

Azure Virtual Desktop on Cisco UCS for Azure Local

April 2025



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Introduction

Cisco UCS on Azure Local is a hyper-converged infrastructure solution that combines compute, storage, and networking on industry-standard x86 servers and components. It is designed to run virtualized workloads on premises using validated hardware, with the option to connect to Azure services for cloud-based backup, site recovery, and more. The solution leverages Microsoft-validated hardware to ensure optimal performance and reliability and supports technologies such as NVMe drives, persistent memory, and Remote-Direct Memory Access (RDMA) networking. Cisco Azure Local offers cloud-based management, fault tolerance, massive resilient storage, scalability, reduced operating expenses, enterprise-class performance, exceptional availability, and automatic Azure Local operating system updates.

Azure Local

Microsoft Azure Local provides a highly available and scalable software-defined hyperconverged solution powered by the purpose-built Azure Local 23H2 Operating System. Azure Local 23H2 is a hyperconverged Windows Server 2022-based cluster that uses validated hardware to run virtualized workloads on premises. You can also, optionally, connect to Azure services for cloud-based backup, site recovery, and more. Cisco's Azure Local solutions use Microsoft-validated Cisco UCS® C-Series rack servers, optimized to ensure performance and reliability and include support for NVMe drives, persistent memory, and Remote-Direct Memory Access (RDMA) networking.

Cisco Azure Local is a solution that combines several products:

- Choice of Cisco UCS C-Series servers connected to Cisco Nexus® 9300 top-of-rack switches
- Azure Local OS 23H2
- Windows Admin Center (optional)
- Azure services

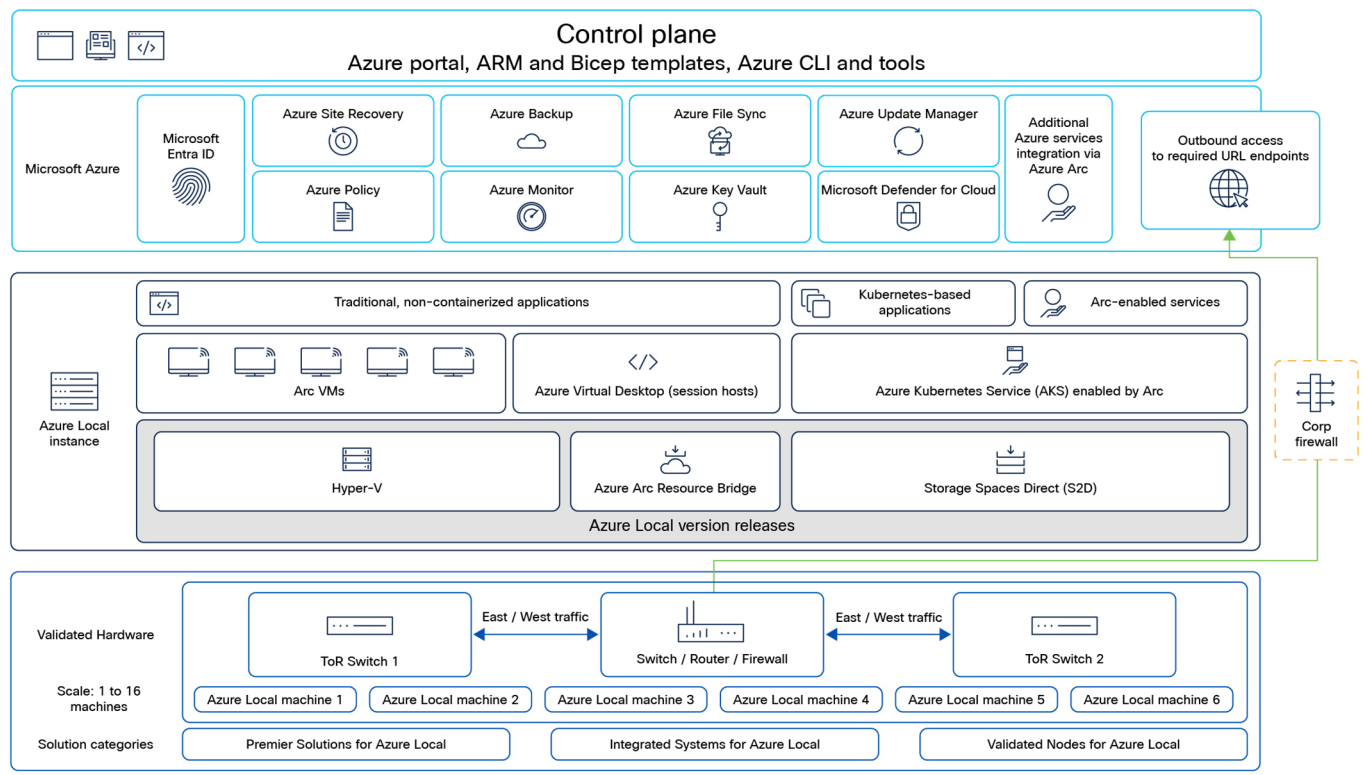


Figure 1.
Azure Local – Baseline reference architecture

Azure Local (formerly Azure Stack HCI) provides a complete SW stack delivered from Azure that can address any number of workload challenges from AI to VDI. Consider the following scenarios for a hyperconverged solution to help you determine if Azure Local is the solution that best suits your needs:

- **Refresh aging hardware.** Replace older servers and storage infrastructure and run Windows and Linux virtual machines on premises and at the edge with existing IT skills and tools.
- **Consolidate virtualized workloads.** Consolidate legacy applications on an efficient, hyperconverged infrastructure. Tap into the same types of cloud efficiencies used to run hyper-scale data centers, such as Microsoft Azure.
- **Connect to Azure for hybrid-cloud services.** Streamline access to cloud management and security services in Azure, including offsite backup, site recovery, cloud-based monitoring, and more.

