



Innovative Oracle Backup and Restore Taken to the Cloud

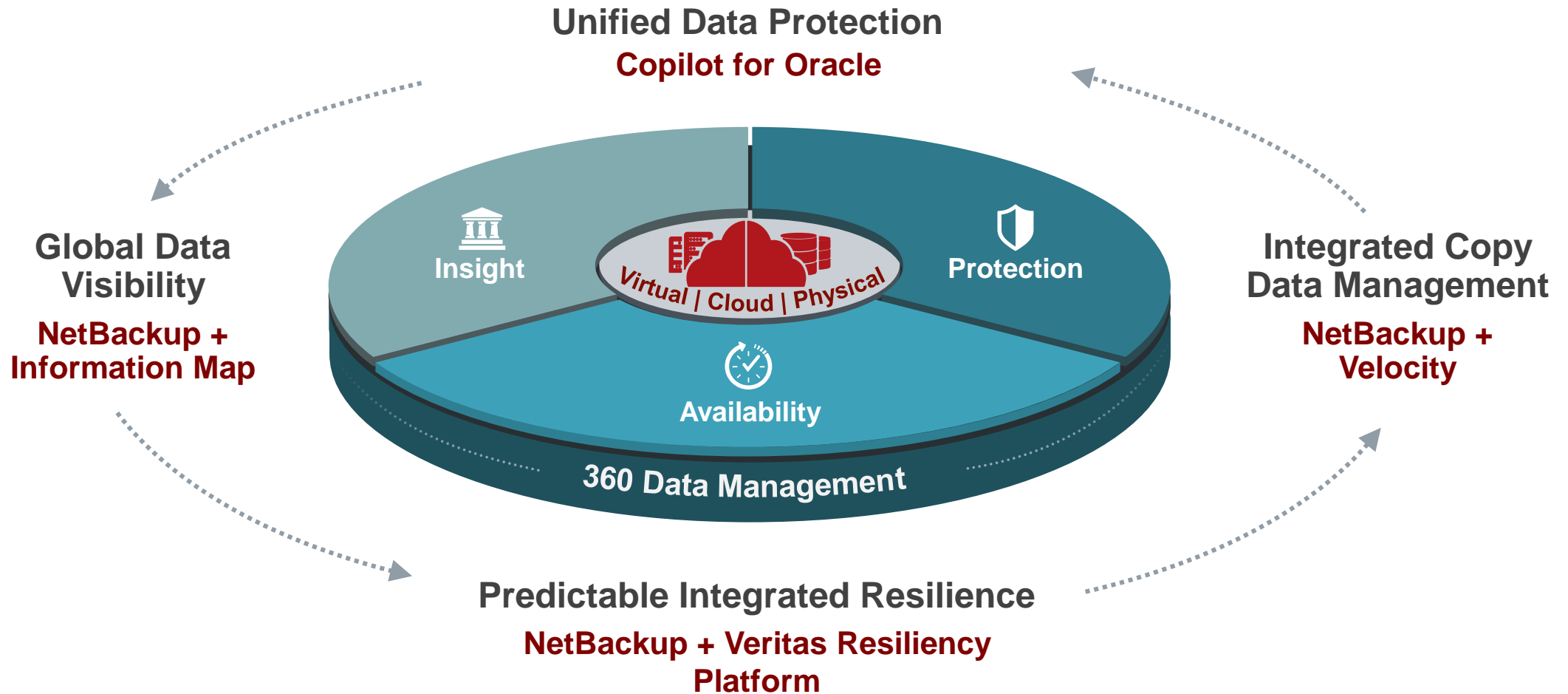
Dan Fischer

Oracle Data Protection

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Delivering Greater Value

Unified Data Protection



Copilot for Oracle – Platform Introduction

- Converged Data Protection Platform
 - Purpose-built
 - Integrated Storage - tuned and benchmarked performance
 - Hardened with Intrusion Prevention System (better than selinux)
- Optimized for Oracle (via Copilot)
- Deployment:
 - Bolts onto Existing NetBackup Enterprise Data Protection
 - Run Standalone



Oracle Protection Methods Overview



Three Popular Methods for Protecting Oracle

- Backup client installed on Oracle database server
 - Deduplication client installed on Oracle database server
- Traditional RMAN Backup and Sweep
- Integrated RMAN Backup and Sweep

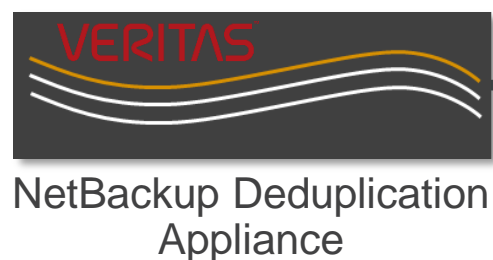
Popular Methods for Protecting Oracle

A Closer Look

Popular Methods for Protecting Oracle

1) Oracle Agent Installed on Database Server

Oracle Agent Installed on Database Server



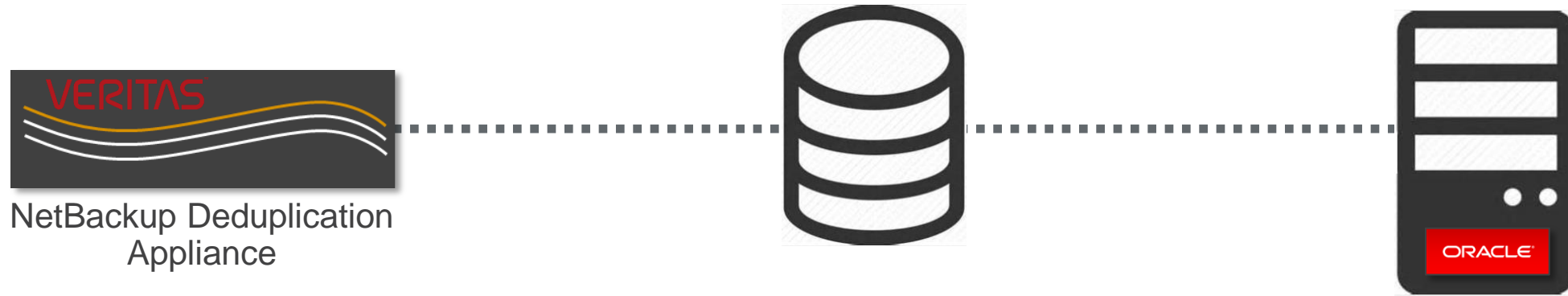
Oracle database agent (SBT) installed on server

- Oracle database agent installed on Oracle server
 - Considered a “streaming” backup
 - RMAN is used but data not stored in RMAN format
 - Full and incremental backups
- Database server-based deduplication optionally supported
 - Oracle agent can be configured to deduplicate data before transfer to backup destination

