Axis Studios bolsters its render farm with Dell EMC PowerEdge servers powered by AMD EPYC™ CPUs

AMD EPYC processor-powered Dell EMC PowerEdge servers enable five times the rack density and massively faster CGI animation output.

AMD EPYC

CUSTOMER

AXIS STUDIOS

INDUSTRY

Media and Entertainment

CHALLENGES

Provide render farm capacity to meet constantly expanding performance needs of new animation and VFX markets

SOLUTION

Switch to AMD EPYC™ CPU-powered Dell EMC PowerEdge servers

RESULTS

Five times the rack density in the render farm enabling much faster performance

AMD TECHNOLOGY AT A GLANCE

2nd Gen AMD EPYC 7702 processors with 64 cores

3rd Gen AMD EPYC 7713 processors with 64 cores

TECHNOLOGY PARTNER

DELLTechnologies

Axis Studios has been at the forefront of animating computer-generated imagery (CGI) for the games industry since 1999. Over the last 20 years, the studio has also grown considerably and expanded its portfolio to include animation and VFX projects far beyond gaming. But CGI animation is one of the most compute power-hungry tasks around. Switching to AMD EPYC™ processors was just what the studio needed to deliver on its constantly expanding computational requirements.

"The company has grown from half a dozen to nearly 400 people in the last 20 years," says Peter Devlin, Head of IT & Facilities, Axis Studios. "The marketplace for Axis has changed, as the games sector has evolved into a multimillion-dollar industry. One of our goals was to change the focus of the company to make it more diverse. Now we service several vertical markets. We still do high-quality animation for games, but we also get involved in animated features, episodic content, VFX for film and TV, and real-time projects. We have recently branched out into extremely high-end creative work for the entertainment sector, such as theme parks."

Clients and artists demand more

"One of the challenges we constantly face is adapting to the stylistic requirements of our clients," continues Devlin. "The demands are just more of everything. More compute power, more storage. Higher frame rates, higher quality, higher-res textures. More geometry. Our artists also want to push the creative envelope. At the same time, clients want faster turnaround times. Their demands would be extremely challenging to meet unless you have really good quality gear sitting in your server room."

"Renders that typically take four hours a frame on other configurations, now only take 40 minutes on an AMD node and that's a game changer."

Andrew Clunes, Rendering Lead, Axis Studios

Axis Studios uses a variety of design and animation tools in its production process, from Autodesk® Maya® to SideFX Houdini™ and Foundry Nuke™. But the primary render farm software is Autodesk® Arnold. "We export an Arnold scene source file that contains all the information for a shot," explains Andrew Clunes, Rendering Lead at Axis Studios. "We run four or five projects at a time and three of them might be 1080p high definition you can roll right through. The other two might be 4K, which is a huge increase in the power you need." Clients also ask for multiple versions of the same project in a short timeframe. "On a 1080p project that's fine. But when the resolution of the show is 4K, that becomes a very different matter."

One sequence of events led Axis towards Dell EMC PowerEdge servers with AMD EPYC™ processors. "Two years ago, we had a client ask us to bid on a piece of work with 100 seconds of 28K frame size delivered at 60 frames a second," says Devlin. Putting this in perspective, 28K at 60 frames per second is 213 times the resolution of HDTV and twice the frame rate. "We figured we would need to invest five million pounds ($6.7 million) in compute capacity to render that project. There was also an animated CG feature project, which will premiere in 2022, where we knew that we would have to expand our capacity by quite a lot. That was the key driver for us beginning to look at AMD hardware."

Performance you can count on

AMD Ryzen™ Threadripper™ workstation CPUs changed the studio's perspective. "We were finding the compute power and bang for the buck with the AMD desktop chips was significantly outperforming what we used previously," explains Devlin.

AMD

"We wanted to find out whether there were CPUs with similar performance benefits for the render farm, so we started reaching out to Dell."

With help from Dell Technologies, Axis Studios tried out the 2nd Gen AMD EPYC processor. One of the key factors beyond its performance was whether the CPU could endure the high intensity use patterns in Axis Studios' render farm. "In our primary server room, we operate a hot aisle containment system," says Devlin. "Those render nodes will be running continuously, 24/7 for three years in a hot aisle containment scenario at as high as 50 degrees (Celsius). "We had good results with 2nd Gen AMD EPYC™ processors, which led us to begin deployment."

"We now have 24 of the 2nd Gen AMD EPYC 7702, and another 24 of the 3rd Gen AMD EPYC 7713 coming online," says Devlin. Dell's technology and support for the full EPYC CPU range, including the highest frequencies and PCIe® Gen 4.0, made it the optimum partner for Axis Studios.

Five times the compute power per rack
The benefits to the Axis Studios render farm have been unparalleled. "We can be five times more rack dense with the AMD hardware," says Devlin. "Plus, the AMD chips are affordable and deliverable as well."

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> Peter Devlin, Head of IT & Facilities, Axis Studios

"Our artists now see their renders finish five hours before they expected," says Clunes. "Arnold as a render engine scales really well especially on the high thread count. We can use 30 AMD nodes and it's done in an hour and a half, well ahead of the end of the day. Renders that typically take four hours a frame on other configurations, now only take 40 minutes on an AMD node and that's a game changer."

> *"[With AMD] it was the easiest build I've ever done. It just worked straight out of the box."*
> Andrew Clunes, Rendering Lead, Axis Studios

"It's down to core count at a higher clock speed," explains Devlin. "Compared to the competition, you're always making a compromise between core counts and clock speed. But you get the best of both worlds with AMD. If you're doing a like-for-like 2U chassis comparison, you're consuming up to 20-25 percent more power and generating more heat, but you're getting up to five times the amount of work out of the unit."

EPYC deployment benefits
Axis also uses Dell EMC PowerScale storage, which perfectly complements the PowerEdge servers. Transitioning from the studio's previous servers proved easy, too. "We basically rebuilt one image to make sure that we had an AMD-compatible version of the operating system and then that was it." Clunes adds: "It was the easiest build I've ever done. It just worked straight out of the box."

"Every studio should take a really good look at its power, compute, and cooling," says Devlin, "because it doesn't make sense to have anything other than AMD hardware." Clunes also appreciates the potential savings elsewhere: "The power yield from these CPUs is fantastic. If you're getting more render power out of a single system compared to five equivalent other ones, you only need to pay for one plugin license on that system, not five."

"We are now executing complex long-form projects that we would have been unable to before," concludes Devlin. "We wouldn't have had the compute capacity. The value proposition that AMD unlocked for us with Dell is great."