Hyperconverged efficiencies

Azure Local solutions combine highly virtualized compute, storage, and networking on industry-standard x86 servers and components. Combining resources in the same cluster makes it easier for you to deploy, manage, and scale. Manage with your choice of command-line automation or Windows Admin Center.

Achieve industry-leading virtual machine performance for your server applications with Hyper-V, the foundational hypervisor technology of Microsoft cloud solutions, and Storage Spaces Direct technology with built-in support for NVMe, persistent memory, and Remote-Direct Memory Access (RDMA) networking.

It helps keep applications and data secure with shielded virtual machines, network microsegmentation, and native encryption.

Hybrid-cloud capabilities

You can use cloud and on-premises resources working as a hyperconverged public-cloud infrastructure platform. Your team can start building cloud skills with built-in integration with these Azure infrastructure management services:

- Azure Site Recovery for high availability and Disaster Recovery as a Service (DRaaS)
- Azure Monitor, a centralized hub, with AI-powered advanced analytics, to track what's happening across your applications, network, and infrastructure
- Cloud Witness, to use Azure as the lightweight tie-breaker for cluster quorum
- Azure Backup for offsite data protection and to protect against ransomware
- Azure Update Management for update assessment and update deployments for Windows VMs running in Azure and on premises
- Azure Network Adapter to connect on-premises resources with VMs in Azure through a point-to-site VPN
- Azure File Sync, to sync your file server with the cloud
- Azure Arc, the software stack management tool provided by Microsoft, which allows you to manage your data no matter where it resides, whether on premises (on Azure Local) or in the cloud (on Azure)

Cisco Azure Local architecture

Cisco Azure Local is a robust, scalable, and efficient solution for hybrid-cloud environments. Cisco Azure Local offers several benefits:

- **Cloud-based management:** Cisco Intersight® provides end-to-end system management, integrating with Microsoft Azure Local systems for seamless cloud management. It also offers the capability to turn individual processor cores on/off, so you can customize the use of system resources to your workload requirements. This also provides you the capability to control your Azure Local Operating System (OS) costs, because Microsoft typically charges \$10/core/month for the OS.
- **Fault tolerance:** built-in resiliency ensures continuous availability, handling storage, server, and switch failures without complex management steps
- **High performance:** utilizes all NVMe storage for high application performance, reducing complexity and cost
- **Reduced operating expenses:** integrated storage with enterprise-class performance allows for streamlined management of the entire Microsoft environment
- **Enterprise-class performance:** supports up to 16 servers with the latest Intel® Xeon® processors, ensuring enough bandwidth for large workloads
- **Scalability:** easily scale from 1 to 16 servers, in increments of one, with flexible configuration options for processor cores, memory, and storage
- **Exceptional availability:** no single point of failure, with automatic reassignment of workloads in case of server or switch failures
- **Automatic updates:** Azure Local OS is automatically updated from Azure, ensuring security and up-to-date software

- **Range of Cisco Nexus 9300 platform switches:** offers flexibility in switch choices, running either NX-OS or Cisco ACI®, validated by Cisco and Microsoft
- **Global support:** supported by Cisco and Microsoft, ensuring timely resolution of support issues

The Cisco® solution for Azure Local architecture must be implemented as described in Cisco Validated Designs. Cisco provides a specific set of PIDs for ordering validated configurations. These PIDs include all of the required components that comprise the solution, but allow the design to be customized for your workloads.

Cisco Azure Local physical topology

The data center is expected to have infrastructure services such as DNS and Active Directory. WDS (Windows Deployment Service) and DHCP are also recommended to expedite deployments. These services must be accessible through the ToR (Top-of-Tack) or EoR (End-of-Row) network switches that connect the Cisco UCS C240 M6 and M7 rack servers (or, optionally, Cisco UCS C220 M7 rack servers) that are part of the Cisco solution for Azure Local in the data-center infrastructure.

The architecture has a data fabric and a management fabric. The servers connect to the data fabric using dual 100Gb connections. The Cisco 9300 platform switches provide this data fabric, which provides Layer-2 connectivity and carries all the Azure Local network traffic (management, compute, and RDMA storage traffic). Server management is facilitated through an Out-of-Band (OOB) management network that connects the server's dedicated management port to an OOB management switch with 1GbE links. The servers with Azure Local OS 23H2 provide a rich set of software-defined services that are the core of this solution.

