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Enterprise

# **NonStop Technical Boot Camp 2023**

## **TBC23 TB67 - New HPE NonStop Business Continuity & Data Integration Features and Roadmap**

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September 2023

## **Forward-looking statements**

This is a rolling (up to three year) Roadmap and is subject to change without notice

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This document contains forward looking statements regarding future operations, product development, product capabilities and availability dates. This information is subject to substantial uncertainties and is subject to change at any time without prior notification. Statements contained in this document concerning these matters only reflect Hewlett Packard Enterprise's predictions and / or expectations as of the date of this document and actual results and future plans of Hewlett Packard Enterprise may differ significantly as a result of, among other things, changes in product strategy resulting from technological, internal corporate, market and other changes. This is not a commitment to deliver any material, code or functionality and should not be relied upon in making purchasing decisions.



# Agenda

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**The Foundations of Business Continuity**

**Business Continuity Architectures & Fundamentals**

**Product Portfolio Updates**

**Adding Digital Resilience to Business Continuity**

**Removing Data Silos**

**Futures and Summary**



# The Foundations of Business Continuity

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Continuous application availability as the goal  
RTO-RPO relationship  
Putting Business Continuity into practice



## **Making Continuous Availability the Goal**

- Provide **continuous access** to IT services
- Eliminate planned & unplanned downtime
- Avoid application downtime
  - Downtime brings prohibitive costs and potential loss of brand reputation
- Migrate without an outage to a new
  - IT infrastructure
  - Data center
- Eliminate data and application silos
- Meet audit compliance requirements



# Key elements of a business impact analysis

## Business Continuity planning

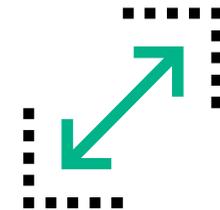
### Recovery Time Objective - RTO

- The maximum acceptable time for recovery from an outage
- RTO is the **targeted duration of time** within which an application (business process) must be restored after a disaster (or disruption) in order to avoid unacceptable consequences associated with a break in business continuity
- An RTO of zero is imperceptible to the customer or end user

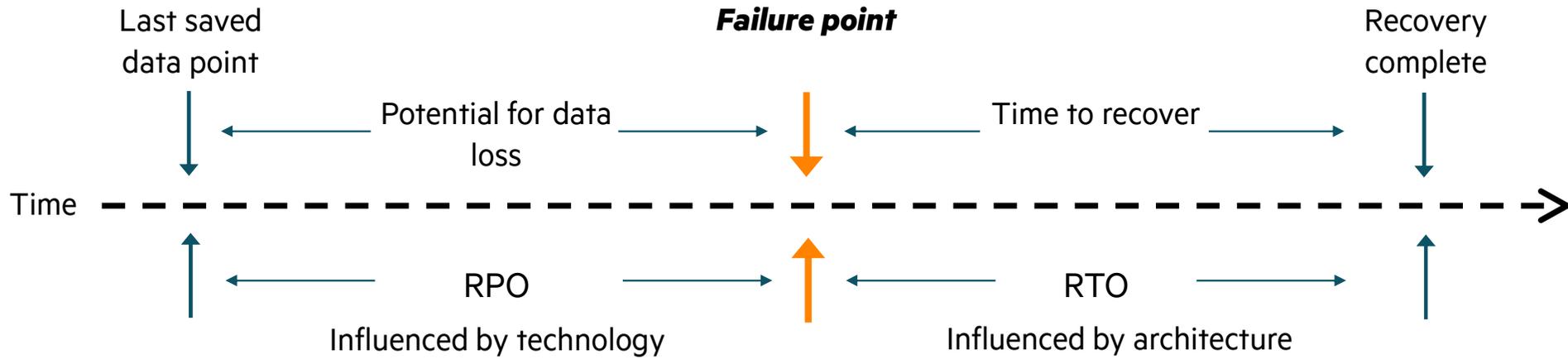


### Recovery Point Objective - RPO

- The maximum acceptable amount of data loss from an outage
- RPO is the **maximum targeted period of** data (or transactions) that might be lost due to a break in business continuity
- Often based upon average value of a lost transaction
  - The value of the transaction matters
- Sometimes the loss of *any* data is unacceptable
  - Loss of life or limb
  - Unreproducible



