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Agenda

- Key technology trends & challenges

- HPE Shadowbase solutions

- New & future features

- Summary

Key technology trends & challenges

Key technology trends

- **Digital resilience**
  - Protection, detection, containment, recovery and repair capabilities against information and communication technology (ICT) related incidents
 - Government regulations underway
- **Ransomware protection — let us help you get here**
  - Global business concern
  - New approaches (e.g., "immutable" backups and "air-gapped" systems)
  - **Value of TMF-audited applications and transaction protection**

- **"I don't expect that there will be any customers left with us when this is over."**

        - CloudNordic Exec

Source: PCMag.com/News/Ransomware-Wipes-Out-Data-Access-for-Majority-of-Cloud-Providers-Customers
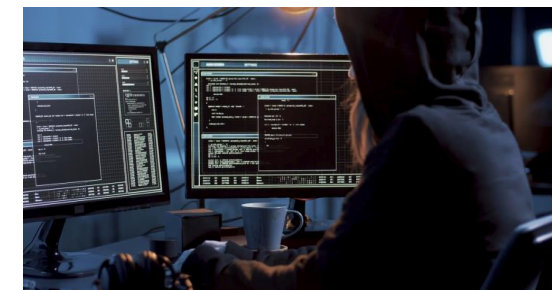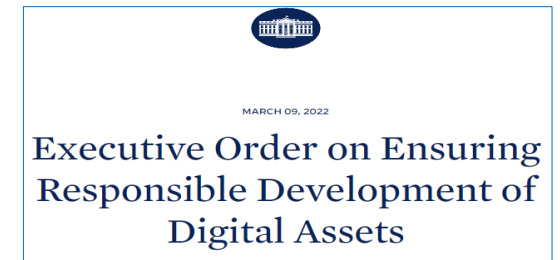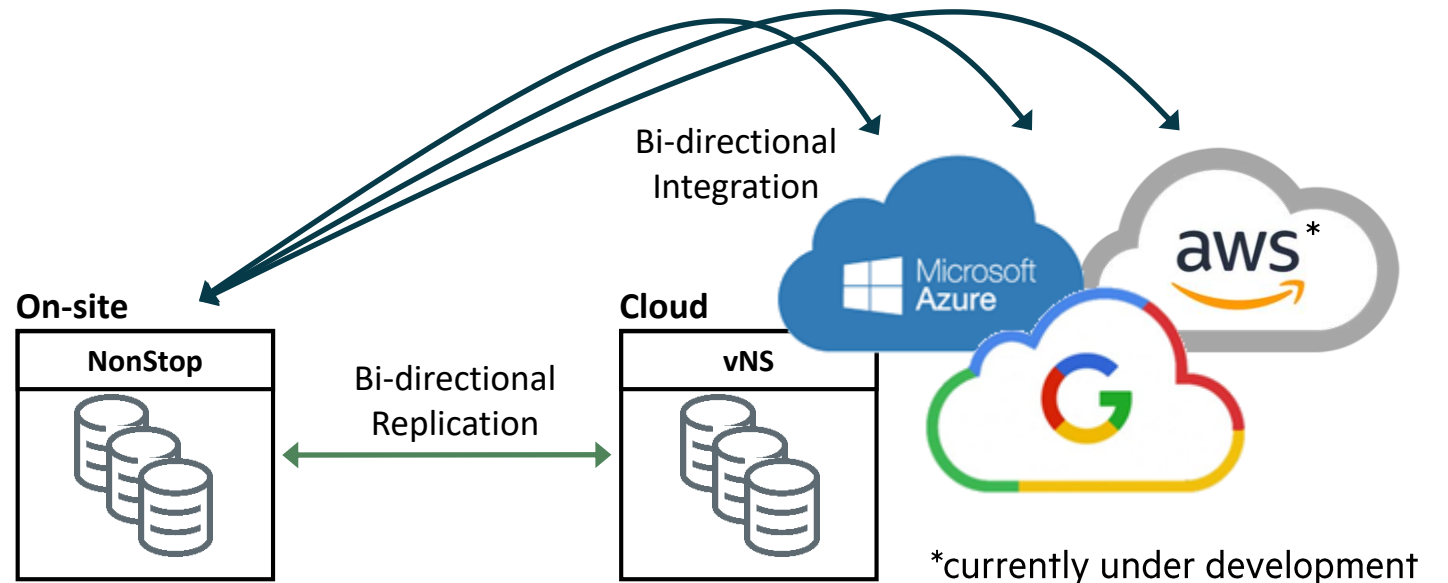
Key technology trends

- **HPE GreenLake**
  - HPE Shadowbase fully supports HPE GreenLake deployments

- **Virtualization**
  - HPE Shadowbase fully supports HPE NonStop virtual environments including Google Cloud Platform, Azure Skytap, and Private Cloud instances

- **Cloud integration & data analytics**
  - HPE Shadowbase provides high-volume, performant data streaming for HPE NonStop cloud integration and online analytical processing (OLAP)

Bi-directional Integration

On-site

NonStop

Bi-directional Replication

Cloud

vNS

*currently under development

# Common IT challenges that customers ask our help with

- **Ensuring continuous application availability**
  - Avoiding costly downtime
  - Recovering rapidly after disasters

- **Migrating online applications**
  - Eliminating migration risk
  - Adopting new IT infrastructure and migrating datacenters
  - Upgrading HPE NonStops via *platform refreshes*

- **Validating data accuracy**
  - Proving data consistency across the enterprise
  - Meeting regulatory and audit compliance
  - Knowing your transactions

- **Eliminating data & application silos**
  - Streaming data across the enterprise
  - Maximizing data and its value
  - Enabling real-time business intelligence

- **Modernizing**
  - Transforming Enscribe files into SQL databases
  - Upgrading from Attunity, GoldenGate, RDF, and other "mature" solutions