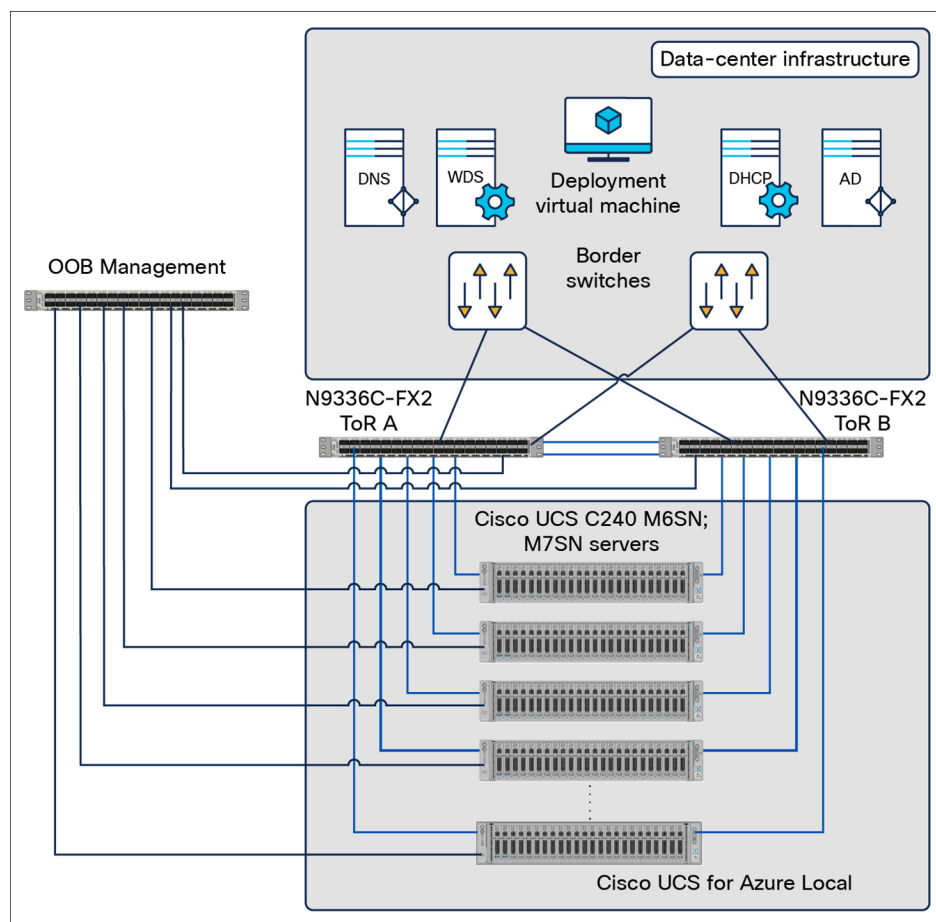


Figure 2.
Cisco Azure Local physical topology

To learn how to deploy the Cisco solution for Microsoft Azure Local, see [Cisco Validated Design](#).

Azure Virtual Desktops

Microsoft provides Azure Virtual Desktop (AVD), a cloud-based Virtual Desktop Infrastructure (VDI) solution. It allows users to access Microsoft Azure Virtual Desktop (AVD), a cloud-based VDI platform hosted by Microsoft Azure. With AVD, organizations can empower their workforce with remote access to essential resources through a centralized and efficient platform.

AVD desktops and applications can be run from anywhere, providing a secure and seamless remote desktop experience.

Here are some of its key highlights:

- Deliver a full Windows experience with Windows 11 or Windows Server. Use single-session to assign devices to a single user, or use multisession for scalability.
- Offer full desktops or use RemoteApp to deliver individual applications
- Present Microsoft 365 Apps for enterprise and optimize them for multiuser virtual scenarios
- Install your line-of-business or custom applications you can run from anywhere, including applications in Win32, MSIX, and Appx formats
- Deliver Software-as-a-Service (SaaS) for external usage
- Replace existing Remote Desktop Services (RDS) deployments.
- Manage desktops and applications from different Windows and Windows Server operating systems with a unified management experience
- Host desktops and applications on premises in a hybrid configuration with Azure Local

With AVD, organizations can empower their workforce with remote access to essential resources through a centralized and efficient platform. A multicloud strategy is a rational approach from an economic perspective for enterprises. This model enhances the business's responsiveness to operational needs – that is where Cisco comes in, providing the Cisco Azure Local solution for AVD deployments on premises.

Microsoft Azure

Home > Azure Arc | Azure Stack HCI >

AZSHCI-EMR-C1
Azure Stack HCI

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Copilot

snaldurg@cisco.com

Overview

This cluster has one or more updates available. [Click here to install required updates.](#)

Essentials

Resource group (mouse) : azshci-23h2-emr

Health status : ---

Location : East US

Subscription (move) : Pay-As-You-Go

Subscription ID : 8e8df9e-613d-40f4-9ad0-34fe457b3cd4

Billing status : Billed monthly

Cloud ID : 9ec063d7-424c-47d8-ac22-0d4b99f03ac2

Tags (edit) : CreatedBy: snaldurg

Cluster name : AZSHCI-EMR-C1

OS name : Azure Stack HCI

OS version : 23H2

OS build : 25398.1085

Azure connection : Connected—7 hours ago

Total physical cores : 128

Custom location : SJCLab

Get started Nodes Monitoring Capabilities

Azure Automanage for Windows Server
Set up Windows Server Azure Edition to use Automanage capabilities like Hotpatch and SMB over QUIC. [Learn More](#)

Prerequisites not met

Deployment guide

Azure Virtual Desktop
Set up desktop and application virtualization with multi-session Windows 11 or Windows 10 deployments. [Learn More](#)

Prerequisites met

Deploy

Kubernetes cluster
Deploy Kubernetes clusters with Azure Arc. [Learn More](#)

Prerequisites met

Deploy

Use the wizard to set up a new host pool containing the Virtual Machines (VMs) that will function as desktops. Click on the **Resource group** field.

Microsoft Azure

Home >

Create a host pool

Basics Virtual Machines Workspace Advanced Tags Review + create

Project details

Subscription * Pay-As-You-Go

Resource group * Pay-As-You-Go

Host pool name *

Location * East US
Metadata will be stored in Azure geography associated with (US) East US. [Learn more](#)

Validation environment ☒ No ☐ Yes

Preferred app group type * Desktop

Host pool details

If you select pooled, users can maintain their personalization and user data with FSLogix.

Host pool type * Select a type

Review + create < Previous Next: Virtual Machines >

Click on **Create new** and give the resource group a descriptive name.

Note: If you have an existing Resource Group that you prefer to use, please select that one instead.

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Create a host pool

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Project details

Subscription * Pay-As-You-Go

Resource group * AZSHCI-23H2-EMR

Host pool name *

Location * East US

Validation environment

Preferred app group type *

Host pool details

If you select pooled, users can maintain their personalization and user data with FSLogix.

Host pool type * Select a type

Review + create < Previous Next: Virtual Machines >

Click on **Host pool name** and give the host pool a descriptive name.

Select **Desktop** in the **Preferred app group type** dropdown list.

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Create a host pool

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Project details

Subscription * Pay-As-You-Go

Resource group * (New) AZSHCI-23H2-VDI

Host pool name * Win11-AVD

Location * East US

Validation environment ☒ No ☐ Yes

Preferred app group type * Desktop

Host pool details

If you select pooled, users can maintain their personalization and user data with FSLogix.

Host pool type * Select a type

Review + create < Previous Next: Virtual Machines >

From the **Host pool type** dropdown list, select **Pooled**. This option was used for evaluation purposes.

Note: Pooled: these desktops are shared among multiple users, enabling them to access and use the same virtual machine.

Personal: these desktops are dedicated to individuals, providing a unique virtual environment.

The screenshot shows the 'Create a host pool' page in the Azure portal. The page is divided into several sections: 'Project details', 'Host pool details', and 'Host pool type'. The 'Project details' section includes fields for 'Subscription' (Pay-As-You-Go), 'Resource group' ((New) AZSHCI-23H2-VDI), 'Host pool name' (Win11-AVD), 'Location' (East US), 'Validation environment' (No), and 'Preferred app group type' (Desktop). The 'Host pool details' section includes a note about FSLogix and a 'Host pool type' dropdown menu. The dropdown menu is open, showing 'Pooled' and 'Personal' options. The 'Personal' option is selected. At the bottom of the page, there are buttons for 'Review + create', '< Previous', and 'Next: Virtual Machines >'.

From the dropdown list, choose **Load balancing algorithms**. We used **Breadth-first** for evaluation.

Note: Azure Virtual Desktop supports two load-balancing algorithms:

- Breadth-first load balancing, which distributes user sessions evenly across the session hosts in a host pool
- Depth-first load balancing, which saturates a host with user sessions until the host reaches its session limit, at which point the load balancer directs new connections to the next host, continuing this process until all hosts are full

Microsoft Azure

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Home >

Create a host pool

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Project details

Subscription *

Resource group * [Create new](#)

Host pool name *

Location *
Metadata will be stored in Azure geography associated with (US) East US. [Learn more](#)

Validation environment ☒ No ☐ Yes

Preferred app group type *

Host pool details

If you select pooled, users can maintain their personalization and user data with FSLogix.

Host pool type *

Load balancing algorithm

Max session limit

[Review + create](#) [< Previous](#) [Next: Virtual Machines >](#)

The **Max session limit** value of a host pool's properties can be configured. We used a single session for the evaluation. Click on **Next**.

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Create a host pool

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Project details

Subscription *

Resource group * [Create new](#)

Host pool name *

Location *
Metadata will be stored in Azure geography associated with (US) East US. [Learn more](#)

Validation environment ☒ No ☐ Yes

Preferred app group type *

Host pool details

If you select pooled, users can maintain their personalization and user data with FSLogix.

