

Lenovo Cloud Reference Architecture for VMware Software Defined Data Center

Simplify Hybrid Cloud and Infrastructure Delivery



Spend More Time Innovating

Gaining control over access, use, and deployment of hybrid applications and infrastructure services is essential for the agile data center. Lenovo Cloud Reference Architecture for VMware SDDC delivers extensive best practices to reduce hybrid cloud complexity and accelerate your digital transformation journey.

VMware SDDC and Hybrid Cloud components provide a comprehensive software platform needed to build and run a hybrid cloud infrastructure. This architectural approach delivers virtualized infrastructure services for compute, storage, network, security, and availability to unify private and public cloud services. These components include built-in intelligence to automate the on-demand provisioning, placement, configuration and control of applications that are based on defined policies.

The Lenovo Cloud Reference Architecture for VMware Software Defined Data Center provides you with extensive information to jump start your way to a well-orchestrated and resilient private or hybrid data center providing centralized control and automation over cloud application and infrastructure services including requirements, architectural overview, operational model, performance and sizing information, and bill of materials configurations.

Integrating, configuring, and testing end-to-end software and hardware technologies means you can spend less time worrying about infrastructure and focus more on enabling innovation.

HIGHLIGHTS

- Provides best practice guidance for deploying Lenovo systems and XClarity foundation software with the VMware Software Defined Data Center (SDDC) architecture for an agile hybrid cloud solution with automated provisioning and management of end-to-end infrastructure from familiar panes of glass
- Includes high performing and resilient cloud-optimized data center infrastructure such as Lenovo x3650 M5 and x3550 M5 servers in either a hyperconverged configuration or utilizing Lenovo Storage V3700 V2 external tiered storage system, and Lenovo high speed RackSwitch Ethernet switches
- Enables rapid transformation into a services-oriented, centrally , and automated hybrid data center through an affordable, resilient, and powerful industry-leading engineered cloud solution

Architecture Brief

Lenovo Cloud Reference Architecture for VMware Software Defined Data Center

Why Lenovo and VMware

For 10 years, Lenovo and VMware have collaborated to deliver successful, integrated virtualized solutions to tens of thousands of customers worldwide. Customers recognize Lenovo's leadership in the worldwide server market and VMware's leadership in x86 server virtualization software infrastructure.

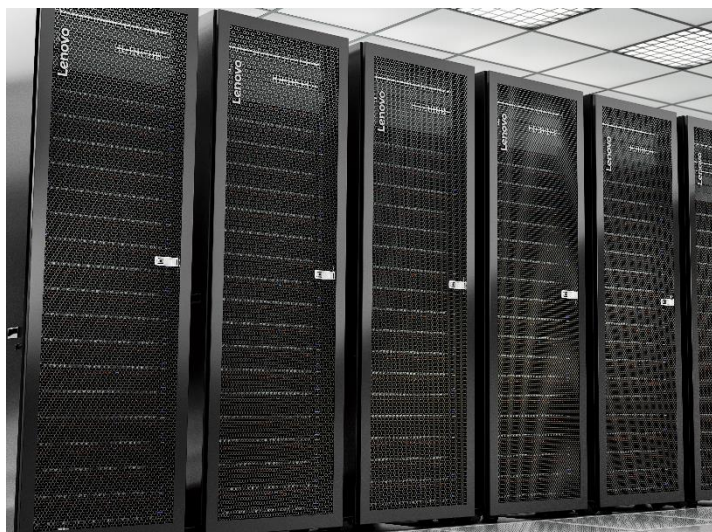
Overview

At the core of this architecture resides the Lenovo System x3650 M5 or x3550 servers.³ These servers deliver the performance and stability required for business-critical cloud workloads. The 1U x3550 M5 can be equipped with two 18-core Intel Xeon E5-v4 series processors and up to 12 drives. The 2U x3650 M5 is similar, but features more expansion slots and incremental 14 2.5-inch hot swappable SAS/SATA HDDs or SSDs for a maximum of 26 drives.