# RTO and RPO relationship



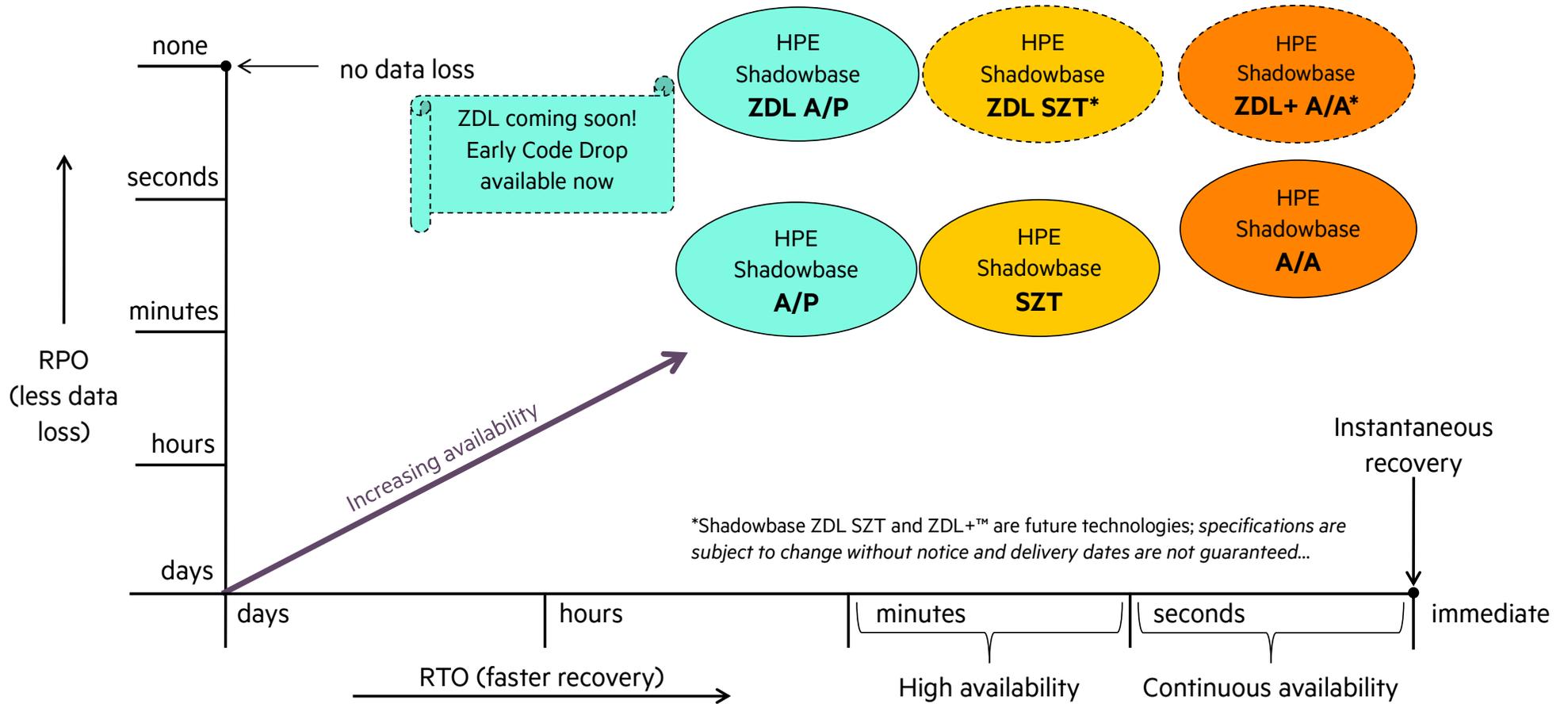
asynchronous vs. synchronous

Active/Passive - A/P  
Sizzling-Hot-Takeover - SZT  
Active/Active - A/A



# HPE Shadowbase Business Continuity continuum

## Transactional replication



# Business Continuity Architectures & Fundamentals

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Active / Passive

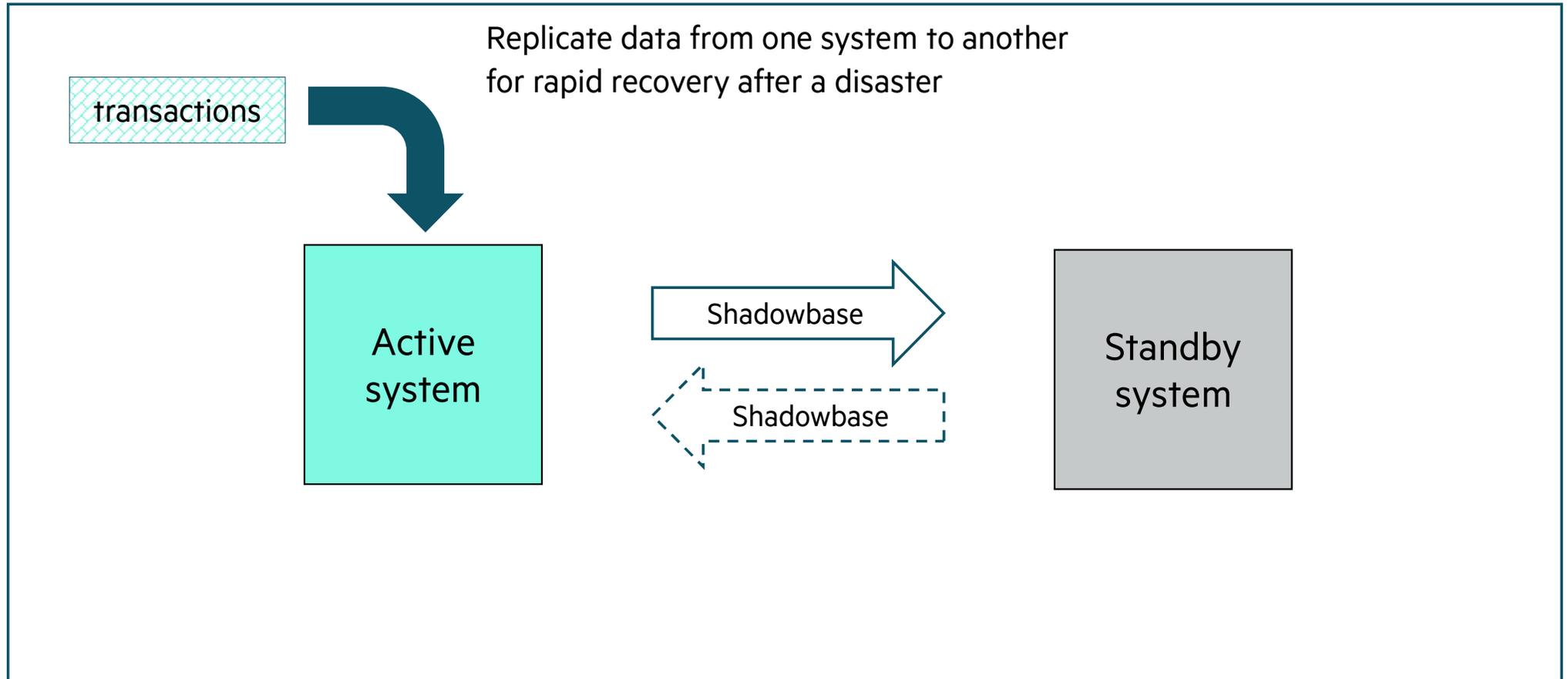