Popular Methods for Protecting Oracle

2) Traditional Backup and Sweep

Traditional Backup and Sweep



Traditional Backup and Sweep



- Need to acquire additional storage for RMAN Backup

Traditional Backup and Sweep



- Need to acquire additional storage for RMAN Backup
- DBA manually writes RMAN backup file to separate disk location

Traditional Backup and Sweep

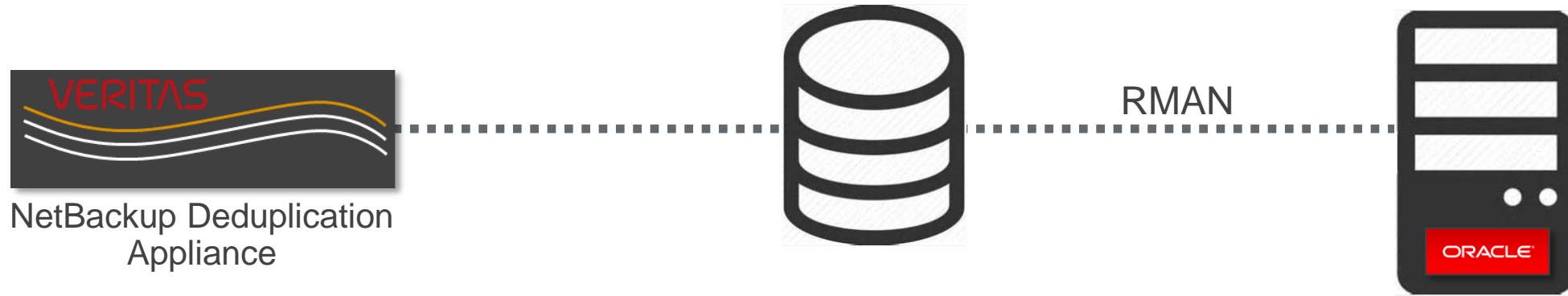


- Need to acquire additional storage for RMAN Backup
- DBA manually writes RMAN backup file to separate disk location
- Backup admin sweeps data to backup destination
- Two separate administrators perform this uncoordinated process
 - Increases chance of missing backups and misplacing and losing critical backup images

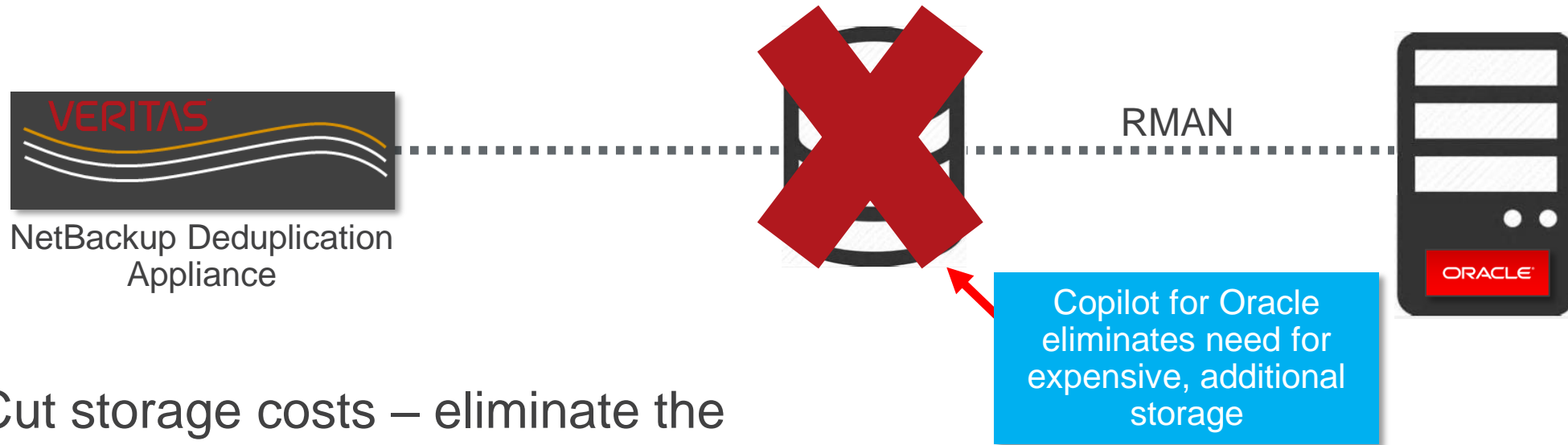
Popular Methods for Protecting Oracle

3) Integrated Backup to Disk and Sweep: Copilot for Oracle

Integrated Backup to Disk and Sweep: Copilot for Oracle

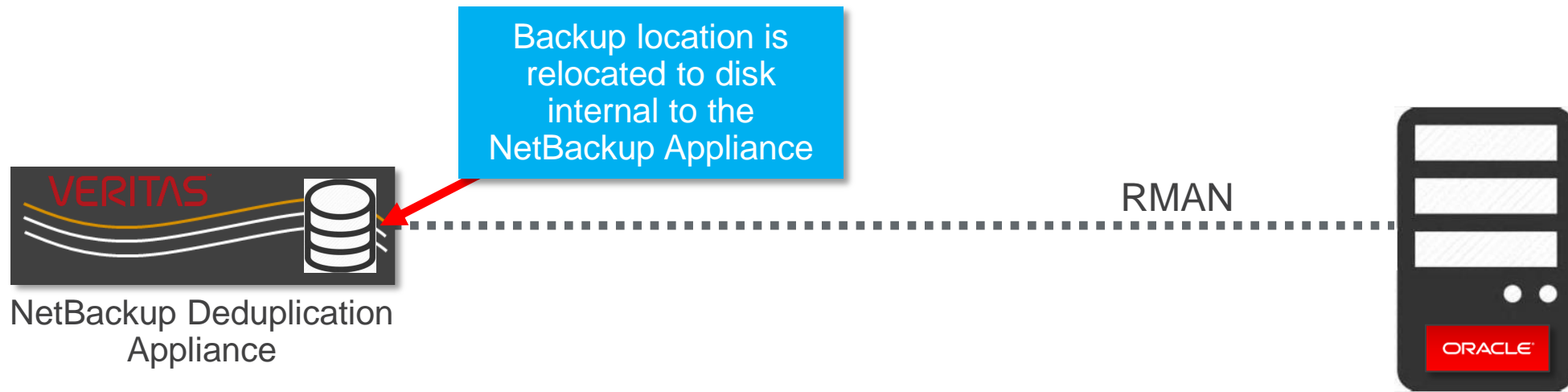


Integrated Backup to Disk and Sweep: Copilot for Oracle



- Cut storage costs – eliminate the expensive disk storage location

Integrated Backup to Disk and Sweep: Copilot for Oracle



- Cut storage costs – eliminate the expensive disk storage location
- Backup location utilizes NetBackup appliance disk
- Entire process is automatically coordinated and scheduled
 - Never miss or lose a critical database backup

