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Contents

Business Benefits of Non-Disruptive Backup Solution for Windows NT

Abstract: This paper examines the business issues associated with backup and recovery, and explores the strategic and tactical advantages of the Non-Disruptive Backup Solution for Windows NT- a complete, characterized, and integrated backup infrastructure that enhances the application availability of business-critical systems. Today's business model increasingly requires 24*7 data and application availability, with little time for a backup window. The Non-Disruptive Backup Solution provides a complete backup infrastructure that offloads backup responsibility from the application server, increases time for profit-generating activities, simplifies backup implementation and management, ensures data integrity, and improves the availability of Oracle and Microsoft Exchange. The document includes both customer and analyst endorsements.

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Business Benefits of Non-Disruptive Backup Solution for Windows NT
White Paper prepared by Storage Products Division

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I. Executive Overview

In the Internet age, backup windows are a thing of the past. As companies move from a conventional to e-business model, their data and applications must be available 24 hours a day, 7 days a week. As a result, businesses need a backup infrastructure that doesn't interfere with the availability and performance of their primary storage systems. In addition, setting up a backup strategy has become increasingly complex.

The *Non-Disruptive Backup Solution* is a *Compaq NonStop*™ eBusiness solution designed for businesses that need to run 24x7—especially those that rely on e-commerce, Oracle databases, and Microsoft® Exchange. This integrated storage solution is solves the two major business problems associated with backup and recovery today:

▪ **Shrinking backup window**

▪ **Complexity of backup**

The *Non-Disruptive Backup Solution* is a combination of products and services that provides a complete backup infrastructure for both Storage Area Networks (SAN) and SCSI direct-attached storage environments. Intended for users of *Compaq StorageWorks RAID Array* RA8000 and *Enterprise Storage Array* ESA12000 systems, it provides a qualified, characterized backup solution. The solution manages the snapshot and cloning features of the *StorageWorks* RAID array using the *Compaq SANworks Enterprise Volume Manager*, and includes customizable application and backup scripts for quick success. This solution initially supports Windows NT®, and in the second quarter of 2000 will also support Sun Solaris and *Compaq Tru64 UNIX*®.

Because it minimizes backup downtime and simplifies backup management, the *Non-Disruptive Backup Solution* delivers quantifiable business benefits. It eliminates dependency on a backup window—while providing the consolidation, redundancy, and manageability benefits of tape automation.

> *"By using Compaq's Non-Disruptive Backup Solution in our data warehouse applications, we reduced planned downtime from over 6 hours to just 15 minutes, giving us a full day of system uptime and application availability each week as we manage a 24X7 operation."*
> —Tim Donar, System Architect, Acxiom Corporation

> *"NT Server is now taking a place alongside mainframe and UNIX operating systems as a major platform for business critical applications. Compaq's* **Non-Disruptive Backup Solution** *helps ensure 24x7 availability of NT applications by eliminating the backup window and makes network bandwidth more available by moving high volume data transfer traffic from disk to tape off the LAN. A centralized backup strategy for NT storage can also be implemented to ensure backup consistency and restoration reliability"*
> —John Webster, Illuminata

II. Solution Description

The *Non-Disruptive Backup Solution for Windows NT* is a qualified, fully integrated configuration of hardware, applications, backup software, and services that allows businesses to perform backup with minimal disruption of production systems.
It provides a backup infrastructure for both SAN (dual loop or switched fabric) and SCSI (direct-attached) secondary storage environments—resulting in an end-to-end data protection environment for both primary and secondary storage.

The solution provides the ultimate integrated storage and backup solution for medium to large companies that depend on e-commerce, finance, online transaction processing, mail and messaging, and business-critical Windows NT applications.

In addition to being compatible with popular third-party backup software, the solution has been characterized with Oracle and Microsoft Exchange on *Compaq ProLiant* servers. The solution includes configuration and performance recommendations, so it can be deployed in a working environment quickly and easily. This gives businesses a reliable way to estimate the solution's behavior under actual conditions—which relieves much of the uncertainty about deploying and configuring a new storage infrastructure.

