



Citrix Virtual Apps and Desktops on Lenovo ThinkAgile HX V3 Systems with AMD EPYC 9005 Processors

Last update: 03 November 2025

Version 1.0

**Lenovo ThinkAgile HX V3
Hyperconverged infrastructure
solution with AMD and Citrix
VDI**

**Citrix Virtual Apps and Desktops on Nutanix
AHV software**

**Includes VDI benchmark
results and Bill of Material**

**Chandrakandh Mouleeswaran
Muhammad Ashfaq**



Citrix Virtual Apps and Desktops on Lenovo ThinkAgile HX V3 Servers Powered by AMD EPYC 9005 Processors

Deliver Scalable and Secure Virtual Desktops

Industries as diverse as healthcare, finance, government, retail, and education have the common requirement to support and secure a mobile workforce. Organizations often have a dispersed workforce using many PCs, laptops, and mobile devices distributed to field offices and remote locations. Virtual Desktop Infrastructure (VDI) is a powerful solution to meet the need for flexibility and global availability of compute resources, while managing data security and compliance on mobile devices.

Lenovo VDI Solutions for Citrix Virtual Apps and Desktops help your organization to achieve a secure, scalable, and efficient VDI solution that enhances employee productivity, reduces operational costs, and supports digital transformation initiatives. The solution streamlines deployment, updates, and policy enforcement through centralized control, reducing IT overhead and accelerating provisioning times. Citrix Virtual Apps and Desktops delivers an immersive, feature-rich user experience for end users, allowing them to work anytime, anywhere, on any device. It supports a consistently rich end user experience for office workers, mobile workers and even 3D developers across devices, locations, media and connections.

Lenovo ThinkAgile HX V3 systems with AMD EPYC 5th Generation 9005 Processors

Lenovo ThinkAgile HX Series V3 servers powered by AMD EPYC 9005 processors provide increased performance, bandwidth and speed. Lenovo ThinkAgile HX V3 servers are available as Integrated Systems and Certified Nodes. Both are pre-validated and factory integrated systems with Lenovo hardware, Nutanix software, and deployment services. Integrated systems provide a quick and convenient path to implement a hyperconverged solution powered by Nutanix and a single point of contact provided by Lenovo for purchasing, deploying, and supporting the solution. HX Certified Nodes come with optional Nutanix software and services. All ThinkAgile HX V3 models support configurations for all flash and hybrid storage deployment.



ThinkAgile HX665 V3 (2U)



ThinkAgile HX645 V3 (1U)

The Lenovo ThinkAgile HX665 V3 (2U) and HX645 V3 (1U) Integrated Systems and Certified Nodes are 2-socket systems support AMD EPYC 9005 series 5th Gen “Turin” processors support up to 160 cores and 6TB memory and 20 NVMe SSDs and 24 SAS/SATA SSDs and it is an ideal choice for virtual desktop workloads and provides higher density.

Citrix Virtual Apps and Desktops

Citrix Virtual Apps and Desktops is comprehensive platform enables secure delivery of virtual desktops and applications to users and supports deployment on on-premise and hybrid cloud. Citrix Virtual Apps and Desktops provides unparalleled user experience to access Windows/Linux application and desktops. It enables rapidly deploy full-featured, personalized virtual desktops and apps in seconds, retain user customization and persona from session to session, and leverage an agile provisioning approach to quickly roll out updates at the next login.

