Connecting radios all over the world

Mimer RadioServer

&

Mimer NetworkRepeater

Description when using them in the same system

Rev B

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A Mimer SoftRadio system can be configured in many ways. This paper describes the setup in a system that have both a **Mimer RadioServer** and a **Mimer NetworkRepeater**. All details on the respective servers are found in their manuals.

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/radioserver

www.lse.se/networkrepeater

Setup manuals: www.lse.se/setup

FAQ RadioServer: www.lse.se/mimer-softradio/faq/#TRS

FAQ NetworkRepeater: www.lse.se/mimer-softradio/faq/#TNR

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2 General

A standard Mimer Network interface allows only one user to connect remotely via TCP. This means that if you have many operators, you need a server, or sometimes two servers.

This document describes the different setups, in cases where you need two servers.

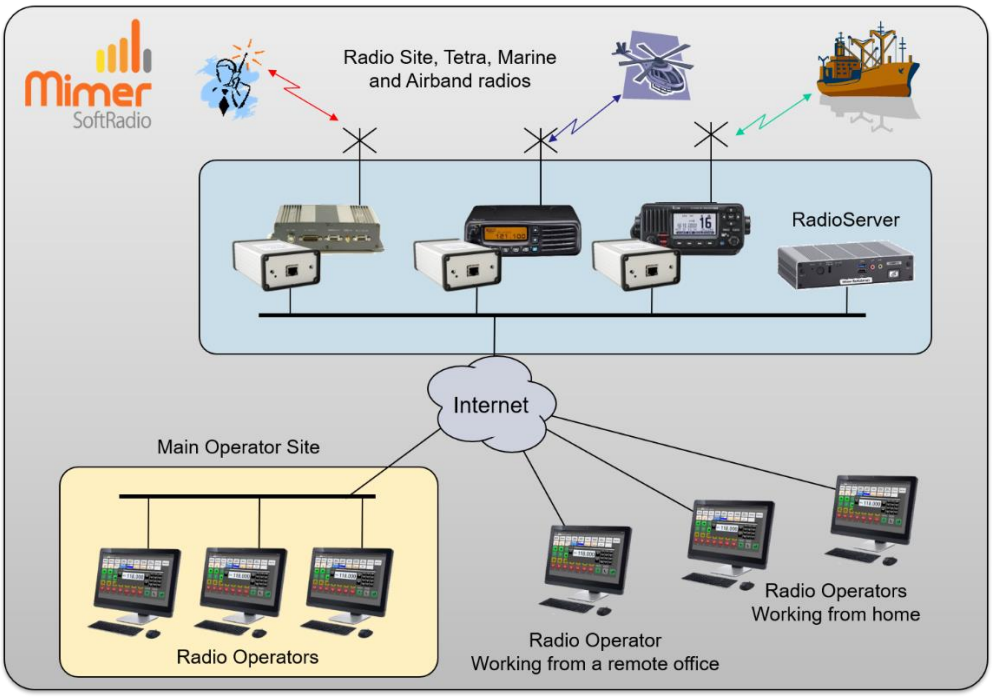
The two servers are each other's opposite, from UDP to TCP and from TCP to UDP respectively.

2.1 Mimer RadioServer

The RadioServer is a Linux component in the Mimer family of products for network operated 2-way radios. Delivered as a ready to run server with hardware, or as a virtualized server.

The RadioServer is usually installed at the radio site and connects to the radios via UDP and the remote operators via TCP. There is also a special version for use over satellite IP links.

As you will see in this manual, the RadioServer can also be installed at the operator end of the system.



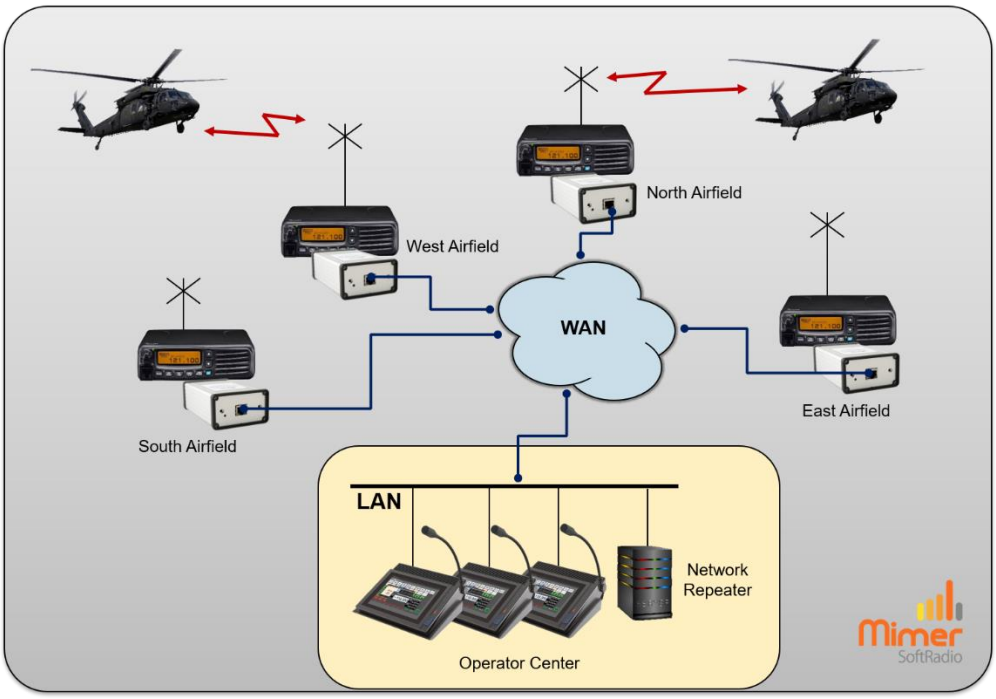
Typical use of a RadioServer.
The RadioServer at the radio site connects many operators at different sites.