HPE Shadowbase solutions

HPE Shadowbase Data Resilience

Replication

Business
Continuity

Integration

Validation

Data
Streaming
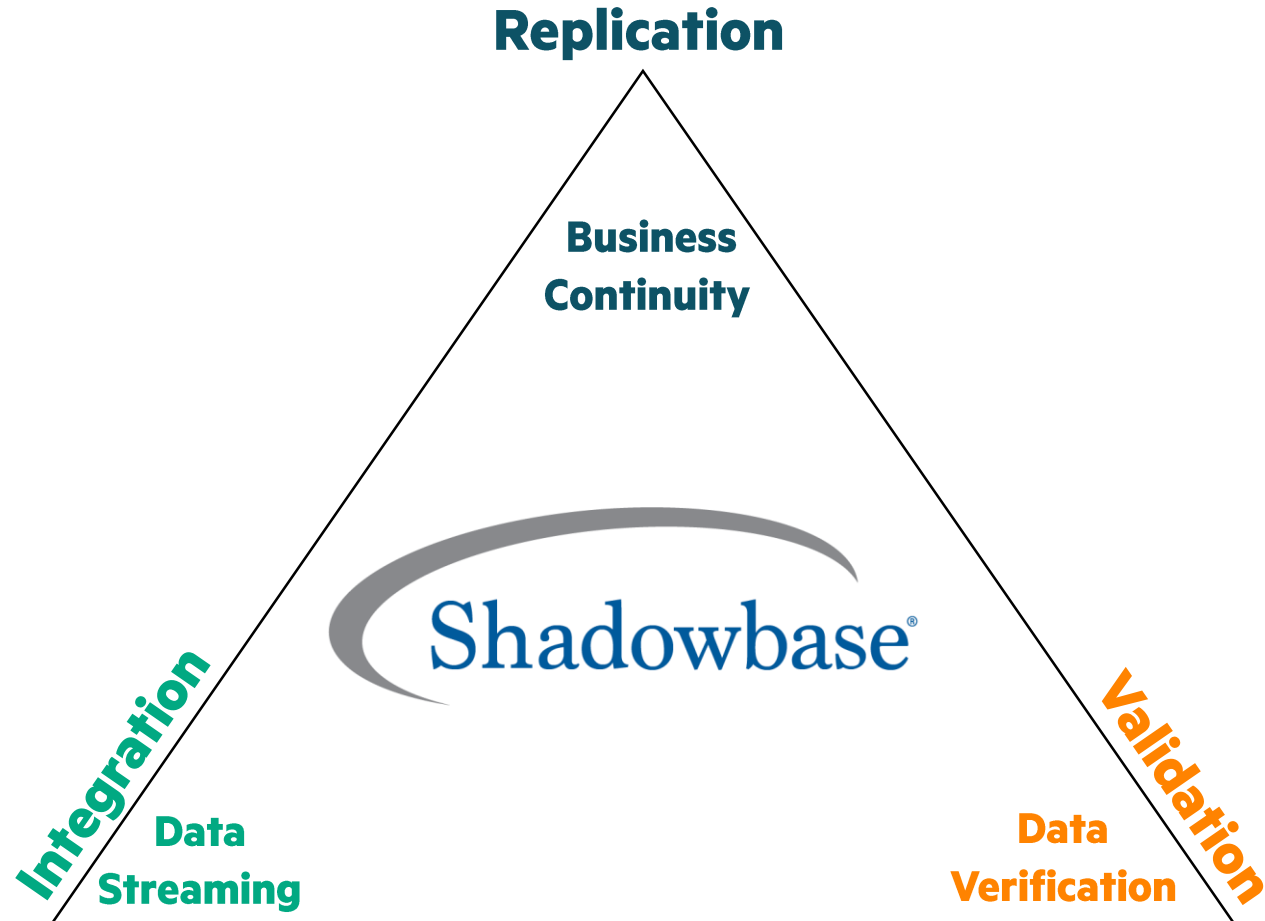
Data
Verification

HPE Shadowbase
Business Continuity solutions

Digital Resilience

- Extreme application availability: achieving century uptimes
- Extreme data resilience with zero data loss and rapid recovery

Use Case

ZDM

Zero Downtime Migration for California Credit Union

ShadowbaseSoftware.com/Publications/
Use-Cases/ZDM-for-Credit-Union/

Capabilities

- Eliminate unplanned downtime
  - **Active / Passive** Disaster Recovery (DR)
  - **Active / Almost-active** "Sizzling-Hot-Takeover" (SZT)
  - **Active / Active** Continuous Availability (Hot-Hot)
- Eliminate planned downtime
  - Use Zero Downtime Migration (ZDM) for upgrades, migrations, and platform refreshes
  - Provide **continuous application availability** and **eliminate business risk** while the migration occurs
- Eliminate data loss
  - **Shadowbase Zero Data Loss** (ZDL, EAP)
  - Synchronous replication technology

HPE Shadowbase
Data Validation: Compare & Repair

Source & target data validation

- Find and resolve data discrepancies
- Helps meet regulatory requirements
- Proves data consistency to key stakeholders

Use Case

C **ZDM**

Massive Datacenter Migration for Money Transfer Firm

ShadowbaseSoftware.com/Publications/Use-Cases/
Massive-Datacenter-Migration-for-Money-Transfer-Firm/

Capabilities

- A Business Continuity "must have"
- Runs online and on-platform
- Supports Enscribe, SQL/MP, and SQL/MX
- Repair function
- Works with all data replication engines

Key benefits

- Ensures backup is ready for an immediate takeover
- Verifies data for migrations, platform refreshes, etc.
- Creates timeline of data points when the DBs matched

Continuous availability for merchant services

HPE Shadowbase for Business Continuity – Active / Active "Partitioned"

Daniel Eklund
Senior Consultant

Situation

- Large payment processor
- HPE NonStop systems

Problem

- 24x7 application usage
- Continuous application availability
- Fault tolerance
- Rapid recovery

Continuous availability for merchant services

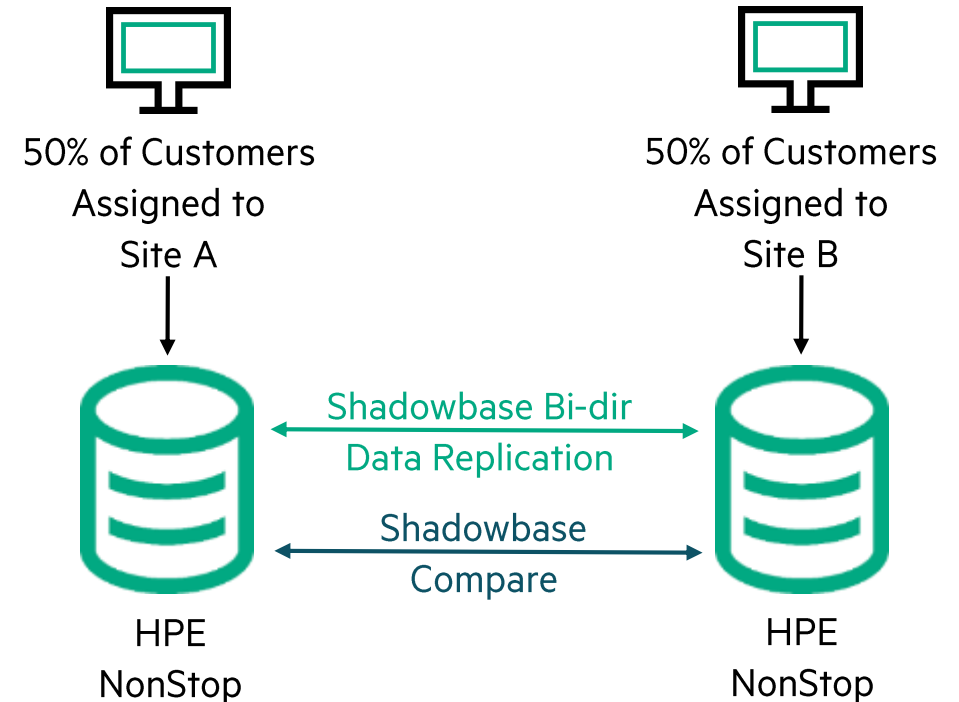HPE Shadowbase for Business Continuity – Active / Active "Partitioned"

Daniel Eklund
Senior Consultant

Solution

- Shadowbase Active/Almost-Active for automatic failover and recovery
- Shadowbase Compare for Data Validation

Outcomes

- Geographic fault tolerance
- Continuous application availability
- Avoids data collision avoidance in this partitioned architecture
- Online data consistency checking and repair discrepancies between sites

50% of Customers
Assigned to
Site A

50% of Customers
Assigned to
Site B

Shadowbase Bi-dir
Data Replication

Shadowbase
Compare

HPE
NonStop

HPE
NonStop

HPE Shadowbase
Data & Application Integration solutions

Data Streaming

- Eliminate data and application silos
- Integrate data from one database into a different database or application for competitive advantage

