

Technical Review

Veritas InfoScale and Hitachi Vantara Storage Deliver High Availability for On-premises, Hybrid, and Multi-cloud Applications

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Abstract

Most organizations are managing numerous applications both on-premises and in the cloud that must be highly available. This is difficult without a centralized management dashboard to orchestrate availability, disaster recovery and migration in the event of a failure, regardless of where each application resides.

This report documents ESG's review of how Veritas InfoScale with Hitachi Vantara Storage can deliver highly available applications and data across on-premises, hybrid, and multi-cloud deployments for a broad range of organizations.

The Challenges

"Always on" is standard operating procedure today. Organizations cannot afford downtime and disruption without losing revenue, customers, and momentum. In addition to local and remote replication, IT builds in clustering and multi-pathing so that they can not only recover data, but also fail over to another component non-disruptively. They work hard to keep all systems running, both on-premises and in the cloud.

However, ESG research reveals the difficulty of achieving these objectives. Only 22% of research respondents reported that they always achieve their recovery SLAs. In addition, 35% report that they can only tolerate less than one hour of downtime for their applications (and for mission-critical applications, that jumps to 57%), and yet 68% of respondents reported experiencing an outage of at least one hour in the past year.¹ There is a clear disconnect between what organizations need and what they are able to achieve.

Figure 1. SLAs and Downtime



Source: Enterprise Strategy Group

Every organization depends on numerous business-critical applications to drive revenue and maximize opportunity. Whether applications reside on-premises or in the cloud, downtime is highly disruptive and costly. The good news is that any organization—not just big companies with deep pockets and lots of IT staff—can leverage Veritas InfoScale and Hitachi Vantara storage to maximize uptime.

¹ Source: ESG Research Report, [Real-world SLAs and Availability Requirements](#), October 2020.

The Solution: Veritas InfoScale and Hitachi Vantara Storage

Infrastructure availability is essential, but by itself is not enough to remain productive. Organizations must keep complete application stacks highly available as well. Together, Veritas InfoScale and Hitachi Vantara storage provide a robust platform for applications and data that lets customers not just survive but thrive during system outages. Virtualized applications and hybrid/multi-clouds can complicate IT, but InfoScale and Hitachi Vantara storage together simplify data migration, replication, and disaster recovery.

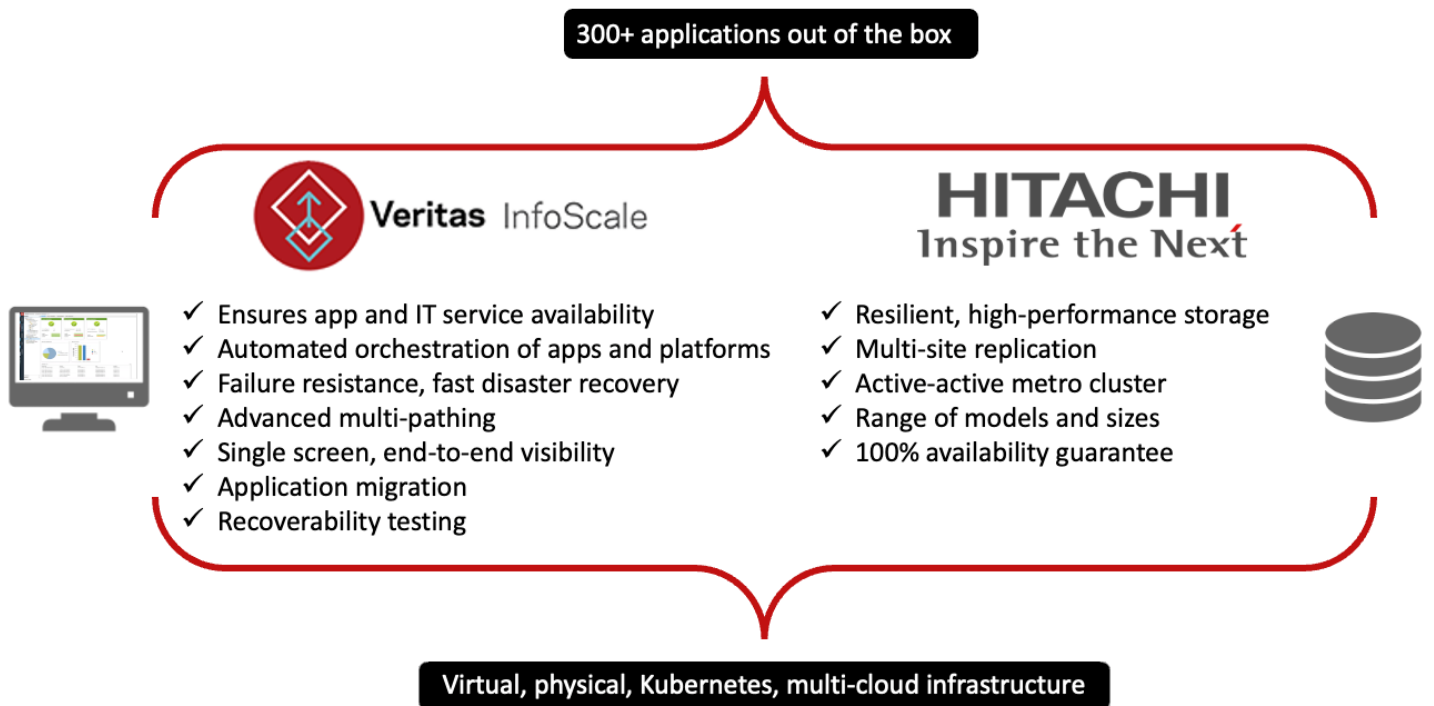
Veritas and Hitachi are long-term partners. Because of their collaboration, it is simple to add Hitachi Vantara storage to InfoScale using Hitachi Ops Center, and when Hitachi updates a storage array, Veritas simply updates its array support library, and the new features are available for InfoScale to manage.