Read more in the RadioServer manual.

2.2 Mimer NetworkRepeater

The NetworkRepeater is a Windows software component in the Mimer family of products for network operated 2-way radios.

The NetworkRepeater is usually installed at the main operator centre and connects to the local operators via UDP and to the remote radios via TCP.



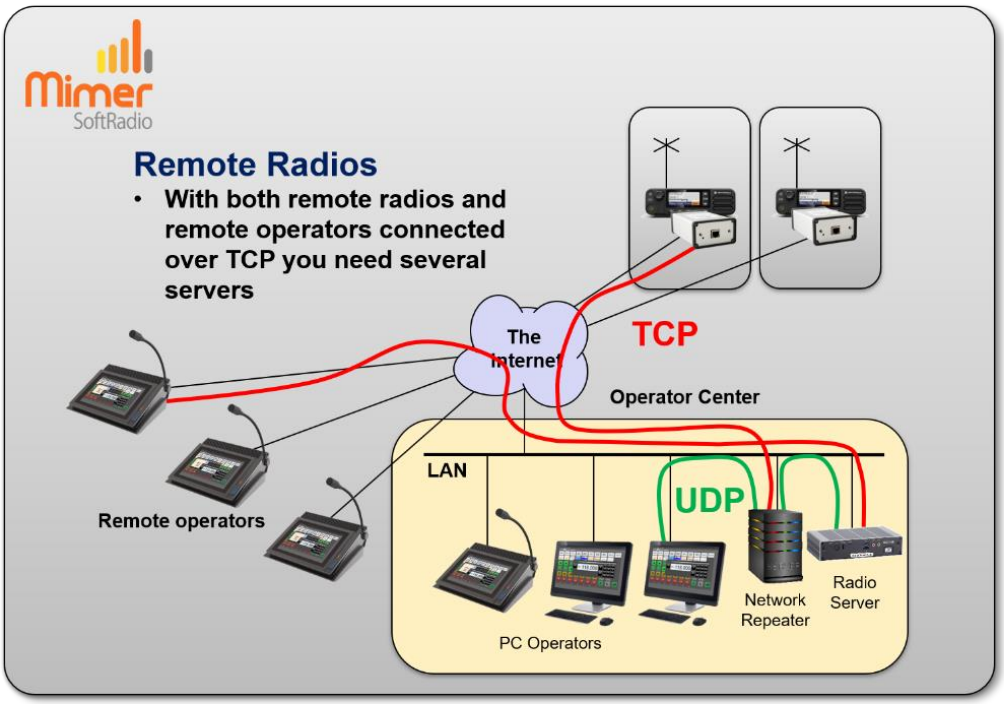
Typical use of a NetworkRepeater.
The NetworkRepeater connects to all radios, at different sites, and then distributes the information in the local LAN.

Read more in the NetworkRepeater manual.

3 When to use 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. And also, when you connect over a satellite IP link.

The setup will look different depending on your system but the basics are the same.



