

BUSINESS CONTINUITY BEST PRACTICES FOR SMB

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Virtualization's biggest driver is big savings: slashing expenditures on servers, licenses, management, and energy. Another major benefit is the increased ease of disaster recovery and business continuity (DR/BC) in virtualized environments.

Note that disaster recovery and business continuity are closely aligned but not identical. We define disaster recovery as the process of restoring lost data, applications and systems following a profound data loss event, such as a natural disaster, a deliberate data breach or employee negligence. Business continuity takes DR a step further. BC's goal is not only to recover the computing environment but also to recover them swiftly and with zero data loss. This is where recovery point objectives (RPO) and recovery time objectives (RTO) enter the picture, with IT assigning differing RPO and RTO strategies according to application priority.

DR/BC can be difficult to do well in data centers with traditional physical servers, particularly in SMB with limited IT budgets and generalist IT staff. Many of these servers are siloed with direct-attached storage and individual data protection processes. Mirroring and replication used to require one-to-one hardware correspondence and can be expensive, leading to a universal reliance on localized backup as data protection. In addition, small IT staffs do not always take the time to perfect their backup processes across disparate servers. Either they do not do it at all – rolling the dice and hoping there won't be a disaster – or they slap backups on tape or USB drives and stick them on a shelf.

Virtualization can transform this environment into a much more efficient and protected data center. Backing up VMs from a handful of host servers is faster and less resource-intensive than backing up tens or hundreds of physical servers. And with scheduled replication, companies achieve faster backup and much improved recovery objectives.

However, many SMBs avoid virtualization. They cite factors such as cost, unfamiliarity with hypervisors, and added complexity. And they are not wrong: virtualization can introduce complexity, it can be expensive, and it can require familiarity with hypervisors. Virtualization cuts down on physical servers but is resource-intensive, especially as the virtualized environment grows. This means capital costs for high performance CPUs and storage. SMBs may also have to deal VM licensing and management costs, administrative burdens, and the challenge of protecting and replicating virtualized data on a strict budget.

For all its complexity and learning curve, is virtualization worth it for SMBs? Definitely. Its benefits far outweigh its problems, particularly its advantages for DR/BC. But for many SMBs, traditional virtualization is often too expensive and complex to warrant the effort. We believe that the answer is HyperConverged Infrastructure: HCI. Of HCI providers, Scale Computing is exceptionally attractive to the SMB. This paper will explain why.

DR Strategy for SMBs

SMBs are subject to the same threats that large companies are, but they may not have the same level of data protection. Let’s take a typical SMB company: less than 500 employees, located in the United States, practicing backup but not strong authentication or formal DR strategies. A data loss from disaster, negligence or breach will average almost \$200 per lost file or record – potentially millions of dollars in losses.

An SMB may eventually recover data from a disaster. But can it recover in time to stave off business disaster? Maybe not. For that answer, let’s look at traditional data protection and DR choices for non-virtualized SMB servers.

DR for SMB	Pros	Cons
Backup to tape	Most backup applications engineered for tape, media and drives are cheap, off-site vaulting protects against on-site disasters, no energy costs for vaulted tape.	Tape libraries are expensive and large, random access data backs up slowly, tape-based restores are slow, can be hard to locate specific backed up files.
Backup to on-site disk	Faster backup and restore than tape, does not require traveling to a vault or ordering tape returns from vault owner.	Considerably more expensive to scale than tape, D2D2T can be complex to set up and maintain, on-site disaster will take down backup disk as well as production storage.
Snapshots	Snapshots are a popular data protection technology. They allow fast rollback of full VM’s and allow individual file restores.	Some snapshot products introduce performance overhead and only allow a limited number of unique snapshots. Snapshots are stored on the same system unless remotely replicated.
Replicate to remote site	Fast and efficient, can be set to near-continuous schedules, excellent RPO and RTO.	Replication software can be complex, heavy user of computing resources, remote site very expensive to deploy and manage.
Cloud backup	Simple to set up, vendor provides backup infrastructure in the cloud, dynamic scaling.	Slow backup and restore requires investment in bandwidth, cloud vendor lock-in, scaling costs money, different cloud infrastructure requires optimization.
Managed backup	Service provider takes on backup chores, relieves IT of some management burdens.	Service can be pricey, IT still needs to verify completed backup and launch recoveries, optimization takes time and resources.

