

# Rethinking How Data Is Managed

## FreeStor<sup>®</sup> - Software Defined For Everything Oracle

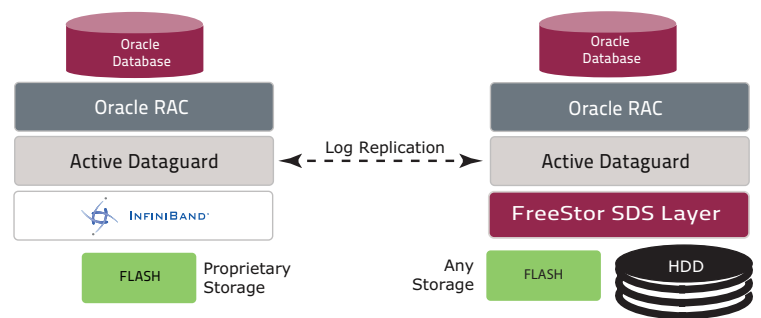
Continuous Data Protection (CDP) is a modern day necessity. Data loss of any kind is increasingly unacceptable while recovery objectives demand that workloads be capable of restarting immediately regardless of the outage cause. CDP is a primary component of FreeStor's platform. FreeStor is a converged data services software platform. It integrates tightly with the entire Oracle ecosystem, including full certification for the Oracle VM stack and Oracle's Real Application Clusters as well as Oracle DB application awareness for snapshots, clones and CDP.

At the core of FreeStor's CDP capabilities are TimeViews. TimeViews are persistent or non-persistent read and write capable snapshots. These are critical for data validation prior to migration cutover, or for practicing post-migration data conversion operations. CDP in FreeStor is done via snapshots and journaling. FreeStor also provides a robust Virtual Tape Library (VTL). FreeStor augments Oracle DataGuard and works with the full range of Oracle's offerings, including Exadata. FreeStor's CDP offers more rollback points than DataGuard alone.

## CDP And Tiering In Practice

FreeStor is natively aware not only of the importance of moving data between clusters and sites, but also between tiers of storage. As with site-to-site replication, deduplication plays a role in CDP. When moving data offsite only change blocks need be sent. Even then, only those writes found to be needed on the other site after deduplication and write coalescing are sent. FreeStor uses different dedupe methods optimized for each storage type. Consider site-to-site replication versus tape storage. In site-to-site replication the master index of deduplicated blocks is replicated to both sites along with the data blocks. This is required for data to be retrieved from those devices.

In the case of tape storage, however, this isn't a particularly helpful approach. The tape only needs the deduplication information for data stored on that tape. It also isn't going to help to stream change blocks to a tape in quite the same way; it's far more helpful to have at least one full copy of the information of the tape, and then any new snapshots and clones than it is to swap out dozens of tapes just to get the full set of blocks to make up a LUN. FreeStor handles all of this automatically. FreeStor has automated tiering that moves data to tape or cloud storage as needed (older snaps, etc.). It can also move high demand workloads to high performing storage tiers such as all flash or hybrid arrays or demote lower demanding workloads.



## Data Service Parity

FreeStor ensures you get the most from your storage hardware, no matter the vendor. Because FreeStor sits between servers and the storage they use it is able to provide a full suite of enterprise class features, regardless of the underlying storage. Site to site replication, deduplication, CDP and more. That FreeStor works with all storage – both new and existing – is important. Datacenters don't spawn, fully formed, from the head of their designer. Most are not turned off for upgrades every three years and then completely replaced. Datacenters continuously evolve, change and grow. Traditionally, enterprise storage has not done a good job of this.

The dirty little secret of the storage industry is that storage vendors aren't very good at migration. Migrating from one vendor's storage to another is usually a nasty, drawn-out affair involving prolonged outages, conversions and all too often unnecessary capital expenditures in the form of intermediate equipment. Even migrating from one generation of a vendor's storage to the next can feature some or all of the forklift upgrade pain.

Data Migration is a real world storage problem easily addressed by FreeStor, offering the ability to easily move data between devices. This data can be array to array, site to site, cluster to cluster, and cloud to cloud or can be a many-to-one consolidation project. It can also be part of a storage tiering effort; moving tier one workloads to hybrid or all flash arrays while moving other workloads to traditional arrays and "cold" data like snapshots and backups off to tape or to the cloud.

## FreeStor® - Software Defined Storage With No Surprises

Today's challenges require a new, software-defined approach that eliminates vendor lock-in, proprietary platform silos, increased complexity, and lack of hardware and software compatibility. Only FreeStor addresses those challenges head on and delivers real value to help organizations reduce costs, eliminate silo's while providing real flexibility and freedom.



**ADAPT FASTER**  
Provision storage in 6 clicks - less than one minute



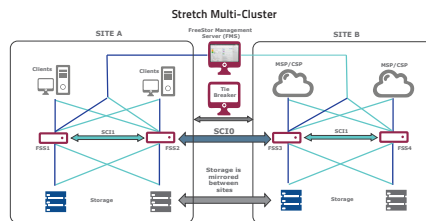
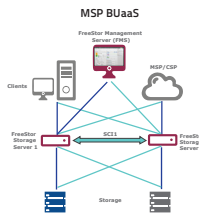
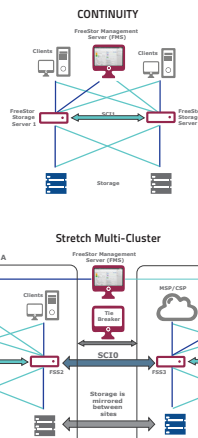
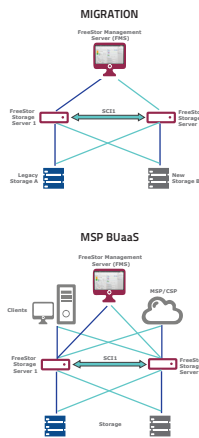
**LOWER YOUR COSTS**  
Pay up to 90% less than buying same features and capacity vs. array-by-array



**USE ONE TOOL**  
Single pane of glass for ALL storage; monitor, report and analyze from ONE tool



**NO SURPRISES**  
Track utilization and predict capacity to better forecast budgets and resources



### Technical Features

- **NEW:** Predictive Analytics across all storage resources
- **NEW:** Simplified Web UI w/ REST APIs
- **NEW:** SAP HANA Certification
- **NEW:** OpenStack Cinder Driver
- **NEW:** Smartphone apps for Android and iOS
- Next generation Intelligent Abstraction® layer
- Unified, centralized management, monitoring, and reporting via Web, tablet, and smartphone
- Improved Failover/HA (Active/Active)
- IO Cluster and IO Multi-Cluster (4-way)
- Over 1 million IOPS per IO Cluster using SSD
- Improved latency
- Inline block-level deduplication

### Technical Benefits

- Horizontal architecture with a single platform, and a single price
- Seamless migration of data to, from and across storage platforms
- Centralized management for enhanced simplicity
- Access the latest storage venues like the public/private/hybrid cloud, SSD and Flash

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