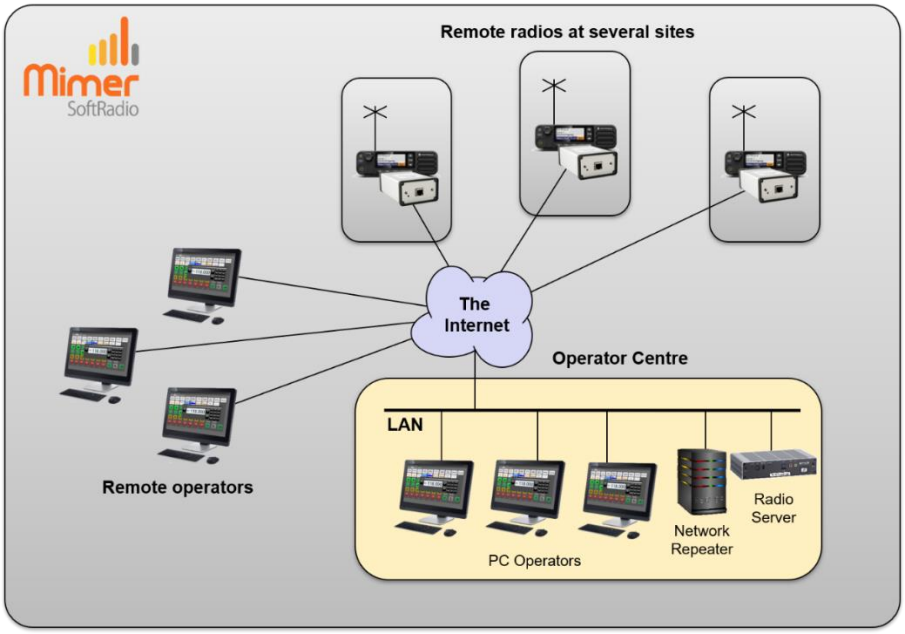
- The NetworkRepeater connects to the radios that are at different sites using TCP over the Internet.
- The local operators connect to the NetworkRepeater using UDP.
- The RadioServer also accesses the radios via the Network Repeater using UDP.
- The external operators then connect to the RadioServer using TCP over the Internet.

The examples on the following pages will explain this further.

3.1 Setup A

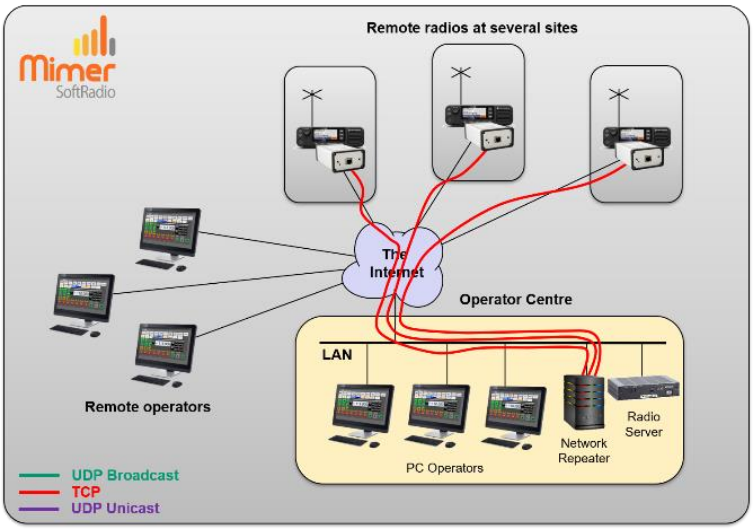
With radios at several sites and also operators at several sites, the most common setup is to place both a NetworkRepeater and a RadioServer in the LAN of the main operator centre. The NetworkRepeater will connect to the radios using TCP and to local operators and the RadioServer with UDP. The RadioServer will then connect to the remote operators with TCP.

With this setup all communication to the remote operators goes through the operation centre. An alternative would be to give each radio site a RadioServer, this would make the system more redundant, but also add cost.



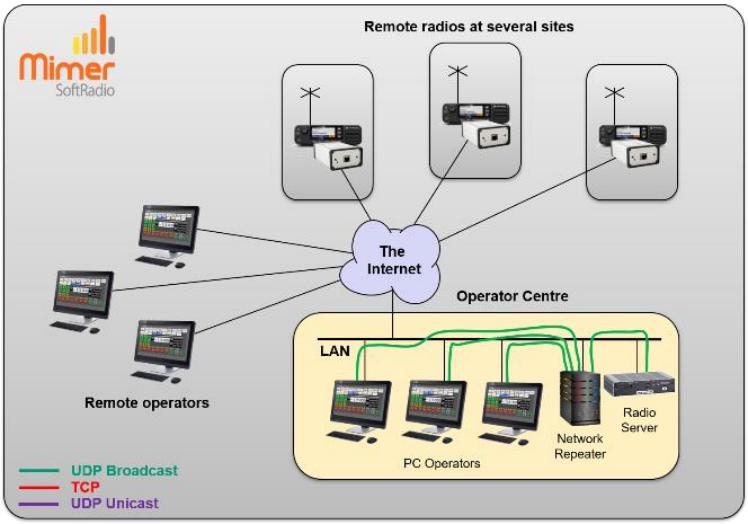
3.1.1 Radio Connection

The NetworkRepeater is set up to connect to each network interface at the radios. The connection uses TCP.



