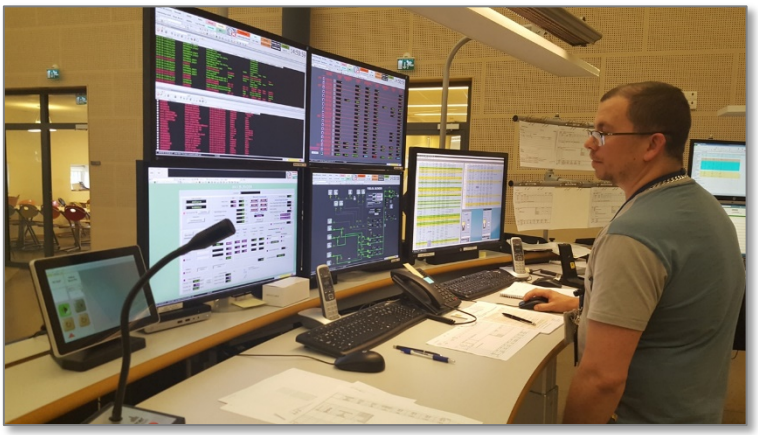
Mimer SoftRadio

Connecting radios all over the world

Setting up your

Mimer NetworkRepeater



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This guide will help with the setup of your Mimer NetworkRepeater.

A NetworkRepeater is delivered as Windows software.

Please also refer to the web page www.lse.se.

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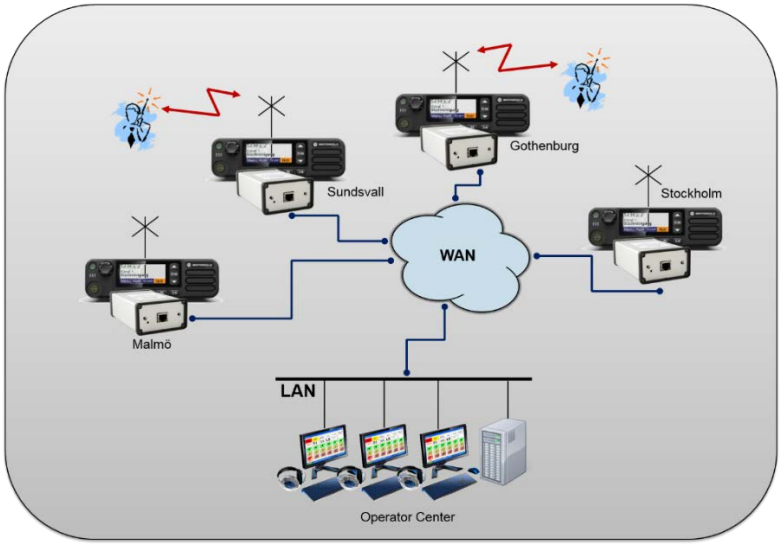
2 General

Mimer NetworkRepeater is a component in the Mimer family of products.

It is typically used in systems where you have base station radios spread out at different sites connected via the Internet or a private WAN, and all your dispatchers at one single site.

The NetworkRepeater handles all logon to the remote radios with their respective Network Interfaces. This makes them appear to the system as local radios. Any number of dispatchers can then access each radio without extra network load.

In this way the internet path will not be so heavily loaded as if all users would access all radios one by one, and there is no need for RadioServers.



Example of system with radios in four cities and all operators in one centre. The NetworkRepeater is placed in the same subnet as the operators.

2.1 The product

The Mimer NetworkRepeater is delivered as a Windows software package. Hardware is usually not included in the delivery.

2.2 Two sizes

The Mimer NetworkRepeater comes in two versions supporting a different number of devices.