The *Non-Disruptive Backup Solution* leverages the snapshot and cloning capabilities of the *StorageWorks* HSG80 RAID controller, using the *SANworks Enterprise Volume Manager (EVM)* coupled with various primary and secondary storage strategies. A key part of the *Non-Disruptive Backup Solution*, *EVM* is web-based software that manages controller-based clone and snapshot operations.
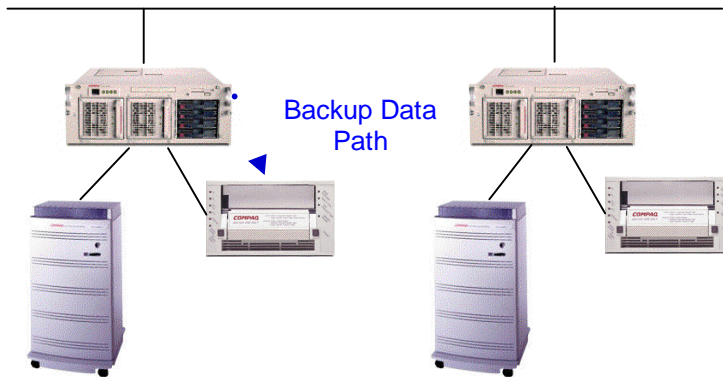
EVM lets you create, in background mode, independently addressable volumes for open system information storage. The volumes are virtual copies of active production volumes. This parallel processing enables you to redirect workloads and perform non-disruptive backups—while maintaining normal business operations. *EVM* can be used to meet business continuance requirements by minimizing application downtime. Because all backup operations are done on the clone or snapshot—rather than on the live data—the performance impact on the production system is minimized during the backup process.

Solution Components

- *Compaq SANworks Enterprise Volume Manager (EVM)* with scripts for third-party backup software and primary data applications
    - Third-party backup software: Legato NetWorker, VERITAS Backup Exec, and Computer Associates ARCserve*IT* (others to follow)
    - Applications: Oracle8 and Microsoft Exchange 5.5
- *Compaq StorageWorks* RA8000 o*r* ESA12000 with HSG80 and ACS 8.5 (F or S) controller firmware
- Choice of Compaq backup device:
    - Tape Library: TL891, TL895, ESL9326D
    - *Compaq Enterprise Backup Solution (EBS)*: *EBS* for Departments, *EBS* for Data Centers
- SCSI or Fibre Channel (dual loop or switched fabric) interconnect to secondary storage
- *Compaq Batch Scheduler*
- Usability information: configuration, performance, and characterization data
- Windows NT backup server with Legato NetWorker, VERITAS Backup Exec, or Computer Associates ARCserve*IT*
- Tested on Oracle and Microsoft Exchange
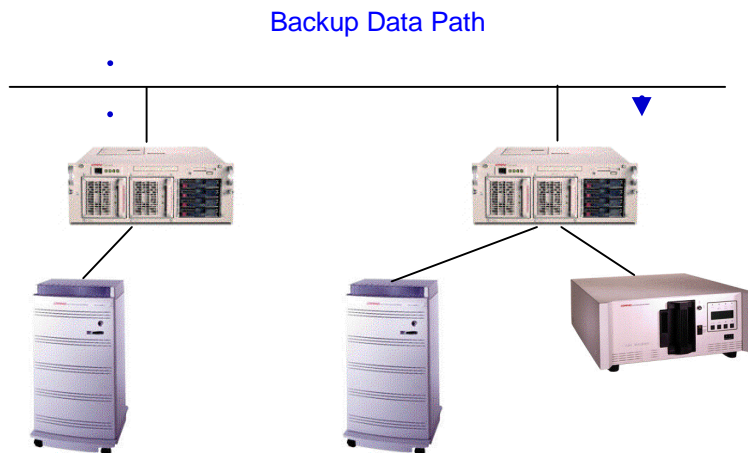- Standard Compaq 3-year warranty