Use Case

AI **BC** **DI**

Real-Time Fraud Detection and Resolution for Financial Switch

ShadowbaseSoftware.com/Publications/ Use-Cases/Fraud-Detection-for- Financial-Switch/
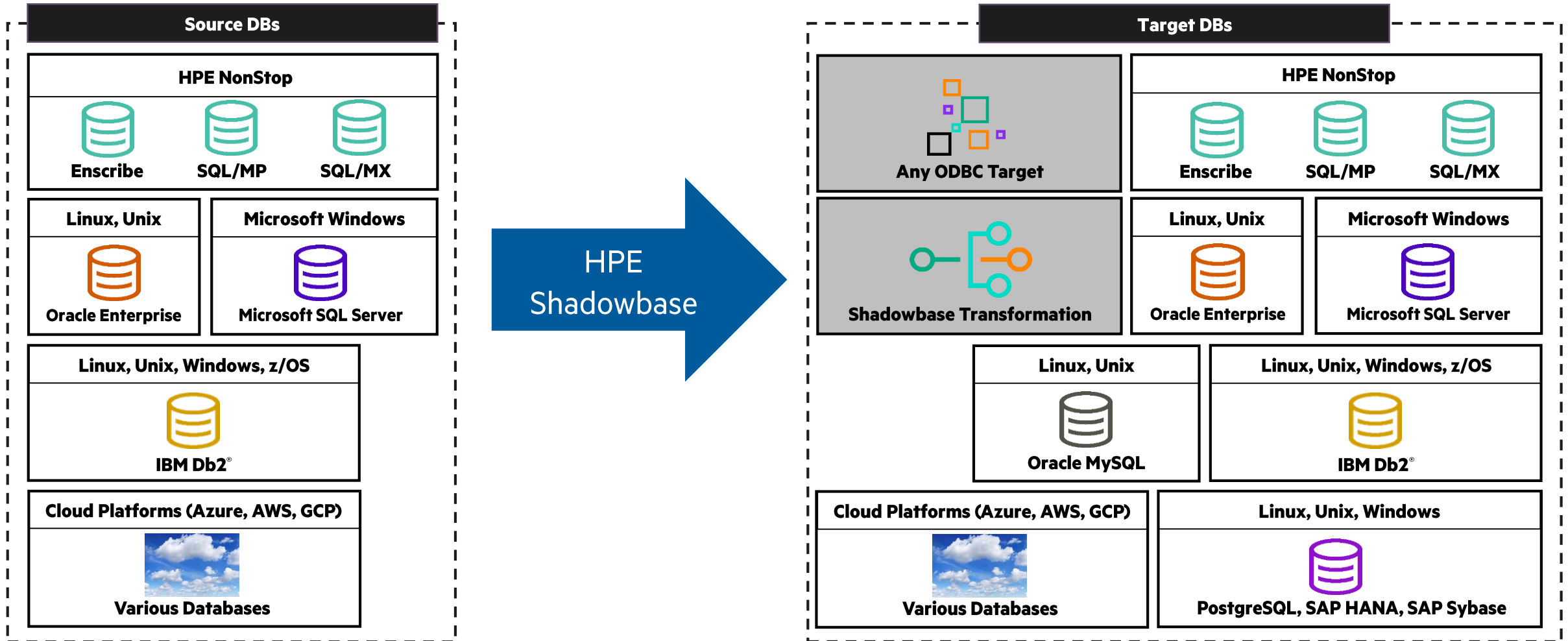
Capabilities

- Like-to-like and dissimilar environments
- Unlimited data transformation, scrubbing, filtering, cleansing, and scalability
- Extend replication capabilities with embedded application logic

Popular uses

- Analytical processing
- Cloud integration
- Data streaming and change data capture
- Data warehouse feeds
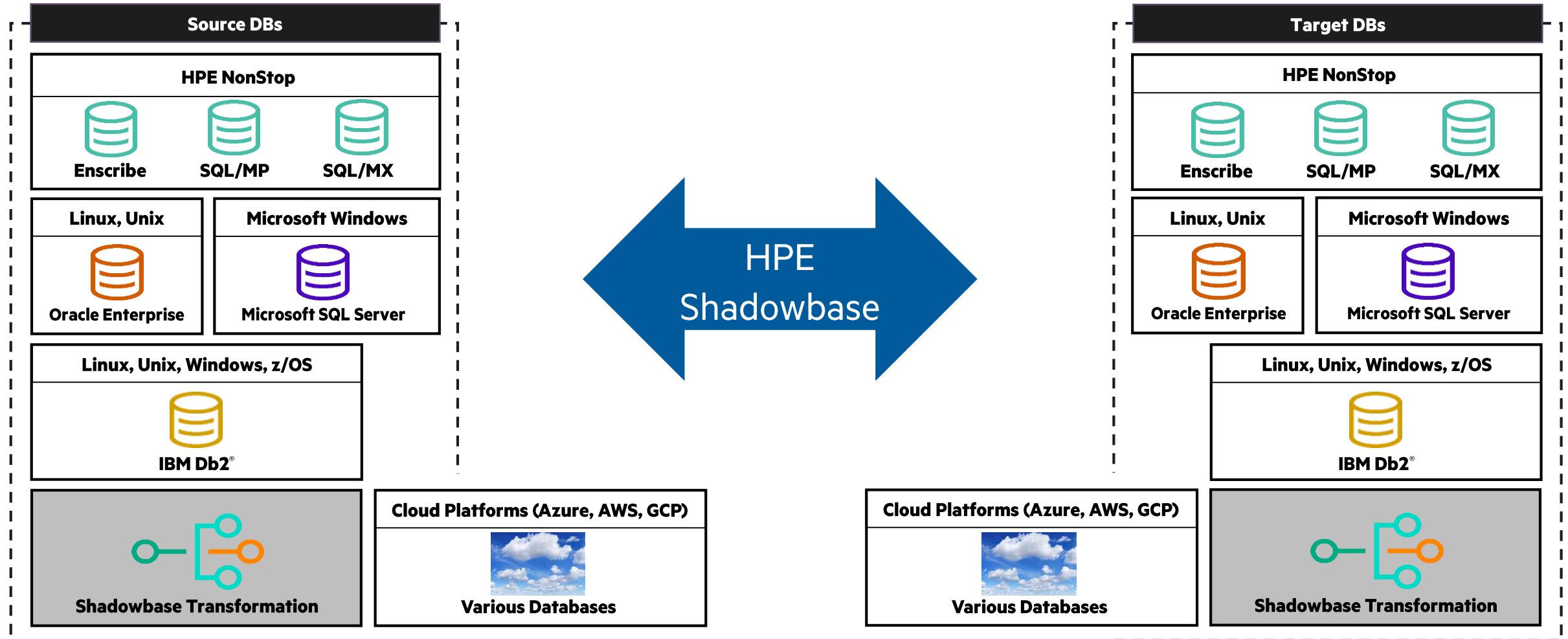- Fraud detection
- Real-time business intelligence

Homogeneous & heterogeneous uni-directional data replication and streaming

All combinations supported

Source DBs

HPE NonStop
- Enscribe
- SQL/MP
- SQL/MX

Linux, Unix
- Oracle Enterprise

Microsoft Windows
- Microsoft SQL Server

Linux, Unix, Windows, z/OS
- IBM Db2®

Cloud Platforms (Azure, AWS, GCP)
- Various Databases

HPE Shadowbase

Target DBs

Any ODBC Target

Shadowbase Transformation

HPE NonStop
- Enscribe
- SQL/MP
- SQL/MX

Linux, Unix
- Oracle Enterprise

Microsoft Windows
- Microsoft SQL Server

Linux, Unix
- Oracle MySQL

Linux, Unix, Windows, z/OS
- IBM Db2®

Cloud Platforms (Azure, AWS, GCP)
- Various Databases

Linux, Unix, Windows
- PostgreSQL, SAP HANA, SAP Sybase

Homogeneous & heterogeneous bi-directional data replication and streaming

All combinations supported

Source DBs

HPE NonStop

Enscribe | SQL/MP | SQL/MX

Linux, Unix

Oracle Enterprise

Microsoft Windows

Microsoft SQL Server

Linux, Unix, Windows, z/OS

IBM Db2®

Shadowbase Transformation

Cloud Platforms (Azure, AWS, GCP)