Active / Almost-Active architecture

Active / Active



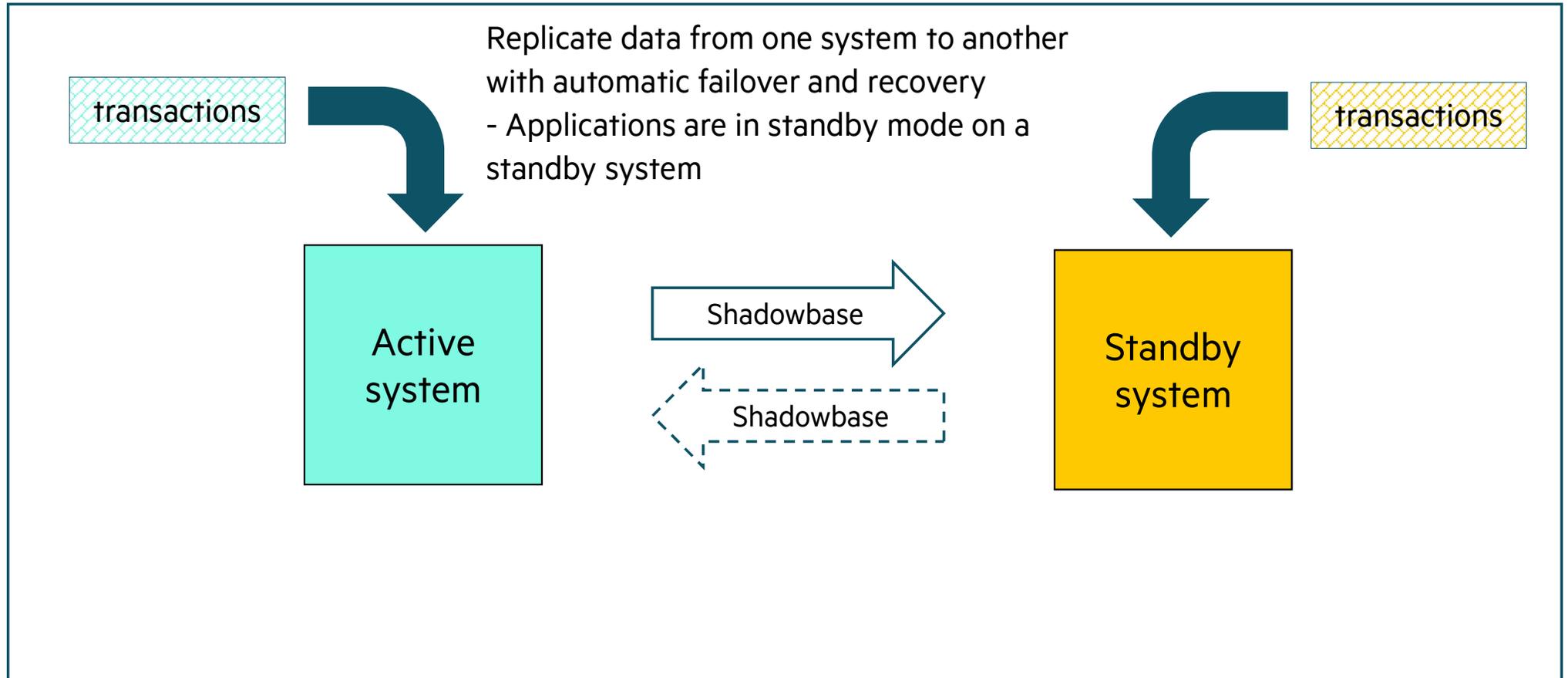
# Active / Passive architecture

## Disaster Recovery with HPE Shadowbase



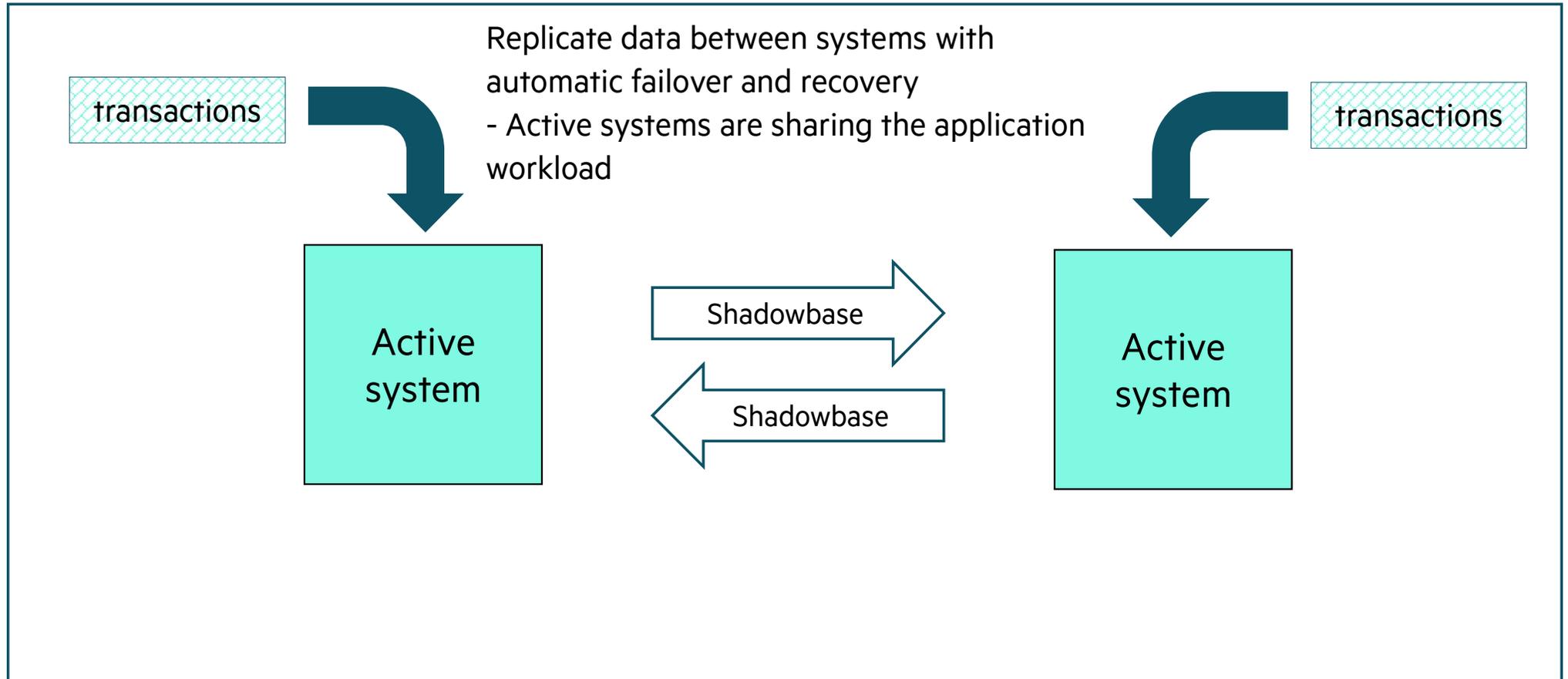
# Active / Almost-active architecture

Sizzling-Hot-Takeover (SZT) with HPE Shadowbase



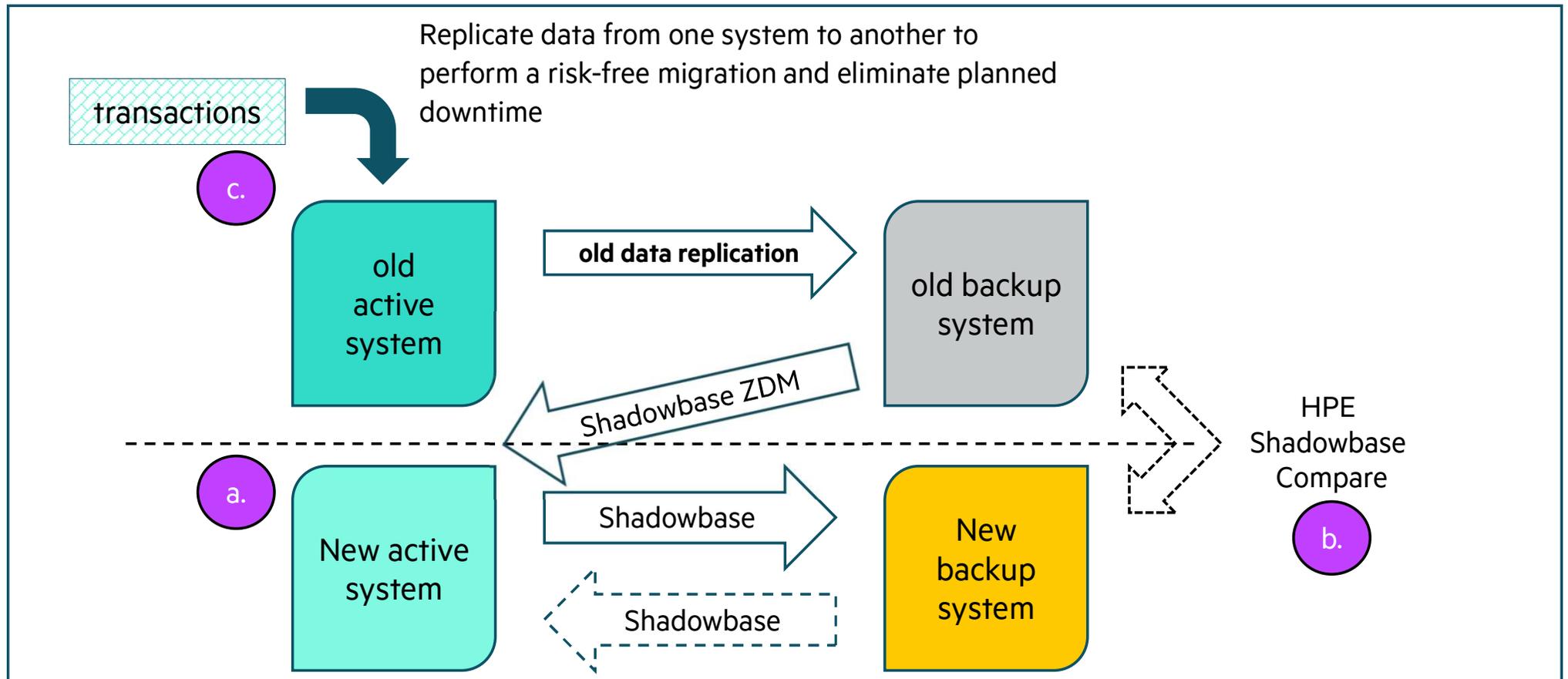
# Active / Active architecture

Continuous Availability with HPE Shadowbase



