Technical brief

Boost virtual desktop density and reduce costs with VDI modernization

HPE ProLiant Compute DL380 Gen12 powered by Intel Xeon 6

Introduction

Remote and hybrid work models have many organizations turning to VDI to keep data secure while ensuring consistent performance across teams. Organizations with high security requirements, such as government agencies, healthcare services, and financial services, rely on the essential access security that VDI provides as the gateway to back-end systems housing critical data. Market research shows that the VDI sector continues to expand at a 6.5% compound annual growth rate as these vital industries seek centralized IT management and security to meet stringent laws and regulations.[1]

Meeting the challenges of VDI—which include providing seamless user experiences, supporting enough desktops, and keeping escalating infrastructure costs in check—requires investing in modern infrastructure. HPE ProLiant Compute DL380 Gen12 servers powered by Intel® Xeon® 6 processors offer organizations an excellent combination of performance, cost-efficiency, and user experience. Intel Xeon 6 processors deliver high virtualization density, reduced TCO, streamlined management, and hardware-level security support for advanced workloads, making them reliable and scalable VDI environments. Boosting virtualization density allows admins to support more users now while also allowing headroom for future growth—which lets them hold off longer on provisioning new VMs or physical servers, keeping admin hassle and cost low.

Whether you're refreshing existing hardware or heading down the VDI path for the first time, HPE ProLiant Compute DL380 Gen12 servers with Intel Xeon 6 processors deliver. Testing shows that the Intel Xeon 6 platform improves performance by 169% over previous-gen processors—which can help cut costs through consolidation.

Support up to 169% more desktop users with headroom for growth and cut VDI costs[2]

[1] "Desktop Virtualization Market Size, Share, Growth, And Industry Analysis, By Type (Hardware, Software) By Application (Commercial, Government, Military, Other), Regional Insights and Forecast From 2026 To 2035," Business Research Insights, accessed March 19, 2026.

[2] edc.intel.com/content/www/us/en/products/performance/benchmarks/intel-xeon-6/

Why run VDI on HPE ProLiant Compute DL380 Gen12?

Virtual desktop infrastructures benefit from the combination of dense CPU and ultra-scalable GPU acceleration for large workloads that the HPE ProLiant Compute DL380 Gen12 brings to the table. A two-socket server with up to 8 TB of RAM, the DL380 offers:

— Ideal support for compute- and data-storage-demanding workloads requiring maximum core count, GPU capabilities, and network and I/O bandwidth

— Intel Xeon 6 processors with up to 144 cores and up to 8 TB of memory as well as 36 EDSFF E3.S drives

— Exceptional compute performance, memory density with scalability, and high-speed data transfer rate to run the most demanding applications

— Silicon root of trust from HPE—the fundamental approach to security that provides zero trust architecture at the silicon level and helps ensure all server-essential firmware is free from malware or compromised code

Modernizing your virtual infrastructure with Intel Xeon 6

Holding onto outdated infrastructure can hamstring your ability to keep up with today's business demands. Moving to a modern Intel Xeon 6 platform for VDI can deliver performance and cost benefits immediately while leaving headroom that introduces the possibility of harnessing other transformative modern workloads, such as AI inference.

— **Do more and spend less:** High virtualization density allows you to consolidate workloads from older servers onto fewer new ones, helping you save on licensing and data center operating costs.

— **Support for demanding modern workloads, including cost-effective AI:** Intel Xeon 6 is an AI-ready platform that delivers value without complexity through built-in accelerators like Intel® Advanced Matrix Extensions (Intel AMX). This lowers latency and cost by allowing you to run demanding workloads using CPU alone, without the need for a separate GPU infrastructure.

— **Keep sensitive data secure with enterprise-grade security for virtualization:** Intel Xeon 6 builds security at the hardware level with Intel Trust Domain Extensions (TDX). Intel TDX creates hardware-isolated, encrypted trust domains that protect VMs automatically, giving you an additional layer of protection to meet compliance needs.

— **Zero business disruption with live VM migration:** Implement changes faster, mitigate maintenance windows, and reduce project risk by keeping applications online when you migrate from older infrastructure.

Testing VDI with Login Enterprise

Any VDI solution must be able to meet the requirements of your organization—serving the number of virtual desktop users you have while providing optimal end-user experiences. The industry-standard benchmark Login Enterprise from Login VSI gives insight into how well a solution performs to ensure you rightsize your environment. Login Enterprise simulates the real-world behavior of end users to deliver insights into system performance, reporting two scores:

— **VSImax:** Reports the number of desktops a solution supports at a certain performance level

— **EUX score:** Reports on user experience with a joint score of resource utilization + application response times

These tests used the knowledge worker workload to reflect users with heavy multitasking workflows.

Figure 1 shows the testbed, which was organized into four functional zones: a control plane, a launcher tier, a desktop tier (system under test [SUT]), and a storage tier. The control plane hosted VMware vCenter®, a domain controller, the Omnissa Horizon 8 Connection Server, and VMmark®, and it connected to supporting services including VMware Cloud Foundation™ (VCF) Operations, golden images for client and launcher virtual machines (VMs), Login Enterprise, and a Microsoft SQL database. A pool of 50 launcher VMs generated the user activity workload, targeting a VDI desktop pool on the SUT, with storage provided through NVMe-over-Fiber (NVMe-oF) and NFS datastores (up to 16). Link speeds shown in Figure 1 (1/25/100GbE) indicate the network bandwidth allocated to support the test infrastructure.

