RAVENNA Web Interface

for device and stream configuration

User Guide

Version: 1.0/1

Edition: 24 July 2013

ALC NetworX

Table of Contents

Changes to This Manual

- **Version 1.0/1** (Edition: July 24th 2013) - initial version, valid from build 7145

Welcome

This documentation covers the RAVENNA Web Interface, a browser-based control interface used to configure RAVENNA devices and streams.

The RAVENNA Web Interface runs on most standard web browsers. It is recommended that you update your web browser to the latest version.

You can access more information by registering at ravenna.alcnetworx.com (click on **Login**). By registering you will receive the latest news for your product, and can download software and documentation.

Marginal Notes

The following symbols are used to draw your attention to:

	Points of clarification.

	Useful tips and short cuts.

	Warning
	Warnings – alert you when an action should *always* be observed.

Operating Principles

1. Enter the IP address of the RAVENNA device to be configured followed by "**:8080**" into the URL field of your web browser (i.e. "**192.168.1.230:8080**"). Alternatively, if the RAVENNA software suite (e.g. the RAVENNA Virtual Sound Card) is installed on your computer, select the **RAVENNA** entry from the Program list in the **Start** menu.

The Overview page for your local RAVENNA installation opens in the browser:
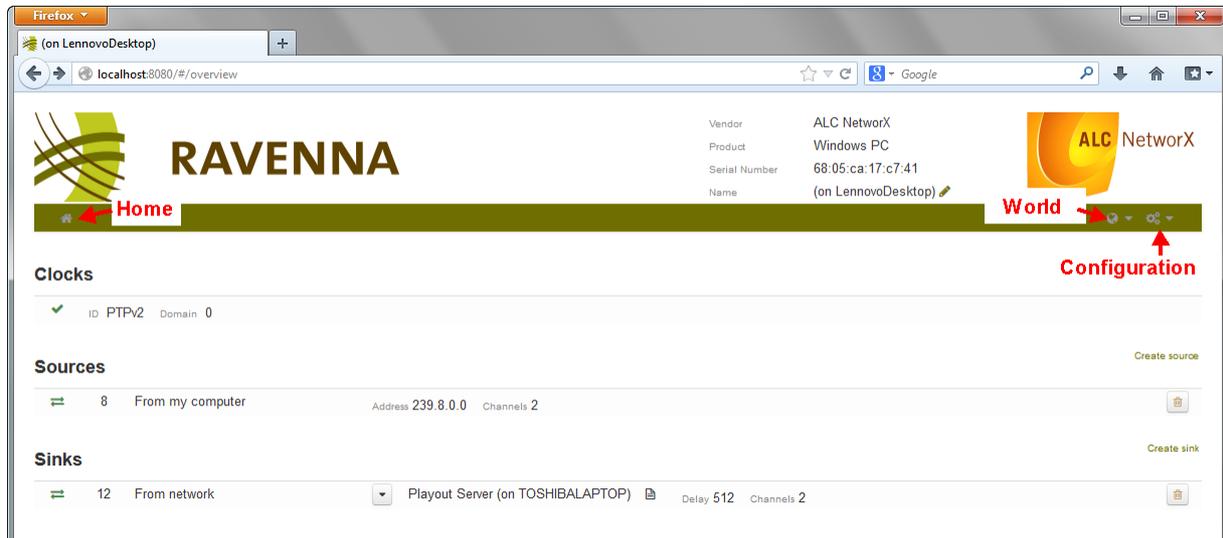
The Overview page lists the PTP clock source (**Clocks**), and any existing streams:

- **Sources** - audio streams published from your computer to the network.

- **Sinks** - incoming audio streams received from the network.

The icons beside each entry indicate:

✔	**Clock Valid**
❗	**Clock Faulty** - check that your network interface is connected to the RAVENNA network, and that the PTP Grandmaster is running.
◑	**Clock Listening** - the device is in slave mode and is waiting for the Grandmaster.
⇄	**Source/Sink Stream Active**
⋰	**Source/Sink Stream Connecting** - for Sink streams, check the sending device.
❗	**Source/Sink Stream Faulty** - the stream could not be created.
	If no icon is present, then the Source or Sink stream configuration is incomplete.

