Audio latency measurement for desktop operating systems with onboard soundcards

Using commodity computers in conjunction with live music digital audio workstations (DAW) has become increasingly more popular in recent years. The latency of these DAW audio processing chains for some application such as live audio monitoring has always been perceived as a problem when DSP audio effects are needed. With "High Definition Audio" being standardised as the onboard soundcard’s hardware architecture for personal computers, and with advances in audio APIs, the low latency and multi-channel capability has made its way into home studios. This paper will discuss the results of latency measurements of current popular operating systems and hosts applications with different audio APIs and audio processing loads.

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Latency Measurement of Desktop OSes. 2.1. Test plan. Overall, there are many combinations of host DAWs, operating systems, driver APIs, soundcards and hardware. Therefore a carefully designed test plan is needed that contains a set of test cases in order to verify specific aspects of system latency by fixing and altering variables in the test domain. In addition to this, the work presented in the study contains some special conditions for the purpose of cross-reference. These included latencies of commonly used professional digital consoles and DSP development hardware. Though the lowest latency of an operating system with onboard soundcard can be close to the professional digital audio hardware, it may suffer losses of audio signals. For reference, Realtek onboard audio and HDMI passthrough (on my hardware, at least) have around 30ms of latency, the Audigy Rx has around 45ms latency, and the STX II has 70ms latency. This low latency sound card I am looking for doesn't have to have any impressive specs like high SNR, EMI shielding, 600Ω headphone amp, 7.1 surround sound, ASIO, or 192/24 audio, but those things would be nice to have. Onboard sound cards: If your mainboards provides an onboard sound card it should be configured to be the standard playback device in the Windows Sound and Audio Settings. Thus, the Windows system sound will be played back by the onboard device without affecting the audio signal of your audio interface or soundcard. Latency/Buffer Setting: If you experience audio drop-outs or crackles take a look at the “ASIO” part of the VST Performance Window (Devices menu). It indicates how much resources are left to calculate the audio data and forward it to the audio driver in time. The system should be configured for continued operations. If this is not done, hard disks will throttle in speed or toggle off after a while and some processors will down clock and slow down.