



apt
WorldCast Systems | Group

SureStream Setup Guide



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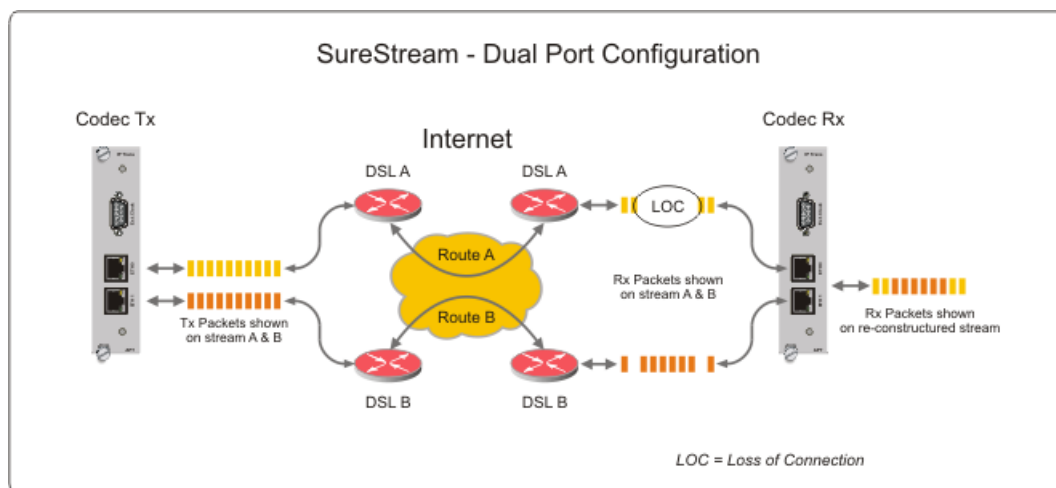
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1. GETTING STARTED

This document describes the configuration of the SureStream feature on the WorldNet Oslo; the SureStream feature is available since System Release 5.0.

With the example configuration described in this guide a duplex audio connection will be established between two WorldNet Oslo frames.

On both locations the Internet is accessed via 2x ADSL connections. The WorldNet Oslo units are located behind a network router. For more information about the WorldNet Oslo system, please refer to the WorldNet Oslo manual.



WorldNet Oslo Network information

MCU card:

UDP port 7777 & 7778 for monitoring and control, UDP port 20 & 21 for FTP connection (firmware uploads, presets and logs).

IP transport card:

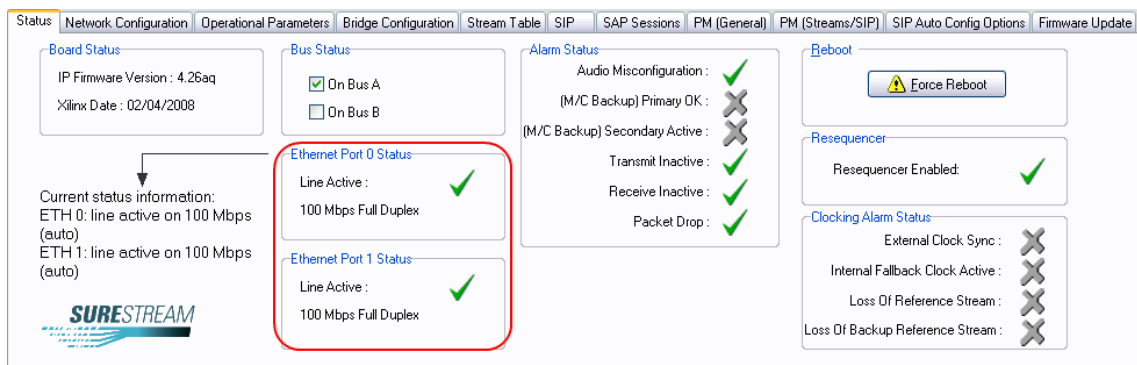
In this example configuration audio streams will be configured as duplex IP connection on a user defined UDP port in the range of 5000 to 5020 (on stream table). The duplex connections guarantees that the source- and the destination- UDP port will be identical and can pass a NAT treatment on the DSL router.