Host pool type *

Load balancing algorithm

Max session limit

[Review + create](#) [< Previous](#) [Next: Virtual Machines >](#)

Select **Custom location** and the **Image** that will be used by the desktop.

portal.azure.com/View/Microsoft_Azure_WVD/Hostpool/Blade/_provisioningContext--/k7B?initialValues=%3A%7B%22subscriptionId%3A%5B%220325dd32-ebf8-403e-86b0-365c7d3306d9%22%2C%22resourceGroupNames%3A%5B%22W11AWD%22%22%7D%22%7D

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Create a host pool

Basics Virtual Machines Workspace Advanced Tags Review + create

A host pool is a collection of one or more identical virtual machines within an Azure Virtual Desktop environment. Here you can give details to create Azure virtual machines for your host pool now, or you can create and add them later, for example if you plan to add virtual machines from Azure Stack HCI. [Learn more](#)

Add virtual machines

☐ No
☒ Yes

Host pools are a collection of one or more identical virtual machines within Azure Virtual Desktop environments. Here you provide a common set of properties to update the Session hosts within your host pool.

Resource group

Defaulted to same as host pool

Name prefix *

W11AWD

Session host name must be unique within the Resource Group.

Virtual machine type

☐ Azure virtual machine
☒ Azure Stack HCI virtual machine

To create a session host virtual machine on Azure Stack HCI, you must be on Azure Stack HCI version 23H2. [Learn more](#)

Custom location *

sjclab

Image *

Select an image
Gallery images
c8kv
c8kv-new
W2K22
Marketplace gallery images
win11a2

If you do not see an image in the drop-down, yet. To create new images on your cloud.

Security type *

Number of VMs *

Virtual processor count *

Memory type

☒ Static
☐ Dynamic

Review + create

< Previous

Next: Workspace >

Provide details for the virtual desktops.

portal.azure.com/View/Microsoft_Azure_WVD/Hostpool/Blade/_provisioningContext--/k7B?initialValues=%3A%7B%22subscriptionId%3A%5B%220325dd32-ebf8-403e-86b0-365c7d3306d9%22%2C%22resourceGroupNames%3A%5B%22W11AWD%22%22%7D%22%7D

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Create a host pool

Basics Virtual Machines Workspace Advanced Tags Review + create

Security type *

Standard

Number of VMs *

20

Virtual processor count *

4

Memory type

☒ Static
☐ Dynamic

Memory (GB) *

16

Network and security

Network *

VMNet2

Provide details for Active Directory.

Domain to join

Select which directory you would like to join: Active Directory

AD domain join UPN *

Password *

Confirm password *

Specify domain or unit ☒ Yes ☐ No

Domain to join *

Organizational Unit path

Provide details for **Virtual machine administrator account**. Click on **Next**.

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Home >

Create a host pool

Virtual processor count *

Memory type ☒ Static ☐ Dynamic

Memory (GiB) *

Network and security

Network *

Domain to join

Select which directory you would like to join: Active Directory

AD domain join UPN *

Password *

Confirm password *

Specify domain or unit ☒ Yes ☐ No

Domain to join *

Organizational Unit path

Virtual machine administrator account

User name *

Password *

Confirm password *

Review > create < Previous Next: Workspace >

Click on **Create new** and give the new **Workspace** a descriptive name.

Note: If you have an existing Workspace that you prefer to use, please select that one instead.

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Home >

Create a host pool

Basics Virtual Machines Workspace Advanced Tags Review + create

To save some time, you can register the default desktop application group from this host pool, with a new or pre-existing workspace.

Register desktop app group ☐ No ☒ Yes

To this workspace *

There's no available workspaces for the selected location.
[Create new](#)

Create new

Workspace name *

AVD-Workspace

We will also create a display name for this workspace, which you can always edit later.

OK Cancel

Review + create

< Previous

Next: Advanced >

Click on **Next**.

portal.azure.com/View/Microsoft_Azure_WVD/HostpoolBlade/_provisioningContext~/7B?initialValues=%3A%7B%22subscriptionId%3A%5B%220325dd32-abf8-403e-86b0-365c7d3306d9%22%2C%22resourceGroupNames%22%3A%5B%22%22%22%2C%22workspaceName%22%3A%22AVD-Workspace%22%22%7D

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Home >

Create a host pool

Basics Virtual Machines Workspace Advanced Tags Review + create

Diagnostic Settings

Diagnostic settings are used to configure streaming export of platform logs and metrics for a resource to the destination of your choice. [Learn more](#)

Enable diagnostics settings ☐

Review + create

< Previous

Next: Tags >

Click on **Next**.

Click on **Create**.

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AVD testing

It is essential to test the virtual desktops to ensure they fully meet the expected performance and accessibility standards.

One of the tools available for assessing Azure Virtual Desktop (AVD) environments is Login Enterprise, developed by Login VSI. This industry-standard software simulates human-centric workloads to benchmark the capacity and performance of Virtual Desktop Infrastructure (VDI) solutions. Cisco Technical Marketing utilizes Login Enterprise to evaluate Cisco VDI architectures for Cisco Validated Designs (CVDs).

Login Enterprise tests Azure Virtual Desktop (AVD) through a custom connector that enables virtual users to connect through the AVD brokering service. All components of Login Enterprise can be deployed in Microsoft Azure, including the Virtual Appliance and Launchers, which support AVD testing. For configuration details, please refer to the Login VSI [documentation](#).

