



Scale Computing Executive Proposal

Virtualization Made Easy.

Scale Computing Proposal

For:

City of Boerne

Proposed Solution

Analysis Results



Executive Summary

Time Recorded	1 Day(s), 4 Hour(s), 58 Minute(s), 5/7/2019 - 5/9/2019		
Total Combined Capacity	7.05 TB	Peak Aggregate Network ...	17.51 MB/s
Total Used/Free Capacity	3.76 TB / 3.29 TB	Total Memory	123.53 GB
IOPS	3833 at peak, 209 at 95%	VM Guest Count	0
Read/Write Ratio	83% / 17%	Peak page fault of 23505 for server COBPDAPP	
Average Daily Write	148.89 GB	A peak of 8 (7.8%) of 103.7 NetCPU Cycles (GHz)	
Total Cores / Total Proces...	48 / 13	30% of IOPS falls on 20% of your capacity (769.40 GB)	

HC3 Overview

HC3: The simple, scalable, highly available appliance solution for modern virtualization.

True Hyperconverged Infrastructure

HC3 brings together virtualization, servers, storage, and backup/disaster recovery into a single solution. All of the components are built together into the solution, including the hypervisor, without the need for any third party components of licensing. Every component has been designed for highly efficient virtualization infrastructure, from the intelligent storage architecture to the low cost of ownership.

Simplicity

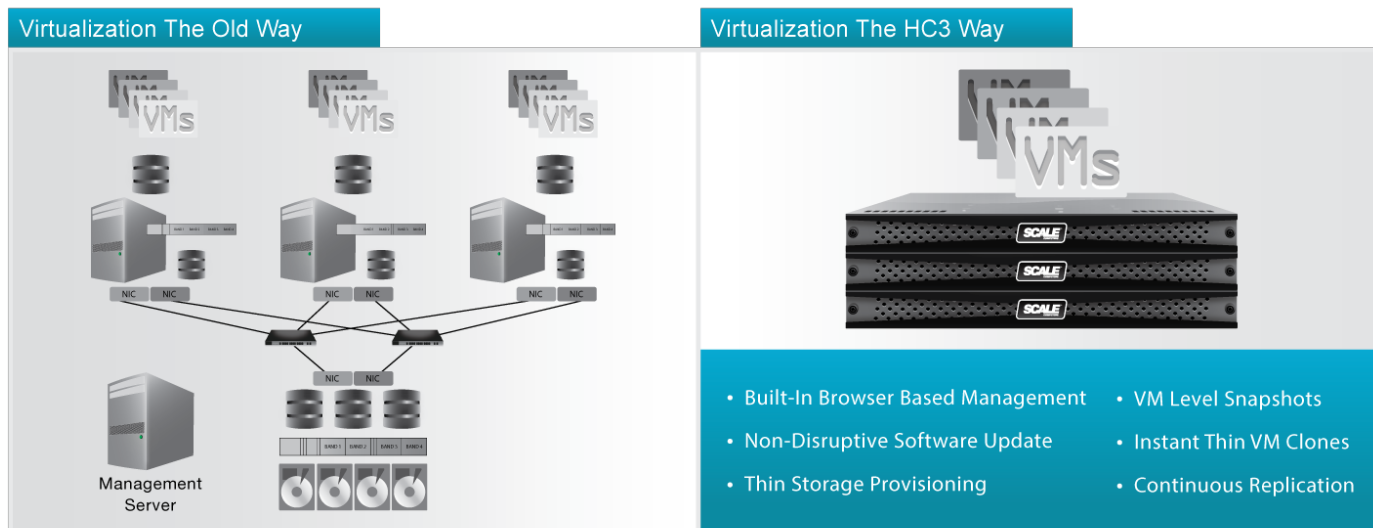
The key to the success of the HC3 and to the success of HC3 customers is the ease-of-use. HC3 eliminates wasteful management tasks that have kept IT administrators trapped in datacenters like overpaid babysitters rather than allowing them time to focus on improving business processes. The simplicity of HC3 directly impacts IT with higher productivity and lower costs.