# Zero Downtime Migration (ZDM)

Example: four node platform refresh with HPE Shadowbase



## Ensure your Disaster Recovery DB matches Production

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- Find and fix database mismatches
- HPE Shadowbase Compare and Repair
- Works with any and all replication engines
- Every system should have a Compare product

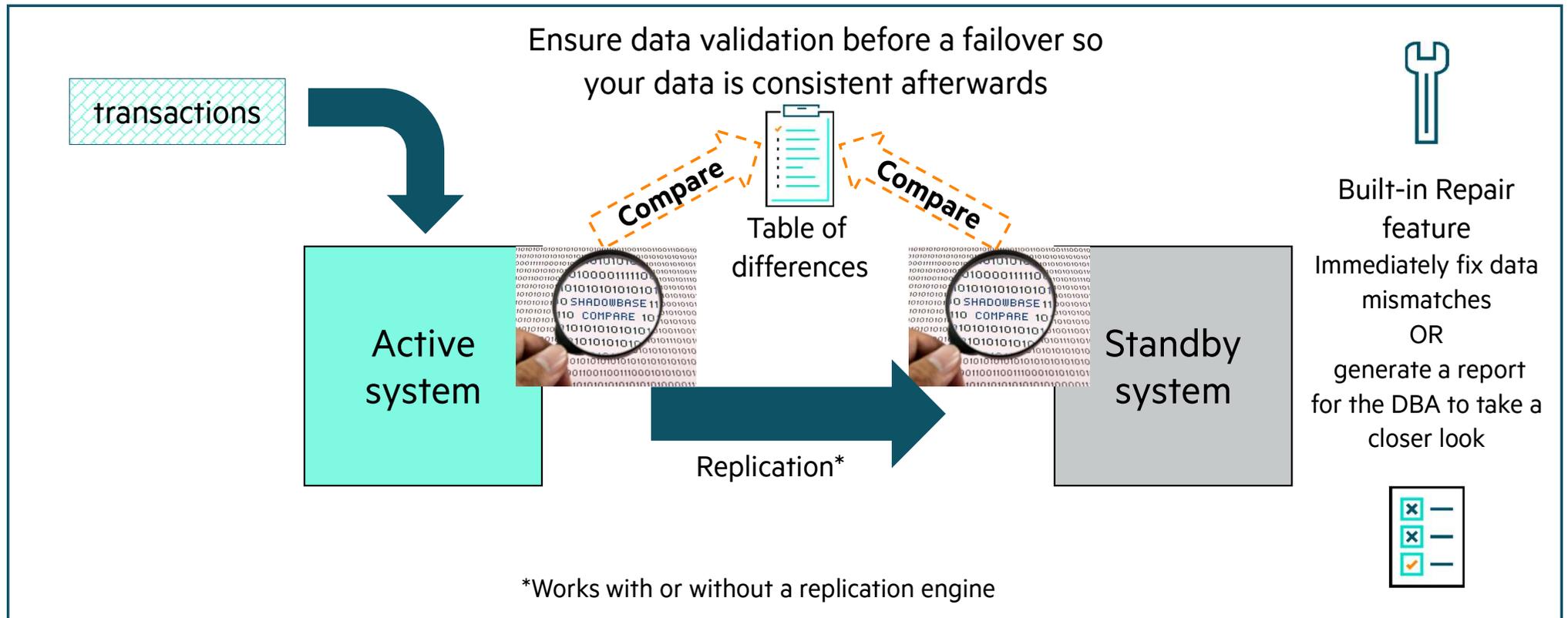
## Mismatches are more common than you might think

