CASE STUDY
Intel® Solid-State Drives
Performance: Data-Intensive Computing

Enhancing music production

Intel® Solid-State Drives (Intel® SSDs) help composers capture creativity by accelerating sample loading and eliminating audio glitches

For musicians who rely on digital audio workstations for composing and recording, traditional hard disk drives can produce significant bottlenecks in the creative workflow. Composers Justin Lassen and Doyle W. Donehoo found that Intel® SSDs could help accelerate sample library load times and eliminate dropped notes, enabling them to capture creativity whenever it strikes.

CHALLENGES

- **Start working sooner.** Load audio sample libraries faster to facilitate creative spontaneity.
- **Eliminate playback errors.** Improve performance of audio sample playback, avoiding dropped notes and glitches and reducing the need for time-consuming workarounds.
- **Avoid data loss.** Improve storage reliability to avoid losing compositions and samples.

SOLUTIONS

- **Intel® Solid-State Drives.** Composers Justin Lassen and Doyle W. Donehoo integrated Intel® SSDs into their music production environments to address key challenges related to audio sample–based music composition.

IMPACT

- **Faster time to creativity.** By reducing audio sample load times, Intel SSDs enable the composers to start working quickly, without losing their creative spark.
- **Better playback performance.** With significantly better read times than hard disk drives, Intel SSDs can play back sample libraries flawlessly.
- **Peace of mind.** The rugged dependability of Intel SSDs helps musicians avoid losing work.

"With Intel® SSDs, I experienced zero dropped notes....These drives allow me to realize compositions that I envision, without limitations."

– Justin Lassen

Whether they are composing soundtracks for feature films or video games, remixing pop songs, or assembling new hip-hop tunes, many musicians today rely on extensive audio sample libraries to bring their ideas to life. Sample libraries can comprise thousands of short recordings of anything from orchestral strings to rare world instruments, captured with varied volumes, playing techniques, and acoustic settings so composers can have a full spectrum of sound at their fingertips.

Loading these massive libraries into software-based samplers and "virtual instruments" can be a time-consuming process. For composers Justin Lassen and Doyle W. Donehoo, long load times dampen spontaneity. "It might take several minutes to load the sample-based instruments in my composition template," says Donehoo. "If I'm inspired, I have to wait a long time before I can start working."

Additional problems arise because of the limitations of mechanical hard disk drives. "It's often difficult to play back numerous samples for the same instrument simultaneously or to trigger the same note in quick succession," says Lassen. "The result is dropped notes or audio glitches. Sometimes I have to change my creative decisions or use workarounds just to have parts play back correctly."

The high failure rates for hard disk drives also mean that compositions and sample libraries are vulnerable to loss. "Several years ago, I had a devastating hard drive crash with my laptop and lost years of work," says Lassen. "I need reliable, durable drives that will let me take my work on the road."

Cutting load times with Intel® SSDs

Intel® SSDs offered possible solutions for both musicians. Lassen installed a 300 GB Intel SSD in his primary mobile workstation—

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– Doyle W. Donehoo

an Apple MacBook Pro* with an Intel® Core™ i7 processor. After transferring his operating system, he installed a variety of music production software, including Apple Logic*, Cakewalk Sonar*, and PreSonus Studio One Pro* plus the EastWest PLAY* sample engine, which he uses for playing back audio samples. "In my environment, the Intel SSD cut loading time for each multilayered instrument from five minutes to just 30 seconds," Lassen says.

Donehoo had a similar experience. He installed a 250 GB Intel SSD in one of his eight custom-built digital audio workstations. To test the drive, Donehoo loaded sample libraries from existing hard disk drives and then started up sessions using Cakewalk Sonar and the Native Instruments Kontakt* software-based sampler. "I noticed immediately how quickly samples loaded," says Donehoo. "With the Intel SSD, it took only 18 seconds to load 57 instruments."

Intel SSDs can help sustain those fast load times over time. The Intel® SSD Optimizer, part of the Intel® SSD Toolbox, supports the Trim feature of the ATA Data Set Management command, which works with the operating system to recover drive capacity as soon as the user deletes files. "Avoiding the data fragmentation that can occur with mechanical drives is a great advantage for composers using sample-based instruments," says Lassen.

Eliminating dropped notes and glitches

The Intel SSDs also helped eliminate dropped notes and audio problems produced by hard disk drives. "With hard disk drives, I couldn't play or perform many compositions in real time without glitches or dropped notes," says Lassen. "With Intel SSDs, I experienced zero dropped notes. These drives are performance ready, even for compositions with layered instrument patches or passages with repetitive, fast notes. These drives allow me to realize compositions that I envision, without limitations."

Intel SSDs allow musicians to play and record more simultaneous tracks on each drive and increase the responsiveness of the environment. "Intel SSDs remove a key bottleneck from the music production environment—the spinning disks," says Donehoo. "Everything runs more smoothly now."

Avoiding catastrophic loses

Replacing mechanical spinning disk drives with Intel SSDs can help musicians avoid losing irreplaceable compositions and samples. "I don't want to have to constantly worry about hard drive crashes or spend excessive time backing up data," says Lassen. "By replacing mechanical disk drives with Intel SSDs, I can significantly reduce the likelihood of losing my work."

Extending mobile creativity

The Intel SSDs also keep the creativity flowing when mobile musicians are away from power outlets. "I've sampled sounds in caves, catacombs, and other places where I had to rely on battery power," says Lassen. "By helping to increase battery life, the Intel SSDs will enable me to do more of that remote recording work while also letting me work longer while I'm traveling."

Capturing the creative spark

Both Donehoo and Lassen agree that the faster sample load times and other benefits of Intel SSDs will help musicians capture the creative spark, ultimately enabling them to produce more and better music while meeting tight production deadlines. "I used to launch my applications and then have a coffee break while my instruments loaded," says Donehoo. "Intel SSDs will let me start working right away while my ideas are still fresh and vibrant."

"When I wake up in the middle of the night with a great idea, the last thing I want to do is wait for instruments to load—I lose that inspiration," says Lassen. "With Intel SSDs, I can start working almost instantly so I can capture the inspiration the moment I have it."

SPOTLIGHT ON JUSTIN LASSEN

Justin Lassen is a composer, remix engineer, and multi-instrumentalist with a varied array of credits to his name, including the symphonic suite "And Now We See But Through a Glass Darkly"; remixes for artists such as Lady Gaga, Garbage, and Linkin Park; and a collection of samples and loops produced for Sony called *White Rabbit Asylum*. He recently contributed to a video game produced by Blue Marble Game Co. and funded by the U.S. Department of Defense that helps with rehabilitation and therapy for service members returning from combat zones.

SPOTLIGHT ON DOYLE DONEHOO

Composer Doyle W. Donehoo has scored a wide variety of popular and award-winning video games including *Warhammer* 40,000: Dawn of War* II, America's Army* 2* and *3, Savage* 2*, and more. A former software engineer, Donehoo is deeply involved with integrating music and technology to deliver exciting orchestral works that could be equally at home in game, film, or television productions.

Performance: Data-Intensive Computing. Support the most demanding business data processing, and computationally intense graphics

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