UZ Brussel boosts hospital services with AMD EPYC™ CPUs

AMD EPYC CPU-powered Dell Technologies servers provide faster performance for medical applications and end-user VDI

AMD EPYC

Running a hospital takes an increasing amount of computing power, particularly for those institutions that also supply IT services to external facilities. UZ Brussel is a Flemish-speaking hospital connected to the Free University of Brussels. It supplies its PrimUZ electronic patient record system to a range of Belgian hospitals. When UZ Brussel was planning its next infrastructure upgrade, Dell EMC PowerEdge servers with AMD EPYC processors delivered the performance and security features required.

"We have a large department for a hospital," says Robin Demesmaeker, Manager of IT Infrastructure at UZ Brussel. "We have around 80 people in total for the IT department, including a lot of developers. Two years ago, we had to write a new tender for our servers. We wanted to virtualize more and more and had always used Intel as a processor. But in the new tender, the balance between performance and value was an important factor." This was where the hospital started considering AMD EPYC technology running on Dell EMC PowerEdge servers.

Faster performance, better value

UZ Brussel's interest in AMD EPYC technology came from seeing the company's success in other markets. "I follow the tech industry quite closely," says Mathias De Belder, Systems Engineer at UZ Brussel. "When the first generation of EPYC processors was launched, I knew that because 'Zen' was a big thing, AMD had the best cards in hand compared to Intel. That is why we pushed to buy AMD instead of Intel."

Thanks to UZ Brussel's solution partner, Dell Technologies, the hospital was able to try the new AMD EPYC processors out running on Dell EMC PowerEdge servers to see if they were the right fit.

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Mathias De Belder, Systems Engineer at UZ Brussel

"They initially sent us a 2nd Gen EPYC™ platform to test. We ran our workloads on it, and we were extremely satisfied with the performance," says De Belder. "It was very important that we could convince our management we could run all our workloads seamlessly on an AMD CPU-powered server."

Compared to the existing systems UZ Brussel had been using, there were clear performance benefits. "We have an internal application for our intranet, and when we started that on our older Intel servers, it took about 10 minutes," says De Belder. "With the PowerEdge servers powered by AMD EPYC processors it booted in three minutes. The continuous build system for the PrimUZ application usually takes 20 minutes. We migrated that workload from our Intel processor service to the 2nd Gen AMD EPYC processors, and it completed 40 percent faster."

UZ Brussel was upgrading servers for two distinct workload categories. One was for the full range of medical applications from Philips GE, Roche, and Abbott, to Varian Brain Lab. The other was for virtual desktop infrastructure (VDI) for everyday computing tasks. "GPUs were very important for VDI," says Steven Van Praet, Systems Engineer at UZ Brussel. "With AMD processors there is a very high number of PCIe lanes available compared to Intel. We also saw that the AMD processors are more cost efficient. For us as technical people, there was not a lot of debate about going with AMD."

The VDI solution had to fulfill everybody's need from the Office Administrators to the HR users and the software developers. "Software Developers are the savviest users, developing our PrimUZ application with Java. We have about 40 developers, and they run quite busy VDI machines with eight CPU cores, 24GB of RAM, and GPU cards.

To host those users, we determined that it was better to go with AMD hardware compared to Intel hardware. With AMD hardware we could have a single-socket machine with four GPU cards."

"We managed to save quite a bit of money on licensing cost, so we've been able to invest more on server hardware," says De Belder. "We took advantage of this opportunity allowing us to be more liberal in giving out resources to VMs." This enabled a massive upgrade of the VDI experience for the end users. "We've upgraded hundreds of doctors and nurses from Windows 7 to new Windows 10 virtual desktops thanks to the new EPYC servers."

Giving users the VDI experience they need

"On our old system, we would never have been able to upgrade to Windows 10 and provide acceptable performance for the 1,500 concurrent users we have per day in the hospital," says De Belder. "We had three attempts to deploy VDI: The first one was miserable, the second one was more miserable, and the third one was EPYC!" The COVID pandemic meant that UZ Brussel had a lot of people working from home, who saw the advantage of VDI when remotely working. "With the old VDI solution, the impact of COVID on IT would have been problematic. But we can now give everyone a virtual desktop with great performance." Van Praet adds: "Before, end users didn't like VDI at all, and now they love it. "

The AMD EPYC Secure Encrypted Virtualization feature is also something UZ Brussel is looking at deploying, because patient record information is extremely sensitive data. "We will be able to encrypt VMs and their memory," says De Belder. He also intends to recommend the PowerEdge servers powered by AMD EPYC processors to other departments, after the great experience UZ Brussel has had so far. "We will advise the genetics department to go with the new 3rd Gen AMD EPYC processors. For their workload, 3rd Gen EPYC is an excellent fit because it needs as much CPU performance as possible. So dual-socket, 64-core CPUs will be perfect for them."

Virtualization benefits from AMD EPYC CPUs

Because UZ Brussel was switching virtual machines processors from Intel to AMD, migration had to be done offline. However, it didn't prove to be problematic. "We did it in less than a week," says Van Praet. UZ Brussel purchased around 50 systems from Dell Technologies, a mix of PowerEdge R7515 and R7525 servers.

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Mathias De Belder, Systems Engineer at UZ Brussel

The servers for internal medical applications were equipped with 24-core high frequency AMD EPYC 7F72 processors, while the VDI machines were powered by 24-core 7402P or 32-core 7502 AMD EPYC CPUs.

"We have a genome sequencing application running on an HPC cluster that uses extremely big VMs, with 12, 16, or sometimes more than 20 CPU cores, and 300GB of memory. The bottleneck for this type of workload isn't CPU but memory capacity. And this is a great advantage for AMD CPUs. With Intel, we had to buy quite expensive CPUs to be able to install the same amount of memory. Our biggest servers have 2TB of memory."

The choice of AMD EPYC processors wasn't just about performance. "We wanted AMD for the security features," says Van Praet. This is particularly important when VDI users could be handling sensitive data such as patient records. "AMD processors have strong capabilities against recent threats. We also use VMware. We had dual-socket Intel machines, that we replaced with single-socket Dell EMC PowerEdge servers powered by AMD EPYC processors, so we cut the number of VMware licenses by half. With Intel, it is more difficult to do this, because the number of cores per socket is very limited."

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Steven Van Praet, Systems Engineer at UZ Brussel

"The greatest advantage of the PowerEdge R7515 powered by AMD EPYC is that we can run our workloads on a single-socket instead of dual-socket," concludes De Belder. "EPYC has the best price-performance, much better than the Intel Xeon. AMD processors have superior security features. We can put more memory inside AMD EPYC single-socket machines than Intel machines and have a higher number of PCIe lanes. It will be the obvious next step to upgrade to 3rd Gen AMD EPYC processors."

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About UZ Brussel

UZ Brussel is a Flemish-speaking hospital connected to the Free University of Brussels. It provides medical services ranging from cardiac surgery and cardiology, medical genetics, medical image and radiology, to oncology, pediatric care, reproductive medicine and vascular surgery. It has 3,800 employees, 721 hospital beds and each year accounts for more than 30,000 patient admissions, 360,000 consultations, and 70,000 emergency care patients. Its philosophy is founded on three principles: Dutch-speaking, pluralist and social. As a university hospital, it also has a teaching mission and conducts scientific research. For more information visit uzbrussel.be.

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About AMD

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