Various Databases

HPE Shadowbase

Target DBs

HPE NonStop

Enscribe | SQL/MP | SQL/MX

Linux, Unix

Oracle Enterprise

Microsoft Windows

Microsoft SQL Server

Linux, Unix, Windows, z/OS

IBM Db2®

Shadowbase Transformation

Cloud Platforms (Azure, AWS, GCP)

Various Databases

HPE Shadowbase Ransomware & Malware defense

Malware & Ransomware protection requires multiple layers of resilience
Business Continuity with Digital Resilience

Digital Resilience

Applications
System
Network
Infrastructure

+

Data Resilience

Database replication
and validation
Encryption
Tokenization

+

Cyber Resilience

Protection
Security
Scanning
Monitoring
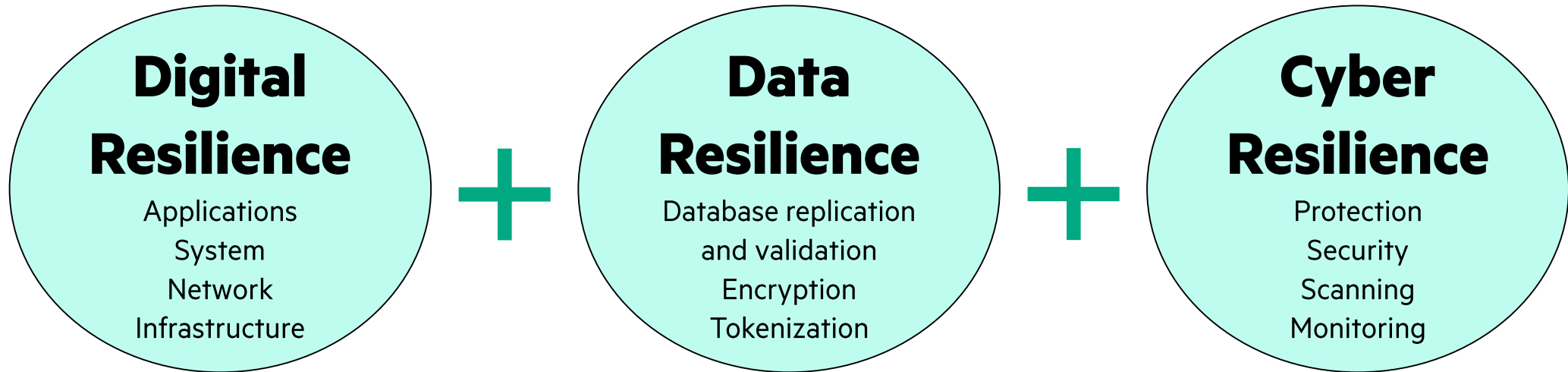
Digital resilience for Ransomware defense using HPE Shadowbase

On HPE NonStop

- *TMF is your first line of defense!*
- Non-audited data and data replication *does not* have the same advantages, capabilities, or protection

  – In a non-audited environment, how would you know?

Using TMF

- ACID transactions
- Guarantees database changes are **always** logged
- Enables the **Audit Trail** to be used for recovery

HPE Shadowbase provides unique capabilities

- Integrates with TMF to extract database change data
- Detects man-in-the-middle (MiTM) attacks between key processes since messages are fingerprinted
- Fingerprints Shadowbase Queue Files to detect file tampering
- Gravic has provided digital resilience solutions for 40+ years
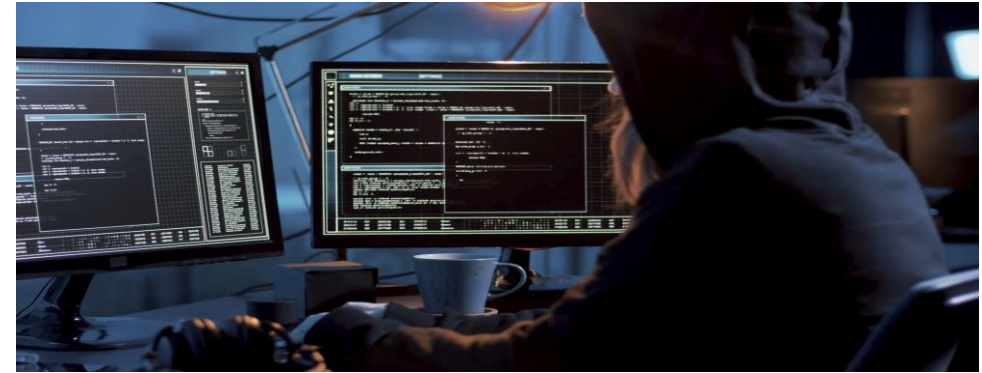
Only the Truth: Debunking TMF NonStop Data Protection Myths

New Improvements and Authors' Note

We recently transformed this content from an article into a full-blown w
feel it is critically important to address this topic because we continue t
considerable misinformation still exists regarding the use of TMF and d
general on HPE NonStop systems.

ShadowbaseSoftware.com/Publications/TMF-Myths/
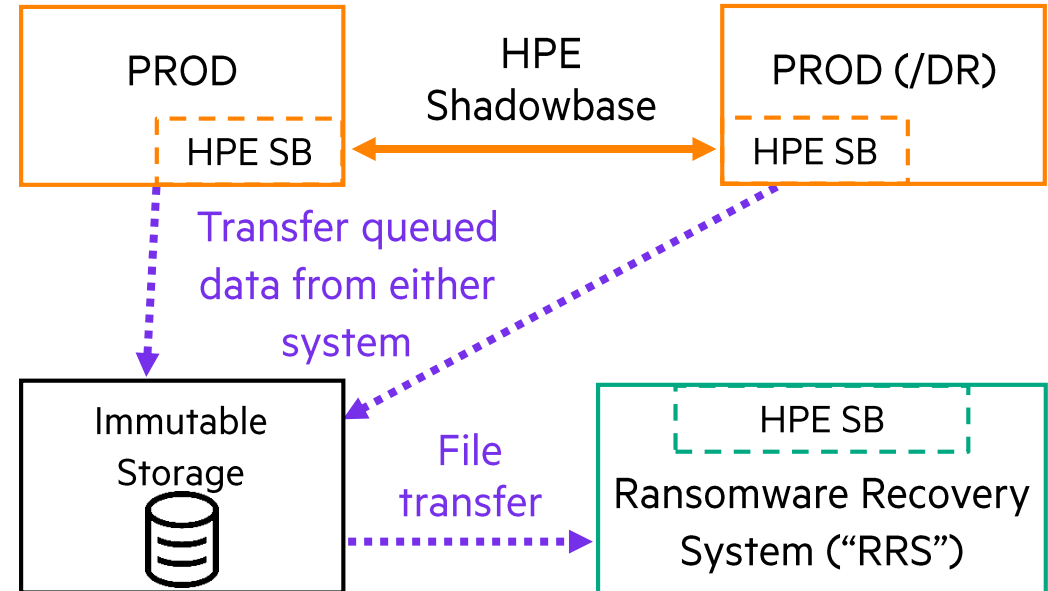
HPE Shadowbase Digital Resilience
Ransomware & Malware Defense