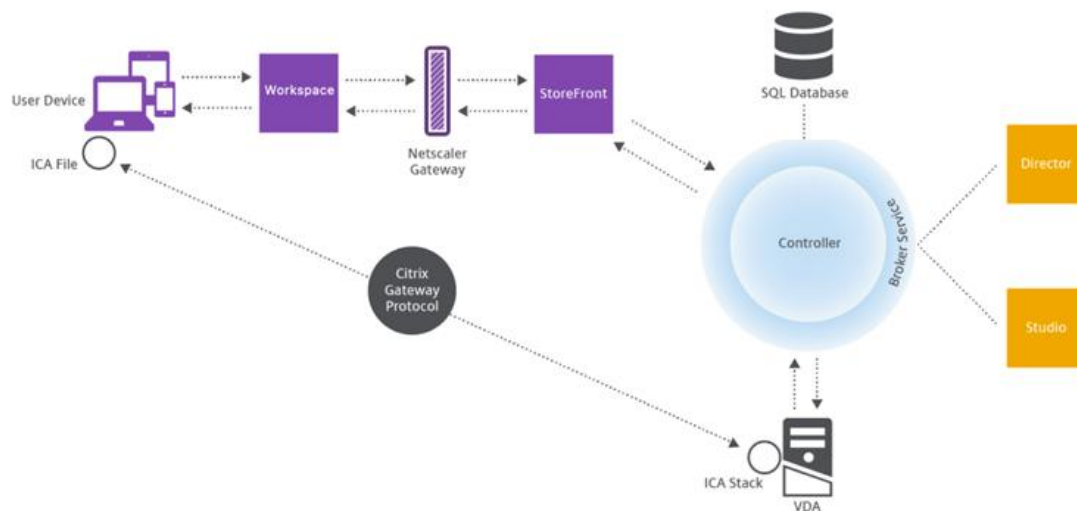


Figure 1 Citrix Virtual Apps and Desktops Logical Components

Delivery Controller distributes applications and desktops, authenticates and manages user access, brokers connections between users and their desktops and applications, optimizes and load balances user connections.

Virtual Delivery Agent (VDA) manages the connection between the virtual desktop and the user device and communicates session information to the controller and collects session information.

StoreFront authenticates users and manages stores of desktops and applications that users access and keeps track of users' application subscriptions.

Citrix Workspace app provides users with quick, secure, self-service access to documents, applications, and desktops.

Studio and Web Studio are management consoles which enable managing Citrix Virtual Apps and Desktops deployment and environment setup, creating workloads to host applications and desktops, and assigning applications and desktops to users.

Login Enterprise Benchmark Results

The Login Enterprise VDI benchmark was performed for the knowledge worker profile on Windows 11 with four node Lenovo ThinkAgile HX665 V3 servers with different 5th Gen AMD EPYC 9005 processors. The benchmark stresses the system to 100% CPU utilization and provides VSIMax metrics based on the login time and application response time criteria. Table 1 below shows configuration and settings used for the benchmark.

Table 1: Test Infrastructure and Configuration

Component	Configuration
Server	4 Node Lenovo ThinkAgile HX665 V3 Nutanix Cluster
Processor(s)	2 x AMD EPYC 9375F 32C (Frequency: Base Boost 3.8 GHz 4.8 GHz) 2 x AMD EPYC 9475F 48C (Frequency: Base Boost 3.65 GHz 4.8 GHz) 2 x AMD EPYC 9555 64C (Frequency: Base Boost 3.2 GHz 4.4 GHz) 2 x AMD EPYC 9655 96C (Frequency: Base Boost 2.6 GHz 4.5 GHz)
Memory Per Node	24 x ThinkSystem 64GB TruDDR5 6400MHz, Configured Speed 6000 MHz (2Rx4) 10x4 RDIMM-A
Disks per Node	12 x ThinkSystem 2.5" U.3 7500 PRO 3.84TB Read Intensive NVMe PCIe 4.0 x4 HS SSD
Boot Drives	2 x ThinkSystem M.2 PM9A3 960GB Read Intensive NVMe PCIe 4.0 x4 NHS SSD
Ethernet	ThinkSystem Mellanox ConnectX-6 Dx 100GbE QSFP56 2-port PCIe Ethernet Adapter
CVM Configuration	16 VCPU + 64 GB Memory
Nutanix	AOS 7.0.1.5, AHV v.20230302.101046, NCC 5.1.1, LCM 3.2.0.1
Windows OS	Windows 11 Version 22H2 (OS Build 22621.5472)
Citrix Virtual Apps and Desktops	7 2407
Virtual Desktop	2 VCPU, 4 GB Memory, 100 GB disk
Apps	Office 365 Pro Plus, Microsoft Edge
Login Enterprise	6.3.14

Table 2 below shows number of knowledge worker profile can be hosted on ThinkAgile HX665 V3 system with different AMD EPYC 9005 series processors during normal load scenarios with 75% CPU utilization. The VSIMax value is equivalent to maximum number of concurrent desktops hosted when CPU usage is at maximum 100% and the application response time increases beyond this point and impacts user experience.