Availability

Based on simplicity of design, HC3 is inherently more stable and more highly available than traditional virtualization solutions. Redundancy, high availability, and resiliency are built into HC3 in every way, including the option of disaster recovery as a service. With HC3, both planned and unplanned downtime can be virtually eliminated, creating more confidence with customers both internal and external.

Scalability

One of the most challenging tasks for IT can be adding capacity to existing infrastructure. With HC3, the simplicity of design and ease of use allow for seamless scaling of infrastructure. New appliances can be added into a running cluster seamlessly, within minutes, without disruption to any running workloads. Different models and capacities can be used together in nearly any combination to scale out resources as needed.



Proposed Configuration



Why Scale Computing?

Scale Computing was founded by former IT administrators who wanted to solve the problem of infrastructure complexity for small and midmarket organizations. Founded in 2007, we first took on storage complexity before deciding to simplify the entire infrastructure stack from storage to virtualization in 2012. With 1500+ customers firmly in the SMB and distributed enterprise (remote office/branch office), we've proven our ability to make infrastructure simple, available, and scalable.

Scale Computing's HC3 system with HyperCore virtualization technology is one of very few, truly hyperconverged solutions on the market. Our hypervisor embedded storage combined with our own operating system, hypervisor, disaster recovery and built-in backup capabilities, and focus on midmarket IT needs makes Scale Computing truly unique. Our ScaleCare support, available 24/7 by phone and web for all our customers, is what really elevates us above the competition. Our support engineers have been described as "data center butlers" for their white glove care and services.

For years, Scale Computing has been winning awards for solution technology and strategy from events like Midmarket Enterprise Summit and Midmarket CIO Forum and in 2015 was named a "Cool Vendor" for storage and virtualization by Gartner. [See a summary of our 2016 awards here](#). Our customer success stories speak for themselves with case studies published across nearly every industry including education, manufacturing, finance, healthcare, and government.

Benefits

Reducing Infrastructure Costs

HC3 reduces Infrastructure costs starting with its low entry price and then by reducing downtime and operational management costs dramatically over time.

Downtime Costs

HC3 nearly eliminates downtime of VMs with built-in high availability. Hard drive failure or even whole node failure can be absorbed with VMs automatically restarting on remaining cluster nodes. HC3 also includes integrated disaster recovery and backup capabilities including continuous replication and failover. Combined with rolling updates and the ability to keep VMs running during node additions, even planned downtime is largely eliminated with HC3.

“ HC3 relieved us of a lot of worry about our aging hardware and has made availability and redundancy a big part of our infrastructure. The ability to upgrade firmware without losing machine use during the workday is amazing; and the ease of configuring and backing up VMs is beyond anything we ever had before.

— Jessica McGeary, IT Manager, Merganser Capital Management

Source: Jessica McGeary, IT Manager, Merganser Capital Management



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Management Costs

HC3 reduces infrastructure management drastically from hours or days per week to only minutes. With a traditional 3-2-1 deployment where administrators may need to babysit hardware and virtualization components for hours during various operational processes to ensure business continuity, these processes are simplified and automated within HC3, requiring virtually no training and very little hands-on management.

Infrastructure Complexity

Complexity in infrastructure architecture slows down deployment, increases management costs, increases both planned and unplanned downtime, and makes upgrades, migrations, and adding new resources like storage or compute more difficult. Complexity is caused by having to integrate solutions from multiple vendors to create a working infrastructure. Multiple vendor solutions generally require multiple training sessions, multiple management consoles, and multiple support organizations to manage and navigate.

HC3 reduces complexity by providing storage, compute, and virtualization from a single vendor. A single web console manages storage, compute, and virtualization for the entire solution. A single support organization supports the entire solution up to and including troubleshooting and assisting with network configuration.

HC3 further eliminates complexity by making migration nearly seamless and automating updates for firmware and software as well as scale out hardware editions. Not only can new hardware nodes be added without downtime, but hardware nodes can be mixed and matched in any configuration, allowing for custom scale out focused on right-sized resource scaling.

