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AudiophileOptimizer Computer Audio Setup Guide

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High-End Computer Audio

Welcome to a journey to achieve the absolute high-end of computer audio, made in Switzerland. You will experience an analog-like audio quality you've probably never heard before on your computer audio transport system. Our mission is to get you there in a pleasant way, without the hassle of complex adjustments and changes to your operating system. This guide will show you how to get your own "Windows Server 2012/R2 audiophile core edition".

Our solution will transform your AudioPC into a true audiophile component. A dedicated AudioPC becomes an ultra-high-end component, ready to use with a simple press of the power button. You don't even need to log in once everything is set up. Press the power button again to shut it down properly. If your system contains an SSD and a modern motherboard, it will be up and running within a couple of seconds and your shutdown times will be even faster.

Kernel-Streaming is one available option Windows offers which is, in our opinion, by far the best option to choose even if it's "ancient technology". You will get the best sound quality and stability, the lowest latency, and it works with most devices. A typical driver developer will certainly tell you WASAPI is the way to go, no doubt about that. But in the end you should use whatever sounds best to your ears and matches your system. No matter if you use Kernel-Streaming, ASIO or WASAPI, you will enjoy a unique audio experience.

Please take your time and read this guide **very carefully**. It will not only show you how to run the AudiophileOptimizer, it will cover many more topics aside from AO's usage. It will show you exactly how to setup and fine tune your computer audio system to get the maximum sound quality possible. Follow these instructions as close as you can.

Please don't employ methods aside from those recommended in this guide. We will not support foreign scripts, optimization scripts, optimization tools, anti-virus software, software firewalls or anything else not listed in these pages. Please don't install, configure or disable anything not mentioned in the guide or not specifically needed to run your audio device. The AudiophileOptimizer will take care of all OS related settings.

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Recommended Scenarios

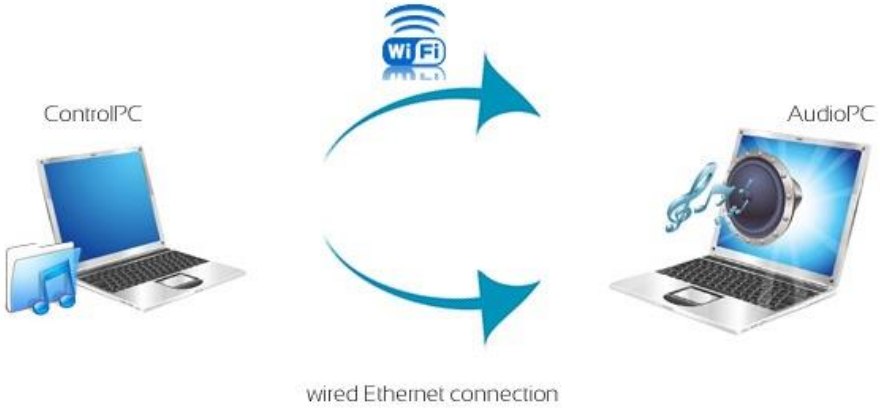
SinglePC Setup

In most scenarios, a well-made SinglePC setup is the way to go. It's not very complicated to set up and will sound better than a DualPC setup made without enough attention to details and carefully selected hardware. You will get very fast boot times, even faster shutdown times, phenomenal analog-like sound quality and a very stable system. If you need the comfort and usability of the desktop environment, GUI edition is what you need. If you seek much better sound quality, but still need some compatibility (WASAPI, WLAN, etc.), minimal-server mode will be the mode for you. And if you are looking for the very best sound quality the AudiophileOptimizer can deliver, core mode is the route to go. On a SinglePC setup JPLAY is not needed, but can be used if you prefer to do so.

DualPC Setup

For more advanced users a DualPC setup is an option to further increase sound quality. For a DualPC setup you need JPLAY as digital transport between the two machines. A DualPC configuration requires advanced skills, knowledge about TCP/IP and network configurations. Both machines need to be fully optimized and treated equally well. You should use only the best components you can afford. So often a well-made SinglePC setup sounds better than a DualPC setup made without the needed attention and love for details.

For the most purist audiophiles, we recommend to have the AudioPC as well as the ControlPC in core mode. But be aware, the lack of a GUI may be tricky if you are not used to DOS commands. To get the best sound quality possible, you clearly should use a DualPC setup carefully configured. If you want the best possible sound quality, go with core mode for both systems. But be aware, the price for this stunning sound quality means living with some drawbacks regarding the usability (no desktop environment etc.) of the Windows operating system.



Another possible setup would be to have the ControlPC in GUI mode and the AudioPC in core mode. This setup will almost reach the level of the DualPC setup in core mode, but offer much more comfort in usage and handling.

Remote Apps

Don't forget about apps for iPhones, iPads and other mobile devices. You can easily control your computer audio transport via RemoteApp by just using one finger, sitting on your couch…

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Software Package

The AudiophileOptimizer, ServiceTool and Setup can be run in GUI, minimal-server or core mode. Remember, you must only run this software on dedicated AudioPC's running Windows Server 2012 R2. Do not try to run either one on a Windows 7, Windows 8 or any other not supported OS.

SETUP.EXE

This is the installer for the AudiophileOptimizer package. It will create a Folder called "AO" in the root directory of your system drive (most likely C:\AO). It will install all components in that folder and create the needed shortcuts on your desktop as well as the needed entries in the start menu and path variables. You can use setup.exe for an **initial installation** and also to **upgrade** your existing AO installation.

AUDIOPHILE_CORE.EXE

This is the most important part of the package; this program will optimize your system. Only use it on your dedicated Audio/ControlPC or in a dual-boot configuration. The AudiophileOptimizer will make permanent changes to your system. **Be sure to make an image backup made with Paragon, Clone-Zilla or Acronis, etc. before you use the AudiophileOptimizer. See the detailed instructions in this manual in chapter "AudiophileOptimizer**

SERVICE_TOOL.EXE

The main purpose of the ServiceTool is to set all disabled drivers and services back to their original state. The ServiceTool can also be used to reset all settings of the AudiophileOptimizer. By using the ServiceTool, you will not lose the optimizations made by the AudiophileOptimizer, just its settings. The ServiceTool can be used for many tasks: for example, to switch between modes (core/minimal/GUI). You can also use it to replace your shell or configure and enable autologon. It's a very powerful tool that will greatly support you on your journey.

SHOW_ADAPTERS.CMD

This will show you the name of your Ethernet connection if you are already in core mode. You need this information to set an IP address with netsh command. This is sometimes needed because of lazy coded drivers that won't work with sconfig.vbs.

SET_IP.CMD

If you want to set an IP address in core mode, and sconfig.vbs does not work with your network card driver, take the information generated by "show_adapters.cmd" and edit "set_ip.cmd" with an editor like notepad. Put in the name of your Ethernet connection and replace your desired IP-Address, subnet mask, etc.

ATTENTION: All cmd files must be used in command prompt and not in PowerShell.

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Mandatory Software

You will need an ISO of Windows Server 2012 or 2012 R2. Burn the ISO to DVD or use the Windows 7 USB Tool to create a bootable USB-Stick of the ISO. This USB Stick will only be used for the installation itself. No Windows To Go types of installations are desired or supported. Please install Windows Server 2012/R2 on an SSD or classic hard drive. Do not install it onto USB-Sticks or CF-Cards. Windows server 2012/R2 trial/evaluation installations can be converted to a permanent retail version later if so desired.

Here's what you need:

- AudiophileOptimizer & ServiceTool
- DAC/DDC/Soundcard drivers
- Windows Server 2012 Standard, Foundation & Datacenter Edition (DOWNLOAD TRIAL ISO) or
- Windows Server 2012 R2 Standard, Foundation, Datacenter & Essentials Edition (DOWNLOAD EVALUATION ISO)

INFO: The trial period of Windows Server trial/evaluation editions can be extended several times:
http://support.microsoft.com/kb/948472/en-us

Optional Software

- JPLAY, MQn Player, Bug head Emperor, HQPlayer, Foobar2000, Roon, TIDAL, Spotify, Quboz, WiMP, Logitech Media Server, etc.
- Process Lasso, Shairport4w (AirPlay), Acourate Convolver, dBpoweramp, etc.
- VB-Audio ASIO Bridge & Virtual Cable Driver
- Chipset drivers for your Mainboard & network card(s)
- Drivers for SOtM, PPA, Adnaco or JCAT USB Card
- Windows 7 USB Tool

Windows 7 USB Tool

You can use the Windows 7 USB Tool to make a bootable USB Stick of a Windows Server 2012 ISO. This is not a WinToGo Installation. The USB Stick is meant to be an installation media for a traditional installation. If you make a bootable USB Stick with the Windows 7 USB Tool, you will not have to enter a product key for Server 2012 during the installation (using the retail ISO). The Evaluation or Trial ISOs don't need a key at all.
http://social.technet.microsoft.com/wiki/contents/articles/913.using-the-windows-7-usbdvd-download-tool.aspx

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Windows Setup

Need-to-know

A certain skillset is required to successfully set up a computer audio transport system. You must feel comfortable executing the following tasks:

- Experience with the basic setup of Windows operating systems
- Copying setup.exe into the root directory of a USB-Stick, CD-ROM, etc.
- Selecting drives, changing folders, running commands
- Using basic DOS commands (command prompt)

If you also want to use JPLAY (optional) you have to be very familiar with:

- Setting up and configuring JPLAY Streamer Mode (DualPC setup)
- Basic network configuration and TCP/IP knowledge
- Basic troubleshooting of network problems (ping etc.)
- Starting the registry editor, editing the registry, etc.
- JPLAY registry settings and tweaking

Basic DOS Commands

Commands are followed by pressing enter if not stated otherwise:

- Core edition configuration	sconfig.vbs
- Start PowerShell	powershell.exe
- Reboot server	shutdown /r /t 0
- Shutdown server	shutdown /s /t 0 or press the power button
- Show files and directories	dir
- Change directory	cd
- Change drives	enter drive letter colon and press enter
- Go back by one directory	cd..
- Go back to root	cd\
- Last command	up arrow
- List of last commands	F7
- Stop JPLAY service	net stop JPLAYService
- Start JPLAY service	net start JPLAYService

Do you want to map a network share while in you are in core mode? Use this command to map a share called “music” on your NAS (IP of NAS is 10.10.10.50) as drive m:

```
net use m: \\10.10.10.50\Music /persistent:yes
```

VIDEO: Watch this video for basic DOS commands in core edition. How to start JPLAYSettings, players etc.:
https://www.youtube.com/watch?v=4xJwDDL8jpI

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BIOS/EFI Settings (optional)

If this is your first installation, you can skip the following steps as they are optional. If you are more experienced, feel free to employ the following steps. First of all, update your BIOS to the latest version available. Disable every device you don't need including serial ports, onboard soundcard, and anything else you won't need for the purpose of playing high quality audio with your DAC or DDC. The following pictures represent examples; try to match them as close as possible. Depending on your BIOS/EFI you won't be able to set every option, but do as much as you can.

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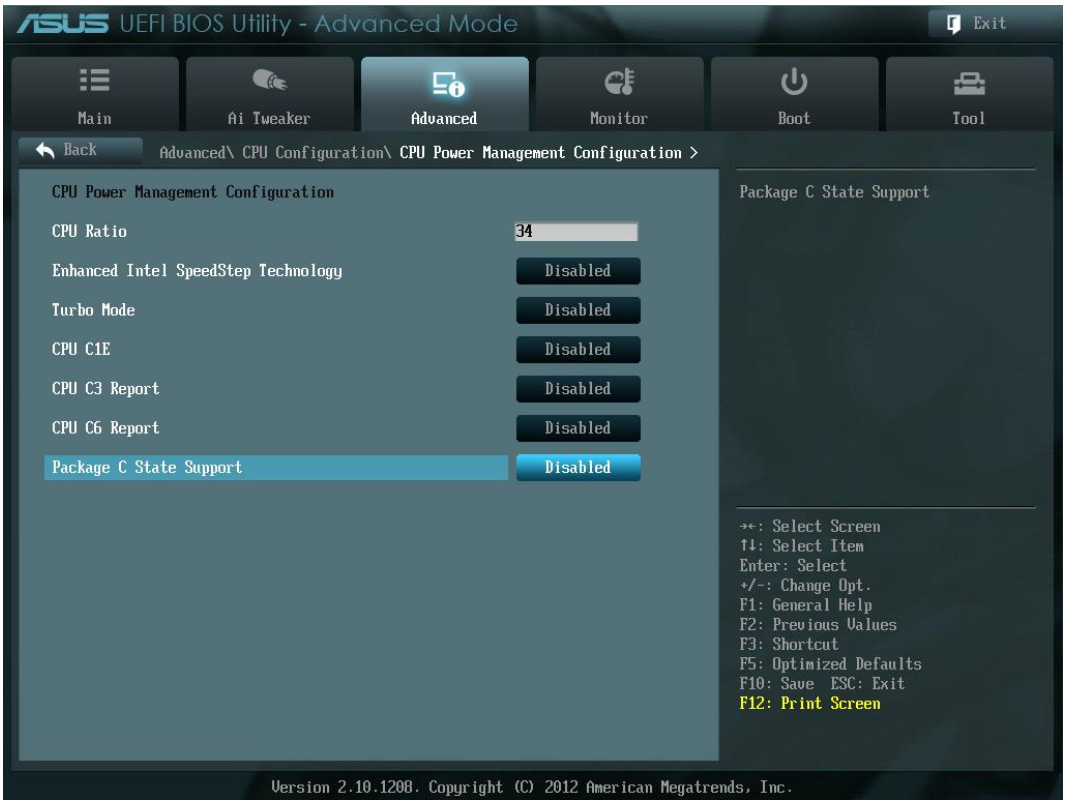
It's very important to disable everything related to **Intel SpeedStep, Turbo Mode, C-States, Virtualization Technology & especially Hyper-Threading**. You can experiment with different speeds of your CPU and or RAM frequencies, as long as you use a fixed value (do not use "auto"). Listen to whatever sounds best to you.



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Enable HPET (High Precision Event Timer); disable Rapid Start and Smart Connect. You can also try HPET disabled. Use whatever sounds better to you.

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Partitioning, Shrinking & Cloning

Now is the time to think about your partition layout. Once installed, it will be very tricky for a non-IT Pro to create or resize partitions without the disk management mmc console. It's worth thinking a moment about the layout. If you already have a working Windows 8.1 CAPS for example, you could shrink the partition and free up some gigabytes for a dual-boot system, without losing your current working Windows 8.1 AudioPC. In fact only about 7GB are needed for the core edition.

We recommend using a 16GB or 32GB SSD for the OS partition and a larger SSD as local music storage. Use the highest quality SATA cables you can find (Be sure to browse our computer audiophile online shop: http://www.highend-audiopc.com/shop). If your motherboard has 2 different SATA chipsets (which is quite common today), use one chipset for the OS disk and the other one for the music drive. Use SATA2 ports instead of SATA3 ports if possible. Please do not install the operating system of a computer audio transport directly onto a USB Stick. A so called "Windows To Go" Installation is not the optimal platform for audio usage for several reasons.

How to shrink a partition: http://www.tweakhound.com/2013/01/02/how-to-resize-your-windows-8-partition/
Cloning/Shrinking: http://www.paragon-software.com/technologies/components/migrate-OS-to-SSD/

OS Installation

Boot your Windows Server 2012/R2 USB Stick or your DVD. Choose the appropriate settings and go on. Setup will be familiar as it will be similar to a Windows 7 or Windows 8.1 installation.

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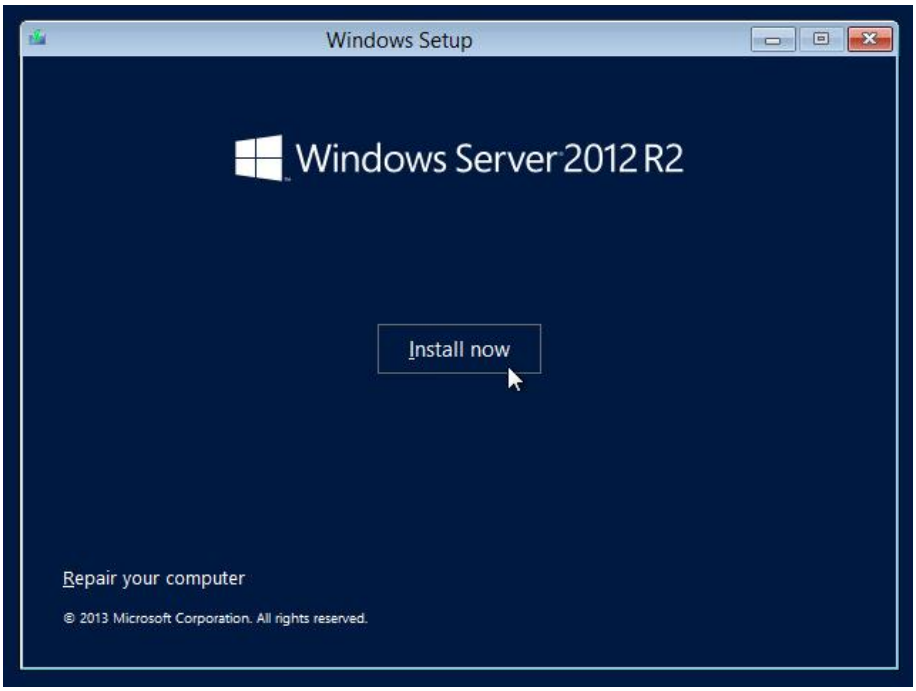
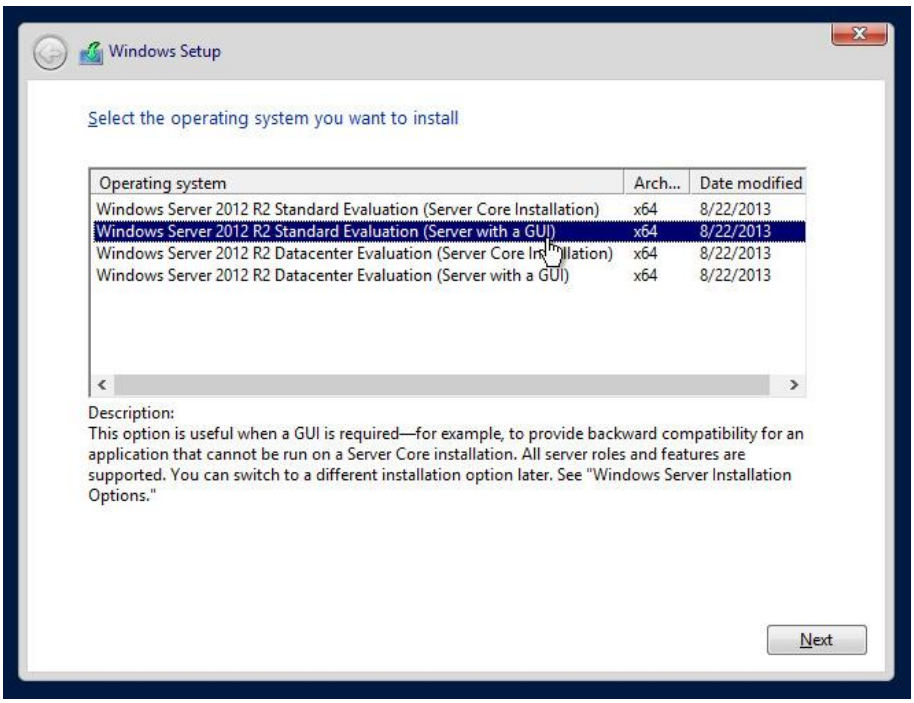
Click on the “Install now” button.



Install the GUI Edition (Server with a GUI). Do **not** yet install the core edition at this point.



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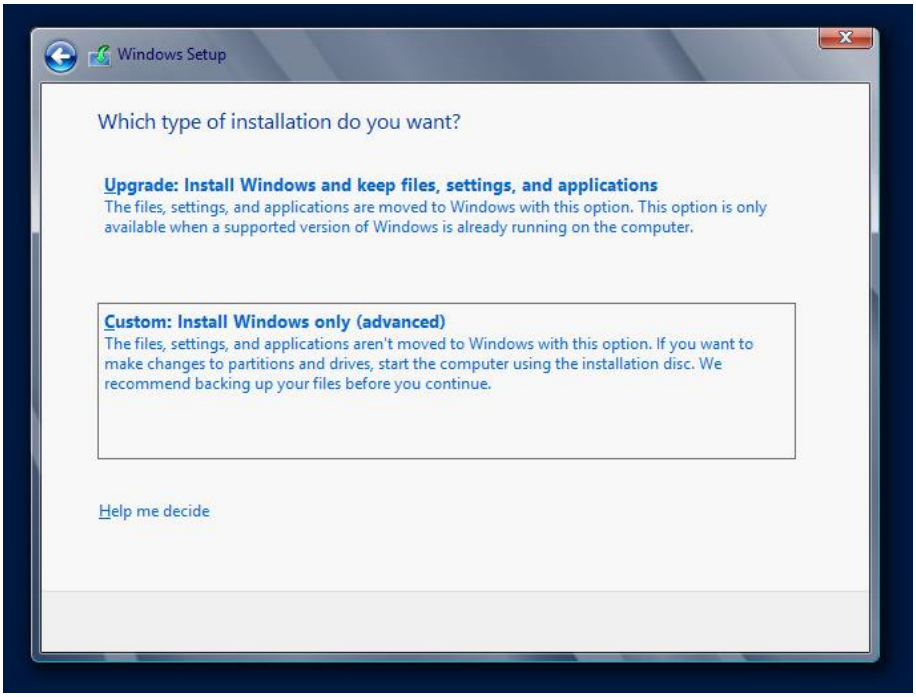
Accept License terms and click next.

Choose Custom: Install Windows only (advanced)



ATTENTION: It is also possible to upgrade an existing installation, but this is absolutely not recommended.

