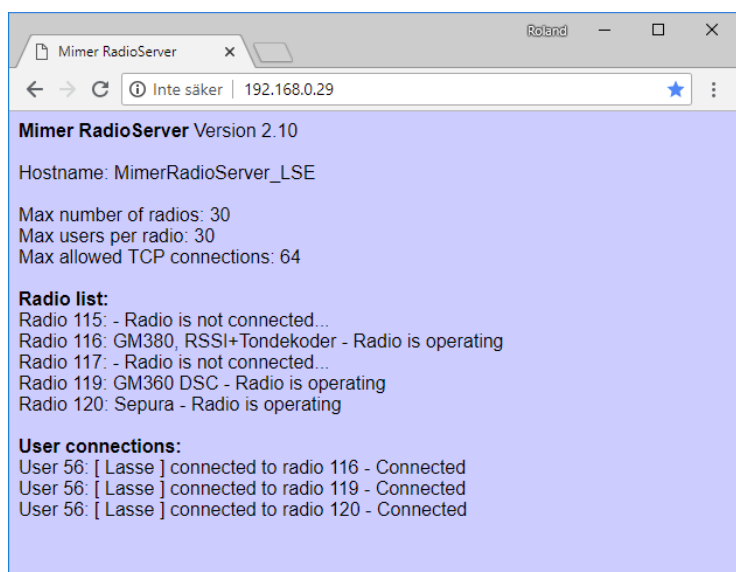
7.2   Checking RadioServer status

The status of the RadioServer can be checked by accessing it with a web browser. Type in the IP of the RadioServer and you will get a list as below. You can access it both over a local LAN and over the Internet*. Choose the Local or WAN IP address of the unit depending on how you access it.

There is also a direct key to get to the Status page from the RadioServer Setup window. Just push the button "Show server status page".

The list shows the currently active radios and the current user connections. Each user connection to a radio will have a separate line. For example four users with two radios each, will show eight connections.

*Your Internet router must be set up to port forward port 80 to the IP of the RadioServer.

Web browser check of the RadioServer status

7.3   Show the server log

The server has a built in log function that shows in detail every connection to the server. This can be useful when setting up a system or when fault finding a system.

RadioServer log window

7.4 Allowed users

You can restrict which users in the SoftRadio system that are allowed to connect to devices through the RadioServer.

Click the "Edit allowed users" key.

Enter the SoftRadio ID numbers of the operators that shall be allowed access. One per line, in the range 10-249.

Or…

Tick the box "Allow all users", this means that there are no restrictions.
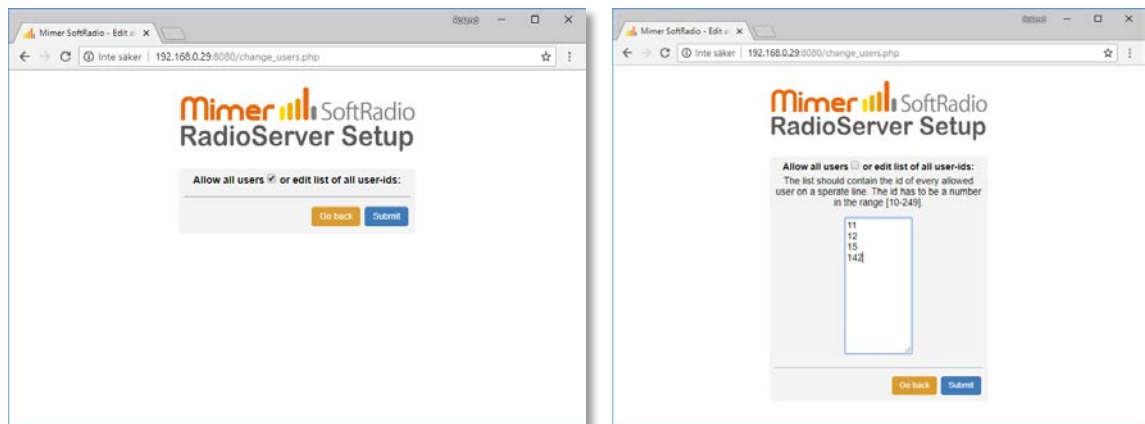
RadioServer - Allow users menu

7.5 Change Server name

The name of the server can be changed by entering the "Change server name" menu.

RadioServer - Change server name menu

8   Setting up the Mimer SoftRadio client

The SoftRadio client (Operator PC) needs to be set up to access the radios through the RadioServer instead of directly to the Network Interfaces.