Hitachi Vantara Virtual Storage Platform (VSP)

Hitachi Vantara offers a wide range of scale-up and scale-out storage solutions to meet the needs of mid-range and enterprise customers. The VSP portfolio delivers highly reliable, highly available, high-performance flash and hybrid storage solutions with enterprise-class storage features including in-system data reduction, remote replication, virtualization, and centralized management. Hitachi Vantara storage is known for its resilience. While a complete review of the extensive features of VSP is beyond the scope of this report, VSP data availability features include:

- Asynchronous remote replication for disaster recovery.
- Active-active metro-clustering with Hitachi Global-active Device.
- Application-aware backup and recovery plus copy data management.
- Three-site application availability and dashboarding that InfoScale can manage.
- Remote operations monitoring with predictive fault analysis and response.
- 100% data availability guarantee, including real-time diagnostics and call-home services.

Figure 2. Veritas InfoScale and Hitachi Vantara Storage



Source: Enterprise Strategy Group

Veritas InfoScale Availability

InfoScale ensures that mission-critical applications and infrastructure work together to deliver maximum availability for physical and virtual applications on-premises, in the cloud, or in hybrid or multi-cloud deployments. InfoScale monitors the complete stack of application services and can initiate actions such as restart, replication, and DR. It includes clustering, volume management, and file system management to support replication, disaster recovery, and application/data migration.

InfoScale provides application stacks with:

- High availability, failure resistance, and fast disaster recovery for all systems that comprise applications.
 - Includes management of multi-site replication and recovery.
 - Application-aware to match quality of service (QoS) to application importance.
- Automated orchestration between applications and platforms, on-premises and in the cloud.
- Monitoring and end-to-end visibility from a single dashboard based on SLAs.
- Streamlined application migration that makes the cloud an integrated part of your infrastructure.
- Fire Drill capability to non-disruptively simulate DR and test recoverability.
- Intelligent caching for storage QoS, as well as thin provisioning, deduplication, and compression.
- Advanced multi-pathing for performance, fast failover, and path failure protection.
- Support for VMware, Hyper-V, and KVM for virtualization; Kubernetes container orchestration; AWS, Azure, and Google Cloud Platform; wide range of operating systems, databases, and storage systems.

The optional Veritas InfoScale Operations Manager (VIOM) software enables organizations to manage multiple applications, servers, and storage arrays in a single screen. With VIOM, IT staff can manage availability, maintain a healthy environment, and perform root cause analysis for problems.

