

HC3[®] Feature Guide



The HC3 virtualization platform brings together servers, storage, virtualization, and disaster recovery into a single, feature rich solution. This guide describes all of the features that make HC3 the perfect infrastructure solution for any datacenter.

◆ **HyperCore**

The heart of the HC3 platform is the [HyperCore operating system](#) which includes a fully integrated KVM-based hypervisor with our patented block access, direct attached storage system called SCRIBE. SCRIBE includes [HEAT](#) to automate tiering across our own hybrid flash storage architecture.

◆ **HC3 Web Interface**

The entire HC3 solution including hardware and software is managed from a single web interface that can be accessed from any node in a cluster. The simple interface design allows both storage and compute resource management and virtual machine management from a single pane of glass. Resource statistics are displayed in real-time along with IOPS, both per VM and cluster wide. VM consoles are also immediately available from the web interface. [Click here for a video demo.](#)

◆ **SCRIBE**

SCRIBE is a wide-striped storage architecture that combines all disks in the cluster into a single storage pool that is tiered between flash SSD and spinning HDD storage. Blocks are striped across all nodes in a cluster redundantly to protect both against individual drive failure and node failure. The use of every drive through wide striping gives a performance advantage to every VM on the cluster. Performance is also enhanced through direct block access because of the direct integration between the storage and the hypervisor resulting in Hypervisor Embedded Storage. There are no inefficient storage protocols that would normally be found in SAN or NAS-based storage solutions including Virtual Storage Appliance architectures.

◆ **HEAT**

HyperCore Enhanced Automated Tiering is the part of SCRIBE that manages data efficiently between the flash SSD tier and the spinning HDD tier in the cluster storage pool. It prioritizes blocks of data on SSD or HDD based on a I/O heat map that tracks I/O against each virtual disk. Although HEAT is primarily automation happening behind the scenes, it provides the ability for the user to tune the relative priority of every virtual disk in the cluster to further optimize the SSD usage where it is needed the most. You can literally turn it to 11. [Click here for the Feature Note.](#) [Click here for a video demo.](#)

◆ **Live VM Migration**

VMs on HC3 clusters can be non-disruptively migrated between nodes with no downtime. This not only allows for rebalancing resource allocation across the cluster but also allows VMs to be relocated automatically during our rolling update process for the HyperCore OS firmware.

◆ **Non-Disruptive Rolling Updates**

HC3 receives software/firmware updates directly to the HC3 Web Interface where they can be applied automatically with no downtime. A single click updates the hypervisor, the storage system, the firmware, and any other part of the complete HC3 system. The automated update process will automatically relocate VMs between nodes to free up the nodes, one at a time, to be updated. When all of the cluster nodes are updated, the VMs are returned to their original configuration across the cluster. [Click here for a video demo.](#)

◆ **VM High Availability**

If a node fails within the cluster, all VMs running on that node are automatically failed over to one of the remaining cluster nodes. Failover happens within minutes for minimal disruption. After the node has been restored or replaced, the VMs can non-disruptively be live migrated back if desired. [Click here for a video demo.](#)

◆ **Self Healing**

The HC3 architecture is built with layers of redundancy, such as dual active/passive network ports, redundant power supplies, and redundant block storage striped across all cluster nodes. Intelligent automation handles drive failures and node failures, redistributing data across remaining drives and VMs across remaining nodes and automatically absorbing replacement drives and replacement nodes into the resource pools.

◆ **Cluster to Cluster Replication**

VMs can be replicated between two HC3 clusters with native, built-in replication. Replication can be local or remote across any distance and can be configured to replicate changes as often as every 5 minutes. Granular selection of VMs for replication allows a range of between one and all of the VMs on a cluster to be replicated. Replica VMs on the target cluster can be booted up within minutes in the event of a failure of the VM on the primary cluster. [Click here for the Feature Note.](#) [Click here for a video demo.](#)

◆ **Snapshot Scheduling**

VM snapshots can be scheduled intuitively and flexibly from the HC3 Web Interface. Schedules can include multiple rules spanning schedule intervals based on minutes to months. Schedules are created as templates that can be assigned to one or more VMs across a cluster. [Click here for the Feature Note.](#) [Click here for a demo video.](#)

◆ **Thin VM Cloning**

HC3 uses a unique thin cloning technique that allows cloned VMs to share the same data blocks as their parent VM for storage optimization, but with no dependencies. If the parent is deleted, the clone is not affected and continues operating without disruption.

[Click here for a video demo.](#)

◆ **Rapid, Easy Deployment**

An HC3 cluster can be racked, cabled, powered on, configured in a matter of minutes, and VMs can be deployed and running in under an hour. Manage from your preferred web browser to the HC3 web interface. There is no extra software to install, simply upload ISOs to deploy VMs with your favorite guest OS.

◆ **Non-Disruptive Scale-Out**

When a cluster needs more resources, a new node can be added within minutes without any downtime to the existing nodes or VMs. After racking, cabling, powering up, and assigning an IP address, the new node and its resources are seamlessly absorbed into the cluster, including the storage capacity being immediately added to the storage pool. Adding nodes results in an immediate performance increase to the running VMs as the resource pool is expanded. [Click here for a video demo.](#)

◆ **Mix and Match Nodes**

With HC3, any two cluster nodes across all HC3 families (1000, 2000, and 4000) can coexist in the same cluster and contribute to the cluster storage pool. This allows clusters to grow not just linearly but in whatever way is needed or desired. This support for different size cluster nodes can facilitate non-disruptive upgrades to the infrastructure by adding newer, bigger nodes and then retiring or repurposing older small nodes if desired, all while keeping the VMs running.

◆ **Remote Support Access**

HC3 offers a remote access point exclusive to ScaleCare support to help diagnose support issues and take corrective actions if necessary. This remote access dramatically speeds up support issue resolution by giving ScaleCare support engineers the ability to see issues firsthand and in real time.



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