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## Definitions

### Supported

Scale Computing will fully support and troubleshoot the operation of the HyperCore system related to any supported operating systems and configurations. Scale Computing may document environment specific configurations and best practices as well as performance optimizations. Scale Computing may provide certified configurations with the operating system vendor where applicable.

### Unsupported

Scale Computing will support and troubleshoot the operation of the HyperCore HC3 system only. Environment specific configurations and best practices may not be available, including performance optimizations. Scale Computing does not routinely test these configurations and will typically not be able to re-create issues specific to these environments for troubleshooting.

#### **Single Node System**

A single HC3 node initialized as an individual HC3 entity.

#### **Cluster**

A minimum of 3 HC3 nodes initialized as an individual HC3 entity.

#### **Tiering**

The HyperCore Operating System's capability to pool different drive types as different levels of storage. All spinning disks are in one tier while all SSD disks are in a separate tier. Enables an end user to customize access to the separate storage pools at the virtual disk level for each HC3 VM.

#### **Non-Tiered Node**

A node model that contains 100% spinning drives and no SSD drives.

#### **Tiered Node**

A node model that contains 25% SSD drives and 75% spinning drives.

#### **All Flash Node**

A node model that contains 100% SSD drives and no spinning drives.

## Tested System Limits

### Supported

#### VM Limits

##### Virtual Disk Capacity

No Minimum  
8 TB Maximum

##### Virtual Disk Count

No Minimum  
26 Maximum

##### Virtual NIC Count

No Minimum  
8 Maximum

#### System Limits

##### Single Node System (SNS)

1 Node Minimum (Any Type Within [Supported Configurations](#))  
1 Node Maximum (Any Type Within [Supported Configurations](#))

If used as a production system, a SNS **MUST** have a HC3 replication target for full support. This does not apply if the SNS is used as a non-production or replication target system.

##### Cluster

3 Node Minimum (Any Type Within [Supported Configurations](#))  
8 Node Maximum (Any Type Within [Supported Configurations](#))

### Unsupported

#### System Limits

A SNS without a HC3 system replication target if the SNS is being used as a production system due to the lack of high availability in the design.

##### Cluster

Spinning disk nodes (Non-Tiered Nodes) cannot be mixed with All Flash Nodes in any configuration.

An **All Flash** cluster is only compatible with **All Flash Nodes**.

## Supported

### HC3 System Replication

- 1 to 1 (One System's VMs To/From One Other System)
- 1 to Many (Different VMs from One System to Multiple Systems)
- Many to 1

In all instances, a maximum of 25 HC3 systems can replicate to a single Target HC3 system.

### HC3 System VM Imports and Exports

QCOW2 v2 is the only supported version when importing an existing QCOW2 file on HCOS 7.1 and previous. QCOW2 v3 is supported on HCOS 7.2+.

E1000/IDE/Compatibility drivers are supported for the initial migration to HC3 unless stated by ScaleCare Support. The latest VIRTIO/performance drivers should be used for full support.

## Unsupported

### HC3 System Replication

- 1 to Many (Same VM from One System to Multiple Systems)

For more than 25 Source HC3 systems replicating to a single Target HC3 system, contact Scale Computing to discuss your use case.

### HC3 System VM Imports and Exports

N/A

E1000/IDE/Compatibility drivers are only supported for the initial migration to HC3 unless otherwise recommended by ScaleCare Support.

See **HC3 System Configurations** for the list of supported **SNS** and **Cluster** node models. A **Cluster** configuration is required for high availability and VM failover capabilities.

## HC3 System Configuration General Guidelines

### RAM

Adding a single node with a larger RAM footprint than the other nodes in the cluster could create some undesirable scenarios for VM failover and rolling software upgrades.

### CPU

No restrictions.

### Networking

Match the networking capabilities of all nodes in a cluster. 1 GbE and 10 GbE SFP+ nodes should not be combined, but 10GBaseT nodes are compatible with 1GbE. **1 GbE ports are disabled for HC3 system use on all 10 GbE SFP+ node models and cannot be enabled.**

### Tiering (SSD)

**There is a minimum of 3 SSD (tiered) nodes in a cluster.** See the [HC3 System Configurations](#) section for more details.