HyperConverged Infrastructure for Business Continuity

Given these less than stellar data protection alternatives, is there a better way to achieve virtualization and DR/BC on an SMB budget? There is with HyperConverged Infrastructure (HCI). HyperConverged systems integrate an entire compute stack in a single component: server, hypervisor, networking, storage, and data protection. The details differ – hyperconvergence vendors may offer physical systems or software-only for OEMs or directly to customer sites. However the customer takes product delivery, the HyperConverged Infrastructure a native hypervisor, management console, networking, storage, and data protection for high availability.

HCI adds virtualization without adding complexity. Remote replication is key to virtual environment DR but that process alone can be complex -- where should IT replicate to? On-premises is simple but in case of an environmental disaster, useless. Leasing an off-site location is much too expensive for most SMB admins. Replicating to the cloud seems simple enough but recovering replicated VMs is another matter. And remote replication sites are only half of the battle: companies also want simplified management and clear, consistent workflows.

These needs hit SMBs particularly hard given small IT staff and lack of specialization. This is why SMBs strongly benefit from a HyperConverged platform that provides servers, hypervisor, storage, and DR -- all via a unified management interface. Certainly not all HCI products are created alike: some of the high capacity/high performance models have expensive price tags and are best suited to the enterprise. What an SMB needs is full-featured HCI that combines sophisticated data protection with management simplicity, and both at a low price point.

Let's look at the top five challenges that this approach solves for SMB disaster recovery and continuity.

Solution #1: Non-disruptive scaling. SMBs need computing systems that can scale storage and performance without disrupting operations, and that are highly cost-effective to purchase and maintain. Cloud backup is highly scalable but bandwidth seriously impacts backup and restore performance. HyperConverged systems scale non-disruptively and take advantage of LAN speeds.

Solution #2: High availability at low cost. HyperConverged systems with replication enable high availability onsite and off. IT chooses service levels by data priority. And although remote sites traditionally require expensive duplicate hardware, virtualized replication does not.

Solution #3: Simplicity. Deploying virtualization and replication as separate products is challenging for generalist IT working with limited resources. HCI enables streamlined virtualization and replication while hiding complexity under the covers. Simplified management includes an intuitive user interface, centralized administration, set-and-forget workflows, and built-in intelligence for DR/BC processes.

Solution #4: Highly cost-effective. Some HyperConverged systems require the customer to buy the hypervisor; others provide it. By definition, HCI combines SAN, servers, networking, data protection software, and the intensive effort to integrate all of the above. HyperConverged systems provide all of this functionality in a single scalable platform, plus automation and central administration. And systems serving SMBs combine all of this functionality at an attractive price point.

Solution #5: Business continuity. Traditional data centers avoid continuous data protection processes because of software and storage expenses, drains on computing resources, optimization requirements and remote site set-up. HCI replaces the complexity and expense with simple VM-level continuous replication and space-efficient snapshot technology.

Business Continuity with Scale HC3 HyperCore v6

Scale Computing was an early pioneer of HyperConverged appliances and is one of the leading innovators in this market. The latest release of Scale's HyperCore Operating System represents the 6th generation of releases since the company was founded in 2007. Scale Computing with the latest release of HyperCore continues to push the boundary in regards to simplicity, value and availability that many SMB IT departments everywhere have come to rely on.

The HC3 approach to simplicity is to create a platform that totally encompasses the virtualization framework. Unlike other HyperConverged products, in which the hypervisor component is added on (like VMware ESX, Microsoft Hyper-V, or Red Hat KVM), HC3 comes with the hypervisor integral to the product through software called HyperCore. This all-inclusive software package allows Scale to de-clutter the product from features that are not needed and radically simplify the virtualization environment. The other products typically require a level of expertise in virtualization that is not needed with the HC3 environment. This makes HC3 the ideal choice for small businesses that may be coming off of standalone servers each with a dedicated application running. In addition, other companies that are using a feature rich complex virtualized environment could benefit from a reduction in administration complexity by moving to HC3.

A good business continuity plan for a business of any size consists of two key elements. First is an always-on infrastructure for running the businesses critical applications on-premises and the second is a good backup and disaster recovery plan with a reasonable RPO and RTO in the case of any unforeseen incident that impacts the primary site. High-availability through a scale-out modular approach has always been a core foundation of the HC3 architecture. HC3 with the release of HyperCore v6 has now added built-in disaster recovery capability through an easy to use built in replication feature. This new feature when combined with VM level snapshots enables the critical component of the business continuity requirements for SMBs. HC3 can provide a near instantaneous RTO and RPO that typically have been priced out of reach for most SMB companies.

