

RAVENNA Virtual Sound Card for Windows

- WDM Version -Software Installation Guide

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Welcome

This documentation covers the installation of the RAVENNA Virtual Sound Card (RVSC) software onto a Windows 7 PC.

The procedure installs the RVSC with WDM Audio Device API, to create a virtual sound card which may be used to send and receive RAVENNA streams.

During installation, you select the network interface to be used for your RAVENNA connection. You can configure up to one capture, one playback and one speaker device, each of which can stream up to 8 channels of audio.

You can access more information by registering at <u>ravenna.alcnetworx.com</u> (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:





System Requirements

Computer

The RVSC may be installed onto a PC which meets the following system requirements:

- Operating System: Windows 7 (32 or 64 Bit).
- **Network Interface Card**: the interface used for your RAVENNA network connection *MUST* use the Intel 82574L chipset. This chipset provides hardware timestamping support for PTP, the time synchronization protocol used within RAVENNA.
- **DPC Latency:** should *NOT* exceed 500 µs. You can use the DPC latency checker (available for download at http://www.thesycon.de/dpclat) to test your computer's performance.

The RAVENNA WDM drivers do *NOT* support Windows 8 or Windows XP.

Network

RAVENNA streaming relies on PTP (Precision Time Protocol) time reference information.

Due to poor jitter performance, your PC may only act as a PTP slave. Therefore, to send or receive RAVENNA compatible streams, a PTP Grandmaster *MUST* be installed somewhere within the network. This could be a stand-alone networking device or a piece of RAVENNA hardware with PTP Grandmaster capabilities.

Having installed the RAVENNA software, you can check the <u>PTP status</u> from the Windows taskbar.



Installing the Software

1. Before running the installer, make sure that your network interface is connected to a powered network switch on the RAVENNA network. If not, the network card cannot be selected during <u>step</u> <u>10</u>.

2. Copy the **ravenna-X.xx.exe** application onto your computer. This file may be downloaded from <u>ravenna.alcnetworx.com</u>.

3. Double-click on the application icon to start the 'RAVENNA Setup Wizard':



If a 'User Account Control' dialogue box appears, click **Yes** to "allow the program to make changes to this computer".

- 4. Observe the recommendation by closing all other applications, and click **Next** to continue.
- 5. Read the license agreement and click I agree:





6. Then click **Next** three times to accept the default installation options:

RAVENNA Setup	RAVENNA Setup
Choose Install Location Choose the folder in which to install RAVENNA.	Choose Start Menu Folder Choose a Start Menu folder for the RAVENNA shortcuts.
Setup will install RAVENNA in the following folder. To install in a different folder, click Browse and select another folder. Click Next to continue.	Select the Start Menu folder in which you would like to create the program's shortcuts. You can also enter a name to create a new folder.
Destination Folder	RAVENNA Accessories Administrative Tools Corel DVD MovieFactory Lenovo Edition Evernote Games
C:\Program Files (x86)\RAVENNA Browse Space required: 3.4MB Space available: 409, 168	Google Chrome Intel Intel AppUp(SM) center Lenovo Think/antage Tools Maintenance Microsoft Silverlight
Copyright (C) 2007-2013 ALC NetworX GmbH	Do not create shortcuts Copyright (C) 2007-2013 ALC NetworX GmbH



The 'Device Driver Installation Wizard' opens:

Device Driver Installation Wiza	rd)
	Welcome to the Device Driver Installation Wizard! This wizard heips you install the software drivers that some computers devices need in order to work.	omponents hich features of RAVENNA you want to install. all and uncheck the components you don't want to VENNA Configuration and Management Service VENNA Streaming Service VENNA KITEELISS8 Service VENNA KITEELISS8 Service VENNA Firewall Sound Card VENNA Firewall Rules
	To continue, click Next.	
	< Back Next > Cancel	DH Cancel

7. Click **Next** to continue and install the RAVENNA network device driver.





8. When the following dialogue box appears, click **Yes** to "override the current device driver":

Device Driver Installation Wizard		
The drivers are now installing		
	Þ	
Ď Ď		Choose Components Choose which features of RAVENNA you want to install.
Please wait while the drivers install. This may take some time to co	mplete.	nts you want to install and uncheck the components you don't want to
	Device Driver Inst	all X
< Back Next >	Your Wou IEEE1	machine is already using the best device driver. Id you like to override it with the ALC NetworX GmbH E1000 588 Adapter (05/03/2013 2.0.0.1297) device driver?
		Yes No
	Copyright (C) 2007-20	13 ALC NetworX GmbH < Back Next > Cancel

When the driver is successfully installed, the following appears:

Device Driver Installation Wiza	rd			
	Completing the Device Driv Installation Wizard	ver		
	The drivers were successfully installed on this of	computer.		
			,	
			Chi	pose Components noose which features of RAVENNA you want to install.
	Driver Name Status		hents you wan	t to install and uncheck the components you don't want to
	✓ ALC NetworX GmbH E1 Device Upda	ited	to continue.	D AVENNA Configuration and Management Convice
	< Back Finish	Cancel		RAVENINA Conliguration and Management Service RAVENNA Streaming Service RAVENNA IEEE 1588 Service RAVENNA Vetual Card
		Space required:	3.4MB	
		Copyright (C) 2007-	2013 ALC Netv	vorX GmbH
				< Back Next > Cancel

9. Click **Finish** to complete the network driver installation.



The 'RAVENNA Setup' Wizard now configures the RAVENNA Virtual Sound Card:

RAVENNA Setup	RAVENNA Setup
Select Network card Select Network card for streaming and set RAVENNA control port	Select Network card Select Network card for streaming and set RAVENNA control port
Select the network card you want to use for RAVENNA	Select the network card you want to use for RAVENINA
Don't bind • Select the IP port for the local RAVENNA webserver that will be installed 8080 If start RAVENNA services automatically 8080	E 1000 IEEE 1588 Adapter #2 Don't bind E 1000 IEEE 1588 Adapter #2 NETGEAR WNDA3100v2 N600 Wireless Dual Band USB Adapter VIStart RAVENNA services automatically
1 Vumber of Capture Devices	1 Vumber of Capture Devices
1 Number of Speaker Devices	1 Vumber of Speaker Devices
1 Vumber of Playback Devices	1 Vumber of Playback Devices
48000 V Samplerate	48000 V Samplerate
Copyright (C) 2007-2013 ALC NetworX GmbH	Copyright (C) 2007-2013 ALC NetworX GmbH
< Back Install Cancel	< Back Install Cancel

10. Choose an option from the drop-down menu - the list will include all network interfaces installed on your computer. Select the interface which uses the Intel 82574L chipset (to meet the <u>System Requirements</u>).

If you cannot see the correct network card, then check that it is connected to a powered network switch. Only connected interfaces appear in the drop-down list.

11. Leave the **Start RAVENNA service automatically** option checked, and the IP port at its default setting (**8080**).

12. Choose the **Number of Capture**, **Speaker** and **Playback Devices** from the drop-down menus - the free version supports 1 x Capture (send) + 1 x Playback (receive) + 1 x Speaker device. Each device streams up to 8 channels of audio. Speaker devices can be used for channel mixdown, i.e. to mix a 7.1 source into a stereo stream.

13. Set the **Samplerate** to either **48000** (48kHz) or **44100** (44.1kHz). The sample rate may be changed later as desired.

14. Then click **Install** to start the software installation - this may take a few minutes, and windows open and close automatically during the install:

🦂 RAVENNA Setup	
	Installing Please wait while RAVENNA is being installed.
Execute: C:\Users\LENOV	0~1\AppData\Local\Temp\nsc8622.tmp\wdm\setup.exe /S /NOPCPI
Show details	
Copyright (C) 2007-2013 ALC	NetworX GmbH < Back Next > Cancel

Each time a 'Windows Security' dialogue box appears, click **Install** to "trust the software from ALC NetworX GmbH".



Once the RVSC Setup is complete, you will see the following dialogue box and an alert in the task bar:

🐗 RAVENNA Setup			
	Completing the RAVENNA Setup		
	Your computer must be restarted in order to complete the installation of RAVENNA. Do you want to reboot now?		
	Reboot now		
RAVENNA	I want to manually reboot later		
	< Back Finish Cancel		
	TL		
		RAVENNA Virtual Sound Card X X Device driver software installed successfully.	0
		17:13	

15. Select **Reboot now** and **Finish** to reboot your computer and complete the software installation.

Following the reboot, a PTP icon appears in the Windows taskbar:



You should now perform the following steps:

- Check the status of your RAVENNA PTP service and, if necessary, adjust the PTP Settings.
- Adjust the LAN Properties of the RAVENNA network interface to optimise performance.



PTP Status & Settings

PTP Status

The PTP icon in the Windows taskbar indicates the status of your RAVENNA PTP service and clock source:



- **Green** = service started and a valid PTP clock source detected. This is the correct state for normal operation.
- **Red** = service started, but no PTP clock source detected. If you see this icon, then check that your computer's network interface is connected to the RAVENNA network, and that a PTP Grandmaster is running.
- **Grey** = service stopped. If, during the software install, you unticked the <u>Start_RAVENNA</u> <u>service automatically</u> option, then you can start and stop the RAVENNA PTP service manually from the taskbar. See the RAVENNA PTP service <u>context menu</u> for more details.