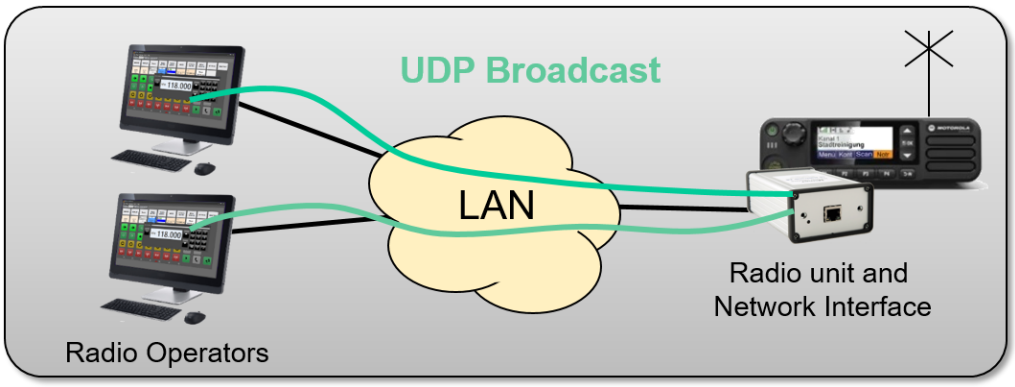
A device can for example be a radio, phone or intercom connected to the Mimer SoftRadio system.

- Mimer NetworkRepeater 60 devices (can be expanded)
- Mimer NetworkRepeater LE 8 devices

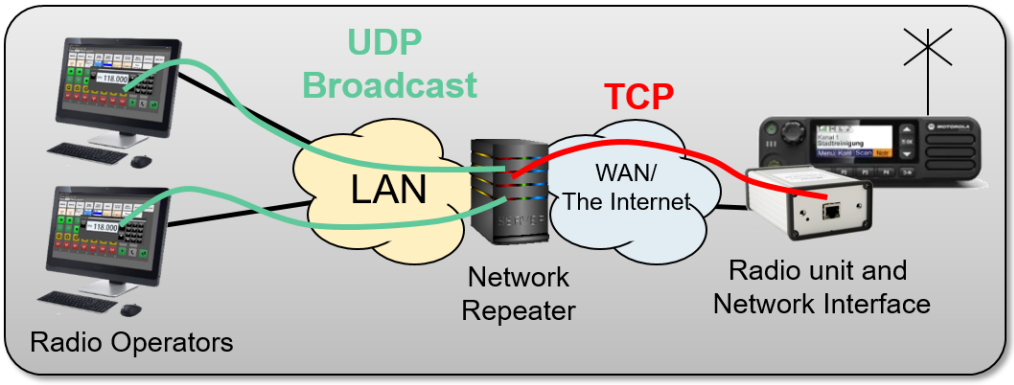
2.3 Introduction

The radio in a Mimer system is connected to the operator network using Mimer Network Interfaces. If the radio is placed far away, in a different sub-domain of the network, the connection to the interface has to be a TCP-connection.

A Network interface can handle just one single TCP connection. So without extra equipment, just one operator can connect to the interface. If there are many operators located at the same place, the Network Repeater can expand this by making this TCP connection to the interface at the radio site, and simulate a locally placed interface that many operators can have access to using UDP connections.



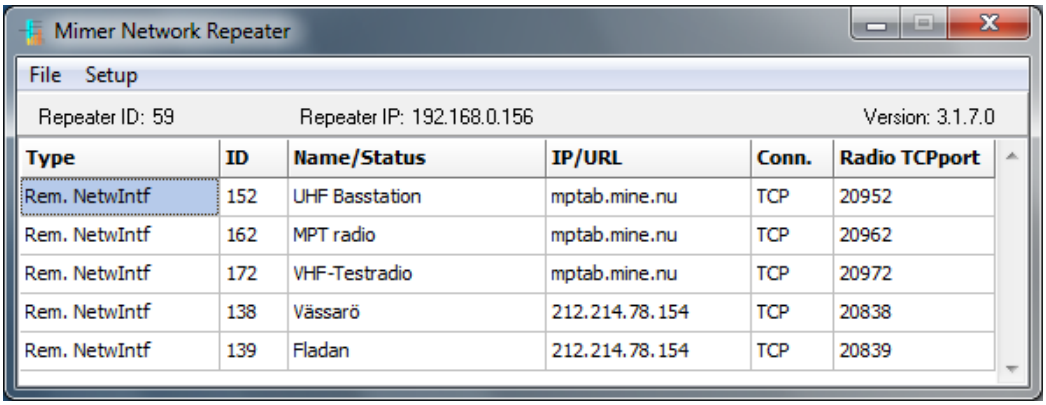
Two or more operators can connect to the network interface over a local LAN.