Hover your mouse over an icon to reveal further information.

2. Click on the Clock or on a Source or Sink stream to view and edit parameters.

3. Click on the **Home** icon (top left) to return to the Overview page.

4. Click **Create source** or **Create sink** (on the right) to create a new stream or connection from an existing stream.

5. Select an entry and click on the trash icon to delete a stream or stream connection.

6. Hover over a summary field to reveal further information, for example:

SDP (Session Description Protocol)   Channels (RAVENNA IO device and Play Channels)
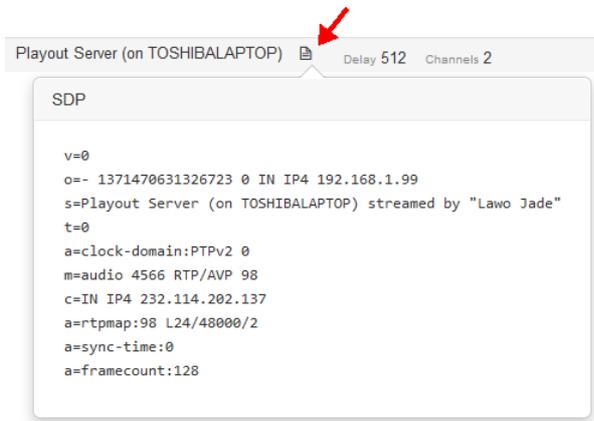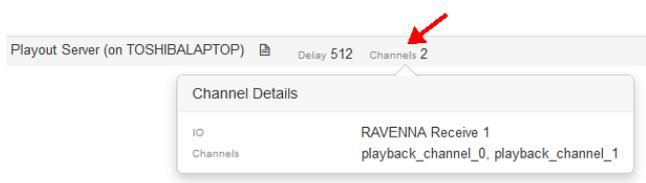
The Headline area (top right) displays product information and the RAVENNA node name:
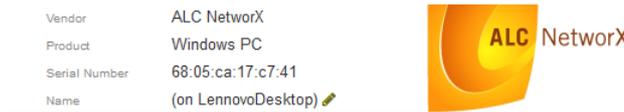
- **Vendor** = the manufacturer's name.

- **Product** = the product name.

- **Serial Number** = a unique number which identifies the device within the manufacturer's product range.

- **Name** = the node name used for RAVENNA discovery and identification. The node name can be edited in Expert mode but must be unique within the RAVENNA network.

7. Click on the **World** icon (top right) to access different RAVENNA nodes visible on the network:
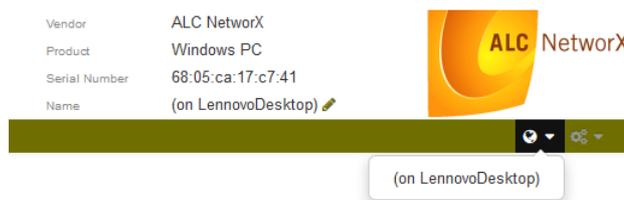
8. Click on the **Configuration** icon (top right) to access other settings (**Network**, **IOs**, **Advanced** and **About** pages):

Clock Parameters

This page provides access to the clock settings (except for the RVSC implementation, where clock settings are accessed via the **PTP** status icon in the task bar. See the "RVSC Win/WDM Software Installation Guide".)

For further details on all parameters, please refer to the IEEE1588 standard documentation.

Status

Type	Type of PTP clock (**PTPv2**)
Status	Status of PTP clock (**Master**, **Slave** or **Faulty** if no PTP clock is detected).