The standard network for this reference architecture is 10 GbE transport. In this capacity, the RackSwitch G8272 is ideal for this architecture. It is an enterprise class Layer 2 and Layer 3 full featured switch that delivers line-rate, high bandwidth switching, filtering, and traffic queuing without delaying data. Large data center-grade buffers help keep traffic moving, while the hot-swap redundant power supplies and fans (along with numerous high-availability features) help provide high availability for business sensitive traffic. Additionally, the RackSwitch G8272 supports deployment into VMware NSX™ networks.

This reference architecture utilizes vSAN to configure physical servers in a hyperconverged cluster, or Lenovo Storage V3700 V2 storage controller to provide shared external storage to the host cluster. vSAN unifies VM and storage deployment while utilizing on-node storage resources to greatly simplify physical host deployment with linear scalability. For greater flexibility between host and storage scalability, Lenovo Storage V3700 V2 delivers new levels of storage efficiency, ease of use, and five 9s of availability.

Integrated into this reference architecture is Lenovo XClarity, foundational systems management software for servers, networking, storage, ThinkAgile, cloud, and software-defined environments. Lenovo XClarity is a virtualized application that accelerates deployment of physical infrastructure and simplifies ongoing management through a simplified dashboard interface. XClarity includes software plugins packaged with advanced functionality to allow VMware SDDC components to view, provision, and control Lenovo infrastructure as a service. This unique integration allows you to automate end-to-end software and hardware deployment to accelerate delivery of hosts, clusters, and virtual resource pools, as well as manage Lenovo infrastructure from familiar VMware tools. With XClarity, Lenovo is ushering in a new era of software-defined infrastructure delivery – as a service.



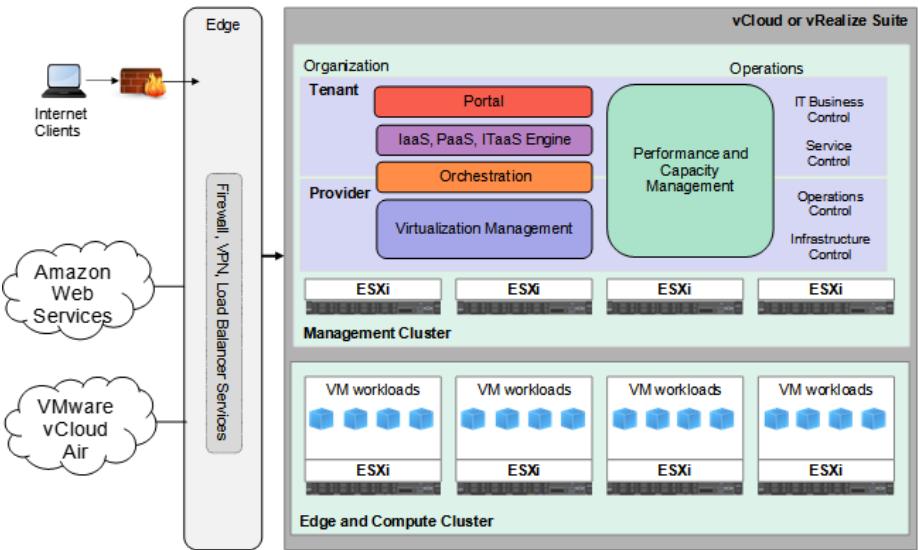
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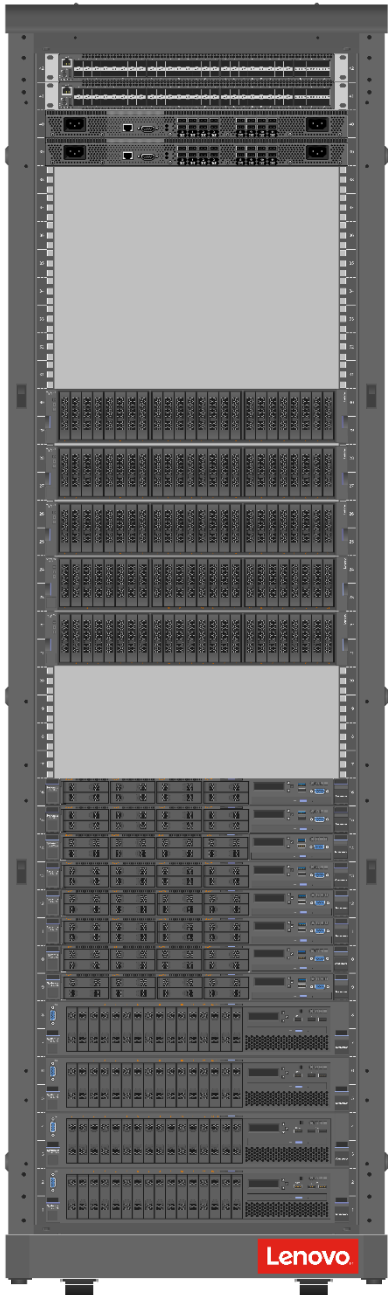
The Lenovo Reference Architecture for VMware Software Defined Data Center provides all the components needed to build and run a fully virtualized, software-defined, and automated hybrid data center. This approach delivers virtualized infrastructure services (compute, storage, networking, security, and availability), with built-in intelligence to automate provisioning, placement, configuration, and control of apps and end-to-end infrastructure based on defined policies.