- Single bundled part number for pre-configured entry-level, mainstream, or enterprise-class solutions, or customized package to met specific requirements
- Optional services, including 24x7 warranty uplift, installation and startup services, and more
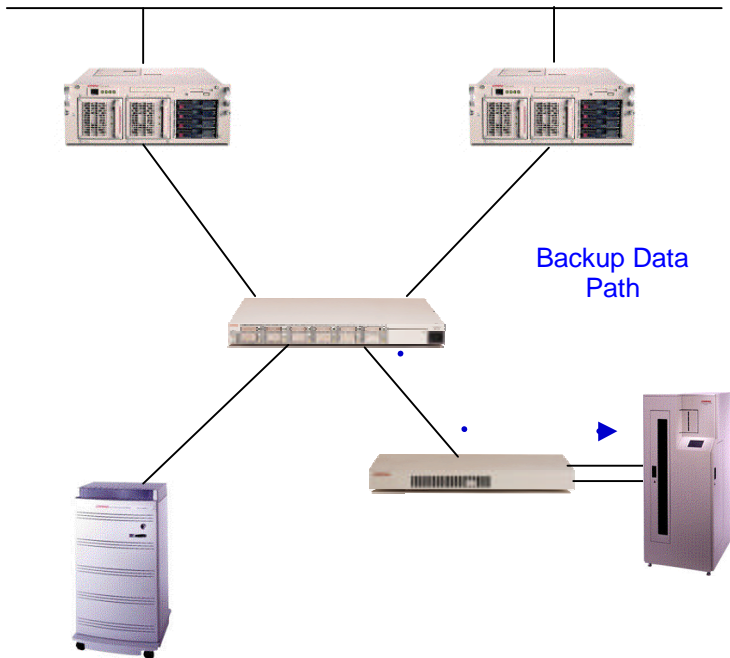
On-Line Local Backup

Backup Data Path

- Each application server is attached to the LAN.
- Each server has local disks for primary storage.
- Tape drives is either imbedded in the server or locally attached for server backup.

- No sharing of resources
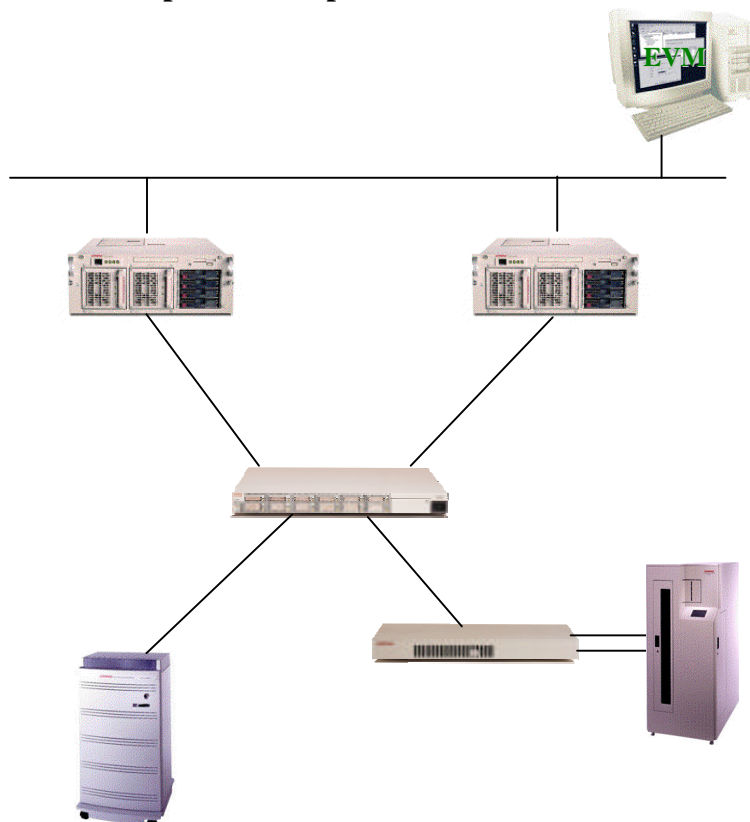
On-Line LAN Backup