Settings

Master	Appears only if this device is a PTP slave; indicates the IP Address of the PTP master.
Offset	Appears only if this device is a PTP slave; indicates the current offset from the PTP master.
Domain	Time domain for PTP. This *MUST* be set to match the domain number of the related PTP Grandmaster.
Prio1	Internal PTP setting (in samples, e.g. **128**). This parameter is used to control the priority of Grandmaster selection. (Refer to the IEEE1588 Best Master Clock algorithm for further details.)
Prio2	"
Announce Interval	in seconds (**1**, **2**, **4**, **8** or **16**). In **Slave** mode, this *MUST* be set to match the Announce Interval of the related PTP master clock. In **Master** mode, this determines the desired Announce Interval.
Sync interval	in seconds (**0.5**, **1** or **2**). In **Slave** mode, this *MUST* be set to match the Sync Interval of the related PTP master clock. In **Master** mode, this determines the desired Sync Interval.
Slave only	When ticked, the device is forced to run in PTP **Slave** mode only.

Delay request mechanism	End to End (**E2E**) or Peer to Peer (**P2P**). This *MUST* be set to match the related PTP master clock. While **E2E** is a more universal setting, **P2P** provides higher clock sync precision but requires full support from all participating switches (between the node and related clock master.)
DSCP	The QoS (Quality of Service) value for PTP traffic (**0-63**). It is recommended to assign a value which is treated as highest priority level in the network. Default is **48**.

Source Stream Parameters

8: From my computer

Status
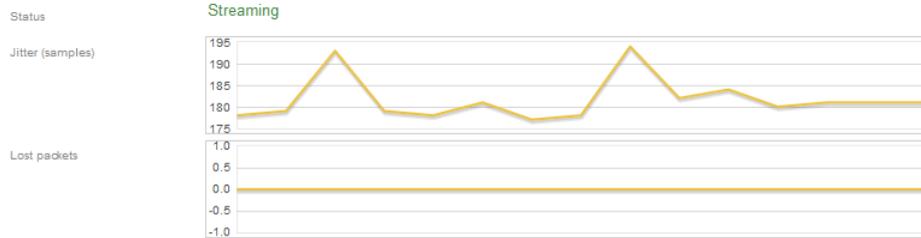
Status   Streaming

Stream Settings

Name	From my computer
Address	239.8.0.0
Frame size	128
DSCP	46
Payload	98
Codec	L24
Channel count	2

IO Settings

IO	RAVENNA Send 1
Channel blocking	☑
Capture channels	capture_channel_0, capture_channel_1

Save   Cancel

The **Status** parameters are for display purposes only. The **Stream** and **IO Settings** are entered when you create or edit a Source stream:

Status

Status	Indicates if streaming is active (**Streaming**) or not (**Connecting** or **Not configured**).
Jitter (samples) Lost packets	These areas appear when streaming is active, and display the amount of jitter and number of lost packets, as reported by subscribers, in graphical form. If there is more than one subscriber, then you will see multiple traces, each colour-coded. Hover over a trace to see the IP address of the subscriber.

Stream Settings

Name	Enter a name to identify the stream on the network (e.g. **From my computer**). A default name is automatically entered, and is taken from the RAVENNA node **Name** (in the headline).
Address	Enter a Multicast IP address for the stream (e.g. **239.8.0.0**). **NOTE:** Avoid entering duplicate Multicast IP addresses (i.e. Multicast addresses already in use for other streams on the network). It is recommended to keep the suggested value.
Frame size	Select a frame size in samples from the drop-down menu (**48**, **64**, **128**, **192** or **256**) or enter any number manually; the default value is **128**. The frame size defines the number of samples per channel per network packet; the smaller the frame size, the lower the latency but the more susceptible to drop-outs. **NOTE:** To avoid packet bursting, choose the same or a multiple of the block size of the selected I/O device. See IO settings (below) and the Configuration -> IOs menu.
DSCP	Appears only in Expert Mode. Select a QoS (Quality of Service) value from the drop-down menu - **EF (46)**, **AF41 (34)**, **AF31 (26)** or **Standard (0)**; the default value is **EF (46)**. This should match the priority settings used in your network for preferred real-time media packet forwarding.
Payload	Appears only in Expert Mode. This is an internal RTP value which informs subscribers about the nature of the content (**98** = dynamic payload type, specified further in the accompanying SDP).
Codec	Select an option from the drop-down menu to define the wordlength of the PCM digital audio (**L16** = 16-bit, **L24** = 24-bit, **L32** = 32-bit or **AM824** = 24-bit audio + 8-bit meta data as used with AES/EBU).
Channel count	Enter the number of audio channels for the stream (e.g. **2** = stereo).