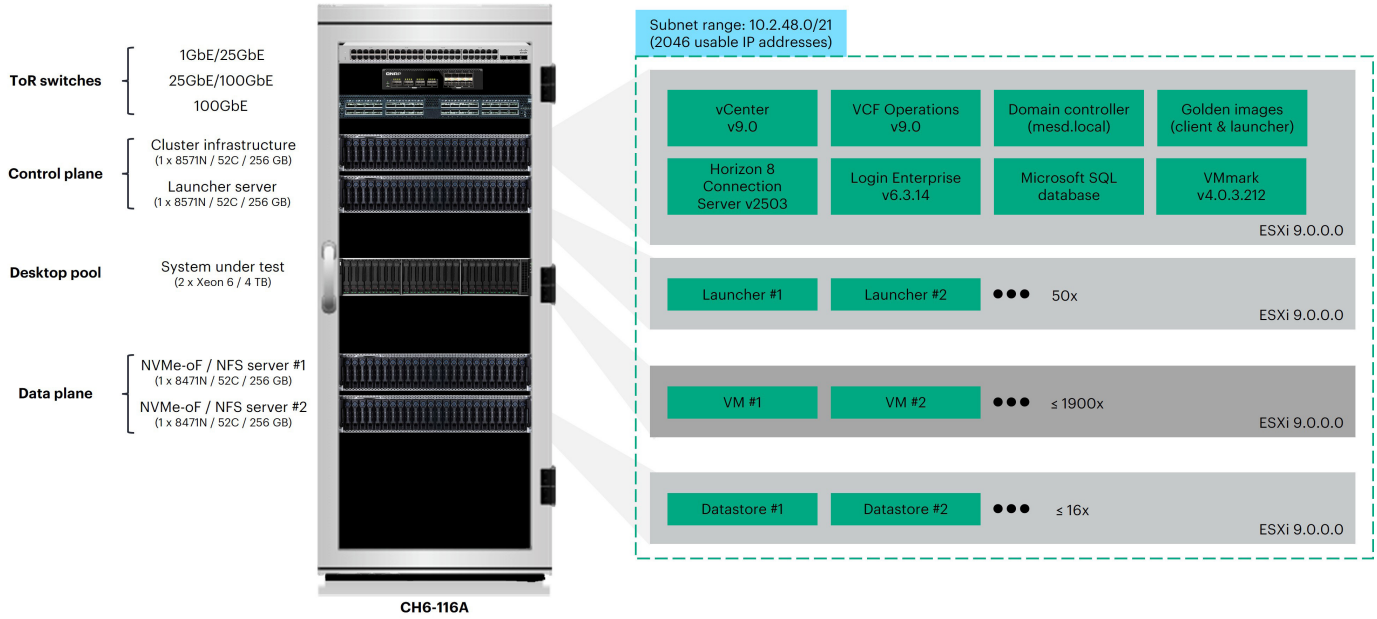

Figure 1. Full stack VDI testbed

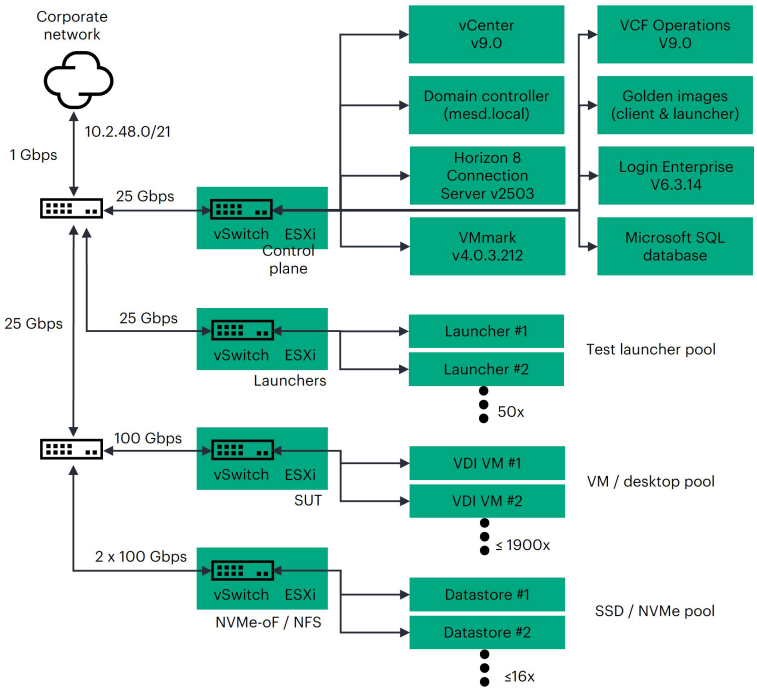

Figure 2. Networking layout for the VDI testbed

Figure 2 illustrates the logical networking for the VDI testbed. The environment was divided into VMware ESXi™ / vSwitch groups for the control plane, launchers, SUT, and NVMe-of/NFS storage, with link speeds (1/25/100GbE) indicated between each plane. The control plane hosted instances of vCenter, Windows Server for Active Directory (user authentication), Horizon Connection Server, Microsoft SQL, and VCF Operations. This layer also provided Login Enterprise, and golden images for the client and launcher.

