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BUSINESS WITHOUT INTERRUPTION™

VERITAS Volume Manager – Delivering High Availability Storage Management Tools for Microsoft Windows

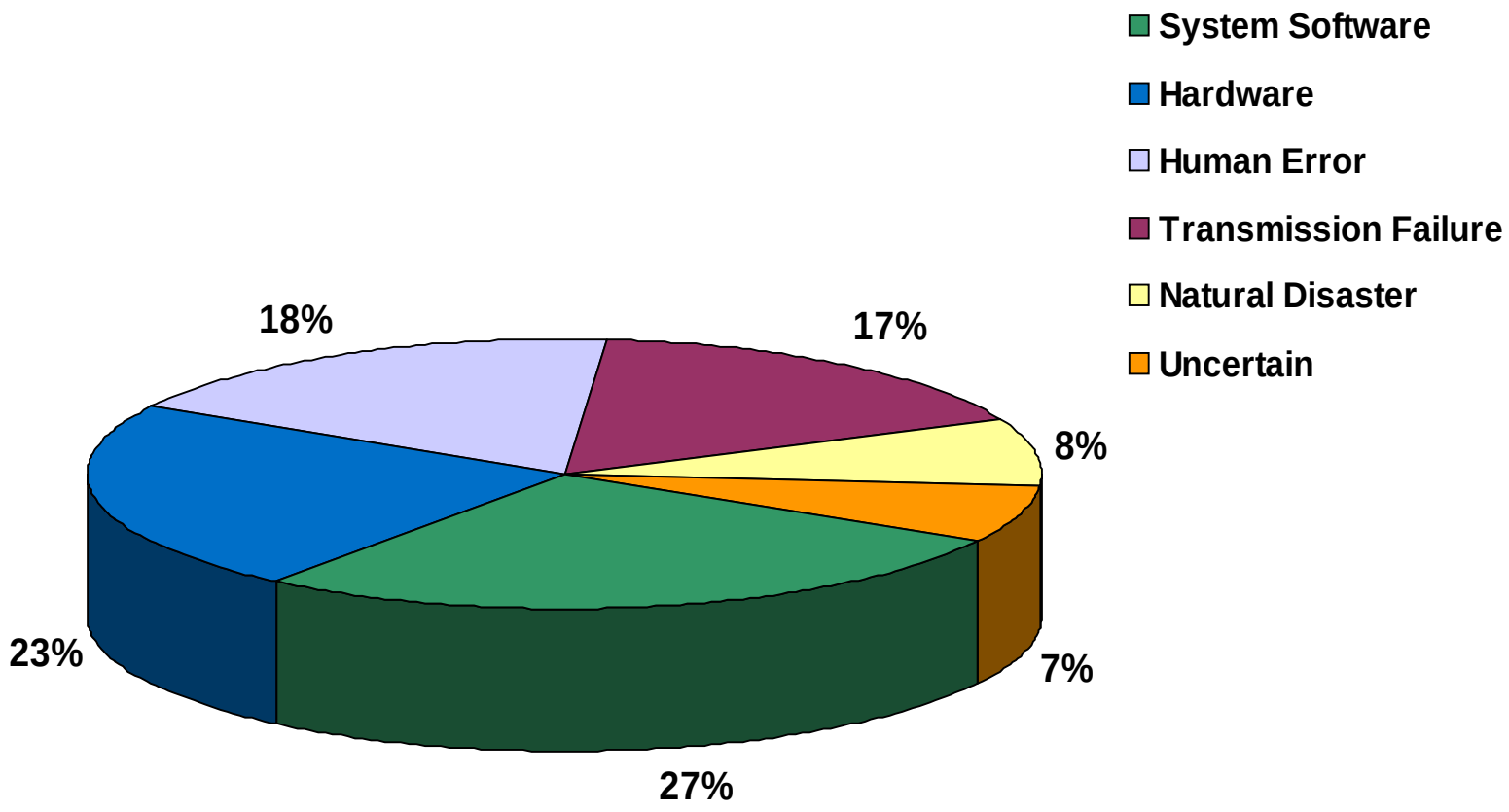
Bob Brencic, Director of Windows Marketing
Foundations Group
VERITAS Software Corporation

Agenda

- Common Sources of Downtime
- Value Proposition - Volume Management
  - High Availability
  - Centralized Storage Management
  - Storage Vendor Independence
  - Performance / Data Protection Optimization
- Next Steps

Downtime Sources

Causes of Unplanned System Downtime



Source: Gartner/Dataquest 12/99

IT Storage Challenges*

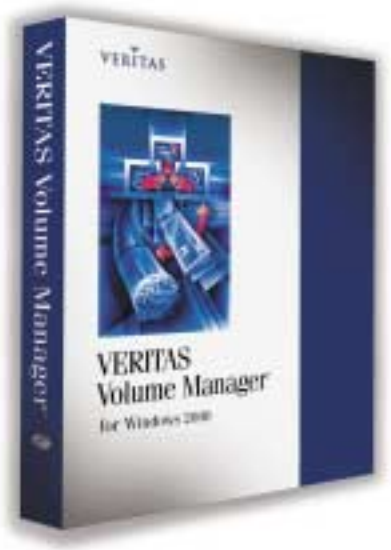
- Backup Window Problems
- Difficulty Managing Growth
- Performance
- Load Balancing
- Data Availability
- Failover
- Tight Staffing Resources

*ITcentrix Storage Networks Report 1999

VERITAS Volume Manager for Windows helps solve all of these challenges!

What is Volume Manager?

- Easy-to-use on-line storage management software for Windows enterprise computing environments
- Logical volumes overcome the physical restrictions imposed by hardware disk devices
- Reduces both PLANNED and UNPLANNED downtime !!
- Host-based Logical Volume Management
  - Dynamic Disks and Dynamic Volumes
  - Isolates applications from traditional pitfalls of storage reconfiguration
- Online Capacity Expansion and Extension
  - Add new storage to host dynamically
  - Extend existing dynamic volume capacity
- Online Data Relocation
  - Physically relocate data dynamically
- SAN Capable
  - Segments SAN Storage



Industry Leader

Volume Manager technology is used by 1600 of the Global 2000 Corporations to ensure high availability of their essential data !!