### Capacity

Each storage pool (SSD and HDD) of a single node addition to a cluster must not be larger than the entire cluster storage pool capacity for SSD and HDD respectively. *Example: A single 12TB HDD / 960GB SSD HC1150 node should not be added to a 3 node cluster of 9TB HDD / 1.4TB SSD HC1150 nodes due to the HDD pool size (even if the SSD pool size meets the recommendation).*

### Mixing SSD and HDD Storage Pools

30% of the SSD tier is reserved by default for write bursts (essentially any new system writes). This is a capacity overhead that **cannot** currently be altered and should be taken into account when reviewing capacity needs. If undertaking a large data migration, it is possible to contact ScaleCare Support to temporarily disable tiering behavior that may lead to performance issues for the duration of the migration. Certain data sets, such as VM snapshots and VM imports, are sent directly to the HDD tier for capacity and performance purposes.

### Performance (HDD Storage Pool)

Drive performance for the HDD pool is roughly determined by the capacity and speed of the available drives. Mixing drives speeds and capacities is supported but inadvisable. Performance issues can be compounded if higher capacity (but slower speed) drives are added to a 10K or 15K speed system. Please contact your Sales Engineer with any questions regarding your use case and needs.

## HC3 System Configurations

HC3 Nodes	Single Node System	Adding HC1100	Adding HC1150	Adding HC1150D	Adding HC1150DF	Adding HC1200	Adding HC1250	Adding HC1250D	Adding HC1250DF	Adding HC2100	Adding HC2150	Adding HC4100	Adding HC4150	Adding HC5150D	Adding HC5250D
HC1100		*	+	+		⑩	+*⑩	+*⑩			+X*		+X*	+X*	+X*
HC1150		+	+	+	+	+*⑩	+*⑩	+*⑩	+*⑩	+	+X*	+*∞	+X*	+X*	+X*
HC1150D		+	+	+	+	+*⑩	+*⑩	+*⑩	+*⑩	+	+X*	+*∞	+X*	+X*	+X*
HC1150DF					+				+*⑩						
HC1200			+	+		⑩	+*⑩	+*⑩			+X*		+X*	+X*	+X*
HC1250		+	+	+	+	+*⑩	+*⑩	+*⑩	+*⑩	+	+X*	+*∞	+X*	+X*	+X*
HC1250D		+	+	+	+	+*⑩	+*⑩	+*⑩	+*⑩	+	+X*	+*∞	+X*	+X*	+X*
HC1250DF					+				+*⑩						
HC2100			+	+		⑩	+*⑩	+*⑩		*	+X*	*∞	+X*	+X*	+X*
HC2150		+	+	+	+	+*⑩	+*⑩	+*⑩	+*⑩	+	+	+*∞	+	+	+
HC4100		∞	+∞	+∞		*∞⑩	+*∞⑩	+*∞⑩		*∞	+X*∞	*∞	+X*∞	+X*∞	+X*∞
HC4150		+	+	+	+	+*⑩	+*⑩	+*⑩	+*⑩	+	+	+*∞	+	+	+
HC5150D		+	+	+	+	+*⑩	+*⑩	+*⑩	+*⑩	+	+	+*∞	+	+	+
HC5250D		+	+	+	+	+*⑩	+*⑩	+*⑩	+*⑩	+	+	+*∞	+	+	+

Supported

Unsupported

+ Requires a minimum of 3+ Tiered Nodes in the cluster  
 X 10GbE SFP+ ONLY; Networking must match original nodes  
 ⑩ 10GBaseT; Compatible with 1GbE nodes dependent on your local environment  
 ∞ 7200K and 10K RPM drive combinations are inadvisable  
 \* Networking must match or be compatible with original nodes

Support is based on the **Tested System Limits** section. SNS configurations **require** a replication target if used as a primary cluster.