PTP Settings

The PTP settings for your RAVENNA network interface should match those of the Grandmaster configuration. To check the settings:

1. Right-click on the PTP icon to open the RAVENNA PTP service <u>context_menu</u>, and select **Settings**:

Quit	RAVENNA PTP Settings	
Settings Interface Selection Open Log Directrory	Protocol Version Role Setting C Version 1 Stratum: 4 ✓ Slave Only ✓ Select Master	Master MAC Address: 00:00:00:00:00:00
Stop Synchronization Service Start Synchronization Service	Image: Wersion 2 Clock Class: 251 ▼ Priority 1: 128 ▼	terrer tetrest la
About RAVENNA	P2P Delay Priority 2: 128 -	Synch Interval: 1/2s 💌
13/06/2013	☐ Synchronize Windows Time to PTP Time ✓ International Atomic Time (TAI) Correction	Number of Switches: 4
	Use IPV6	Domain: 0
	DSCP: EF PHB	Verbosity Level: 0 💌
		OK Cancel

The specific settings depend on your PTP Grandmaster configuration. For details please contact your network or system administrator.

2. Click **OK** to save any changes and exit the dialogue box.



LAN Properties

To optimise the performance of your RAVENNA network interface, you should adjust its 'LAN Properties' as follows:

1. Open the Windows Control Panel from the **Start** menu, and select **Network and Internet** -> **Network and Sharing Center**.

You should see the LAN (Local Area Network) connection which you are using for RAVENNA listed on the right hand side.

2. Click on the connection (e.g. RAVENNA-LAN), and select Properties.

3. Under the **Networking** tab, untick all the options except for **QoS Packet Scheduler** and **Internet Protocol Version 4 (TCP/IPv4)**:



4. Select **OK** and **Close** to confirm the changes.



RAVENNA PTP Service Context Menu

1. Right-click on the PTP icon in the taskbar to open the RAVENNA PTP service context menu:



• About RAVENNA. - reveals information about the RAVENNA PTP service release:



- **Stop/Start Synchronization Service** use these options to start or stop the RAVENNA PTP service. Note that the various RAVENNA services are interdependent, and therefore you may not be able to stop the RAVENNA PTP service if another depending service (such as the RAVENNA streamer service) is running.
- **Open Log Directory** opens the log file directory on your computer. Here you can open or copy a log file to assist with diagnostics:

						X
OO ⊂ 🎍 ► log				- i i j	Search log	٩
Organize 👻 Burn	New folder				:≡ ▼ 🗍	0
J Music 🔺	Name	Date modified	Туре	<u>_</u>		
Pictures	PTPLog	13/06/2013 14:36 13/06/2013 13:37	Text Document			
Homegroup	ravenna_butler.1	13/06/2013 13:35 12/06/2013 18:44	Text Document Text Document	=		
Sue (TOSHIBALA	ravenna_butler.3	12/06/2013 18:42 12/06/2013 18:09	Text Document		Select a file to preview.	
🗣 Network	ravenna_butler.5	12/06/2013 17:28 12/06/2013 17:13 13/06/2013 13:37	Text Document Text Document Text Document			
🍌 log	ravenna_streamer.1	13/06/2013 13:35 12/06/2013 18:44	Text Document Text Document			
-	•			F		
18 items						



 Interface Selection - click to select a different network interface card for your RAVENNA PTP service. Note that only suitable interfaces (those meeting the <u>System_Requirements</u>) appear in the drop-down list:

RAVENNA PTP Network Interface Selection		×
Select PTP network interface		
E 1000 IEEE 1588 Adapter #2 MAC:68:05:CA:17:C7:41		•
	ОК	Cancel

- Settings opens the <u>PTP Settings</u> dialogue box.
- Quit terminates the RAVENNA PTP control program.

You can restart the RAVENNA PTP control program by rebooting your computer (if the <u>Start</u> <u>RAVENNA service automatically</u> option was ticked).

Alternatively, locate the **Program Files** -> **RAVENNA** folder on your computer, and double-click on the **IEEE1588Control** application:





Windows Default Playback/Recording Device

Following a successful installation, the RAVENNA send, receive and speaker devices appear in the Windows Sound Control Panel. This allows you to assign them as the default Playback and/or Recording device, if desired (e.g. to directly monitor an incoming stream).

The procedure is identical to configuring a physical sound card:

1. Open the Windows Control Panel from the **Start** menu, select **Hardware and Sound** and click on **Sound**.

2. Under the **Playback** tab, select either the **RAVENNA Send** (or **Speakers**) device, and click on **Set Default**:



3. Under the **Recording** tab, select the **RAVENNA Receive** device, and click on **Set Default**:



4. Select **OK** to confirm all the changes.