ESG Tested

ESG viewed two remote demos of InfoScale. One demo was staged using two dual-controller Hitachi Vantara storage arrays in a Denver, CO lab: a VSP E790 with 36TB of SSD storage configured with RAID5, and a VSP 5000 Series array with 248TB of RAID6 capacity, both using Veritas Volume Replicator (VVR) for continuous replication. Another demo was cloud based.

We logged into VIOM via web-based GUI, we were able to view the resources that had been added for two cloud-based, Red Hat VM clusters emulating a production Oracle database: a local cluster consisting of Sys1 and Sys2 and a remote standby cluster consisting of Sys3 and Sys4. VVR was also used for continuous replication in this demo.

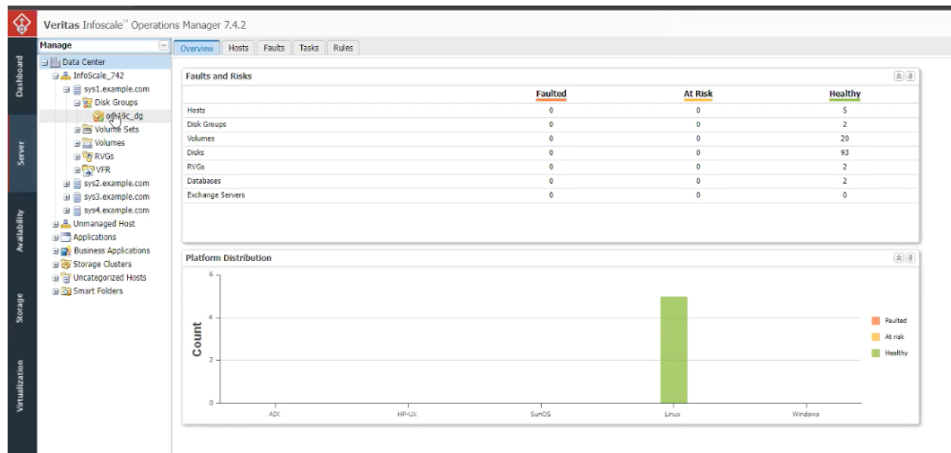
Ease of Management

Dashboard

VIOM makes InfoScale easy to use across multiple systems and includes management and reporting. It uses different perspectives to display information in the context the administrator needs.

Each perspective tab has its own overview, and these are consolidated in the **Dashboard Overview**, which can show the number of faults, at risk, and healthy components by perspective:

Server (such as hosts, disk groups, volumes, and databases), **Availability** (such as clusters, service groups, and systems), **Storage** (such as enclosures, pools, and switches), and **Virtualization** (such as clusters, virtualization servers, and VMs). For example, from the Server perspective, administrators can manage storage, including tasks such as selecting LUNs and creating volumes and file systems for applications.