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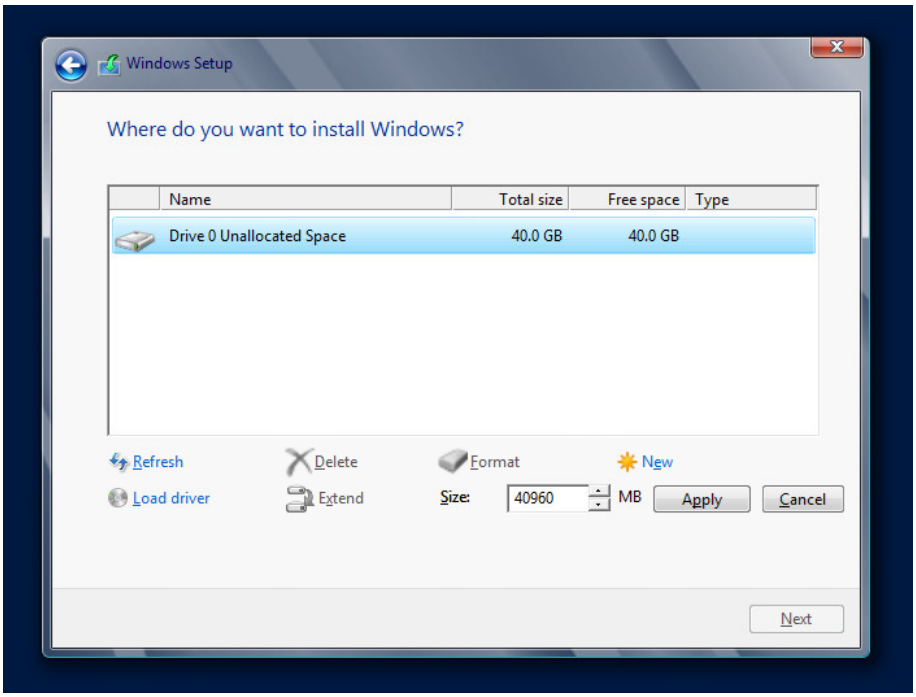
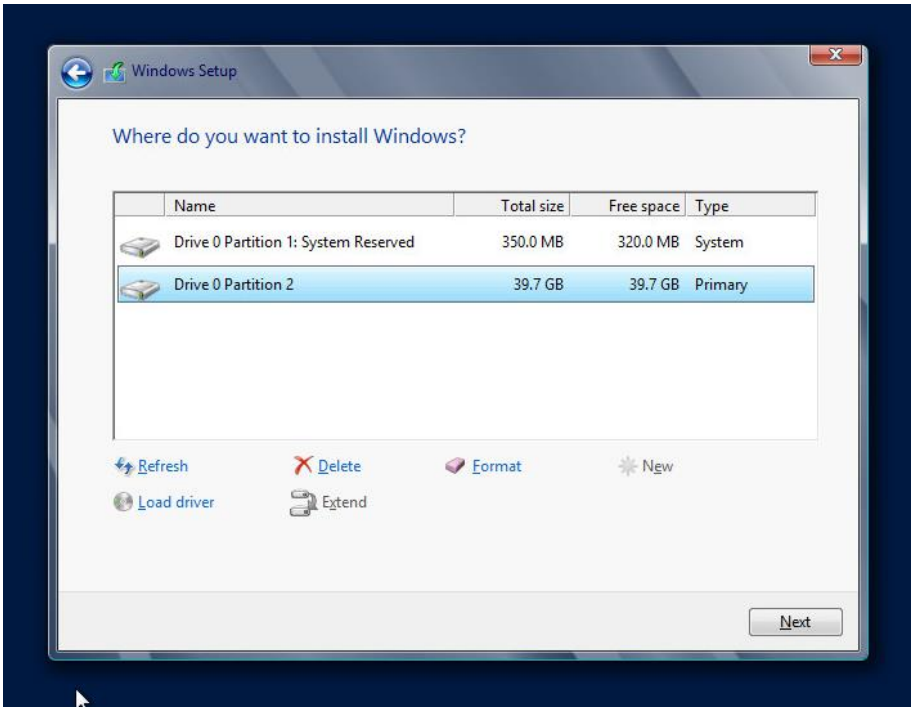
Let’s go on and create the partition according to your needs, the minimum size is 15GB.



ATTENTION: The 350MB Partition called “System Reserved” is common and mandatory.



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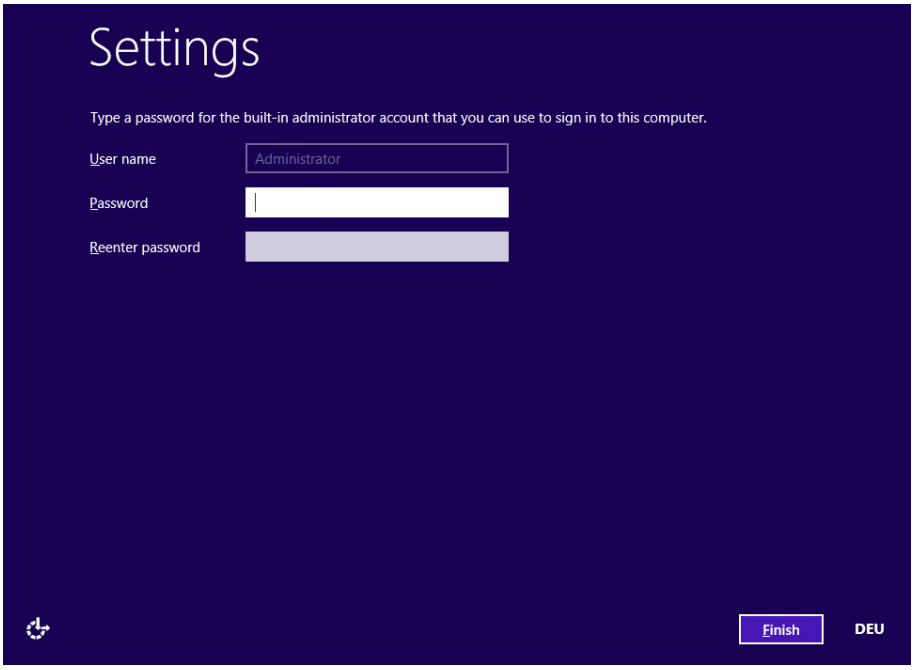
Once the installation is finished, you will get the logon screen.



You have to set a password. Your password has to contain small and capital letters as well as numbers and at least one special character.

ATTENTION: If you are using the Trial/Evaluation Edition of Server 2012/R2, you need an active internet connection for the system to activate itself online. If the system cannot activate itself online, it will not run for the full trial period and will start shutting down the machine automatically if idle.

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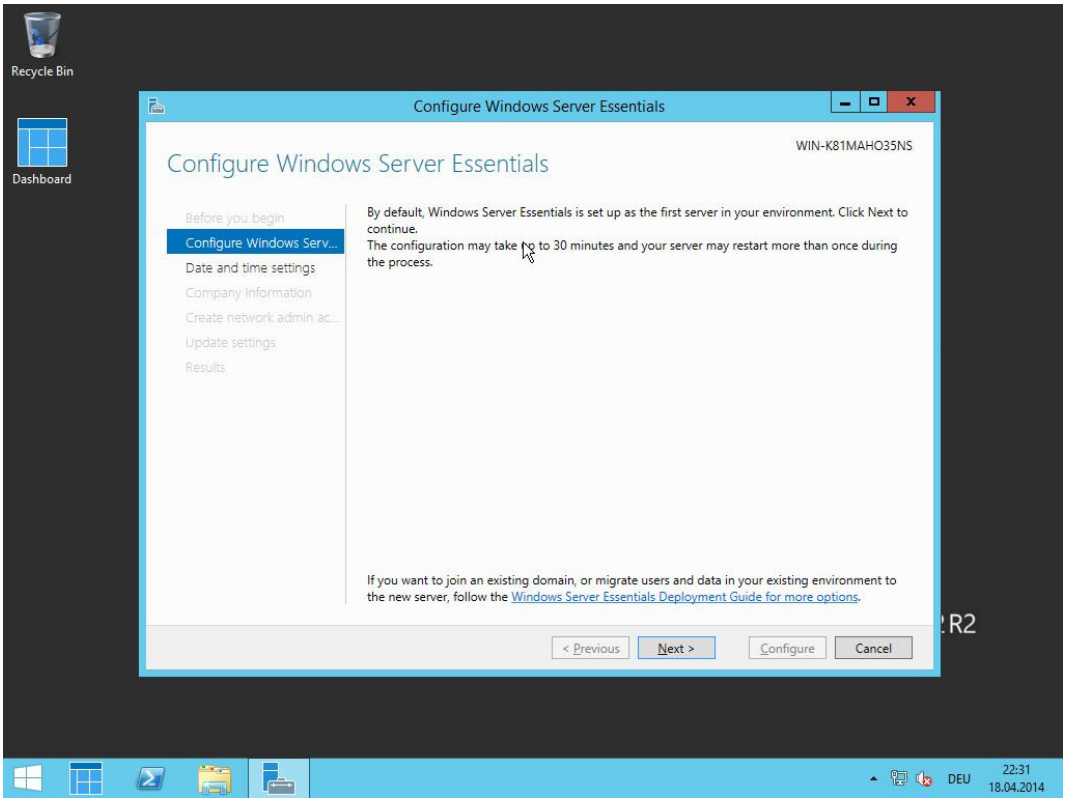
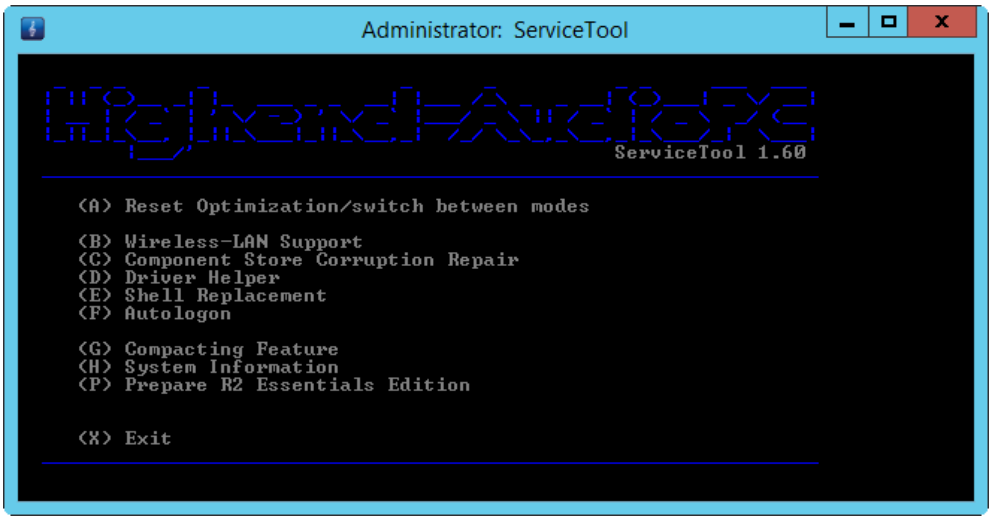
Server 2012 R2 Essentials Edition

You can skip this chapter if you don't use Windows Server R2 Essentials Edition. Windows Server 2012 R2 Essentials Edition needs some special preparation before you can use it as platform for the AudiophileOptimizer. Right after the first logon you will see a configuration wizard:

DON'T START THE CONFIGURATION WIZARD, CANCEL IT IMMEDIATELY!



Install the AudiophileOptimizer package (setup.exe) according to the installation instructions found in this manual. Then run ServiceTool and select "**P**" to prepare R2 Essentials. After this process, you can continue with the manual.



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Driver & Software Installation

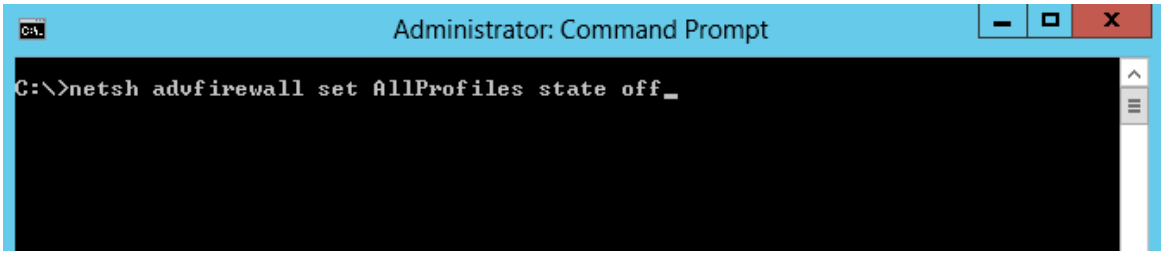
Once the GUI Edition is installed, please install all device drivers needed in device manager. Install the latest chipset drivers of your motherboard, the latest drivers for your network card, and install all drivers needed for your DAC or DDC and anything else that shows a missing driver in the device manager. **Do not install the 3rd party driver of your video adapter if not absolutely needed.** Many graphic card drivers set system priority in favor for the graphic card. If you really need the graphic cards driver, try to install only the INF files with PnPUtil and not the whole driver package.

How to use PnPUtil: http://msdn.microsoft.com/en-us/library/windows/hardware/ff550428%28v=vs.85%29.aspx

Disable Firewall (Optional)

Before you start configuring JPLAY you should disable the Firewall. Open a command prompt and enter:

```
netsh advfirewall set AllProfiles state off
```



Roon, Bug head Emperor, JPLAYmini, HQPlayer, Foobar2000 & Co.

Once all drivers are setup, install JPLAY (if you plan to use JPLAY) and reboot. On a SinglePC or a ControlPC, also install the music player of your choice. For the very best sound quality we recommend Bug head Emperor. JPLAYmini works in core edition, but requires a tool like Total Commander to choose files for playback.

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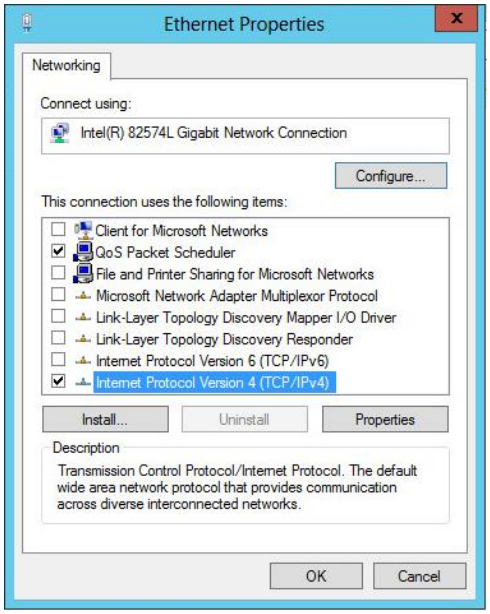
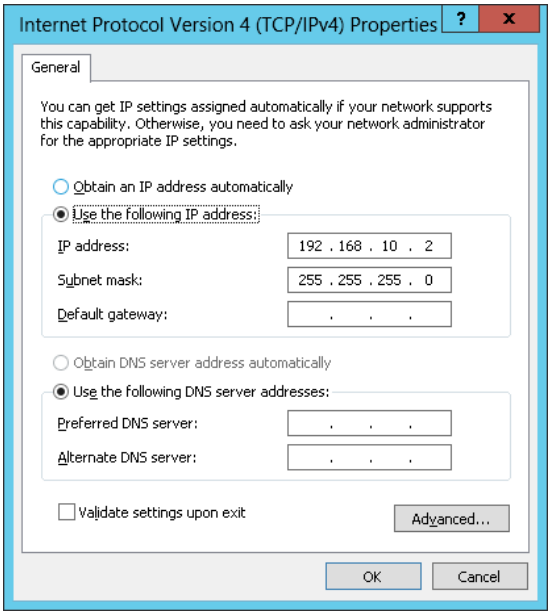
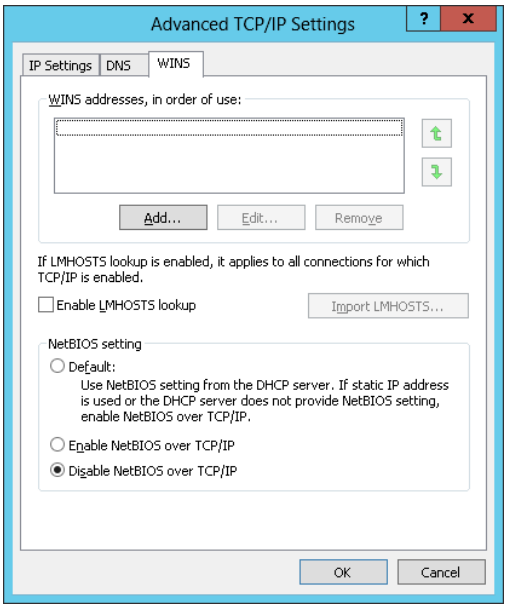
Network Tuning (optional)

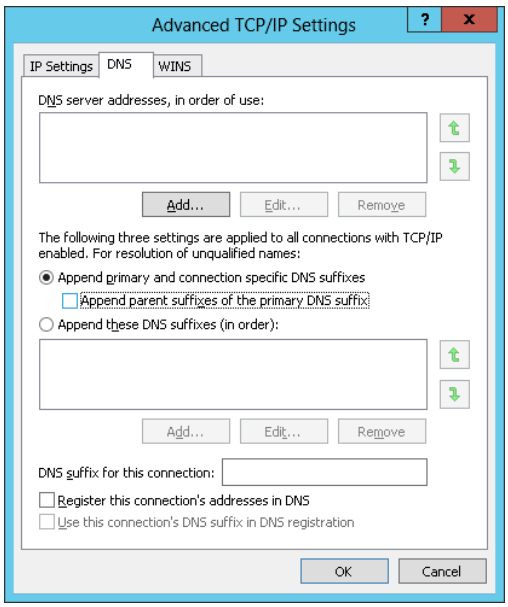
Edit the settings of the network card used for the direct link between ControlPC and AudioPC and uncheck everything besides TCP/IPv4 and QoS. The JPLAY card(s) don't need a gateway or DNS Servers, leave those fields empty. This is only for dedicated "JPLAY" network cards and not for your internal LAN adapter. Apply these changes only on both dedicated network cards for JPLAY StreamerMode. Don't make these changes on your internal LAN card, especially not if you want to use network related services like SMB/CIFS shares (Windows file shares) etc. You have to use fixed IP Addresses under any circumstances; do **not** use dynamic (DHCP) IP's!





Open properties of the network card used for JPLAY StreamerMode and open TCP/IPv4 properties. Uncheck everything under DNS and WINS, disable NetBIOS over TCP/IP.





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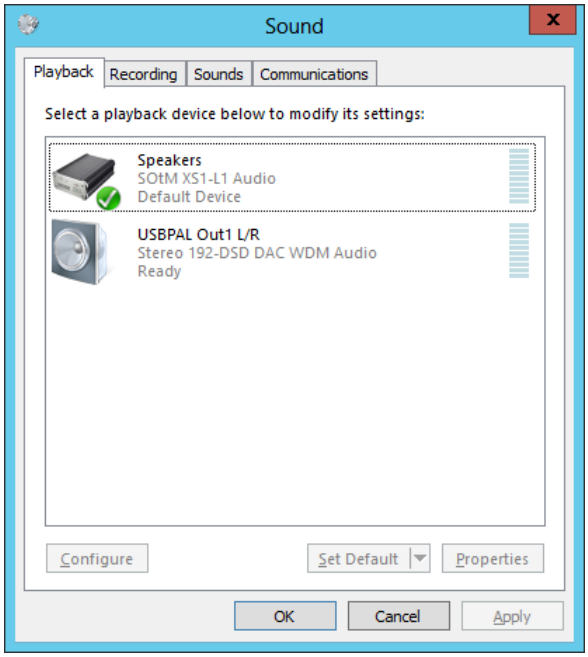
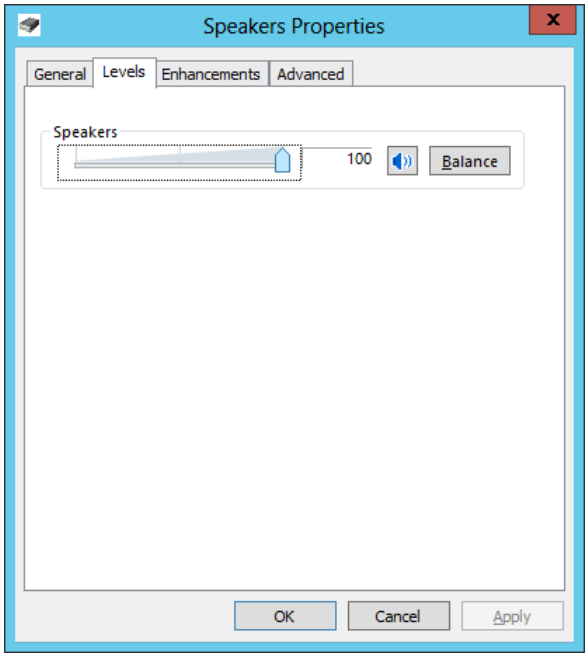
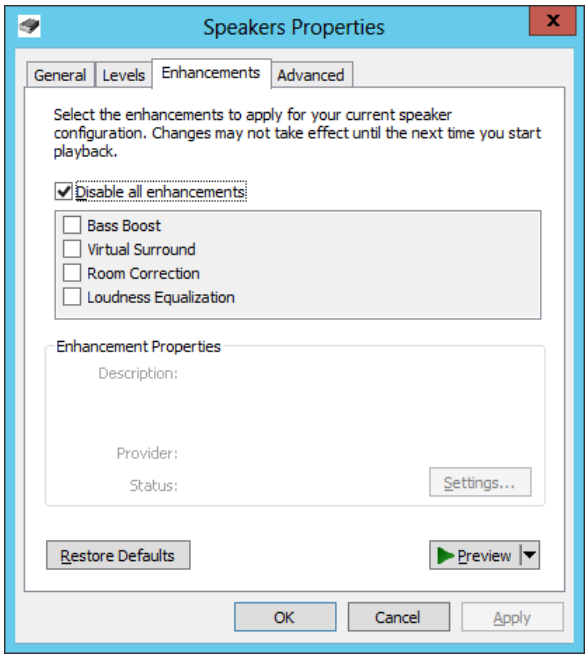
WASAPI

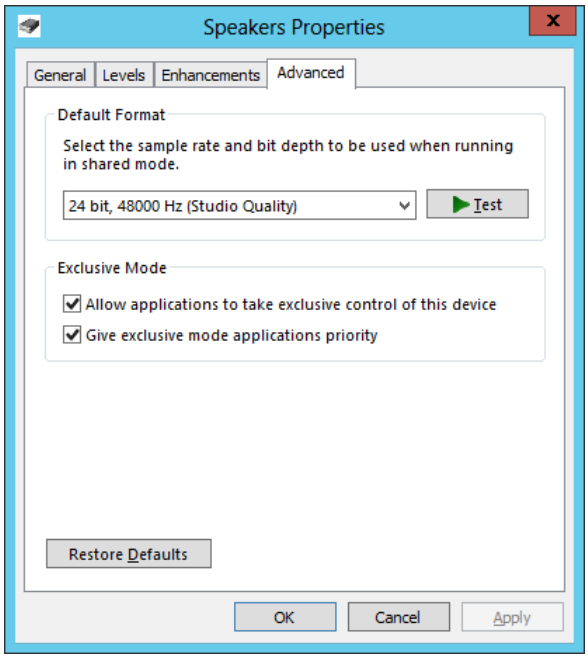
You can skip this section if you don't use WASAPI. WASAPI is supported in minimal-server and GUI mode, but not in core mode. If you have multiple WASAPI capable devices, choose one as your standard sound device. After the conversion to minimal-server edition, you won't be able to switch between different WASAPI devices inside JPLAY settings anymore. **It is very important to set the volume to 100% if your device supports that option.** Also disable all enhancements in the properties of your device. All these settings do not matter if you use ASIO or Kernel-Streaming.

INFO: Every server OS has all windows audio services disabled by default. If you need WASAPI, or your driver is related to WASAPI architecture in any way, you need to set the windows audio services to automatic start.