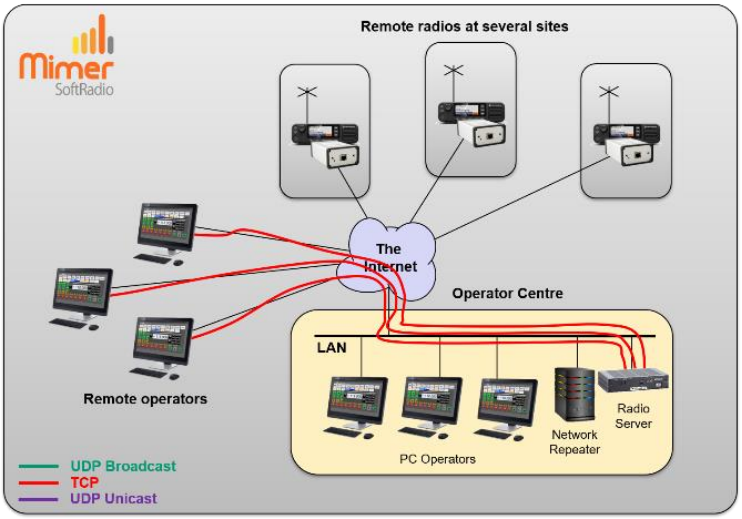
3.1.2 Local Operators and RadioServer

The local operators connect to the NetworkRepeater using UDP Broadcast in the local LAN subnet. The RadioServer also connects to the NetworkRepeater with UDP.



3.1.3 Remote Operators

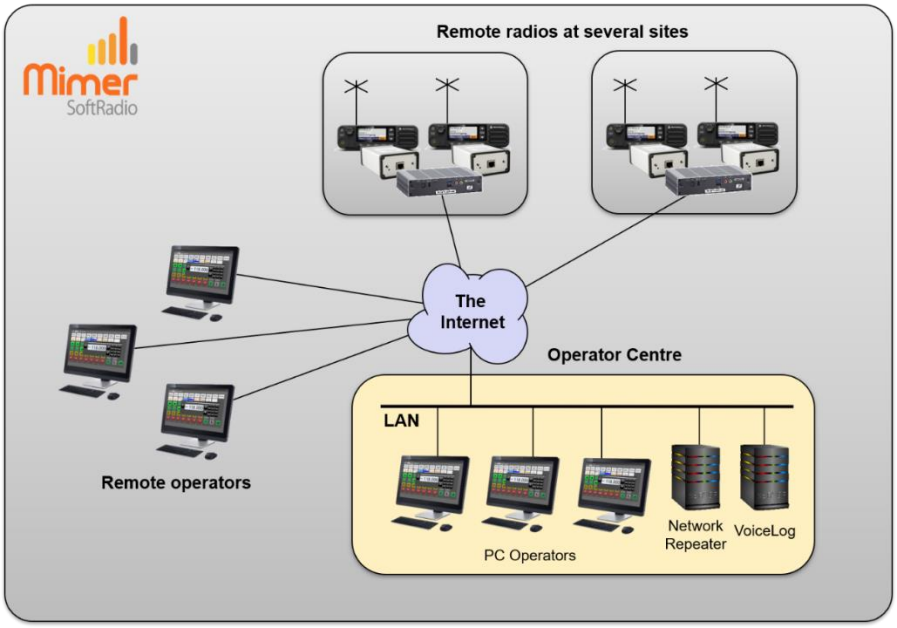
The remote operators then connect to the RadioServer using TCP.



3.2 Setup B

In this case there is a RadioServer at each radio site. This gives a better safety since every radio site can connect to every operator without passing through a common point.

Adding the NetworkRepeater at the main operator centre gives less connections to each RadioServer and also the possibility to have a VoiceLog server. The VoiceLog can only listen to the radios receiving audio in UDP format.



3.2.1 Radio Connection at the radio site

The RadioServer, at the radio site, connect to each local radio using UDP Broadcast.

3.2.2 Remote Operators

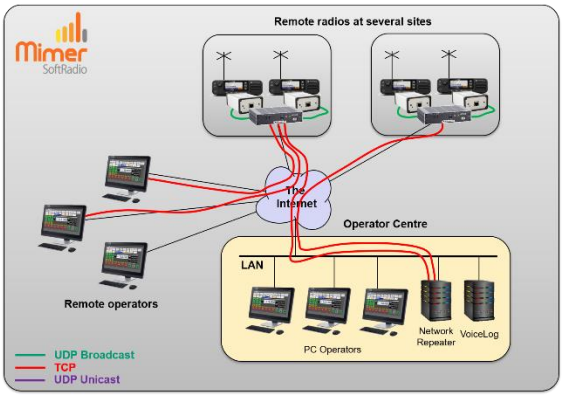
The remote operators then connect to the RadioServers using TCP.

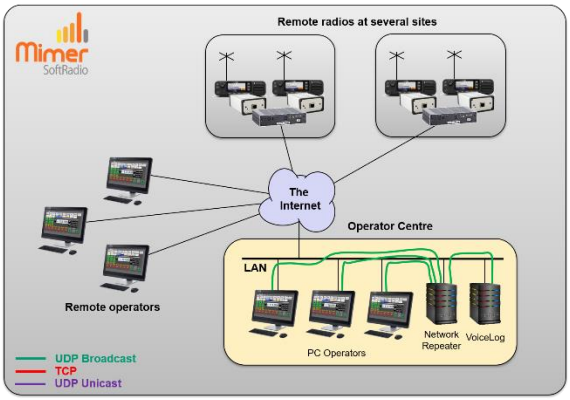
3.2.3 NetworkRepeater connection

The NetworkRepeater also connect to the RadioServers using TCP.