IO Settings

IO	Select a RAVENNA IO device from the drop-down menu (e.g. **RAVENNA Send 1**). **NOTE:** devices do *NOT* appear if they are disabled (see the Configuration -> IOs menu).
Channel blocking Capture Channels	These options assign channels from the audio interface to the RAVENNA Source stream. Tick **Channel blocking** to assign the number of chosen audio channels as a single block of consecutive channels (e.g. channel 1+2, 3+4, etc). Then use the **Capture channels** field to select the first channel of the block. Untick the **Channel blocking** option to edit the channel assignments individually.

When creating a new Source stream, the resultant network packet size is displayed at the bottom of the page; the packet size is determined by the **Frame size**, **Codec** and **Channel count**.

If the packet size exceeds the Ethernet MTU (Maximum Transmission Unit), then a warning appears. To fit the MTU, you may reduce the **Frame size**, lower the wordlength (**Codec**) or split the stream by reducing the **Channel count** per stream.

Stream Sink Parameters

9: From network

Status

Status   Receiving stream

Jitter (samples)

Lost packets

Stream Settings

Description	From network
Source	Playout Server (on TOSHIBALAPTOP)
Delay	512
Channel count	2

IO Settings

IO	RAVENNA Receive 1
Channel blocking	☑
Play channels	playback_channel_0, playback_channe

[Save] [Cancel]

The **Status** parameters are for display purposes only. The **Stream** and **IO Settings** are entered when you create or edit a stream Sink:

Status

Status	Indicates if streaming is active (**Receiving Stream**) or not (**Connecting** or **Not configured**). **Channel map collision** appears if one or more channels of the stream are assigned to an audio interface channel already in use. If so, check the other stream Sink configurations. **Multicast/port conflict** appears if a stream Sink with the same Multicast IP address is already in use. Currently, a stream can only be received once per node.
Jitter (samples) Lost packets	These areas appear when streaming is active, and display the amount of jitter and number of lost packets in graphical form.

Stream Settings

Description	Enter a name to label the stream, locally on your computer (e.g. **From network**).
Source	Select a Source stream from the drop-down menu. You can select any stream available on the RAVENNA network, including streams published from your own PC. The name of the stream is determined by the sender (**Playout Server**); the sender's device name is included in brackets (**on TOSHIBALAPTOP**).
Delay	Enter the amount of delay to be applied, in samples, before samples are played out (forwarded to the internal audio interface); the default value is **512**. The delay is referenced to the sampling time at the sender. Thus, it needs to be large enough to cover all possible influences, such as the packet assembly delay at the sender (frame size), transport delay, maximum packet jitter and packet disassembly delay at the receiver. **TIP:** Set the delay to be larger than the frame size specified by the sender. As a general rule, the delay value should be 2 x sender's frame size. So, if the sender's frame size = 128, set the delay = 256. If you experience drop-outs, increase the delay time.
Channel count	The channel count determines the number of channels to be routed from the selected stream to the internal audio interface. If 0 is entered, all available channels are used upon subscription.

IO Settings

IO	Select an available audio IO device from the drop-down menu (e.g. **RAVENNA Receive 1**). **NOTE:** devices do *NOT* appear if they are disabled (see the Configuration -> IOs menu).
Channel blocking Play Channels	These options assign channels from the subscribed RAVENNA stream to the selected audio IO device. **NOTE:** channels are numbered starting at 0. Individual names may appear if IO channels have been named in the Configuration -> IOs menu. Tick **Channel blocking** to assign channels as a single block of consecutive channels (e.g. stream channels 0..4 -> audio IO channels 3..6). Use the **Play channels** field to select the first channel of the block. Untick the **Channel blocking** option to edit the channel assignments individually. **TIP:** when receiving more stream channels than available audio IO channels, untick **Channel Blocking** to freely assign the channels. **NOTE**: do *NOT* assign the same **Play channel** more than once. Otherwise you will receive a channel conflict error.