Copilot for Oracle vs. Backup and Sweep Comparison

Copilot for Oracle Makes Backup and Sweep Better

Feature	Traditional Backup and Sweep	Copilot for Oracle
Uses native RMAN tools	YES	YES
Eliminates need for expensive 3 rd party disk	NO	YES
Automatically manage space in backup location	NO	YES
Never miss a backup - eliminates disconnect between Backup admin and Oracle DBA	NO	YES
Both Backup admin and Oracle DBA have visibility into all backup activity and history	NO	YES
Automatically generate RMAN script	NO	YES
DBA can check backup status using familiar RMAN tools	NO	YES
DBA can perform “ad-hoc” backup	YES	YES
Eliminate full backups - supports “incremental forever” using Oracle’s Incrementally Updated Backups	NO	YES
Instantly recover Oracle database	NO	YES

Copilot for Oracle Advanced Features

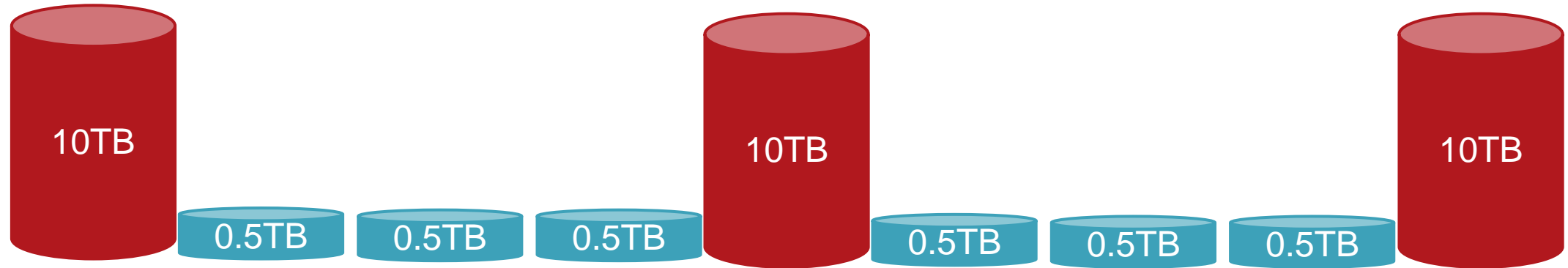
Incremental Forever + Point-In-Time Snapshots

Copilot for Oracle Incremental Merge

- Incremental Merge technology was developed by Oracle
 - A.K.A. RMAN Incrementally Updated Backup
- A logical full backup without the impact of a full backup
 - Significantly reduces backup impact on the Oracle server
 - Reduces network overhead
- Veritas engineers developed a method of combining Oracle's Incremental Merge technology with the Copilot for Oracle feature
- The result is a unique “incremental forever” Oracle backup integrated with the Copilot for Oracle “backup to disk” method
- Implementation is simple
 - Entire process is handled by NetBackup Copilot for Oracle and completely automatic



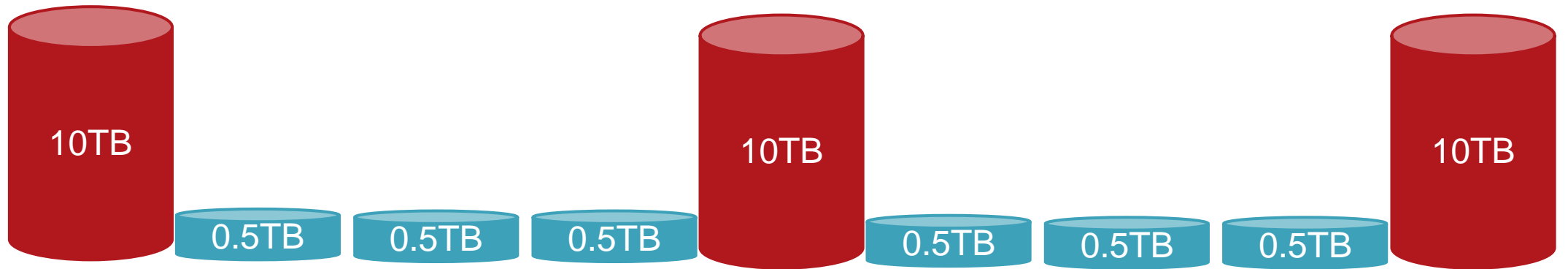
Traditional Full vs. Incremental Merge



Traditional backup and sweep process requires periodic and resource intensive full Oracle backups

Significantly increases load on Oracle server

Traditional Recurring Full vs. Incremental Merge



Copilot for Oracle Incremental Merge eliminates need for subsequent full backups

Reduces load on Oracle server with no loss of any restore functionality

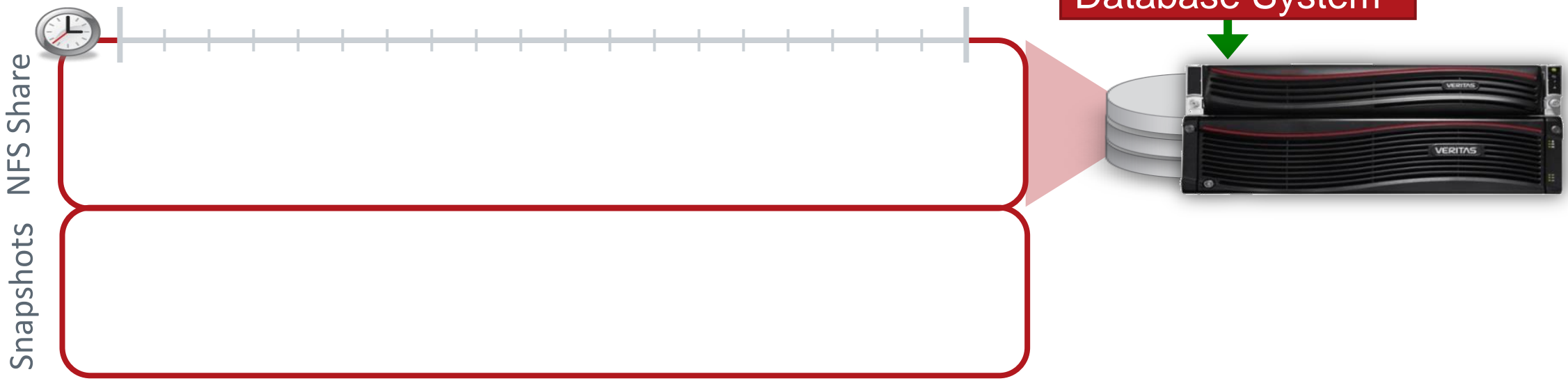
Every Incremental is a FULL Recovery Point



