Hauptwerk VST Plug-in Tutorial

Sonar
Tutorial: Basic sequencing with Sonar on Windows (with audio via the Hauptwerk VST Link, MIDI via two real MIDI cables)

This tutorial features Cakewalk’s Sonar version 8.5.3

In this tutorial MIDI is routed between Hauptwerk and Sonar via two real MIDI cables. At the time of writing Sonar doesn’t yet support MIDI sys-ex with VST plug-ins, hence using real or virtual MIDI cables is the recommended method. You can use third-party virtual MIDI cable utilities such as loopMIDI, or two real, physical MIDI cables to connect between Hauptwerk and Sonar. In this tutorial we show the use of two real MIDI cables.

Part 1: Setting up Hauptwerk and Sonar

- First make sure you have a multi-port MIDI interface with at least two spare MIDI IN ports and two spare MIDI OUT ports and two spare MIDI cables. In this example tutorial, the interconnecting MIDI ports used are called ‘micro lite: Port 1’ (IN and OUT) and ‘micro lite: Port 2’ (IN and OUT), while the MIDI organ console is instead connected to the MIDI ports called ‘FW AP MIDI’ (IN and OUT).
- Launch Hauptwerk.
- Go to the ‘General settings | MIDI ports | MIDI IN ports’ screen tab. Make sure the MIDI ports that your MIDI organ console is connected to are ticked for ‘Console MIDI IN’. Select the first connecting MIDI cable’s port for ‘Sequencer MIDI IN’, i.e. ‘micro lite: Port 1’ in this example:

![Hauptwerk MIDI Ports](image-url)
• Go to the 'MIDI OUT ports' tab. Make sure the MIDI ports that your MIDI organ console is connected to (if your console needs MIDI output for solenoid-actuated/illuminated tabs, etc.) are ticked for 'Console MIDI OUT'. Select the second connecting MIDI cable's port for 'Sequencer MIDI OUT', i.e. 'micro lite: Port 2' in this example:

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It’s important to understand that MIDI IN/OUT to/from your MIDI organ console goes directly to/from Hauptwerk, not via the MIDI sequencer. The sequencer is effectively side-chained via a MIDI loop (unlike conventional AU/VST instrument plug-ins where MIDI to/from MIDI keyboards would go via the sequencer to the AU/VST instrument).

• Click OK.

• Now connect one MIDI cable between your first spare IN and OUT pair of MIDI ports, and another MIDI cable between your second spare IN and OUT pair of MIDI ports. In this example, a MIDI cable needs to be connected between the 'micro lite: Port 1' MIDI IN port and the 'micro lite: Port 1' MIDI OUT port and another MIDI cable needs to be connected between the 'micro lite: Port 2' MIDI IN port and the 'micro lite: Port 2' MIDI OUT port.

• Go to the 'General settings | Audio outputs' screen. Make sure 'Hauptwerk AU/VST Link' is selected as the audio output device (if you want to record/play audio to/via Sonar and/or to apply reverb/convolver VST plug-in effects to Hauptwerk’s output):

• Exit Hauptwerk (so that you can set up devices in Sonar to avoid conflicting with Hauptwerk).
• Launch Sonar (either 64-bit or 32-bit is fine, although 64-bit should give slightly higher performance). Cancel (close) the ‘Quick Start’ window:

• Go to ‘Options | MIDI Devices’. Deselect all ports except for the second connecting MIDI cable’s port for input (‘micro lite: Port 2’ in this example) and the first interconnecting MIDI cable’s port for output (‘micro lite: Port 1’ in this example):
• Go to ‘Options | Audio’ and select the ‘Advanced’ tab. Make sure the ‘Driver Mode’ is set to ‘ASIO’. If you’re using Sonar 7 or earlier, also untick ‘Use Multiprocessing Engine’ (otherwise audio may break up severely, since Sonar 6/7’s multi-processor optimization conflicted with Hauptwerk’s, although that no longer appears to be necessary with Sonar 8.5):

![Audio Options - ASIO]

• If you needed to change anything on the screen then click OK and close and restart Sonar, again cancelling the ‘Quick Start’ prompt on launch.

• On the ‘Options | Audio’ and select the ‘Drivers’ tab. Untick all entries that are ticked by default (this must be done first otherwise Sonar won’t let you tick a different driver) then tick the entries for your audio interface’s ASIO driver’s channels that you want to use (typically the analogue inputs and outputs):

![Audio Options - ASIO]

• Click Apply.
• Still on the 'Options | Audio' screen, select the 'General' tab. Select the ASIO driver for your audio interface as the playback and record timing master:

![ASIO Driver Selection](image)

• Click OK. If you needed to change anything on the screen then restart Sonar for good measure, again cancelling the 'Quick Start' prompt on launch.

• On the 'Options | Global... | General' make sure 'Always Echo Current MIDI Track' is not ticked:

![Global Options](image)
• On the 'Options | Global... | MIDI' screen tab make sure that all options in the 'Record' section are ticked, except for 'Echo System Exclusive', which should not be ticked:

![Global Options Screen](image.png)

• Click OK.

• Go to 'Tools | Cakewalk Plug-in Manager':

![Cakewalk Plug-in Manager](image2.png)
• Click on the 'VST Configuration: Options' button. Make sure that the path Hauptwerk's VST plug-ins were installed to is present in the list, otherwise click the 'Add...' button to select and add it. The default installation location for Hauptwerk's VST plug-ins is: 'C:\Program Files\Hauptwerk Virtual Pipe Organ VST Link Plug-In':

![Image of Cakewalk VST Scan Paths window]

• If you needed to add the path then make sure that 'Re-scan existing plug-ins' is ticked.

• Click OK.