We tested the following solutions:

— A previous-generation Intel® Xeon® Gold 6338 processor-powered generic server

— A previous-generation Intel Xeon Gold 6548Y+ processor-powered generic server

— A previous-generation 5th Gen Intel Xeon Gold 6558Q processor-powered HPE ProLiant Compute DL380 Gen11

— A current-generation HPE ProLiant Compute DL380 Gen12 with 2x Intel Xeon 6527P (mainline option)

— A current-generation HPE ProLiant Compute DL380 Gen12 with 2x Intel Xeon 6730P (mainline option)

— A current-generation HPE ProLiant Compute DL380 Gen12 with 2x Intel Xeon 6745P (performance option)

— A current-generation HPE ProLiant Compute DL380 Gen12 with 2x Intel Xeon 6747P (performance option)

Boost virtual desktop density with HPE ProLiant Compute DL380 Gen12 featuring Intel Xeon 6 processors

Our VDI testing shows that refreshing with DL380 Gen12 featuring Intel Xeon 6 processors helps admins plan for the future by boosting rack density and keeping costs in check. Focusing on server-level as well as rack-level virtualization density helps ensure that your VDI solution can weather peak events and also gives your infrastructure more room to grow without the need to expand to additional hosts.

Gen-over-gen improvements lead to big savings

Both mainline and performance Intel Xeon 6 configurations dramatically improved virtual desktop density and user experience compared to older Intel Xeon processors, increasing density by as much as 169% compared to Ice Lake processors, and by up to 89% compared to 5th Gen Intel Xeon Scalable processors (see Figure 3). HPE ProLiant Compute DL380 Gen12 servers with Intel Xeon 6 processors achieve these density gains at the same power consumption rates as previous-gen servers, delivering a more efficient VDI deployment that keeps budget concerns in mind. Figure 4 showcases the virtual desktop instances per core across processors, which further shows the gains available when you boost virtualization density with new DL380 Gen12 with Intel Xeon 6 processors.

Intel Xeon 6 platforms provide strong enough density gains over the previous gen that organizations could consolidate multiple older servers onto fewer HPE ProLiant Compute DL380 Gen12 servers. Improvements in total rack density through consolidation drives TCO lower over time because both licensing costs and data center costs related to floor and rack space, power, and cooling plummet as you reduce the number of servers you must support.

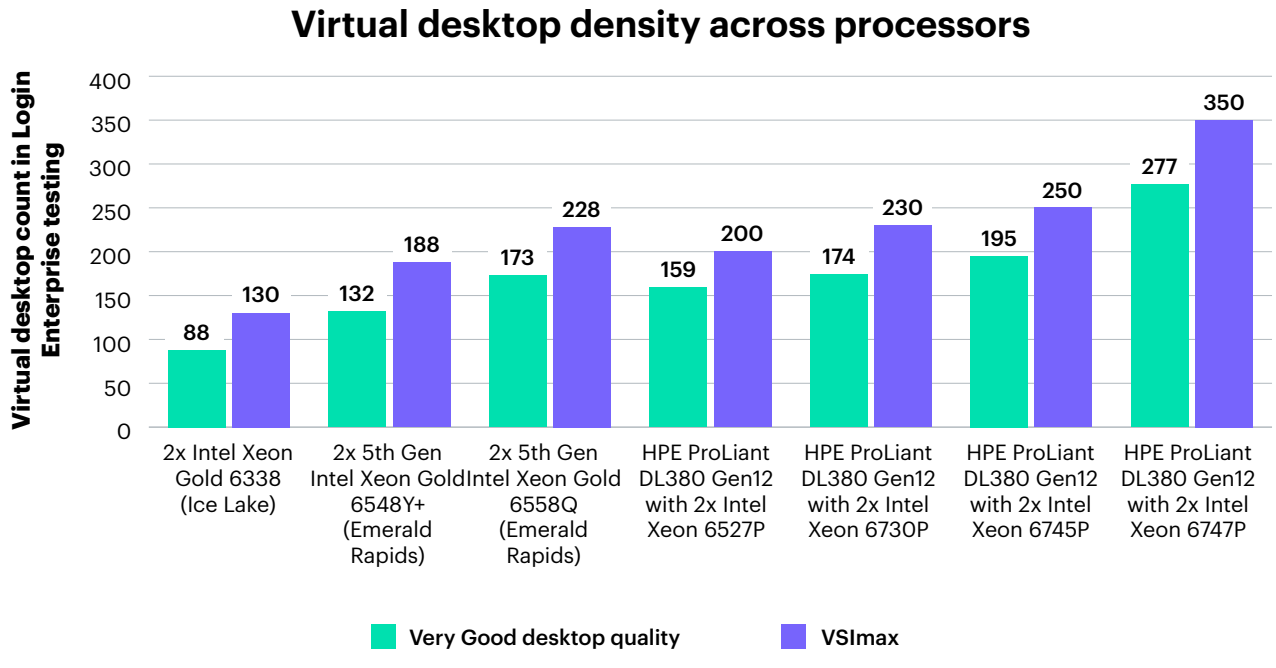

Figure 3. Login Enterprise's very good desktop quality and VSImax desktop results

Additionally, admins that already support older Intel Xeon processor-based systems can take advantage of live migration to simplify the infrastructure refresh by moving to new Intel Xeon processor-powered solutions. Moving from older Intel platforms to new DL380 Gen12 with Intel Xeon 6 processors can reduce project risk by keeping workloads running so business doesn't have to hit stop. That means organizations can maintain SLAs and get new tools into the hands of the people who need them faster.

