(intel®)

Surf Accelerates Video Processing with Intel® Technology

With the new Intel® Xeon® Platinum 8168 processor, service providers can deliver more streams per server without using discrete graphic cards

> "We recommend that our customers adopt the Intel® Xeon® Platinum 8168 processor so they can process more video streams per server, and more cost-effectively deliver and expand their services"
>
> **— Niv Kagan**
> VP of Product and Marketing
> Surf Communications Solutions

Surf Communications Solutions helps companies offer powerful streaming real-time video and audio services. With the new Intel® Xeon® Platinum 8168 processor, service providers can deliver more streams per server without using discrete graphic cards.

Founded in 1996, Surf Communications Solutions creates high-density multimedia processing technologies in a wide variety of formats. The company's solutions are used by leading global vendors for their multimedia servers and gateways and have been deployed worldwide.

Business Challenge

Not so long ago, video phones seemed like sci-fi. Now they're everywhere. At the same time, video cameras are being deployed in smart cities for mobility, security, and safety applications. For service providers who want to provide video communications, the business challenge is to reliably process as many streams as possible, at the lowest cost.

That means having servers that can simultaneously process many streams, as the following example shows. Imagine an application that takes input from 300 cameras. It creates twenty different mosaics of fifteen cameras each, for monitoring by different police units in real time. If you can't do all that on a single server, you will typically have to send all 300 streams to multiple servers. Each server will only generate some of the mosaics because being selective about which streams go where is impractically difficult. If you can't do the work on one server, the hardware required can add up quickly, because each server is receiving all 300 video streams.

Surf Communications Solutions helps companies solve problems like these by offering a platform for real-time processing of video and audio streams. It accelerates time to market by offering off-the-shelf capabilities for scalable video, voice, and signal processing. Additionally, it enables companies to adopt standard hardware based on Intel® processors, so customers can drive costs down and increase flexibility in their hardware base. Solutions can be deployed on-premise, in the cloud or in a network functions virtualization (NFV) infrastructure where standard servers replace highly specialized hardware in the Communications Service Provider industry.

"We provide a multi-layered platform that allows our customers to offer highly scalable voice and video applications without needing to build the infrastructure

for that," says Niv Kagan, vice president of product and marketing at Surf. "Because we use Intel® platforms for our solutions, our customers are not stuck with a particular hardware vendor. This is especially important for NFV deployments."

Surf uses voice codecs in Intel® Integrated Performance Primitives (Intel® IPP) and video codecs in the Intel® Media Server Studio. "We use codecs from Intel because we trust they will continue to be supported, and Intel takes care of porting from generation to generation," says Kagan.

Achieving a 2.75x Speedup

Surf compared its existing Intel® Xeon® processor E5-2690 v3 with the new Intel Xeon Platinum 8168 processor to measure the performance improvements the new processor offers. The test was conducted using two servers in Surf's labs where each one housed one of the processors. The software was based on Surf-HMP*, Surf's multimedia processing platform which can support video streams as high as 8K, as well as voice and signal processing.

The baseline configuration was based on a two-socket Intel Xeon processor E5-2690 v3, running at 2.GHz with 24 cores and 32GB of total memory. The new platform was the Intel Xeon Platinum 8168 processor with 48 cores and 192GB of total memory. Because the test is CPU bound and not memory bound, the memory difference was not significant. In both cases, Intel® Turbo Boost Technology and Intel® Hyper-Threading Technology (Intel® HT Technology) were enabled. CentOS Linux* was the operating system.

Success was measured by the number of full HD channels that could be simultaneously processed. When processing full HD video at 30 frames per second, the Intel Xeon

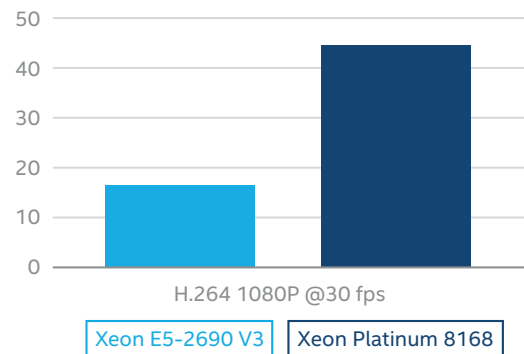### Channel density per system

Figure 1: Channel density per system in processing full HD video increased from 16 to 44 on the new system

Platinum 8168 processor was able to process 37 percent more channels per core than the older processor with a total of 22 channels per CPU. The per-core performance improvements are a result of improvements in the micro-architecture of the new processor, with performance improving by 36.11 percent even when normalized for equal processor frequency[1].

The total speed-up for the system was 2.75x1, taking into account the higher core count of the new processor.

One additional test involved transcoding of voice between the AMR codec used for wireless and the G.711 codec used for wireline networks, with streams being converted in both directions. This test showed a 16.67 percent performance improvement per CPU, and an improvement per system of 133 percent[1]. The new processor can transcode 7000 channels simultaneously, per CPU.

Eliminating Discrete Graphic Cards

"These results have solidified our strategy around Intel," says Kagan. "We were thinking about recommending discrete graphic cards to increase performance for core networks requiring high density processing, but the results from the new Intel Xeon Platinum 8168 processor mean that our customers can just use the Intel processor. Not needing any specialized hardware is a game changer."

Add-on cards increase complexity and cost. At a low level, using them involves doing more memory copy operations which slows down performance. At an operational level, they add a point of failure and cost. Adding a discrete graphic card means the hardware is no longer standard, which undermines NFV strategies that depend on network functions running on standard hardware anywhere.

Kagan adds: "While the per-core performance shows a clear improvement, what matters to our customers is the overall system performance, enabled by the increased core count of the new Intel Xeon Platinum 8168 processor. If our customers do a return on investment calculation, I believe they will find it refreshing that the new processor delivers savings in the data center. They can potentially cut the number of servers they need, making significant savings in space, power and cooling."

Niv concludes: "Together with Intel, we provide a solution that enables companies to build highly scalable voice and video solutions. We recommend that our customers adopt the Intel Xeon Platinum 8168 Processor so they can process more streams per server, and more cost-effectively deliver and expand their services."

To find out more about Surf Communications Solutions, visit **www.surfsolutions.com**.