Solution 1: Real-time recovery system
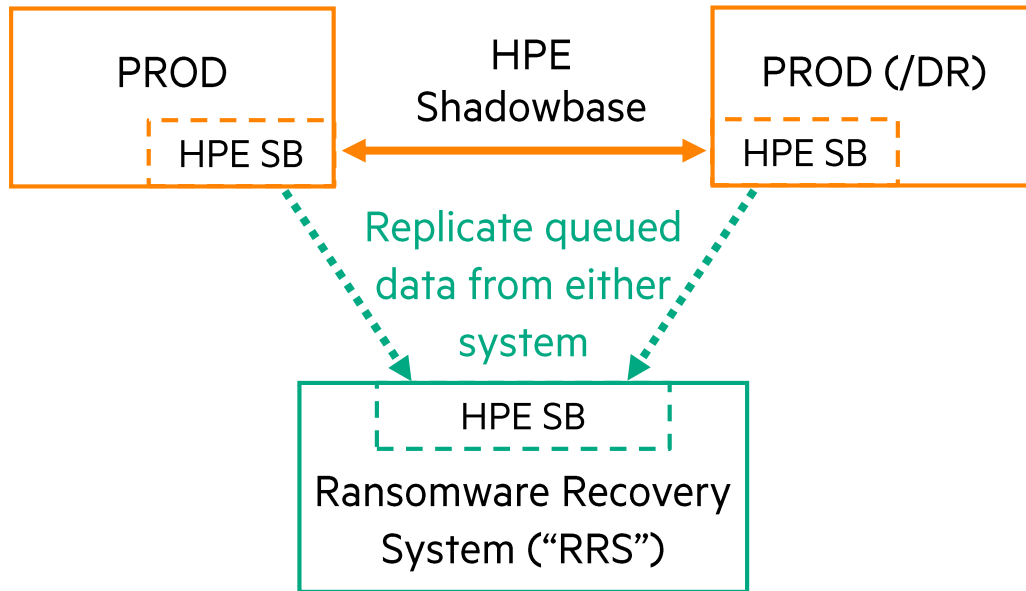
- TCP/IP or Expand feed from either system to RRS
- Capture and store (queue) DB change data directly on RRS
- But is this really S-A-F-E?

Solution 2: Air-gapped, immutable storage

- Air and people gapped RRS
- Capture and store (queue) DB change data on immutable storage

Survive a Ransomware Attack!
HPE Shadowbase Ransomware demo

PROTECT
Implement safeguards and controls
- Zero Trust Security
- Data Protection
- Rigorous security hardening

- Identify assets to protect

IDENTIFY
Understand your environment

DETECT
Discover cyber events
- Monitor activity (use AI/ML)
- Monitor environment integrity

- Data backup & recovery strategy
- Implement 3-2-1-1 rule

RECOVER
Maintain resilience and business continuity

RESPOND
Actions to deal with attacks
- Standard operating procedures

Survive a Ransomware Attack!

HPE solutions can help protect and recover your mission critical NonStop systems and data from malware and Ransomware

- Rapidly restore systems and recover data
- Air-gapped backups
- Immutable storage
- 3-2-1-1 backup rule
- Preserve corrupted environment for forensics

Demo at HPE booth

Hewlett Packard Enterprise

GRAVIC®
HPE Shadowbase
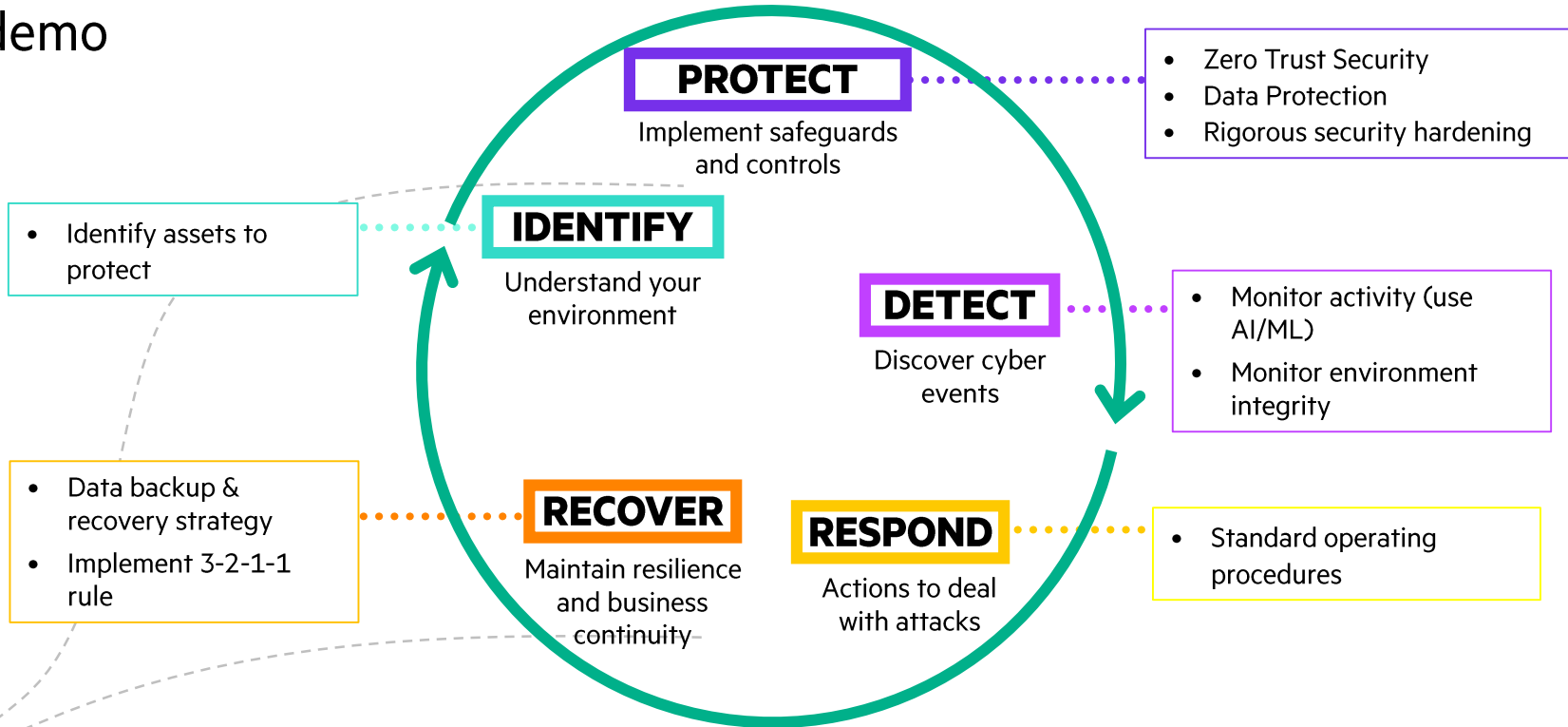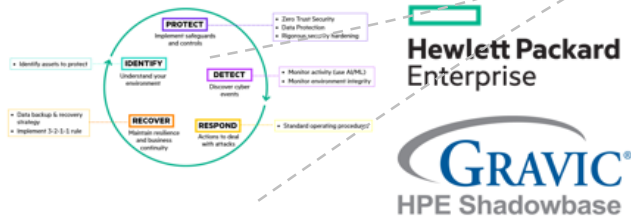
HPE Digital Resiliency Framework based on NIST guidelines
- New HPE Shadowbase capabilities work to rapidly **RECOVER** critical data
- Current focus is on **detection** and **recovery**, with future capabilities directed at **identification** and **prevention** (and hence **avoidance**)
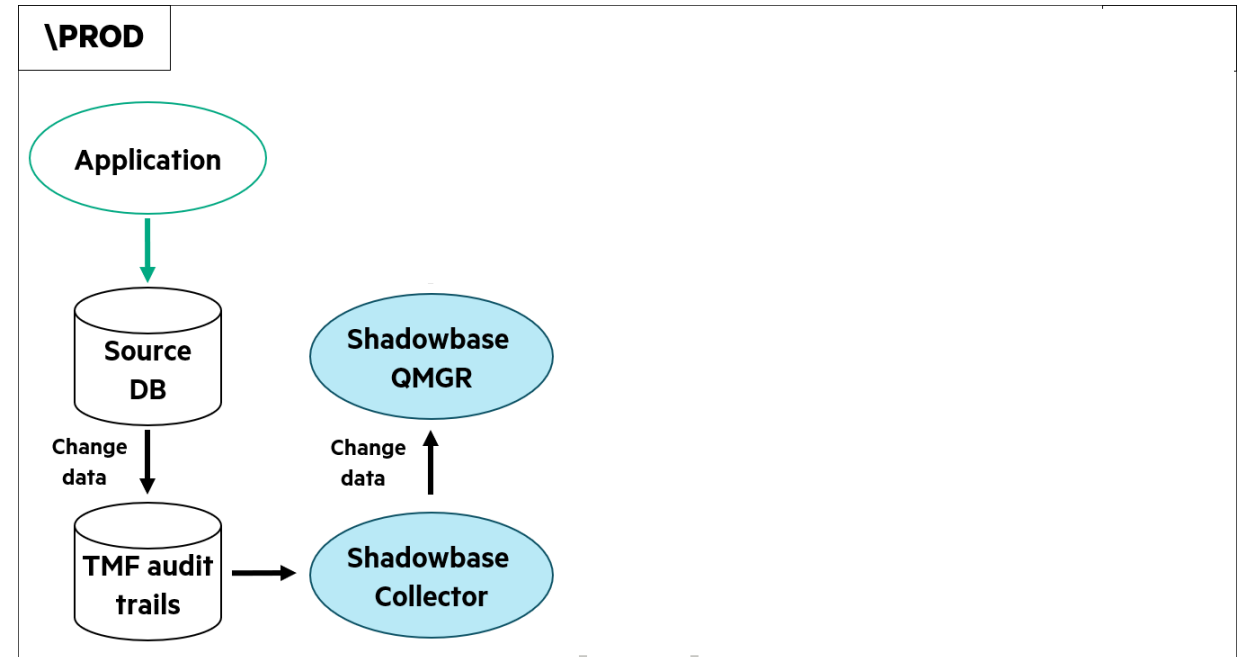
Digital resilience using air-gapped, immutable storage
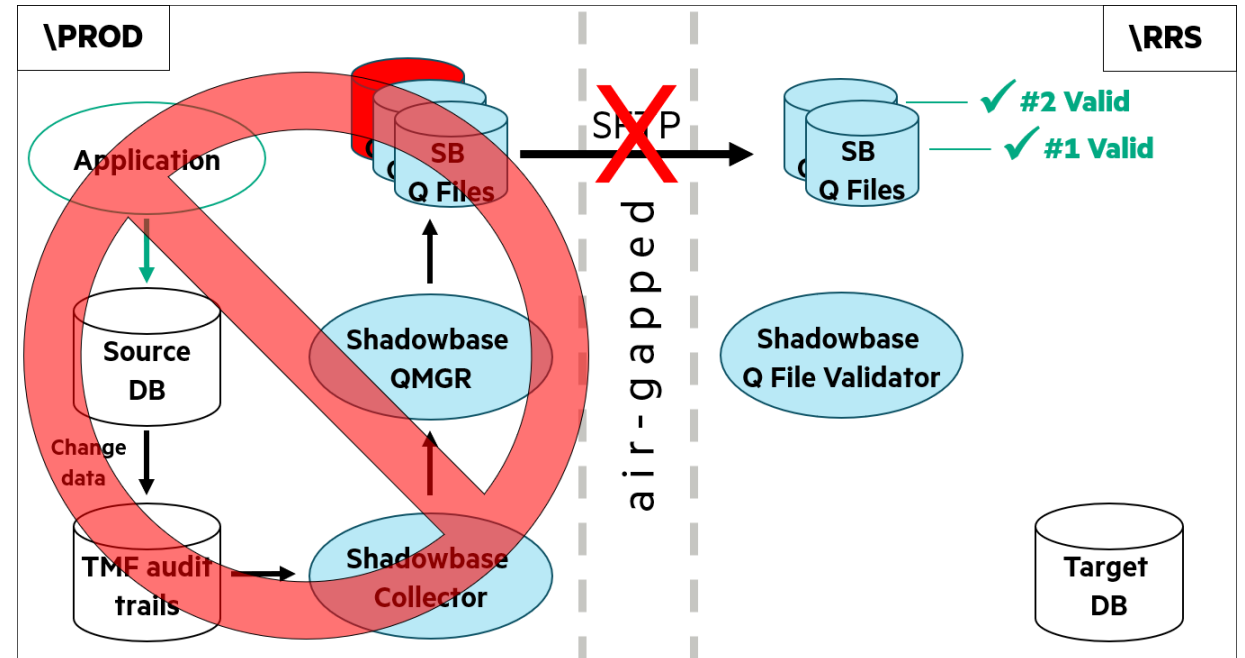
HPE Shadowbase Queue Manager (QMGR)

