

MAYAH Application Note 28

Redundant IP audio streaming

1. General description

Data transmissions via an IP network could suffer from packet loss and or packet corruption. If these transmissions carry time critical content, like in a live audio transmission, a mechanism to retransmit a lost or damaged packet (like TCP) is unsuitable because the additional arrival delay makes the packet to become outdated.

To reduce the risk of packet loss and to increase the reliability of a connection some models of the MAYAH product range are capable of doubling the IP stream to send it via a secondary network interface to physically separated networks. With this redundancy the total network error rate can be reduced distinctly.

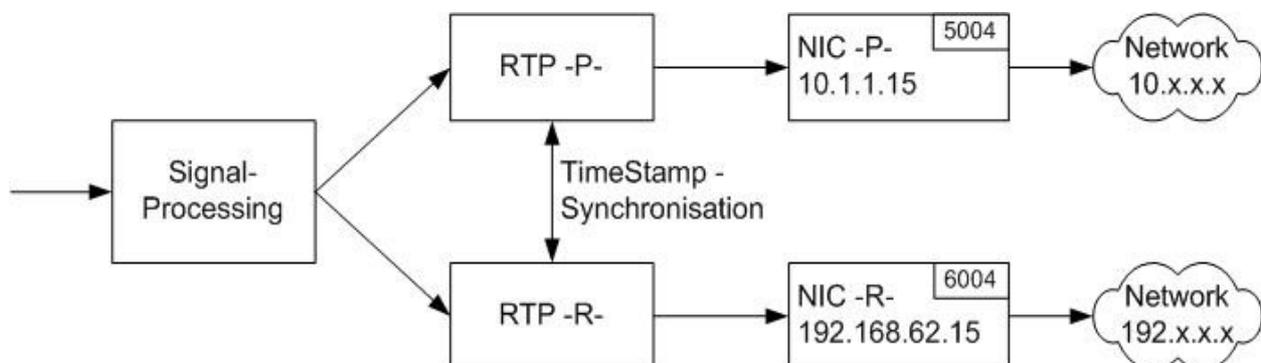
If you have to deal with two networks both of them showing a packet loss rate of 10% (primary network1(P) = 10% packet loss rate, redundancy network2(R) = 10% packet loss rate) you get a total loss rate of $P \cdot R = 0,1 \cdot 0,1 = 0,01$ which means that the packet loss rate drops from 10% to 1%.

2. Technical description

In a MAYAH device equipped with two network interfaces (e.g. C1190/91), the basic network interface which only took the control task so far (like Telnet, SNMP, FTP) now also handles the redundancy stream. The jack for this network interface is typically labeled LAN whereas the interface responsible for the primary stream is labeled LAN1.

The applicable device duplicates the data stream at the RTP (RFC3550) layer before it passes them to both of the network interfaces. The sequence numbers of the RTP packets are being synchronized so that identical packet content is stamped with identical packet numbers.

The source identifiers (SSRC) of both data streams are different from each other to make it possible to identify and handle both streams completely separate.



The IP port for the redundancy connection is equivalent to the primary RTP port plus 1000. E.g. default RTP port for audio streaming is 5004, hence the redundancy connection will be done via the port 6004.

3. How to use on MAYAH devices

3.1 via Front panel

To activate the redundancy feature on a C1191 please set
CODEC → SETUP → APPS → MODE to „Redundancy“.

After doing so the menu

CODEC → CONNECT → DIRECT

will show a „primary destination“ and a „redundancy destination“ field. Primary and the redundancy destination IP address can be entered in this fields.

Attention should be paid to the correct network configuration for both interfaces. Parameters like address, netmask and if necessary gateway must be set carefully.

3.2 with Direct Commands

To use the redundancy feature by direct command you have to

- configure the connection with the remote command `com_route`
- start the whole connection configuration with `com_connect CONCONF[n]` whereas [n] is a variable for 1,2,...n which represents an index for different connection configurations.

The syntax for `com_route` is:

[Index]com_route [Subindex] [Interface] [Direction] [Address]

- **Index** references the different connection configurations.
- **Subindex** references different connections within a connection configuration.
- **Interface** determines the local interface to be used for the connection.
- Possible values are „IP1“ or „IP2“
- **Direction** defines the direction for the data transmission.
- Possible values are „1“=send, „2“=receive, „3“=send&receive
- **Address** is the address to send to resp. to receive from.

An example:

Your MAYAH device is equipped with two network interfaces LAN and LAN1.
LAN has the IP address 10.1.1.15, LAN1 has 192.168.62.15.

You want to setup a redundancy streaming with two streams.
One should be send to 10.1.1.16 the other to 192.168.62.16.

The appropriate routing commands are:

```
1$com_route 1 IP2 1 192.168.62.16
```

```
1$com_route 2 IP1 1 10.1.1.16
```

These commands configure the primary stream (LAN1) which resides on Interface 2 (IP2) to send its data to destination 192.168.62.16. Additionally the secondary(the redundant) stream (LAN) is configured to be send to 10.1.1.16 via Interface 1 (IP1). The configuration is saved in the first connection configuration slot. The connection configuration can be activated by sending the command `com_connect CONCONF1`.