The only difference from connecting directly to a Network Interface using TCP is that the IP address of the RadioServer shall be specified instead of that of the Network Interface. And the TCP Port and the Password of each radio as specified in the RadioServer settings.
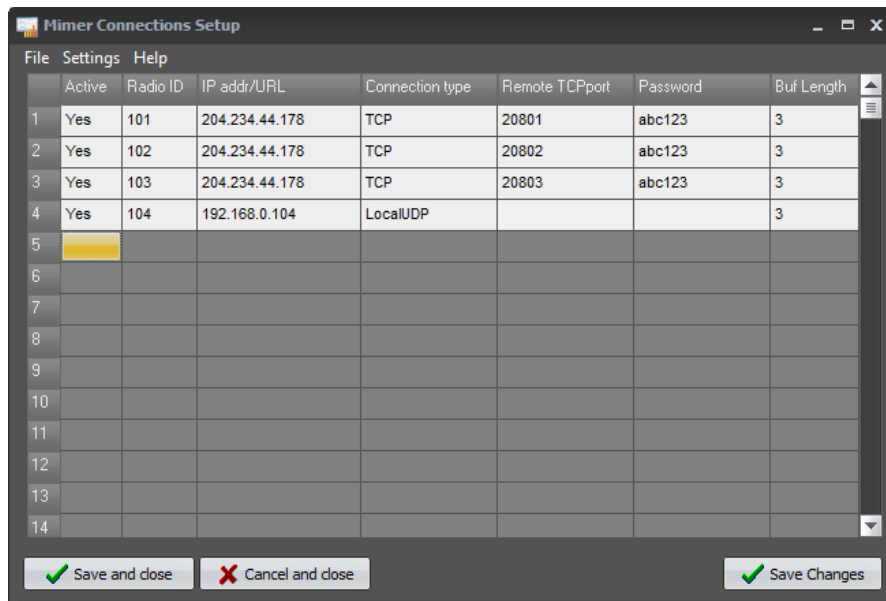
Example of Mimer Connection Setup, in an Operator PC. Three radios connected to the RadioServer over TCP and one local radio.

If more than one radio is attached to the server there will be several radios in Mimer Connections Setup that all have the same IP Address = the address to the RadioServer.

In the example above, the user has setup three remote radios with an external IP and one remote radio with a local IP address.

The NetworkInterface or in this case the RadioServer at the radio end of the system always needs to have a static IP address. If none is available a dynDNS service can be used.

However each radio will need to have different ID numbers and different remote TCP-port settings as defined earlier in this manual.

9 Using both a RadioServer and a NetworkRepeater

In some system setups you need to use both a RadioServer and a NetworkRepeater. Typically when you have both radios and operators spread out at different sites connected by the Internet.
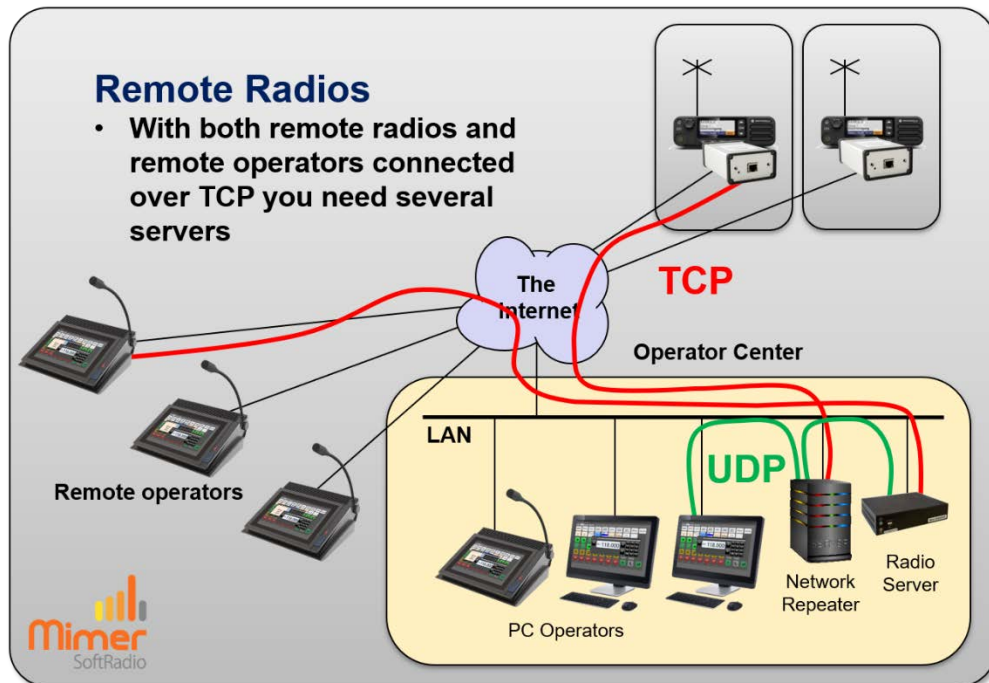
- The NetworkRepeater connects to the radios that are at different sites with TCP over the Internet.
- The local operators connect to the NetworkRepeater using UDP.
- The RadioServer also connect to the NetworkRepeater using UDP.
- The external operators then connect to the RadioServer using TCP over the Internet.

Please compare with the drawing earlier in this manual where the radios are at the same site. Then the RadioServer is placed there and no NetworkRepeater is needed.

10 Mimer RadioServer summary:

Max number of local radios	32
Max number of connected users	32
Total max IP connections (Radios x Users)	64
Power supply	5VDC 2Amp. Mains adapter included.
Network connections	Two 10/100MB Ethernet RJ45 connections
Remote access	Web based, ssh
Operating system	CF Debian Linux. With added services like ssh, ftp, dhcpc etc.
Default IP on eth0	192.168.0.28
Default IP on eth1	Dynamically allocated by external DHCP server.

10.1 Note

The name "RadioServer" can mislead that the server is only used for connecting radios. This is not true. The connection can be to any device in the Mimer SoftRadio family. For example phone-, intercom- or PA-system-Network Interfaces.

10.2 Power failure

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

When power is restored the RadioServer will automatically boot up in 2-3 minutes.

11 Problem solving

On the SoftRadio web pages there is an FAQ page. It has a section for common issues when setting up a system with a RadioServer.

www.lse.se/mimer-softradio/faq/#TRS

Mimer
SoftRadio

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