- **Q Files**
  - Contain queued change data
  - Are **fingerprinted** _and_ **validated**
 - Enables more data management controls

- Detects **man-in-the-middle (MiTM) attacks** between key processes
  - Q Files with invalid fingerprints are halted and removed from \RRS (Ransomware Recovery System)

Watch the demo at HPE booth

Digital resilience using air-gapped, immutable storage

HPE Shadowbase Queue Manager (QMGR)

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- **Enable recovery to a point-in-time**

Watch the demo at HPE booth

Digital resilience using air-gapped, immutable storage

HPE Shadowbase Queue Manager (QMGR)

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  - Q Files with invalid fingerprints are halted and removed from \RRS (Ransomware Recovery System)

- **Enable recovery to a point-in-time**

- **Build "data vaults"** (not pictured)
  - Optionally store data off-platform into a DB or Q files
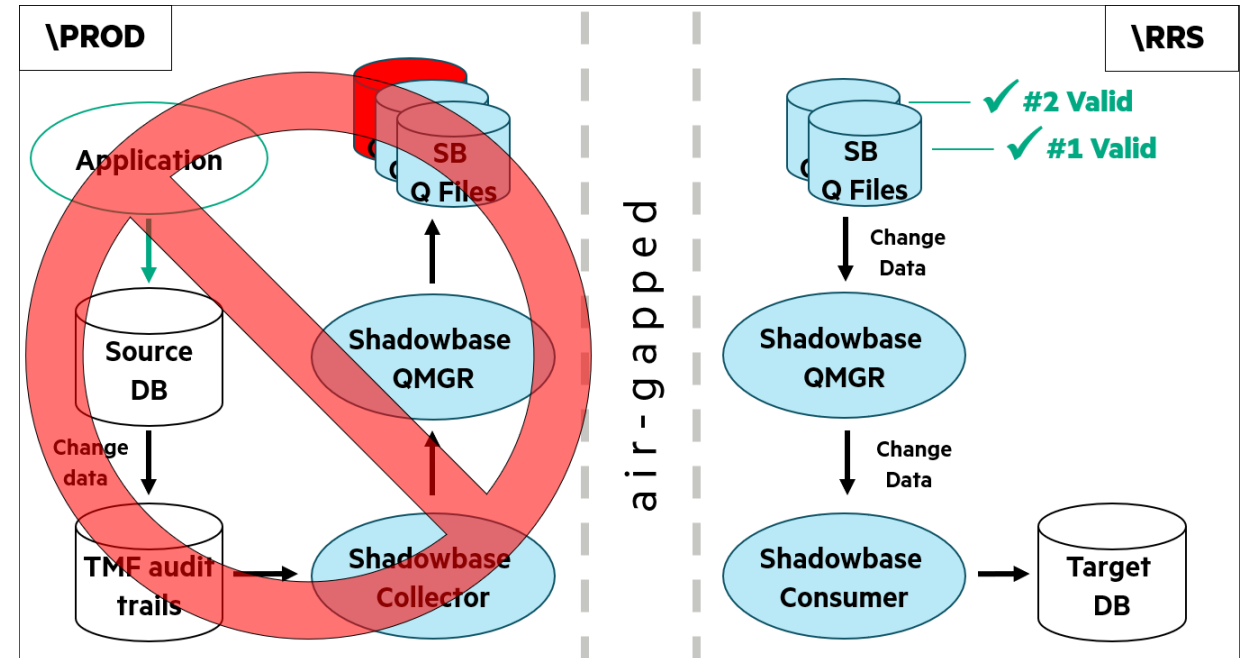
Watch the demo at HPE booth