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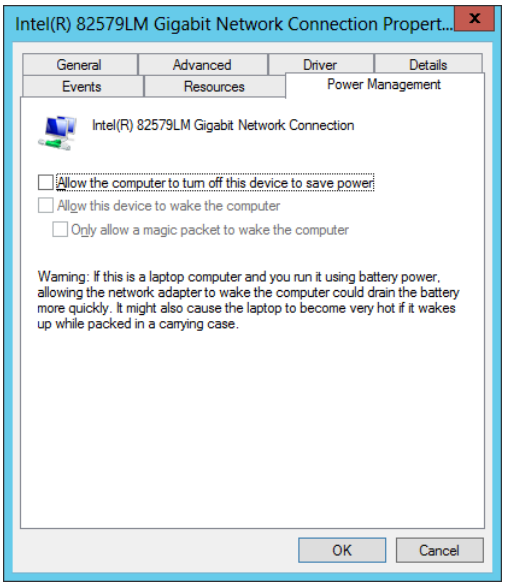
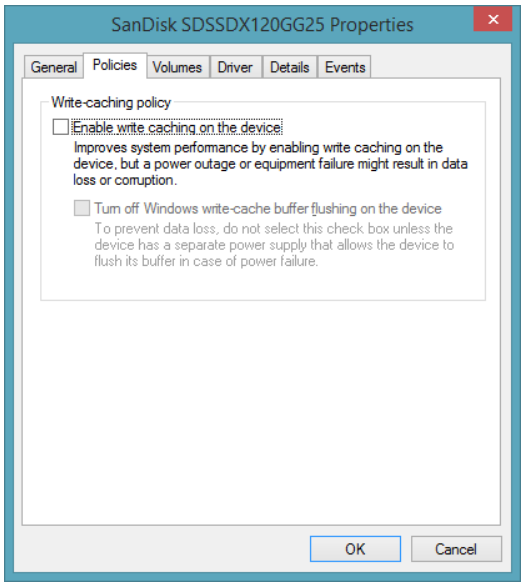
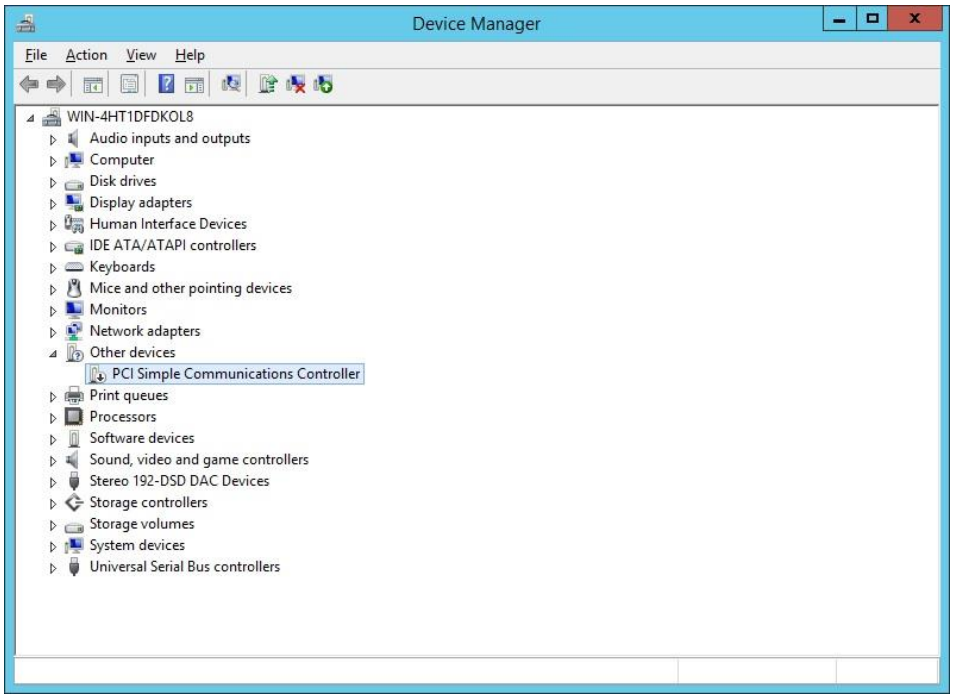
Device Manager

Open the Device manager and select your hard disk drives. In the properties, turn off write-caching of all disks. All power management features (USB, network cards, etc.) get automatically disabled by the AudiophileOptimizer. The AudiophileOptimizer further includes several USB optimizations. The following adjustments are optional:





ATTENTION: Often a device called "PCI Simple Communications Controller" shows up. You can safely disable it; you won't need it.



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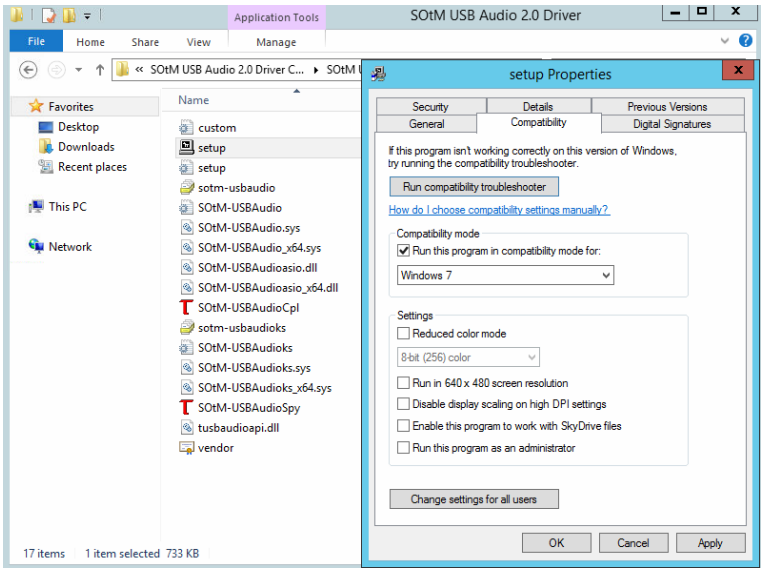
DAC/DDC Drivers

Most driver vendors do not yet offer DAC/DDC drivers made for Windows Server 2012/R2. Drivers made for Windows 8 or Windows 8.1 will work without any issues since Windows 8/8.1 and Server 2012/R2 share the same binaries in wide areas. If no driver for Windows 8 or 8.1 is available, you will have to use the Windows 7 driver. Sometimes the compatibility mode is needed to install a Windows 7 driver on Windows Server 2012/R2. You can use the Driver Helper function of ServiceTool to install such drivers, please see detailed instructions in this manual in chapter "Driver Helper



ATTENTION: If you still encounter problems during driver installation, start a command prompt and run "install.cmd" found here: https://www.highend-audiopc.com/Drivers/install.rar. From the same command prompt window, start the setup.exe of your DAC/DDC driver and install its drivers. Run finish.cmd after you've finished the installation.

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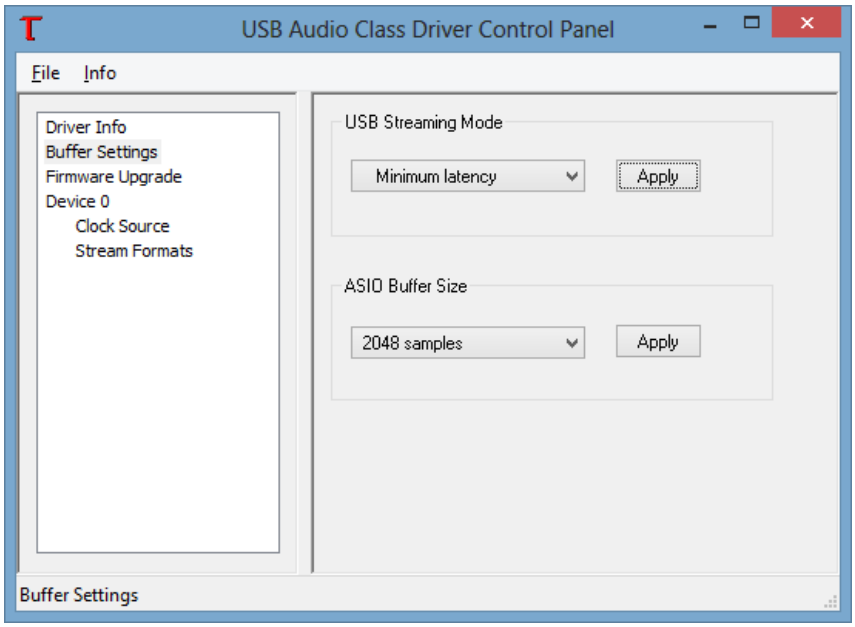
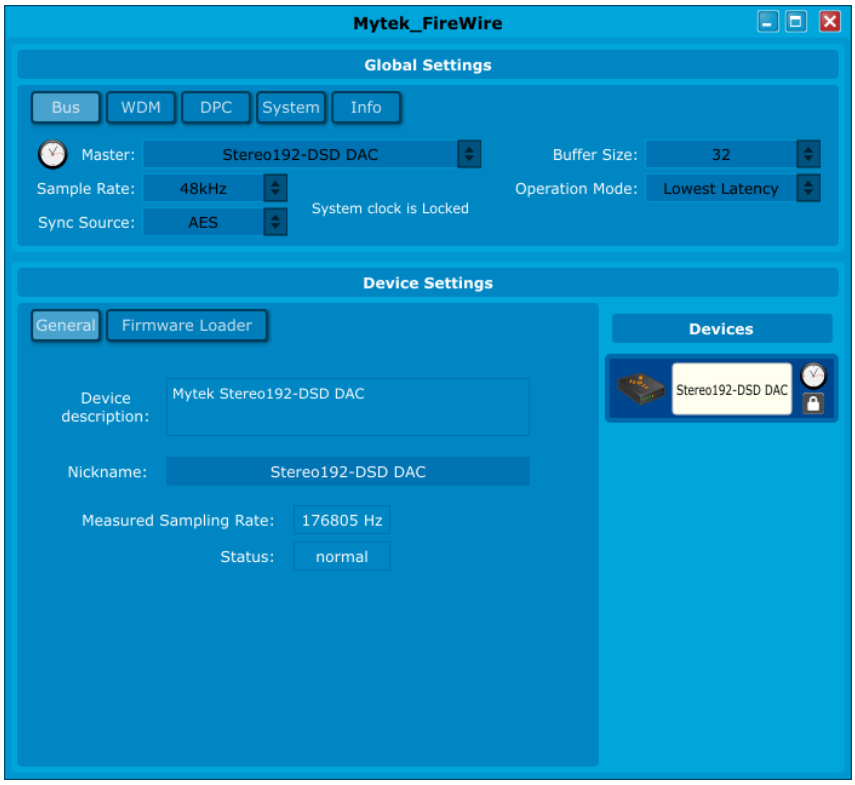
Latency Settings

If an adjustment is possible at all, don't forget to adjust the latency settings of your DAC/DDC driver to minimum latency. You may also set the streaming mode to "always on". We use and can highly recommend the SOtM dx-USB HD USB/AES converter with upgraded super clock and intelligent dual-battery power supply (SOtM mBPS-d2s). USB Streaming Mode set to minimum latency is crucial for having the most magical sound quality possible. It's better to have higher buffer values in JPLAY than raise the latency in the USB Driver Control Panel. Be aware that minimum latency causes a lot of stress on your hardware and might cause hiccups and dropouts. If your hardware is not up to the task, it will possibly sound better with a less aggressive latency setting. You will have to experiment to find the optimal setting for your setup.





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Converting Evaluation to Retail Edition

If you have installed the evaluation or trial edition of Windows Server 2012 R2, you can convert it to a retail edition before you activate it by using the key you receive when you purchase Windows Server 2012 R2. Use this command (in command prompt, not PowerShell) to convert the trial edition:

```
DISM /online /Set-Edition:ServerStandard /ProductKey:XXXXX-XXXXX-XXXXX-XXXXX-XXXXX /AcceptEula
```

NOTE: You need to replace XXXXX-XXXXX-XXXXX-XXXXX-XXXXX with a legit Windows Key!

More information: http://technet.microsoft.com/en-us/library/dn303416.aspx

OS Activation

If you have installed a retail version, you can enter the Key and activate your copy via sconfig. You can also activate the core edition with these commands:

1. Enter Product key: `slmgr.vbs –ipk XXXXX-XXXXX-XXXXX-XXXXX-XXXXX`
2. Activation: `slmgr.vbs –ato`

Remember, you need an active and working internet connection for the online activation. So you may have to reconfigure your network settings and connect your AudioPC to your internal LAN one last time.

ATTENTION: You can also activate your copy of Windows Server 2012/R2 via telephone. Enter "slui.exe 4" in the command prompt to start the telephone activation wizard. This works only in GUI mode.

If you are using the TRIAL/Evaluation edition and do not activate your copy online, your system will start to shut itself down when idle.

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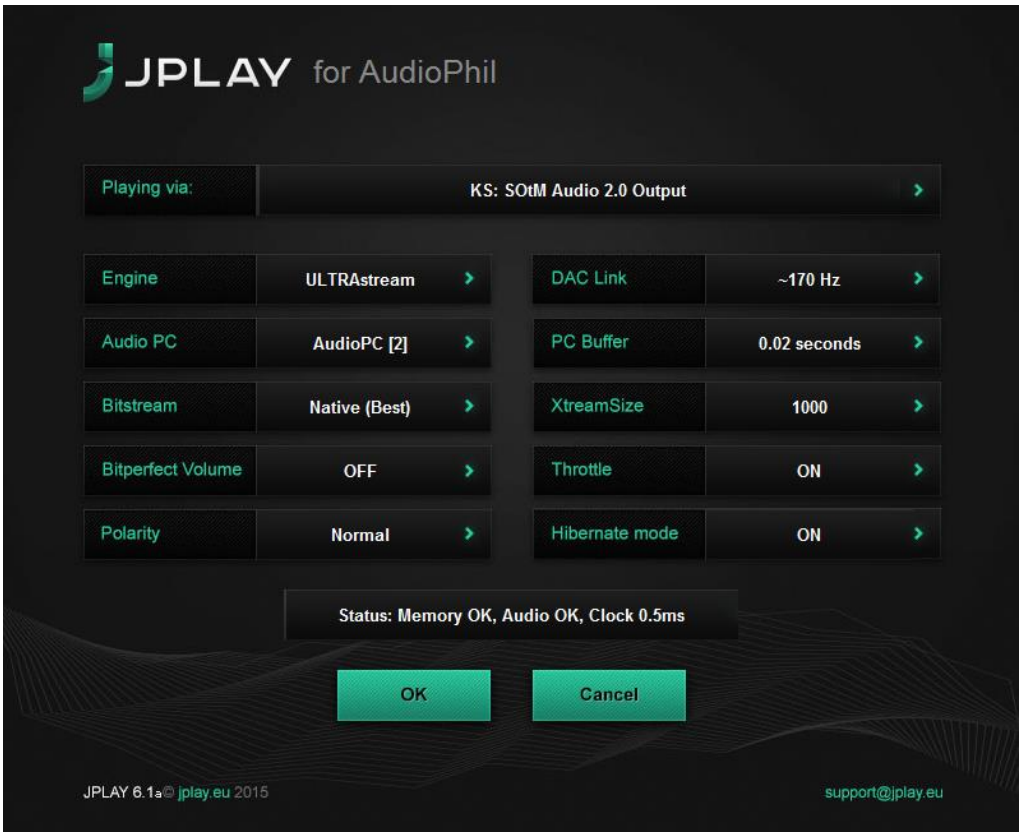
JPLAY (optional)

JPLAY Settings

This is an example how a JPLAY configuration might appear. You should start with the default settings and first learn more about what the JPLAY settings do. Then you can experiment with the JPLAY Settings and the registry settings for JPLAY. Once you installed AO, you can start JPLAY Settings by typing "js" in a command prompt, no matter what directory you currently are in.



If you encounter sonic problems, drop outs, distortion, or get no sound at all, please **increase JPLAY buffer sizes.**

JPLAY Registry

Don't forget to optimize your JPLAY settings in the registry of your ControlPC. The settings are located in the following registry key on the ControlPC: **[HKEY_CURRENT_USER\Software\JPLAY].** There is no need for adjustments on the AudioPC's registry; JPLAY will handle this for you. If you have everything working, it is a good idea to make a backup of the JPLAY registry of the ControlPC.

Name	Typ	Daten
(Standard)	REG_SZ	(Wert nicht festgelegt)
ASIOChannelOffset	REG_SZ	0
AudioPC	REG_SZ	name<AudioPhil> ip<192.168.10.1>
DriverBuffer	REG_SZ	0
Host	REG_SZ	192.168.10.1
MiniCache	REG_SZ	750
Port	REG_SZ	48168
UltraSize	REG_SZ	100
XtreamSize	REG_SZ	2000

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JPLAY StreamerMode

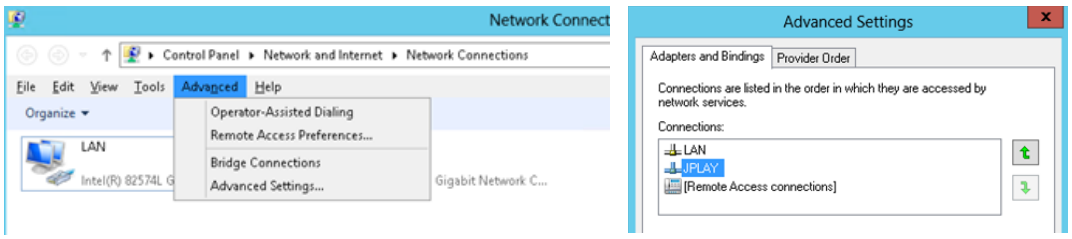
It's important that you get JPLAY Streamer Mode working, and verify that Kernel-Streaming, WASAPI and ASIO are all working (this functionality depends on what your hardware supports and what you want to use in the end), before you switch from GUI to core edition. Your Media Player, JPLAY, etc. has to work before you can continue.

Do not use dynamic (DHCP) IP addresses under any circumstances. You must use manually defined (fixed) IP addresses, especially in a DualPC configuration. How-To: http://www.sysads.co.uk/2013/01/assign-a-static-ip-address-to-windows-server-2012/

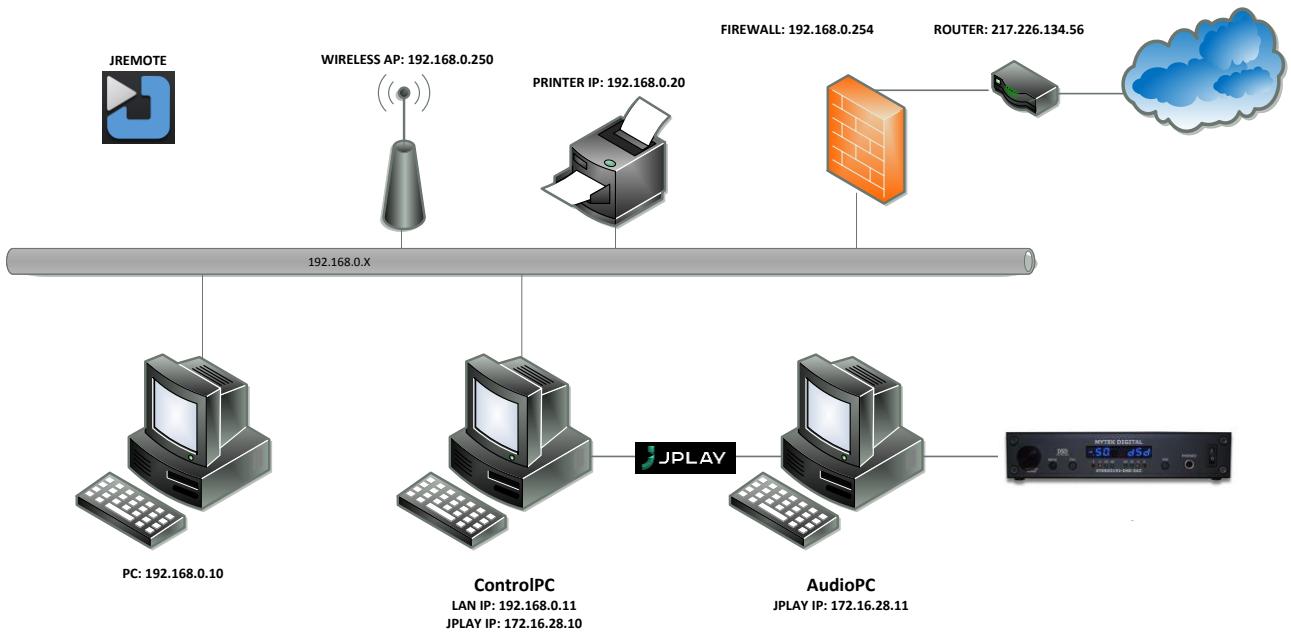
Please refer to the JPLAY manual for detailed instructions on how to install, configure and fine tune JPLAY in a DualPC configuration. http://jplay.eu/manual

Properly configured network cards are very important for JPLAY StreamerMode. Your ControlPC should have two network cards, one card for your internal LAN and another dedicated network card for JPLAY StreamerMode. Your AudioPC should have only one network card, and this should be connected directly to the second card of your ControlPC. This will make a remarkable step up in sound quality, so don't miss it.

Enter "ncpa.cpl" at the command prompt and click on advanced settings and check the order of your NIC's. The dedicated LAN Interface must be on top.