- **Administrator actions** that affect replication
  - Application **changes the target** DB instead of the source DB
  - Disables TMF – even momentarily
  - Delete (scratch) necessary audit trails
  - DBA **changes the target DB structure** instead of the source DB
- **Lack of coordination** between the App & Infrastructure teams
  - Adding new files or tables to the DB **but not to** the replication configuration
  - **Forgetting to enable the TMF Audit flag**
    - After adding new files or tables to the DB and replication configuration
  - Forgetting to link non-audited intercepts into the application programs
    - After rebuilding a non-audited application



# Find and fix data mismatches between databases

HPE Shadowbase **Compare** and **Repair** solutions



# Product Portfolio Updates

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HPE NonStop Business Continuity



# HPE NonStop Business Continuity portfolio...

Best in class HPE solutions

## Active/Passive Disaster Recovery

HPE Shadowbase Basic  
HPE Shadowbase Basic ZDL  
RDF & RDF/ZLT (Mature)



## Active/Active Continuous Availability

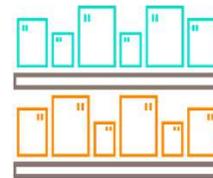
HPE Shadowbase Advanced  
(two-way, bi-directional)



## Solution Enablers

NonStop TMF  
NonStop AutoTMF  
NonStop AutoSYNC  
NonStop SDR  
HPE Shadowbase Data  
Integration and Application  
Integration

- Streams data between platforms



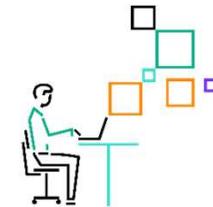
## Add-on Solutions

Shadowbase Compare

- Find and fix mismatches

Shadowbase Essentials

- 8 major solutions for data management and transformation



# NonStop Transaction Management Facility (TMF)

The foundation for transaction integrity and data consistency

- **Bedrock of transaction integrity**, data protection
- If any part of transaction fails, transaction backs out, database is always consistent
- All database modifications captured in audit trail
- Low level integration, high speed
- Enhances performance with automatic buffering
- Required by **HPE Shadowbase** and **RDF**
  - If you have non-audited applications, look to **NonStop AutoTMF** to allow the data to be replicated



## NonStop AutoTMF Product

Enables automatic TMF transaction protection

- HPE NonStop Shadowbase and RDF rely upon TMF
- System performance often improves with use of TMF
- Provides “**transparent**” **TMF protection** for Enscribe applications not designed to use TMF
- No application changes are required to use and implement AutoTMF
- **Non-TMF protected applications** (e.g., BASE24™) can utilize RDF or HPE Shadowbase replication when they are **TMF-enabled with AutoTMF**
- Support for **TMF auditing of all BASE24™** operations including Full Refresh

- No new updates in 2023 – latest update T0581ABO (July 2022)
- No defects reported since last product update



## NonStop AutoSYNC Product

Automatic replication, distribution & synchronization of non-database files

- **Complements HPE Shadowbase and RDF** by replicating whole files, creating functionally ready backup systems and distributed application environments
- **Duplicates software and application environments** within and across systems
- Facilitates system migrations
- Maintains file synchronization 24 x 7 eliminating manual operations
- **Replicates structured and unstructured Guardian and OSS files**
  - Including: program objects, startup files, text files, obey files, TACL macros
  - Supports the replication of opened files
- Supports TCP/IP or Expand
- REPORT function provides detailed ad-hoc statistics and comparison of source and target file sets
- Optional TRIGGERS take action when a file or file set is updated



# NonStop AutoSYNC – new in 2023

## Enhancements and defect repairs

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- Manageability (June 2023)
  - The maximum number of syncfilesets per syncuser has been increased from 32K to 100K (RFE)
  - The BRIEF option has been added to INFO BATCHID that limits the info displayed to a list of batch identifiers in a batchid range
  - A restricted form of wildcarding of the destination fileset has been implemented to reduce the number of fileset definitions required to manage certain types of large AutoSYNC configurations (see T2713ABO softdoc for details)
- Performance (June 2023)
  - The new global option SYNCSTARTMAX allows the user to limit the number of concurrent synchronization processes that are activated following an event that causes a large number of syncfilesets to be activated (such as a takeover or a configuration change)
  - The number of records deleted from the log file when the file is full is now restricted to the lesser of 10000 or all the records for the oldest day of activity, to reduce the impact of the cleanup on the synchronizations in progress



## NonStop AutoSYNC – new in 2023 (con't)

### Enhancements and defect repairs

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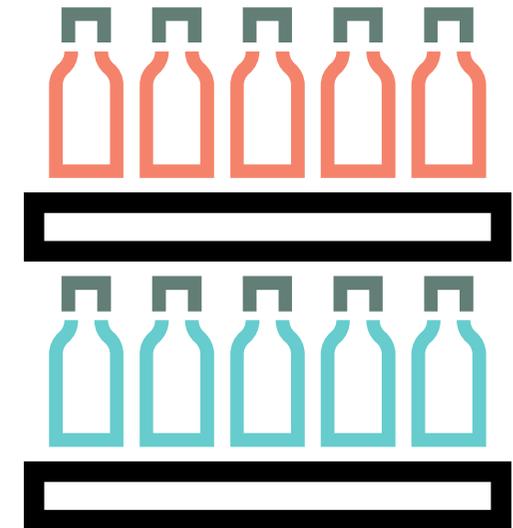
- Performance (September 2023)
  - AutoSYNC has been enhanced to increase parallelism for synchronizing over TCP/IP for configurations that use an assigned TCP/IP port with the ASYNCLLOG-ZASY entry in the SERVICES file (RFE)
- Defects repaired
  - Fixes for 100% of defects reported or found internally since the AutoSYNC update T2713ABN in July 2022
  - Total of 3



## NonStop SDR (SQL DDL Replicator) Product

Automatic replication of database structural changes (schema et al)

- **SDR works with RDF** to replicate **SQL/MP** database **DDL schema changes**
  - Add/Drop index, Add column, etc.
  - Split/Move partition, etc.
  - Does not apply to data changes
- Ensures distributed and backup system tables are kept in step with primary system tables
- Utilizes TMF to **ensure operations are done in perfect sequence**
  - avoiding chance of database corruption
- Reduces risk of manual database administration changes at backup site



