



Graphics with integrated audio—overview



Introduction: This document introduces the technology of audio integration with workstation-class graphics hardware, explains how it works, and details the support available for HP Workstation customers who wish to use this technology.

Graphics-integrated audio:

Audio integrated into a graphics card is provided by an audio device built directly into the GPU. This audio device, like any device, is visible in Windows® Device Manager and requires a driver to work properly. Audio signals are processed on the graphics card and transmitted to the monitor through a card's DisplayPort output. Both DisplayPort and HDMI cables (used with a DisplayPort to HDMI adapter) can transmit audio. Monitors that support DisplayPort or HDMI audio can then play the audio transmitted over the graphics cable through integrated or separately connected speakers.

By default, the system BIOS in all HP Z Workstations and HP xwX600 series HP Workstations disables the motherboard audio when a separate audio device (such as a Creative SoundBlaster audio card) is present. In the case of a combination graphics/audio card, the motherboard audio remains enabled so the user can choose which audio device to use. Systems with both a discrete audio card and a combination card will by default have the motherboard audio disabled and both plug-in cards enabled. This setting can be changed in the advanced BIOS settings—see the document on Graphics Integrated Audio Setup for more information.

FIGURE 1. SUPPORT MATRIX

Card	Audio Source	DisplayPort	HDMI (Via DP)
Intel® Integrated HD Graphics (HP Z200)	Integrated on GPU	Yes	Yes
NVIDIA Quadro FX 3800	2-pin S/PDIF input	No	Yes
NVIDIA Quadro FX 380 LP	Integrated on GPU	Yes	Yes

Audio over HDMI

DisplayPort cards can be used with a DisplayPort to HDMI adapter and a monitor or TV with HDMI input. The dual-mode nature of DisplayPort means that in this case the card is outputting a true HDMI signal. Currently no HP high-performance monitors with HDMI inputs have integrated speakers, but audio can be set up using any display that has both, such as an LCD television or a consumer monitor like the HP 2159m. The HP LP2475w monitor can provide audio over HDMI using external speakers. All graphics cards listed in Figure 1 above support audio over HDMI.

Audio over DisplayPort

Audio capabilities are built into the DisplayPort specification and have been implemented in a few graphics solutions such as the NVIDIA Quadro FX 380 Low-Profile card. Any DisplayPort display with audio capabilities (through either internal or external speakers) should be able to support DisplayPort audio.

Conclusion

Graphics-integrated audio offers users high-definition audio functionality without the need for an additional plug-in card or excess cables. With support from graphics card and monitor vendors, users can easily configure a graphics-integrated audio solution to meet their needs.