Subject: Check my math?
Posted by kerryg on Mon, 15 Mar 2010 04:10:32 GMT
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Hi folks - latency's a hot issue for many PARISians, so I put a little latency explainer up on the Wiki. If any folks with relevant expertise want to run their eye over it and make sure I'm not totally out to lunch on what I've written (particularly the math) I'd be grateful for any corrections.

Subject: Re: Check my math?
Posted by drfrankencopter on Mon, 15 Mar 2010 13:52:09 GMT
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Well, personally I think it makes more sense to describe latency in terms of time, and distance (speed of sound), than MIDI ticks, but I guess some folks would appreciate the reference in a musical timing sense.

By my math, here's a sample delay chart (for 44.1 kHz). Remember that sound travels about 1 foot per millisecond, which can also give you an equivalent sonic reference point (e.g. would you worry about the timing of a track that you mic'd an extra 2 feet back from the performer?). Anyways, here's the chart (please note that these values rounded off to 2 decimal places):

#of samples | delay
1 | 22 micro seconds
64 | 1.45 ms
128 | 2.9 ms
256 | 5.8 ms
512 | 11.61 ms
1024 | 23.22 ms
2048 | 46.44 ms
4096 | 92.88 ms

Cheers

Kris

Subject: Re: Check my math?
Posted by thesandbox1 on Mon, 15 Mar 2010 16:31:54 GMT
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http://www.svn.net/artguy/paris.notes/2-6-03
"That's as good as it gets in my experience. Analog input to channel with compressor and EQ to stereo bus to monitor out in 1.5ms at 44.1KHz is incredible. And I do think it matters. All over the internet, I hear Native DAW owners yakking about "8ms latency is just the same as being 8 feet from the speakers", etc. No, it's not. Not if you're wearing headphones as in the majority of recording, certainly singing, not to mention drumming. Not that timing really

matters for drumming or anything.

I talk to pro drummers who absolutely DREAD going to project studios with "low latency" Native rigs. No fun at all. Of course, the together types will monitor through a digital console (still with more latency than Paris) and resolve the issue that way. But how much $$$ have you saved and complexity have you gained by having to own a console just to monitor properly for ODs?

The comb filter effect introduced into headphones by larger latencies is a big factor in the way a singer feels about the sound of their own voice in the cans, IMO. Higher latencies create enough lag between bone conduction and what's hitting the ears from the cue feed to create issues for many singers, including pitch. Many variables here, but latency does not help anything."

drfrankencopter wrote on Mon, 15 March 2010 06:52

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Subject: Re: Check my math?
Posted by kerryg on Mon, 15 Mar 2010 22:14:24 GMT
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Latency is such a hot-button issue - how much latency is "acceptable" is going to vary from player to player, and often style to style. Small amounts bug me during tracking.

I want to get "hard numbers" for the rountrip latency of ProTools HD in there - anyone got exact data?

Subject: Re: Check my math?
Posted by Ted Gerber on Tue, 16 Mar 2010 14:53:18 GMT
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Hi Kerry -

Thanks for the great work as per usual. Two things:

1. I believe the UAD latency is specific to the host computer, and the new (vs 5 & up) UAD control

panel displays that particular system's latency.

2. Q: I'm planning on going the Vertex route, but how is audio latency across submixes accounted for? That is plugins used on submix 1 resulting in a delay of the rest of the audio on that submix, but what about the audio on subix 2?
Or is Senderella used for this?

Ted

Subject: Re: Check my math?
Posted by dnafe on Tue, 16 Mar 2010 17:08:23 GMT
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Hey Ted

I used faderworks on my last project across two cards and subgroups and I didn't notice any comb filtering or anything odd sounding for that matter.

Now if Senderella can cross submixes and you have a common FX across several tracks split between two submixes I would think there is a real possibility of hearing some odd latency generated artifacts.

Subject: Re: Check my math?
Posted by Ted Gerber on Tue, 16 Mar 2010 18:12:23 GMT
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thanks Don

Subject: Re: Check my math?
Posted by drfrankencopter on Tue, 16 Mar 2010 21:04:14 GMT
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dnafe wrote on Tue, 16 March 2010 10:08

Now if Senderella can cross submixes and you have a common FX across several tracks split between two submixes I would think there is a real possibility of hearing some odd latency generated artifacts.

This will require further testing, because it depends on where the source of the latency across submixes lies. If the latency originates from the way the editor window feeds tracks to the mixer, then there WILL be potential for latency artifacts on the Senderella sends, but if the latency is generated in the EDS mixer itself, then the Senderella sends will not be affected as they occur in the native plug-in chain before the EDS mixer.

I hope that makes sense.

It's something that's easy enough to check by a null test across 2 submixes.

Cheers

Kris

PS: For most aux type effects this latency would be no big deal...but for parallel compression it could be a deal breaker!

Yet another PS: I've managed to get the Senderella source code to compile under the VST 2.3 SDK. Unfortunately the source that I have is not the same as the most recent version, but the core components are all there. I'm now going through the process of documenting the code, and hope to begin modifying it to better suit Paris this week(March break).

Subject: Re: Check my math?
Posted by dnafe on Tue, 16 Mar 2010 21:51:21 GMT
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drfrankencopter wrote on Tue, 16 March 2010 17:04dnafe wrote on Tue, 16 March 2010 10:08

Now if Senderella can cross submixes and you have a common FX across several tracks split between two submixes I would think there is a real possibility of hearing some odd latency generated artifacts.

This will require further testing, because it depends on where the source of the latency across submixes lies. If the latency originates from the way the editor window feeds tracks to the mixer, then there WILL be potential for latency artifacts on the Senderella sends, but if the latency is generated in the EDS mixer itself, then the Senderella sends will not be affected as they occur in the native plug-in chain before the EDS mixer.

I hope that makes sense.

Makes perfect sense
