



HIGH AVAILABILITY

High availability is crucial in today's world of business. RisingTide offers a product and service portfolio designed so that your storage systems will effectively run non-stop. Our innovative and self-managing HA IP SAN technology replicates storage nodes locally for non-stop operation, with carrier grade availability (“five nines”), or across a continent for disaster recovery.

RisingTide SAN systems can operate in highly available configurations (active/passive redundancy) with an adjustable consistency model. This delivers optimal performance and availability in a wide range of business scenarios, including globally distributed disaster recovery solutions. Failover times of ten and less seconds allow virtually continuous operation (“five nines” availability). HA SAN clusters are supported by a fabric protocol agnostic implementation for iSCSI, FCoE and FC infrastructures, or spanning all protocols.

Scalable SAN Availability and DR

RisingTide HA SAN systems support three levels of synchronicity between SAN nodes: *synchronous*, *buffered* and *asynchronous*. They can be selected to adjust the coupling and consistency model of the HA SAN nodes, depending on the effective distance and latency between the redundant SAN nodes. The resulting system allows scaling from tightly coupled, closely co-located synchronous HA SANs that operate in virtual lockstep, up to globally distributed solutions that provide robust disaster recovery.

Easy to Manage HA SANs

The RisingTide UI provides powerful yet easy and intuitive control for HA SAN clusters. SAN nodes can be replicated and made highly available with a single command, by referencing the secondary SAN node. The attribute and rule-based RisingTide UI incorporates decades of in-depth expertise of robust highly available storage clusters, which gets auto-deployed. Other operating parameters, such as the consistency model, can be dynamically adjusted on the go.

Dynamic Fencing

In order to manage network partitioning (“split brain”) scenarios, the RisingTide high availability solution can use physically redundant network paths to fence off nodes and ensure data coherency, integrity and seamless continuity.

Enterprise Clustering

In addition to the traditional Network RAID1 (active/passive) configuration, RisingTide HA SAN systems support a number of features

CLUSTER STORAGE

Active/passive or active/active redundancy create “Network RAID1” or “Network RAID10” configurations for HA storage with no single points of failure

PERFORMANCE

>99.999% Availability
 <10 seconds failover time
 Up to 2.4PB gross capacity
 Up to 300km tightly coupled
 Scalable synchronicity
 LUN or node redundancy

END-TO-END DESIGN

The smart interplay between tiered HA concepts allows resilient end-to-end system designs:

- HA storage clusters
- Server failover clustering
- Dynamic IO fencing
- Protocol-level redundancy
- Multipathing

RTS DIRECTOR

Powerful and easy CLI + API allow managing complex, large distributed HA storage clusters with a small set of carefully designed commands

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that deliver transparent scalable high availability for compute clusters.

Failover Clustering provides clustering for Windows Server 2008 / R2 and RedHat RHEL 5.x, based on advanced protocol features such as Persistent Reservations (PR), Asymmetric Logical Unit Assignment (ALUA) and I/O Fencing. RisingTide HA SANs implement all of these advanced features, which traditionally only have been available in high-end arrays, where possible even in inter-fabric mode across multiple protocols, such as iSCSI, FCoE, FC, etc.

Protocol-Level Redundancy supports multiple low-level logical connections within one session (“initiator/target nexus”) across different physical network paths, possibly even spanning different fabric protocols, in order to aggregate all available bandwidth, enable dynamic low-level load-balancing, and implement low-level transparent failover scenarios.

OPERATING ENVIRONMENTS

Microsoft

Windows Server 2003/2008/R2
Windows 7 / Vista / XP

Apple

OS/X (with 3rd party initiator)

Unix

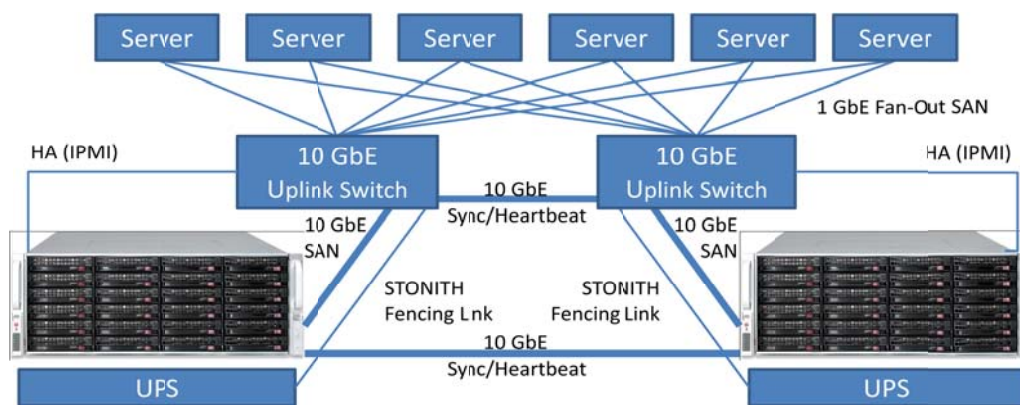
Solaris 10 (x86 / SPARC)
OpenSolaris
HP-UX

Linux

Red Hat RHEL 4.x / 5.x
SuSe SLES 10.3 / 11
Red Hat Client

Virtual Machines

VMware ESX 4.0 / vSphere
Windows Virtual PC
KVM / Qemu
Oracle xVM / VirtualBox
Xen



Technical Specifications

Performance

>99.999% availability
<10 seconds failover time
Up to 300km distance (synchronous)
Up to 2.4PB gross capacity
LUN or node redundancy

Storage Architecture

Active/Active redundancy
Active/Passive redundancy
No single point of failure (clustered)
Fully standards-based
Scalable synchronicity
“Crash” failure model

Layered HA Architecture

Highly Available storage clusters
Server failover clustering
Tiered dynamic fencing
Protocol-level redundancy
Rule-based multipath STONITH

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