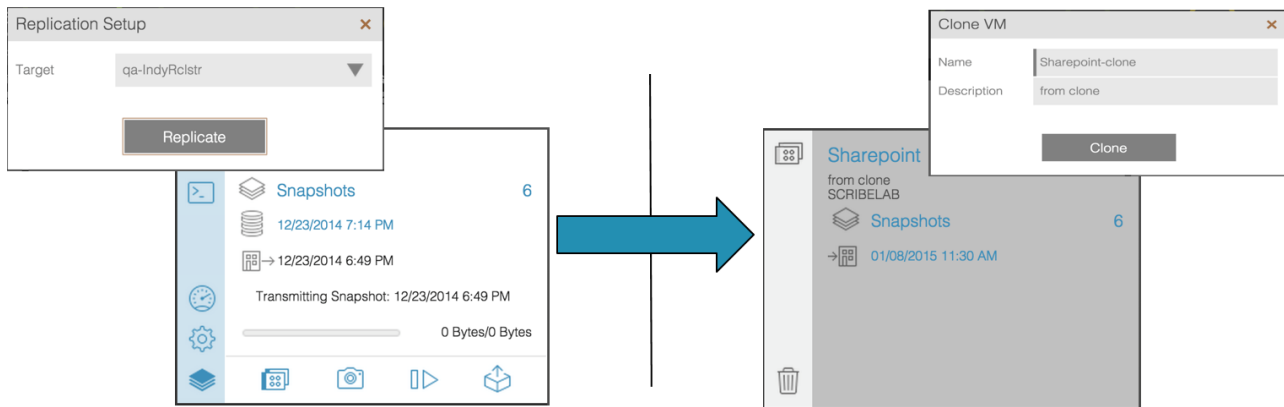
HC3 Integrated Backup and Disaster Recovery

At the core of a good RPO is HC3's VM-centric snapshot capability. A business can decide to setup a schedule of automated snapshots or manually take snapshots of any VM. The more critical the VM the more frequent the snapshot can be scheduled. The replication feature also works at a VM level and any VM that is being replicated will do so in a space efficient manner by only replicating the change blocks needed. HC3 will replicate in a way that automatically maintains the same snapshot versioning on the target HC3 as is on the local machine. The target HC3 can be across campus or across country and gives SMBs significant flexibility in costs as the target machine can be sized to just provide infrastructure for the most critical VMs.

Failover and Failback made easy and fast

When the inevitable site outage hits, Scale's HC3 has made the failover and failback procedures almost child's play. Once the critical VMs are replicating to the remote site, failing over an application takes only two steps. First clone the latest replicated snapshot to prepare it to be an active VM and then boot the VM, which will enable the downed application at the primary site to now be running at the remote location. It is that simple and this simplicity enables a business to easily test out their DR procedures that previously were too painful and costly to exercise. Figure 1 shows how easy it is to setup both the replication of a VM to remote site and also the cloning step needed to failover the VM to the remote site.

Figure 1: Scale HC3 DR Replication and Failover Setup Example



Typically, when a business plans for a disaster they tend to think about floods, tornados, fires and other acts of God. In reality, for most small businesses an outage is just as likely to come from a backhoe digging across your internet feed or an elongated power outage. With this in mind Scale's HC3 has implemented failback in very novel and unique way that radically reduces the RTO of the primary site. HC3 continuously keeps track of the snapshot relationship between both the primary and secondary site even after the failover event. Now when a business is ready to failback to the primary site HC3 can replay back to the primary site only those changes that have happened since the failover which in turn reduces the RTO significantly for the primary site. What this means is a business can initiate a failover much more frequently, rather than waiting out the typical power or internet outage a small business can now afford to failover and failback more frequently in order to maintain precious availability to run the business.

Taneja Group Opinion

SMBs have their computing plate full with the infrastructure they already own. It can seem overwhelming to institute large-scale projects like virtualization, let alone investing in business continuity plans that would actually keep the business going in the event of a disaster. However, we urge SMBs to remember that adopting Scale's HC3 is killing two birds with one inexpensive stone: integrating virtualization and native data replication is a single simplified stack.

Scale's HC3 is now providing previously out of reach enterprise-grade business continuity capabilities that can easily be managed with an often limited and generalized IT staff. This makes their job easier, not harder. Adopting Scale's highly affordable HC3 will easily virtualize their environment, replicate data, improve backup and restore processes, and offer sophisticated remote replication. Scale's leading combination of simplicity and a low price point makes it an ideal choice for SMBs and the world of virtualization.

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