New & future features

HPE Shadowbase releases in 2023
For full details, visit ShadowbaseSoftware.com/Releases/

- HPE NonStop Shadowbase
  - Released March 2023, Version 6.720 (T1122^ABC)

- HPE NonStop Shadowbase Compare
  - Released March 2023, Version 6.800 (T1122^ABB)

- HPE Shadowbase for Other Servers
  - Released June 2023, Version 6.800 T1124-T1130 (multiple SPR's based on platform)

- **DO NOT INSTALL version 6.700 or newer until a new license file is obtained**!
  - A new Shadowbase license file is required to install & run HPE Shadowbase (for NonStop & Other Servers) version 6.700 & newer
  - Contact the *HPE License Manager* to request a new license before upgrading
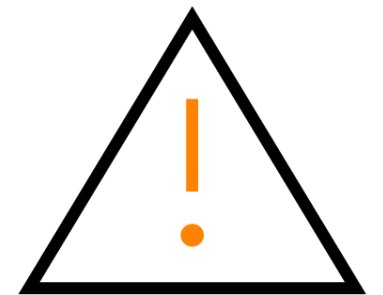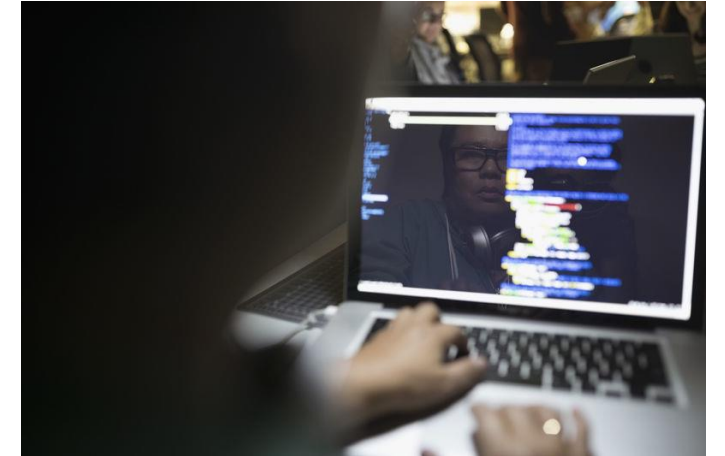
New HPE Shadowbase features (1 of 2)
Available now

Important: Shadowbase users using version 6.600 or earlier should upgrade to 6.700 or later to fix an O/S JulianTimeStamp performance issue

- Simplified SYSKEY replication for SQL/MP & SQL/MX users

- Enhancements to the CHECK DBS command to validate Shadowbase configurations before deployment

- 10-100x performance improvement for integrating HPE NonStop with Cloud environments

- SBMAP data transformation scripting language for Enscribe & SQL/MP users
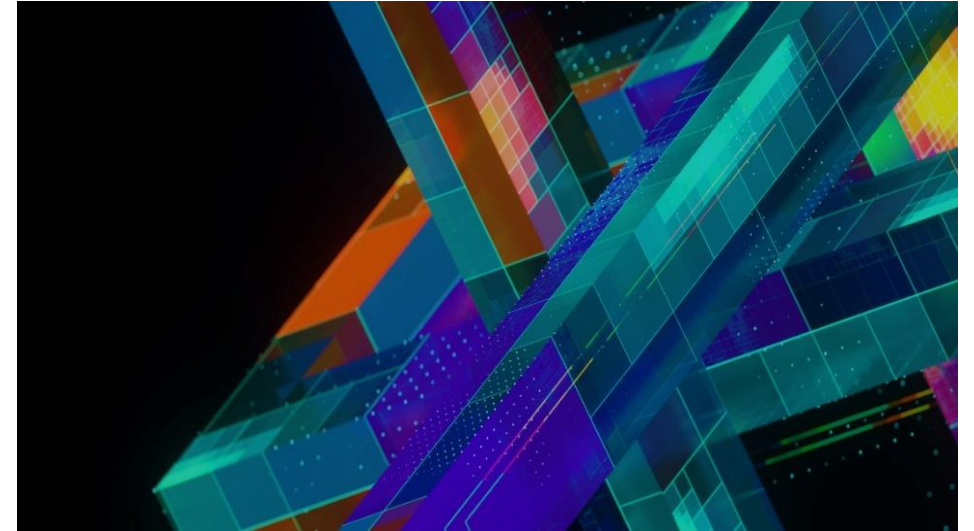
For full details, visit:
ShadowbaseSoftware.com/Releases/

New HPE Shadowbase features (2 of 2)
Available now

- Additional ETL tools
  - Output data into CSVs, flat-files, fixed position, etc.
  - JSON support

- HPE Shadowbase Compare enhancements
  - Enscribe files
    - Wildcard support
    - Iterative compare mechanism
    - Data compression
    - Support for unstructured/queue files
    - Massive performance improvements for large files
  - SQL/MP & SQL/MX tables
    - Wildcard support
    - Automatic parallel execution capability to dramatically improve performance
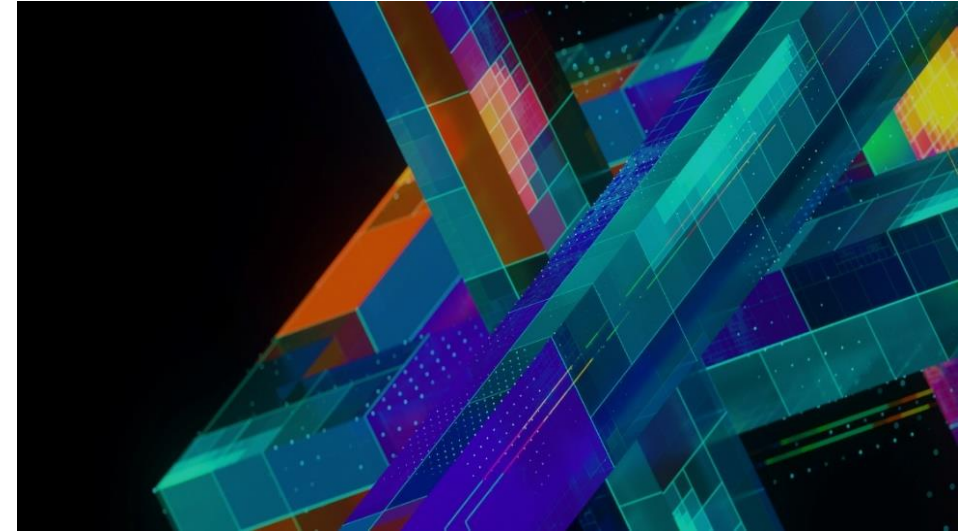
For full details, visit:

ShadowbaseSoftware.com/Releases/

Future features
HPE Shadowbase

- Direct target support for Kafka & AWS APIs

- Enhanced IBM z/OS integration
  - Native Shadowbase port on IBM Mainframe z/OS to support Db2 as a source and target

- Heterogeneous Compare
  - e.g., NonStop to: Oracle, SQL Server, DB2, Sybase, MySQL, PostgreSQL, and others