About Login VSI

Login VSI helps organizations proactively manage the performance, cost, and capacity of their virtual desktops and applications wherever they reside – traditional, hybrid, or in the cloud. The Login Enterprise platform is 100 percent agentless and can be used in all major VDI and Desktop-as-a-Service (DaaS) environments, including Citrix, Omnisia (formerly the End-User Computing division of VMware), and Microsoft. With 360° proactive visibility, IT teams can plan and maintain successful digital workplaces with less cost, fewer disruptions, and lower risk. Founded in 2012, Login VSI is headquartered in Boston, Massachusetts, and Amsterdam, Netherlands. Visit www.loginvsi.com.

This testing approach is beneficial for Continuous Testing, Load Testing, and App Compatibility testing with Login Enterprise.

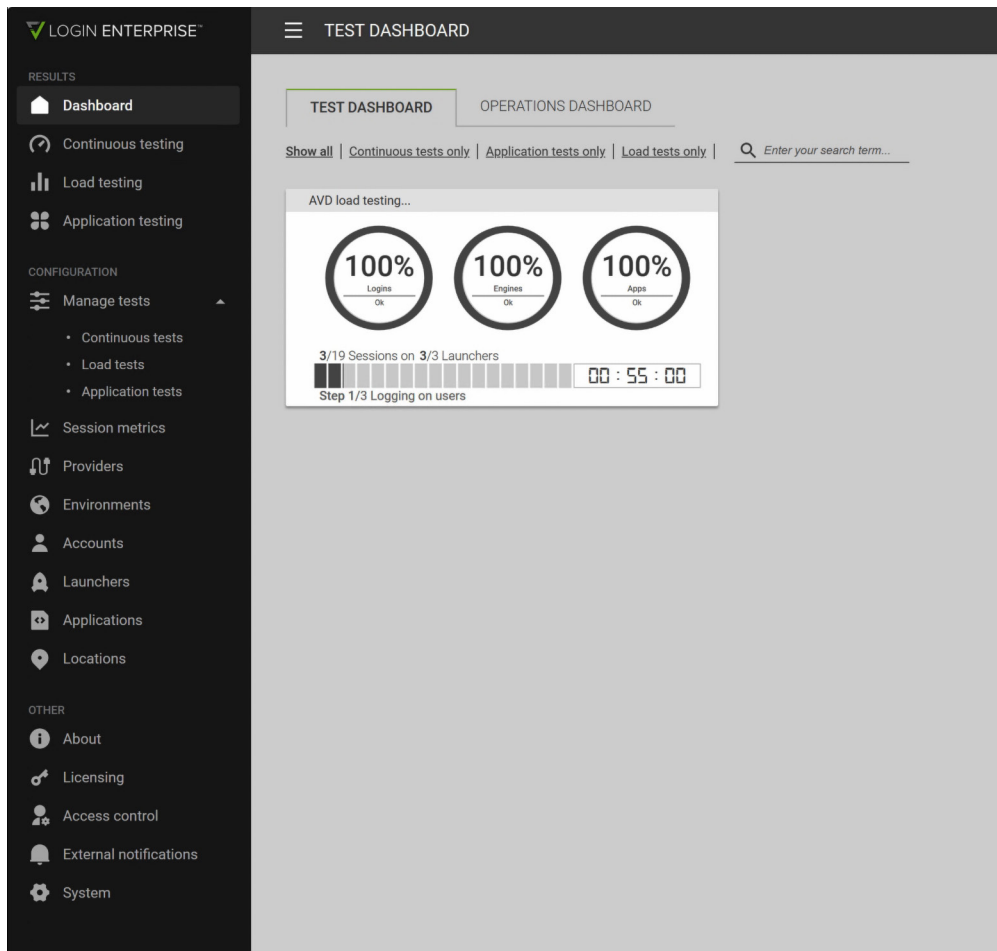


Figure 4.
Load testing with Login Enterprise Dashboard

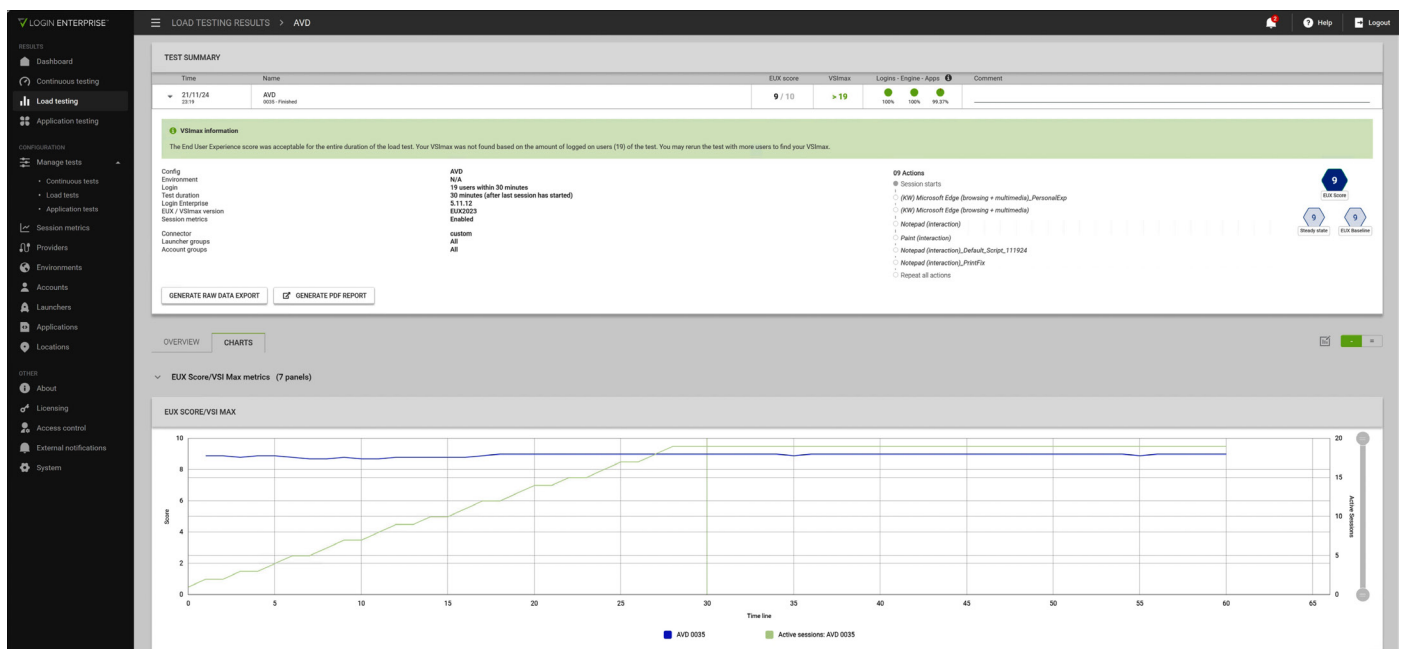


Figure 5.
