

AMD EPYC™ SoCs CONSOLIDATE VIRTUAL DESKTOPS FROM LEGACY DUAL PROCESSOR SYSTEMS TO LOWER-POWER SINGLE PROCESSOR SYSTEMS

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Transition from Dual to Single Processor

VMware Horizon® 7.6 combined with VMware vSAN® and a single AMD EPYC™ 7702 SoC enables you to run more virtual desktops per node as a legacy dual processor server.

Upgrade and Consolidate

Customers consolidating Windows® 10 desktops will find that a single AMD EPYC 7702 powered server can run considerably more virtual desktops than their legacy Intel Xeon Gold 6138 dual processor powered servers.

More Desktops per Processor

AMD internal Login VSI testing shows that an AMD EPYC processor-based four node cluster supports ~850 desktops. Thus, each server, powered by a single AMD EPYC 7702 processor, can deliver 212 virtual desktops offering class-leading density^{1,2} at low TCO.



AMD EPYC™ Delivers Exceptional Hyperconverged Performance on Login VSI™

Total cost of operation (TCO) is of high concern when upgrading a virtual desktop infrastructure. Older dual processor servers due for refresh have to be replaced with newer models. And new dual processor servers can come with a high price tag, use more electricity, and generate more heat than single processor systems.

Before AMD EPYC 7702, single processor systems could not be counted on to support the VDI workloads of dual processor systems. Now servers powered by a single AMD EPYC 7702 processor, with its high core count, high memory bandwidth, and high number of virtual desktops per processor in a hyperconverged system, proves to be an excellent choice for deploying virtual desktops in a hyperconverged environment.

Processor	Desktop OS	Virtual Desktops Per Node	Virtual Desktops Per Processor
1 x AMD EPYC 7702	Windows® 10 2016 LTSB	212	212
2 x Intel Xeon Gold 6138, 2GHz, 20-Core ²	Windows® 10 Enterprise 64 bit	150	75

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

A single processor server with the AMD EPYC 7702 enables you to run as many virtual desktops per node as a legacy dual processor server and requires less power³ and cooling per server, all 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 single socket servers with AMD EPYC 7702 processors with 128 threads per server (Figure 1). We added 512 GB of memory in a high-throughput, single-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 891 GB, for a total of 20.96 TB of high-speed storage. Each cache disk was 450 Gb SATA SSD. vSAN deduplication, compression, and checksum were disabled. 25-Gbps switches connected the servers.

The virtual desktops ran Microsoft Windows 10 LTSB 2016 with 2 vCPUs, each with 2304 MB of memory allocated and 40 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. The configuration of the reference system, used to represent a configuration three or more years old and due for consolidation, is detailed in Table 2.

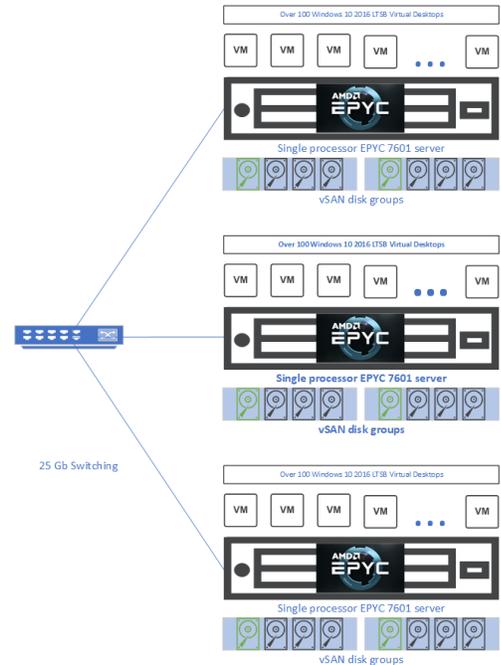


Figure 1: Benchmark Configuration

PROPERTY	SPECIFICATION
Server	3 x rack server
CPU	2 sockets, Intel® Xeon® Gold 6138 CPUs
RAM	768 GB
Network adapter	2 x Intel 10 Gigabit SFI/SFP
Storage adapter	2 x 12 Gbps SAS PCI Express®
Disks	SSD: 2 x 960GB cache SSD SSD: 4 x 1.8TB capacity HDD

Table 2 Reference System for Legacy Intel-based 2P Server System

Confidently Virtualize Your Desktops

AMD internal Login VSI testing (Figure 3) shows that the AMD EPYC processor-based four node cluster supports 850 desktops. Thus, each server, powered by a single AMD EPYC 7702 processor running VMware vSAN and VMware Horizon 7.6 can deliver 212 virtual desktops, considerably higher density than the dual processor server with legacy Xeon processors that only deliver ~75 virtual desktops per processor² (Table 1). This means customers can reduce power and cooling costs while supporting Windows 10 when replacing older VDI servers. AMD EPYC combined with VMware® vSAN can help save on capital expense, deployment, power and cooling.