Backup Data Path

- Each application server is attached to the LAN.
- Each server has local disks for primary storage.
- One server is designated as a backup server and is responsible for tape automation device.
- Shared backup resources via LAN.
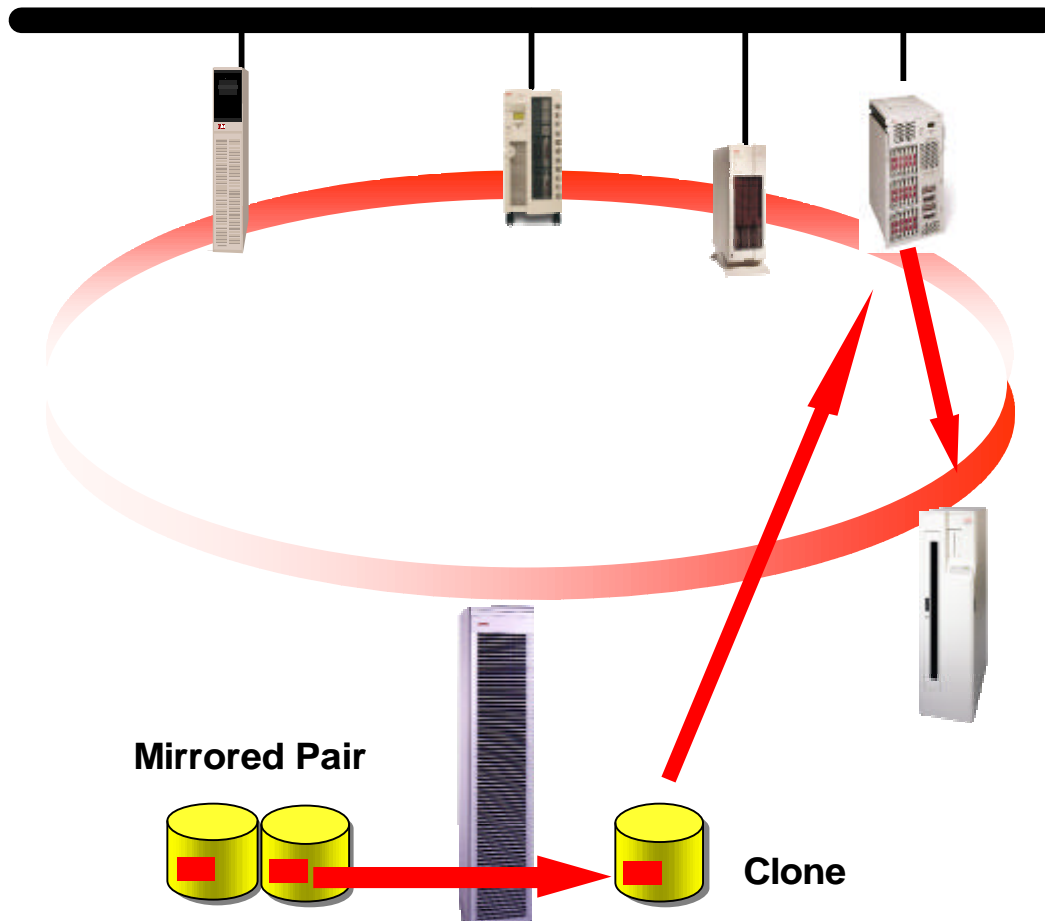
On-Line SAN Backup