Microsoft selected VERITAS:

- To develop their disk management software for Windows 2000
- This basic version is known as “Logical Disk Manager” (LDM)
- VERITAS Volume Manager is built on this LDM foundation which was jointly developed by VERITAS & Microsoft

Basic Features

Both Windows 2000 LDM and Volume Manager for Windows offer:

- ✓ **No Downtime – You can do online configuration without interrupting your users**
- ✓ **No Rebooting –Dynamic volumes allow you to add new hard disks or extend / reconfigure volumes to a Windows 2000 Server *without rebooting* and affecting availability of the server !!!!**

Volume Manager: Adding Value to Windows 2000

Feature	Windows 2000 (LDM)	Volume Mgr for Windows 2000
Online Growth for Simple/Spanned	✔	✔
RAID 0, 1, 5	✔	✔
32 Columns for a Dynamic Volume	✔	✔
Windows NT4 Disk View	✔	✔
Disk Encapsulation	✔	✔
Integrated Array Management		✔
Online Growth for RAID 0,1,5		✔
Online Subdisk Move		✔
Microsoft Cluster Support		✔
Mirrored MSCS Quorum Disk		✔
N-ways Mirror		✔
Preferred Plex		✔
>32 Columns for a Dynamic Volume		✔
Multiple Diskgroups		✔
I/O Statistics		✔

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Volume Management: What is the Value Proposition?

- **High Availability**
- **Centralized Storage Management**
- **Performance / Data Protection Optimization**
- **Storage Vendor Independence**

High Availability

- **Reduced downtime for administrative tasks such as storage growth and reconfiguration**
  - **Dynamic storage expansion**
    - Rescan for new storage online
  - **Dynamically extend any Volume without taking it off-line**
    - Simple/Spanned
    - Striping, Mirroring, RAID 5 & Mirrored Stripes
  - **Subdisk Move**
    - Change the physical location of data without changing any logical characteristics
      - Relieve volume “hot-spots” online
      - Migrate data online

High Availability

- **Dynamic Volume Resilience and Portability**
  - **All disk and fault-tolerance information is distributed across a one megabyte "private region" at the end of every Dynamic Disk**
  - **Dynamic Volumes can be physically relocated to other hosts without losing any configuration or fault-tolerance characteristics:**
    - Windows 2000 Logical Disk Manager
    - VERITAS Volume Manager for Windows
  - **No dependence on the Windows registry**

High Availability

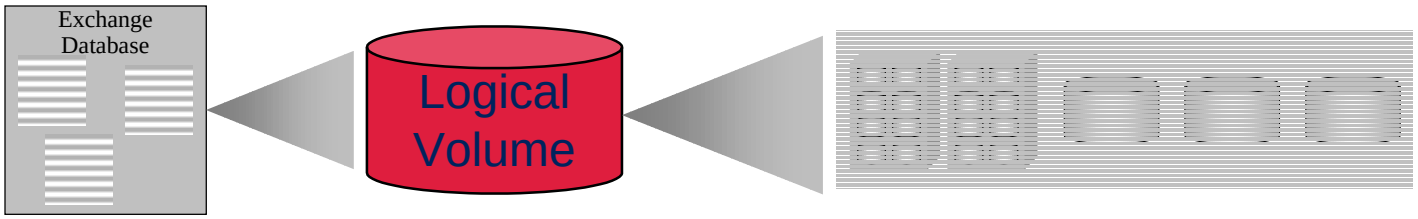
- **Flexibility in volume usage through multiple mirrors**
  - **Supports up to 32 plexes (mirrors)**
    - Remote restore source
    - Third Mirror Break-off
    - Data Mining

High Availability

- **Server-to-Storage path fault tolerance via Dynamic Multi-Pathing (DMP)**
  - **Can load-balance and provide redundant paths to data housed on storage sub-system**
    - Path fault tolerance for clustered environments
    - Path fault tolerance and load-balancing for non-clustered environments
  - **Local or SAN attached**

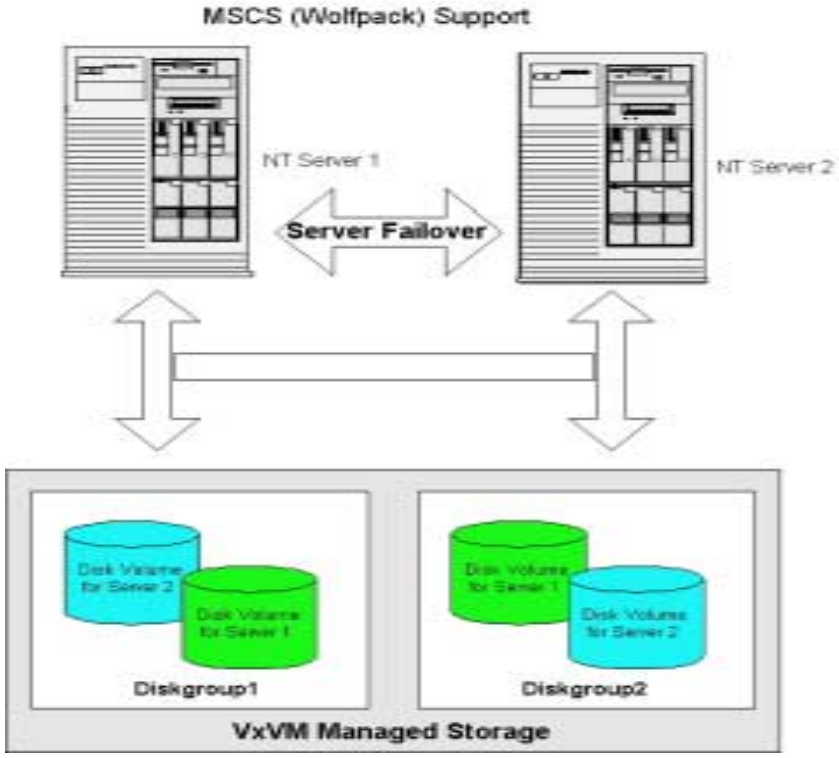
High Availability

- **Large database and file system capability via volumes without physical disk limitations**
  - **Number of Dynamic Disks**
    - No Limit
  - **Number of Dynamic Volumes**
    - No Limit
  - **Number of Subdisks in a Dynamic Volume**
    - Up to 256