Example network topology



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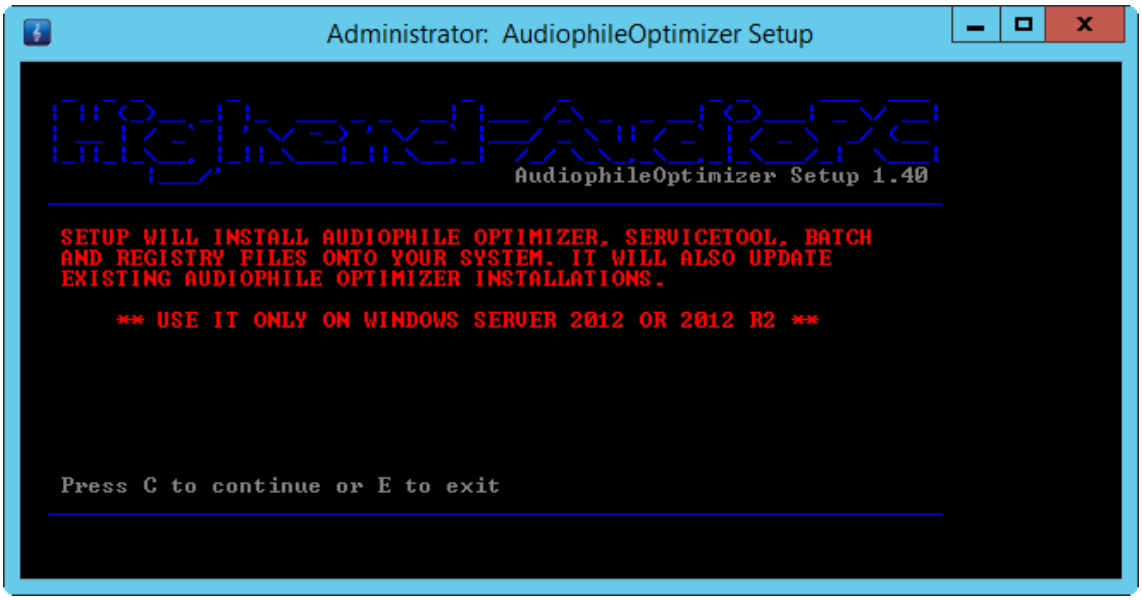
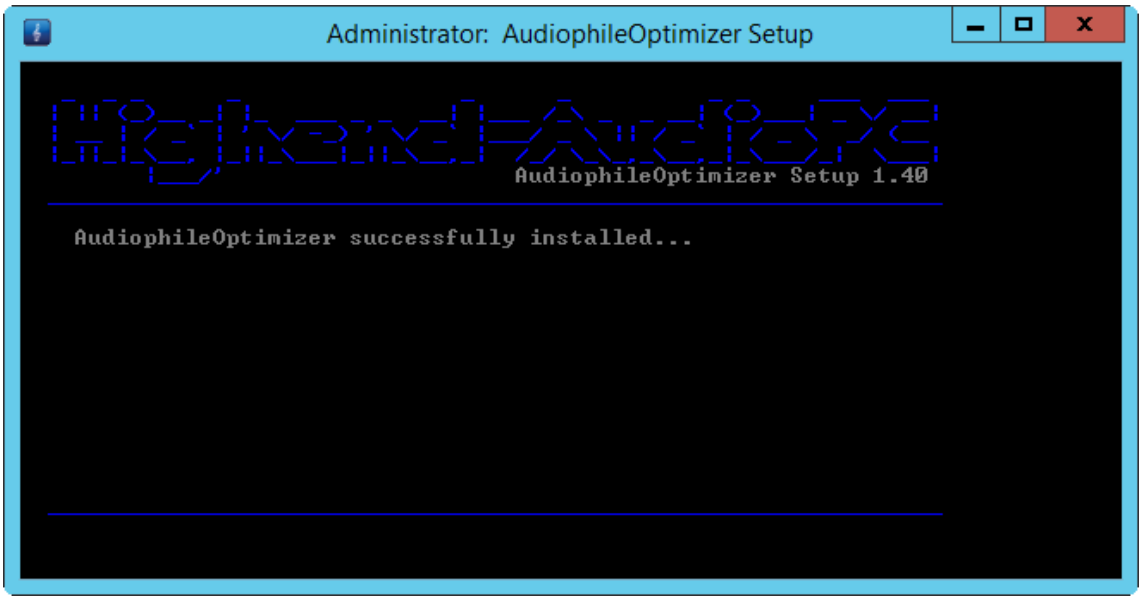
AudiophileOptimizer

Installation

We recommend you to copy setup.exe into the root directory of a USB Stick and then run it on your dedicated audio machine. Do not try to run setup on a Windows 7 or Windows 8.1 machine. Setup.exe will install the complete AudiophileOptimizer package into the folder "AO" on your system drive (most likely C:\), create shortcuts on the desktop and add the needed start menu entries for the AudiophileOptimizer and ServiceTool.





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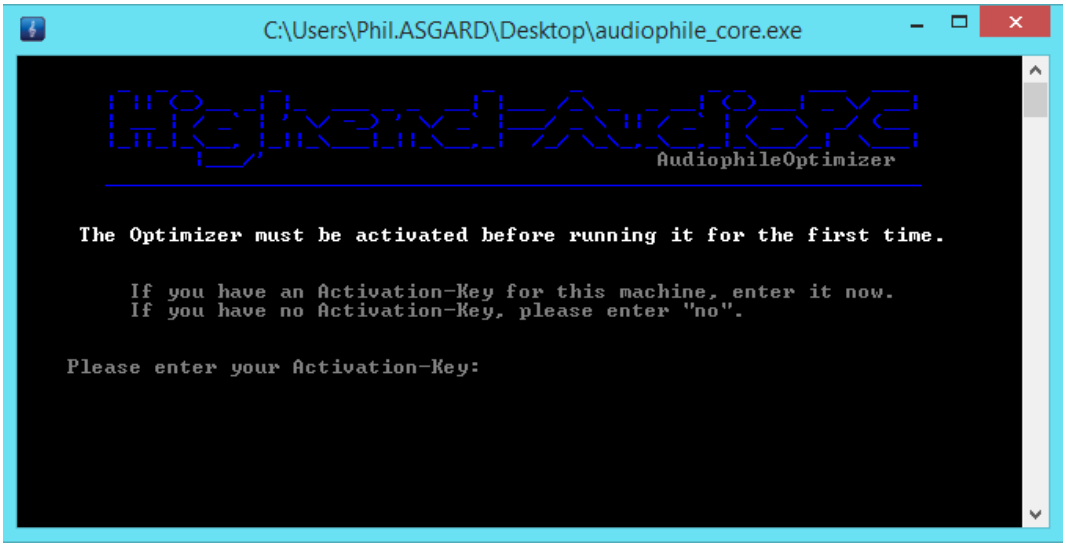
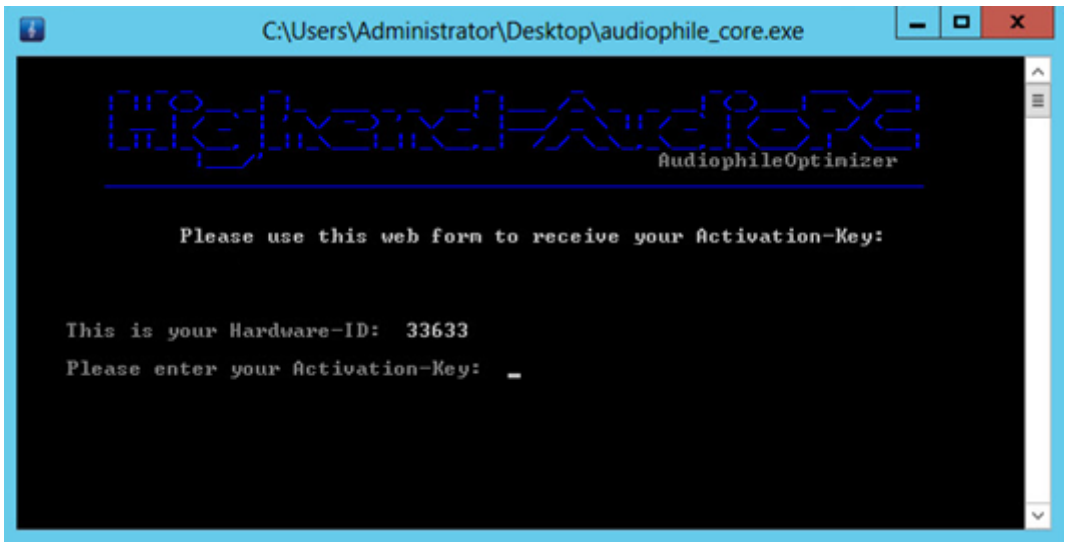
Activation

It is very important that you have all hardware (network cards, DAC, DDC, etc.) connected, turned on and all needed drivers properly installed prior to activation of AudiophileOptimizer. Avoid using dynamic (DHCP) IP-addresses or DHCP-reservations under any circumstances; you must use a static (fixed) IP addresses. Disable all unneeded network adapters in BIOS or through device manager but have at least one active LAN adapter.

You must not have any "unknown devices" with a yellow or red sign in your device manager before you activate the Audiophile Optimizer. If you have any "unknown devices" with a yellow or red sign, the mechanism generating the Hardware-ID will not work as expected, resulting in additional Activation-Keys needed. Devices with a yellow sign which you don't plan to use anyway can be safely disabled.

When you run the AudiophileOptimizer for the first time, you will be asked if you already have an Activation-Key for this machine. If you already activated this machine in the past, please enter the Activation-Key that was generated and emailed to you. If this is the first time you want to activate the AudiophileOptimizer on a new machine, enter "no".





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Activation Portal

If you have never activated a machine before, enter "no" and you will be displayed a Hardware-ID. Open the self-service portal and enter the email (PayPal) address you ordered the AudiophileOptimizer with and the Hardware-ID displayed.

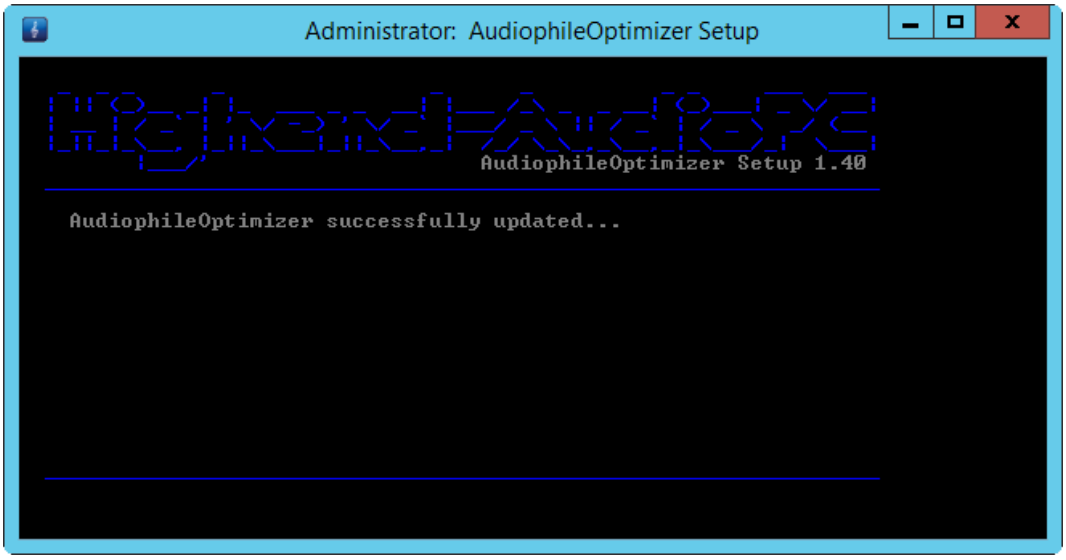
Important: you can use any other internet enabled computer to open the activation self-service portal! No need to do this on the actual music server! On this other computer, simply go to the self-service portal and generate your Activation key.

Once you have generated your Activation-Key, you will also get a confirmation email containing your Activation-Key and matching Hardware-ID. DO NOT DELETE THIS EMAIL because as long you use the same hardware, the same Activation-Key will work on the same machine.

Upgrading AudiophileOptimizer

If a new version of the AudiophileOptimizer is released, run the new version of setup.exe over your current setup. Setup.exe can be run in core-, minimal-server and GUI mode. You don't have to do a reset via ServiceTool before you run setup.exe. Once setup.exe updates your current version of AudiophileOptimizer, it will automatically launch the latest ServiceTool to make a full reset. This is important for the new AO version to work as expected.

AO 1.40 Upgrade Notice: If you upgrade AO 1.26 (or older) to AO 1.40, setup will launch ServiceTool 1.60 to make the full reset. Since all your old Activation-Key(s) will no longer work, ServiceTool will need a new Activation-Key before it can make the full reset. Do not close ServiceTool: go to the Activation-Portal and generate a new AO 1.30 (or later) compatible Activation-Key and activate ServiceTool with the Key; this will also activate AO. This is by design.



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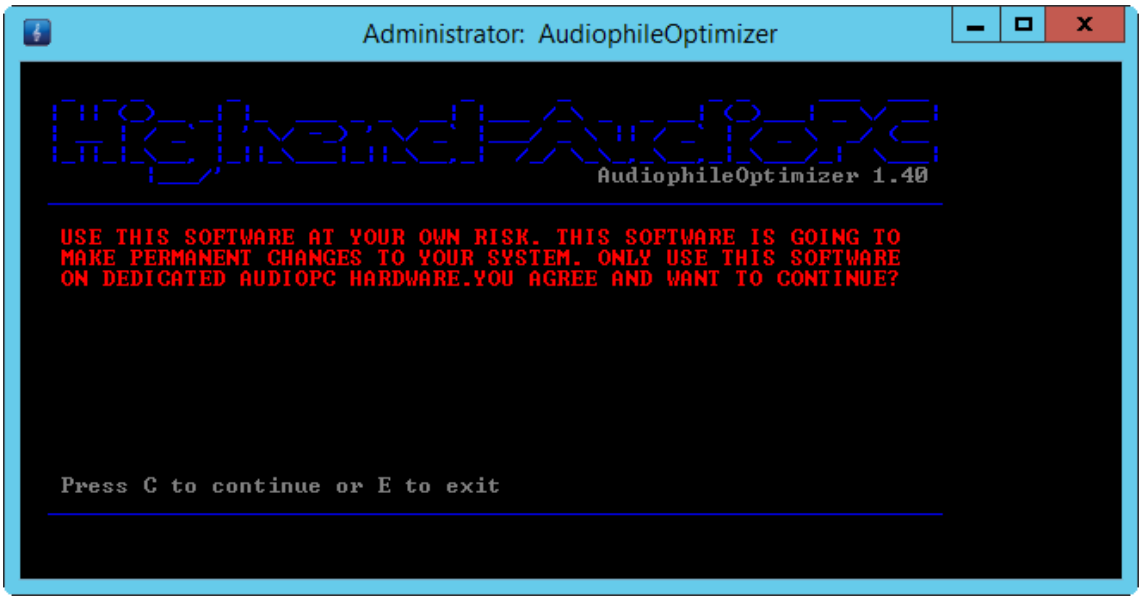
Using AudiophileOptimizer

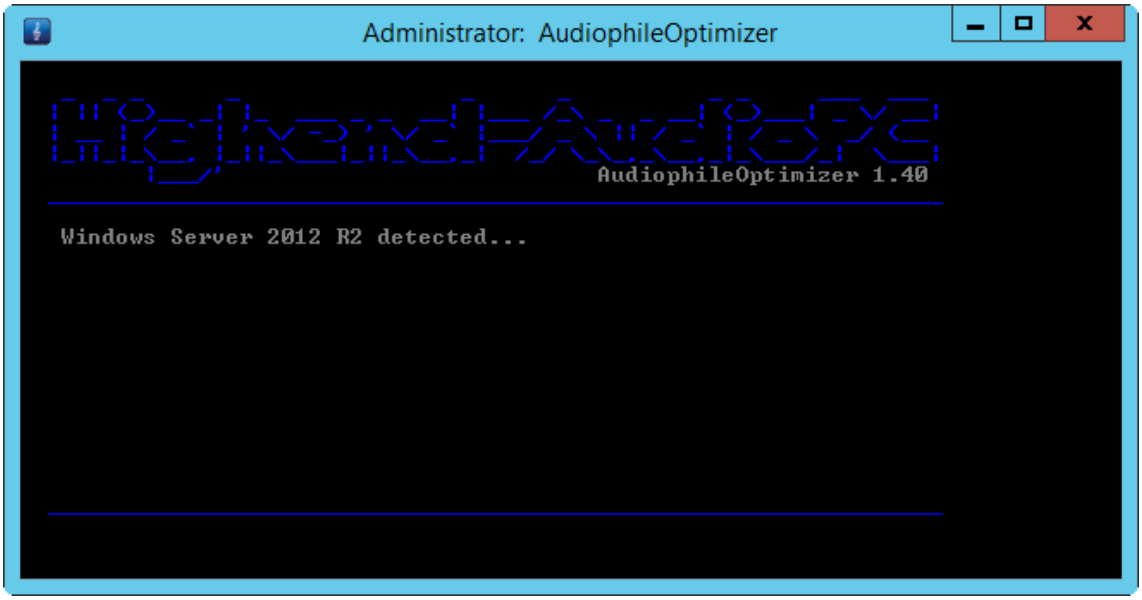
Read the warning and press "C" if you agree and want to continue.



While the AudiophileOptimizer prepares the system, it will also check the version of the operating system. It will only run on supported operating systems. If no supported OS is detected, the AudiophileOptimizer will exit without making any modifications to your System. Supported operating systems are:

- Windows Server 2012 Standard, Foundation & Datacenter Edition (EN, DE, FR)
- Windows Server 2012 R2 Standard, Essentials, Foundation & Datacenter Edition (EN, DE, FR)

Once a supported operating system is detected, the AudiophileOptimizer will start with the optimization. The AudiophileOptimizer will not start on any unsupported platform; it will only run on the OS's listed above.



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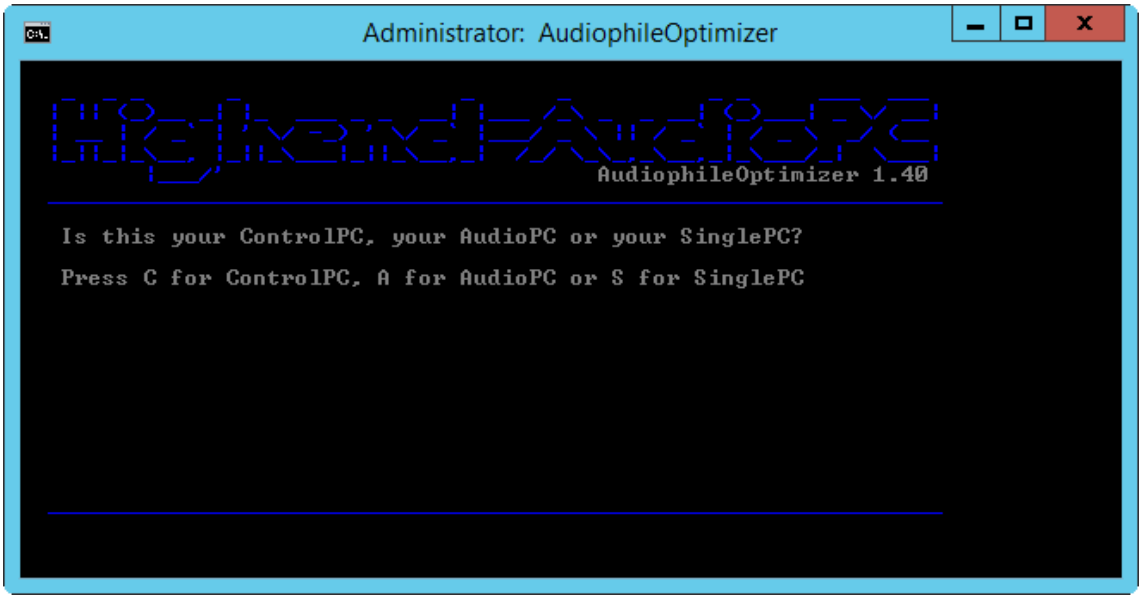
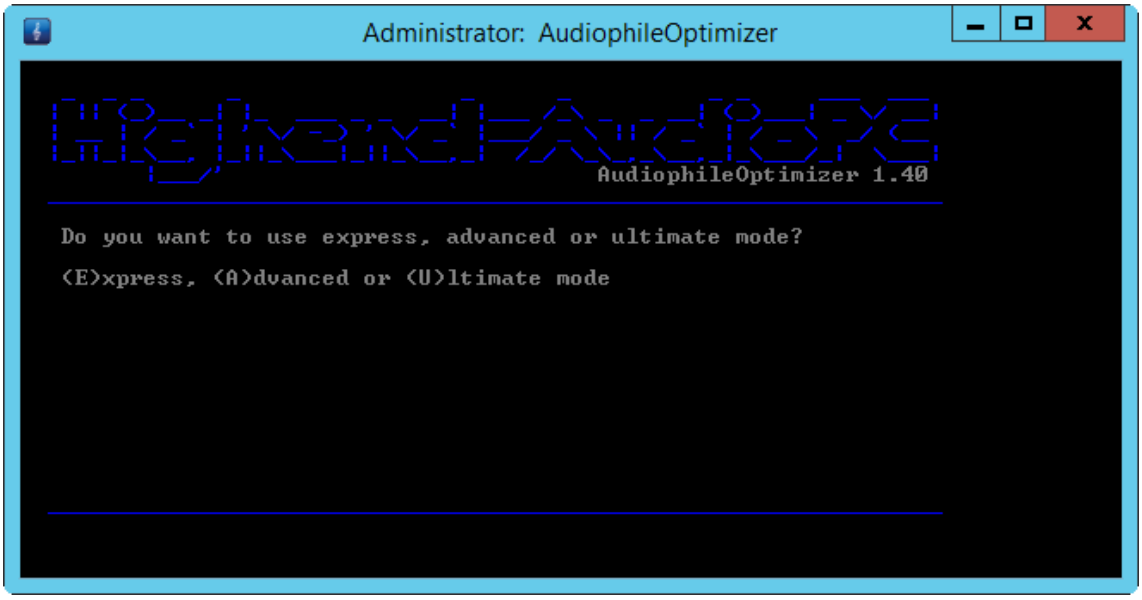
Usage type

First, you will have to define the usage type of the PC on which you are currently running the AudiophileOptimizer. AudiophileOptimizer has an integrated JPLAY-Detector which will check if the JPLAY service is running or not. If no JPLAY service is running, SinglePC mode will automatically be selected. If you use JPLAY, you can choose between ControlPC, AudioPC & SinglePC mode. The usage type can only be set once; if you want to change it again you have to do a reset using the ServiceTool. If you want to see the usage type menu and do not use JPLAY, start AO with the parameter -ut (type "ao -ut" and press enter).



Express, Advanced & Ultimate Mode



If you choose express mode, AudiophileOptimizer will run without asking you any questions. It will automatically choose the Sound-Signature and Digital-Filter setting that about 80% of all users like the most (based on the experiences of the development phase). Express mode will result in a mildly optimized but very compatible configuration, but certainly not the best sounding.

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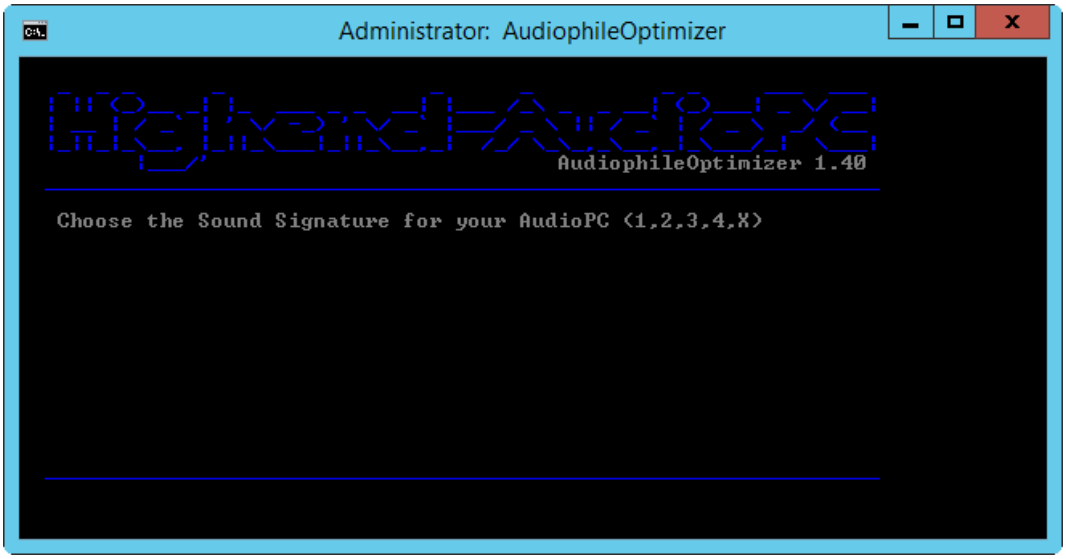
For more experienced users, advanced mode offers several options and configuration settings. It will let you take control over what AO does and doesn't; it will give you the ability to fine tune your system using Sound-Signatures and Digital-Filters. It will let you deactivate or disable more services/drivers, and enable a host of other configuration possibilities. Advanced mode is only recommended for advanced and experienced users.

