PERFORMANCE BRIEF

AMD EPYC™ SoCs CAN PROVIDE HIGHER DENSITY, HIGHER PERFORMANCE VIRTUAL DESKTOPS THAN LEGACY DUAL PROCESSOR SYSTEMS

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The right processor for VDI

VMware Horizon® 7.9 combined with VMware® vSAN™ and a dual AMD EPYC™ 7542 SoC enables you to run more virtual desktops per node than legacy dual processor servers.

High performance at high density

Our testing reveals that the average response time at full load only differs from response time at minimal load by ~0.1 seconds. This means at high load or low, end users get a productive and comfortable user experience.

More Virtual Desktops per Processor

AMD internal Login VSI testing shows that an AMD EPYC processor-based four node cluster supports ~980 desktops. Thus, each server powered by dual AMD EPYC 7542 processors, can deliver 245 virtual desktops offering class-leading density[1,2] at low TCO.

AMD EPYC™ Delivers Exceptional Hyperconverged Performance on Login VSI™

Upgrading a virtual desktop infrastructure frequently requires replacing older dual processor powered servers due for refresh with newer models. This can have a huge impact on the Total Cost of Operations (TCO).

Now, you can help reduce TCO with servers powered by AMD EPYC 7542 processors. With their high core count and ample memory bandwidth, AMD EPYC 7542 powered servers support a large number of VDI workloads, proving them to be an excellent choice for deploying virtual desktops in a hyperconverged environment.

Processor	Desktop OS	Virtual Desktops Per Node
2 x AMD EPYC™ 7542	Windows® 10 Enterprise 64 bit	~245
2 x Intel Xeon Gold 6138, 2GHz, 20-Core[2]	Windows® 10 Enterprise 64 bit	150

Table 1: Login VSI "Knowledgeworker" test of Windows 10 desktops

Dual socket servers with AMD EPYC 7542 processors enable you to run far more virtual desktops per node than a comparable legacy dual processor server configuration, while supporting Windows 10. See Table 1.

Tested with Login VSI

Login VSI is the industry standard virtual desktop load-testing tool. With the Login VSI benchmark you can model the performance, scalability and availability of typical virtual desktop environments based on their synthetic user technology. Login VSI uses Microsoft® Office and other knowledge worker applications to determine response times.

Test Configurations

We configured four dual socket servers with AMD EPYC 7542 processors with 128 threads per server (Figure 1). We added 1TB of memory in a high-throughput, dual-DIMM-per-channel configuration. The storage configuration used VMware vSAN software with 8 SATA SSD disks in two disk groups per server. Each capacity disk was 1.6 TB, for a total of 23.29 TB of high-speed storage. Each cache disk was 1.6 TB SATA SSD. vSAN deduplication and compression were disabled, and checksum was enabled. 25-Gbps switches connected the servers.

The virtual desktops ran Microsoft Windows 10 Enterprise 64 with 2 vCPUs, each with 4096 MB of memory allocated and 60 GB of vDisk. This configuration represents a typical hyperconverged architecture.

We compared our system to a similarly configured vSAN architecture designed to support virtual desktops. See Table 2 for configuration details.

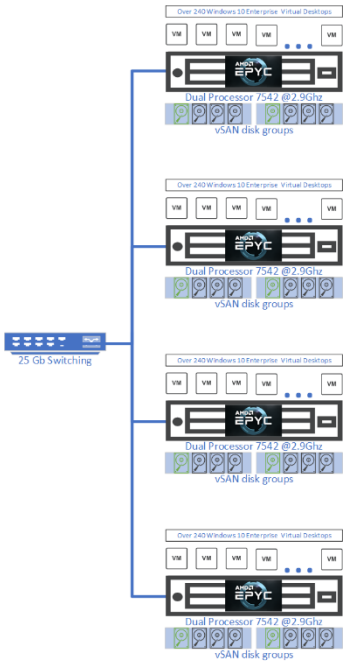

Figure 1 Benchmark Configuration

PROPERTY	AMD EPYC™ 7542	REFERENCE SYSTEM
Server	4 x Dual Socket Server	3 x rack server
CPU	2 sockets, EPYC 7542 CPUs	2 sockets, Intel® Xeon® Gold 6138 CPUs
RAM	1 TB	768 GB
Network adapter	Broadcom® NetExtreme 25 GB	4 x Intel X710 rNDC
Storage adapter	Dell® PERC H745P	2 x 12 Gbps SAS PCI Express®
Disks	SSD: 2 x 1.6 TB SATA cache SSD SSD: 6 x 1.6 TB SATA cache SSD	SSD: 2 x 960GB cache SSD SSD: 4 x 1.8TB capacity HDD

Table 2 Reference System for Legacy Intel-based 2P Server System and replacement 2P EPYC Server System

Confidently Virtualize Your Desktops

AMD internal Login VSI testing (Figure 2) shows that the AMD EPYC processor-based four node cluster supports 979 desktops. Thus, each server, powered by dual AMD EPYC 7542 processors running VMware vSAN and VMware Horizon® 7.9 can deliver ~245 virtual desktops, considerably higher density than the dual processor server with legacy Xeon processors that only deliver ~75 virtual desktops per processor[2] (Table 1). This means customers supporting Windows 10 when replacing older VDI servers can experience much better response times and higher density.