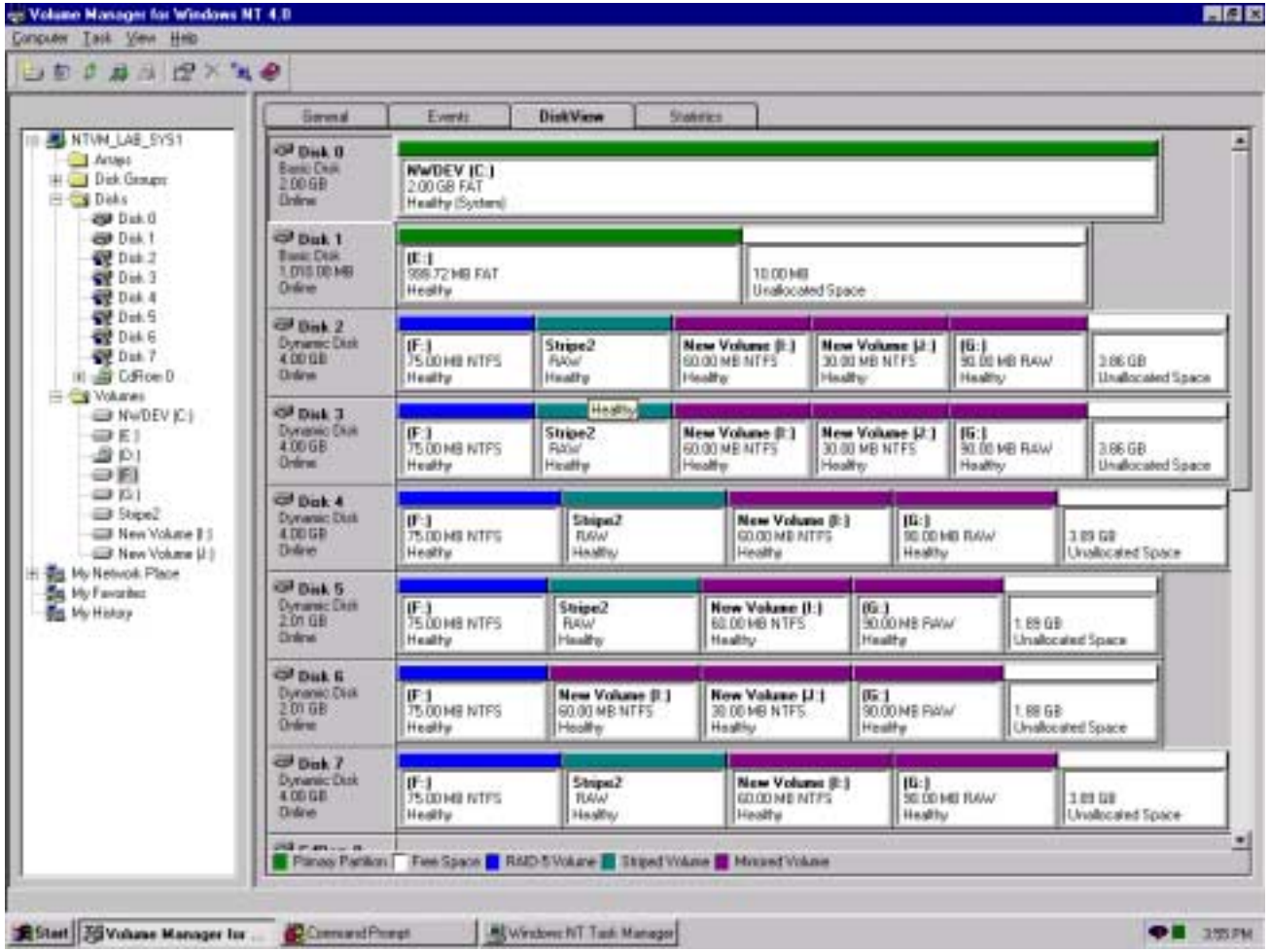
High Availability

- **High Availability via interoperability with VCS (VM-NT) and MSCS (VM-W2K)**
  - **Enables use of Dynamic Disks / Volumes on both Microsoft Cluster Server and VERITAS Cluster Server**



Storage Management

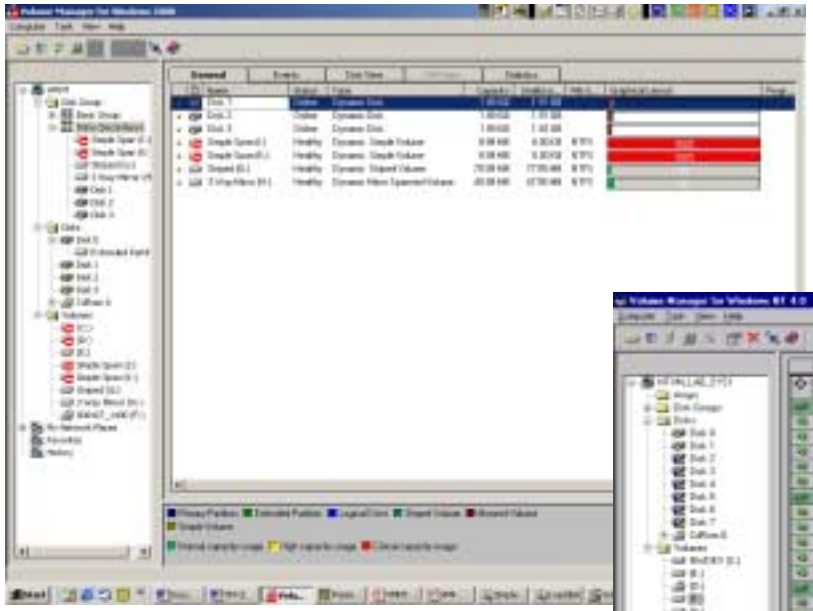
- **Manage domain-wide storage from a single Windows 2000 console**