Note: On a simplex connection the transmitting IP card will assign a random source UDP port between 6000-7000 differently from the destination port (as configured on the stream table between 5000 and 5020),

Make sure:

- that outgoing UDP traffic is not blocked by the router (NAT rules)
- the ETH ports (ETH 0 & 1) of the IP card must be assigned to different sub networks, i.e. ETH 0: xxx.xxx.100.xxx, ETH 1: xxx.xxx.115.xxx

The MCU and the IP card are set to “auto negotiating” the port speed and mode of each physical port by default. The negotiation results can be checked on the IP card status page:



Note: The setting must be the same on both the switch and the WorldNet Oslo IP ports, i.e. “Auto” on switch/router, “Auto” on the WorldNet Oslo interface (or 100 full / 100 full, etc).

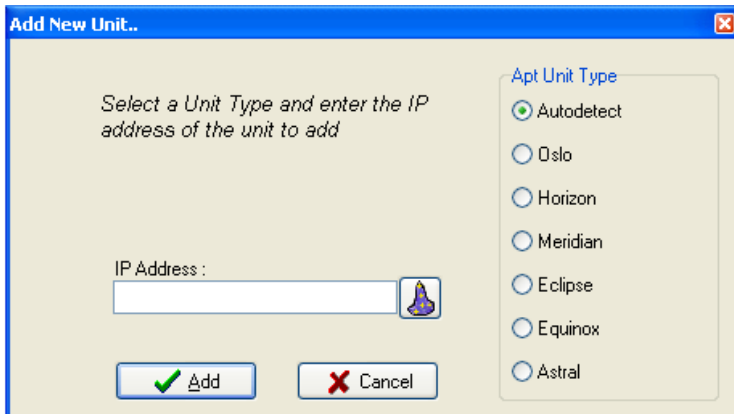
The WorldNet Oslo needs firmware version SR5.0 with CMS/NMS #1114. SureStream must be enabled; the SureStream logo on the IP card status page indicates the presence of the SureStream feature.

In case that the Oslo frames are already connected to the CMS/NMS continue with chapter 3.


2. ADD UNITS IN THE CMS/NMS

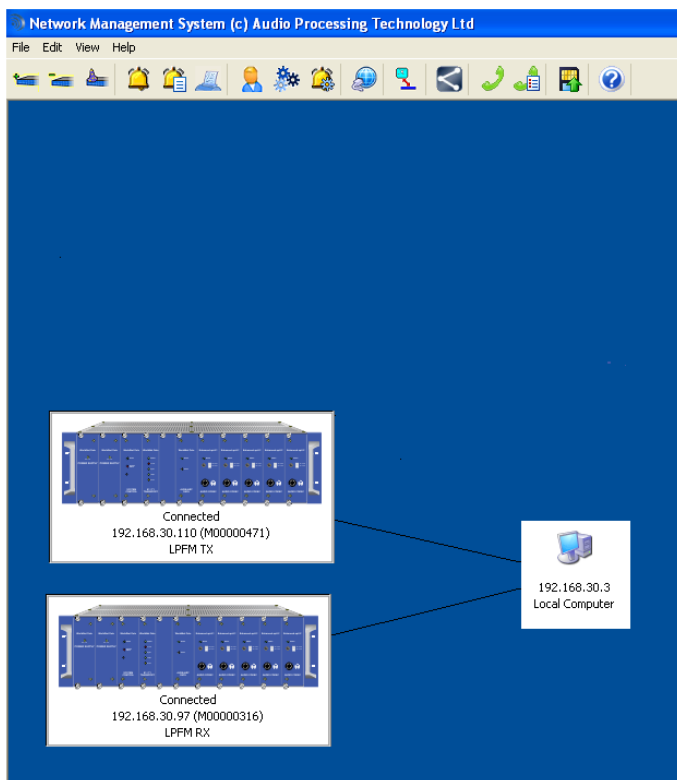
Open the CMS/NMS (default username = administrator, password = password)

Locate  in the main toolbar.