Load testing with Login Enterprise results

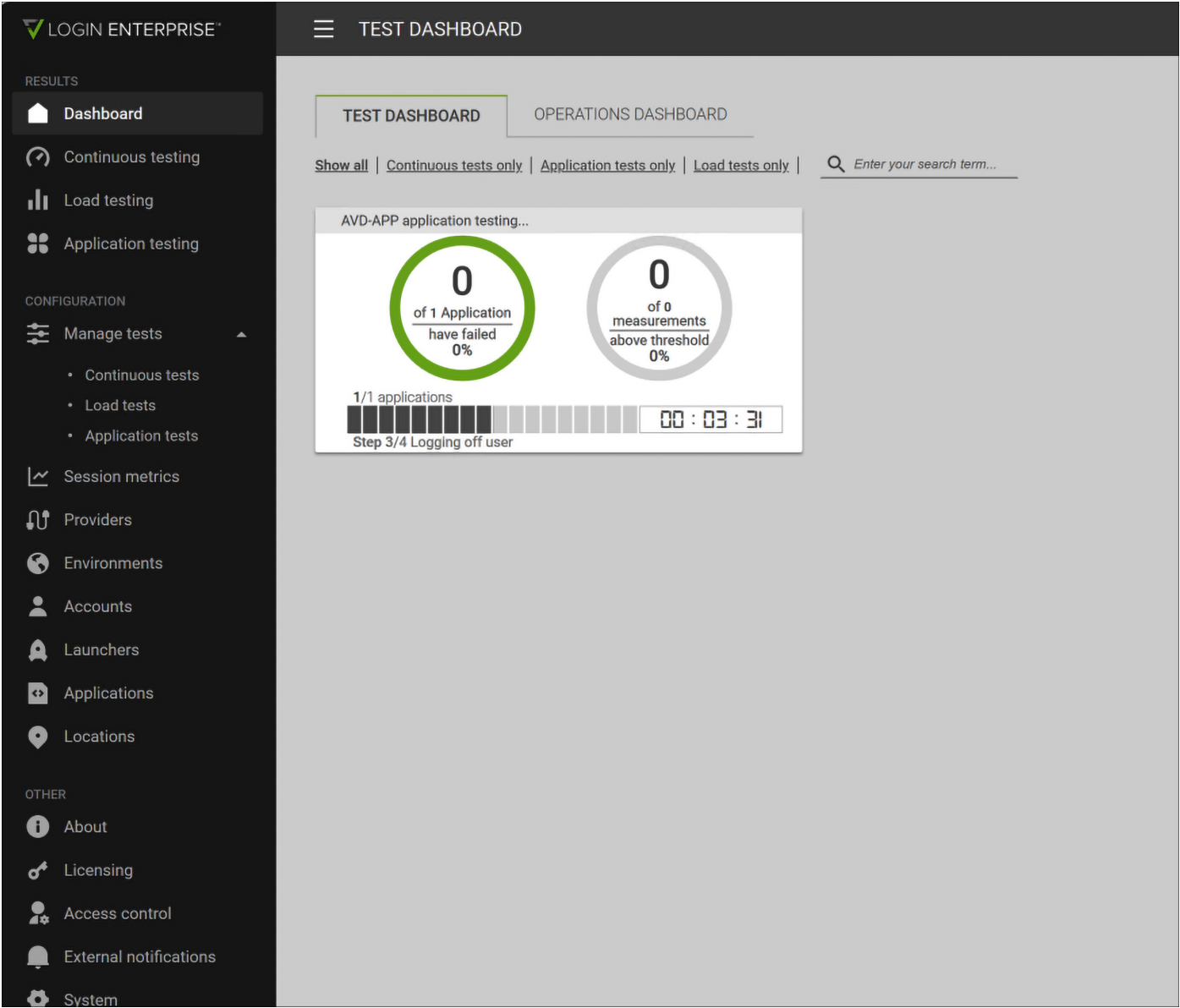


Figure 6.
App Compatibility testing with Login Enterprise dashboard

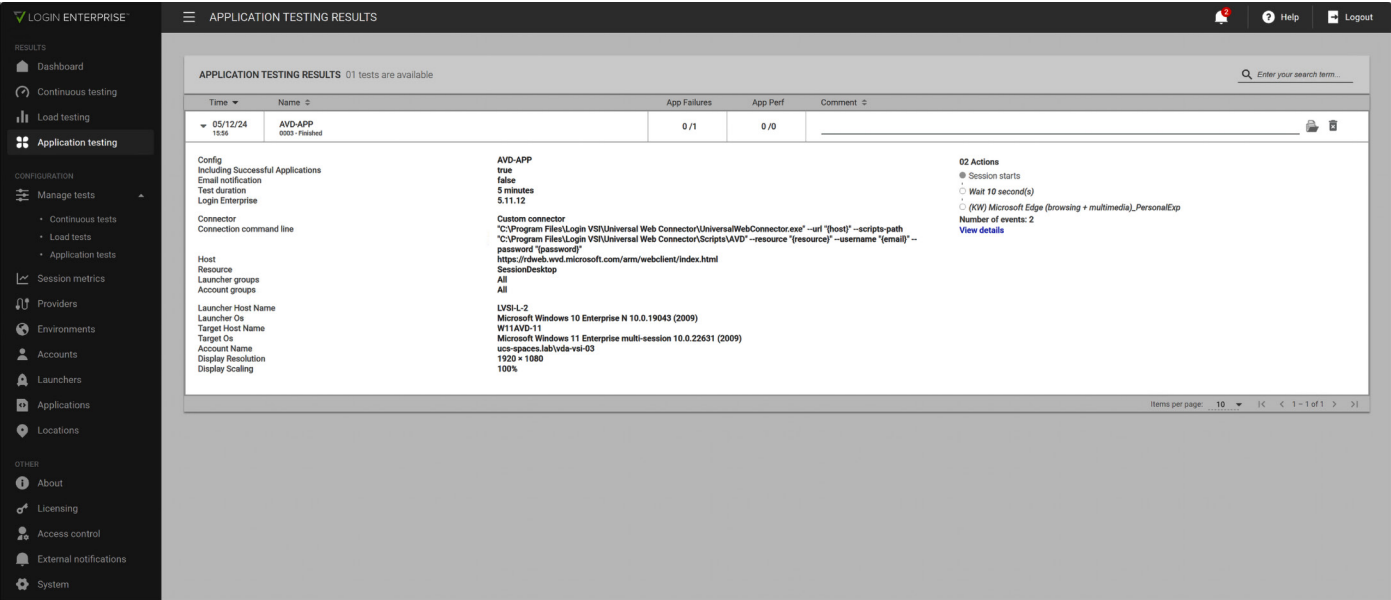


Figure 7.
App Compatibility testing with Login Enterprise results

Summary

Cisco UCS for Azure Local offers a range of benefits that enhance business operations through a hybrid-cloud computing approach. It provides rapid scalability and hybrid-cloud deployment, allowing businesses to transform into digital organizations by modernizing applications. The platform is designed for agility, adaptability, and efficiency, enabling faster digital transformation and quick deployment of desktops and applications. Cisco UCS for Azure Local integrates seamlessly with existing networking infrastructure, offering an all-NVMe design for rapid data read/writes and up to a 100G end-to-end design for efficient data movement. It ensures consistent server configuration with Cisco Intersight server profiles and allows management of on-premises cloud environments through the Azure portal or Windows Admin Center. Additionally, it provides global world-class support from Cisco and Microsoft, ensuring a streamlined support experience.

While this paper does not detail exhaustive testing of AVD on the Cisco UCS for Azure Local design, the reader should take away that we have shown the ability to deploy AVD onto Azure Local with Cisco UCS so that you can get started on your own deployments and follow the Microsoft documentation to assist your efforts. Cisco has a long history of experience with various VDI management software alternatives, and now this testing provides proof that Cisco UCS for Azure Local is a powerful infrastructure choice for AVD deployments. We hope you will investigate this option further.

Discover more about Cisco UCS Solutions for Microsoft Azure Local by clicking [here](#).

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