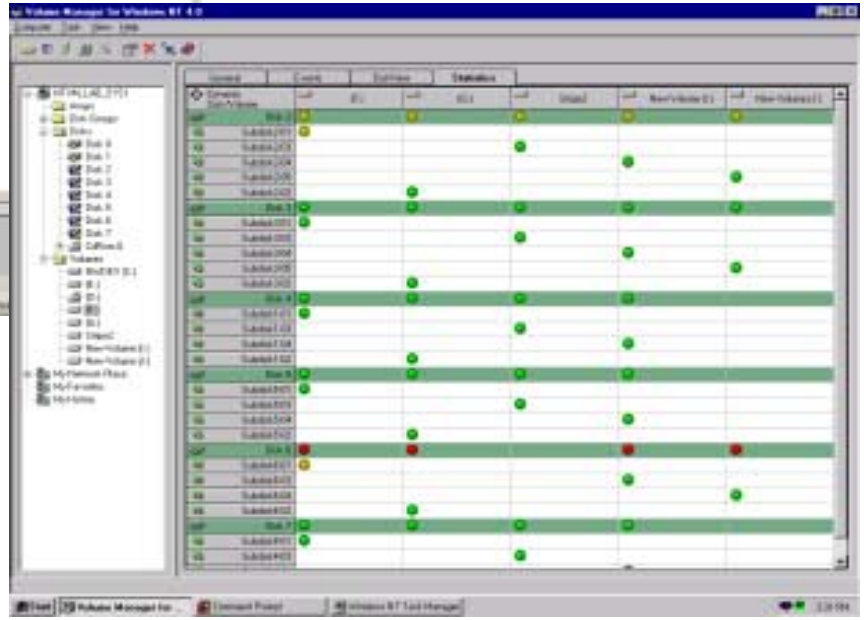
Storage Management

- **Optimize Storage Performance Online**

General View

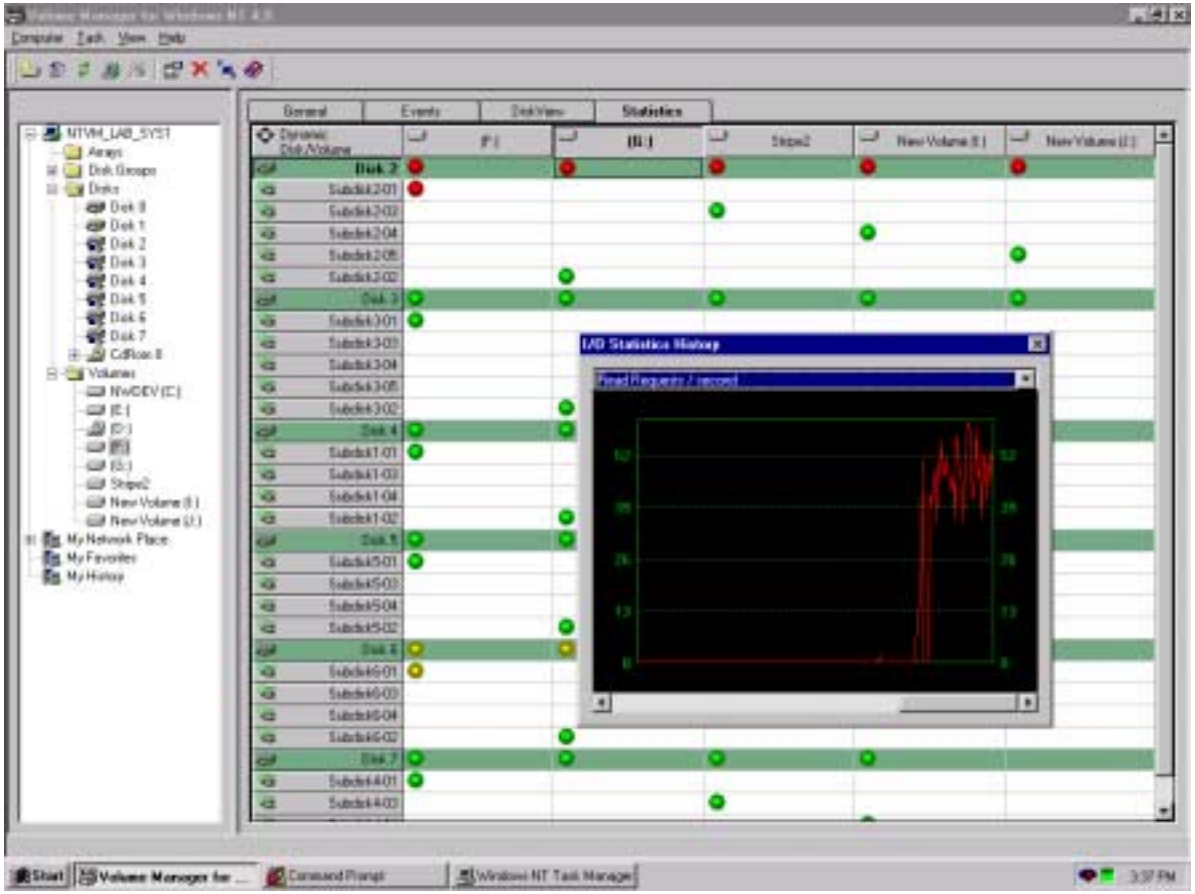


Statistics View



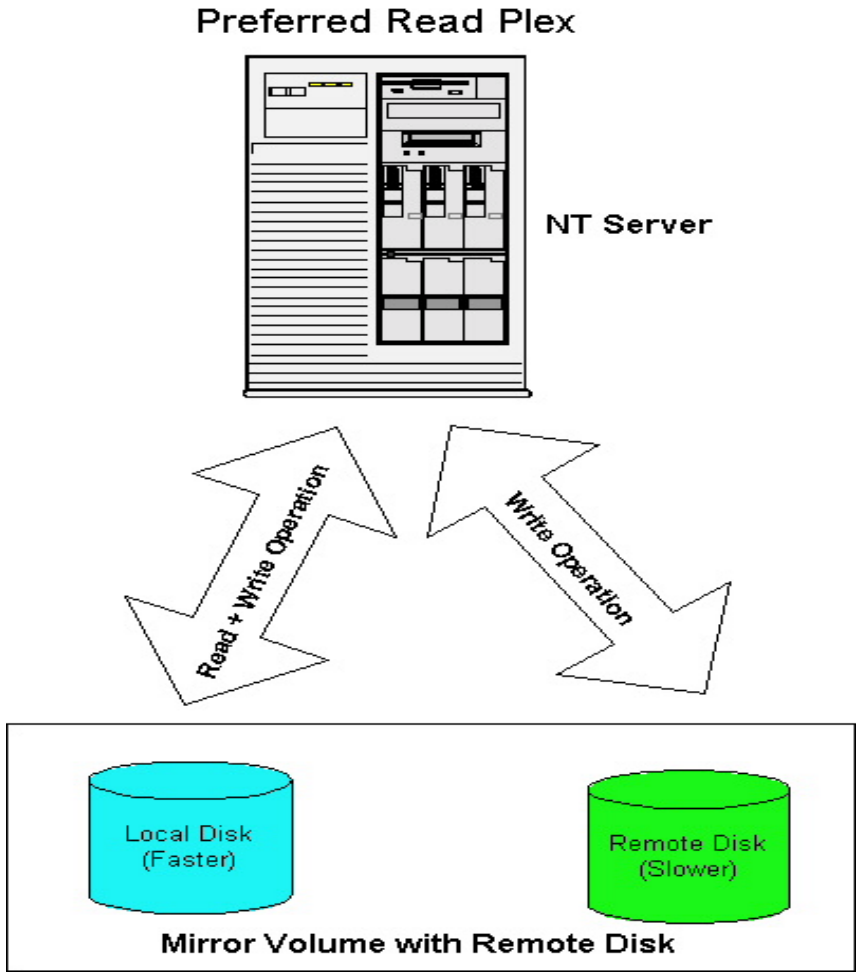
Performance / Data Protection Optimization