Over WAN or the Internet only one connection can be made. This will be a TCP connection. The NetworkRepeater makes this connection and then makes many connections to operators over the local LAN using UDP.

The Network Repeater is typically installed on a separate Server computer in the local network.

After installation, the connections to the radio network interfaces needs to be defined. This is done in a similar way to the settings in the Mimer SoftRadio client.



Example of the Mimer NetworkRepeater running

2.4 Recommended hardware

We recommend running the software on a separate Windows Server or Windows PC. In small systems the server function may be placed on one of the operator PCs.

In systems with for example a Mimer VoiceLog, the server can be shared between the two applications.

The application is very small and does not require a special PC/Server. Any modern unit will work.

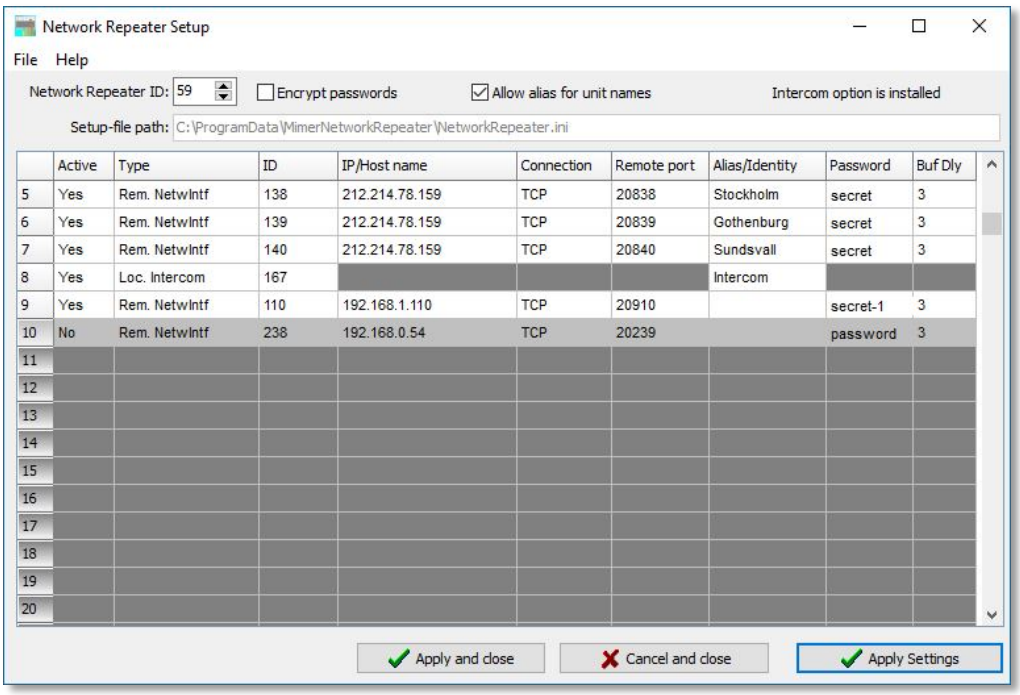
2.5 Installation

Install the software package from the supplied USB stick.

Most likely you want the program to Auto start when the server starts, so select this type of installation.

3 Set up of the Connections in the NetworkRepeater

- Start the “NetworkRepeater” program.
- Go to “Setup – Open Setup Dialogue…”.
- Select a unique ID number for the NetworkRepeater. It can be any number 10-240 that is not in use by an operator or other device in the system.



