

## MODELS

### Compaq StorageWorks Non-Disruptive Backup Solution for Windows NT

#### Entry Level Solution:

Rackmount RA8000 on fibre loop with SCSI-attached TL891, ProLiant backup server, Enterprise Volume Manager, and Compaq Batch Scheduler 176944-001

#### Departmental Solution:

Rackmount RA8000 on fibre switch with fibre-attached TL895, ProLiant backup server, Enterprise Volume Manager, and Compaq Batch Scheduler 176945-001

#### Enterprise Solution:

Rackmount ESA12000 on fibre switch with fibre attached TL895, ProLiant backup server, Enterprise Volume Manager, and Compaq Batch Scheduler 176946-001

#### Custom-Build-to-Order Solutions

*CT-NDBUS-01 (Entry-Level)*  
*CT-NDBUS-02 (Departmental)*  
*CT-NDBUS-03 (Enterprise)*

## The Ultimate in Data Storage and Backup for Business Critical Windows NT Environments

Due to the rapid growth of information across the enterprise, and the need for ever-increasing volumes of data storage, data backup is a major challenge for IT organizations. The backup window decreases as the demand for more available storage and simple backup procedures becomes more urgent. The Non-Disruptive Backup Solution for Windows NT is a pre-tested configuration of hardware, applications, backup software, and services that permits backup with minimal disruption to production applications. It provides the ultimate integrated storage and backup solution for businesses that operate 24 \* 7, eCommerce, and businesses with business-critical NT applications. Because it simplifies backup management, the solution delivers quantifiable business benefits by eliminating dependency on a backup window, while providing the consolidation, redundancy, and manageability benefits of tape automation.

## Elimination of the Backup Window and Simplification of Backup Management

The Non-Disruptive Backup Solution uses Compaq SANworks Enterprise Volume Manager (EVM) and Compaq Batch Scheduler software to automatically schedule offline backup of an Oracle database or a Microsoft Exchange Store and create, in background mode, an independently addressable point-in-time copy for use in backup. The point-in-time copies are either mirror images (clones), or virtual copies (snapshots) of active production volumes. This parallel processing offers workload compression and the ability to perform non-disruptive backup while maintaining normal business operations. The Non-Disruptive Backup Solution includes database and backup application scripts, thereby automating a formerly manual process, and simplifying the backup implementation.

The process for implementing the backup is automated and proceeds as follows:

1. Briefly quiesce the Oracle or Microsoft Exchange application.
2. Create a snapshot or clone of the data.
3. Restart the application and continue business operations.
4. Mount the snapshot or clone on the backup server.
5. Backup the snapshot or clone to tape.

The Non-Disruptive Backup Solution delivers all the components necessary for to implement the above process, including characterization, sizing, and performance data, and is "SAN-ready," to allow for future growth. It provides a backup infrastructure for both SAN (dual loop and switched fabric) and SCSI (direct attached) storage environments.

## Seamless Integration/Investment Protection

The Non-Disruptive Backup Solution integrates smoothly into existing Microsoft Exchange and Oracle environments. Both performance and capacity can be scaled with the addition of RAID Arrays and tape libraries. A significant component in Compaq's Enterprise Network Storage Architecture(ENSA), the Non-Disruptive Backup Solution ensures simple, centralized backup management, as well as the highest level of availability for production storage systems.

To facilitate seamless integration into existing environments, Installation and Start-up Services are available from Compaq Customer Services.

## Hardware, Software, and Characterization Components

The Non-Disruptive Backup Solution consists of the following components:

- Fibre-Channel RAID Array 8000 or ESA 12000 with HSG 80 controller and ACS (array controller software) version 8.5 F/S
- Choice of backup library: TL891, TL895, or ESL9326D
- Choice of SCSI or fibre channel SAN interconnect:
  - SCSI: UltraWide SCSI Host Bust Adapter
  - Dual loop SAN: Enterprise Backup Solution for Departments
  - Switched fabric SAN: Enterprise Backup Solution for Data Centers
- Compaq SANworks Enterprise Volume Manager for Windows NT version 1.0
- Compaq Batch Scheduler for Windows NT version 2.0
- Customizable scripts for applications and backup software (Microsoft Exchange, Oracle, Legato NetWorker®, Computer Associates® ArcServe/7, VERITAS Backup Exec)
- Usability data: configuration, performance, sizing, and characterization

These components are integrated to provide the Compaq StorageWorks Non-Disruptive Backup Solution for NT. Compaq is able to successfully integrate these "best-in-class" components and offer superior technology to solve the business problems of (1) eliminating the backup window, and (2) simplifying backup implementation and management.