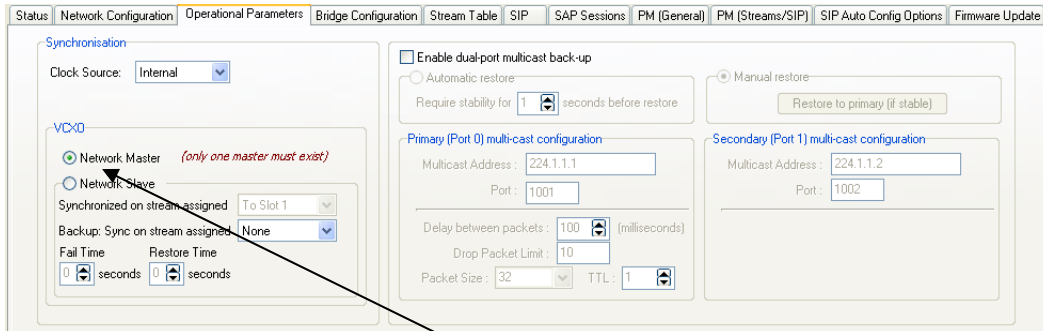
In “Add New Unit”, type in the IP address of the MCU card. (Default 192.168.100.110)

Another option is the network scan. To start a Network, click on “”



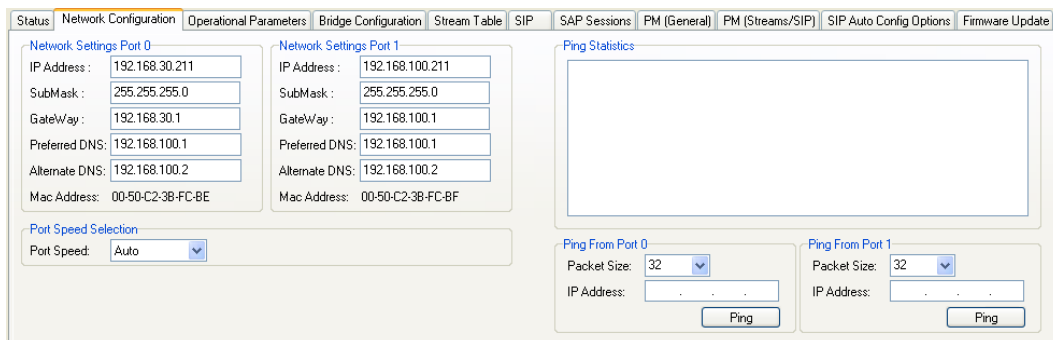
3. IP CARD SETUP SITE A

3.1. Operational Parameters



At site A the IP card should be set to “Network Master”.

3.2. Network Configuration

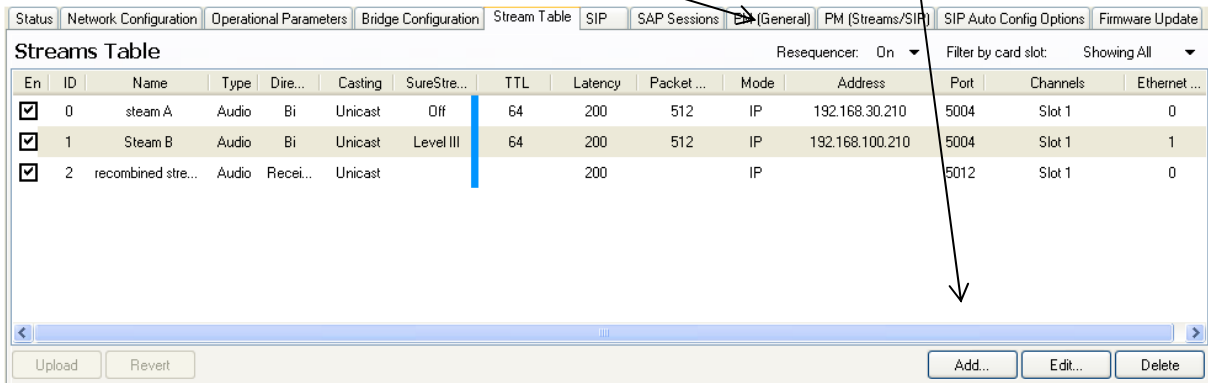


In “Network Configuration” change the IP settings to those provided by the network administrator. Once the IP settings are completed the IP connectivity can be tested with the PING tool provided on this page. Add the IP address of the remote unit to either ETH “0” or ETH “1” and click “Ping”. The remote unite should respond correctly.

Note: It is not always guaranteed that the ICMP packets (ping) can pass routers or a firewall.