• Still in the Cakewalk Plug-In Manager, highlight the 'VST Instruments (VSTi)' node in the left-hand pane and 'HauptwerkVSTLink-64bit' in the middle pane (or 32-bit if you're using 32-bit Sonar):

![Image of Cakewalk Plug-In Manager window]

• Click the 'Plug-In Properties' button:

![Image of VST Plug-In Properties window]
• Make sure that 'Enable as plug-in' and 'Configure as synth' are ticked and that 'Translate Bank/Program Changes' and 'Do not intercept NRPNs' are not ticked. Important: if the last of those options (NRPNs) is not ticked then no Hauptwerk registration changes will be recorded in Sonar. Note also that there is a bug in Sonar 8.5.3 and Sonar 6 in which the NRPN option isn't remembered when Sonar is restarted, so you need to re-tick it every time you launch Sonar, but before you load a project. That bug was fixed in Sonar 7 but seems to have been re-introduced in Sonar 8.

• Click OK.
Part 2: Creating template projects

- Go to the 'Options | Audio | General' screen tab. Set 'Sampling rate' to 44100 Hz. Important: you must change the value here before creating each new project, since it isn't possible to change a project's sample rate after creating it:

- Go to 'File | New ...'. Name the project 'HauptwerkVSTLink44100HzMIDIViaCables' and select 'Blank (no tracks or buses)' for the template:

- Click OK.
• Go to the ‘Options | Project | MIDI Out’ screen tab. Make sure that the ‘Zero Controllers When Play Stops’ and ‘Patch/Controller Searchback Before Play Starts’ options are not ticked:

![Options | Project | MIDI Out Screen Tab](image)

• Click OK.

• Go to ‘Insert | Soft Synths | Hauptwerk Virtual Pipe Organ VST Plug-In | HauptwerkVSTLink-64bit’ (the folder name may be different if you installed the Hauptwerk VST plug-in to a non-default folder, and the plug-in will be 32-bit if you're using 32-bit Sonar). The ‘Insert Soft Synth Options’ window appears:

![Insert Soft Synth Options Window](image)

• Make sure that all of the following are ticked: ‘Enable MIDI Output’, ‘Create These Tracks: MIDI Source’, ‘Create These Tracks: Synth Track Folder’, ‘Create These Tracks: First Synth Audio Output’ (or ‘All Synth Audio Outputs: Stereo’ if you’re using the Hauptwerk Advanced Edition’s multi-channel audio output). Important: ‘Enable MIDI Output’ isn’t ticked by default and if you don’t tick it then you won’t be able to record any MIDI from Hauptwerk.
Click OK. The tracks will be created:
• Hold-click on the MIDI output selection (in the left-hand track properties pane, immediately below the MIDI cable icon) and select the first interconnecting MIDI cable’s MIDI port (‘micro lite: Port 1’ in this example) as the MIDI output for the track:

• Go to ‘File | Save As ...’. Select ‘Template’ for the type and set the ‘Go to Folder’ setting to ‘Template files’, name the template ‘HauptwerkVSTLink44100HzMIDIViaCables’, then click Save:
• Use ‘File | Close’ to close the template project.

• Now repeat the whole of part 2 of this tutorial, but this time using 48000 Hz as the sample rate, and naming the resulting template ‘HauptwerkVSTLink48000HzMIDIViaCables’. In future you will then be able to choose the appropriate template according to the native sample rate of the Hauptwerk sample set you use for a project. If you use any sample sets that use 96000 Hz as their native sample rate (unusual) then repeat part 2 a third time for that sample rate.
Part 3: Creating a Sonar test project

- Launch Sonar if it isn’t already running, making sure you cancel (close) the ‘Quick Start’ screen (necessary because of the Sonar VST plug-in NRPN setting bug).

- Go to ‘Tools | Cakewalk Plug-in Manager’, highlight the ‘VST Instruments (VSTi)’ node in the left-hand pane and ‘HauptwerkVSTLink-64bit’ in the middle pane (or 32-bit if you’re using 32-bit Sonar):

- Click the ‘Plug-In Properties’ button:

- Make sure that ‘Enable as plug-in’ and ‘Configure as synth’ are (still) ticked and that ‘Translate Bank/Program Changes’ and ‘Do not intercept NRPNs’ are not ticked. Important: if the last of those options (NRPNs) is not ticked then no Hauptwerk registration changes will be recorded in Sonar. Note also that there is a bug in Sonar 8.5.3 and Sonar 6 in which the NRPN option isn’t remembered when Sonar is restarted, so you need to re-tick it every time you launch Sonar, but before you load a project. That bug was fixed in Sonar 7 but seems to have been re-introduced in Sonar 8.

- Click OK.
Go to 'File | New...' and select 'HauptwerkVSTLink44100HzMIDIViaCables' as the template, give the project a name, and then click OK:

Make sure Hauptwerk is running with St. Anne's loaded. (Important: the sample rate of the sample set must match the sample rate setting of the template, otherwise the organ will sound at the wrong pitch.)

Back in Sonar, highlight the HauptwerkVSTLink folder group, and click its 'R' button (so that it's lit in red) to arm recording:

Press a 'reset all' piston/button in Hauptwerk (for example, on the 'Audio, MIDI and Performance' large control panel), so that the MIDI recording will start from an all-off registration/state.

Click on the circular record button on one of Sonar's transport bars:
- Wait for the metronome's count-in to finish then turn on some stops in Hauptwerk and click/play some keys or play the St. Anne's default demo MIDI file.
- Press the stop button on Sonar's transport bar then the 'rewind to start' button.
- Reset Hauptwerk again, so that the piece will play back from an all-off registration/state.
- Press the play button on Sonar's transport bar. The actions you recorded should play back exactly as you recorded them: