PERFORMANCE BRIEF **MAY 2019**

AMD EPYC™ SoCs AND CITRIX XenDesktop®: DOUBLE THE VIRTUAL DESKTOPS PER PROCESSOR

Transition from Dual to Single Processor

Citrix XenDesktop® 7.15 combined with VMware vSAN® and a single AMD EPYC™ 7601 SoC enables you to run as many virtual desktops per node as a Xeon Gold 5120 dual processor server[2].

Consolidate with Confidence

Customers running Windows® 10 will find that a single AMD EPYC 7601 powered server can run the same number of virtual desktops as their Intel Xeon Gold 5120 dual processor powered servers [Table 1].

More Desktops per processor

AMD EPYC processors enable 140 virtual desktops per processor with the AMD EPYC 7601 processor offering class-leading density[1] at low TCO.

AMD EPYC™ Delivers Exceptional Hyperconverged Performance on LoginVSI™

When upgrading a virtual desktop infrastructure, TCO is one of the highest concerns. Older dual processor servers due for refresh should be replaced with newer models. But new dual processor servers can come with a high price tag, use more electricity, take up more space, and generate more heat than single processor systems.

Previously, single processor systems could not be counted on to support the VDI workloads of dual processor systems. Until now. Servers powered by a single AMD EPYC 7601 processor, with its high core count, high memory bandwidth, and high number of virtual desktops per processor, proves to be an excellent choice for deploying virtual desktops in a hyperconverged environment.

PROCESSOR	NODES	VIRTUAL DESKTOPS PER NODE	VIRTUAL DESKTOPS PER PROCESSOR
1 X AMD EPYC 7601	4 x 1RU general purpose servers	140	**140**
2 X INTEL XEON GOLD 5120, 2.2 GHZ 14-CORE[3]	3 x 2RU vSAN appliances	140[2]	70

Table 1: LoginVSI "Knowledgeworker" Test of Windows 10 Desktops

A single processor server with the AMD EPYC 7601 enables you to run as many virtual desktops per node as a legacy dual processor server and requires less power[4] and cooling per server. See Table 1.

Tested with LoginVSI

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

Test Configurations

AMD engineers configured four single socket servers with AMD EPYC 7601 processors, each with 64 threads per server (Figure 2). We installed 512 GB of memory in a high-throughput, single-DIMM-per-channel configuration. The storage configuration used was VMware vSAN software with 8 x SATA SSD disks with 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 one 894 Gb SATA SSD. vSAN deduplication and compression were enabled, and checksum was disabled. 25-Gbps switches connected the servers.

The virtual desktops ran Microsoft Windows 10 LTSB 2016 with two vCPUs, each with 2304 MB of memory allocated and 40 GB of vDisk each. This configuration represents a typical hyperconverged architecture.

We compared our system to an appropriately configured legacy vSAN architecture running Citrix XenDesktop 7.15 designed to support virtual desktops during testing. The configuration details of the legacy reference system and the AMD EPYC processor-based system are shown in Table 2.

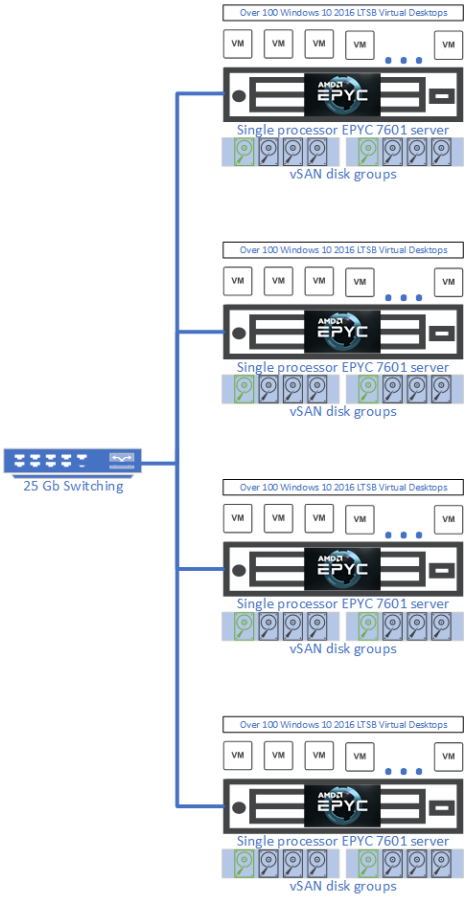

Figure 2: Benchmark Configuration

PROPERTY	LEGACY REFERENCE SYSTEM	AMD EPYC PROCESSOR SYSTEM
SERVER	3 x 2RU vSAN appliance servers	4 x 1RU general purpose servers
HYPERVISOR	VMware ESXi 6.5	VMware ESXi 6.7 U2
PRESENTATION SOFTWARE	Citrix XenDesktop 7.15	Citrix XenDesktop 7.15
CPU	Dual socket Intel® Xeon® Gold 5120	Single socket AMD EPYC 7601
RAM	384 GB	512 GB
NETWORK ADAPTER	2 x Intel 10 Gigabit SFI/SFP	2 x 25 Gigabit SFP
CACHE STORAGE	SSD: 2 x 400 GB HDD: 4 x 1.8 TB HDD	SSD: 2 x 894 GB SSD: 6 x 894 GB

Table 2: Legacy Reference System and AMD EPYC Processor System Configuration

The EPYC Advantage: AMD EPYC processors can enable a greater density of virtual desktops per processor due to their innovative architecture combining high core counts, large memory capacity, ample memory bandwidth and massive I/O, all with the right ratios to help performance reach new heights.

Confidently Virtualize Your Desktops

Our AMD internal Login VSI testing (Figure 3) shows that the single processor AMD EPYC 7601 server running VMware vSAN and Citrix XenDesktop 7.15 can deliver the same virtual desktop density as a dual processor server with Intel Xeon Gold processors[2] (Table 1). This means customers can reduce cooling costs and power[4] consumption while running Windows 10 when they replace legacy VDI servers with AMD EPYC processor-based solutions.

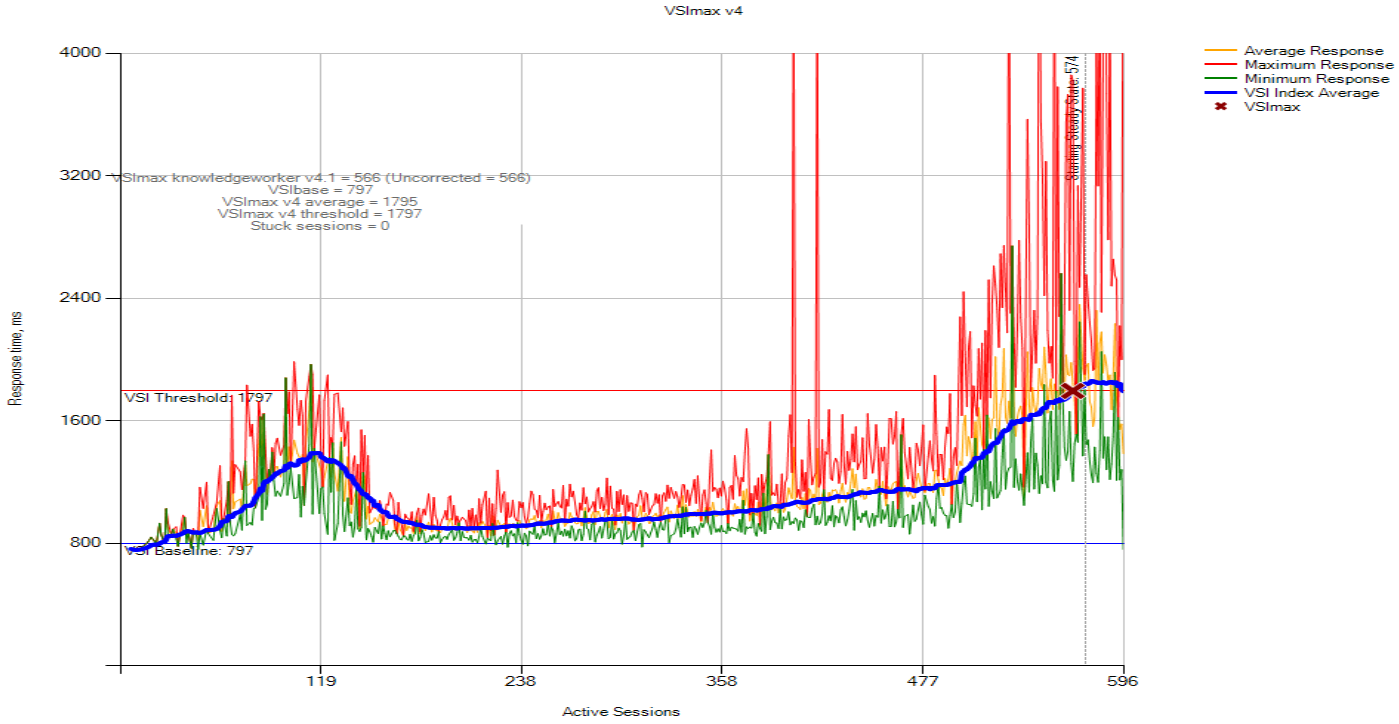

Figure 3: LoginVSI test results: VSImax Overview of AMD EPYC processor-based system

AMD EPYC processors, in combination with VMware vSAN and Citrix XenDesktop can help customers save on capital expense, deployment, power and cooling.

Innovation is Becoming 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 7601 system on chip (SoC) delivers 32 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 bandwidth[1], and massive I/O capacity - all essential elements of virtual desktop environments.

AMD Enables Increased Density of Your Virtual Desktop Infrastructure

For more information about AMD EPYC server processors visit:
https://www.amd.com/en/products/epyc-server

FOOTNOTES

1. Best-in-class based on industry-standard pin-based (LGA) X86 processors. NAP-166
2. 3rd party data not independently verified by AMD. Dell EMC Ready System for VDI on VxRail – Reference Architecture for Citrix – Section 6, page 65: User Density Summary, Row 2, Workload: Knowledge Worker: https://downloads.dell.com/solutions/general-solution-resources/White%20Papers/DellEMC.VxRail.Citrix.XenDesktop-RA.pdf
3. 3rd party data not independently verified by AMD. Dell EMC Ready System for VDI on VxRail – Reference Architecture for Citrix – Paragraph 3.3.1.2 V570/V570F-B5 Configuration: https://downloads.dell.com/solutions/general-solution-resources/White%20Papers/DellEMC.VxRail.Citrix.XenDesktop-RA.pdf
4. 3rd party data not independently verified by AMD. EPYC 7601 TDP 180W vs. Intel Xeon Gold 5120 TDP 105W X 2 processors: https://ark.intel.com/content/www/us/en/ark/products/120474/intel-xeon-gold-5120-processor-19-25m-cache-2-20-ghz.html
5. Based on results found on the LoginVSI Benchmark Reports site: https://www.loginvsi.com/resources/benchmark-reports