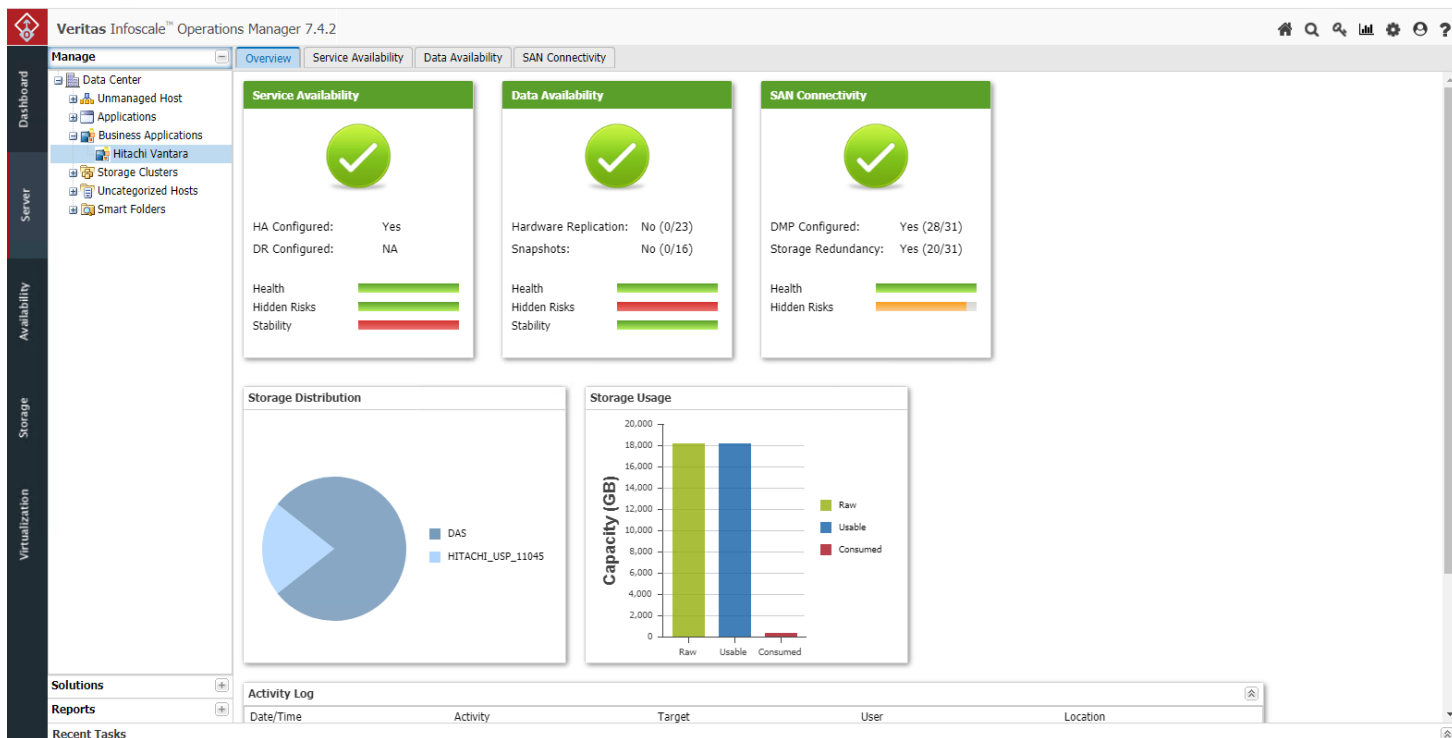
IT administrators define *Service Groups*, which are groups of monitorable components that make up an application (such as the database, OS, file system, CPUs, and physical or virtual networks and storage). For example, an Oracle service group might include the Oracle binaries along with the server, disk, network, and network listener components that enable that database to run. InfoScale monitors these service groups and in case of failover, can restart application stacks or initiate DR procedures across on-premises, geographically dispersed, and cloud-based components. This automated restart and recovery results in minimal downtime.

Many other resources are available for management. For example, provisioning storage capacity is simple. Administrators can easily add disks, create disk groups, make them available to applications, and create volumes and file systems from these disk groups in just a few clicks. They can also save provisioning templates for reuse to speed future provisioning.

Create Business Application View

Organizations can create their own business application views, which bring together the various components of an application in a customized view to simplify monitoring and troubleshooting. That way, an alert from a critical business service can be identified by its importance, not just as one in a list of alerts. In the demo with Hitachi Vantara storage, we created a business application view named *Hitachi* in just a few clicks from the **Server** tab. We added the local clusters in our test bed, then selected and added volumes, disk groups, and service groups. Then, we could view overviews and details of those components together (see Figure 3). At a glance, we could view service and data availability, SAN connectivity, and whether HA, DR, replication, snapshots, dynamic multi-pathing (DMP), and storage redundancy were configured. Graphs displayed the distribution of storage types and the amount of raw, usable, and consumed capacity.

Figure 3. Business Application View



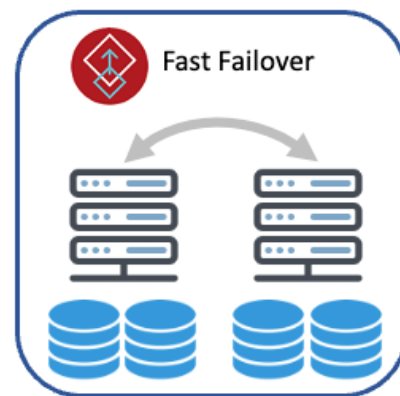
Source: Enterprise Strategy Group

Additional details regarding clusters, service groups, resources, databases, initiators, and storage connectivity were available by clicking on individual tabs. The SAN Connectivity tab also displayed a graph of read/write latency by host.