Ultimate mode offers the full range of options and best performance AO can offer; it will give you maximum control over every aspect of AO and your sound quality. Ultimate mode is only for very experienced users; this includes deep knowledge about Windows systems in general, TCP/IP and network configuration as well as the AudiophileOptimizer itself.

If you want to hear the full potential of the AudiophileOptimizer, your system must be in core or minimal-server mode and you have to select ultimate mode in AO and take advantage of all options offered.

Sound Signatures

After you've selected the usage type of your machine, you can decide between four different Sound Signatures. Find out for yourself which Signature matches best with your hardware, your loudspeakers or headphones, and last but not least, your personal taste. If you are not sure which Sound Signature to start with, use Signature 1 (default). Option X represents the windows default setting.



If you run a DualPC setup in StreamerMode, the sound Signatures of the ControlPC and AudioPC can be mixed, so a total of 16 (25, including Windows default settings) different combinations are possible.

Digital-Filter Mode

After selection of the sound signature, you will be able to choose the Digital-Filter mode. If you are not sure which mode to use, start with mode B (default). Use the mode that sounds best to your ears. Option X represents the windows default setting.

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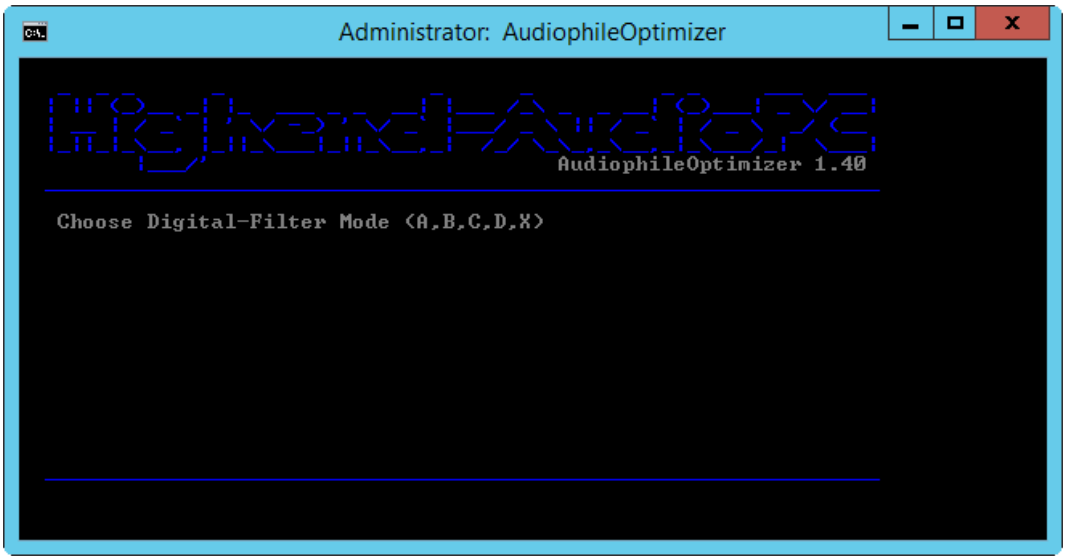
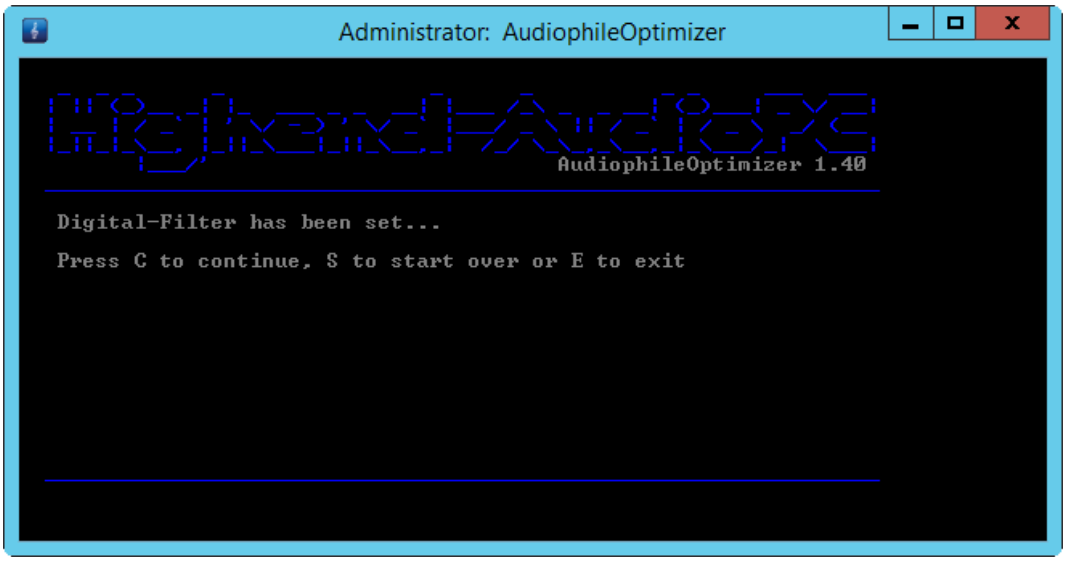


If you want to change the Sound Signature or Digital-Filter mode, just run the AudiophileOptimizer again. Starting with the second run of the AudiophileOptimizer, it is possible to choose a new Sound Signature or Digital-Filter mode and then exit (by pressing "E") the AudiophileOptimizer without having to set all other options again. The other option is "S" to start over; no reboot is required.



Best Practice

To most easily find your personal Sound Signature and Digital-Filter mode, it's best to change both during playback of a song. If you choose "S" to start over, you can change the Sound Signature and Digital-Filter mode again and again until you find your perfect setup. Once you have found it, you can choose "E" to exit. Press Ctrl-Alt-Del during music playback to start the Task Manager. You can then start the AudiophileOptimizer to adjust your Sound Signature and Digital-Filters.

INFO: All Sound Signatures and Digital-Filter modes are bit perfect and do not alter the source in any way. They only change the way the operating systems handles the running tasks and their priorities as they relate to the operational state of the CPU. Always use the latest available version of the ServiceTool & AudiophileOptimizer.

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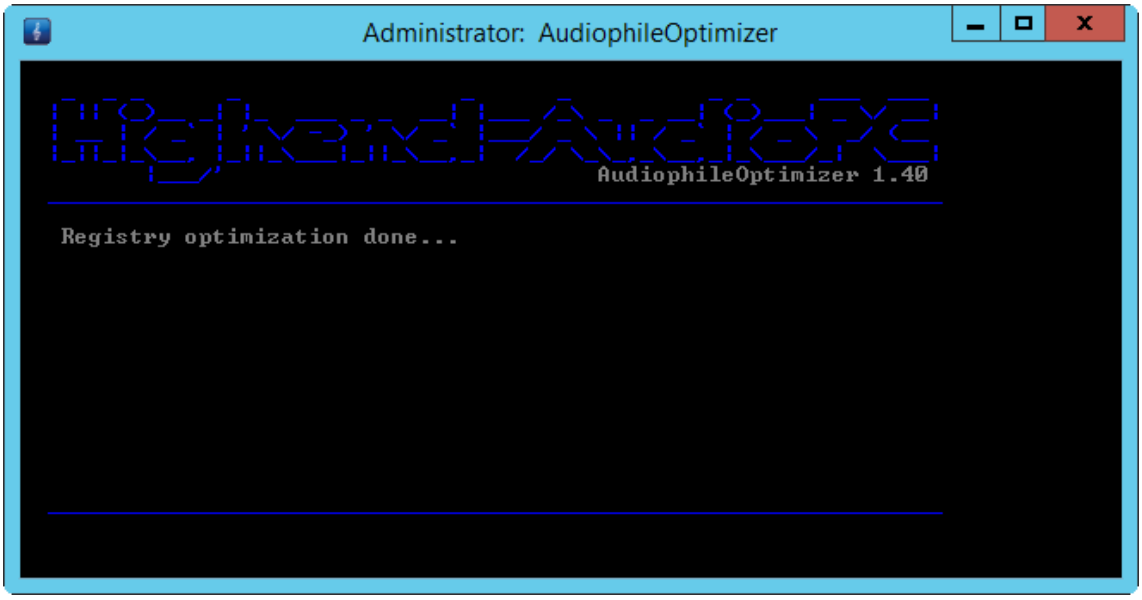
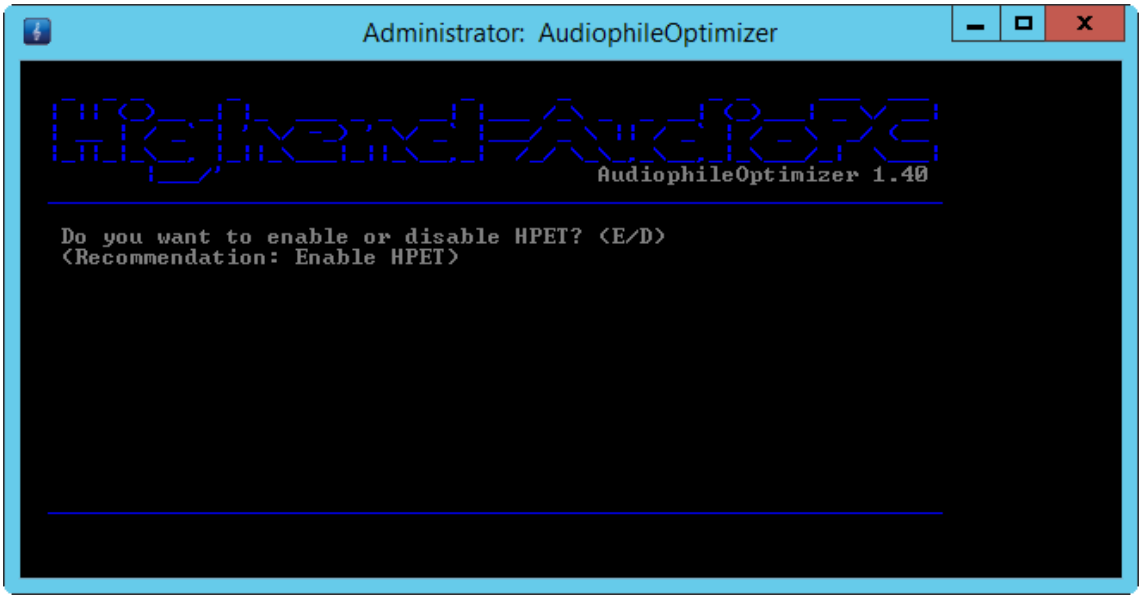
Registry Optimization

Once the Sound Signature and Digital-Filter mode are set, the AudiophileOptimizer will make all the changes to the registry needed to optimize the system for the best audio quality possible. It will take care of your hard drive settings, optimize the file system, memory management, CPU management, power settings, TCP/IP tuning, IRQ prioritization, turn off many unnecessary or counterproductive windows features, disable all visual effects, adjust system settings for best performance, customize the GUI, taskbar and icons, and much more. Hundreds of changes occur during this process.



Enable or disable HPET

Try both options; use whatever sounds better on your system. Default recommendation is to enable it.



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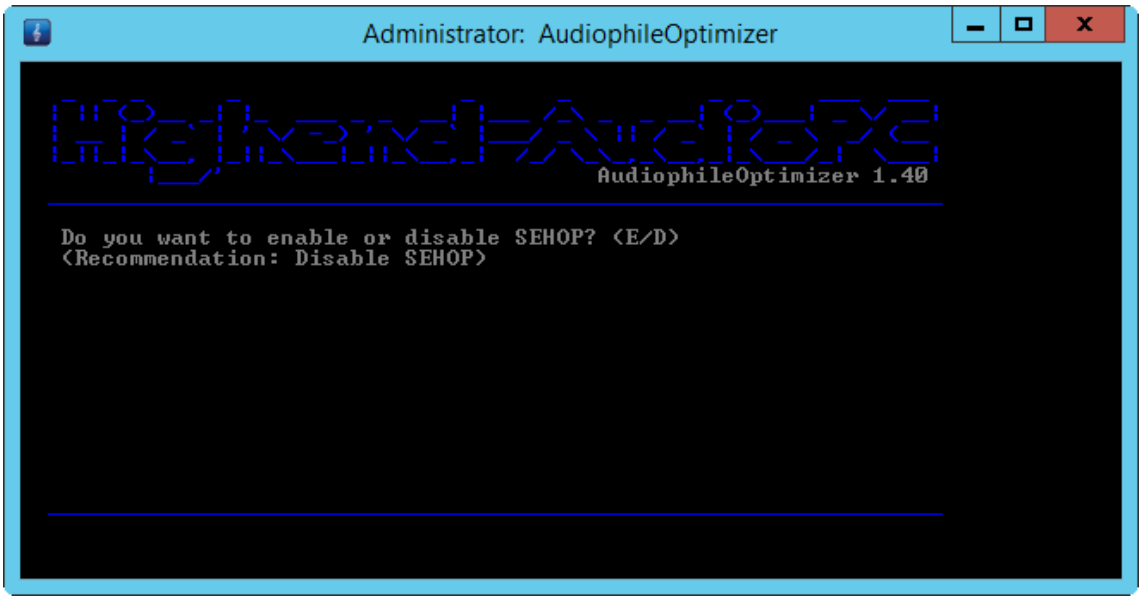
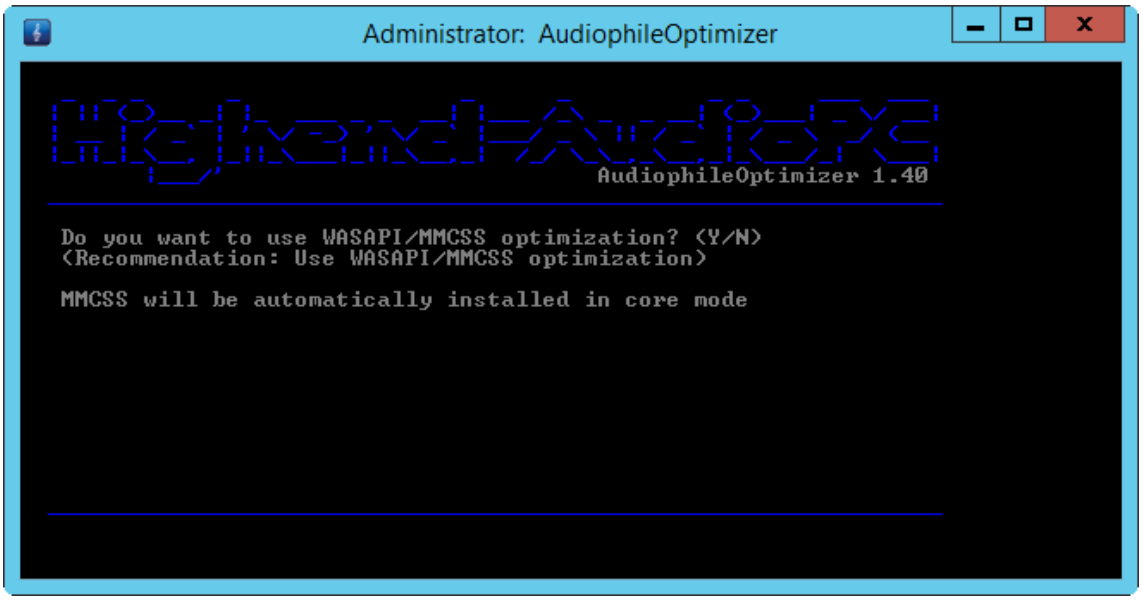
Enable or disable SEHOP

Try both options; use whatever sounds better on your system. Default recommendation is to disable it.



WASAPI/MMCSS Optimization

It's highly recommended you enable WASAPI/MMCSS Optimization no matter what mode you are in. If you are in core mode, this feature will even re-enable MMCSS in core mode.



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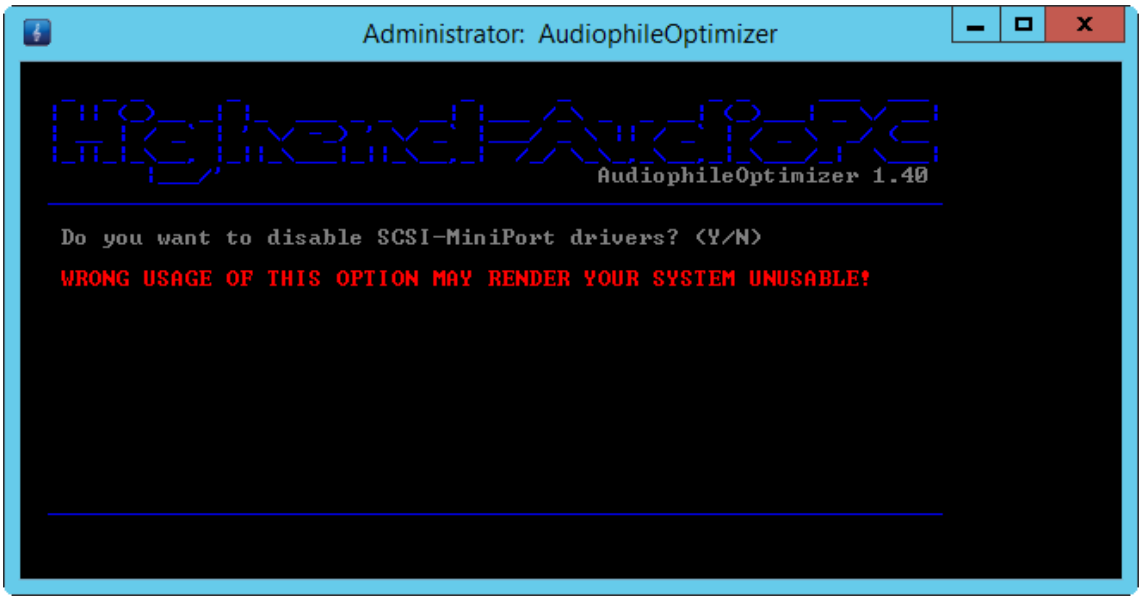
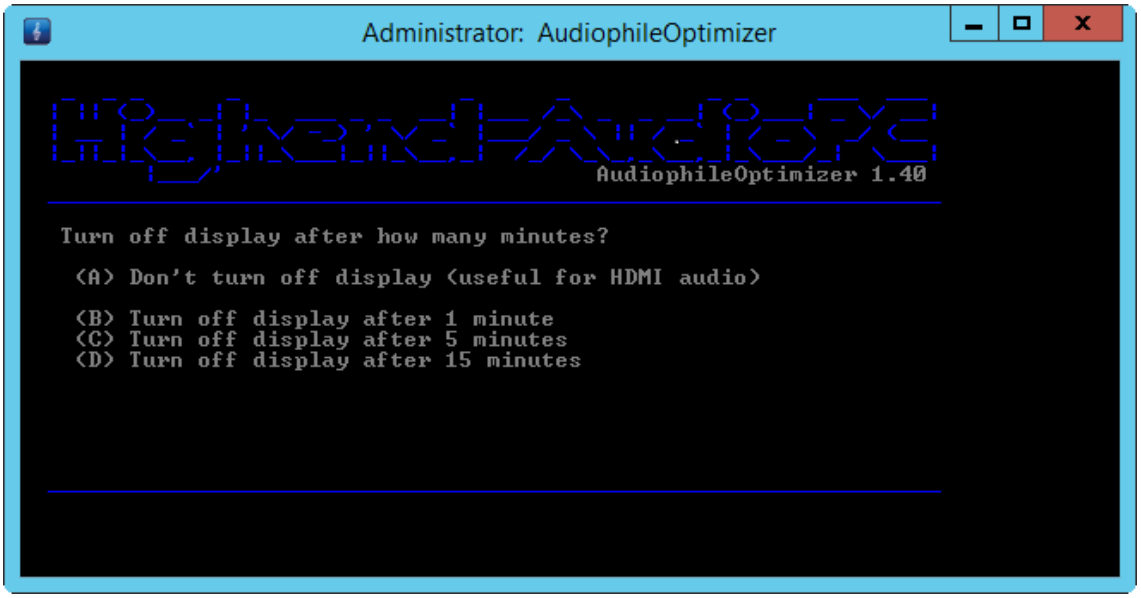
SCSI-MiniPort Drivers

Be very careful if you want to use this option. Only use it if you have IDE or SATA drives. Do not use this option under any circumstances if you have SAS, SCSI or RAID drives. If you still do so your system might not be able to boot again!



Display Stand-By Behavior

You can select from A to D to choose after how many minutes your display will go into stand-by mode. Do not use this feature if your DAC or DDC is connected via HDMI!



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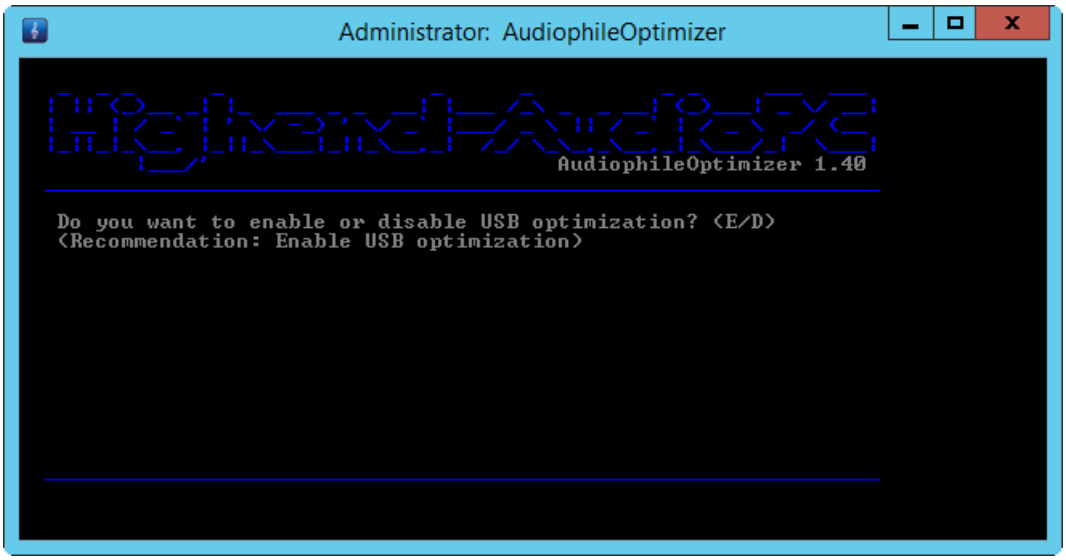
USB Optimization

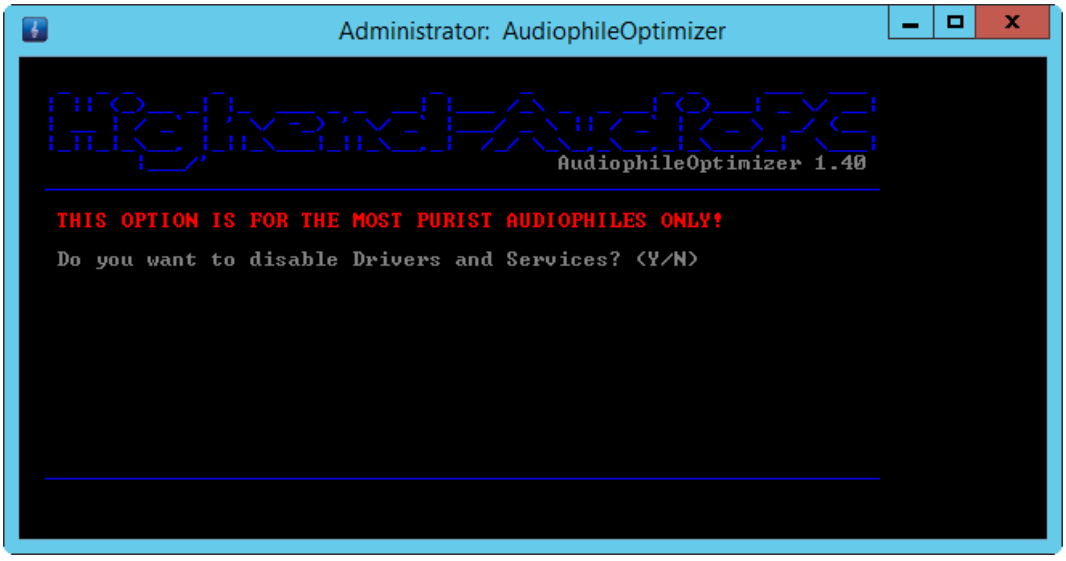
Press "E" to enable USB optimization or "D" to disable it. Press "D" as well if you don't want to use USB optimization at all. It is highly recommended that you enable USB optimization (also on the ControlPC if you run a Dual-PC setup) but, as always, use whatever sounds best in your system.