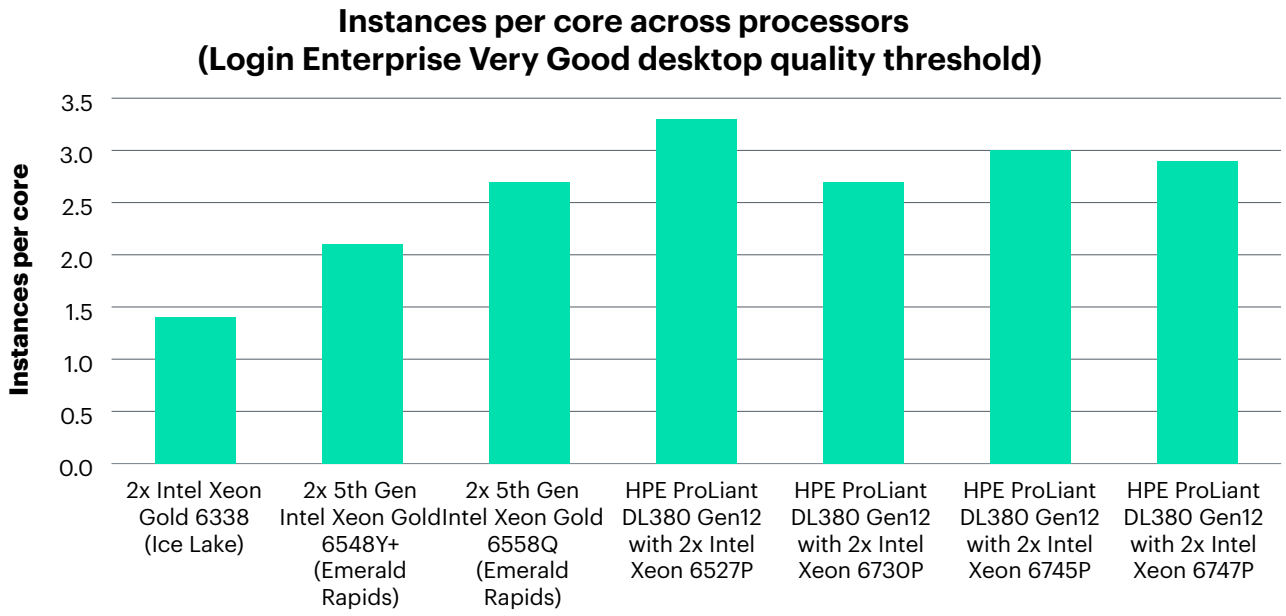

Figure 4. Instances per core across processors using Login Enterprise testing

Table 1. Login Enterprise results

SKU	Very good >= 7.5	VSImax	Server	Normalized VSI very good (vs. 6338)	Normalized VSI very good (vs. 6548Y+)	Instances per core VSI very good	Normalized VSI very good (vs. 6558Q)
2 x Intel Xeon Gold 6338 (Ice Lake)	88	130	Intel ICX RP	1.0	0.7	1.4	
2 x 5th Gen Intel Xeon Gold 6548Y+ (Emerald Rapids)	132	188	QCT D54Q-2U	1.5	1.0	2.1	
2 x 5th Gen Intel Xeon Gold 6558Q (Emerald Rapids)	173	228	DL380 Gen11	2.0	1.3	2.7	1.0
2 x Intel Xeon 6527P	159	200	DL380 Gen12	1.8	1.2	3.3	
2 x Intel Xeon 6730P	174	230	DL380 Gen12	2.0	1.3	2.7	
2 x Intel Xeon 6745P	195	250	DL380 Gen12	2.2	1.5	3.0	1.1
2 x Intel Xeon 6747P	277	350	DL380 Gen12	3.1	2.1	2.9	1.6

Table 2. Processor details for the systems tested

SKU	Core count	Clock rate (GHz)				Cache/socket (MB)
		Total core count	Base	All core turbo	Max. Turbo	
2 x Intel Xeon Gold 6338 (Ice Lake)	2 x 32	64	2	2.7	3.2	48
2 x 5th Gen Intel Xeon Gold 6548Y+ (Emerald Rapids)	2 x 32	64	2.5	3.5	4.1	60
2 x 5th Gen Intel Xeon Gold 6558Q (Emerald Rapids)	2 x 32	64	3.2	4.1	4.1	60
HPE ProLiant Compute DL380 Gen12 with 2x Intel Xeon 6527P	2 x 24	48	3	4.2	4.2	144
HPE ProLiant Compute DL380 Gen12 with 2x Intel Xeon 6730P	2 x 32	64	2.5	3.6	3.8	288
HPE ProLiant Compute DL380 Gen12 with 2x Intel Xeon 6745P	2 x 32	64	3.1	4.1	4.3	336
HPE ProLiant Compute DL380 Gen12 with 2x Intel Xeon 6747P	2 x 48	96	2.7	3.8	3.9	288

Detailed Login Enterprise results for each system

The following screenshots show the Login Enterprise results for each system over the duration of the tests.