Automated “Incremental Forever”

Full Recovery Points - Illustrated

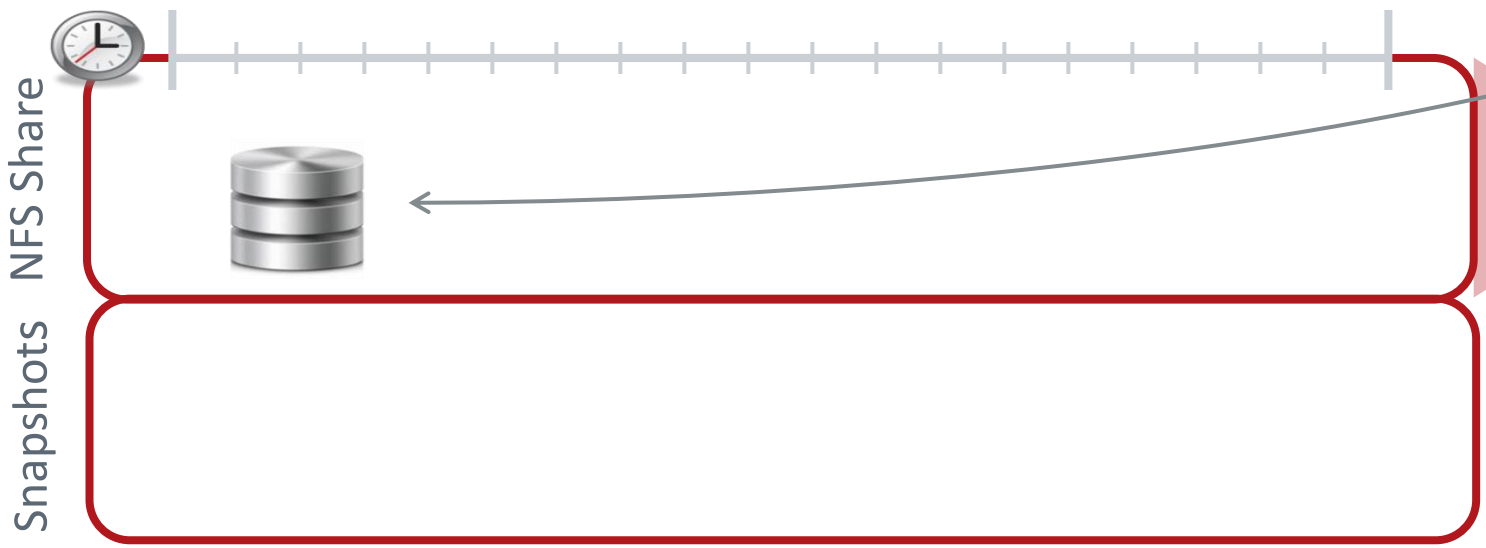
Automated “Incremental Forever” Full Recovery Points - Illustrated



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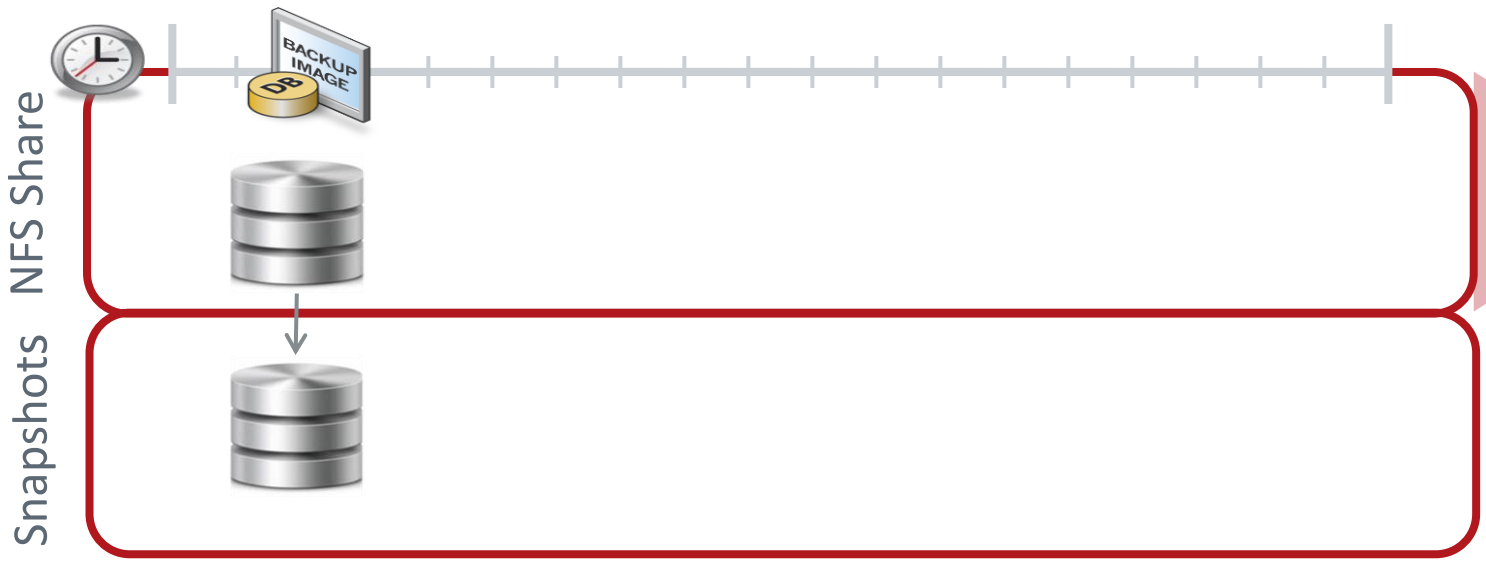
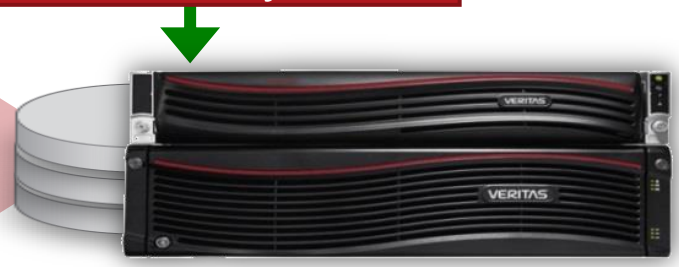
Database System