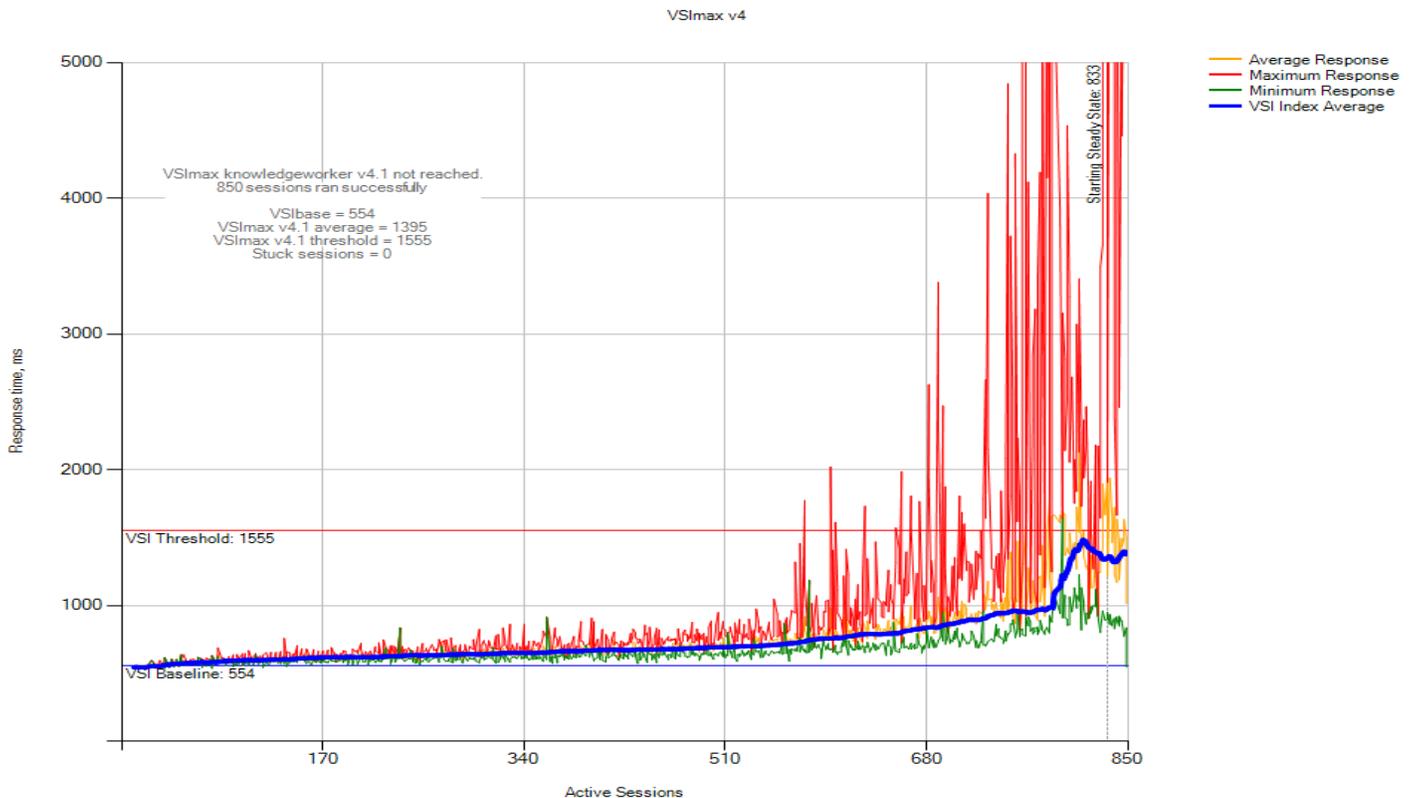


Figure 2: AMD EPYC 7702 1P Server 4-Node Cluster Login VSI Test Results

Innovation is Becoming Ever More Important

Innovation is the reason for these outstanding results. As the once-automatic leaps in processor performance become increasingly elusive, innovation becomes even more important. The AMD EPYC 7702 system on chip (SoC) delivers 64 cores of CPU performance. The ability to package more cores in a comprehensive system on chip becomes 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 number of cores, memory capacity and bandwidth¹, 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 showing 150 desktops per node:
<https://www.emc.com/collateral/TechnicalDocument/xc-series-vmware-horizon-ra.pdf>
3. EPYC 7702 TDP 200W vs. Intel Xeon Gold 6138 TDP 125W X 2 processors.
<https://ark.intel.com/content/www/us/en/ark/products/120476/intel-xeon-gold-6138-processor-27-5m-cache-2-00-ghz.html>

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