



Cinesite supercharges postproduction with AMD EPYC™ CPUs

Dell PowerEdge servers powered by AMD EPYC processors help deliver faster movie rendering for less.



CUSTOMER

CINESITE

INDUSTRY

Film and TV postproduction

CHALLENGES

Deliver the most rendering performance for the money when completing The Addams Family 2

SOLUTION

Deploy Dell PowerEdge servers powered by AMD EPYC™ processors

RESULTS

30 percent lower cost for the same compute power than Intel-based alternative

AMD TECHNOLOGY AT A GLANCE

Dell PowerEdge C6525 servers
AMD EPYC™ 7702 and 7662 CPUs
with 64 cores

TECHNOLOGY PARTNER

DELL Technologies

Cinesite has been at the forefront of film and television visual effects and animation for over 30 years.

The company's production credits read like a Hall of Fame and include some of the most successful movies of all time. Cinesite creates visual effects and animation from its studios in London and Montreal, in Vancouver, and also through their partner companies Image Engine in Vancouver and Trixter in Berlin & Munich. All of their work relies heavily on computational performance. When the Vancouver studio needed exceptional hardware for rendering The Addams Family 2 movie, Dell PowerEdge servers powered by AMD EPYC CPUs delivered exactly what was desired.

"...the [AMD EPYC] price was much lower for the overall amount of compute we needed, around 30 percent. It was absolutely a no-brainer."

*Jeremy Brousseau, Head of IT,
Cinesite Vancouver*

Calculating project 'core-hours'

"We do animation for theatrical releases in the Vancouver studio," says Jeremy Brousseau, Head of IT, Cinesite Vancouver. "Other sites do VFX, but our requirements are different. We need a lot for one large show at a time. The Addams Family 2 was very heavy, with a lot of large assets, big renders, short timeframes, and huge artist quotas. We just had to render, render, render."

To cope with a postproduction job this intense, Cinesite wanted to ensure their rendering infrastructure could support the high workload demands they were facing. In preparation for a new movie "I spend months planning the expected render requirements," says Brousseau. "When we start working on a show, the departments estimate how long an average frame is going to take in 'core-hours'." This is how many hours a single frame would take to render on an average compute core. "Then we extrapolate that across the entire show week by week."

The result of these calculations reveals how much compute power will be needed to complete the project and Cinesite implemented a dual strategy approach. "Our plan is to keep a baseline in co-location facilities in town, and only burst to the cloud when needed," says Brousseau. "Buying nodes is still going to be cheaper in the long run than cloud infrastructure if you can keep them utilized a decent amount of the time for a three-year period." But not all cores are created equal. "If a frame comes back in ten hours on average but sometimes it's eight and sometimes it's 12, that has to be accounted for in the math."

Cinesite employs a workflow involving a wide variety of software, including Foundry and Autodesk®. But the primary workload in Vancouver is rendering in Autodesk Arnold® through the Gaffer lighting software. Once the number of core-hours has been estimated for a project using this workflow, Brousseau can work out the hardware required to deliver the project on schedule. But it's also important, to deliver frames quickly enough for the artists to work efficiently.

"A frame might take 200 core hours," says Brousseau. "But that doesn't mean a single core alone generates a frame in 200 real-world hours. We'll use 30 or more cores so that the frames come back in a reasonable amount of time and the artist can get their work back quicker. Everything's about iterations. The faster they can send their jobs out and get them back, then make adjustments for another render, the better." For The Addams Family 2, AMD EPYC processors helped with an outstanding iterative workflow. "It has always been about density, so when we heard AMD had 64 physical cores on a chip we knew we had to do a comparison."

Less money, more compute

Nevertheless, Brousseau wanted to know if AMD EPYC was the right fit for Cinesite's workloads. "We did a comparison between AMD and Intel," he says. "We wanted to assess overall compute for the price, so we ended up doing an evaluation, courtesy of Dell. We compared dual 24-core Intel Xeon Gold 6252 CPUs versus dual 64-core AMD EPYC 7702 processors. This was including Optane memory on Intel's side, to lower the price of the overall package by not having to buy half a terabyte of RAM."