Automated “Incremental Forever” Full Recovery Points - Illustrated

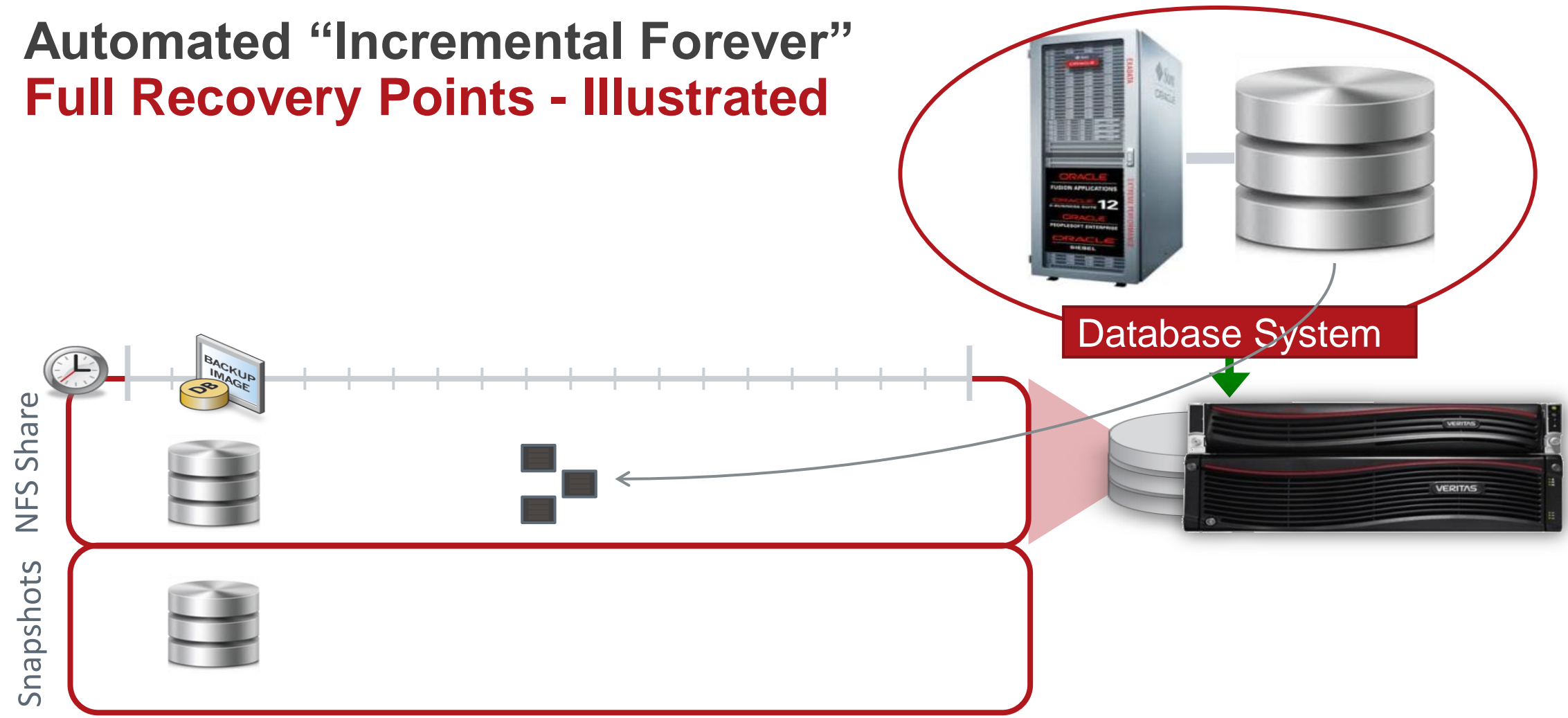


Database System

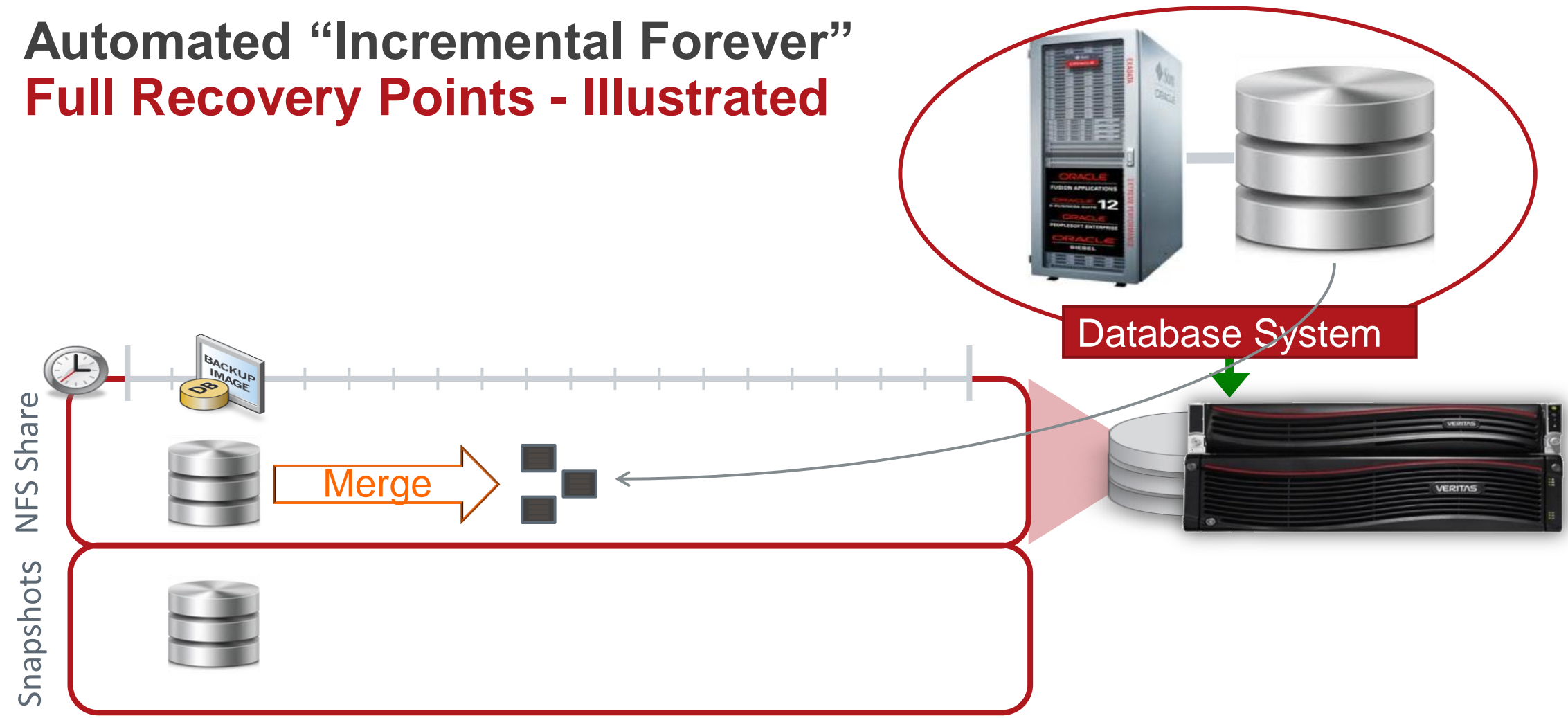


NFS Share
Snapshots

Automated “Incremental Forever” Full Recovery Points - Illustrated