- **Online Performance Tuning**
  - **Hot spot detection**
  - **Online subdisk move (partition)**



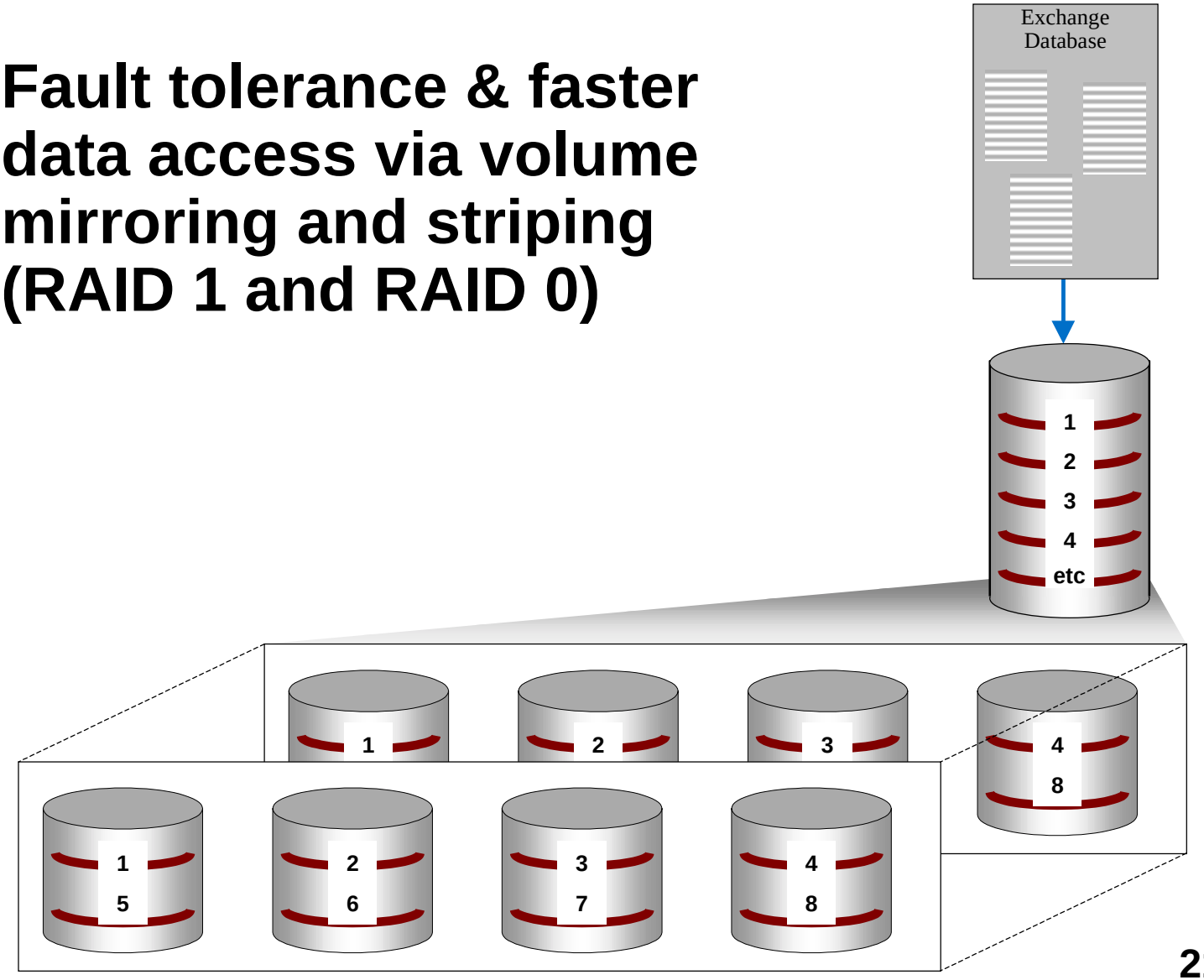
Performance / Data Protection Optimization