Improving Performance

HC3 architecture was designed with both performance and efficiency in mind, starting with hypervisor embedded storage. HC3 storage is presented to VMs as direct attached storage without inefficient storage protocols found in other solutions that use VSA architectures. This design also stripes data across the entire cluster, so that each virtual disk can take advantage of all the disks in the cluster for improved read/write performance.

On top of the efficient hypervisor embedded storage, HC3 features hybrid flash storage with our own automated tiering technology. Data is automatically moved between the flash storage tier and the HDD storage tier based on sophisticated heat mapping. Our HyperCore Enhanced Automated Tiering (HEAT) not only handles the tiering automatically but allows for user configurable tuning of flash allocation priority on a per virtual disk basis. The ability to set relative flash allocation priority between a range of 0-11 allows administrators on-the-fly control of flash allocation between no flash (0) or all flash (turn it to 11).

HC3 comes with a wide range of options for RAM, CPU, and storage capacities to make sure performance objectives can be easily reached. Our efficient designs deliver high performance at a reasonable price.

Disaster Recovery / Backup

HC3 has built in disaster recovery with continuous replication, failover, failback, and even disaster recovery as a service (DRaaS) options. These capabilities help many of our customers meet their SLAs without needing additional DR solutions and by using DRaaS, without hosting their own DR sites, significantly reducing costs.

HC3 protects entire VMs without using agents by replicating only the changes at the hypervisor level. The ability to protect individual VMs as desired means that DR can be right-sized for your needs from a single VM to all of the VMs running on HC3. The flexibility of sizing HC3 appliances and clusters also allows you to tailor your DR infrastructure or simply use our hosted facilities with DRaaS.

High Availability

Within an HC3 cluster, VMs are highly available with wide-striped storage across the whole cluster and automatic failover of VMs from failed cluster nodes to remaining nodes. Individual disk failures cause no downtime and can be replaced with any impact to the running VMs. Nodes can be replaced without downtime as well.

High availability is a foundational principle of HC3 design. HC3 appliances are all built with redundant components such as power supplies and network components to protect against common hardware failures. HC3 clusters are generally configured with redundant switching to further protect against network failures. Maintenance tasks like firmware and

HC3 CUSTOMER SATISFACTION RATING

Lauren Fitzpatrick, a Systems Administrator II at Home Healthcare Hospice & Community Services, said they would be very likely to recommend HC3 for this reason:

“The system is super easy to install, use, and maintain. It has simplified our entire infrastructure and improved performance 10 fold. Support has been great and always very responsive.”

Source: Lauren Fitzpatrick, Systems Administrator II, Home Healthcare Hospice & Community Services

Validated Published: Jun. 10, 2016 TVID: 470-195-570

Based on a response of 10 to the question "On a scale of 0-10, how likely would you be to recommend HC3?"



HC3 CUSTOMER STATISTIC

90% of surveyed IT organizations decreased the time spent recovering from a hardware failure running a critical workload by 83% or greater with the high availability built into HC3.



Source: TechValidate survey of 166 users of HC3

Validated Published: Jun. 10, 2016 TVID: FC7-DA4-AF8



software updates are automated within HC3 to keep workloads online and eliminate downtime.

Ease of Use

The ease of use with HC3 is evident in the deployment and the ongoing management of the environment. An entire cluster can be racked, stacked, cabled, and running VMs, in only a couple of hours, even for an administrator who has never used the solution. There is no specialized training required to begin using HC3, although training and white glove support is available if desired.

The entire HC3 system, including compute, storage, hypervisor, and DR is managed from a single, web-based interface. It is easier to use than most cloud providers, but with the added benefit of having your data on-premises. VMs can be created and started very quickly, Backup and DR can be configured per VM in just a couple clicks. VMs can easily be managed in groups through filtering and tagging. At a single glance, the status of the entire cluster can be seen.