Intel RP with 2 x Intel Xeon Gold 6338 (Ice Lake)

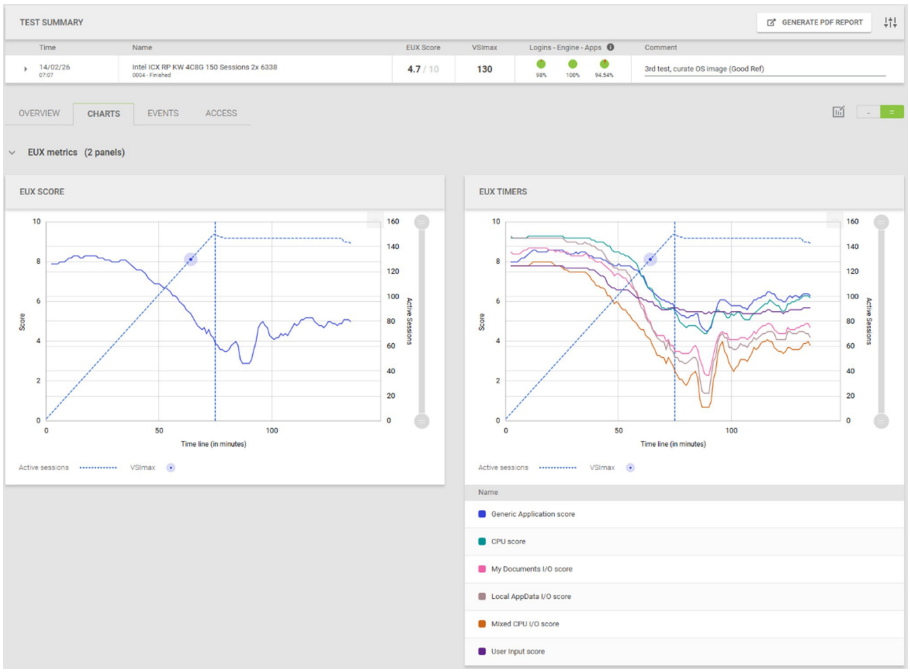

Figure 5. Login Enterprise load test results (number of active instances versus EUX scores) on an Intel reference platform with 2 x Intel Xeon Gold 6338 (Ice Lake)

Intel SDP with 2 x 5th Gen Intel Xeon Gold 6548Y+ (Emerald Rapids)

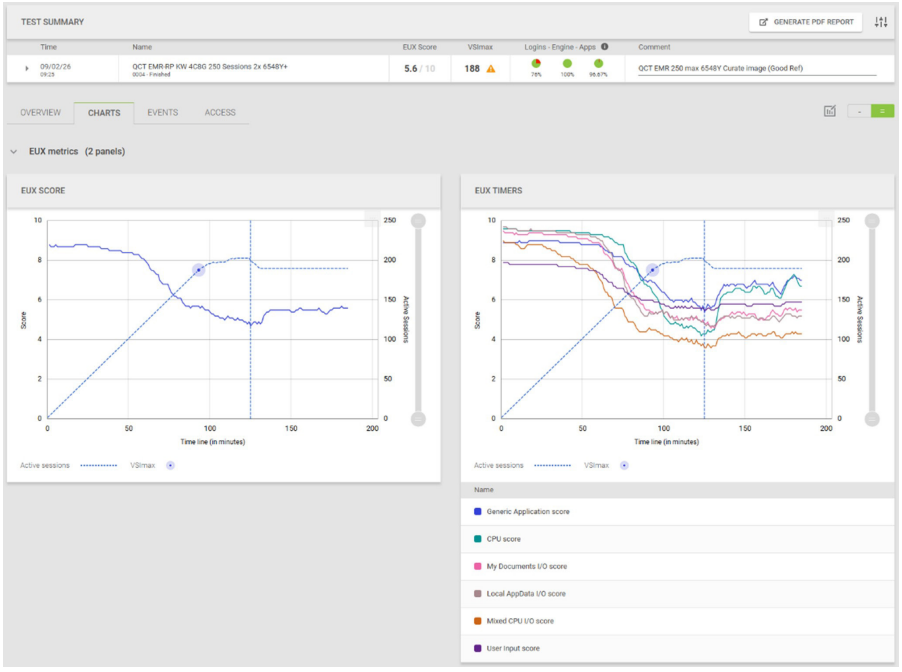

Figure 6. Login Enterprise load test results (number of active instances versus EUX scores) on an Intel software development platform with 2 x 5th Gen Intel Xeon Gold 6548Y+ (Emerald Rapids)

HPE ProLiant Compute DL380 Gen11 with 2x 5th Gen Intel Xeon Gold 6558Q (Emerald Rapids)