- **Preferred Plex**
  - **Designate a mirror plex for all read operations**



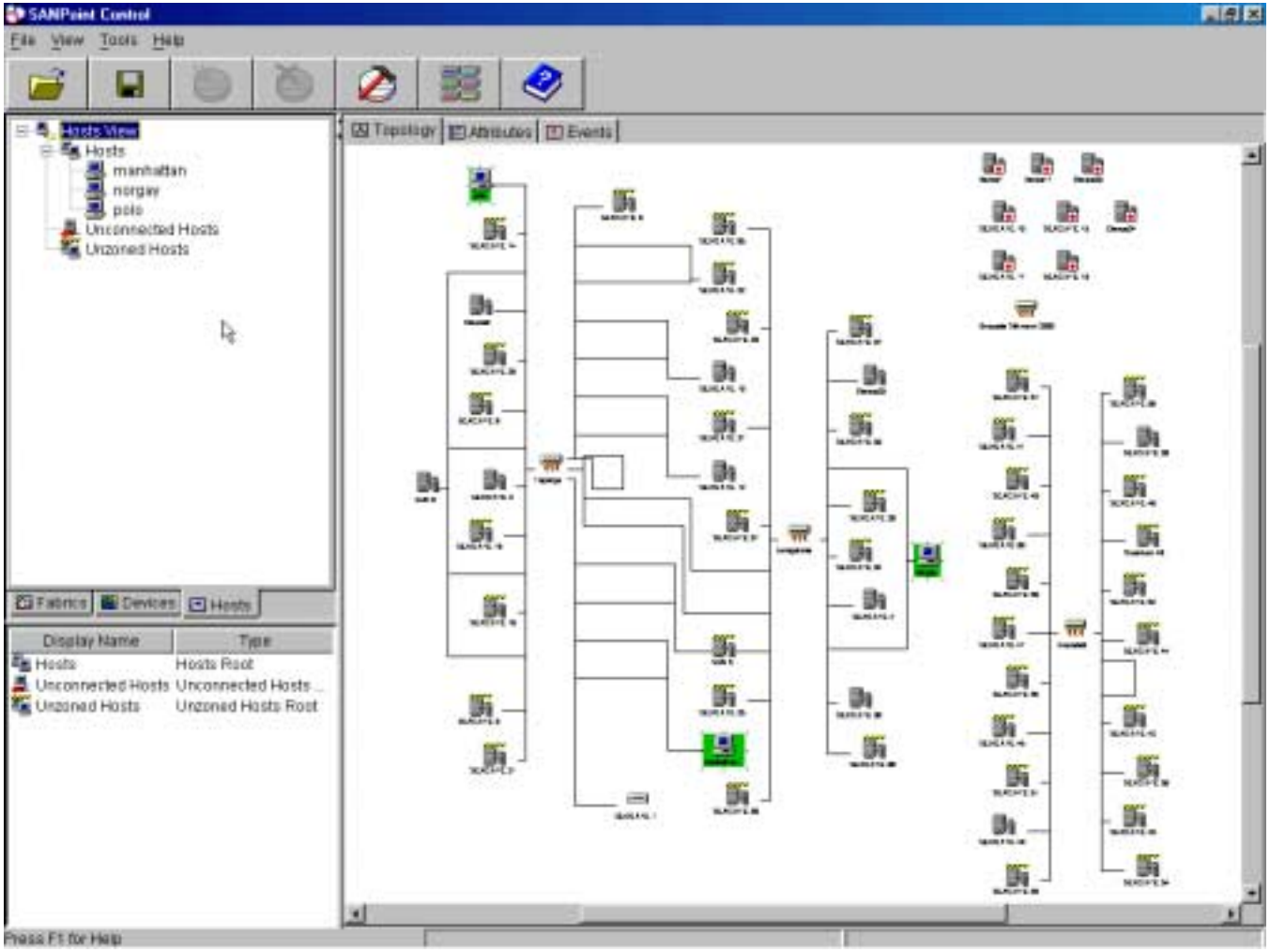
Performance / Data Protection Optimization

- **Fault tolerance & faster data access via volume mirroring and striping (RAID 1 and RAID 0)**



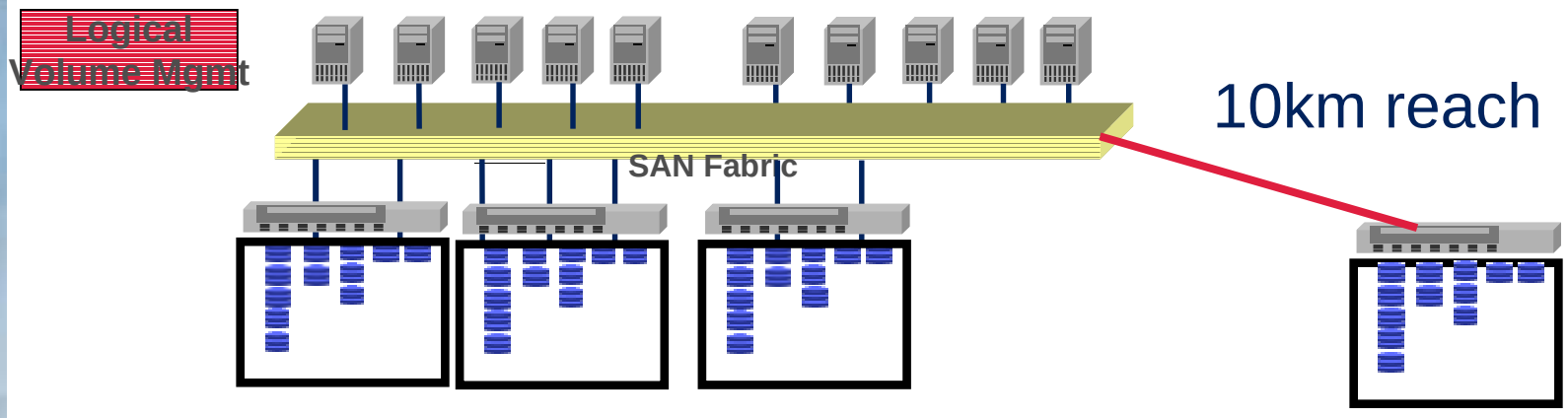
Storage Vendor Independence

- **Integration into SAN environments**



Volume Manager for Windows On-Line SAN Storage Management

- **Key VM capabilities applicable to SANs:**
  - Manage storage from one GUI
  - Dynamic growth of volumes
  - Easy resolution of bottlenecks
  - Consistent naming of devices between servers
  - Remote mirroring for disaster protection

