

Suggestions for VM Installation

This document presents recommended settings for installing the Nasuni Filer on a virtual machine (VM). This is excerpted from the [Nasuni Filer Initial Configuration Guide](#).

The minimum recommended virtual machine resources for running the Nasuni Filer are as follows:

Limit	Value
Minimum free disk space to run the Nasuni Filer.	352 GB (328 GiB) (includes operating system, 250 GB cache, and cache-on-write (COW) disk)
Minimum required memory on a VM host.	4 GiB
Recommended memory on a VM host.	8 GiB
Recommended Nasuni Filer VM memory.	8 GiB
Nasuni Filer Virtual Machine cores.	4 default, 8+ for optimal performance

The current maximum cache size for the Nasuni Filer is 500 TiB. However, each platform also has its own maximum cache size for a single cache disk. (Multiple cache disks are supported.) The following table lists the maximum cache size per single cache disk (by platform) supported by the Nasuni Filer. Visit [VMware features](#) and [Hyper-V features](#) for the most complete information.

Virtual Platform	Maximum Cache Size for a Single Cache Disk
VMware ESXi 5.5 and above NOT using VMFS-5	2 TiB
VMware ESXi 5.5 and above	62 TiB (using VMFS-5) 64 TiB (using physical Raw Disk Mapping (RDM) (aka "pass through disks"))
Microsoft Hyper-V	2 TiB (Server 2008) 500 TiB (using "pass through disks") (Server 2008) 64 TiB (using VHDX) (Server 2012) 64 TiB (Server 2012 R2)
Microsoft Azure	4,095 GiB (Nasuni Filers support the Microsoft Azure maximum size for a single disk, which is currently 4,095 GiB.)
Amazon EC2	1 TiB for hard disks, 16 TiB for SSDs

Note: Nasuni supports VMware ESXi 5.5 and above.

Note: To add cache space by configuring additional cache disks, contact Nasuni Technical Support.

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Note: Note that you can configure pass-through disks on VMware and Hyper-V.

The following table lists the maximum number of CPU cores (or virtual CPUs) that are supported by the Nasuni Filer.

Virtual Platform	Maximum CPU Cores
VMware ESXi 6.0	128
VMware ESXi 5.5	64
Microsoft Hyper-V	4 (Server 2008); 64 (Server 2012 and Server 2012 R2)

Note: Nasuni supports VMware ESXi 5.5 and above.

The following table lists the maximum RAM (by virtual platform) that is supported by the Nasuni Filer. Visit [VMware features](#) and [Hyper-V features](#) for the most complete information.

Virtual Platform	Maximum RAM
VMware ESXi 6.0	4 TB (actually 4080 GB)
VMware ESXi 5.5	1 TB
Microsoft Hyper-V	64 GB (Server 2008); 1 TB (Server 2012); 4 TB (Server 2012 R2)

Note: Nasuni supports VMware ESXi 5.5 and above.

Other Suggestions and information

- Run Nasuni Filers on disks with performance equal to or better than 10K RPM SAS disks. Disks should be dedicated to the Nasuni Filer to avoid contention with other I/O-intensive workloads. Disk latency should not exceed 15 ms. With VMware, you can use Storage I/O Control (SIOC) to give priority to the Nasuni Filer over other VMs sharing the same datastore.
- The time to generate an encryption key can vary widely, depending on the hardware (real or virtual) that the Nasuni Filer is executing on. Encryption keys are generated in the background, so as to not block use of the Nasuni Filer during generation.
- With VMware, if VMs have more vCPUs than a single NUMA node contains, configure Virtual NUMA properly. Virtual NUMA requires virtual hardware version 8 or later; the Nasuni VM ships at virtual hardware version 7, but can be upgraded to match the version supported by your hypervisor. Size VMs to align with physical NUMA boundaries: if the host has 4 cores per NUMA node, your VM should have multiples of 4 vCPUs. With VMware version 6.5 or earlier, assign one virtual core per virtual socket. Virtual NUMA is only enabled for VMs with more than eight vCPUs. To override this setting, add "numa.vcpu.min = X" to the VM's VMX file.

- With Hyper-V, Hyper-V 2012 and later supports Guest Aware NUMA, which provides the host's NUMA layout to a guest. However, if you enable Dynamic Memory for a VM, Guest Aware NUMA is disabled. Therefore, do not enable Dynamic Memory for VMs with a large number of virtual processors, so that the VM can efficiently use the underlying NUMA architecture.
- For optimal performance, do not use DHCP.
- Reboot times are approximately 60 seconds.
- If any network interfaces are not in use, set them to “Disabled” on the **Network Configuration** page in the Nasuni Filer UI.
- For further information, also see:
 - [Performance Best Practices for VMware vSphere 5.5](#).
 - [Performance Best Practices for VMware vSphere 6.0](#).
 - [Performance Best Practices for VMware vSphere 6.5](#).
 - [Performance Tuning Guidelines for Windows Server 2012 R2](#).

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