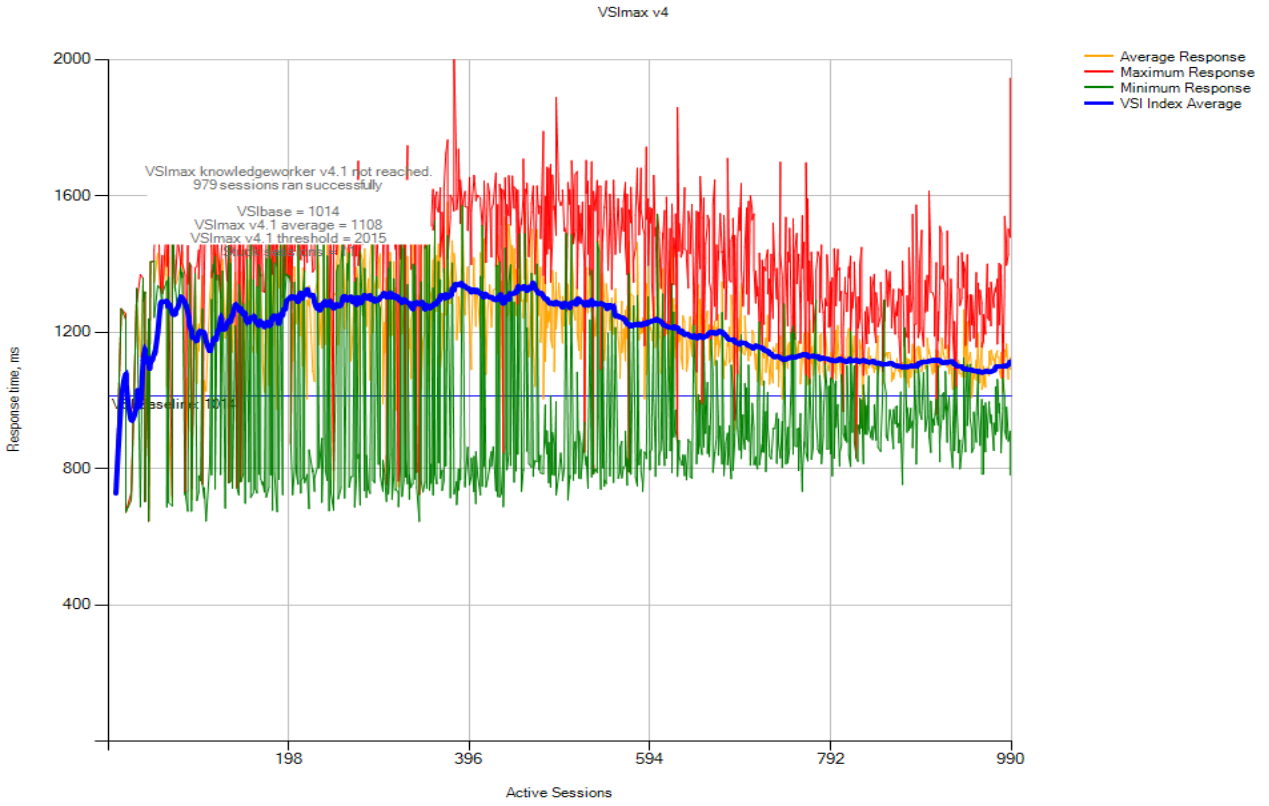

Figure 2: AMD EPYC 7542 2P Server 4-Node Cluster Login VSI Test Results

Also, the response time as measured by VSImax Average at 1108 ms is only 94 ms greater than the base response time of 1014 ms. This shows that the system response time is only minimally impacted at maximum load levels. We can safely conclude that the system can scale beyond our current threshold limits.

Innovation is Becoming Ever More Important

Continuous innovation enables the AMD EPYC 7542 system on chip (SoC) to deliver 32 cores of CPU performance. The ability to package more cores in a comprehensive SoC is essential to delivering superior performance at a reasonable cost. It is part of AMD's strategy of delivering a better balance of resources for better real-world application performance. The AMD EPYC SoC delivers best-in class core count, memory capacity and bandwidth[1], and massive I/O capacity - all essential elements of virtual desktop environments.

FOOTNOTES

1. Best-in-class based on industry-standard pin-based (LGA) X86 processors.
2. Dell EMC Ready System for VDI on XC Series Reference Architecture for VMware Horizon; page 56 for hardware configuration; page 57 – 61 showing 150 desktops per node: https://info.loginvsi.com/acton/attachment/25205/f-0244/1/-/-/-/-/Dell%20EMC%20-%20Ready%20System%20for%20VDI%20on%20XC-Series-VMware-Horizon.pdf?_ga=2.267704142.1150824767.1570492678-294143756.1564612450