This view makes it easy to understand the status of critical applications and to maintain uptime, providing information that is difficult to get otherwise. InfoScale agents monitor the underlying resources and report on their availability and health. If an alert shows that a service group is offline, affecting the application, an administrator can immediately view the resources comprising that service group and act as needed. Similarly, if an Oracle database supports multiple applications, administrators can create a business application view for each. While most storage arrays are supported, the close relationship between Veritas and Hitachi results in APIs that provide extensive detail for storage such as VSP.

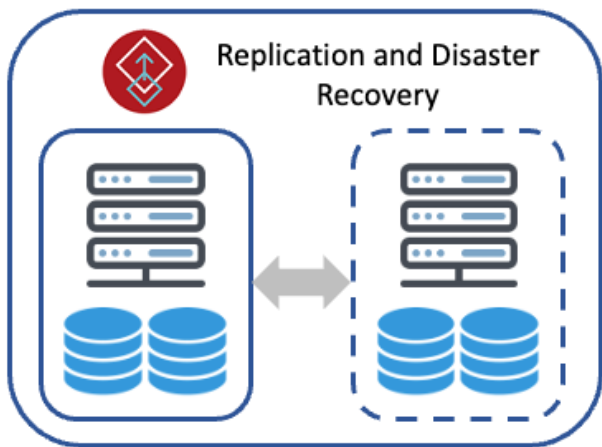
Fast Failover

InfoScale includes automatic cluster failover. We initiated a failover of service groups between Node 1 and Node 2 in the Hitachi Vantara storage demo, which would happen automatically in the event of a failure. All services were back up and running on the failover node in seconds. InfoScale can also update DNS records, a common issue during global failover. InfoScale automates all the tasks needed to get back up and operational, saving time and speeding productivity. For example, instead of DBAs handling the database tasks, storage admins handling storage, and network admins handling network tasks, InfoScale can take care of all of it.



Replication and Disaster Recovery

InfoScale makes it easy to do replication and DR between on-premises, hybrid, and multi-cloud resources. For example, an organization may have applications and services in the cloud but the database on



premises. InfoScale can replicate and migrate data as needed between these environments using volume replication or Hitachi hardware replication.

Administrators can create InfoScale replicated volume groups (RVGs) with storage resource logs (SRLs) where changes are logged before data is moved. The ability to track those changes enables InfoScale to maintain write order fidelity: writes are committed at any remote sites as they are committed on the primary site. As a result, structured applications like databases can be back online fast, with no lengthy log replay.

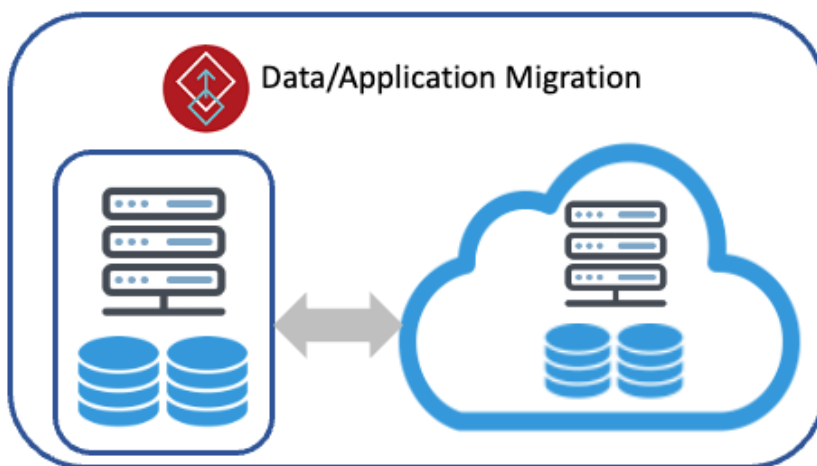
These features enable fast recovery, fully controlled by InfoScale, which manages the SRLs, service and application uptime, any log replay that is

required, and DNS updates. Administrators don't need to handle any of this, including the final step of reversing replication to ensure ongoing data protection.

Data and Application Migration

Data migration is extremely simple. For example, to move data from other storage to Hitachi Vantara requires simple host mirroring to the Hitachi VSP array, in real time or on a schedule. Administrators choose the number of paths and how to handle the original volumes after the move, mirror the data, and then break the mirror.