The tests performed with 32C, 48C and 64C processors reached VSIMax value and the test with AMD EPYC 9655 96C processor did not reach maximum as the test was performed with 2000 users only and the system was left with 10-15% CPU headroom which can accommodate more users.

Table 2: VSIMax for knowledge worker with Windows 11 and Microsoft Office 365

Hardware	Login Interval	VSIMax	Number of Virtual Desktops (75% CPU)
4 x ThinkAgile HX665 V4 2x AMD EPYC 9375F 32C	5 user per minute per server	864 (95% CPU)	165 per server
4 x ThinkAgile HX665 V4 2x AMD EPYC 9475F 48C	5 user per minute per server	1253 (95% CPU)	222 per server
4 x ThinkAgile HX665 V4 2x AMD EPYC 9555 64C	5 user per minute per server	1637 (95% CPU)	290 per server
4 x ThinkAgile HX665 V4 2x AMD EPYC 9655 96C	5 user per minute per server	1999 (87% CPU)	355 per server

Figure 2 shows the EUX (End User Experience) score for the tested AMD EPYC 9005 processors. The score for all processors is above 8 from the beginning of the test and it is consistent till CPU reaches 90% usage and user experience is expected to decrease due to resource contention across virtual desktops and applications.

Figure 3 shows Login response time is 5-10 seconds which shows AMD EPYC 9005 processors and Nutanix hyperconverged storage with NVMe drives provide maximum performance for virtual desktops.

Figure 4 shows Office 365 application start time is below 3 seconds which shows AMD EPYC 9005 processors and Nutanix storage with NVMe drives deliver low latency applications to end users.