3.2.4 Local Operators and VoiceLog

The local operators connect to the NetworkRepeater using UDP Broadcast. Also, the VoiceLog connects to the NetworkRepeater with UDP.



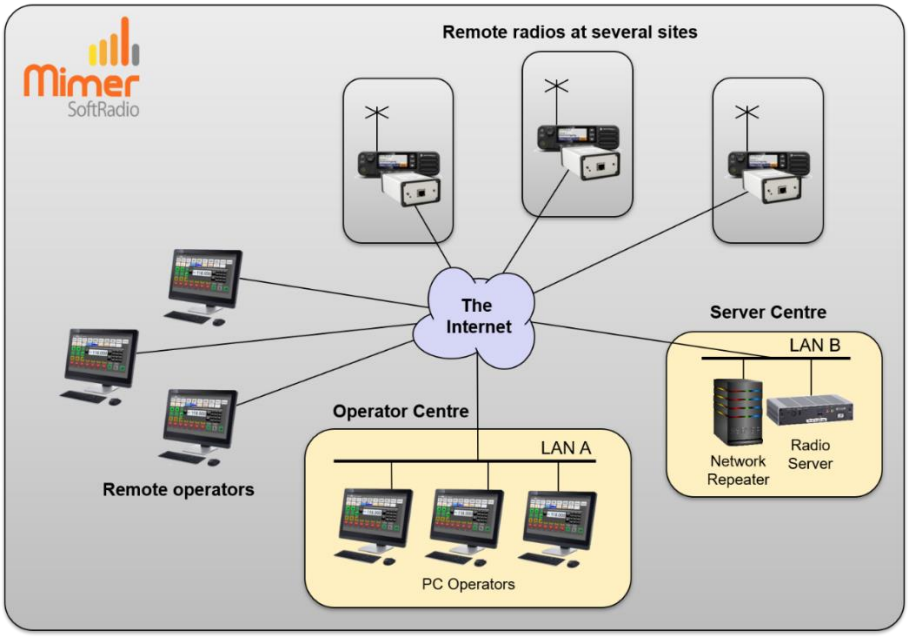


3.3 Setup C

Similar setup as in example A, but the servers have been placed in a server centre in another LAN subnet than the operators.

The NetworkRepeater will connect to all radios with TCP. The RadioServer will connect to the NetworkRepeater with UDP and then to all operators with TCP.

If a VoiceLog is needed it shall be placed in the subnet of the two servers.

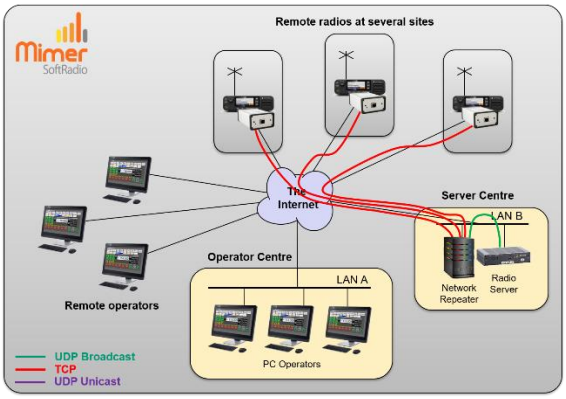


3.3.1 Radio Connection

The NetworkRepeater is set up to connect to each radio. The connection uses TCP.

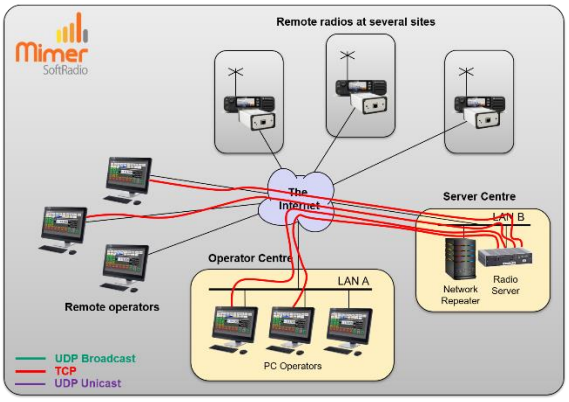
3.3.2 RadioServer

The RadioServer connects to the NetworkRepeater with UDP.
If there is a VoiceLog, this will also connect local to the NetworkRepeater.