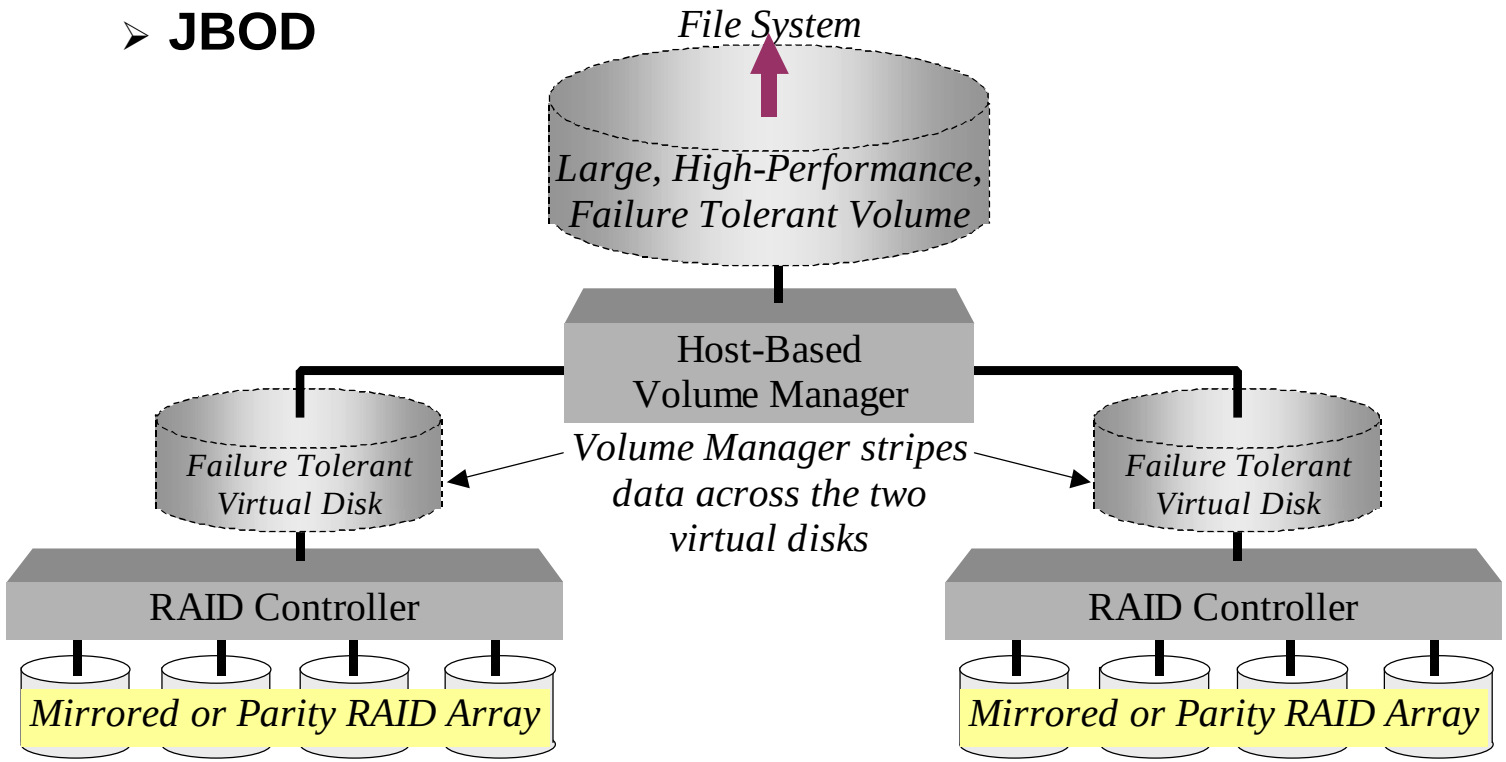


Storage Vendor Independence

- **Improved utilization of storage from multiple vendors via RAID across disparate arrays**
  - **Supports any HBA / RAID controller (or combination of) on the Windows Hardware Compatibility List (HCL)**
  - **Use Volume Manager to migrate online data from one array to another**
  - **Use Dynamic Volumes to aggregate capabilities of any number of arrays**

Storage Vendor Independence

- **Aggregate Volumes**
  - **By aggregating volumes, we can complement any combination of storage subsystems:**
    - **RAID 5**
    - **JBOD**

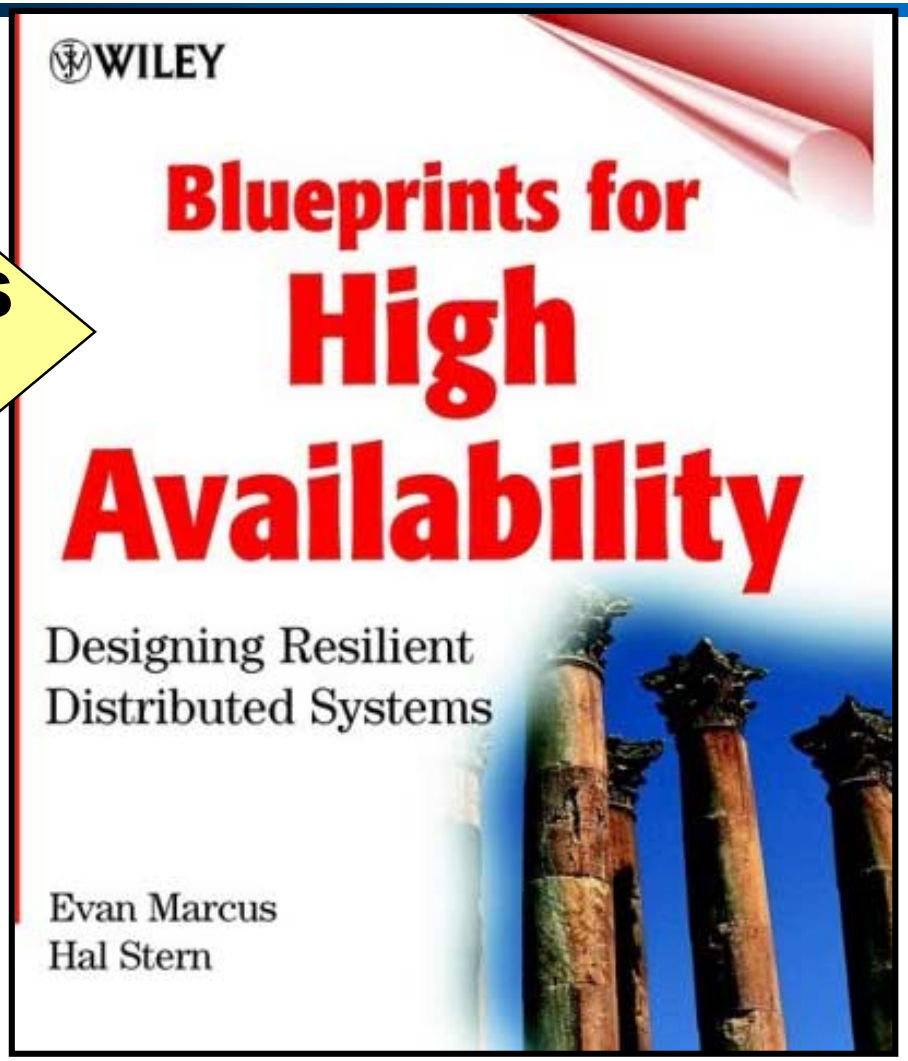


Upgrading VM-WinNT to VM-Win2000

- **Same Volume layout on each greatly eases migration**
  - **Deport the VM-WinNT volumes and then import them to VM-Win2000**
- **NTFS compatibility**
  - **Win2K will see and use NTFS v.4 with no issues except the fact that advanced file system attributes will not be seen**
  - **Upgrade the disks to NTFS v.5 provided the NT4 system that would still need to mount these disks has SP5 or higher**