Backup Data
Path

- Each application server is attached to the SAN
- SAN attached disks for primary storage
- SAN attached tape automation for secondary storage
- Shared backup resources via SAN
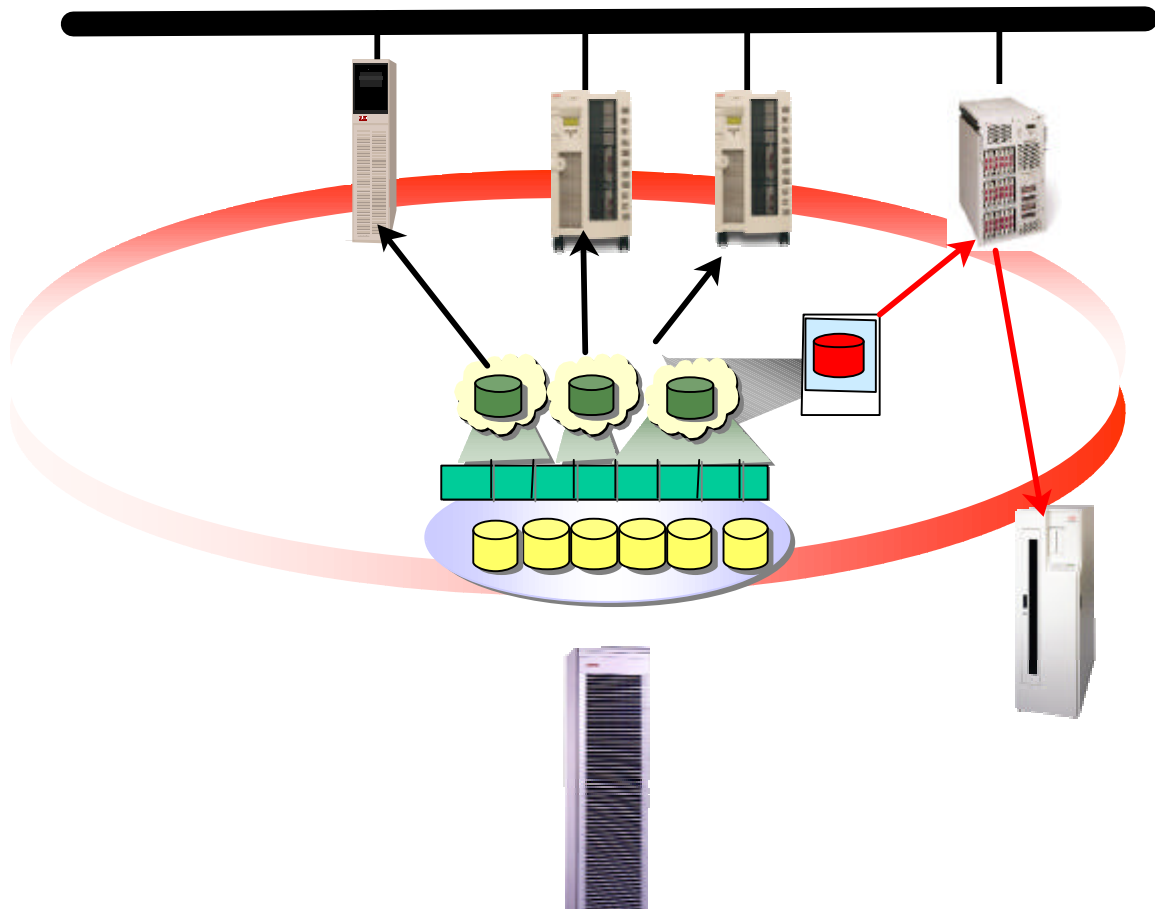
Non-Disruptive Backup

EVM

- Each application server is attached to the SAN
- SAN attached disks for primary storage
- SAN (or SCSI) attached tape automation for secondary storage
- Shared backup resources via SAN
- Off-Line backup using EVM software (clone or snapshot technology)

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Cloning with the Non-Disruptive Backup Solution

- Create a clone of the data (mirror)
- Quiesce the Exchange or Oracle database
- Split off the clone
- Restart the database
- Mount the clone on the backup server
- Backup the clone to tape

Snapshot with the Non-Disruptive Backup Solution

- Quiesce Exchange or Oracle
- Create a point in time snapshot (a virtual copy) of the data
- Restart the application
- Mount the snapshot on the backup server
- Backup the snapshot to tape

III. Business Benefits

<table>
<tr><td colspan="5" align="center">Benefits at a Glance</td></tr>
<tr>
<th>Feature</th>
<th>Traditional Method</th>
<th>Compaq Non-Disruptive Backup Solution</th>
<th>Business Benefits</th>
<th>Operational Benefits</th>
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<tr>
<td>Backup</td>
<td>Backup to tape</td>
<td>Backup to snapshot, clone, or tape—tested on Oracle and Exchange</td>
<td>Minimum disruption to business operations

Ability to backup without impact to production systems</td>
<td>Increased application availability and production system uptime</td>
</tr>
<tr>
<td>Storage Manage-ment</td>
<td>Manual, complex, labor-intensive</td>
<td>Scripted, automated characterized configurations using industry-standard components</td>
<td>Time and cost savings Improves utilization of personnel resources</td>
<td>Improves reliability and productivity</td>
</tr>
</table>

Provides a complete backup infrastructure

The *Non-Disruptive Backup Solution* is a modular, end-to-end data protection environment for both primary and secondary storage. The solution can be tailored to the specific needs of the business. For example, it can be implemented immediately in a direct-attached, SCSI environment and later added to a Compaq SAN. This simplifies the deployment of backup—while accommodating future needs.