## VM Guest Operating Systems and Drivers

Linux						
Guest OS by Functionality	Centos Enterprise Linux *	RHEL Enterprise Linux *	Ubuntu Server *	FreeBSD *	SUSE Linux Enterprise *	Fedora *
General Functionality and Features	Versions Currently Supported by the Manufacturer	Versions Currently Supported by the Manufacturer	Versions Currently Supported by the Manufacturer	Versions Currently Supported by the Manufacturer	Versions Currently Supported by the Manufacturer	Versions Currently Supported by the Manufacturer
HC3 Virtual Disk Mount Display	Requires Guest Agent **	Requires Guest Agent **	Requires Guest Agent **	Requires Guest Agent **	Requires Guest Agent **	Requires Guest Agent **
HC3 Virtual Disk Live Add						
HC3 Virtual Disk Live Delete						
Drivers	Packaged	Packaged	Packaged	Packaged	Packaged	Packaged

Fully Supported for Functionality

HC3 Supported; Guest OS May Not Support this Functionality

\* Kernel versions prior to 2.6.34 without appropriate patches expose a kernel issue that causes the VM to hang after upgrading to HyperCore version 7.6 and above. Update all Linux VMs to kernel versions with patches and/or 2.6.34 or above prior to upgrading the HyperCore software.

\*\* HC3 Supported, but the guest OS may or may not support this functionality. IDE virtual disk types may or may not be compatible.

Any guest operating system not listed here may operate normally on the HC3 system but is not tested for stability or functionality. Scale Computing can only provide minimal support assistance for non-tested guest operating systems.

## Windows

Guest OS by Functionality	Server 2016 x64	Server 2012 2012 R2 x86, x64	Server 2008 2008 R2 x86, x64	Windows 10 x64	Windows 8 8.1 x86, x64	Windows 7 x86, x64
General Functionality and Features	Requires HCOS Version 7.2+ BIOS Only; UEFI Unsupported	BIOS Only; UEFI Unsupported	BIOS Only; UEFI Unsupported	BIOS Only; UEFI Unsupported	BIOS Only; UEFI Unsupported	BIOS Only; UEFI Unsupported
HC3 Virtual Disk Mount Display	Requires Guest Agent *	Requires Guest Agent *		Requires Guest Agent *	Requires Guest Agent *	
HC3 Virtual Disk Live Add						
HC3 Virtual Disk Live Delete						
Drivers	Scale Computing Version 0.1.126-sc02	Scale Computing Version 0.1.126-sc02	Scale Computing Version 0.1.126-sc02	Scale Computing Version 0.1.126-sc02	Scale Computing Version 0.1.126-sc02	Scale Computing Version 0.1.126-sc02

Fully Supported for Functionality

HC3 Supported; Guest OS May Not Support this Functionality

\* HC3 Supported, but the guest OS may or may not support this functionality. IDE virtual disk types may or may not be compatible with the mount point feature and/or live disk tasks.

Any guest operating system not listed here may operate normally on the HC3 system but is not tested for stability or functionality. Scale Computing can only provide minimal support assistance for non-tested guest operating systems.



## HC3 Move Powered by Carbonite

### Supported

#### Windows Full Server Failovers

- All Editions But Core—Server 2016 (x64) ReFS Included
- All Editions—Server 2012 R2 (x64)
- All Editions—Server 2012 (x64)
- All Editions —Server 2008 R2 (x64) SP1+
- All Editions —Server 2008 (Requires v7.1 Licensing)

#### Linux Full Server Failovers

- Centos—Enterprise Linux 7.1 to 7.3 (x64)
- Centos—Enterprise Linux 6.7 to 6.9 (x64, x86)
- Centos—Enterprise Linux 5.9 to 5.11 (x64, x86)
- RHEL—Enterprise Linux 7.1 to 7.3 (x64)
- RHEL—Enterprise Linux 6.7 to 6.9 (x64, x86)
- RHEL—Enterprise Linux 5.9 to 5.11 (x64, x86)
- Ubuntu—Ubuntu Server 16.04.0 to 16.04.2 (x64, x86)
- Ubuntu—Ubuntu Server 14.04.3 to 14.04.5 (x64, x86)
- Oracle—Oracle Enterprise Linux 7.1 to 7.3 (x64)
- Oracle—Oracle Enterprise Linux 6.7 to 6.9 (x64, x86)
- SUSE—SUSE Linux Enterprise 12.0 to 12.2 (x64)
- SUSE—SUSE Linux Enterprise 11.2 to 11.4 (x64, x86)

\* Full Linux support details available in the [Carbonite v8 documentation](#).

### Unsupported

All other operating systems listed in the VM Guest Operating Systems section but not listed as Supported for HC3 Move Powered by Carbonite.

