VMware Edge Compute Stack on Lenovo ThinkSystem SE350

Seamlessly extend VMware environment from the datacenter to the edge

Lenovo partners with VMware to enable a secure, scalable and high-performance vSAN ReadyNode certified solution.
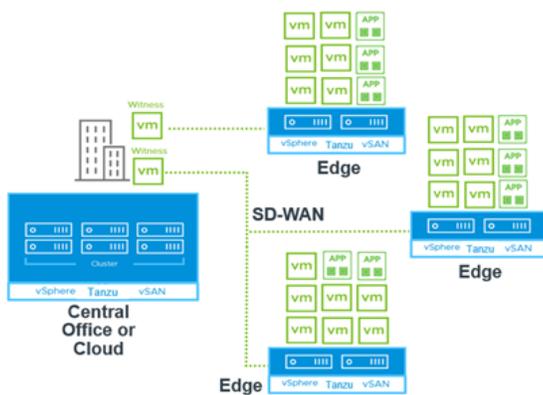

Figure 1: Edge-native applications built on VMs or containers

This solution for remote edge computing provides a 2-node, high availability cluster with Wi-Fi or wired connectivity and a backup cellular LTE link. It uses small, robust ThinkSystem SE350 Edge servers that support extended temperature, shock and vibration and provide up to 25 to 30 virtual machines at a remote/Edge location. It provides a small footprint, cost-effective way to extend VMware's vSphere® infrastructure to the edge and manage it using existing vSphere management tools. The solution can be set up and managed from a centralized location using a remote VMware vSAN™ witness and vSphere Lifecycle Manager. Also, with the upcoming support of SD-WAN Orchestrator, you can create a Secure Access Service Edge (SASE), managing all the Edge networks from a centralized location.

Benefits

The combination of Lenovo's compact and powerful ThinkSystem SE350 Edge server with pre-loaded VMware ESXi and defined software stack VMware vSAN and vSphere (VMware Tanzu™ and SD-WAN are optional) makes this solution easy to deploy for customers of all sizes and industry types. Retail, manufacturing, healthcare, smart cities, and many more can benefit from resilient edge computing that extends the VMware environment out from the core data center.

The Lenovo ThinkSystem SE350 supports a wide range of use cases at the edge, bringing together high compute power and compact, rugged form factor. It has a small footprint measuring 43mm high, 209mm wide, and 376mm deep that can be mounted on a wall, stacked on a shelf, or installed in a rack. The server is also dust-resistant and can handle temperatures from zero degrees Celsius to 55 Celsius. It uses the Intel Xeon D-2100 processors, which

Figure 2: ThinkSystem SE350

feature a data center processor optimized for network, storage, and cloud-edge systems. Intel Xeon D-2100 processors have up to 16 (4c, 8c, 12c, 12c QAT also available) cores with a performance per-watt of power that is optimized for enterprise edge applications.

Lenovo ThinkSystem SE350 is a certified vSAN ReadyNode for VMware vSphere versions 6.7 and later. It is fully enabled and Ethernet-connected for a VMware vSAN stretched cluster configuration since it supports variety of connectivity options like wired 10Gb or 1Gb Ethernet, SFP+ or RJ45 connections, Wi-Fi (endpoint or Access Point), and Cellular (e.g.4G LTE) connection.

Combining this powerful purpose-built edge hardware with VMware's software stack saves time and money while lowering risk. This flexible all-in-one combination enables organizations to rapidly expand to new edge locations.

Data protection on several layers

VMware vSAN 2-node deployments include two physical servers to host VMs and and a witness, which can be a physical server or VM). 2-node deployments offer high data availability, so in case of a node failure, the applications running on the problematic node will be moved to the alternate node where a complete replica of each data component is available. This way the applications will remain in an uninterrupted state and running. vSAN 2-node cluster configuration achieves this level of redundancy by applying a storage policy of RAID-1 and Failures to Tolerate of 1 (Mirroring); in other words, one host failure can be supported without an impact on the application's running state.

Maintaining security at the edge location can be challenging since the compute nodes are not in an environment as secure as the data center. Lenovo ThinkSystem SE350 and vSAN 2-node clusters as part of ReadyNode solution come together to assure the data is protected on several different levels:

• Data-at-rest encryption - the purpose of data at rest encryption is to essentially disallow access to the stored data without the appropriate key to unlock the data. In the event of media loss or theft, the data is secure without the presence of the unlocking key. Because of this, data-at-rest encryption is often employed in environments that require additional levels of security.

• Integrated Trusted Platform Module (TPM) 2.0 support enables advanced cryptographic methods, such as digital signatures and remote attestation.

Highlights

• vSAN ReadyNode certified all-in-one solution with preloaded SW for easy deployment

• Seamless edge-to-cloud VMware experience

• Reliable HA cluster

• Resilient hardware environment

• Secure processing of data right where it's created

• Rapidly expand to new Edge locations

• Simple licensing model for edge sites

• Self-installation or engagement of Lenovo PS

• Supports Secure Boot to ensure only a digitally signed operating system can be used.

• Industry-standard Advanced Encryption Standard (AES) NI support for faster, stronger encryption.

• Intel Execute Disable Bit functionality can prevent certain classes of malicious buffer overflow attacks when combined with a supported operating system.

• Intel Trusted Execution Technology provides enhanced security through hardware-based resistance to malicious software attacks, allowing an application to run in its own isolated space, protected from all other software running on a system.

• Lenovo patent pending secure hardware platform can detect un-authorized movement or tampering of the system and ultimately lock-down the data for increased security.

Three configurations to cover various scenarios

Ingredient	Solution A	Solution B	Solution C
Processor	Intel Xeon 8C 2.2GHz 65W	Intel Xeon 8C 2.2GHz 65W	Intel Xeon 16C 2.2GHz 100W
Memory	64GB	128GB	256GB
Storage	2-8x 480GB Industrial A600i SATA SED SSD	2-8x 480GB Industrial A600i SATA SED SSD	2-8x 480GB Industrial A600i SATA SED SSD
NICs	10GBase-T 2-Port, 10/100/1GbE RJ45 2-Port Intel i350	10GBase-T 2-Port, 10/100/1GbE RJ45 2-Port Intel i350	10GBase-T 2-Port, 10/100/1GbE RJ45 2-Port Intel i350
Default SW	vSAN, vSphere	vSAN, vSphere	vSAN, vSphere
Optional SW	Tanzu, SD-WAN	Tanzu, SD-WAN	Tanzu, SD-WAN

For more information

To learn more about VMware Edge Cloud on ThinkSystem SE350 solutions and validated configurations, contact your Lenovo Business Partner or visit: www.lenovo.com

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