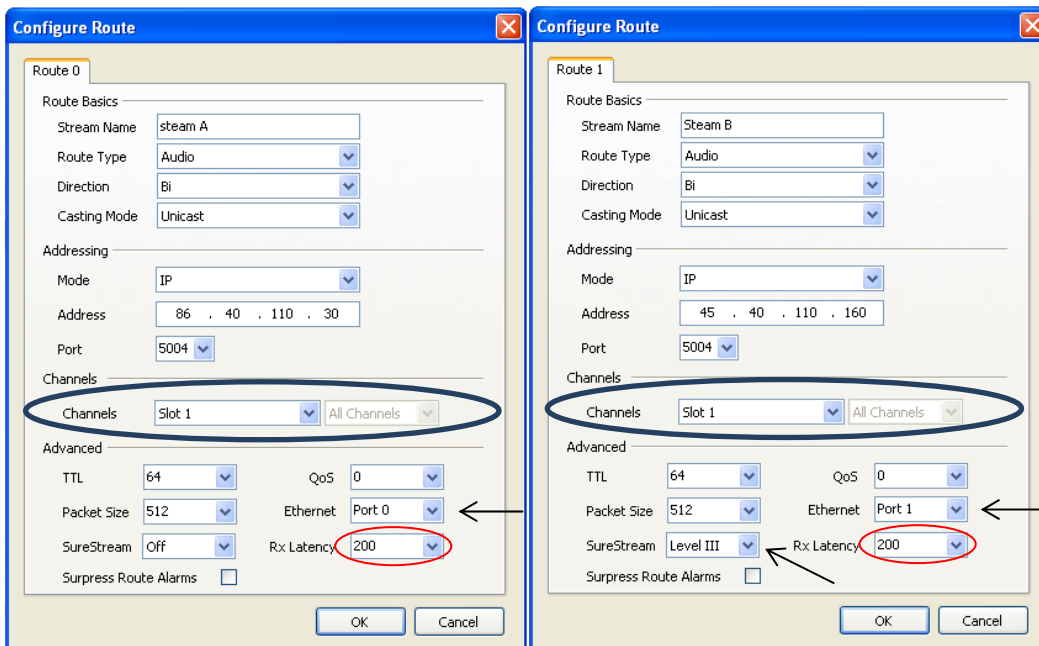
3.3. Streams Table

Firstly ensure that the Re-sequencer is set to on, and then click on “Add” to configure a new stream.



En	ID	Name	Type	Dire...	Casting	SureStre...	TTL	Latency	Packet ...	Mode	Address	Port	Channels	Ethernet ...
<input checked="" type="checkbox"/>	0	steam A	Audio	Bi	Unicast	Off	64	200	512	IP	192.168.30.210	5004	Slot 1	0
<input checked="" type="checkbox"/>	1	Steam B	Audio	Bi	Unicast	Level III	64	200	512	IP	192.168.100.210	5004	Slot 1	1
<input checked="" type="checkbox"/>	2	recombined stre...	Audio	Recei...	Unicast			200		IP		5012	Slot 1	0

Clicking on “Add” opens the route configuration window. The figure below shows route “0” and route “1”. SureStream needs at least a pair of routes, one without SureStream and one with SureStream enabled.



Configure Route

Route 0

Stream Name: steam A

Route Type: Audio

Direction: Bi

Casting Mode: Unicast

Mode: IP

Address: 86 . 40 . 110 . 30

Port: 5004

Channels: Slot 1

TTL: 64, QoS: 0, Packet Size: 512, Ethernet: Port 0

SureStream: Off, Rx Latency: 200

Configure Route

Route 1

Stream Name: Steam B

Route Type: Audio

Direction: Bi

Casting Mode: Unicast

Mode: IP

Address: 45 . 40 . 110 . 160

Port: 5004

Channels: Slot 1

TTL: 64, QoS: 0, Packet Size: 512, Ethernet: Port 1

SureStream: Level III, Rx Latency: 200

Route 0 is a unicast, bi-directional route to site B. It is set to transmit to the WAN IP address of the receiver ADSL routers. The ADSL router will see the packets on its WAN side on the selected port and will forward them to the WorldNet Oslo ETH 0.

Route 1 is the second route on the SureStream pair of routes. It transmits from ETH 1 to site B with SureStream enabled and is assigned to the second ADSL WAN IP address.