\* **HC3 Move Powered by Carbonite does not support Desktop operating systems.**

**NTFS file systems only.** See the **HC3 Move Powered by Carbonite Quickstart Guide** for further information on the HC3 Move service.

Tools exist for migration in cases where HC3 Move is not supported or offered. Clustered application environments such as **Microsoft Failover Cluster** or **Distributed Access Groups** will require additional configuration changes to migrate to HC3. Contact ScaleCare Support for further information.

## Native HC3 System Replication

HCOS Version	7.2.24	7.3.22	7.3.24	7.4.11	7.4.17	7.4.20	7.4.21	7.4.22	7.5.21	7.6.7	8.0.1	8.0.2	8.0.3	8.1.0	8.1.1
7.2.24	Supported	Supported	Supported	Supported	Supported	Supported	Supported	Supported	Unsupported	Unsupported	Unsupported	Unsupported	Unsupported	Unsupported	Unsupported
7.3.22	Supported	Supported	Supported	Supported	Supported	Supported	Supported	Supported	Unsupported	Unsupported	Unsupported	Unsupported	Unsupported	Unsupported	Unsupported
7.3.24	Supported	Supported	Supported	Supported	Supported	Supported	Supported	Supported	Unsupported	Unsupported	Unsupported	Unsupported	Unsupported	Unsupported	Unsupported
7.4.11	Supported	Supported	Supported	Supported	Supported	Supported	Supported	Supported	Unsupported	Unsupported	Unsupported	Unsupported	Unsupported	Unsupported	Unsupported
7.4.17	Supported	Supported	Supported	Supported	Supported	Supported	Supported	Supported	Unsupported	Unsupported	Unsupported	Unsupported	Unsupported	Unsupported	Unsupported
7.4.20	Supported	Supported	Supported	Supported	Supported	Supported	Supported	Supported	Unsupported	Unsupported	Unsupported	Unsupported	Unsupported	Unsupported	Unsupported
7.4.21	Supported	Supported	Supported	Supported	Supported	Supported	Supported	Supported	Unsupported	Unsupported	Unsupported	Unsupported	Unsupported	Unsupported	Unsupported
7.4.22	Supported	Supported	Supported	Supported	Supported	Supported	Supported	Supported	Supported	Supported	Supported	Supported	Supported	Supported	Supported
7.5.21	Unsupported	Unsupported	Unsupported	Unsupported	Unsupported	Unsupported	Unsupported	Unsupported	Supported	Supported	Supported	Supported	Supported	Supported	Supported
7.6.7	Unsupported	Unsupported	Unsupported	Unsupported	Unsupported	Unsupported	Unsupported	Unsupported	Supported	Supported	Supported	Supported	Supported	Supported	Supported
8.0.1	Unsupported	Unsupported	Unsupported	Unsupported	Unsupported	Unsupported	Unsupported	Unsupported	Supported	Supported	Supported	Supported	Supported	Supported	Supported
8.0.2	Unsupported	Unsupported	Unsupported	Unsupported	Unsupported	Unsupported	Unsupported	Unsupported	Supported	Supported	Supported	Supported	Supported	Supported	Supported
8.0.3	Unsupported	Unsupported	Unsupported	Unsupported	Unsupported	Unsupported	Unsupported	Unsupported	Supported	Supported	Supported	Supported	Supported	Supported	Supported
8.1.0	Unsupported	Unsupported	Unsupported	Unsupported	Unsupported	Unsupported	Unsupported	Unsupported	Supported	Supported	Supported	Supported	Supported	Supported	Supported
8.1.1	Unsupported	Unsupported	Unsupported	Unsupported	Unsupported	Unsupported	Unsupported	Unsupported	Supported	Supported	Supported	Supported	Supported	Supported	Supported