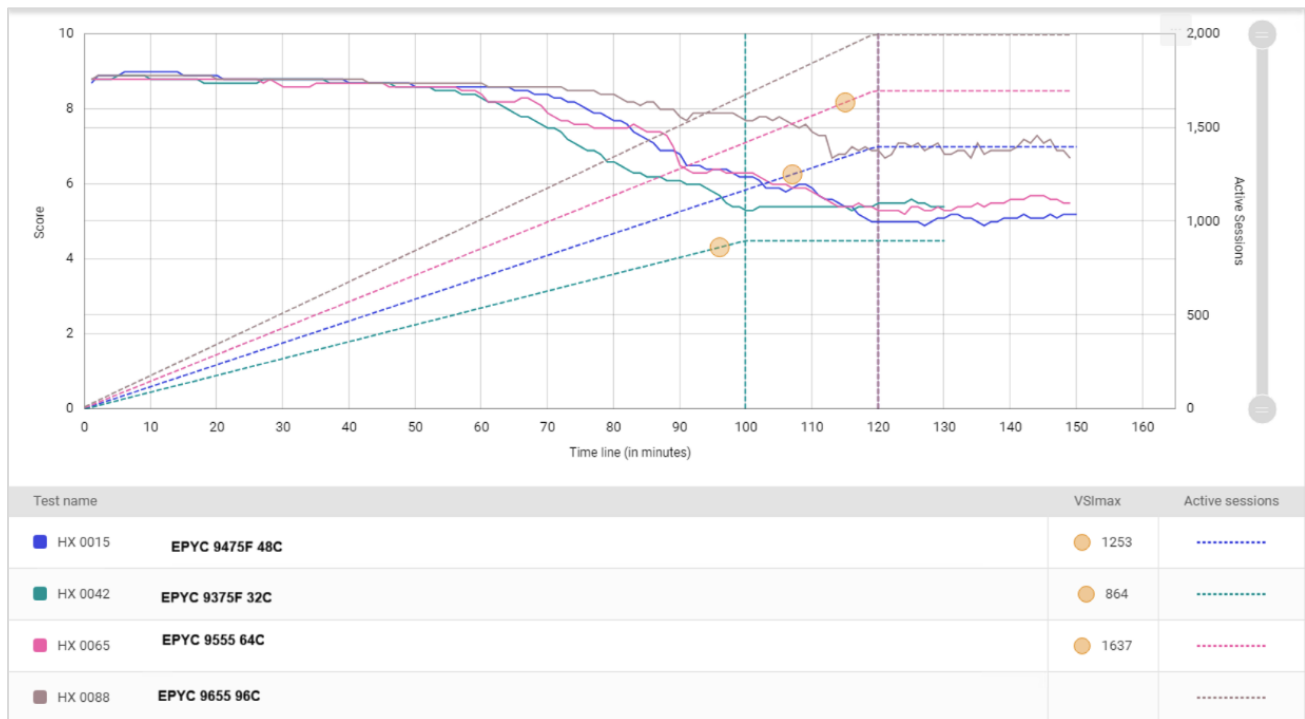


Figure 2: Citrix VAD – Knowledge Worker – EUX Score – AMD EPYC 9005 Processors

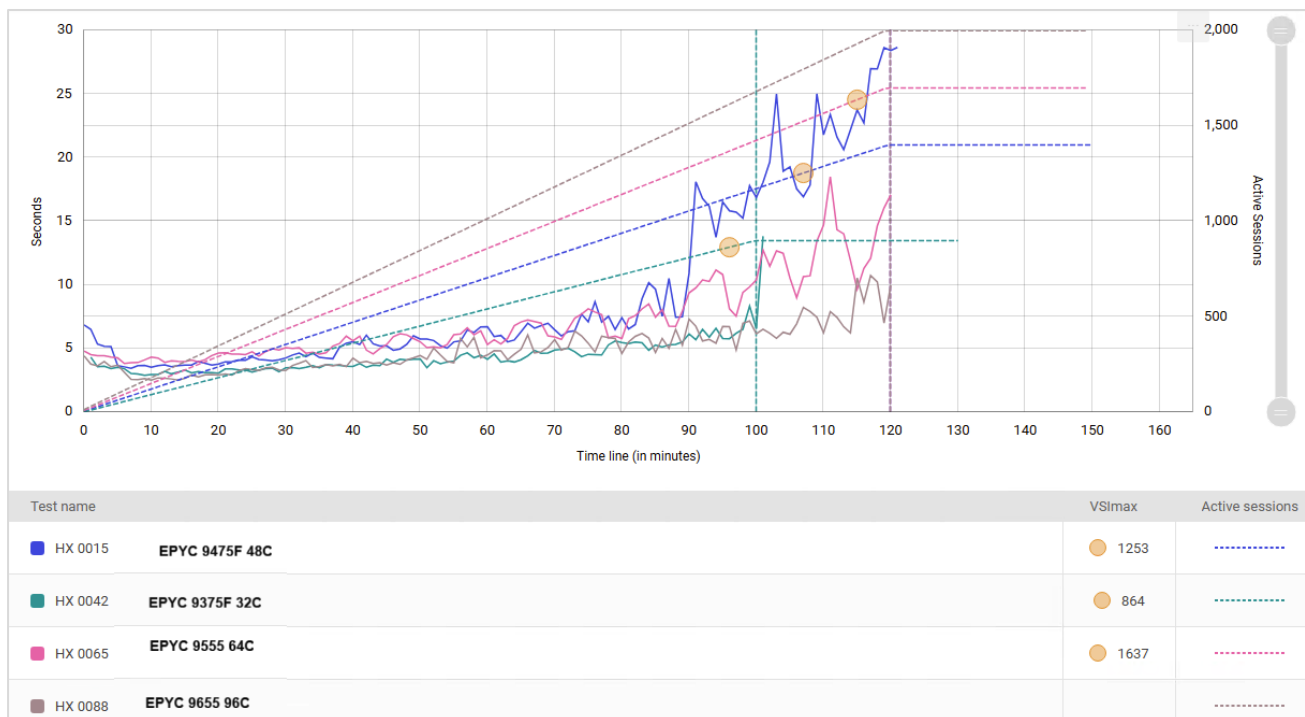


Figure 3: Citrix VAD – Knowledge Worker – Login Time – AMD EPYC 9005 Processors

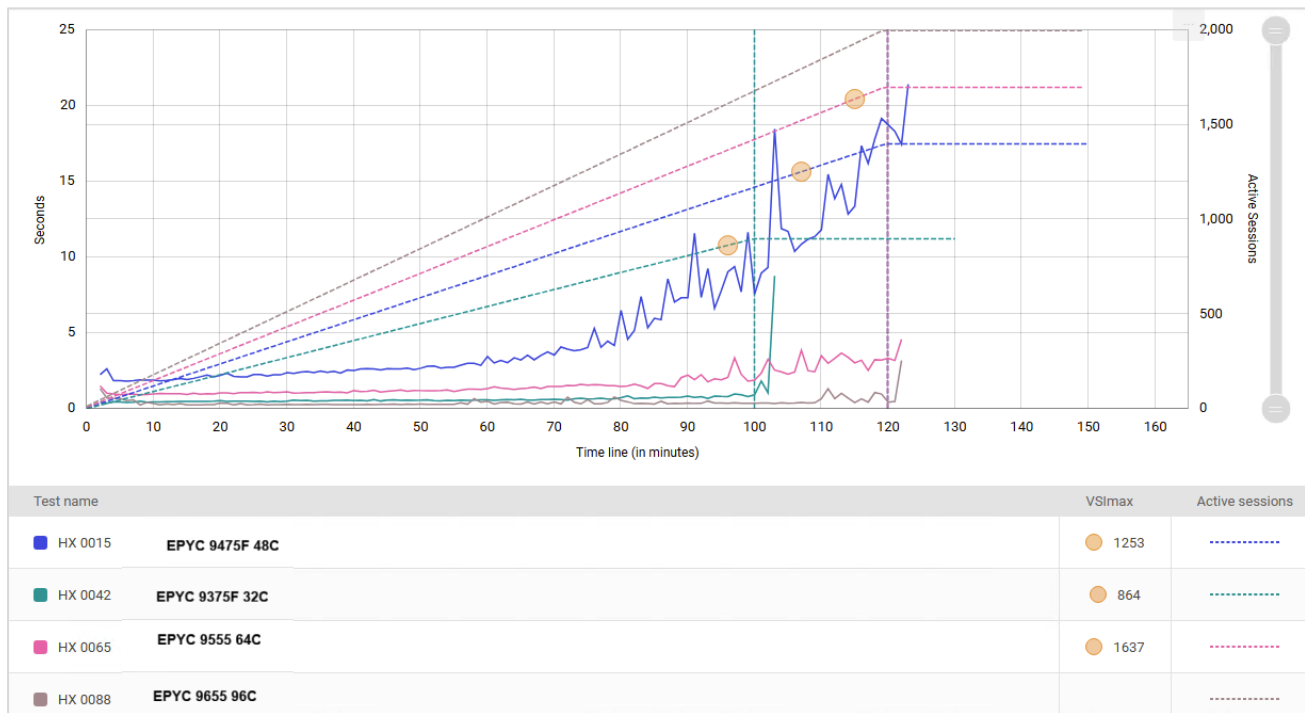


Figure 4: Citrix VAD – Knowledge Worker – Office 365 Apps Start Time – AMD EPYC 9005 Processors

End-to-End VDI Solution

From devices to desktops, Lenovo helps businesses access the data needed to make informed decisions. Lenovo offers a wide range of PCs, tablets, thin clients and smartphones for end user access. The portability, versatility and lightweight features of Lenovo thin clients allow for deployment across the organization, especially where space is at a premium.

Bill of Materials: Lenovo ThinkAgile HX665 V3

Part number	Product Description	Qty
7D9NCTO1WW	Server : ThinkAgile HX665 V3 Integrated System	1
BSQL	HX665 V3	1
BVGL	Data Center Environment 30 Degree Celsius / 86 Degree Fahrenheit	1
B15S	Nutanix SW Stack on Nutanix AHV	1
B0W1	3 Years	1
BVKV	Nutanix Cloud Platform (NCP) Pro Software License with Mission Critical Support	1
C2AJ	AMD EPYC 9375F 32C 320W 3.8GHz Processor	2
BQ29	ThinkSystem SR665 V3 2U High Performance Heatsink	2
C0CK	ThinkSystem 64GB TruDDR5 6400MHz (2Rx4) RDIMM-A	24
BH8D	ThinkSystem 2U/4U 8x2.5" NVMe Backplane	2