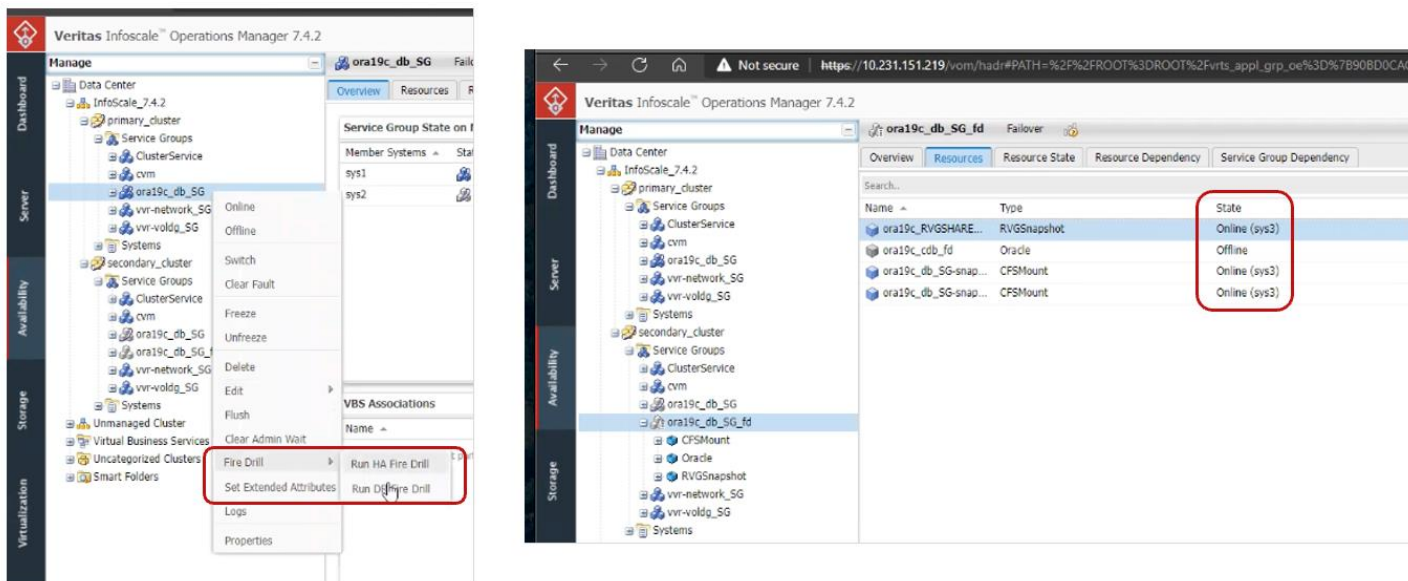
With a few clicks, administrators can create Application Migration Plans to easily move between systems, including for version upgrades and updated network settings. This vastly simplifies the challenges of moving applications into fresh builds and can save weeks or months of manual effort.



Fire Drill Recoverability Testing

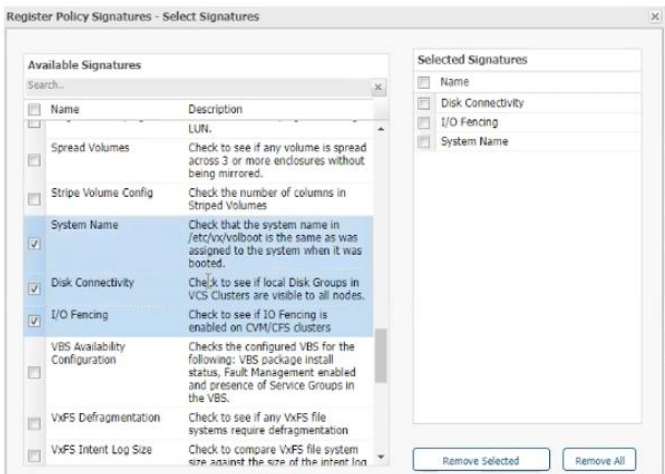
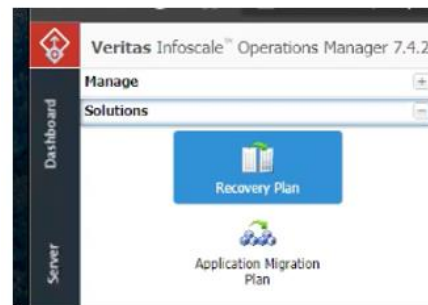
InfoScale's Fire Drill feature brings up a shadow copy of a service group using Hitachi or other snapshots, so administrators can test and validate how prepared they are for recovery. Fire Drill brings up everything required for the service to be online, changing the names slightly to avoid naming conflicts. ESG selected an Oracle service group on the primary cloud cluster, right clicked, and selected **Fire Drill/Run DR Fire Drill** (a local HA Fire Drill was another option). This brought up the database on Sys3 (the remote resource previously configured using the Fire Drill Wizard), where we could non-disruptively validate the ability to recover. At this point, the InfoScale volume replicator took a snapshot of the database, mounted the snapshot, and brought up a clone of the Oracle services, listener, and anything else required for Oracle to run. We logged into Sys3 and validated that the Oracle snapshot was ready to go (Figure 4). Fire Drill can also be configured to go offline automatically after testing.