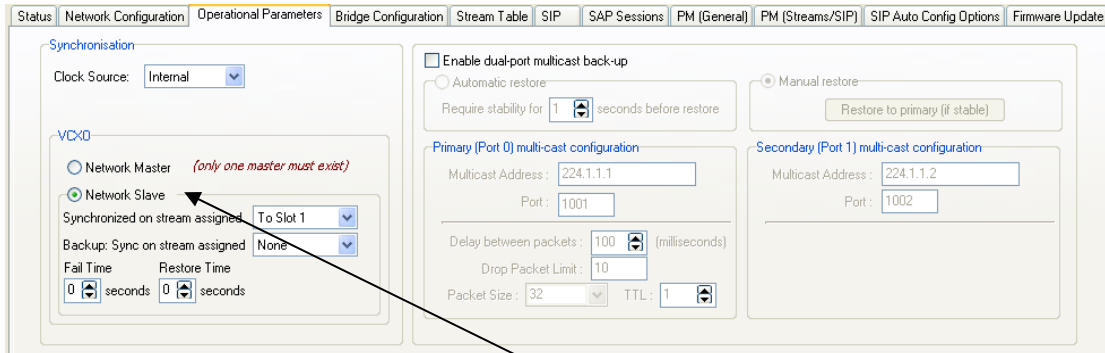
There are 3 different options available of SureStream to choose from level I to level III.

Each of these options uses a different set of SureStream parameters on the treated IP stream. The term “Level” does not implicate the level of redundancy. Sometimes L I work better than L III in the same way as the Internet routing behaviour is not predictable.

Note: All routes (bi-directional and Rx) must have the same buffer size! This is an important identifier for the SureStream engine.

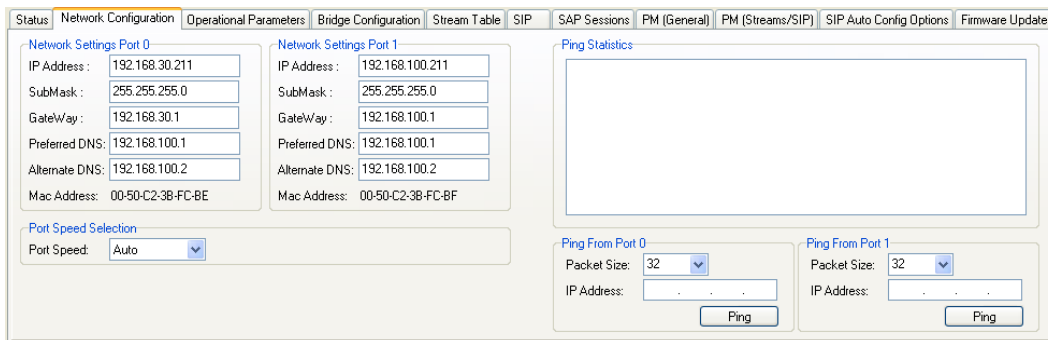
4. IP CARD SETUP SITE B

4.1. Operation Parameters



At site B the IP card should be set to “Network Slave”.

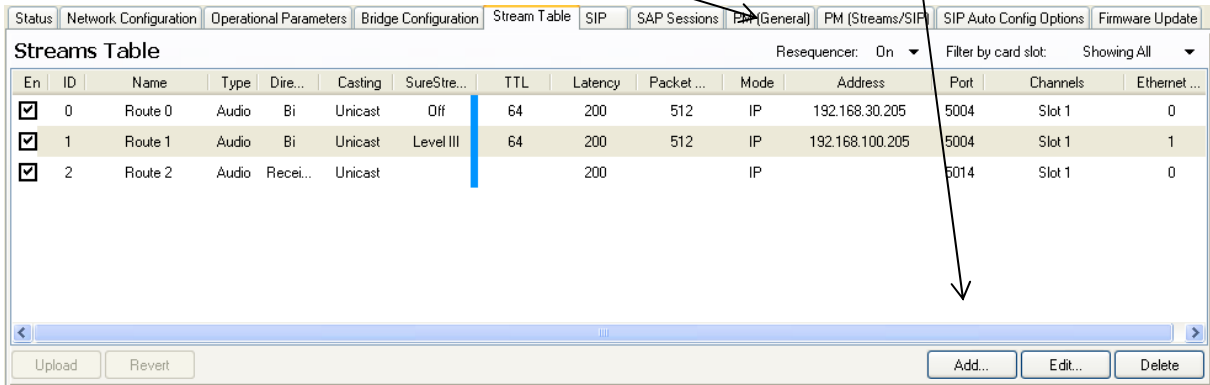
4.2. Network Configuration



In “Network Configuration” change the IP settings to those provided by the network administrator.