**Supported**

**Unsupported**

## HyperCore OS Software Versions

### Supported

#### General Availability

7.4.22: 05/2018

7.2.24: 09/2017

*Replaces: 7.4.21, 7.4.20, 7.4.17, 7.3, 7.2.23, 7.2.20, 7.2.16, 7.2.13*

#### Unrestricted Availability

8.0.3: 11/2018

*Replaces: 8.0.2, 8.0.1, 7.6.7, 7.5.21*

#### Restricted Availability

8.1.1: 01/2019

*Replaces: 8.1.0*

### Unsupported

7.1.11: 12/2016

*Replaces: 7.1.10, 7.1.7*

6.4.2: 04/2016

*Replaces: 6.4.1, 6.2.15, 6.2.14, 6.2.13, 6.2.12, 6.1.11, 6.0.14, 6.0.13, 6.0.12, 6.0.10, 6.0.8*

### Definitions

**General Availability (GA)**—Available through the HC3 web interface for self-upgrades at your convenience.

**Unrestricted Availability (UA)**—Production ready software upgrades; UA software releases may be available in the HC3 web interface for any systems already on the software path, otherwise they must be scheduled with and applied by ScaleCare Support.

**Restricted Availability (RA)**—Production ready software upgrades available at ScaleCare Support’s discretion; RA software releases may have validation criteria for application and must be scheduled with and applied by ScaleCare Support.

ScaleCare offers full support on the latest two General Availability software releases.

Support is available for Unrestricted Availability (UA) software released within the last 12 months unless the software has since been replaced by the relevant General Availability version.

## Latest HC3 virtIO Performance Drivers and Microsoft Windows Drivers Reference

In the guest OS **Device Manager > Properties > Drivers** view, ensure the listed drivers match the Date and Version for Windows here.

Windows OS	scale-virtio-win-0.1.126.sc02 Red Hat VirtIO SCSI Disk Device	scale-virtio-win-0.1.126.sc02 Red Hat VirtIO Ethernet Adapter	scale-virtio-win-0.1.126.sc02 Red Hat VirtIO SCSI Controller (Storage Controllers)	scale-virtio-win-0.1.126.sc02 VirtIO Serial Driver (System Devices)
Server 2016	Date 6/21/2006 Version 10.0.14393.1613	Date 8/11/2016 Version 100.73.104.12600	Date 8/11/2016 Version 100.73.104.12600	Date 8/11/2016 Version 100.73.104.12600
Server 2012 R2	Date 6/21/2006 Version 6.3.9600.18758	Date 8/11/2016 Version 63.73.104.12600	Date 8/11/2016 Version 62.73.104.12600	Date 8/11/2016 Version 62.73.104.12600
Server 2012	Date 6/21/2006 Version 6.2.9200.16384	Date 8/11/2016 Version 62.73.104.12600	Date 8/11/2016 Version 62.73.104.12600	Date 8/11/2016 Version 62.73.104.12600
Server 2008 R2	Date 6/21/2006 Version 6.1.7601.19133	Date 8/11/2016 Version 61.73.104.12600	Date 8/11/2016 Version 61.73.104.12600	Date 8/11/2016 Version 61.73.104.12600
Windows 10	Date 6/21/2006 Version 10.0.17134.1	Date 8/11/2016 Version 100.73.104.12600	Date 8/11/2016 Version 100.73.104.12600	Date 8/11/2016 Version 100.73.104.12600
Windows 8.1	Date 6/21/2006 Version 6.3.9600.18758	Date 8/11/2016 Version 63.73.104.12600	Date 8/11/2016 Version 62.73.104.12600	Date 8/11/2016 Version 62.73.104.12600
Windows 8	Date 6/21/2006 Version 6.2.9200.16384	Date 8/11/2016 Version 62.73.104.12600	Date 8/11/2016 Version 62.73.104.12600	Date 8/11/2016 Version 62.73.104.12600
Windows 7	Date 6/21/2006 Version 6.1.7601.19133	Date 8/11/2016 Version 61.73.104.12600	Date 8/11/2016 Version 61.73.104.12600	Date 8/11/2016 Version 61.73.104.12600

## HC3 Web Interface Browsers

### Supported

**Chrome**  
Windows, Mac OS X

*Version: 71, 70*

**Internet Explorer \***  
Windows

*Version: 11*

**Firefox**  
Windows, Mac OS X

*Version: 64, 63*

### Unsupported

**Microsoft Edge**  
Windows

**Safari**  
Windows, Mac OS X

\* There is a known issue with non-US keyboard layouts trying to utilize special characters in the HC3 web interface VM console view in Internet Explorer. An alternate supported web browser should be used until the resolution is released.