3.3.3 All Operators

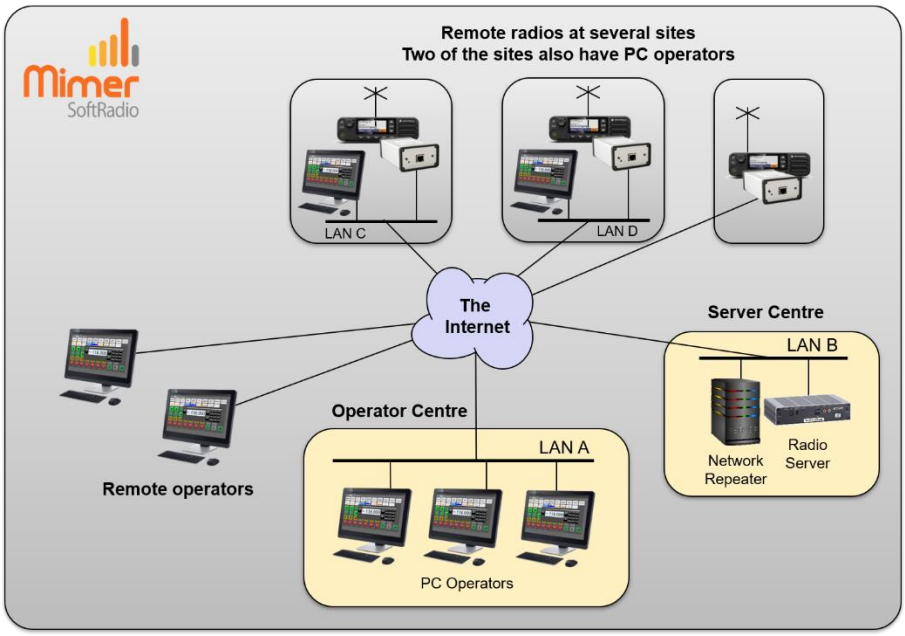
All operators are in this setup “remote”. They connect to the RadioServer using TCP.



3.4 Setup D

Similar setup as in example C, with the servers in a server centre, in another LAN subnet than the operators, and in this case also local operators at two of the radio sites.

Each local operator can connect to each local radio without going through the servers. Adding the safety of not being dependant of any Internet or server problem.



3.4.1 Radio Connection

The NetworkRepeater is set up to connect to each radio. The connection uses TCP.

3.4.2 RadioServer

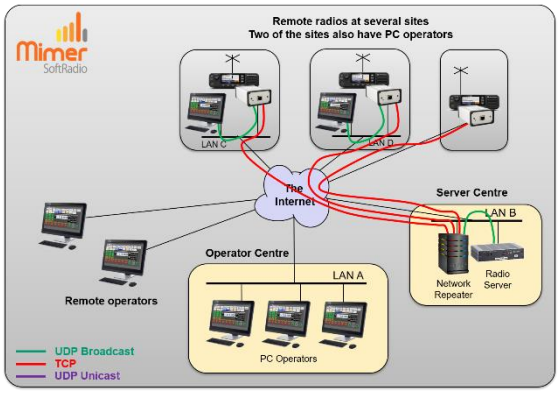
The RadioServer connects to the NetworkRepeater with UDP.

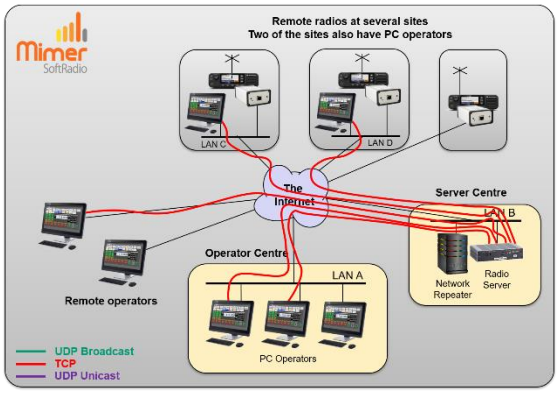
3.4.3 Local Operators

The local operator connects with UDP to the local radio.

3.4.4 All Operators

All operators connect to the RadioServer using TCP.
The “local operators” also connect to the RadioServer for all remote radios.