Configuration Menu

The Configuration menu provides access to the **Network**, **IOs**, **Advanced** and **About** pages:
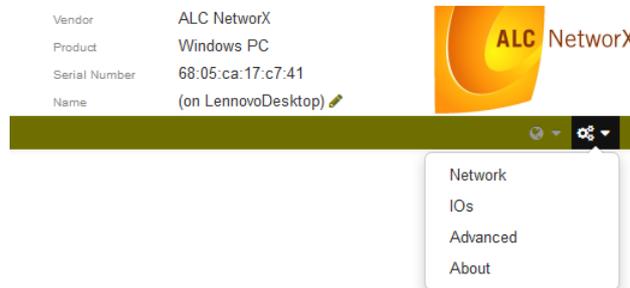
Network
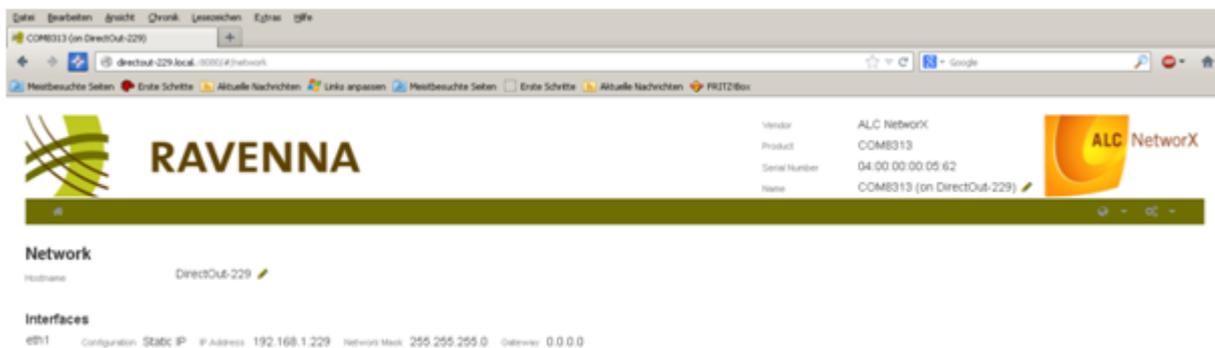
Hostname	This is the hostname of the RAVENNA node, used to identify the device at a network level. You can rename nodes in [Expert mode](#) by clicking on the pencil icon. Some naming constraints apply (i.e. the node name must be unique; no spaces are allowed, etc.)
Interfaces	This area lists all the available network interfaces installed on the RAVENNA node. Click on an interface to view its details. In some RAVENNA implementations, these fields are read-only.