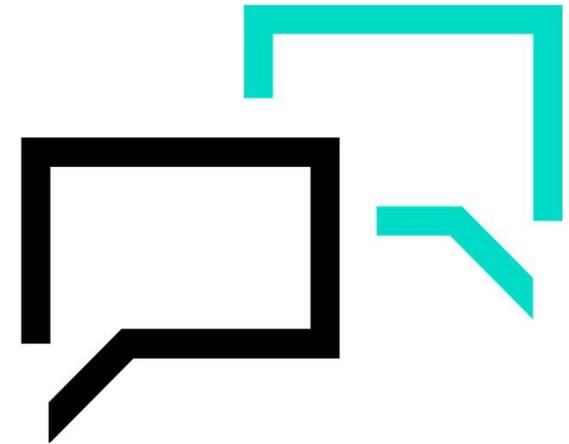
- No new updates in 2023 – latest update T2828AAQ (June 2019)
- No defects reported since last product update

## **Remote Database Facility**

### RDF and RDF/ZLT

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- RDF provides asynchronous A/P Business Continuity replication
- RDF/ZLT provides synchronous A/P Business Continuity replication
  - Requires XP enterprise storage arrays
- Uses Expand communications
- Has moved to the Mature maintenance level - 2018
  - Refer to the most recent SPML for details
  - Are saleable products, okay to continue using
  
- Use HPE Shadowbase to go beyond RDF functionality



## Data replication beyond RDF

HPE Shadowbase brings additional functionality

- More advanced architecture options with **Sizzling-Hot-Takeover** and **Active/Active**
- HPE Shadowbase **Compare** and **Repair** solutions
  - Validate source and target databases match
- **Data Integration** and **Application Integration** (DI & AI)
  - Eliminate data silos and enables real-time analytics
  - Streams data between platforms, including cloud platforms
  - non-NonStop connectivity to Linux, UNIX, Windows, IBM...
  - Supported databases include Oracle, SQL Server, SAP HANA, Db2...
- Extensible with SBMAP scripting language for data transformation
- HPE Shadowbase **Essentials Bundle**
- Connectivity over Expand or **TCP/IP**
- **Digital Resilience** for Malware and Ransomware protection



Visit the HPE booth for a cool demo!

# Adding Digital Resilience to Business Continuity

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Malware & Ransomware protection is the new digital frontier



# Malware & Ransomware protection requires multiple layers of resilience

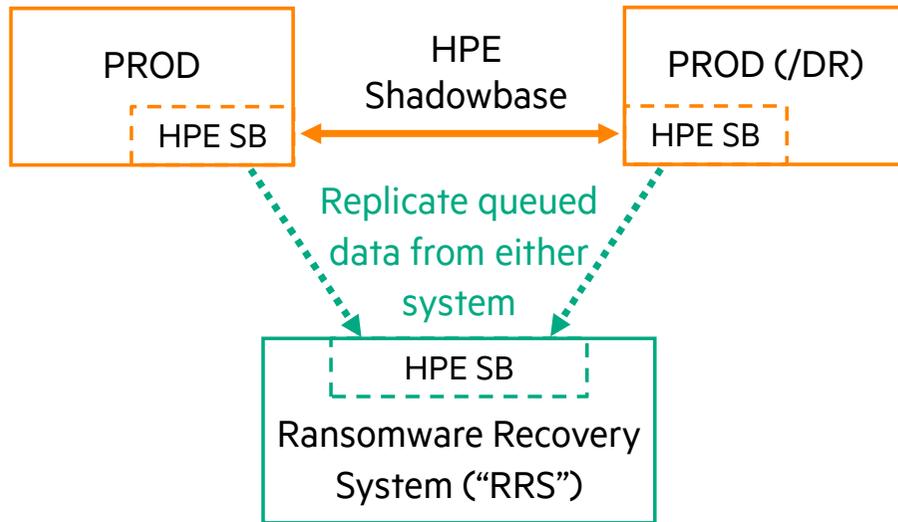
Business Continuity with Digital Resilience



# HPE Shadowbase Digital Resilience

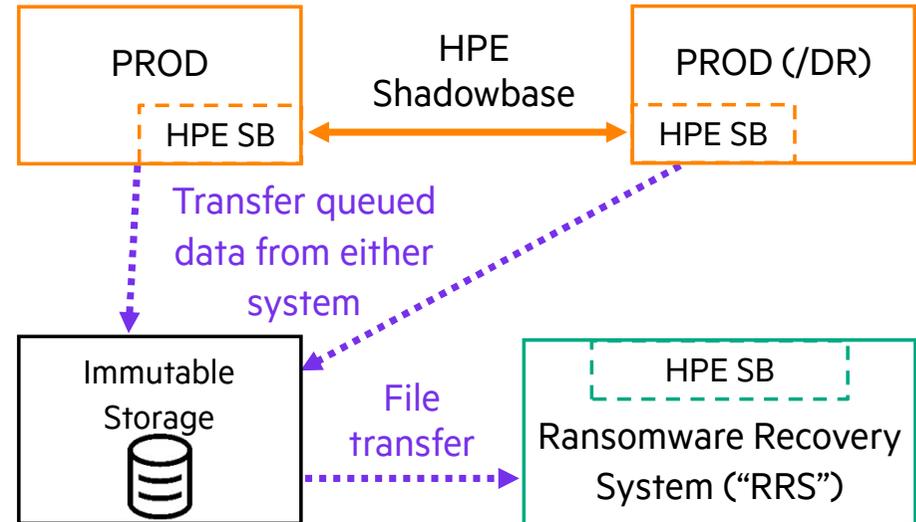
## Ransomware & Malware Defense

### 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**



# Removing Data Silos

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Data Integration & Application Integration (DI & AI)  
Key tools & utilities for Shadowbase environments



# How HPE Shadowbase eliminates data silos

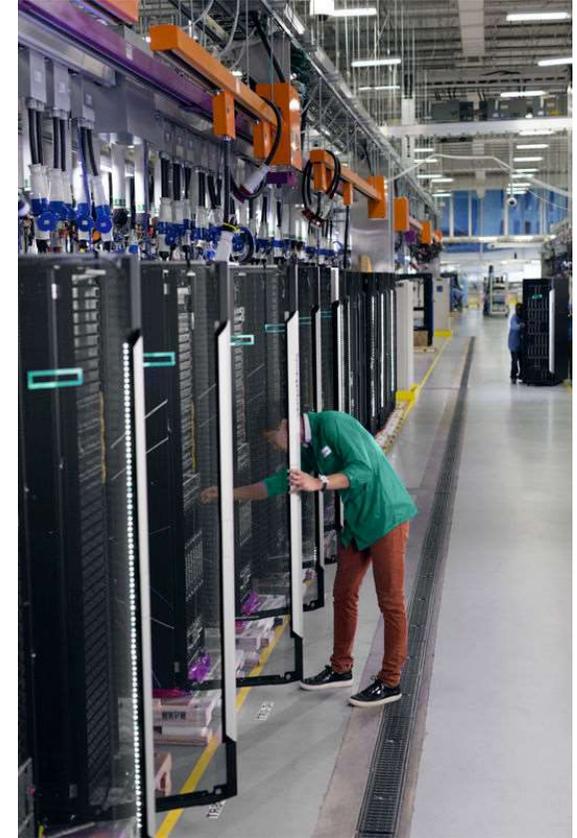
## State-of-the-art data streaming

### Data Integration (DI) - *eliminate data silos*

- Streams data between databases
- Sophisticated **heterogeneous data integration**
- Real-time CDC - Change Data Capture replication
- Supports transformation, filtering, cleansing, etc.