If you select to use USB Optimization, USB 3 Link Power Management will be made visible in power management (windows default is to hide this option) and disabled automatically as well.

Disabling Drivers & Services

You will be able to disable many unnecessary Windows services and drivers, all of which are unneeded in common computer audio scenarios. Disabling "Drivers & Services" will have a nice effect on the overall sound quality of your system.



ATTENTION:

If you get in trouble and software you need working does not work anymore, please run ServiceTool and choose "A" for a full reset, then run AudiophileOptimizer again without disabling "Drivers and Services".

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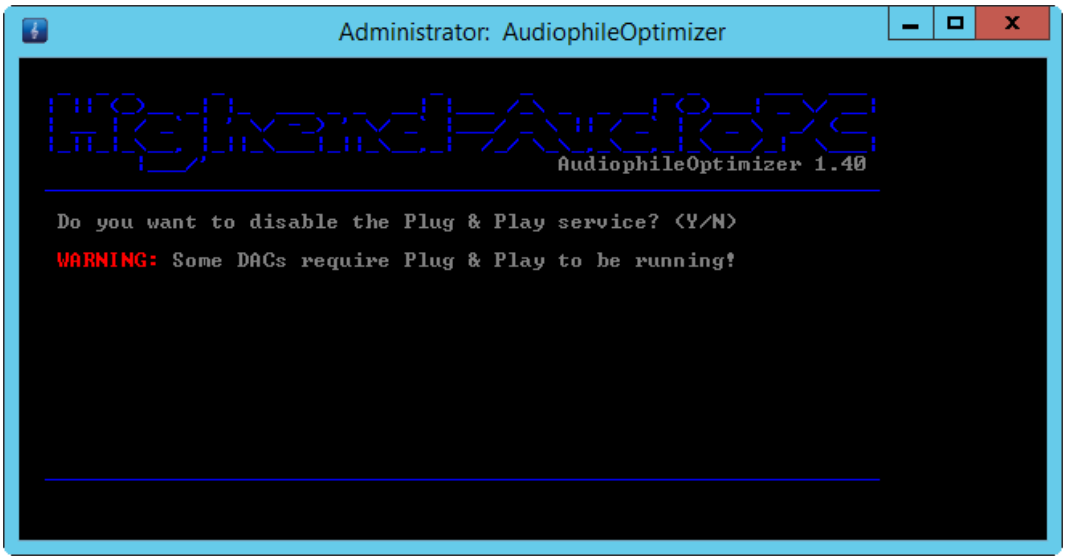
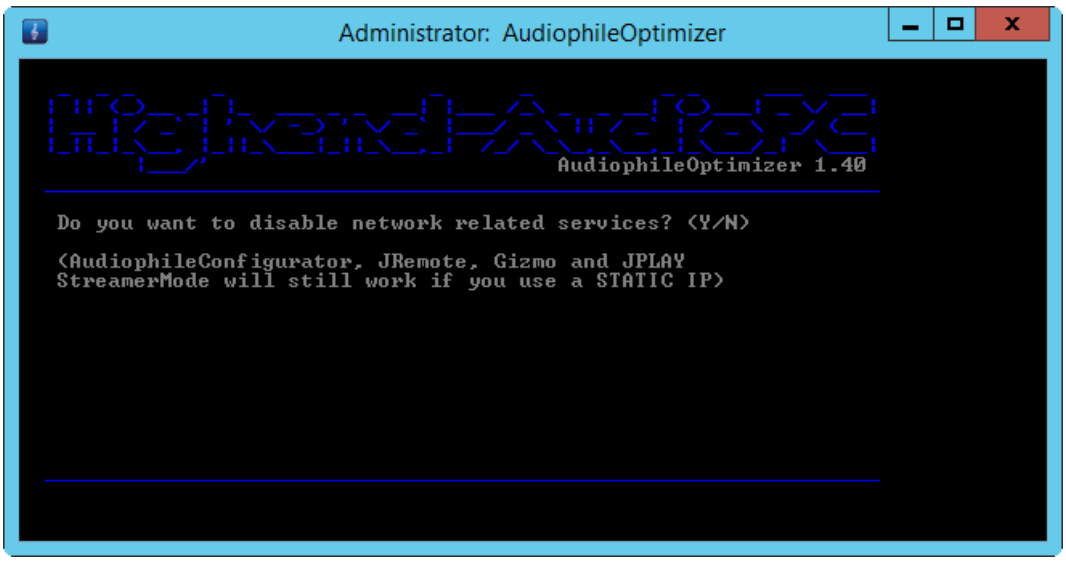
Plug & Play Service

Some DAC's need the Plug & Play service (or even the event log service) running. If you disabled the Plug & Play service, you may not change the USB ports of your devices (DAC etc.) anymore. If you want to enable the Plug & Play service again, enter "`sc config plugplay start= auto`" in a command prompt window and reboot your machine.



Network related Services

This is one of the most important settings to decide about. Especially on the AudioPC it is very important to disable all network related services; this will result in a very nice step-up in overall sound quality. If you decide to disable network related services, Remote Desktop and Windows Remote Management will be automatically disabled as well. Depending on your scenario (ControlPC for example), disabling all network related services also means dealing with some drawbacks. Depending on your needs, it might be best not to disable network related services on the ControlPC. If you use network drives or a NAS, you won't be able to connect to them anymore.



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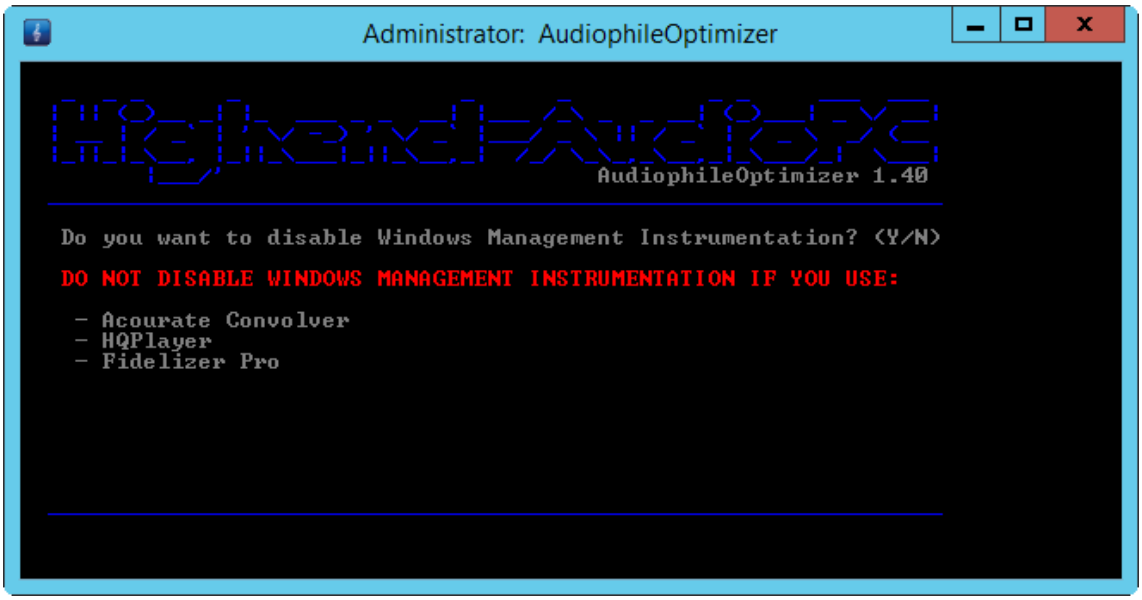
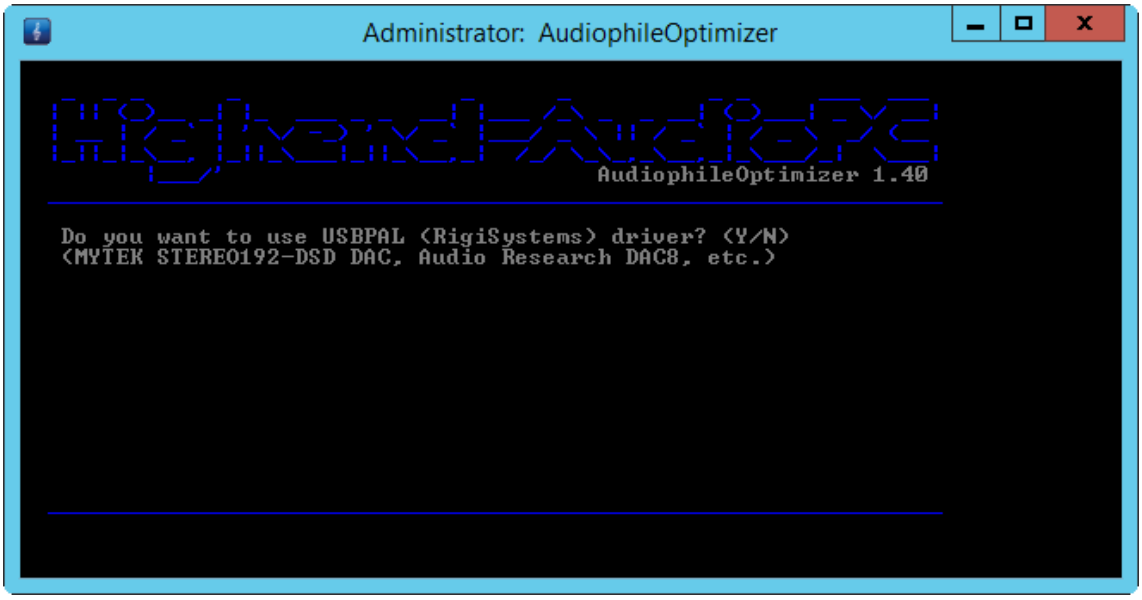
Windows Management Instrumentation

Certain applications (Acourate Convolver, HQPlayer or Fidelizer Pro for example) need the WMI service to be running. If you plan to use such software, answer this question with "no". Default recommendation is to say "yes".



USBPAL Drivers (RigiSystems)

DAC's or DDC's that use USBPAL drivers by RigiSystems (like the Mytek STEREO192-DSD DAC or the Audio Research DAC8) need certain windows services running to work properly. By choosing this option, the AudiophileOptimizer won't disable the services needed by those devices.



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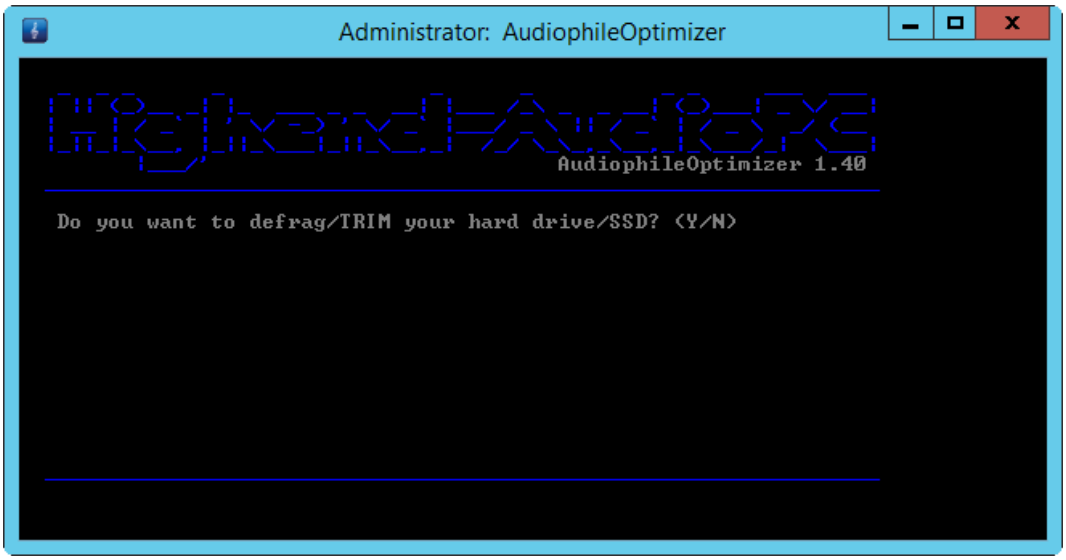
Defragmentation

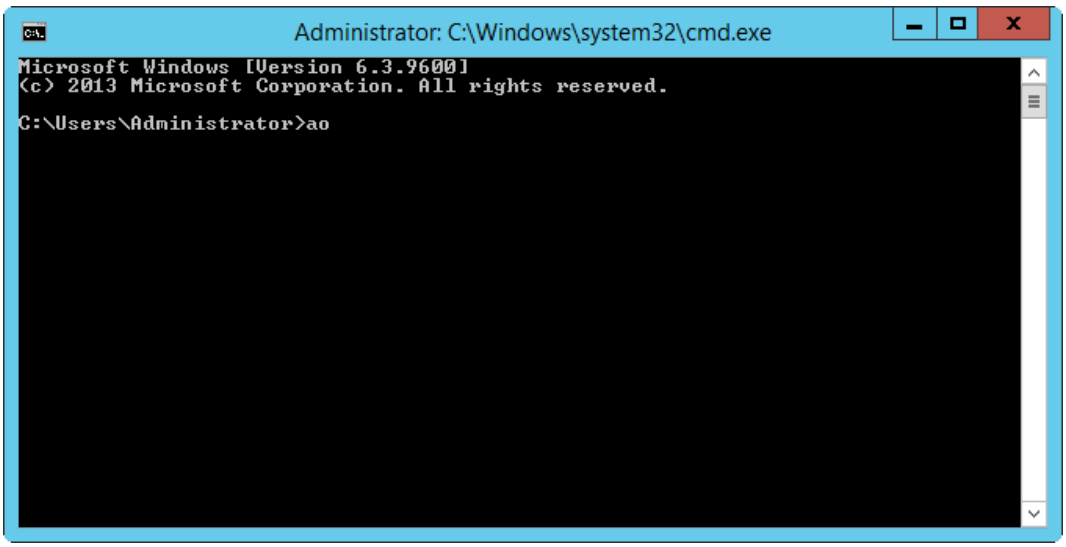
Just before the optimization is finally done, you will be asked to defrag your hard drive or TRIM your SSD. The Microsoft defrag utility will automatically know if it is a hard drive or SSD and will give it the right treatment. You should do this at least once every few months.



Short Names and Parameters

Instead of manually changing directories in a command prompt and starting AudiophileOptimizer by typing "audiophile_core.exe", you can take advantage of short names. This means you can start AO by just typing "ao" (instead of "audiophile_core.exe") and pressing enter. This also works for ServiceTool: just type "st" and hit enter.

Thanks to the path variables (which setup.exe created for you), you don't need to change the directory anymore. The short names will work in any directory or path, no matter where you are. This example shows how to start AO in a command prompt.



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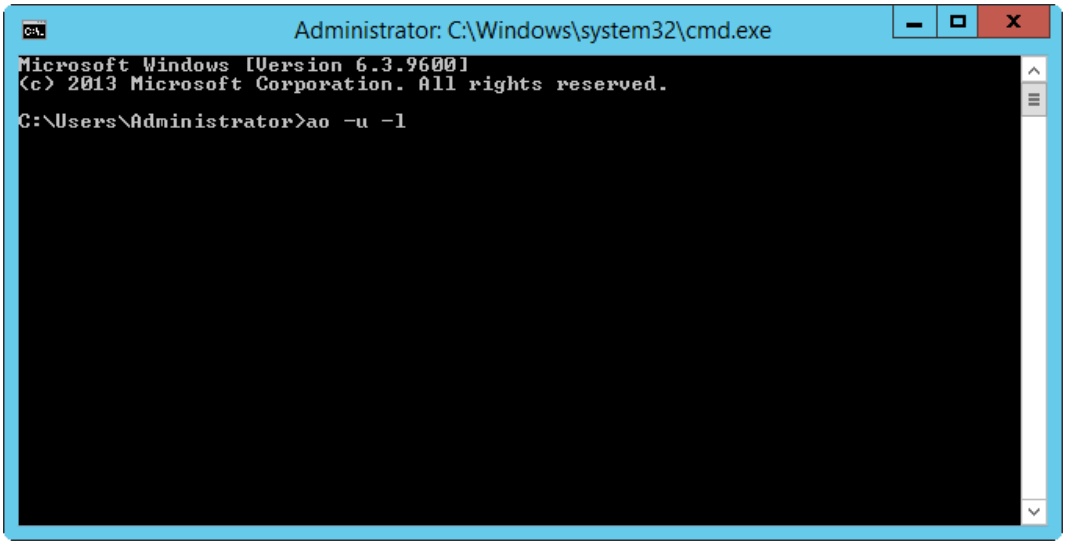
AO and ServiceTool now offer several parameters. These parameters can also be combined if needed.

AO -U	Start AO in ultimate mode
AO -E	Start AO in express mode
AO -L	Creates AO settings log file
AO -UT	Possibility to select usage type if JPLAY is not installed (Usefull for HQPlayer NAA Setups)
ST –R	Directly do a full reset via ServiceTool

This example shows how to start AO in ultimate mode and generate a settings log file:



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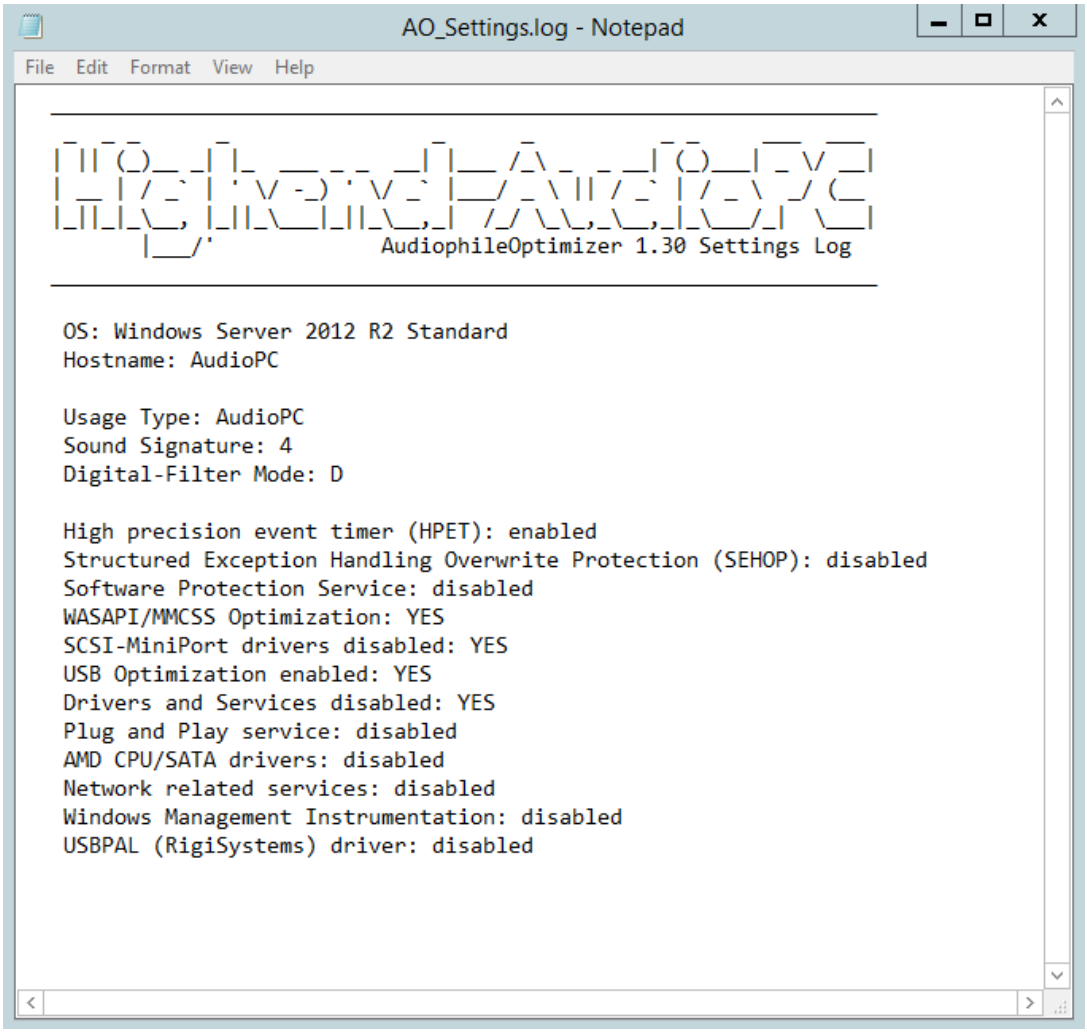
AO Settings Log File

AudiophileOptimizer can generate a settings log file for you. This will get handy if you ever want to achieve the exact same settings in the future. To get a proper log file, do a full reset using ServiceTool, then run AudiophileOptimizer using the argument "-L". Once AO completes the run, it will write the log file to C:\AO\AO_Settings.log. After the reboot, go into C:\AO and open your Log file and print it if you like. You can also save the log file in any other location, but don't leave it in the AO directory (C:\AO\).