	Active	Type	ID	IP/Host name	Connection	Remote port	Alias/Identity	Password	Buf Dly
5	Yes	Rem. NetwIntf	138	212.214.78.159	TCP	20838	Stockholm	secret	3
6	Yes	Rem. NetwIntf	139	212.214.78.159	TCP	20839	Gothenburg	secret	3
7	Yes	Rem. NetwIntf	140	212.214.78.159	TCP	20840	Sundsvall	secret	3
8	Yes	Loc. Intercom	167				Intercom		
9	Yes	Rem. NetwIntf	110	192.168.1.110	TCP	20910		secret-1	3
10	No	Rem. NetwIntf	238	192.168.0.54	TCP	20239		password	3
11									
12									
13									
14									
15									
16									
17									
18									
19									
20									

Setup window for the Mimer NetworkRepeater

- Add a connection that specifies the first interface using the following settings:
  - Set Active to Yes on the first line.
  - Normally you set “Rem. NetwIntf”. (If you have installed the InterCom option you will also be able to choose “Loc. Intercom”).
  - Enter the ID of the Network Interface. It is a number in the range 10-240 that is defined in the Network Interface.
  - Enter the IP address, or URL, to the Network Interface at the device.
  - Normally set the Connection type to TCP. The second choice “Ext UDP” is only used when connecting to a Mimer RadioServer over a satellite link.
  - Select the Remote TCP port. This is configured in the interface as the “TCP server port”. The factory default for the interfaces is port 20997. If you have several interfaces behind a router, on the same IP address, you may want to use port forwarding to route the data to each interface. You will then need to set different port numbers to each interface.

On the other hand, if the interfaces are accessed on different IP addresses they may use the same port number.

- Alias/Identity. This selection is valid if you have ticked the box above “Allow alias for unit names”. This will change the name presented to the dispatcher. Further described later in this manual.
- Specify the password for the connection to the Network Interface. This is defined in the Network Interface.
- Set the buffer delay “Buf Dly”. For a high quality and very short TCP connection a value of 4 or 5 can be used. This corresponds to a buffering of approximately 130-160ms before playback starts. If you encounter dropouts in the sound due to a low-quality connection you may increase this value to handle higher time jitters in the data transfer. Values up to 16 can be used.

- You have now defined the first connection. If the Network Repeater shall serve more devices, just add these in the same way.
- Finally press [Apply and Close]

4 Special functions

4.1 Using Alias names

Each radios name is set in the Network Interface that is connected locally to the radios. This is then displayed in SoftRadio so that the dispatcher knows which radio he is working with.

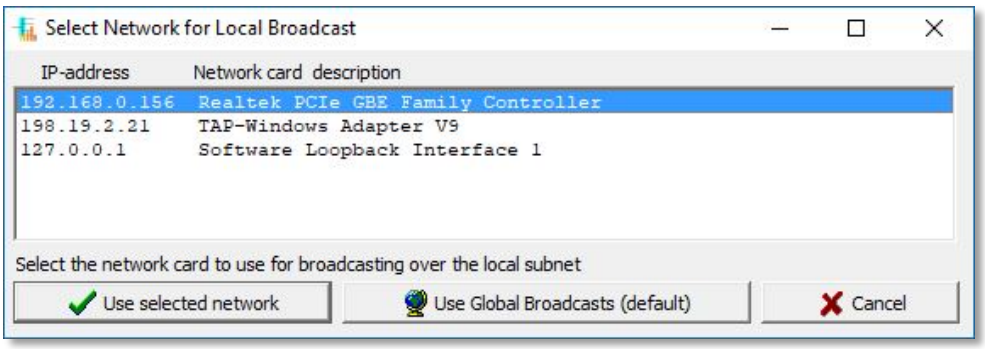
In some systems it is practical to be able to change this name without travelling to the radio base station site. With the Alias function activated, the Network Repeater will rename what is displayed at the dispatcher. (nothing will be changed in the network interface itself)

Practical in systems where the base radios are connected over 4G/LTE and are moved around for different events. The administrator can then rename the radios for each event from a central position.

4.2 Setting up the local broadcast net

If the PC/Server that the NetworkRepeater is run on has several IP networks connected, maybe both physical and also virtual networks like VPN tunnels, you will need to select the one that the broadcast to the dispatchers shall work on.

The setting is accessed from the “Setup” menu.



Select local broadcast network

4.3 Using a satellite connection

When connection to the network interfaces at the radios are done over a satellite link the latency and jitter becomes very high. To help the system to handle this, there are a special version of the Mimer RadioServer that needs to be installed at the radio end.

When setting up the Mimer Network Repeater to connect to a satellite version Radio Server the connection protocol shall be set to “Ext UDP”.