Offloads backup responsibility from application server

This solution frees businesses from backup window restrictions because its backup procedures do not interfere with the availability and performance of primary application data. This means minimal or no disruption to business operations. In fact, the solution significantly reduces downtime of production systems due to backup. Increased uptime can result in greater revenues and increased customer satisfaction—which is critical for 24x7 operations and e-commerce applications that require 100% availability of production systems.

Increases time for profit-generating activities

The *Non-Disruptive Backup Solution* can provide significant financial benefits for businesses. By eliminating planned downtime, companies can generate more business, service a greater number of customers, and optimize their revenue-producing activities.

Simplifies backup implementation and management

The backup and restore process is the most difficult challenge in the storage arena today. Backup technologies have become increasingly complex, third party software products add to the complexity, and databases impose unique formats—resulting in difficulty designing and operating backup systems. More importantly, the complexity of the implementation leaves many businesses uncomfortable with the integrity of the backup data.

The *Non-Disruptive Backup Solution* provides easy implementation of backup strategies, including customizable scripts, and the integration of all necessary components— applications, hardware, backup software, services, and real usability information. It also includes extensive performance, sizing and configuration data. As a result, personnel costs and efforts are reduced—resulting in significant time and cost savings to businesses. Additionally, integrity of the backup data is ensured.

Improves the availability of Oracle and Exchange

Today, most business-critical applications for Windows NT involve either Oracle or Microsoft Exchange. The *Non-Disruptive Backup Solution* significantly improves Exchange and Oracle availability because it delivers immediate backup for Exchange and Oracle.

Ensures data integrity

The *Non-Disruptive Backup Solution* uses *EVM* software to transfer point-in-time consistent data to the production volume copy, which ensures that data is accurate and current.

Provides investment protection

The *Non-Disruptive Backup Solution* leverages existing hardware/software and uses standard Compaq components—thus protecting past investments. And because it supports a wide variety of configurations and is compatible with future ENSA products, future investment protection is ensured as well.

Supports popular third-party backup software

Not only can businesses use their favorite third-party backup software, they can use it with complete confidence because the solution is pre-tested. Legato NetWorker, VERITAS Backup Exec, and Computer Associates ARCserve*IT* are qualified and characterized on the *Non-Disruptive Backup Solution*—ensuring compatibility with the company's existing environments and operations.

Offers non-stop warranty protection

Companies can choose from a many optional extended warranty and/or installation and startup services—as needed to support the business. The extended, 24x7 warranty offers non-stop warranty protection. Installation and startup services ensure that the solution is up and running quickly and ready for use with the required application. The resulting quick deployment and solution health check is a benefit to business applications where short installation times and dependable results immediately translate into increased profits.

Learn more

For more information on the Non-Disruptive Backup Solution, please contact your Compaq representative, or visit the following websites:

Compaq StorageWorks Non-Disruptive Backup Solution:
http://www.compaq.com/products/storageworks/solutions/non-disruptive/wntindex.html

Compaq Storage Solutions:
http://www.compaq.com/products/storageworks/menu_solutions.html

Compaq SANworks Enterprise Volume Manager (EVM):
http://www.compaq.com/products/storageworks/Storage-Management-Software/evmindex.html

Compaq Tape Storage Systems:
http:/www.compaq.com/products/storageworks/tape_optical_storage.html

Compaq StorageWorks RAID Arrays:
http://www.compaq.com/products/storageworks/raidstoragesystems.html

Compaq NonStop eBusiness Solutions:
http://www.compaq.com/strategy/