Recommended Reading:

By Evan Marcus & Hal Stern



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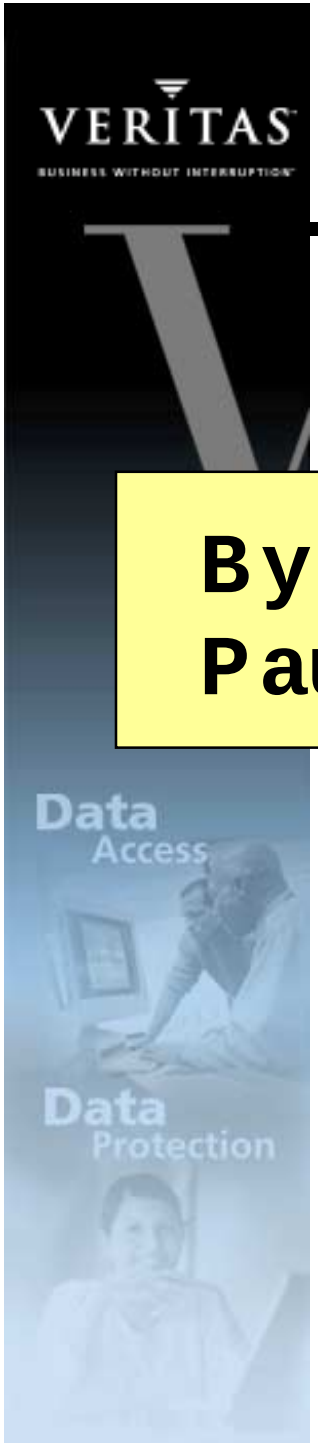
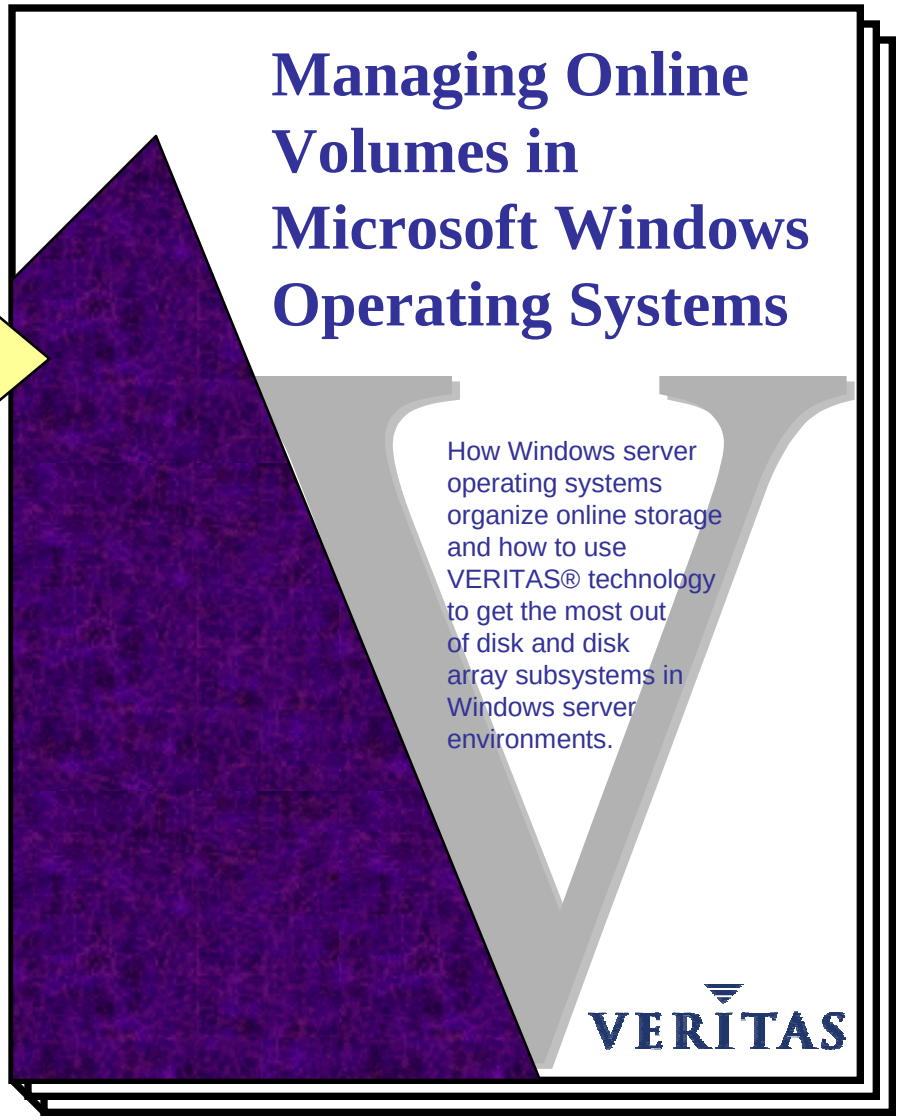
More Recommended Reading



By Paul Massiglia



Sample the Product:

(1) Download Evaluation:

- **http://www.veritas.com/servlet/Customer/GetCustomerInfo/trial_dl.html?PRODCODE=volumemanager2000&SKU=970-000004&PRODNAME=Volume%20Manager%20for%20Windows%202000**

(2) Online demo:

www.veritas.com/us/products/volumemanagerwin/VM_Demo.html