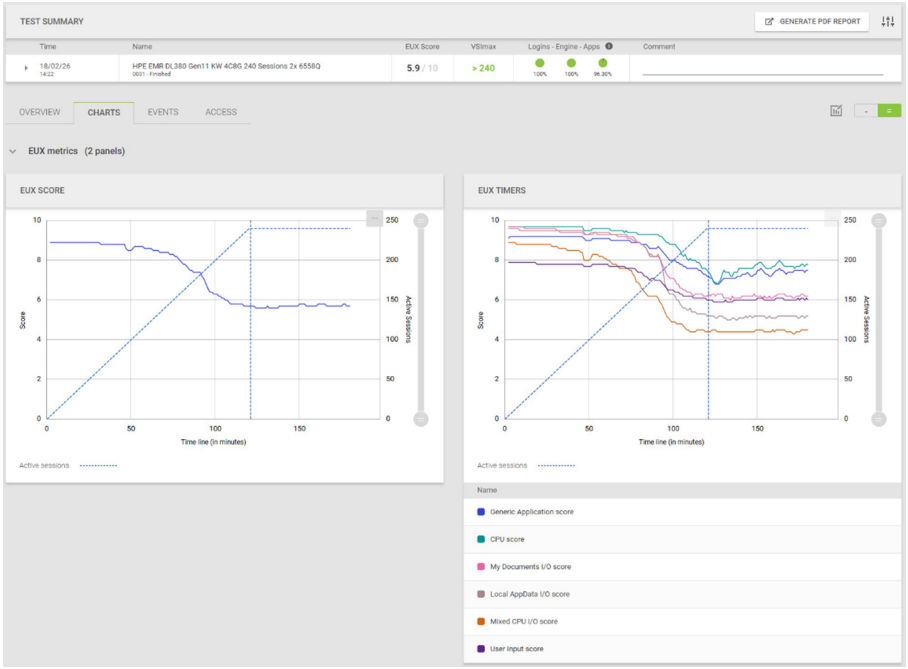

Figure 7. Login Enterprise load test results (number of active instances versus EUX scores) on an HPE ProLiant Compute DL380 Gen11 with 2 x 5th Gen Intel Xeon Gold 6558Q (Emerald Rapids)

HPE ProLiant Compute DL380 Gen12 with 2 x Intel Xeon 6527P

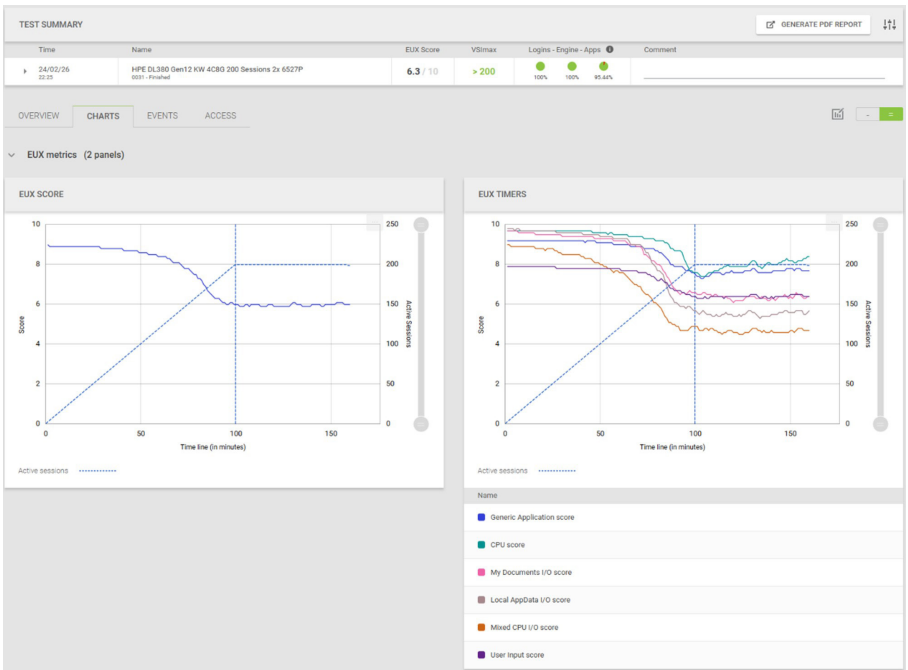

Figure 8. Login Enterprise load test results (number of active instances versus EUX scores) on an HPE ProLiant Compute DL380 Gen12 with 2 x Intel Xeon 6 6527P

HPE ProLiant Compute DL380 Gen12 with 2 x Intel Xeon 6730P

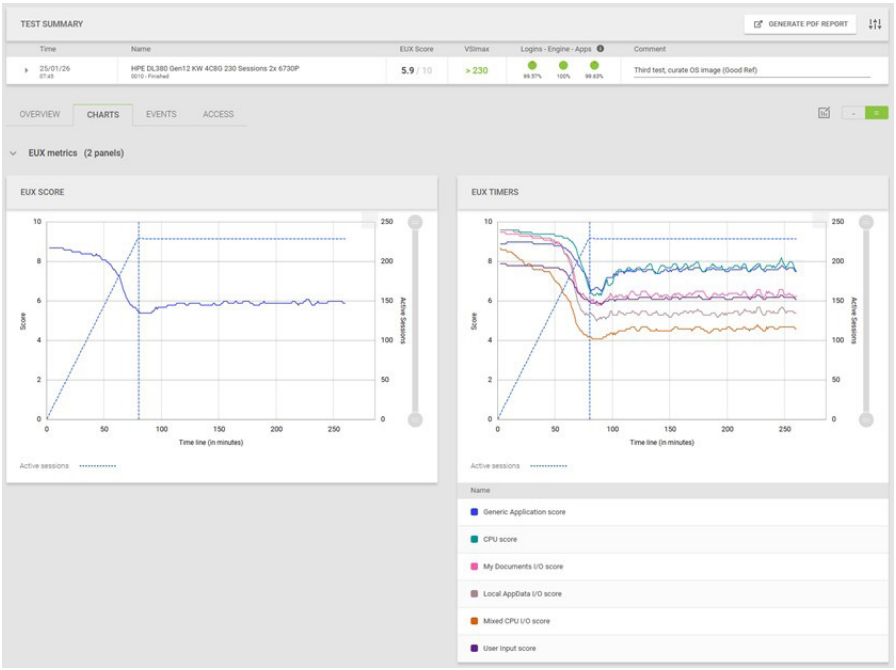

Figure 9. Login Enterprise load test results (number of active instances versus EUX scores) on an HPE ProLiant Compute DL380 Gen12 with 2 x Intel Xeon 6 6730P