### Application Integration (AI) - *eliminate application silos*

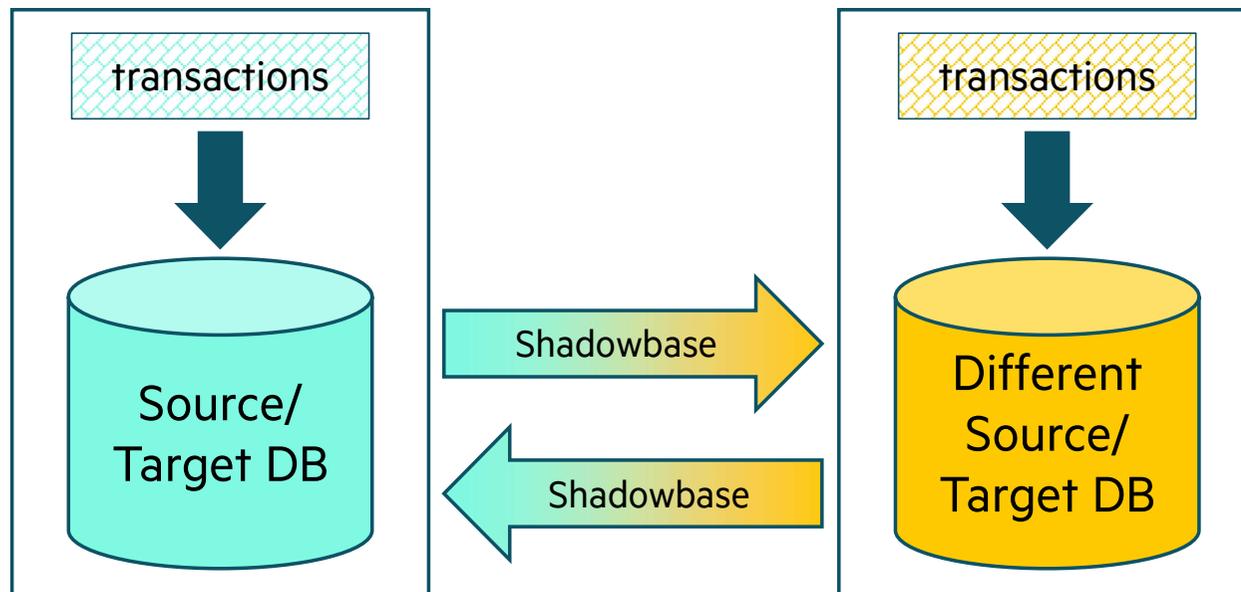
- Streams data between platforms
- Easily and seamlessly share data across applications
  - Real-time business intelligence
  - Real-time fraud detection
  - Decision support systems
  - Etc.



# HPE Shadowbase Streams for Data Integration

Bi-directional

Replicating data between databases while transforming, scrubbing, and filtering



## Supported DBs

### Source / Target DBs

- Oracle
- Microsoft SQL Server
- IBM DB2
- NonStop Enscribe, SQL/MP, SQL/MX

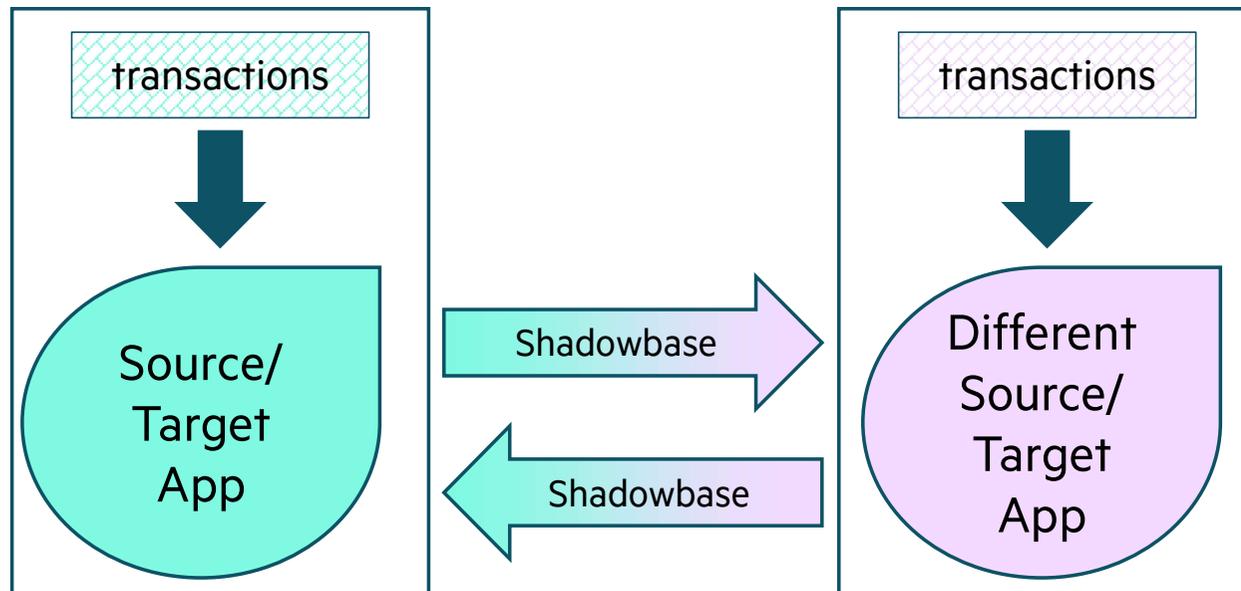
### Additional Target DBs

- SAP HANA
- SAP Sybase
- PostgreSQL
- Oracle MySQL
- Any DB with ODBC

# HPE Shadowbase Streams for Application Integration

Bi-directional

Replicating data from one application to a different application with Shadowbase acting as middleware



## Supported Apps

### Source / Target Apps

- BASE24 Classic
- BASE24-eps
- BPC SmartVista
- Home-grown Applications
- Lusic Tango
- Verifone RTS
- ...