Automation is a key component of the ease of use within HC3. Typical IT tasks such as rolling out firmware and software updates to the infrastructure are nearly eliminated by automation. HC3 will automatically move workloads between nodes to apply updates without any downtime. The administrator only need to initiate the process.

The ease of use stems from the simplicity of HC3, which is part of the design to reduce the management burden of infrastructure. This translates directly into a cost saving not only in using IT management time on growth projects rather than maintenance, but in less deployment time and downtime.

“ Allows technical staff to come up to speed quickly on the items that are most important to us, without having to spend weeks becoming an expert on the solution.

— Zac King, IT Director, TeamLogic IT of Las Colinas

Source: Zac King, IT Director, TeamLogic IT of Las Colinas



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“ I cannot say enough about Scale's HC3 cluster and their world class support team. I was able to get the cluster setup in a few hours and build our company's first network in a few days.

— Robert Miller, IT Director, Landmark Restaurant

Source: Robert Miller, IT Director, Landmark Restaurant



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Scalability

Scaling out infrastructure can be a dreaded task with fears like hardware incompatibility, over-provisioning, under-provisioning, and unexpected costs. HC3 makes scaling out easy and fear-free by pre-validating each node's compatibility. This provides flexibility in mixing and matching nodes in any configuration without fear of incompatibility.

Adding nodes to an HC3 cluster can be done within minutes with no downtime to running workloads. After pointing the new node to the existing cluster, HC3 will automatically add the new node's storage to the storage pool seamlessly giving existing workloads access to the new disks immediately.

With the ease of adding nodes, and the ability to mix and match, you can easily add just the resources you need, when you need them, without fear of burdensome testing and validation. No need to overprovision for future growth when scaling out is so easy. Buy what you need, when you need it.

Standardization

Traditional infrastructure architecture combines components and technologies from multiple vendors which adds complexity beginning with research and purchasing phase and continues complicating the solution throughout its lifecycle. These components and technologies include storage appliances, server hardware, hypervisors licensing, and additional management and DR software components to round out the solution. These different technologies must be tested and validated before implementation and then maintained individually with updates and patches.

Aside from normal maintenance, support for infrastructure becomes complicated by different vendors in the solution pointing fingers at other vendors. Support run-around is common in multi-vendor solutions and wastes time and money, aggravating problems.

Standardization with Scale Computing and HC3 eliminates most of this complexity by pre-testing validating the solution and providing a single source of support. Issues are addressed quickly and efficiently by ScaleCare support because there is no finger pointing, just resolutions. The simplicity and efficiency of a single-vendor solution like HC3 translates directly into saving in implementation, management, and support.

Security

With HC3 you get the security of having your workloads running in a pre-validated, highly available environment on premises, under your own control. Rather than relying on the security of a third party, you have complete control of your data, and you're able to make it as secure as you need, and respond to security issues within your own timeframe.

Data on HC3 is made more secure by a minimal network footprint for cluster and hardware administration and the unique storage architecture. Data is stored across multiple drives and multiple nodes making it nearly impossible to reassemble data without accessing it directly through HC3 workloads or administrative functions.

Third party alternatives, such as cloud providers, are not focused solely on your business and host many other customers, making them a larger target for attack. The larger providers are more likely to be targeted by DDOS attacks that disrupt your access to your data and services. These attacks are much less likely to be directed at your individual business or disrupt your on-prem infrastructure.

Desktop Management

If you are looking to simplify desktop management with VDI, HC3 is a perfect platform to provide the infrastructure. The ease of deployment and management of HC3 is ideal for bringing the solution online quickly. HC3 can be used with VDI solutions like Workspot VDI 2.0, Citrix, and Remote Desktop Services.

Partnering with Workspot, Scale Computing has created a reference architecture that supports 175 desktop VMs on a modest 3-node HC1150 cluster, using LoginVSI for performance validation. Similarly, 360 desktop VMs were supported on a 3-node HC4150, proving in both cases that HC3 can deliver VDI infrastructure at a low price per desktop.