## Operating System Support

Windows NT 4.0 Service Pack 5

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## Applications Support

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Microsoft Exchange version 5.5  
Oracle version 8.05

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## Backup Software Support

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### Legato

Legato NetWorker version 5.51 for Windows NT  
Legato Smartmedia version 1.2-2  
Microsoft Exchange Server Windows NT client version 1.1 (optional)  
Oracle Windows NT client version 1.0 (optional)

### Veritas

VERITAS Backup Exec version 7.3 for Windows NT  
Autoloader Option (required for tape library control)  
Shared Storage Option (required for fiber/Enterprise Backup Solution)  
Agent for Microsoft Exchange Server (optional)  
Agent for Oracle Server (optional)

### Computer Associates

CA ArcServe/IT Advanced Edition for Windows NT version 6.61  
ArcServe/IT Tape Library Option (required for tape library control)  
ArcServe /IT Enterprise Library Option (required for fiber/Enterprise Backup Solution)  
Backup Agent for Microsoft Exchange (optional)  
Backup Agent for Oracle (optional)

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## Enterprise Volume Manager

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Enterprise Volume Manager (EVM) is web-based software that manages controller-based clone and snapshot operations. EVM can be used to meet business continuance requirements by minimizing application downtime. All backup operations are done on the clone or snapshot, minimizing performance impact on the production system.

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## Tape Products

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**TL891:** Available as a stand-alone tabletop unit or as a scalable/stackable rackmount unit, with a removable 10 cartridge magazine, integrated barcode reader, and two Compaq DLT 35/70 drives. The TL891 base unit offers 700 GB of compressed storage capacity in a small 4U height, and up to 6.3 TB in a multi-unit library. Performance is 36 GB/hr to 180 GB/hr (native), providing transfer of up to 1 TB in less than six hours. For use in SCSI environments and with EBS for Departments.

**TL895:** Offers multiple terabytes of automated DLT backup for mission-critical data. Backs up to 6.7 TB of data in a single, standalone library. Performance is 36 GB/hr to 126 GB/hr (native). Highest reliability of any DLT automation device with two million mean swaps (MSBF). For use in SCSI environments and with EBS for Departments and EBS for Data Centers.

**ESL9326D:** Provides the ultimate in high-capacity unattended backup and restore for the enterprise. With 326 slots and up to 16 Compaq 35/70 DLT drives, the ESL9326D offers up to 22.8 TB of data storage (using 2:1 compression) and native transfer rates up to 288 GB/hr. For use in SCSI environments.

**Enterprise Backup Solution (EBS):** Provides consolidated backup of multiple servers over high speed, independent fibre channel storage network to centrally attached SCSI tape libraries. EBS for Departments supports the TL891 and TL895. EBS for Data Centers supports the TL895. Both EBS products have backup speeds of up to 100 MB/s, dramatically reducing backup time.

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## RAID Array 8000/Enterprise Storage Array 12000 with HSG80 Controller

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**RAID Array 8000 (RA8000):** Midrange, fibre-channel based, primary storage for departments. Scales to 864 GB per cabinet or 2.6 TB in a single system. Features support of multiple mirror sets, multi-host support, and no-single-point-of-failure architecture.

**Enterprise Storage Array 12000 (ESA12000):** Enterprise class, fibre-channel based, primary storage. Scales to multiple terabytes. Features support of multiple mirror sets, multi-host support, and no single point of failure architecture.

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## Interconnects

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**SCSI:** The TL891, TL895, or ESL9326D may be direct-attached to a backup server via SCSI.

**Fibre Channel Hubs:** The Fibre Channel Hub 7 and Fiber Channel Hub 12 provide up to seven and twelve multi-mode fibre channel connections for attaching to hosts and storage (primary and secondary). The storage hub is a rack-mountable unit with a 1U form factor.