IOs
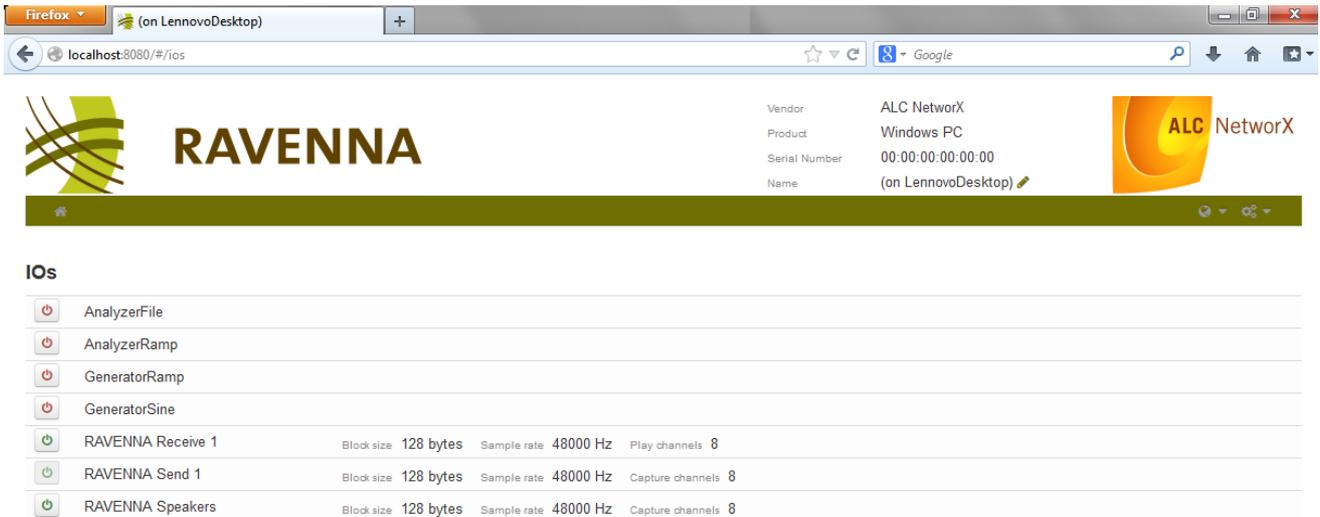
This page provides access to all audio IO devices and test signals.

1. Click on a left-hand button to enable or disable an IO device:

- **Green** = enabled.

- **Red** = disabled.

> Audio IO devices *MUST* be enabled if they are to appear in the Source/Sink Stream IO selection menu.

2. When enabling an IO device, you are asked to enter the following parameters:

Audio block size	Select a value (in samples) from the drop-down menu. This determines how often an audio interrupt will be triggered.
Sample rate	Enter the desired sampling rate (e.g. **48000 Hz** = 48kHz).
Play / Capture channels	The number of audio IO channels (e.g. **8**) and their labelling.

Advanced
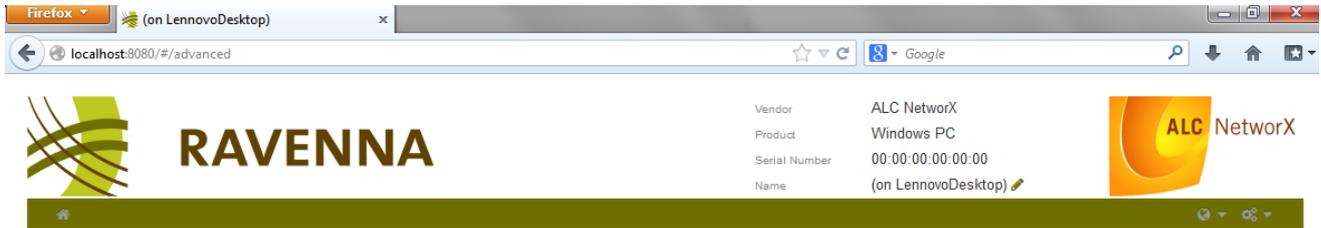
1. Tick **Enable expert mode** to gain access to:

   • RAVENNA log file settings.

   • Test signals (in the IOs page).

   • Some additional parameters for Source stream configuration (DSCP & Payload).

   • Renaming for the RAVENNA nodes.

> Note that the status of **Expert mode** is stored by your web browser, and not by the RAVENNA software.

Log Files

The RAVENNA software produces three log files for diagnostic purposes (**/log/butler**, **/log/streamer** and **/log/ptp**). Each file contains messages. You can open the log files and prioritise messages as follows:

1. Open the **Advanced** page and enable <u>Expert mode</u>.

2. For each message, in the **butler** and **streamer** log files, enter a priority by selecting a drop-down option:

- **Info** = lowest log level

- **Debug** = medium log level

- **Trace** = highest log level

- **Not Set** = level is inherited from the branch below (i.e. root).

3. Scroll down the page, and click on one of the log file links to open the log file in a new browser window:

4. Or, click on **List running processes** to open a list of running processes.

About

The **About** page lists the current version of the RAVENNA Web Interface and all credits.