"We started with old assets from The Addams Family 1," continues Brousseau. "We worked with the head of lighting and the pipeline folks to convert scenes and assets into the Gaffer-Arnold workflow. Then we did tests with three or four different scenes. From small ones with just a few simple assets to huge ones with many large assets, to get a broad scope of how everything's going to perform. We created a baseline with our old Intel Skylake systems and compared the new Intel and AMD systems to that. The AMD EPYC processors had two and a half times the number of cores on each chip, and the price was much lower for the overall amount of compute we needed, around 30 percent. It was absolutely a no-brainer."

But Brousseau also needed to demonstrate that the output from AMD processors was comparable to output from Intel's. "We had to make sure that the images were ending up pixel for pixel the same," he says. "We can't have even minor differences because we knew we were still going to be rendering on our previous Intel nodes as well. But everything was consistent, so there were no caveats with AMD EPYC processors, it really was more for less."

"We also got half as many racks versus what we would have needed for Intel nodes, so the management is easier, and I've got to buy fewer top-of-rack switches for them."

Jeremy Brousseau, Head of IT, Cinesite Vancouver

Cinesite implemented a strategy to help ensure their compute investment was highly utilized, while keeping the ability to scale their compute capacity on demand as needed. This was critical to maximizing their "compute per dollar". The Addams Family 2 also called for extensive bursting into cloud compute at the most intensive periods of production. "We hit 170,000 vCPUs in AWS across 2,400 instances," says Brousseau. "We used anywhere from 64- to 96-vCPU instances, whatever was available." This involved a mix of instances powered by AMD EPYC and

competitor-based instances, so here again it was essential that Cinesite had already demonstrated the renders would be comparable whichever platform was used. The AMD instances used performed exactly as expected, delivering excellent rendering performance.

It's all about the density

Cinesite chose Dell PowerEdge C6525 servers powered by 2nd Gen AMD EPYC 7662 CPUs as its co-located platform. "We have used Dell nodes forever," says Brousseau. "We use Puppet to manage the nodes, which integrates well with how Dell's IPMI implementation of the BMC works." There were no fundamental differences caused by the switch from Intel to AMD processors. "Nothing really had to change. The first time you see 256 threads in the htop process viewer window it is an eye-opening experience. But otherwise, nothing."

The core advantage of the new EPYC CPU-powered servers did mean Cinesite could run more jobs on each node. "On Intel nodes, we would run one job," says Brousseau. "On the AMD EPYC nodes we run four. But if

something absolutely must come back faster, we don't have to stick to the 64 threads. We could use 128 or 256. Another benefit of the density is that we can buy fewer licenses. For Arnold and Nuke™ for example, we need 35 percent fewer licenses, because we need fewer servers with AMD EPYC CPUs."

"We also got half as many racks versus what we would have needed for Intel nodes, so the management is easier, and I've got to buy fewer top-of-rack switches for them," continues Brousseau. "There were significant benefits with EPYC. We have roughly the same number of nodes, but we have about five times the cores with AMD CPUs. So that's about how much denser they are." AMD's density roadmap also means Brousseau is really looking forward to AMD's future EPYC CPUs. "We can use all the cores we can get. The render times are never going to go down, but things are only going to look better and better."

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About Cinesite

Cinesite is an award-winning digital entertainment studio with 30 years of experience and work on hundreds of film, TV, and streaming productions. The company's visual effects and animation teams breathe life into filmmakers' visions. Alongside skilled artists and engineers, Cinesite works closely with filmmakers and studios to achieve the impossible, whether through complex visual effects or conceiving and realizing entire animated films. Cinesite makes its magic happen from studios in London, Montreal and Vancouver, and since 2015 has also welcomed the VFX masters at Image Engine (Vancouver) and Trixter (Munich and Berlin) to the Cinesite family. For more information visit cinesite.com.

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About AMD

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