**Fibre Channel Storage Switches:** The Compaq StorageWorks Fibre Channel Storage Switch 8 and Fibre Channel Storage Switch 16 are high-performance, scalable switch fabrics designed for creating SANs:

- Eight (Fibre Channel Switch 8) or 16 (Fibre Channel Switch 16) 1 Gb/s non-blocking Fibre Channel connections for high data throughput
- Dynamic path rerouting in the event of a link failure
- Full-duplex transmissions for high performance

**Fibre Channel SAN Switches:** The Compaq StorageWorks Fibre Channel SAN Switch/8 and Fibre Channel SAN Switch/16 are high-performance, scalable switch fabrics designed for creating SAN's with Compaq StorageWorks RAID Array 8000, ESA 12000 storage systems and EBS for Data Centers:

- Eight (Fibre Channel SAN Switch/8) or 16 (Fibre Channel SAN Switch/16) 1 Gb/s non-blocking Fibre Channel connections for high data throughput
- Pre-configured with Fabric operating software, WEB Based Management Tools, and Zoning software
- Dynamic path rerouting in the event of a link failure
- General 10-km link distance support for switch to switch connections

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## Prerequisites

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### Compaq ProLiant Windows NT Server

- Windows NT server for EVM (may also be the application server and/or backup server)
- Windows NT server for use as backup server

### Host Bus Adapters

- Fibre Channel Host Bus Adapter, KGPSA-BC, 380574-001
- Tape Library Ultra-Wide SCSI Host Bus Adapter, 157299-B21

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## Standard Warranty

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The Non-Disruptive Backup Solution is covered by a three-year parts warranty, one-year onsite warranty, and one-year labor warranty.

**Note:** Certain restrictions apply. Consult the [Compaq Customer Support Center](#) for details. In Canada, consult the [Product Information Center](#) at 1-800-567-1616 for details.

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## Extended Service Options

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**Extended Warranty:** 24 \* 7 warranty protection

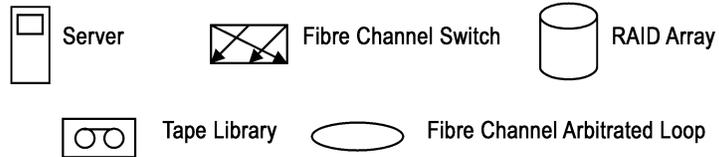
**Installation and Startup Service:** provides routine connection, configuration, and system health-check service.

The service includes:

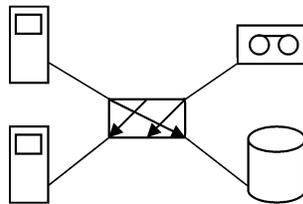
- Configuration and assembly of hardware components
- System verification testing

## CONFIGURATION QUICK REFERENCE GUIDE

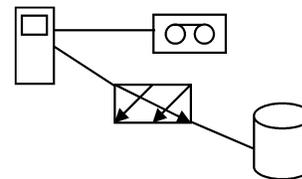
### Backup Infrastructure Diagrams:



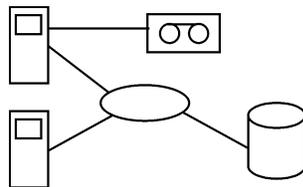
1: Disk-Fibre Switch / Tape-EBS Switch



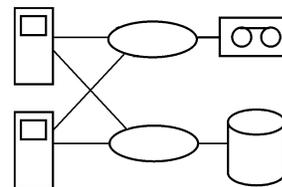
2: Disk-Fibre Switch / Tape-Direct SCSI



3: Disk-FCAL / Tape-Direct SCSI



4: Disk-FCAL / Tape-EBS FCAL



The following will be supported as valid solution configurations using EVM for Windows NT-Intel software, Windows NT 4.0 SP5, the RA8000 or ESA12000 with ACS 8.5 (F or S), and Oracle v8.05 or Microsoft Exchange v5.5:

### Supported Configurations

Infrastructure	Backup Application	Tape Library
Disk-Fibre Switch Tape-EBS Switch	Legato Networker v5.51	TL895
Disk-Fibre Switch Tape-Direct SCSI	Legato Networker v5.51	ESL 9326D
		TL895
		TL891
	VERITAS Backup Exec v7.3	ESL9326D
		TL895
		TL891
	CA ArcServeIT v6.61	TL895
		TL895
		TL891
Disk-FCAL Tape-Direct SCSI	Legato Networker v5.51	ESL9326D
		TL895
		TL891
	VERITAS Backup Exec v7.3	ESL9326D
		TL895
		TL891
	CA ArcServeIT v6.61	TL895
		TL895
		TL891

## CONFIGURATION QUICK REFERENCE GUIDE *(continued)*

### Supported Configurations *(continued)*

Infrastructure	Backup Application	Tape Library
Disk-FCAL Tape-EBS FCAL	VERITAS Backup Exec v7.3	TL895
		TL891
	CA ArcServeIT v6.61	TL895
		TL891

## SPECIFICATIONS

### Non-Disruptive Backup Solution for Windows NT

The Non-Disruptive Backup Solution is a pre-tested installation that includes the following Compaq and non-Compaq products. Refer to the QuickSpecs or Detailed Descriptions for the individual Compaq product.