- HPE Shadowbase Zero Data Loss (ZDL) solution
  - Synchronous Replication enables zero data loss (RPO = 0)
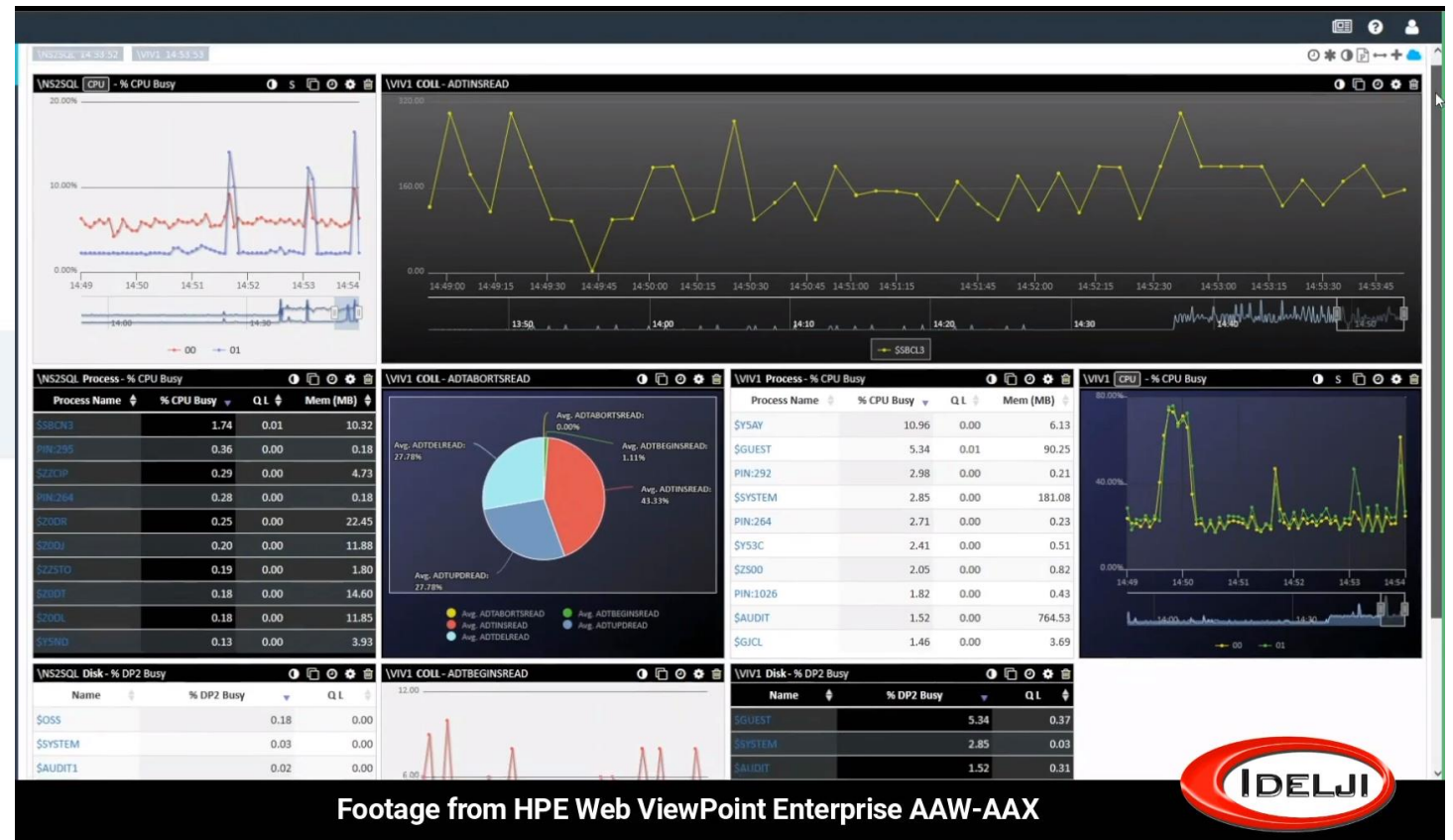 - Business continuity and data streaming support

Summary

HPE Shadowbase Monitoring via Idelji Web ViewPoint Enterprise Plug-in

https://vimeo.com/815503116

HPE Shadowbase videos
Quick & simple overviews

Solutions Overview
  – Vimeo.com/345756852   (2 mins)

Business Continuity
  – Vimeo.com/369785276   (3 mins)

Compare & Repair
  – Vimeo.com/523995684   (3 mins)

Zero Downtime Migrations
  – Vimeo.com/475133622   (4 mins)

Data & Application Integration
  – Vimeo.com/382625428   (4 mins)

Essentials Bundle
  – Vimeo.com/735455234   (5 mins)

Vimeo.com/ShadowbaseSoftware   YouTube.com/@ShadowbaseSoftware4957

Subtitles are available. Play the video slower or faster.

Subtítulos disponibles. Reproduce el video más lento o más rápido.

Subtitle tersedia. Putar video lebih lambat atau lebih cepat.

Sari kata tersedia. Mainkan video dengan lebih perlahan atau lebih pantas.

字幕の利用が可能です。ビデオの再生を遅く、又は早くする事が可能です。

字幕可用。播放　　 的速度　慢或　快。

자막 사용이 가능하며 동영상을 빠르게 또는 느리게 재생할 수 있습니다.

CC

Wrap-up

- HPE Shadowbase is HPE's strategic *go-forward* data replication & streaming solution

- Globally sold and supported by HPE (and HPE's regional resellers)

- Use HPE Shadowbase for **Business Continuity protection**, **Data Verification**, & **Data Streaming**

- The right people + the right solutions: *that's where the magic happens™*

HPE Sessions of Interest

VT4

- HPE Shadowbase: Maximize NonStop Digital Resilience with Data Replication, Integration, and Validation
  - Tuesday, 1-2:00 PM, Denver 4

CFP1 – *Customer Talk!*

- Major UK Bank Migrates its BASE24™ Application to Active/Active for Continuous Availability
  - Wednesday, 10:30-11:30 AM, Denver 1-2

TB67

- New HPE NonStop Business Continuity & Data Integration Features and Roadmap
  - Wednesday, 2:45-3:45 PM, Denver 1-2

VT5

- Ransomware Protection and Data Recovery
  - Wednesday, 4-5:00 PM, Denver 1-2

Hewlett Packard Enterprise

connect

NonStop TBC 2023
September 12-14, 2023 - Denver, Colorado - Hilton Denver City Center

Survive a Ransomware Attack!
HPE Shadowbase Ransomware demo

Stop by the booth & watch the demo!

Follow us on

Thank you

Product-related questions: ask your HPE Sales team

Technical-related questions: SBProductManagement@Gravic.com

Marketing-related questions: PRHolenstein@Gravic.com

HPE Shadowbase videos

In various languages

HPE Shadowbase videos
Quick & simple overviews

Overview

- Real-time data replication and streaming for a NonStop world

Vimeo.com/345756852

Business Continuity

- Eliminate unplanned downtime for extreme availability

Vimeo.com/369785276

Zero Downtime Migration

- Eliminate planned downtime for upgrades, migrations, and platform refreshes

Vimeo.com/475133622

HPE Shadowbase videos
Quick & simple overviews

Data & Application Streams

- Integrate one database/ application with another

Vimeo.com/382625428

Compare & Repair

- Source and target database validation

Vimeo.com/523995684

Essentials

- Manage, monitor, and transform your data

Vimeo.com/475133622

HPE Shadowbase videos
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Overview

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YouTube.com/Watch?v=pHu9qX3Pll0

Business Continuity

- Eliminate unplanned downtime for extreme availability

Youtube.com/Watch?v=cyoBd-iAPuc

Zero Downtime Migration

- Eliminate planned downtime for upgrades, migrations, and platform refreshes

Youtube.com/Watch?v=7MnmKr8a8zQ

HPE Shadowbase videos
Quick & simple overviews

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Youtube.com/Watch?v=3QtvqB3qtdQ

Compare & Repair

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Youtube.com/Watch?v=RFYjL_zhhAU

Essentials

- Manage, monitor, and transform your data

Youtube.com/Watch?v=5iU2o1JDo-c