Figure 4. Fire Drill Recoverability Testing



Source: Enterprise Strategy Group

With InfoScale, administrators can also create Recovery Plans with just a few clicks to group together disparate service groups and resources. For example, a large database might span 10 systems, each with web service groups controlling the applications. With a recovery plan, administrators can ensure that all the systems and resources stop and start at once and can use the Fire Drill capability to test across the entire stack.



Risk Signatures

The InfoScale availability solution is not only reactive, designed to get applications back online automatically when a failure occurs, but also proactive. Administrators can run risk signatures to see how ready they are for recovery, selecting from a list of prepopulated and/or customized signatures. In the example at left, we selected several storage-related signatures: System Name (was the name when booted the same as assigned?); Disk Connectivity (are local disk groups in clusters visible to all nodes?); and I/O Fencing (is I/O fencing enabled on clusters?). By running these, administrators can identify common issues and be alerted to act before problems arise.

Why This Matters

Maintaining data and application availability is essential for on-premises, multi-cloud, and hybrid deployments. Hidden challenges can wreak havoc, such as downtime for a database that supports numerous critical production applications. Similarly, while cloud infrastructure is generally reliable and available, there is no guarantee that your cloud-based application or service is.

ESG validated how easy it is to ensure high application availability using Veritas InfoScale. Using a single screen, administrators can monitor and manage applications and the infrastructure components that support them across distributed on-premises and cloud deployments. It is easy to execute failover, replication, disaster recovery, and migration tasks, and to customize visibility and management by application stack. In addition, we validated the ease of implementing InfoScale Fire Drill recoverability testing.

The Bigger Truth

Customers, partners, and suppliers today expect around-the-clock business services, creating massive pressure on IT organizations. Whether you are a \$50M or \$50B company, your applications make your business, so you need affordable availability solutions that are easy to manage to have a chance of reaching your business goals.

But maintaining availability is a juggling act among numerous application and infrastructure components that are distributed across on-premises and cloud locations. Managing availability point by point is difficult and often ineffective.

Together, Veritas and Hitachi Vantara—two juggernauts of the IT industry—offer a strong platform of software and hardware that can help you ensure that your business achieves its availability goals. Veritas InfoScale delivers end-to-end visibility and management of applications and the on-premises and cloud components that support them, while Hitachi Vantara storage includes advanced clustering and replication technologies as well as a 100% data availability guarantee.

ESG validated InfoScale's:

- End-to-end visibility and management across distributed resources.
- Ease of fast failover, replication, disaster recovery, and application migration.
- Simple recoverability testing using Fire Drill.

InfoScale delivers automated failover and recovery orchestration for multi-tier applications, predictable RTOs and RPOs, compliance, mobility, and flexibility. With hundreds or thousands of systems to manage, multiple on-premises and cloud locations, and applications supporting myriad business processes, this automation is essential to maintaining high availability.

Of course, every production environment is different, and it is important to plan and test any potential solutions in your own environment to validate viability and efficacy.

But our message is simple: Any organization can benefit from a joint Veritas InfoScale and Hitachi Vantara solution that delivers simple, automated failover, disaster recovery, and data migration for both applications and storage, with full visibility in a single screen across on-premises and cloud. If you have essential applications and data, then this joint solution is worth a serious look.

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