# Futures and Summary

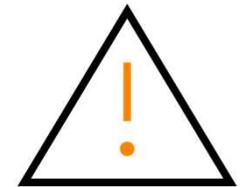
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## HPE Shadowbase releases in 2023

For full details, visit [ShadowbaseSoftware.com/Releases/](https://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 and Other Servers) version 6.700 & newer
  - Contact the *HPE License Manager* to request a new license before upgrading

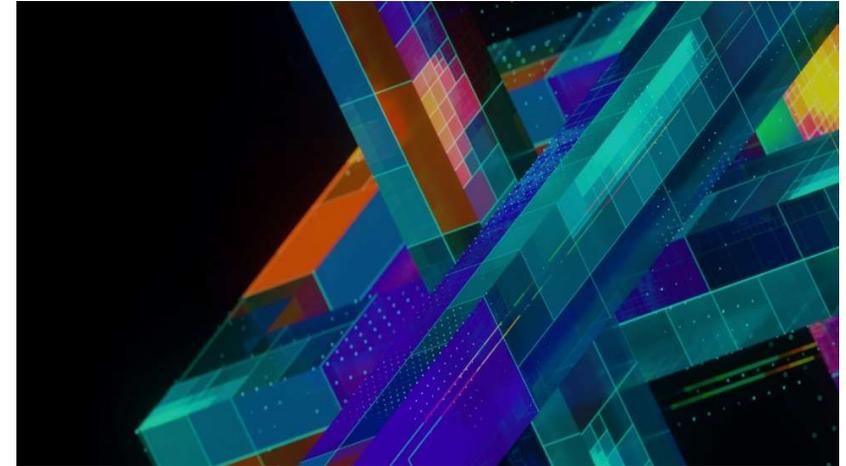


## New HPE Shadowbase features (1 of 2)

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 and 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 and SQL/MP users



For full details visit



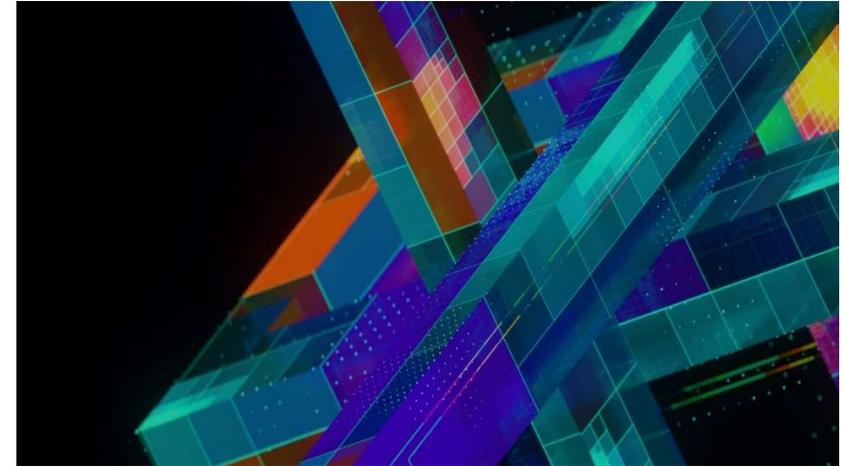
[ShadowbaseSoftware.com/Releases/](https://ShadowbaseSoftware.com/Releases/)

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## 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 and SQL/MX tables
    - Wildcard support
    - Automatic parallel execution capability to dramatically improve performance



For full details visit



[ShadowbaseSoftware.com/Releases/](https://ShadowbaseSoftware.com/Releases/)

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## Future features

### HPE Shadowbase

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- Direct target support for Kafka and 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 & data streaming support



# Survive a Ransomware Attack!

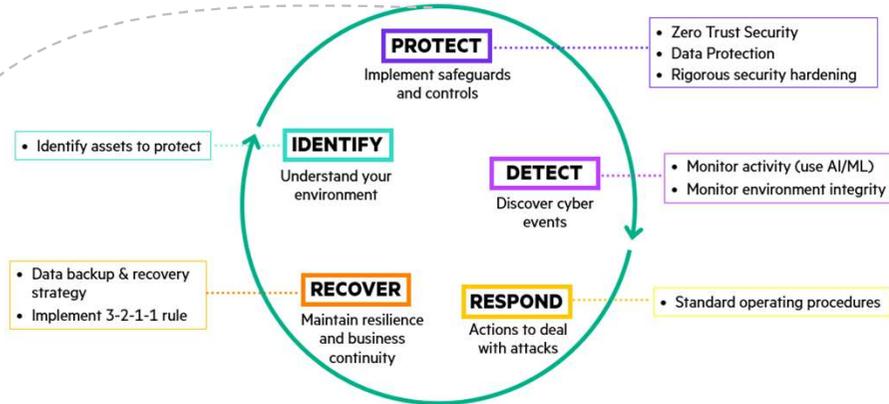
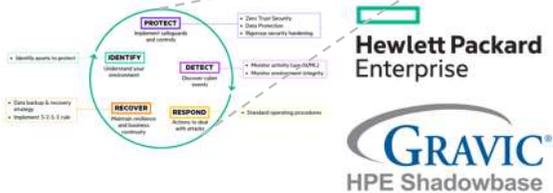
## HPE Shadowbase Ransomware demo

### 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



- New HPE Shadowbase capabilities to rapidly **recover** critical data
- Current focus is on **detection** and **recovery**, with future thinking on **prevention**

# NonStop Partnership– It’s a Beautiful Thing!



# **Thank you for attending this talk**

## **TBC23 TB67 - New HPE NonStop Business Continuity & Data Integration Features and Roadmap**

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# Additional content

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# HPE NonStop Shadowbase solution videos

Quick and simple overviews

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Solutions Overview <2 minutes

- [Vimeo.com/345756852](https://vimeo.com/345756852)

Data and Application Integration ~4 minutes

- [Vimeo.com/382625428](https://vimeo.com/382625428)

Essentials Bundle ~5 minutes

- [Vimeo.com/735455234](https://vimeo.com/735455234)

Business Continuity ~3 minutes

- [Vimeo.com/369785276](https://vimeo.com/369785276)

Zero Downtime Migrations <4 minutes

- [Vimeo.com/475133622](https://vimeo.com/475133622)

Compare & Repair ~3 minutes

- [Vimeo.com/523995684](https://vimeo.com/523995684)

