



# UNIFIED SAN SYSTEMS

The proliferation of servers and influx of data in today's IT environments affects the enterprise at all levels. To leverage data to its fullest extent, it must be manageable and accessible when needed. Consolidating data in an SAN is a highly scalable solution to achieve this goal. It allows decisively higher performance, flexibility, availability and manageability than any other storage solution.

## The RisingTide Unified SAN

RTS Unified SAN systems provide cost-effective, reliable and highly scalable storage solutions. Designed for a wide range of operating environments and connectivity protocols (iSCSI, FC, FCoE and IB), RTS Unified SANs allow consolidating storage on any SAN fabric.

RTS SANs particularly benefit environments where price/performance, flexibility, and availability of administrative staff are critical IT decision factors. For SMBs and workgroups, RTS SANs enables an easy-to-use affordable primary storage solution to consolidate data and migrate online DAS systems to highly scalable storage solutions. For the enterprise and larger organizations, RTS SANs enable reliable and robust storage from low-cost desktops to blade servers and high-end SMPs, including virtualized environments.

RTS SANs can be based on Ethernet as a unified networking technology, which ensures cost leadership by leveraging commodity economics and an enormous experience base.

The modular architecture of RTS SAN systems offers an affordable entry-point without sacrificing scalability and future functionality. Customers can start small and grow almost unlimited. RTS SANs always meet their storage requirements.

## Extensive Open Source Expertise

RTS' open source software base lays the groundwork for its commercial products and its emerging industry standards – assuring best-of-breed technology, compatibility and reliability. By combining proven technology with commodity economics, growing organizations can take advantage of reliable data protection and improved availability at the lowest TCO for a wide variety of computer systems.

## Simple Installation and Management

The RTS Director provides powerful yet easy control for all cluster storage management tasks. It leverages generations of distributed systems R&D to provide trusted and reliable cluster data management. The UI and API significantly reduce the complexity of

## iSCSI, FC, FCoE AND IB

Unified connectivity across all network infrastructures allows effective integration of storage.

## COMPATIBILITY & RESILIENCY

Best performance, compatibility and reliability at lowest TCO through generations of open-source software.

## PERFORMANCE & SCALABILITY

Dual 40 Gb/s IB line rates  
VMware VAAI support  
Online volume management  
Unlimited LUNs/target  
Maximum LUN size 750TB  
RAID0, 1, 5, 6, 10, 50, 60  
Automatic NIC trunking

## HIGH AVAILABILITY

Easy Network RAID1, multipathing and protocol-level failover

## ROW SNAPSHOTS

Best-in-class performance plus consistency protocol allow fast coherent rollbacks and replays of complete application stacks

## RTS DIRECTOR

Simple SAN installation and management with a powerful yet easy UI and API

**YOUR DATA. DELIVERED.**

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installation, configuration, management and diagnostic tasks. Online capacity expansion, dynamic RAID-level migration, dynamic SAN configuration, volume creation and host-to-volume mappings give administrators full control of their storage system and the ability to make swift and precise changes when necessary.

## Premium Features

Premium features provide additional functionality to an organization's storage system when and if their growing storage demands require it.

**Enterprise Clustering** provides transparent support for Windows Server 2008 / R2 Failover Clusters and Red Hat Enterprise Clusters, thus bringing enterprise features to commodity SANs.

**Storage Partitioning** logically divides a single storage node into multiple systems by defining access control lists between hosts or host groups and volume groups within node. This enables a range of hosts with different capacity,

performance and data protection demands to effectively share a single storage array.

**Volume Snapshot** creates capacity-efficient, point-in-time volume images that preserve a logical volume for such uses as file backup and restoration. ROW (redirect-on-write) snapshots deliver high-performance, and an inband checkpoint protocol guarantees transparent file system consistency that allows coherent rollback and replay of complete application stacks in heterogeneous operating environments.

**Volume Copy** creates a complete physical copy – or clone – of a volume within a storage system. These unique copies can be assigned to any host and used for application development and testing, information analysis or data mining.

**Hierarchical Storage Management** allows managing snapshots and volume copies dynamically. It always archives them on the most cost-effective media by tracking usage patterns and factoring technology tradeoffs.

## OPERATING ENVIRONMENTS

### Microsoft

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

### Apple

OS/X (with 3<sup>rd</sup> party initiator)

### Unix

Solaris 10 (x86 / SPARC)  
 OpenSolaris  
 HP-UX

### Linux

Red Hat RHEL 5 / 6  
 SuSe SLES 10.3 / 11  
 Red Hat Client

### Virtual Machines

VMware ESX 4, vSphere 4 / 5  
 Windows Virtual PC  
 KVM / Qemu  
 Oracle xVM / VirtualBox  
 Xen

## 90% COST SAVINGS IN VMs

10 GbE line speed in VMs with RisingTide initiator increases VM density by an order of magnitude and decreases cost by up to 90%

## Technical Specifications

### Unified Target (iSCSI, FC, FCoE, IB)

Full compliance with IETF RFC-3270 Protocol & Intra-Nexus Multiplexing Protocol load-balancing and failover Advanced Clustering (SPC-4)

### High Availability

Network RAID1 (data continuity)  
 Active/active task migration  
 Active/active session continuation  
 Full Error Recovery (ERL=0/1/2)  
 Redundancy in supported fabrics  
 No single point of failure

### Advanced Features

Dynamic SSD caching  
 VMware vStorage Array APIs (VAAI)  
 Zero management cache protection  
 Aggregation of all fabric bandwidth  
 Multipathing over multiple subnets  
 High-performance parallel architecture

### Manageability

Dynamic LUN provisioning  
 Powerful & easy cluster management  
 SNMP & Email notifications  
 iSNS Server and Client

### Storage Media Independence

Virtualization of all storage media  
 Transparent mapping of I/O to LUNs  
 Unlimited capacity per target  
 Unlimited LUNs per target  
 Maximum LUN size 750TB  
 RAID0, 1, 5, 6, 10, 50, 60

### Massive Scale-Up

Storage capacities up to 2.5PB/rack  
 Up to 1M IOPS (dual 40 Gb/s IB)

### Standards-Based

Industry-standard Unified Target

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### NORTH AMERICA

RisingTide Systems LLC  
 San Ramon, CA 94583  
 +1-650-384-6366

### EMEA

Empalis GmbH  
 Stuttgart, Germany  
 +49-172-727-7920

[www.risingtidesystems.com](http://www.risingtidesystems.com)