Core Mode Features of AO

- Enables TIDAL in core mode
- Enables Bug head Emperor/Infinity Blade in core mode
- Enables MMCSS (Multimedia Class Scheduler) in core mode
- Enables Kernel-Streaming (x86 & x64) in core mode
- Enables Kernel-Streaming support for JRiver Media Center in core mode
- Enables Kernel-Streaming support for JPLAYmini in core mode
- Enables Kernel-Streaming support for JPLAY in core mode
- Enables Foobar2000 in core mode
- Enables JRiver Media Center 20.0.16 and higher in core mode

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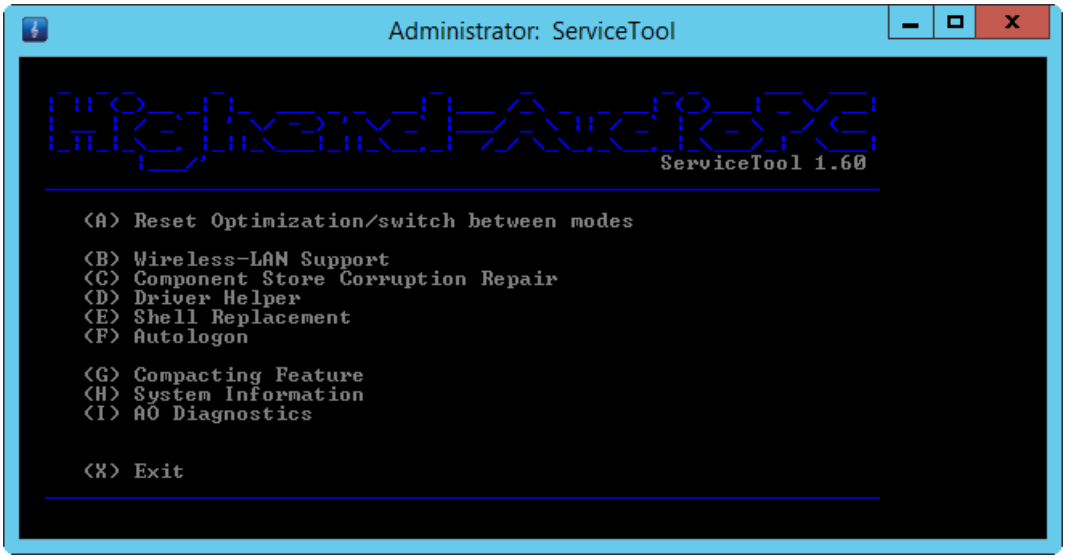
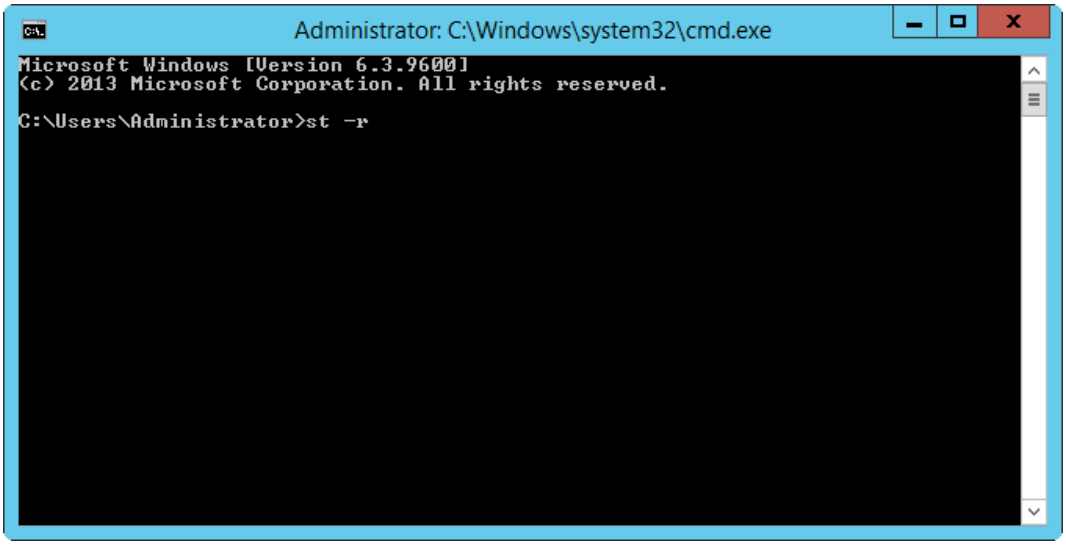
ServiceTool

This is an overview of all functions ServiceTool can offer. ServiceTool will help you greatly to accomplish a lot of maintenance and configuration tasks.



Reset Optimization

The main purpose of the ServiceTool is to reset the changes made to services and drivers by the AudiophileOptimizer. Selecting (A) will partially undo the optimizations and restore the original state of all drivers and services. For example, it will enable you to maintain your system and install Windows updates. Using the reset does not uninstall or disable AO. After a reset via ServiceTool, your system is still partially optimized via AO (about 95%). **After doing a reset via ServiceTool, don't forget to start AO again and do a full run to get fully optimized again.**



If you want ServiceTool to directly do a full reset, start it using parameter -r (type "st -r" and press enter).

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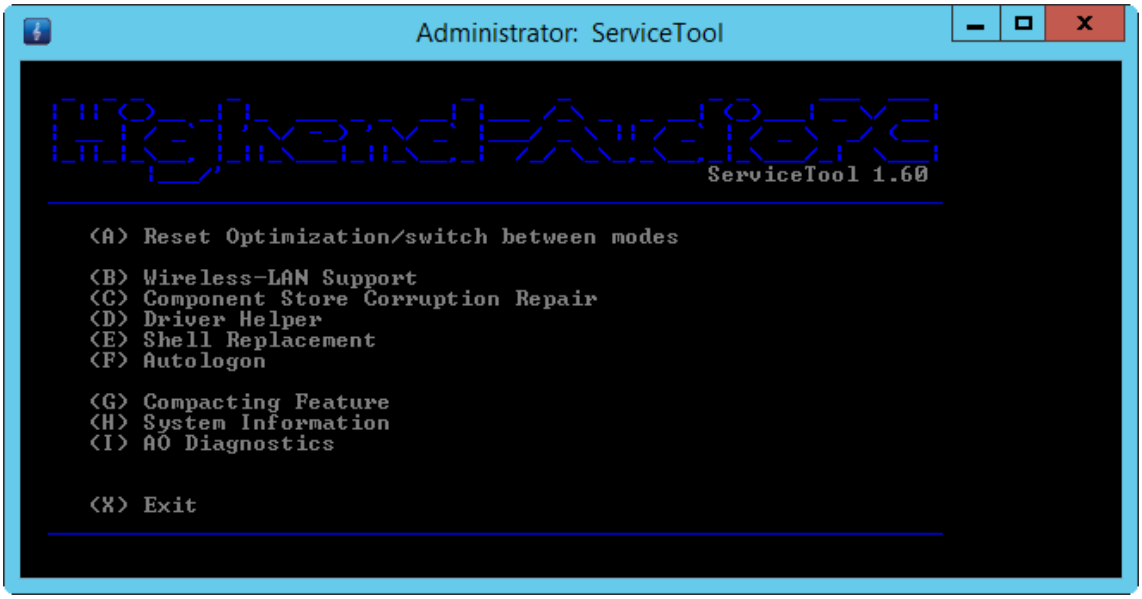
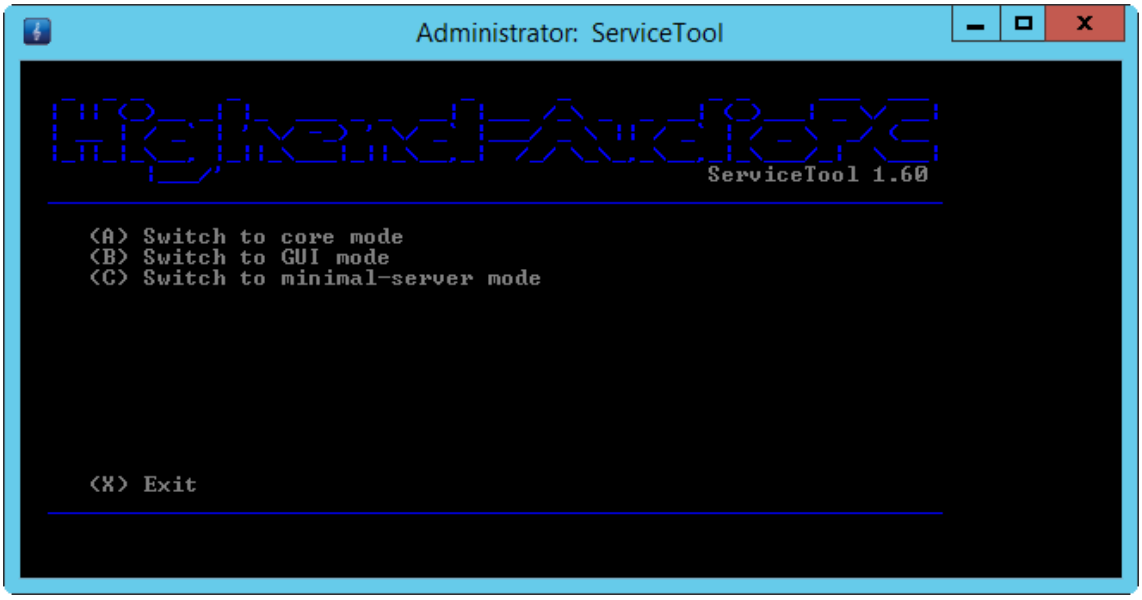
Converting GUI to Core Edition

If you want to run your system in GUI mode, then directly proceed with the next step. If you want to remove the desktop environment (GUI) to get the maximum sound quality possible, please start the ServiceTool and select A for "Reset Optimizer/switch between modes".



Then select A "Switch to core mode" to switch to core or C to switch to minimal-server mode.



ATTENTION: IF YOU HAD YOUR SYSTEM ALREADY OPTIMIZED WITH THE AUDIOPHILEOPTIMIZER AND WANT TO SWITCH BETWEEN MODES (CORE, MINIMAL, GUI), YOU HAVE TO RUN THE SERVICETOOL TWICE. If you choose "Reset Optimizer/switch between modes", the first run will reset drivers & services state, revert certain changes made by the AudiophileOptimizer and then reboot your machine. The second run of the ServiceTool will then offer you to switch between modes (core/GUI/minimal-server).

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Depending on your CPU and hard drive, removing the GUI will take a couple of minutes or more. After the reboot, you will see the command prompt of the Windows Server core edition. You may also replace the shell with another MediaPlayer like Bug head Emperor, HQPlayer, Foobar2000, Roon or Total Commander. You can use the shell replacement function of the ServiceTool to do so (please see detailed information in chapter "Shell Replacement

IMPORTANT: Right after the conversion to core mode, Kernel-Streaming will no longer work. This is by design of the operation system, but the AudiophileOptimizer will take care of this if you run it again and select to install Kernel-Streaming and MediaPlayer support. **Don't forget to run the AudiophileOptimizer again after every switch between any mode.**

Minimal-Server Mode

The "minimal-server mode" is a special variant of the core mode. You will end up in core-mode, but still have access to the device manager, have WASAPI and WLAN support, and have most of the control panels available like in GUI mode. Please use the ServiceTool to switch to minimal-server mode.

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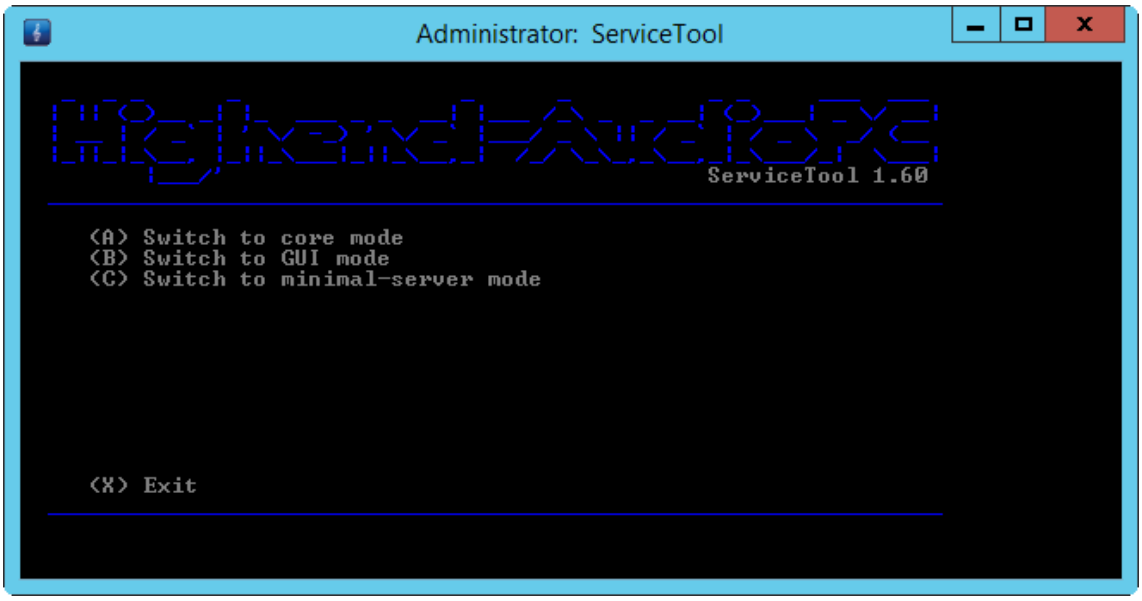
Converting Core to GUI Edition

Windows Server 2012 R2 will allow switching back to GUI in case some major maintenance tasks need to be undertaken. **If you need to switch back to GUI mode and had your system already optimized, you need to run the ServiceTool twice.** Chose A and then choose A again after the reboot. Then you will have the possibility to switch between modes:



If you are uncomfortable with the minimalism of core or minimal-server, leave your system in GUI mode.

ATTENTION: Don't forget to run AudiophileOptimizer again after you switched between modes!

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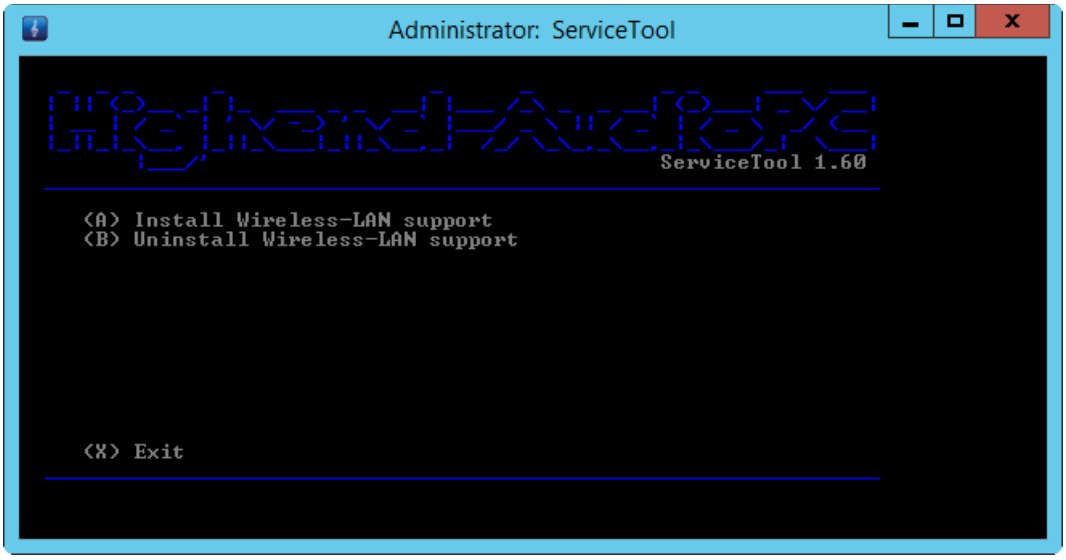
Wireless LAN-Support

Windows Server 2012 R2 doesn't have Wireless-LAN support installed by default. So even if you can successfully install your WLAN driver, it won't work until you have additionally installed Windows Server Wireless-LAN support.



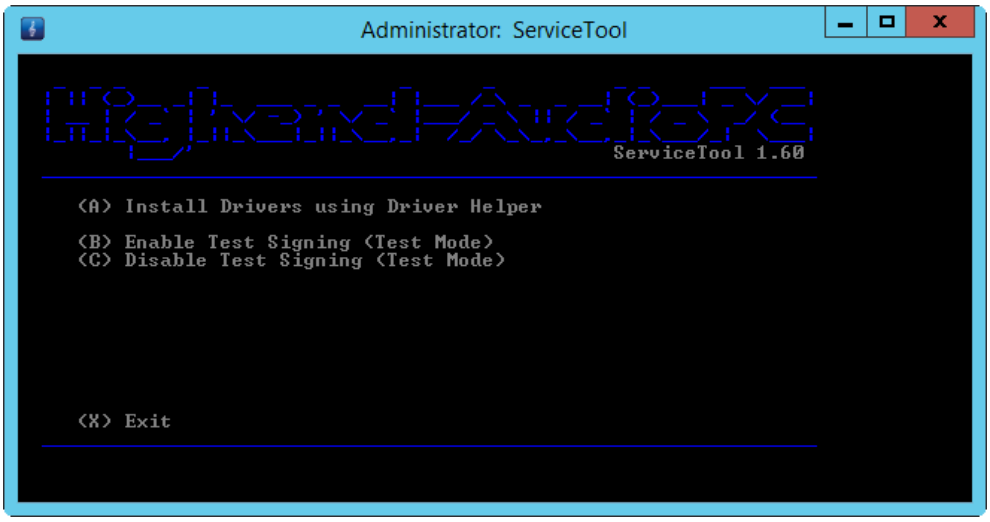
Component Store Corruption Repair

Should you encounter any problems during switching between modes, your component store is probably corrupted. You can try running the component store corruption repair function to repair it. Should any defects be detected, they can only be repaired if you have an active and working internet connection.

INFO: http://blogs.technet.com/b/joscon/archive/2012/09/26/fixing-component-store-corruption-in-windows-8-and-windows-server-2012.aspx

Driver Helper

Instead of using install.cmd to install a driver, you can now use the Driver Helper from ServiceTool. If you can't install a driver because of compatibility issues, Driver Helper will get it done. Once you start Driver Helper, browse and select the EXE file of your driver (setup.exe or install.exe). Driver Helper will automatically set compatibility-mode and a few other settings that will help to install your driver. Driver Helper will not run with INF or any other files than EXE. Should you have manually edited your driver's INF files, you can use the Driver Helper to enable or disable driver test-signing but not to install the INF files itself.



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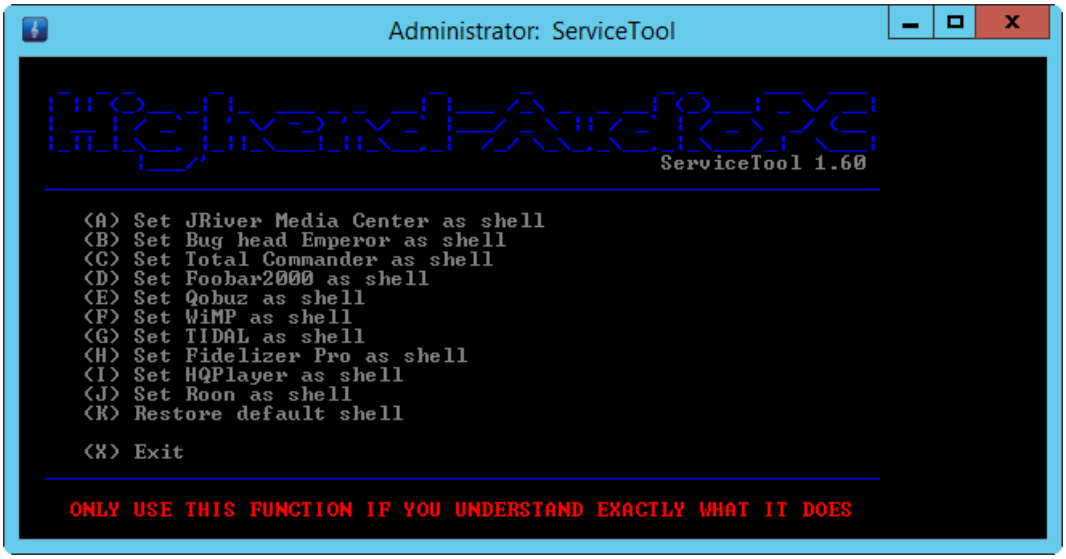
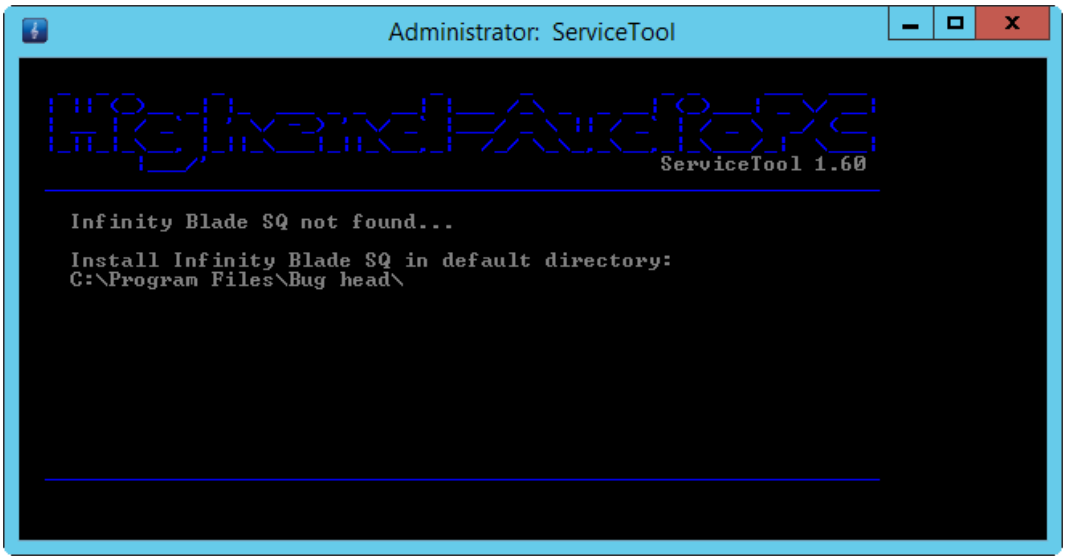
Shell Replacement

In GUI mode your desktop environment is your so called "shell". In core- or minimal-server mode your shell is a simple command prompt. Instead of starting the desktop or command prompt as shell, you can replace the shell with your favorite media player. This has an auto start character and is better for sound quality. You can enable and configure such a shell replacement via ServiceTool. The ServiceTool has a built-in check routine to make sure you cannot configure a shell replacement that won't work. However you should only use this feature if you know exactly what you're doing.

You can set Roon, HQPlayer, Bug head Emperor, TIDAL, Fidelizer Pro, Total Commander, Foobar2000, Qobuz, WiMP and others as shell; all of them need to be installed in their default locations.