B0SW	Nutanix Flash Node Config	1
C2BS	ThinkSystem 2.5" U.3 7500 PRO 3.84TB Read Intensive NVMe PCIe 4.0 x4 HS SSD	4
B8P9	ThinkSystem M.2 NVMe 2-Bay RAID Adapter	1
BTTY	M.2 NVMe	1
BXMH	ThinkSystem M.2 PM9A3 960GB Read Intensive NVMe PCIe 4.0 x4 NHS SSD	2
BN2T	ThinkSystem Broadcom 57414 10/25GbE SFP28 2-Port OCP Ethernet Adapter	1
BPQU	ThinkSystem V3 2U x16/x8/x8 PCIe Gen5 Riser 1 or 2	1
BPK9	ThinkSystem 1800W 230V Titanium Hot-Swap Gen2 Power Supply	2
7S0PCTO3WW	Nutanix P&P Software for ThinkAgile HX	1
7S0XCTO5WW	XClarity Controller Platin-FOD	1
SBCV	Lenovo XClarity XCC2 Platinum Upgrade (FOD)	1
5WS7C01439	3Yr Premier 24x7 4Hr Resp ThinkAgile IS HX665 V3	1
5PS7C01448	3Yr KYD Add-On ThinkAgile IS HX665 V3	1

References:

Lenovo ThinkAgile HX665 V3 Integrated System and Certified Node

<https://lenovopress.lenovo.com/lp1649-lenovo-thinkagile-hx665-v3-is-and-cn-hx665-v3-storage-is-and-cn>

Lenovo ThinkAgile HX645 V3 Hyperconverged System and Certified Node

<https://lenovopress.lenovo.com/lp1650-lenovo-thinkagile-hx645-v3-integrated-system-and-certified-node-amd-9004>

Citrix Virtual Apps and Desktops Design Guidance

<https://community.citrix.com/tech-zone/by-product/citrix-virtual-apps-and-desktops>

5th Generation AMD EPYC™ Processor

[AMD EPYC™ 9005 Series Processors](#)

AMD Technical Information Portal

[AMD Technical Information Portal](#)

Trademarks and special notices

© Copyright Lenovo 2025.

References in this document to Lenovo products or services do not imply that Lenovo intends to make them available in every country.

Lenovo, the Lenovo logo, ThinkSystem, ThinkAgile, ThinkCentre, ThinkVision, ThinkVantage, ThinkPlus and Rescue and Recovery are trademarks of Lenovo.

IBM, the IBM logo, and ibm.com are trademarks or registered trademarks of International Business Machines Corporation in the United States, other countries, or both.

Microsoft, Windows, Windows NT, and the Windows logo are trademarks of Microsoft Corporation in the United States, other countries, or both.

Intel, Intel Inside (logos), MMX, and Pentium are trademarks of Intel Corporation in the United States, other countries, or both.

AMD and AMD EPYC are trademarks of Advanced Micro Devices in the United States, other countries, or both.

Other company, product, or service names may be trademarks or service marks of others.

Information is provided "AS IS" without warranty of any kind.

All customer examples described are presented as illustrations of how those customers have used Lenovo products and the results they may have achieved. Actual environmental costs and performance characteristics may vary by customer.

Information concerning non-Lenovo products was obtained from a supplier of these products, published announcement material, or other publicly available sources and does not constitute an endorsement of such products by Lenovo. Sources for non-Lenovo list prices and performance numbers are taken from publicly available information, including vendor announcements and vendor worldwide homepages. Lenovo has not tested these products and cannot confirm the accuracy of performance, capability, or any other claims related to non-Lenovo products. Questions on the capability of non-Lenovo products should be addressed to the supplier of those products.

All statements regarding Lenovo future direction and intent are subject to change or withdrawal without notice and represent goals and objectives only. Contact your local Lenovo office or Lenovo authorized reseller for the full text of the specific Statement of Direction.

Some information addresses anticipated future capabilities. Such information is not intended as a definitive statement of a commitment to specific levels of performance, function or delivery schedules with respect to any future products. Such commitments are only made in Lenovo product announcements. The information is presented here to communicate Lenovo's current investment and development activities as a good faith effort to help with our customers' future planning.

Performance is based on measurements and projections using standard Lenovo benchmarks in a controlled environment. The actual throughput or performance that any user will experience will vary depending upon considerations such as the amount of multiprogramming in the user's job stream, the I/O configuration, the storage configuration, and the workload processed. Therefore, no assurance can be given that an individual user will achieve throughput or performance improvements equivalent to the ratios stated here.

Photographs shown are of engineering prototypes. Changes may be incorporated in production models.

Any references in this information to non-Lenovo websites are provided for convenience only and do not in any manner serve as an endorsement of those websites. The materials at those websites are not part of the materials for this Lenovo product and use of those websites is at your own risk.