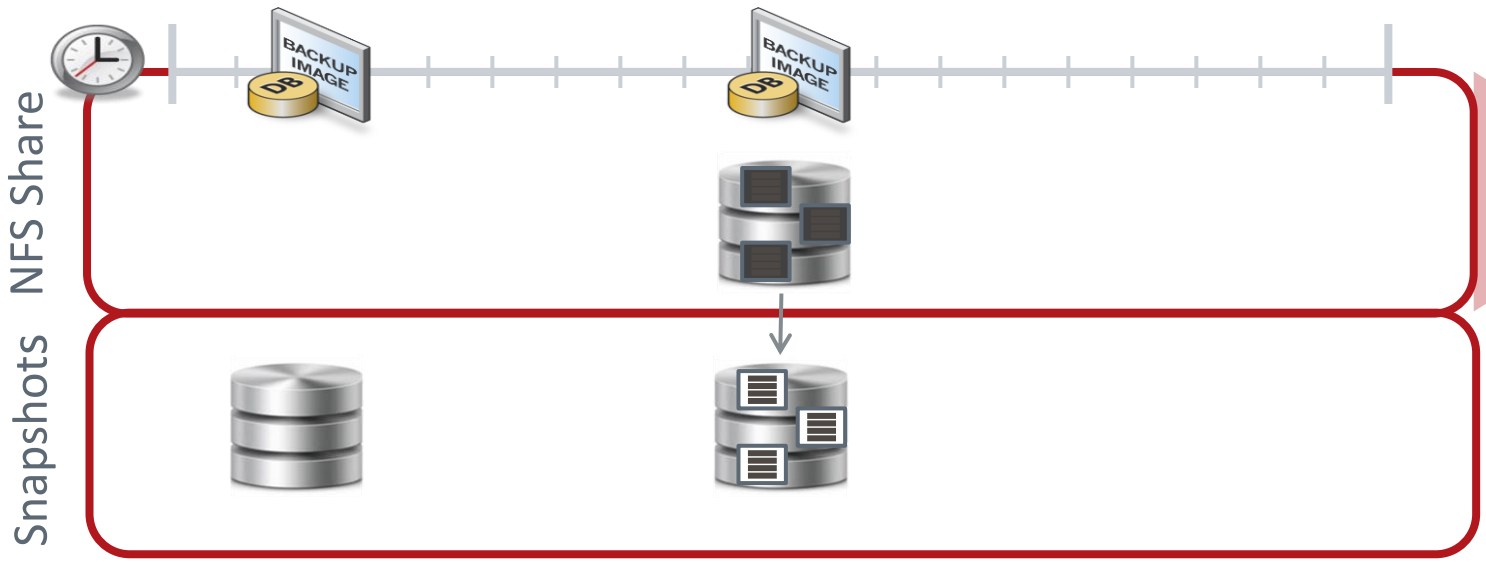
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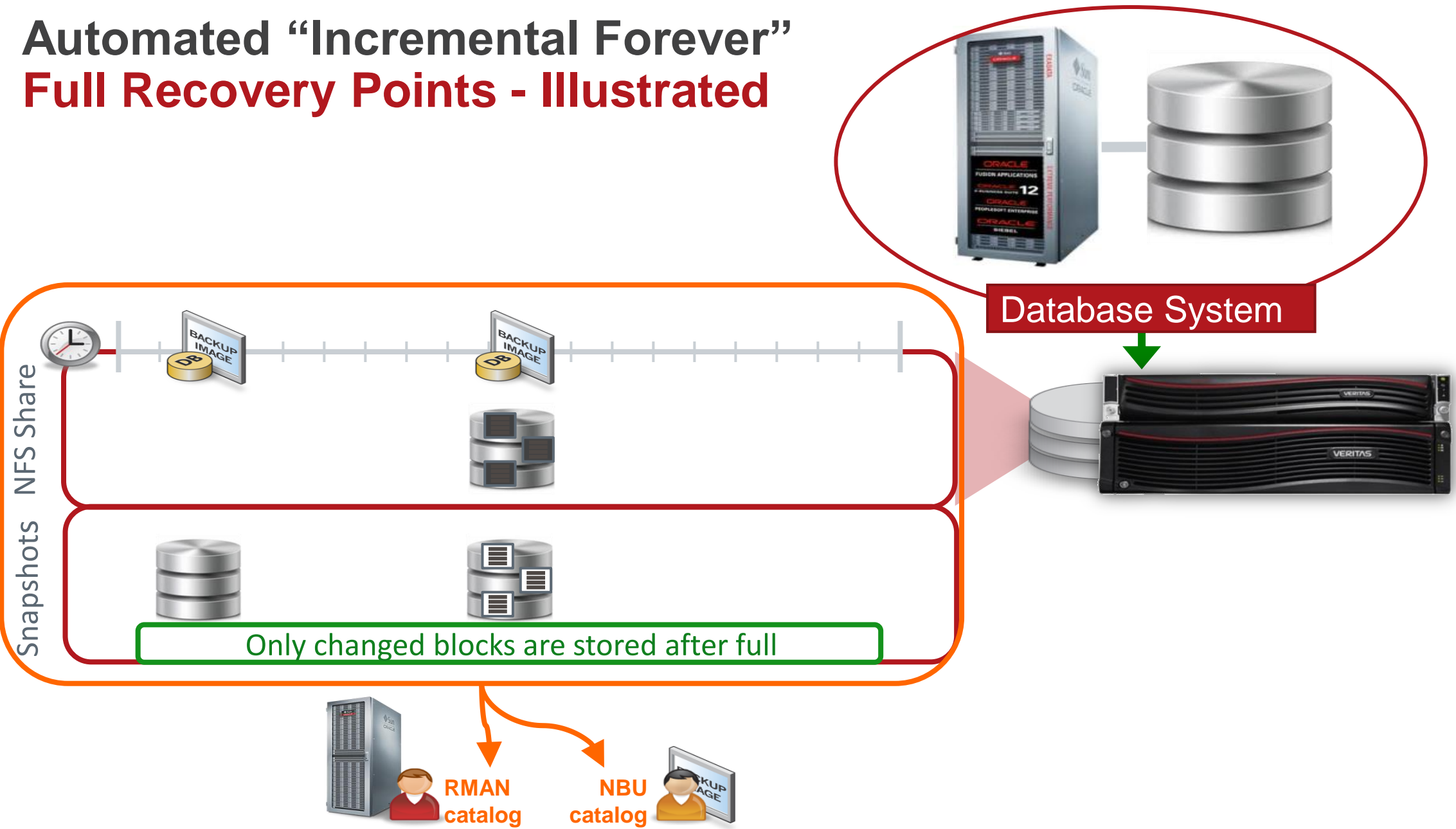
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Automated “Incremental Forever” Full Recovery Points - Illustrated