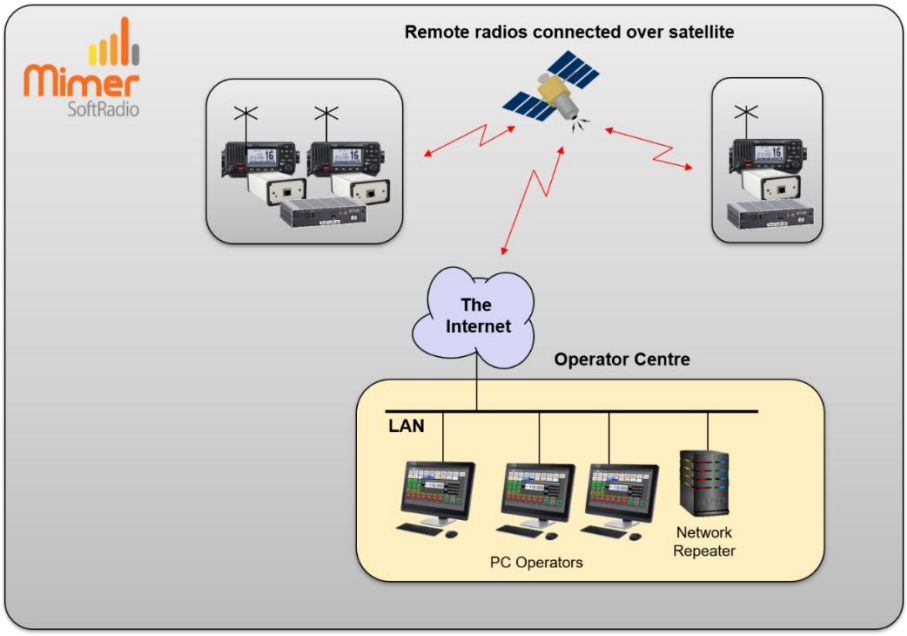




3.5 Setup E

When using a satellite IP connection there is a need for both servers, they work as a pair. You will need a RadioServer in satellite mode offshore and a NetworkRepeater onshore.

Between the servers UDP Unicast is used, instead of TCP which has drawbacks over satellite.



3.5.1 Radio Connection at the radio site

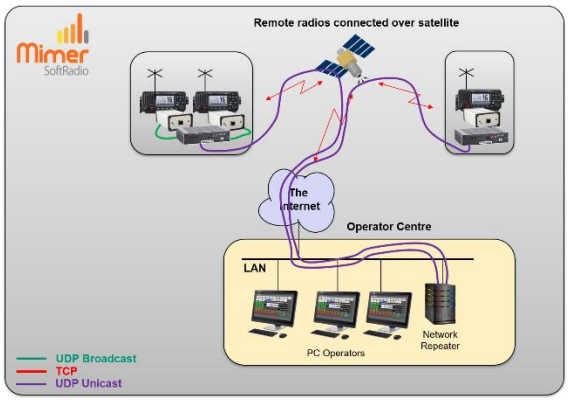
The RadioServer, at the radio site, connect to each local radio using UDP Broadcast.

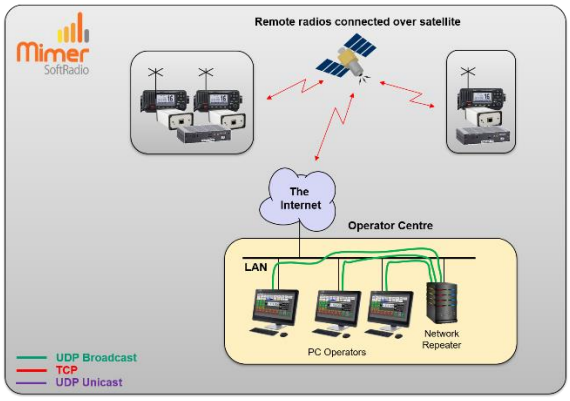
3.5.2 NetworkRepeater to each radio site

The NetworkRepeater is set up to connect to each RadioServer. The connection uses UDP Unicast.

3.5.3 Local Operators

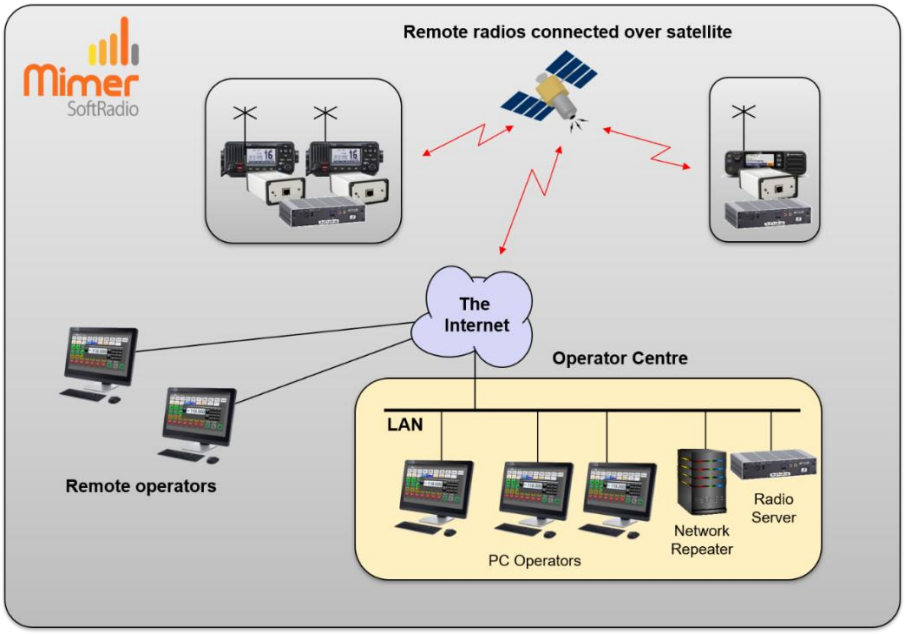
The local operators connect to the NetworkRepeater using UDP Broadcast in the local LAN subnet.





