GMO supercharges cloud services with AMD EPYC™ CPUs

Increasing virtual machine density while reducing costs for Microsoft Hyper-V®

AMD EPYC

CUSTOMER

GMO INTERNET GROUP

INDUSTRY

Internet infrastructure provider

CHALLENGES

Delivering more virtual machines per server to reduce costs

SOLUTION

Deploy AMD EPYC™ 7552 processors

RESULTS

More than five times as many virtual machines per server as previous configuration

AMD TECHNOLOGY AT A GLANCE

AMD EPYC 7401P with 24 cores
AMD EPYC 7552 with 48 cores

TECHNOLOGY PARTNER

DELL Technologies

The worldwide public cloud market is predicted to grow nearly 20 percent in 2020, according to Gartner Research, and that rate shows no signs of slowing over the next few years. Tokyo-based GMO Internet, Inc is a Japanese Internet infrastructure company with a strong portfolio of cloud services based on Microsoft and Open Source platforms. When GMO learned about AMD EPYC™ processors, the new technology appeared to offer the perfect way to take the company's cloud provisions to the next level.

The cloud business is a very price-sensitive one, so the number of virtual machines (VMs) that each server can support is critical. "We can reduce our cost by having a higher density of VMs per server," explains Yuya Matoba, Assistant Manager, Compute Product Team, Cloud Service, GMO Internet, Inc. The high core number per socket of AMD EPYC processors made them a particularly attractive prospect for GMO. Originally, GMO had been running its Windows-based Hyper-V VMs via 20 racks of servers with other x86 processors. By using AMD EPYC CPUs, Matoba was hoping to drastically reduce this number, lowering both acquisition and operational costs considerably.

Greater core density with AMD EPYC

GMO provides a range of Internet services, including domains and bare metal servers. But one of the company's biggest areas is cloud service provision via the commercial Windows operating system and Hyper-V hardware virtualization as well as Open Source Linux®-based platforms. For its Hyper-V offering, GMO had originally been operating 20 racks of dual-socket servers using other x86 processors with four cores per CPU. "The number of VMs per server was 40 at maximum," says Matoba.

GMO provides VMs for its customers to install and run their own software on in the cloud. The number available per server therefore equates directly with how many customers can be supported on each one. Dell Technologies, GMO's hardware partner, suggested the company try out 1st Gen AMD EPYC processors in its Dell EMC PowerEdge R6415 rack servers to improve density. GMO had already been impressed by the publicity AMD's consumer-level CPUs were starting to achieve. "AMD processors had been highly evaluated," explains Matoba. "We reckoned that since the consumer CPU was much appreciated, the server CPU must be really good too, with excellent performance. That's why we decided to evaluate the AMD EPYC processor."

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Yuya Matoba, Assistant Manager, Compute Product Team, Cloud Service, GMO Internet, Inc.

Since GMO was going to be migrating its VMs over to the new platform, it was also important this be fully compatible with Windows and Hyper-V. "Dell EMC's AMD EPYC processor-based PowerEdge servers were quickly certified for Windows and Hyper-V, which was another motivation for us to use them," says Matoba. The transition to the AMD EPYC went smoothly, with AMD's support helping sort everything out easily. "We replaced the old x86 servers with the new AMD EPYC ones and achieved a very high density of VMs per server, but we wanted to improve the density of the VMs per server even further." This led GMO to try out the 2nd Gen AMD EPYC processor when it was launched.

Reducing operating costs with a single socket

To ensure they were using the right processors for the next upgrade, GMO did its own performance testing of its existing 1st Gen AMD EPYC 7401P processor platform against other non-AMD 12-core CPUs in dual-socket configuration and a 48-core 2nd Gen AMD EPYC 7552 processor in a single socket, using Maxon Cinebench Release 20. The non-AMD x86 processors were 59 percent faster than GMO's existing 1st Gen AMD EPYC platform, due to having a much higher base clock frequency, but the 2nd Gen AMD EPYC was 58 percent faster than the non-AMD x86 CPUs due to having twice as many cores.

With cloud service provision, it's not all about raw performance, but how many VMs that can be supported within the budget. The x86 processors would necessitate a dual-socket configuration and more expensive CPUs to provide the high-performance level that the AMD EPYC 7552 processor was able to with just a single socket. "If we wanted to raise the number of cores to the level of AMD, it was going to be very expensive with the old x86 processors," says Matoba. This made the AMD EPYC servers less expensive to buy and had a further benefit for day-to-day costs. "By reducing two sockets to one we can reduce power consumption."

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The result was a vastly increased number of VMs per server, allowing GMO to deliver with two racks of servers what had previously required 20 racks of its of its former configuration. "In comparison with the older generation from which migration was done, we used to have 40 VMs per server, and now we can achieve 250 VMs per server," says Matoba. This has enabled a further reduction in the costs of software licenses. "If the number of sockets is large, we have to pay more because we are using Microsoft's Service Provider License for Windows Server. If we can also reduce the number of cores for the same number of VMs, then we can reduce the cost accordingly. That is a quantitative benefit of 2nd Gen AMD EPYC."

Future AMD EPYC roadmap means more services

After the success with the AMD EPYC processor running GMO's Windows Hyper-V workloads, the company is now considering deployment in other areas, starting with its Linux-based Open Source cloud offering. "The Windows server is very stable," says Matoba. "The future challenge would be Open Source software with EPYC. In the past, we only had one choice of CPU for x86 platforms, but now we will be able to change the selection process."

In the shift from 1st to 2nd Gen AMD EPYC processors, GMO has raised its memory allocation from 256GB to 512GB—still well within the 4TB maximum of AMD processor-powered platforms. GMO hasn't taken advantage of the AMD EPYC processor's support for PCI Express® 4.0 yet, but will for future offerings. "We are going to develop a virtual desktop infrastructure (VDI) product for corporations and PCI Gen 4 will play an important role. We would like to use a GPU for VDI and that will use PCI Gen 4, and also AMD has a GPU, so we'd like to try that in the future."

For now, though, GMO is reaping significant benefits from AMD EPYC processors. "The watts per core is really good, and as a result, we can improve the density of the VMs." AMD's roadmap towards the 3rd Gen EPYC will also give GMO the ability to plan future service improvements. "Because AMD is trying to develop new things and new challenges, we can also develop new services as well. That is really helpful."

About GMO Internet Group

GMO Internet Group is an Internet service industry leader, developing and operating Japan's most widely used domain, hosting & cloud, ecommerce, security, and payment solutions. The Group also includes the world's largest online FX trading platform, as well as online advertising, Internet media, and cryptoassets related services. GMO Internet, Inc. (TSE: 9449) is headquartered in Tokyo, Japan. For more information, visit gmo.jp/en.

About AMD

For 50 years AMD has driven innovation in high-performance computing, graphics, and visualization technologies—the building blocks for gaming, immersive platforms, and the data center. Hundreds of millions of consumers, leading Fortune 500 businesses, and cutting-edge scientific research facilities around the world rely on AMD technology daily to improve how they live, work, and play. AMD employees around the world are focused on building great products that push the boundaries of what is possible. For more information about how AMD is enabling today and inspiring tomorrow, visit amd.com/EPYC.