Copilot for Oracle Advanced Features

Copilot for Oracle Instant Recovery

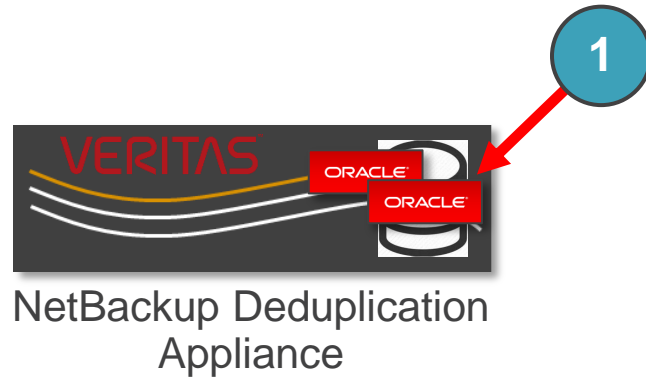
Copilot for Oracle Instant Recovery Process



NetBackup Deduplication
Appliance

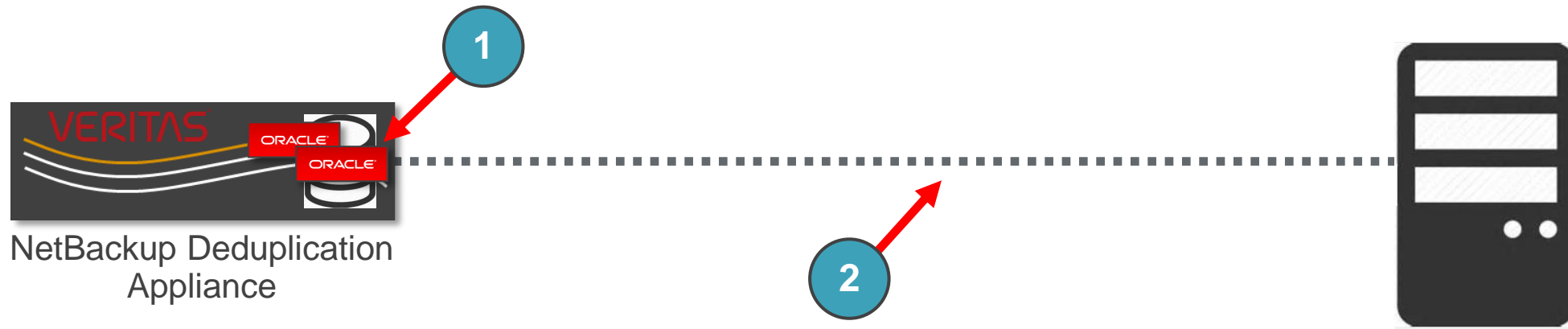


Copilot for Oracle Instant Recovery Process



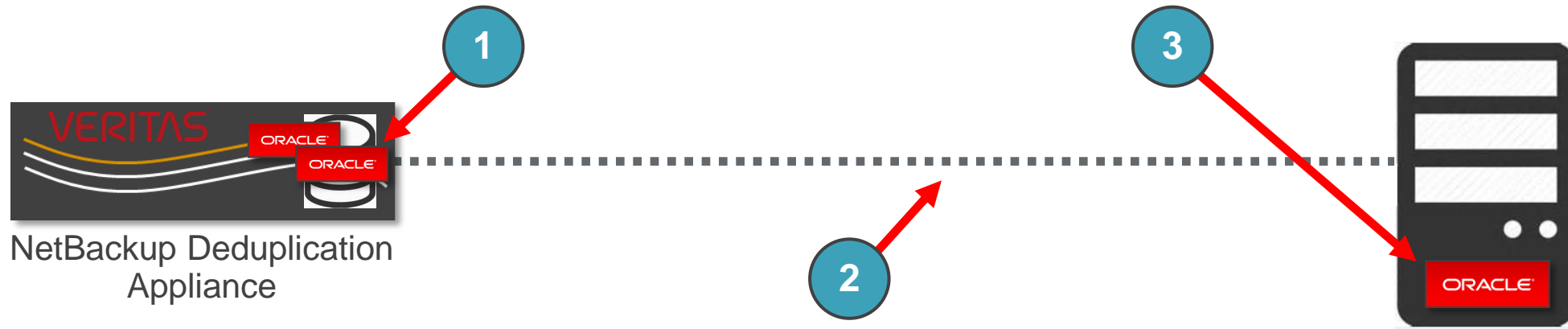
1. Oracle “backup to disk” image is cloned
 - No changes to original backup image ever occur
 - Any RMAN full/incr backup images located on backup disk can be used

Copilot for Oracle Instant Recovery Process



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2. Cloned image is exported to Oracle server over NFS
 - Oracle redo log group is cleared

Copilot for Oracle Instant Recovery Process



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 - No changes to original backup image ever occur
 - Any RMAN full/incr backup images located on backup disk can be used
2. Cloned image is exported to Oracle server over NFS
 - Oracle redo log group is cleared
3. Oracle database is mounted, open and fully accessible

Copilot for Oracle Instant Recovery - Backup To Disk and Sweep

- Instantly recover Oracle database
 - Full backup
 - Incremental backup
 - Incremental merge backup
- Recover entire 10TB Oracle database in ***minutes!***

Oracle Redo Log Group Cleared?	Database provisioned, mounted and open
No	31min 37sec
Yes	4min 46 sec