#### Compaq Hardware

- **Primary Storage Array**
  - RA8000 with HSG80 controller(s) and ACS 8.5 F or S
  - ESA12000 with HSG80 controller(s) and ACS 8.5 F or S
- **Disk Drives**
  - Hard disk drives, 36 GB, 7200 rpm, UWSE
  - Hard disk drives, 18 GB, 10,000 rpm, UWSE
  - Hard disk drives, 9 GB, 10,000 rpm, UWSE
  - Hard disk drives, 9 GB, 7200 rpm, UWSE
- **Backup Server**
  - Compaq ProLiant 1850R, or comparable Windows NT server
- **Host Bus Adapters**
  - Fibre channel Host Bus Adapter
  - Tape Library UltraWide SCSI Host Bus Adapter
- **Interconnects**
  - Fibre Channel Storage Switch, 16 port
  - Fibre Channel SAN Switch/16 with Fabric Software
  - Fibre Channel Storage Switch, 8 port
  - Fibre Channel SAN Switch/8 with Fabric Software
  - Fibre Channel Hub, 12 port
  - Fibre Channel Hub, 7 port
  - Fibre Channel Tape Controller-II
- **Secondary Storage DLT Automation**
  - TL891 Tape Library
  - TL895 Tape Library
  - ESL9326D Tape Library

#### Compaq Software

- Compaq SANworksEnterprise Volume Manager Software for Windows NT-Intel version 1.0
- Compaq StorageWorks Command Console version 2.2 or later
- Compaq Batch Scheduler 2.0 for Windows NT

## SPECIFICATIONS *(continued)*

### Third Party Software

- **Legato**  
Legato NetWorker version 5.51 for Windows NT  
Legato Smartmedia version 1.2-2  
Microsoft Exchange Server Windows NT client version 1.1 (optional)  
Oracle Windows NT client version 1.0 (optional)
- **Veritas**  
VERITAS Backup Exec version 7.3 for Windows NT  
Autoloader Option (required for tape library control)  
Shared Storage Option (required for fiber/Enterprise Backup Solution)  
Agent for Microsoft Exchange Server (optional)  
Agent for Oracle Server (optional)
- **Computer Associates**  
CA ArcServe/7 Advanced Edition for Windows NT version 6.61  
ArcServe/7 Tape Library Option (required for tape library control)  
ArcServe/7 Enterprise Library Option (required for fiber/Enterprise Backup Solution)  
Backup Agent for Microsoft Exchange (optional)  
Backup Agent for Oracle (optional)

## NON-DISRUPTIVE BACKUP SOLUTION COMPONENTS

Select one from each item # to assemble the solution, or select one of the bundled part numbers (next section).

Item	Item Descriptions	Base SKU	Quantity
1	EVM Software for Window NT-Intel	160094-B21	1 per server/client
2	ACS 8.5F Controller Software	128697-B21	1 per HSG80
	ACS 8.5S Controller Software	160091-B21	
3	OS Platform Software Kit for NT (SWCC)	380551-001	1 per HSG80
4	RA8000 Rack with 1 HSG80 Controller	380660-B21	1 (minimum)
	RA8000 Rack with 2 HSG80 Controllers	380670-B21	
	RA8000 Pedestal with 1 HSG80 Controller	380550-B21/B22	
	RA8000 Pedestal with 2 HSG80 Controllers	380560-B21/B22	
	ESA12000 with 1 Chassis and 2 HSG80 Controllers	380580-001/002	
	ESA12000 with 2 Chassis & 2 HSG80 Controllers	380600-001/002	
5	Hard Disk Drives, 36 GB, 7200 rpm, UWSE	147599-001	24 (typical)
	Hard Disk Drives, 18 GB, 10,000 rpm, UWSE	380589-B21	
	Hard Disk Drives, 18 GB, 7200 rpm, UWSE	147598-001	
	Hard Disk Drives, 9 GB, 10,000 rpm, UWSE	380588-B21	
	Hard Disk Drives, 9 GB, 7200 rpm, UWSE	147597-001	
6*	ProLiant NT Backup Server (PL1850R - typical)	153554-001	1 (backup server)
7	Fibre Channel HBA (switched fabric), KGPSA-BC	380574-001	1 per server/client
	Fibre Channel Host Adapter Kit / PCI (loop only)**	223180-B21	
8	Fibre Channel Storage Switch, 16 port	380578-B21	1
	Fibre Channel SAN Switch / 16 with Fabric Software	158223-B21	
	Fibre Channel Storage Switch, 8 port	380591-B21	
	Fibre Channel SAN Switch / 8 with Fabric Software	158222-B21	
	Fibre Channel Hub, 12 port	295573-B22	
	Fibre Channel Hub, 7 port	234453-001	1 (SCSI tape) 2 (dual fibre)