HPE ProLiant Compute DL380 Gen12 with 2 x Intel Xeon 6745P

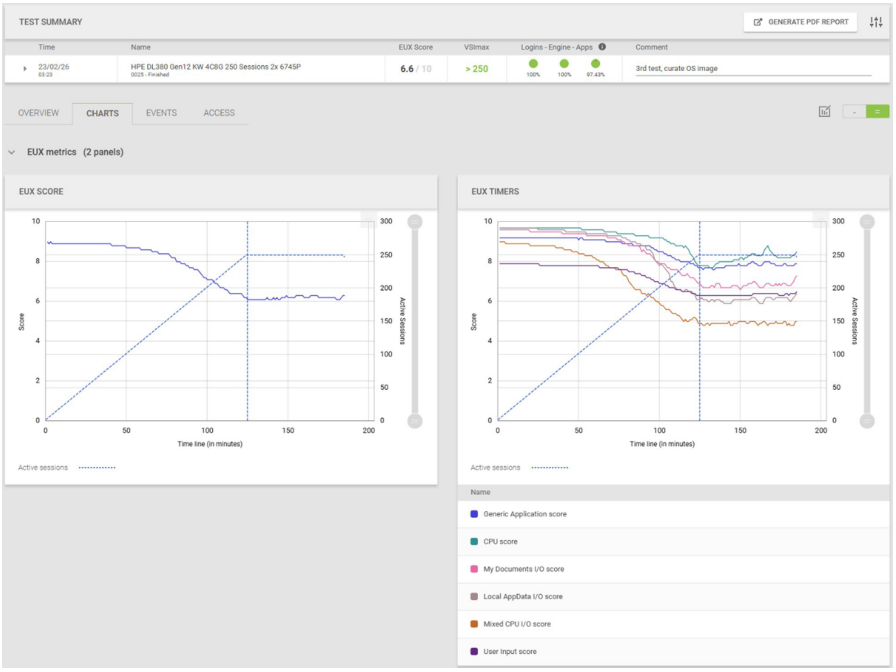

Figure 10. Login Enterprise load test results (number of active instances versus EUX scores) on an HPE ProLiant Compute DL380 Gen12 with 2 x Intel Xeon 6 6745P

HPE ProLiant Compute DL380 Gen12 with 2 x Intel Xeon 6747P

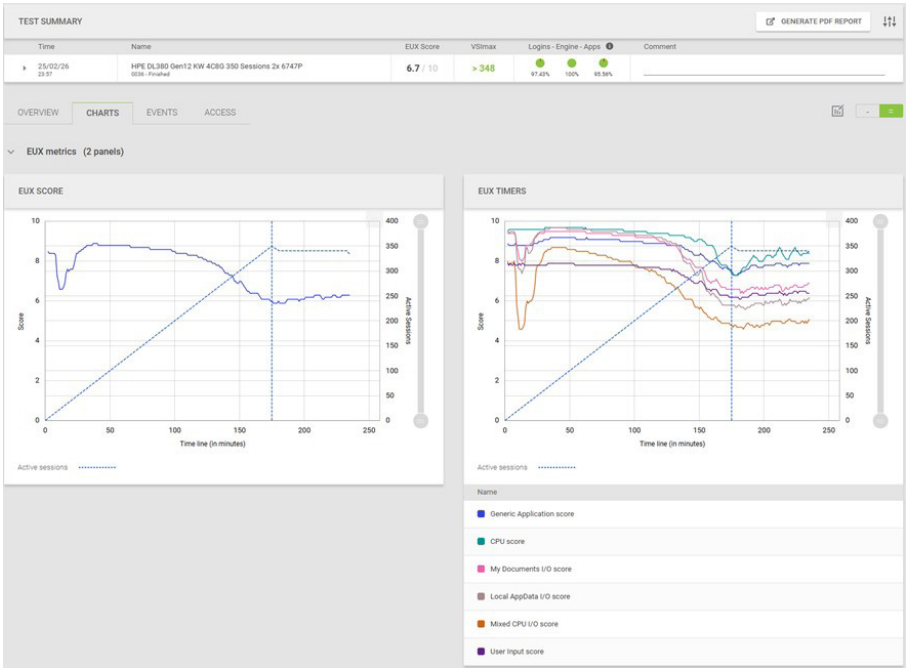

Figure 11. Login Enterprise load test results (number of active instances versus EUX scores) on an HPE ProLiant Compute DL380 Gen12 with 2 x Intel Xeon 6 6747P

Practical planning guidance: cost, sizing, networking, and resilience

Your team can use these benchmark results as you plan and size your VDI solution. Higher desktop density per host directly reduces cost per desktop. A platform that supports more desktops per host requires fewer physical systems to serve the same user population—and that advantage multiplies across hardware, support contracts, rack space, and power draw over a multiyear period.