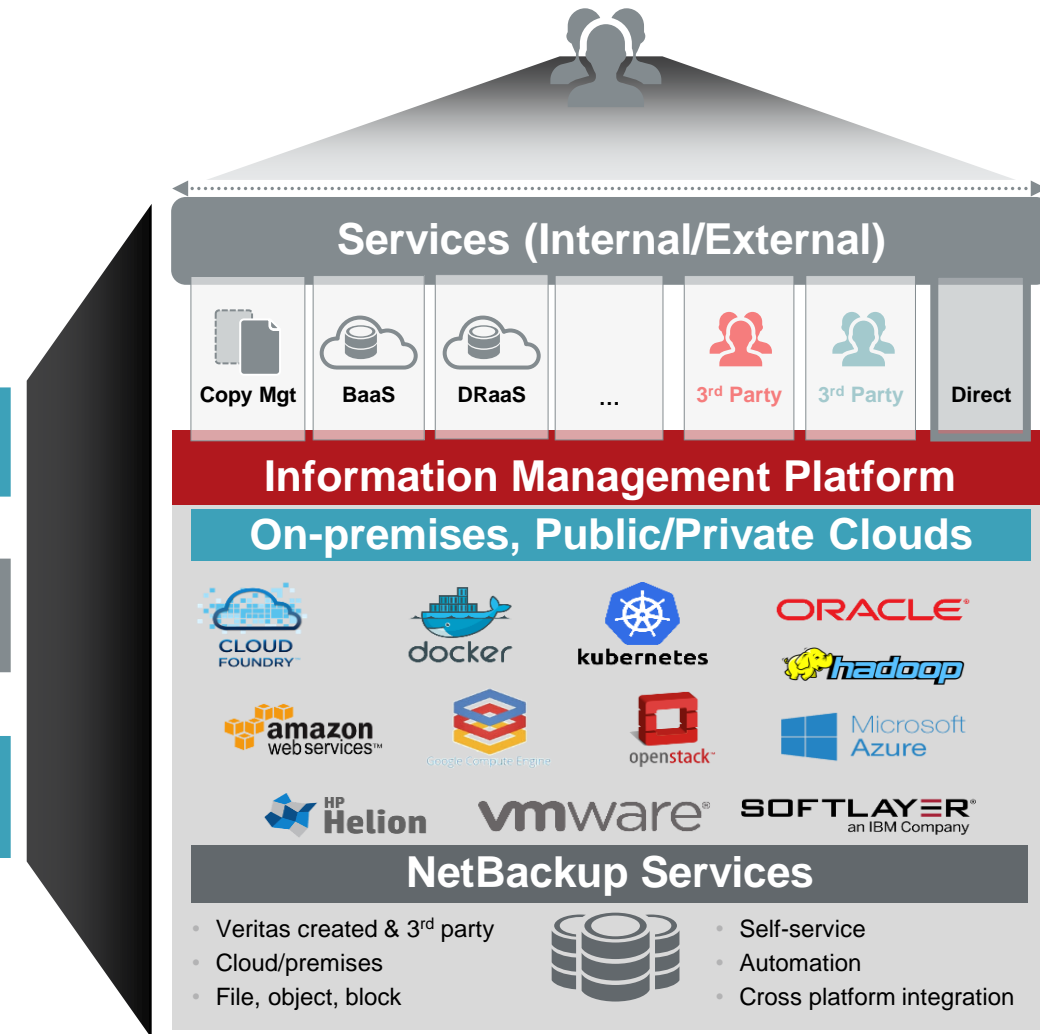
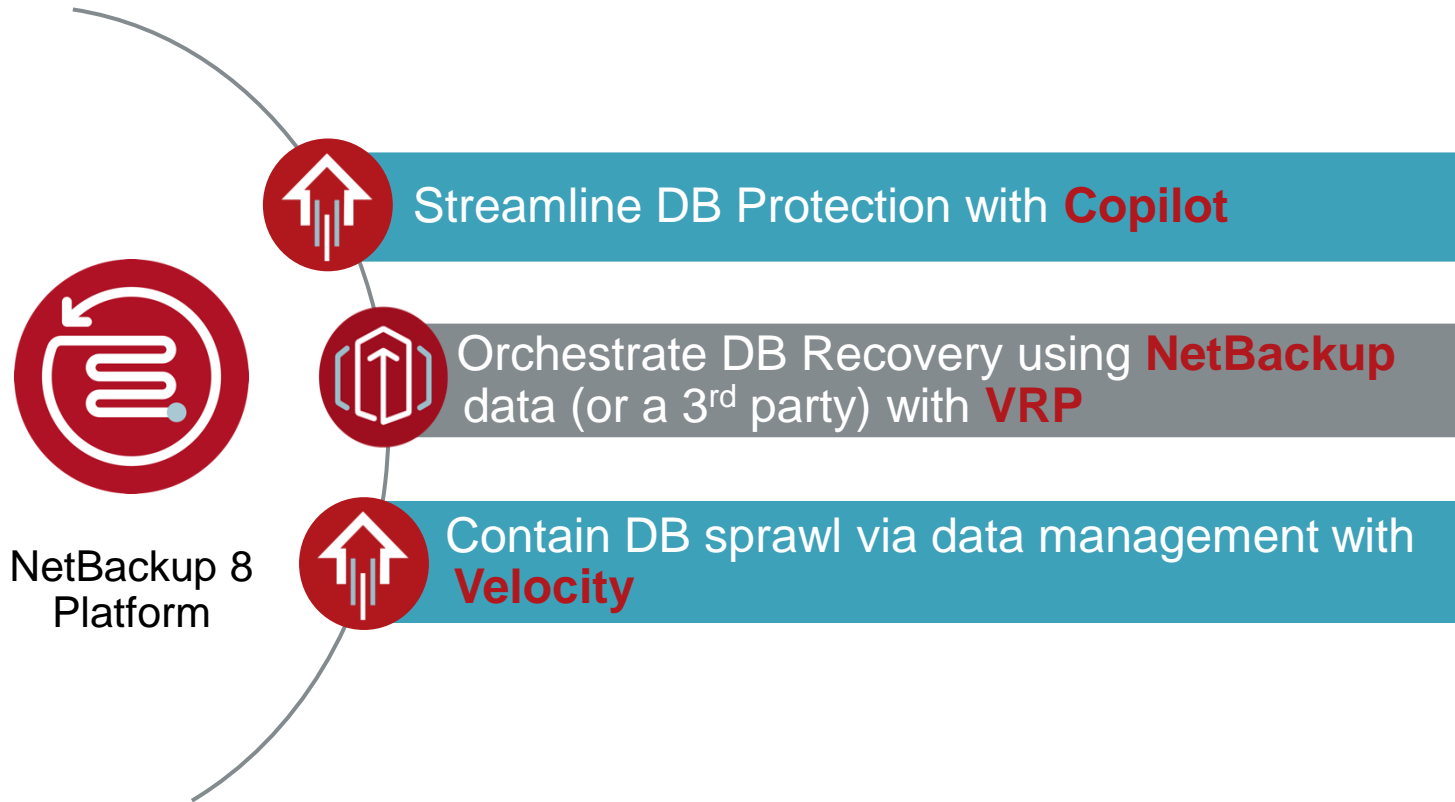
Veritas & Oracle In/To The Cloud

Cloud Investments

Supporting Customers for the Future ... And Beyond



Singular Information Platform
Driven through Integration





Thank you!

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