If your files are not in the correct place, ServiceTool will show you a warning and won't change anything on your system. Example warning message:



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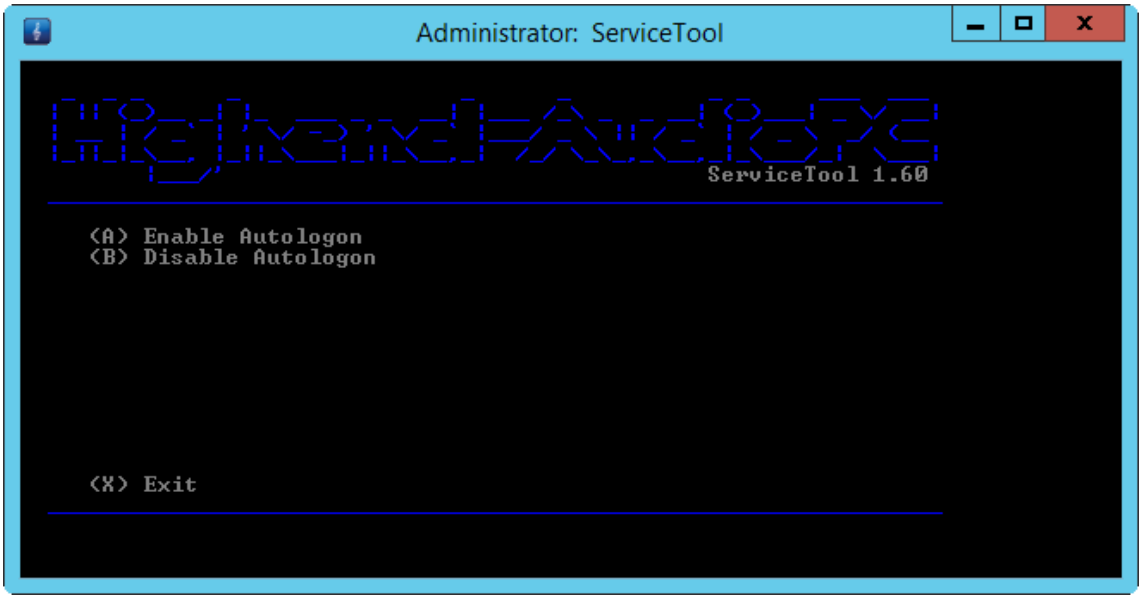
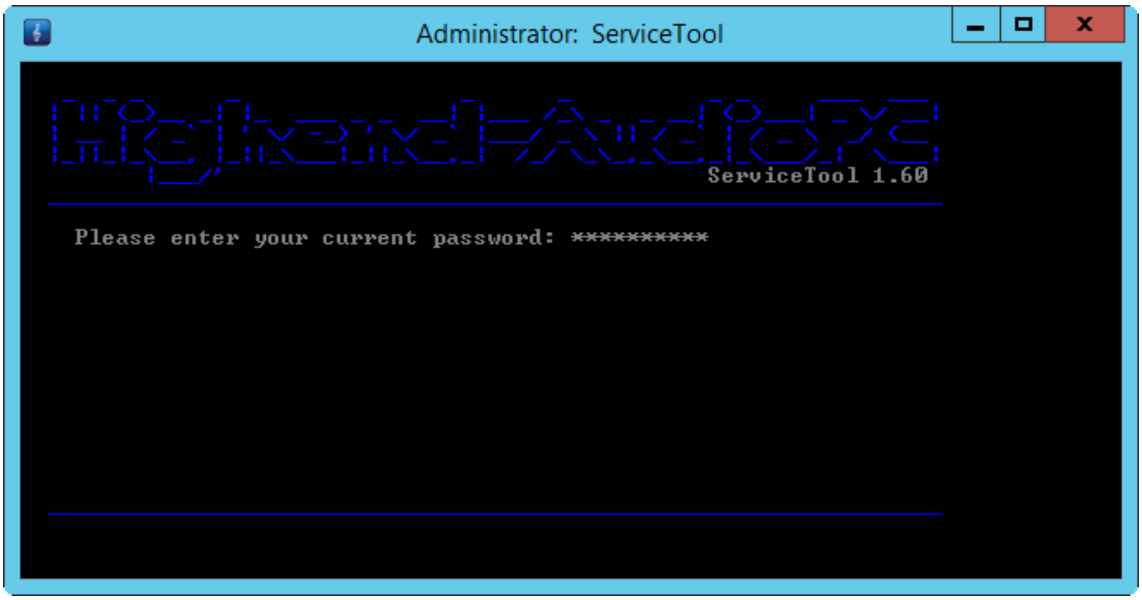
Restoring default shell

You can also restore the default shell using the ServiceTool. It will automatically check whether you are in core, minimal-server or GUI mode and restore the appropriate default shell for you. It will restore the command prompt in core/minimal-server or the desktop environment in GUI mode.

Autologon

If you want to enable Autologon, you can do so by using the ServiceTool. Choose "E" on the first screen, then run "A" to enable & configure Autologon. ServiceTool will use your current user and will ask you for your current password; the rest will be automatically configured by the ServiceTool.





INFO: Don't worry about password expiration; AudiophileOptimizer will take care of this for you.

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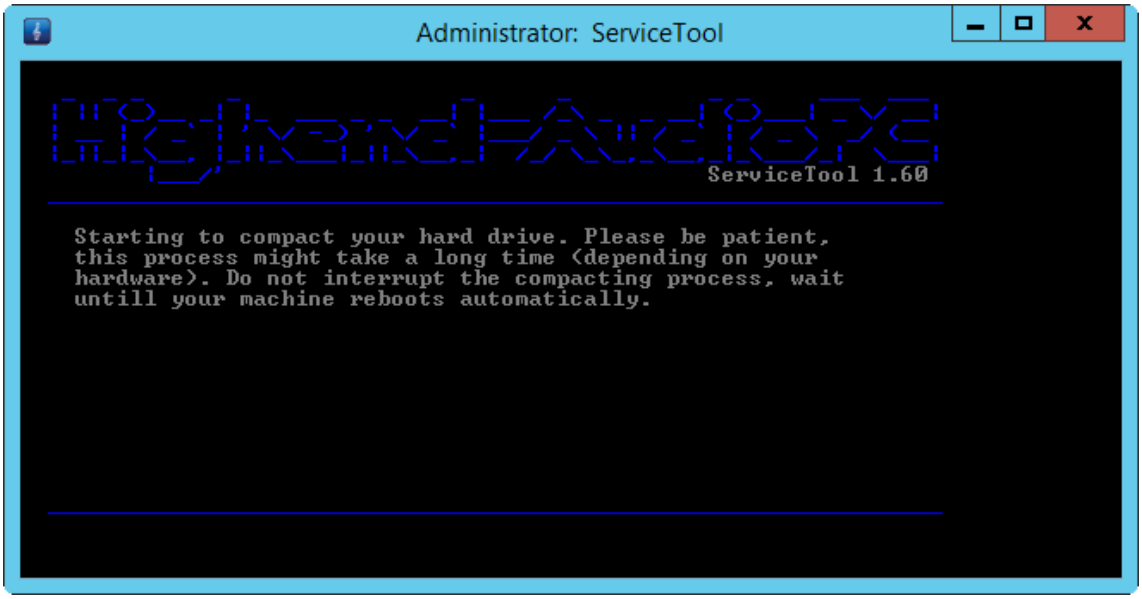
Compacting Feature

You can use the ServiceTool's Compacting Feature to make your system partition much smaller. This is useful for "Windows in RAM" systems. Please see external documentation about how to setup Windows in RAM. Be aware that compacting is a very intensive process and will take a long time to complete. **DO NOT INTERRUPT THE PROCESS UNDER ANY CIRCUMSTANCES!**



System Information

You can use the ServiceTool to display information about your hardware. It will show you the exact model of your mainboard, CPU, your DAC or DDC, the vendor's name of your RAM, its speed in MHz and the part number of your RAM.

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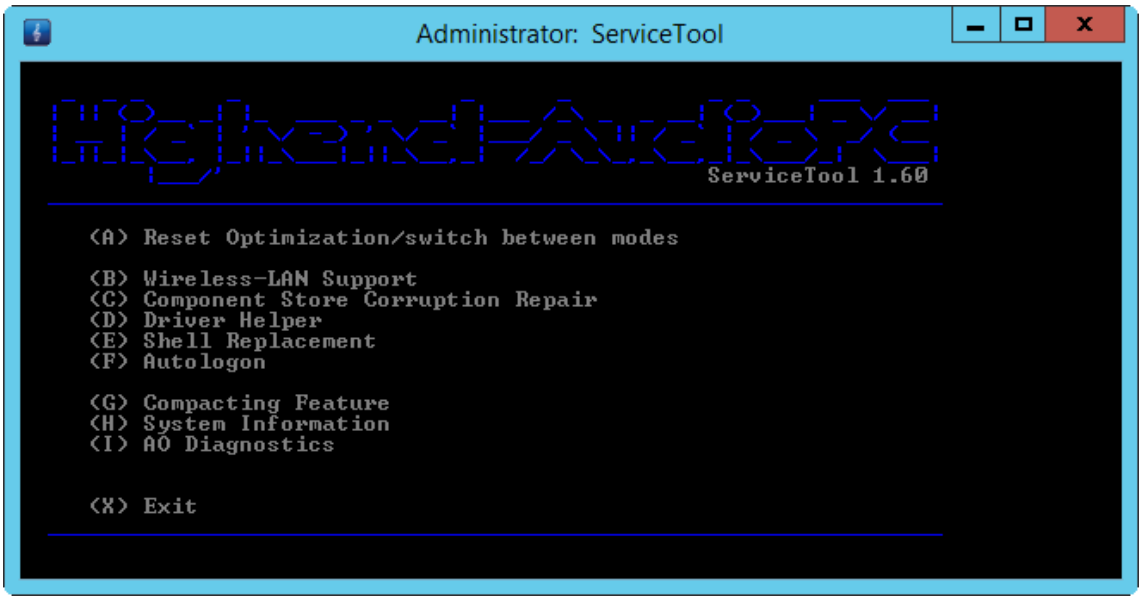
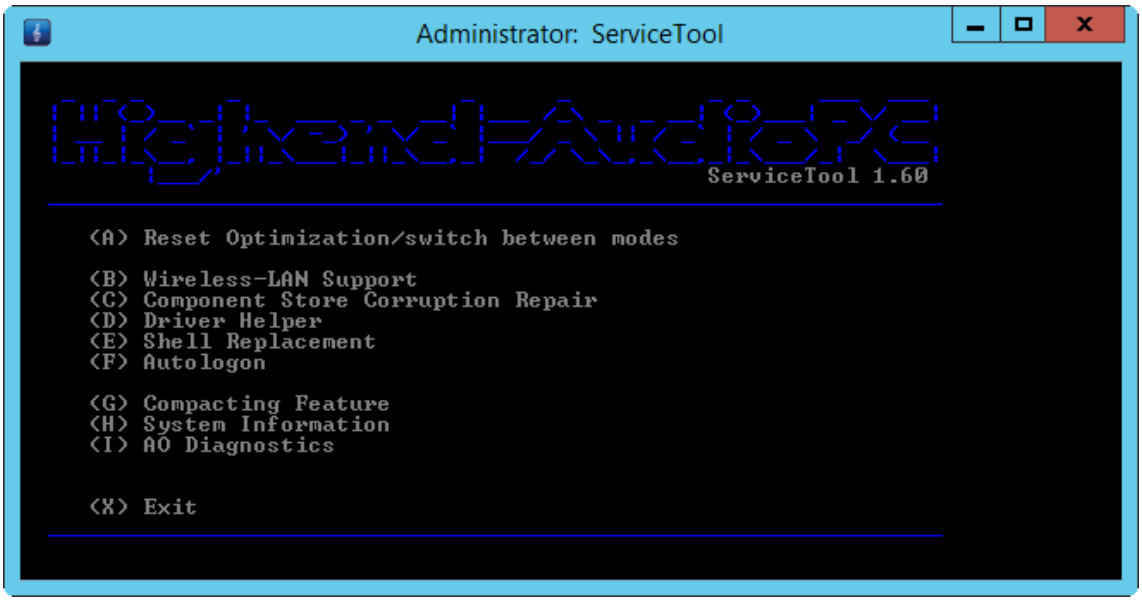
AO Diagnostics

You can use the ServiceTool to collect several log files of your system and have it send them to our diagnostics facility. Start the ServiceTool and select Option "I" to enter AO Diagnostics.



Press "A" and follow the onscreen instructions to start the collection of the diagnostic log files. If you have a working internet connection, the logs will be automatically uploaded to our diagnostic facility. If you have no internet connection, the log file (diagnostic.log) will be saved locally and you can send them to us via email.



ATTENTION: You have to open a support request via email before you upload your diagnostic log files. If you do so without first opening a support case, your log files will be deleted after a few days.

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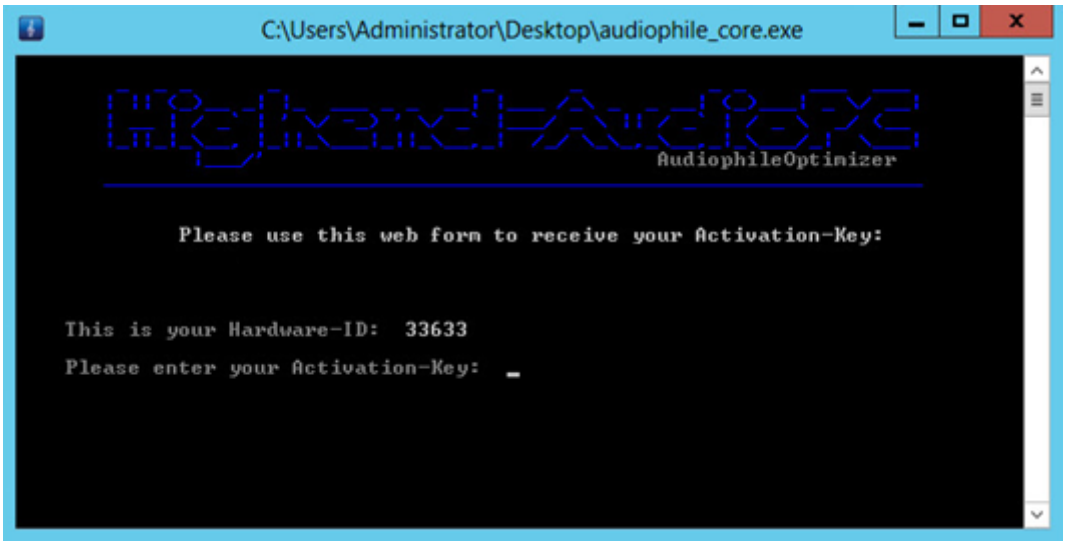
Frequently Asked Questions

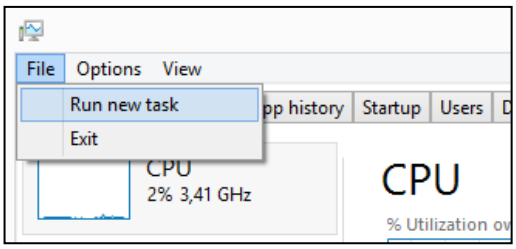
Q: **I cannot find or did not receive my Activation-Key via email, what's wrong?**

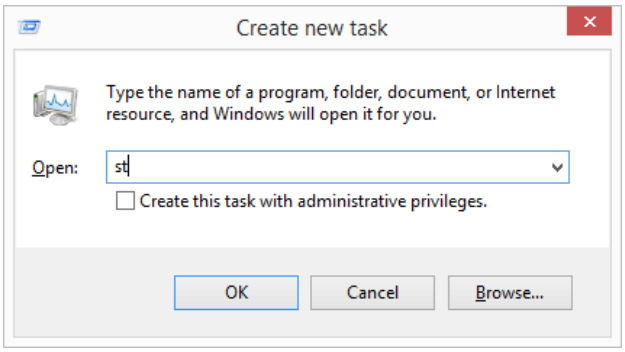
A: The AudiophileOptimizer uses a hardware-bound copy-protection system. This means your Activation-Key must be generated according to your machine specific Hardware-ID. To get your Hardware-ID, you must run audiophile_core.exe on your target system. Note the displayed Hardware-ID and open the self-service portal to generate your personal Activation-Key. Once you generate your Activation-Key, you will also get a confirmation email containing your Activation-Key and matching Hardware-ID. **DO NOT DELETE THIS EMAIL** because as long you use the same hardware the same Activation-Key will work on the same machine.



Q: **After using the shell replacement function, I am stuck in my media player. How can I get a command prompt or start the ServiceTool to get back to GUI mode?**

A: Press Ctrl-Alt-Del to start the TaskManager. Click on "File", then click "Run new task", enter "cmd" to start a command prompt or enter "st" or "service_tool" to start the ServiceTool.





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Q: After switching to core-mode/minimal-server mode or after using the AudiophileOptimizer, my remote app (JRemote, Gizmo, etc) can no longer connect to JRiver Media Center, what's wrong?

A: You forgot to set a static IP-address. You may not use DHCP-addresses (automatically configured). You have to set a static IP address: http://www.sysads.co.uk/2013/01/assign-a-static-ip-address-to-windows-server-2012/ (If you are in core or minimal-server mode, use show_adapter.cmd and set_ip.cmd found in C:\AO\Tools. Don't forget to edit set_ip.cmd before you run it!

Q: After switching to core-mode, AO needs a new Activation-Key. What's wrong?

A: This behaviour is by design of Windows. Core mode does not offer WLAN capabilities so by switching into core mode, the WLAN functionality is removed again. The copy protection of AO also takes the (W)LAN card into consideration, so if the WLAN card was removed due to switching to core mode, a new Activation-Key is needed. You should always have at least one LAN adapter installed!

Q: After a few days, my system suddenly started to shut itself down. What's wrong?

A: You are using a Trial or Evaluation version of Windows Server 2012/R2. Those versions need to have an active internet connection at least one time to automatically activate themselves over the internet. If they cannot activate over the internet, they will start shutting down on a regular basis. Check your control panel to see if your Windows installation is activated. Or you can use the method described here: http://support2.microsoft.com/kb/2806745

Q: I installed WiFi drivers and the device shows up correctly in device manager, but my WiFi does not work.

A: Start the ServiceTool and press "B" to install Wireless-LAN Support for Windows Server 2012/R2.

Q: My Activation-Key does not work at all. What's wrong?

A: There are only five possible scenarios if your Activation-Key does not work:

1.) You try to activate AO 1.30 (or newer) with an Activation-Key for AO 1.26 (or older)
2.) You try to activate AO 1.26 (or older) with an Activation-Key for AO 1.30 (or newer)
3.) You mistyped your Hardware-ID in the self-service portal
4.) You mistyped your Activation-Key in AO or ServiceTool
5.) You are using the self-service portal for the trial version of AO instead of the regular portal

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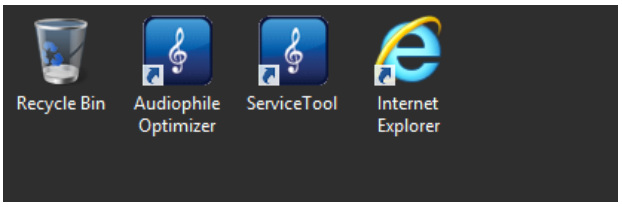
Q: Why do I get a warning message regarding UAC when I try to start Internet Explorer?

A: Use the shortcut on your desktop to start Internet Explorer.



Q: What are the minimum hardware requirements for Windows Server 2012 R2 and AO?

A: You need at least 2GB of RAM, an x64 compatible CPU, about 25GB disk space and a DAC or DDC.

Q: Why is AudiophileOptimizer not available for Windows 7 or Windows 8?

A: A typical Windows operating system (Windows 7, Windows 8, etc.) has about 50 to 100 processes and about 500 to 1000 or more threads all running at the same time. The CPU is involved in every single thread and process and, unfortunately, all of this processing must take place in real-time, resulting in jitter. A Windows Server 2012 or 2012 R2 system in core mode, fully optimized with the AudiophileOptimizer, runs only 5 to 7 services and about 15 to 20 processes.

Q: On how many machines or how many times can I use the AudiophileOptimizer?

A: The personal license of AO contains 5 Activations. Generally, only one Activation-Key is needed for one system assuming the hardware does not change too much. Among other factors, the Mainboard, network card and hard drive signature are used to calculate the Hardware-ID. You can either install AO on five different machines or use more Activation-Keys if you need to change your hardware and therefore have to enter new Activation-Keys.

Q: What exactly happens if I do a reset via ServiceTool?

A: The reset via ServiceTool primarily resets the states of all services and drivers. This is needed to do maintenance work on your setup like installing Windows Updates. Some Device Drivers also need a reset via ServiceTool before they can be installed. Once you finished your maintenance work, don't forget to do a full run with AO again.

Q: Is AO disabled or uninstalled when I do a reset via ServiceTool?

A: No. Over 95% of the optimizations are still in place after a reset via ServiceTool! Only drivers and services are set back to their original state. (Automatic start, etc.)

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Support

ACTIVATION/WEBSITE

If you lost your Activation-Key, have a question regarding activation process, the self-service portal, your license count, the download site, or encounter any problems related to the activation of the AudiophileOptimizer, you must send your support request via email to activation@highend-audiopc.com.

TECHNICAL PROBLEMS

If you encounter technical problems or get an error message directly related to the AudiophileOptimizer, you must send your support request via email to support@highend-audiopc.com. Please understand that we do not offer free email-support for topics like general Windows handling questions, setting up and configuring TCP/IP settings, mapping network drives, installing drivers, and so on.

SUPPORT THREAD

If you have questions regarding best practices as they relate to the AudiophileOptimizer, Windows Server 2012/R2, core-mode, network driver installation, or any other product that you would like to run on Server 2012/R2, or you just need tips and tricks, please submit a post to the official support thread found here: http://jplay.eu/forum/computer-audio/windows-server-2012-audiophile-core-edition-official-support-thread/.

Feedback

Feedback about sound quality, discussions about Sound Signature and Digital-Filter settings, etc. are always welcome; please submit a post to the audio forum of your choice or to any of the threads below:

- http://jplay.eu/forum/computer-audio/release-of-new-windows-server-2012-audiophile-core-edition-this-weekend/
- http://www.computeraudiophile.com/f10-music-servers/whos-used-audiophile-optimizer-windows-2012-server-or-windows-8-a-17897/
- http://www.computeraudiophile.com/f11-software/windows-server-2012-a-16698/?highlight=Windows+Server+2012
- http://www.aktives-hoeren.de/viewtopic.php?f=30&t=4295 (Germany)
- https://www.facebook.com/groups/712100898817969/ (Asia)
- http://www.stereo.net.au/forums/index.php?/topic/60130-audiophile-optimizer/ (Australia)

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Highend-AudioPC Shop

Please visit our brand new Highend-AudioPC shop, made for computer audiophile enthusiasts. Here you can find selected Paul Pang Audio, SOtM-Audio, JCAT, Bitsum, Fidelizer Audio and other computer audiophile products, often at reduced prices. Paul Pang and JCAT offer a 14-day money back guarantee, Paul Pang even includes world-wide free shipping. Should you want to order a product not listed in our shop, need technical assistance or have any questions, please don't hesitate to contact us via e-mail to shop@highend-audiopc.com. We are very confident that we will find the perfect solution for your setup.

SHOP URL: http://www.highend-audiopc.com/shop

bitsum

Process Lasso

Fidelizer "Pure Fidelity" for Windows

Fidelizer Pro

SOtM

Ultimate High Performance Audio

SOtM dx-USB HD USB/AES Converter

SOtM tx-USBhubIn (internal)

SOtM iSO-CAT6 LAN Isolator

JCAT

JCAT Reference LAN Cable

JCAT Reference USB Cable

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