When projecting total cost of ownership over a typical three-year lifecycle, density is the primary lever. Fewer hosts mean lower acquisition costs, lower support costs, and lower ongoing operational overhead—all from the same user workload. Planning with an N+1 buffer for maintenance and failover is standard practice, but even with that buffer applied, a higher-density solution typically requires fewer total hosts and delivers a lower three-year TCO.

The HPE ProLiant Compute DL380 Gen12 with Intel Xeon 6 processors demonstrates this principle directly. Greater per-host density means fewer systems required to support your VDI environment, and fewer systems mean lower total cost over the life of the deployment.

In the following section, we provide practical frameworks you can adapt to your environment. The examples are illustrative, and your plan may vary depending on the specifics of your environment including vendor quotes, licensing models, and user mix.

Memory and storage recommendations by user type

Processors aren't the only resource that determine desktop density. Memory and storage constraints also factor into the number of VMs you can run per server. Use the following guidance to align host configurations with your specific user mix. For example, if most of your users do development work on their desktops, they'll need more resources than users who do their work on a web browser. Treat these recommendations as starting points and validate with pilot testing and profile analytics.

Table 3. Starter sizing guidance by VDI user profile (adjust based on image, policy, and workload mix)

User type	Typical apps	vCPU per desktop	Memory per desktop	Storage per desktop
Task worker	Data entry, CRM, browser	2	4–6 GB	30–40 GB
Knowledge worker	Office apps, collaboration, multitasking	2–4	8–12 GB	50–75 GB
Power user	Analytics, dev tools, heavy multitasking	4–8	16–32 GB	100+ GB

Host-level note: Higher desktop density increases the importance of balanced memory and sufficient storage IOPS. Make sure you plan for peak events such as boot storms, login storms, and patch cycles.

Network requirements and bandwidth considerations

Network sizing depends on protocol, display settings, multimedia policy, and whether storage traffic shares the same fabric. Use separate VLANs and QoS policies to protect VDI user experience during contention.

Recommended baseline per VDI host (typical starting point):

— 10/25GbE for management and control plane traffic

— 25/50/100GbE for VDI user traffic and east–west VM traffic (scale with desktop density)

— Link Aggregation Control Protocol (LACP) 100GbE or NIC teaming for storage traffic (vSAN, NVMe-oF, NFS, or other centralized storages), depending on architecture

Typical steady-state bandwidth per desktop (planning ranges) are as follows:

Table 4. Bandwidth planning guidance per desktop (actual requirements vary by protocol and policy)

User type	Typical apps	vCPU per desktop
Task worker	150–300 Kbps	Video, high refresh rate, multiple monitors
Knowledge worker	300–600 Kbps	Video calls, screen sharing, peripherals
Power user	1–2+ Mbps	3D graphics, high-res media, data visualization

Bandwidth planning tip: Evaluate peak conditions (morning login, patch Windows, application launches) and confirm switch port density, uplink oversubscription, and storage fabric capacity align with your target desktops-per-host.

Backup and disaster recovery implications

Higher desktop density per host can reduce the number of physical servers you operate, which lowers both CapEx and operational resources needed for backup, patching, and disaster recovery (DR) plans.

Considerations for backup and DR planning:

— Protect the golden image and application layers with versioned snapshots and change control; keep recovery points aligned with patch cadence.

— Use user profile management (or containerized profiles) to reduce full-desktop backup scope and speed user recovery.

— Plan DR capacity using usable desktops per host (with headroom) rather than raw vCPU counts; validate recovery time objectives with a failover test.

— If consolidating to fewer hosts, validate cluster quorum, spare capacity (N+1 or N+2), and maintenance workflows to avoid user-impacting contention during failures.

Live VM migration with VMware vSphere® can help reduce maintenance windows during refresh activities and simplify operational transitions when moving between compatible platforms. Standardizing on HPE ProLiant Compute DL380 Gen12 servers with Intel Xeon 6 processors helps ensure this compatibility when moving from previous generations.

Conclusion

Modernizing VDI with HPE infrastructure based on Intel Xeon 6 processors gives organizations a path to success by delivering greater virtualization density that results in stronger performance, headroom for growth, greater value, and advanced features that can support modern workloads. If you're moving from an existing VDI platform, Intel Xeon 6 processors deliver significant improvements in virtualization density, workload responsiveness, and user experience, while optimizing total cost of ownership through efficient resource utilization and power savings. Plus, seamless live migration from older Intel CPUs to new ones reduces the hassle and business disruption often inherent in data center overhauls. By integrating cutting-edge security, management, and acceleration technologies, HPE ProLiant Compute DL380 Gen12 servers featuring Intel Xeon 6 processors empower IT teams to safeguard data, streamline operations, and future-proof their environments.

Test data shows that moving from an existing infrastructure built on 5th Gen Intel Xeon processors to an Intel Xeon 6 solution would provide organizations up to 89% more virtual desktops. If you're running systems that are even older, you can see even greater density savings, with HPE ProLiant Compute DL380 Gen12 + Intel Xeon 6 processors offering as much as 169% higher virtual desktop density than systems running Intel Xeon Gold 6338 (Ice Lake) processors. By boosting density, you can support the VMs you need now and leave headroom to plan for the future.

Get started on refreshing your VDI environment with the HPE ProLiant Compute DL380 Gen12 powered by Intel Xeon 6 processors today.

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