You will also need a higher buffer delay than normal. Please test your connection and set the delay to the lowest possible but still with an acceptable connection.

5 Setting up Mimer SoftRadio to work with a NetworkRepeater

In the operator PC´s “Mimer Connections Setup”, you specify the device connection just as usual, but you now have local UDP interfaces in the NetworkRepeater instead of remote TCP connected interfaces. So instead of the IP address, or URL, to the interface, you specify the IP address of the Server that is running the NetworkRepeater.

This also means that if the NetworkRepeater connects to more than one device, you will end up specifying the same IP address for several devices. But the network interfaces ID´s will of course be different.

6 Adding the option “Mimer InterCom” to the NetworkRepeater

There is an option to the NetworkRepeater that allows operators to use an intercom channel between themselves. This is practical if the operators are in different rooms or even at different locations.

6.1 Functionality

The operator gets an extra device panel that looks similar to the radio and phone devices. The panel has a PTT button for transmission on the intercom channel. It has a button for an announcement tone on the intercom channel and it has an open/close loudspeaker button just as all other devices.

All operators with the loudspeaker open on the intercom channel will hear all messages.

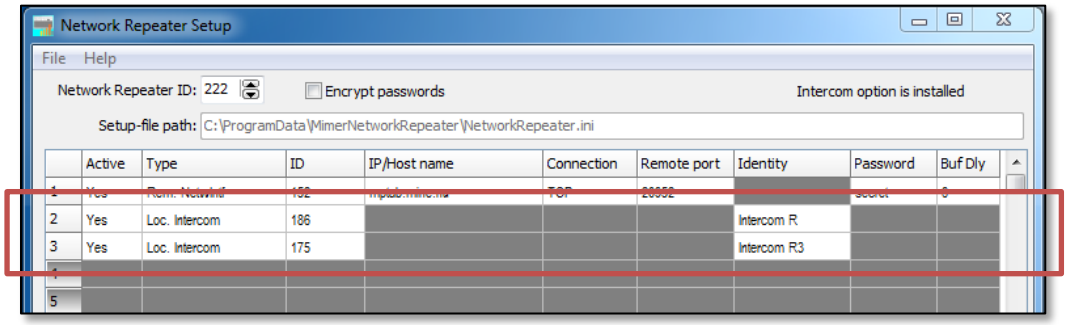
The announcement tone will be heard regardless if you have the intercom speaker open or closed. When an announcement tone is sent the name bar will blink in green on all operators until one operator transmits.

6.2 Setting up the server

- Close the NetworkRepeater application.
- Install the Intercom option on the server running the NetworkRepeater.
- Restart the NetworkRepeater application.

Then open the settings dialogue.

- Activate a line for the intercom function.
- Set the type to “Loc. Intercom”.
- Give the intercom a unique ID number in the Mimer System (10-240).
- Give the intercom an identity. This will be the name that shows on Mimer SoftRadio’s name bar.
- Repeat these steps if you need more than one intercom channel.



The setup window with rows 2 and 3 set as intercom channels

6.3 Setting up the client (at the operator)

In the program “Mimer Connection Setup”, where you set up the radios and other devices that the operator shall connect to, you need to set up also the intercom as a device. Please note that each intercom uses one of the total number of devices that you can connect, standard on Mimer SoftRadio is eight devices and with Mimer SoftRadio XL you can connect 30 devices.

6.3.1 In a local network, LAN (standard)

With the operator and the NetworkRepeater in the same subnet of a LAN.

You specify the IP address of the server that runs the Mimer NetworkRepeater and the ID number that have been set up for the intercom function.

24	Yes	186	192.168.0.157	LocalUDP			3
25	Yes	175	192.168.0.157	LocalUDP			3

Example from Connections Setup using a local LAN

6.3.2 In a wide area network, WAN/Internet

When the operator and the NetworkRepeater are not in the same subnet of a LAN.

The connection from the client is made with TCP and you will need to connect the operator through a Mimer RadioServer to the NetworkRepeater.

Please see the instructions for the RadioServer. If unclear send a question to mimer@softradio.se.

7 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 NetworkRepeater.

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

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