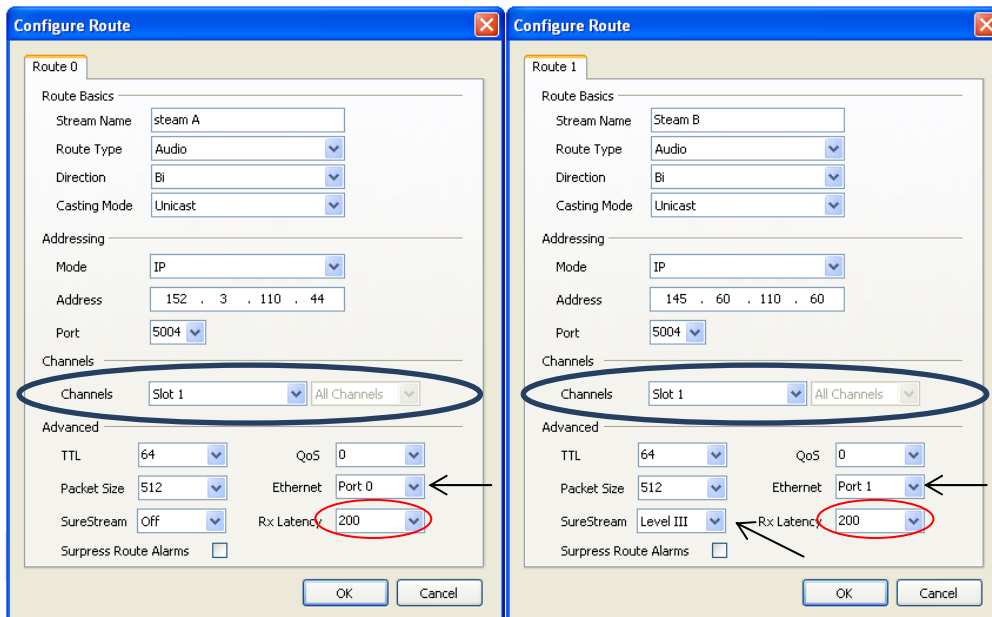
4.3. Streams Table

Firstly ensure that the Re-sequencer is set to on, and then click on “Add” to configure a new stream.



En	ID	Name	Type	Dire...	Casting	SureStre...	TTL	Latency	Packet ...	Mode	Address	Port	Channels	Ethernet ...
<input checked="" type="checkbox"/>	0	Route 0	Audio	Bi	Unicast	Off	64	200	512	IP	192.168.30.205	5004	Slot 1	0
<input checked="" type="checkbox"/>	1	Route 1	Audio	Bi	Unicast	Level III	64	200	512	IP	192.168.100.205	5004	Slot 1	1
<input checked="" type="checkbox"/>	2	Route 2	Audio	Recei...	Unicast	Off		200		IP		5014	Slot 1	0

Clicking on “Add” opens the route configuration window. The figure below shows route “0” and route “1”. SureStream needs at least a pair of routes, one without SureStream and one with SureStream enabled.



Route 0 is a unicast, bi directional route assigned to site A. Remember to use the WAN IP address of the receiver ADSL routers. The ADSL router will see the packets on its WAN side on the selected port and will forward them to the WorldNet Oslo ETH 0.

Route 1 is the second route on the SureStream pair of routes. It transmits from ETH 1 to site A with SureStream enabled and is assigned to the second ADSL WAN IP address.

There are 3 different options available of SureStream to choose from level I to level III.

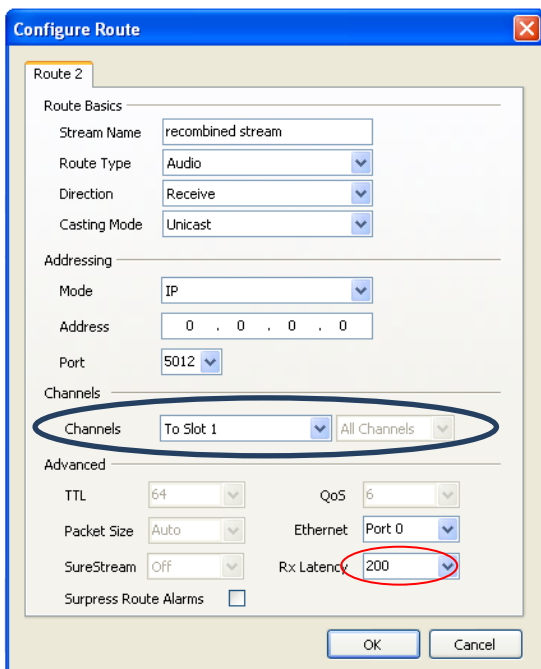
Each of these options uses a different set of SureStream parameters on the treated IP stream. The term “Level” does not implicate the level of redundancy. Sometimes L I work better than L III in the same way as the Internet routing behaviour is not predictable.