3.6 Setup F

Same setup as in example E above, with the addition of two external operators. These will need that one more RadioServer is installed at the main operator centre, this is a standard version, not the satellite version.

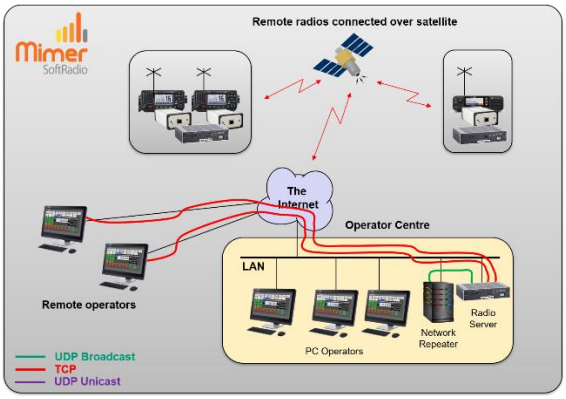


3.6.1 Radio Connection at the radio site

The RadioServer, at the radio site, connect to each local radio using UDP Broadcast.

3.6.2 NetworkRepeater to each radio site

The NetworkRepeater is set up to connect to each (sat mode) RadioServer. The connection uses UDP Unicast.



3.6.3 Local Operators and RadioServer

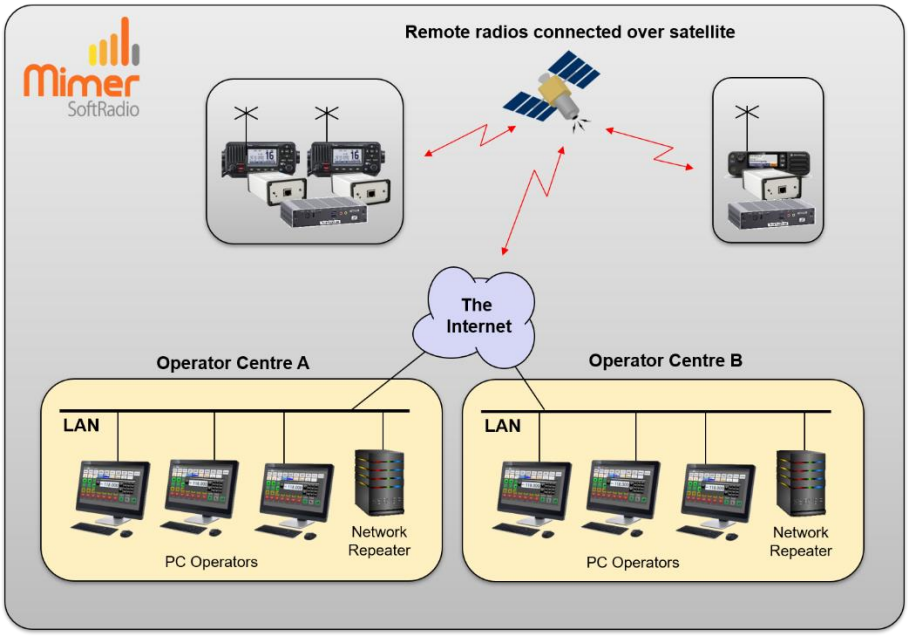
The local operators connect to the NetworkRepeater using UDP Broadcast in the local LAN subnet. Also the local RadioServer connect to the NetworkRepeater with UDP.

3.6.4 Remote Operators

The remote operators then connect to the local RadioServer using TCP.

3.7 Setup G

Same setup as in example E and F above, with the addition that the operators are located at two (equal) centres. Instead of resending the information from the main operator centre, both centres are connected directly to the radio sites.
Note that this will load the satellite channel twice as much. But it also has positive redundancy effects.

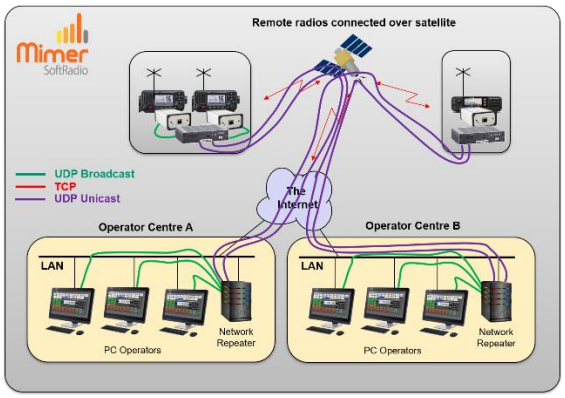


3.7.1 Radio Connection at the radio site

The RadioServer, at the radio site, connect to each local radio using UDP Broadcast.

3.7.2 NetworkRepeater to each radio site

Both NetworkRepeaters shall be set up to connect to both RadioServers. The connections use UDP Unicast.



3.7.3 Local Operators

The local operators connect to the NetworkRepeater using UDP Broadcast in the local LAN subnet.

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