Hybrid Cloud Architecture

The diagram below shows the conceptual design of the software-defined cloud platform using VMware SDDC components, and the example below shows the full engineered rack solution configuration optimized to enable high performance, availability, and resiliency to enable hybrid infrastructure as a service. The reference architecture simplifies deployment for either a private cloud based on vSphere with Operations Management and VMware vCloud Suite, or a centrally managed software-defined hybrid cloud spanning private and public cloud services with vRealize Suite. Configurations and operational models have been tested and validated for on-premise private cloud services and VMware vCloud Air and AWS public cloud services. Configurations may be customized to best suit applications running in your environment, as well as your objectives. To accelerate time to value, Lenovo offers professional services and expertise to assess, design, implement, and support this solution.



Cloud-optimized Lenovo x3650 M5 and x3550 M5 servers, with Lenovo Storage V3700 V2 and Lenovo RackSwitch networking, form the foundation of the Lenovo Cloud Reference Architecture for VMware SDDC



Architecture Brief

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Why Lenovo

Lenovo is a leading provider of x86 servers for the data center. Featuring rack, tower, blade, dense and converged systems, the Lenovo server portfolio provides excellent performance, reliability and security. Lenovo also offers a full range of networking, storage, software, solutions, and comprehensive services supporting business needs throughout the IT lifecycle. With options for planning, deployment, and support, Lenovo offers expertise and services needed to deliver better service-level agreements and generate greater end-user satisfaction.

For More Information

To learn more about the Lenovo Cloud Reference Architecture for VMware SDDC, contact your Lenovo Business Partner or visit:

www.lenovo.com/systems/solutions



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¹ #1 x86 Reliability; ITIC 2014-2015 Global Server Hardware, Server OS Reliability Report, May 2014 (latest report); lenovo.com/images/products/system-x/pdfs/analyst-reports/XSL03126USEN.PDF. (2015 survey results pending)

² 1 Customer Satisfaction; TBR Customer Satisfaction Survey, May 2015 (latest report); lenovo.com/images/products/system-x/pdfs/white-papers/tbr_x86servers_top_csat_1q15_wp.pdf

³ Other servers supported by this RA include ThinkServer RD650 and RD550.

⁴ 2133MHz DDR4 memory at 2 DIMMs per channel (2DPC) is a Lenovo exclusive.

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