Note: All routes (bi-directional and Rx) must have the same buffer size! This is an important identifier for the SureStream engine.

4.4. Monitor Route

A monitor route can be setup in order to visualize the SureStream behaviour. This is an optional configuration on one or both sites and does not influence the SureStream operation. The monitor route is a local setting and shows the combination of both received streams from route 0 and 1.

The SureStream engine allows as many redundant streams as necessary or appropriated. On a receiving end all packet streams assigned to the same audio card (i.e. slot 1) are identified as part of the SureStream configuration. The IP engine “scans” the incoming streams starting at the lowest route ID and finds route “0” and route “1”, both assigned to card slot one and therefore identified as redundant streams. Without having a “monitor” route configured SureStream identifies route 1 as the route with the highest route ID and combines the RTP content on route 1. In this case route 1 feeds the data through the de-jitter buffer to card slot 1.



The screenshot shows the 'Configure Route' dialog box for 'Route 2'. The 'Route Basics' section includes 'Stream Name' (recombined stream), 'Route Type' (Audio), 'Direction' (Receive), and 'Casting Mode' (Unicast). The 'Addressing' section includes 'Mode' (IP), 'Address' (0.0.0.0), and 'Port' (5012). The 'Channels' section has 'Channels' set to 'To Slot 1' and 'All Channels'. The 'Advanced' section includes 'TTL' (64), 'QoS' (6), 'Packet Size' (Auto), 'Ethernet' (Port 0), 'SureStream' (Off), and 'Rx Latency' (200). There is also a 'Surpress Route Alarms' checkbox which is unchecked. 'OK' and 'Cancel' buttons are at the bottom.

Consequently a third route with a higher route ID than “1” configured as a receive route to the same card slot as route 0 and 1, will also be identified as part of the SureStream configuration. - A “monitor” route acts as a “virtual” route receiving RTP content from route 0 and 1 internally (not from the network) and uses its de-jitter buffer to feed the data to card slot 1 (buffer size must be identical). This allows viewing the errors on route 0 and 1 on the performance monitor.

It is important to understand, that with this configuration the codec card in slot 1 transmits via route 0 and 1, but takes the received data finally from the buffer of route 2.

5. PERFORMANCE MONITORING

As described in the previous section, the performance monitor page shows the behaviour of route 0 and route 1. Route 2 is configured and used to visualize the SureStream performance (the monitor route).

Stream	Name	Bytes	Port	Packets	Dropped Pkts	Reseq Acti...	LOC	Dup Pkts	Receive Buffer Levels	Rx Pkt Size	Physical ...
0	Stream A	247,094,384	5004	431,853	0	0 (0.0000%)	5	0	0ms 204ms 400ms 0% 100% 200%	512	0
1	Stream B	259,024,900	5004	452,704	0	0 (0.0000%)	2	0	0ms 204ms 400ms 0% 100% 200%	512	1
2	recombined	232,929,524	5014	407,092	0	40 (0.0098%)	0	177,254	0ms 194ms 400ms 0% 100% 200%	512	0

Update every: 10 seconds

Clear figures... Automatically update Next Update Due : 7 seconds.

Stream 0 and 1 are the two bi-directional streams “connected” to the remote Oslo frame. Both streams show LOC errors (Loss of Connection). Stream 2 is the recombination of data from of stream 0 and 1 and feeds the audio data through the de-jitter buffer to card slot 1.

This example shows that even with LOC errors on both “component” streams (0/1) the recombined data stream is without any error or interruption. The “duplicated packets” count shows the number of packets that were dropped by the SureStream engine. SureStream drops all identical packets that arrive on both streams and uses this redundancy to fill gaps in the primary or secondary stream.