## NON-DISRUPTIVE BACKUP SOLUTION COMPONENTS *(continued)*

Item	Item Descriptions	Base SKU	Quantity
9	FC Optical Short Wave GBIC	380561-B21	1 per interconnect
	FC Optical Short Wave GBIC-SW (SAN Switch only)	234456-005	
10	Fibre Channel Optical Cable	234457-B22	1 per interconnect
11	Tape Library UW SCSI Host Bus Adapter	157299-B21	1 per 4 DLT drives
	Fibre Channel Tape Controller II***	152975-001	
12	Compaq Batch Scheduler v2.0 for Windows NT	388934-001	1 per EVM server
13	TL891 Tape Library	120876-B22	1 (typical)
	TL895 Tape Library	349350-B24	
	ESL9326D Tape Library	146205-B23	
14	Legato NetWorker	<i>3rd Party P/N</i>	1 per server/client
	VERITAS Backup Exec	<i>3rd Party P/N</i>	
	CA ArcServe/IT	<i>3rd Party P/N</i>	

\* Optional (use any ProLiant NT server)

\*\* Does not support HSG80 connectivity.  
Supported on Tape Library loop only.  
Comes with fibre cable and GBIC for connectivity.

\*\*\* Required with Fibre Attached Tape Library

## INTEGRATED, RACK-MOUNTED CONFIGURATIONS

### Entry-Level Non-Disruptive Backup Solution – 176944-001

Item Descriptions	Quantity
Enterprise Volume Manager for Windows NT-Intel	1
ACS 8.5F Controller Software	1
OS Platform Kit for NT (SWCC)	1
RA8000 Rack with 1 HSG80 Controller	1
Proliant Backup Server PL1850R 6/600 512 US	1
Fibre Channel Host Bus Adapter (fabric), KGPSA-BC	2
Fibre Channel Storage Hub 7 Port	1
Fibre Channel Short Wave GBIC	3
Fibre Channel Optical Cable	2
Tape Library, UltraWide SCSI Host Bus Adapter	1
Compaq Batch Scheduler 2.0 for Windows NT	1
TL891 Tape Library	1
Rack and associated accessories, power distribution, power supplies	1

### Departmental Non-Disruptive Backup Solution - 176945-001

Item Descriptions	Quantity
Enterprise Volume Manager for Windows NT-Intel	1
ACS 8.5F Controller Software	2
OS Platform Kit for NT (SWCC)	2
RA8000 Rack with 2 HSG80 Controllers	1
Proliant Backup Server PL1850R 6/600 512 US	1
Fibre Channel Host Bus Adapter (fabric), KGPSA-BC	2
Fibre Channel SAN Switch / 8 with Fabric Software	1
Fibre Channel Short Wave GBIC	5
Fibre Channel Optical Cable	3
Fibre Channel Tape Controller II	1

## **INTEGRATED, RACK-MOUNTED CONFIGURATIONS** *(continued)*

### **Departmental Non-Disruptive Backup Solution - 176945-001** *(continued)*

<b>Item Descriptions</b>	<b>Quantity</b>
Compaq Batch Scheduler 2.0 for Windows NT	1
TL895 Tape Library	1
Rack and associated accessories, power distribution, power supplies	1

### **Enterprise Non-Disruptive Backup Solution - 176946-001**

<b>Item Descriptions</b>	<b>Quantity</b>
Enterprise Volume Manager for Windows NT-Intel	1
ACS 8.5S Controller Software	4
OS Platform Kit for NT (SWCC)	4
ESA12000 with 2 Chassis and 4 HSG80 Controllers	1
Proliant Backup Server PL1850R 6/600 512 US	1
Fibre Channel Host Bus Adapter (fabric), KGPSA-BC	2
Fibre Channel SAN Switch / 16 with Fabric Software	1
Fibre Channel Short Wave GBIC	7
Fibre Channel Optical Cable	3
Fibre Channel Tape Controller II	1
Compaq Batch Scheduler 2.0 for Windows NT	1
TL895 Tape Library	1
Rack and associated accessories, power distribution, power supplies	1