



Enterprise

# Shadowbase Product Suite Update

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# Agenda

**Shadowbase Product Suite – Quick Refresher**

**Shadowbase Support for HPE Integrity NonStop X Systems**

**Shadowbase Product Suite Updates – Recently Released**

- HPE NonStop Enscribe and SQL Enhancements
- New Features in Shadowbase for Migrating ACI BASE24 Environments
- Oracle Log Source Enhancements

**Shadowbase Product Suites - Future**

- IBM DB2 Log Source Introduction
- Enhanced Support for Sybase IQ and Teradata as a Target
- Shadowbase ZDL™: Synchronous Replication with *Zero Data Loss*

**Shadowbase Support for HPE S-Series Systems**

**Shadowbase Software Product Release (SPR) Process**

**Summary**

**Questions? Please ask as we go along...**



# Shadowbase Product Suite

- A Quick Refresher

# Featuring Shadowbase



- Available directly from **HPE Sales**
- Sophisticated **data replication** capabilities for business continuity
- Rich **data and application integration** options
- Available for **NonStop** and **other servers** (Unix, Linux, Windows)
- **Numerous databases supported:** NonStop SQL/MX, SQL/MP, Enscribe, IBM DB2, Oracle Enterprise, Oracle MySQL, SAP Sybase, Microsoft SQL Server
- **Zero Downtime Migrations (ZDM)** to migrate to a new platform or release
- Post replication database **compare**
- Management **utilities**
- Attractive **Cost of Ownership (COO)**
- Backed by **premium HPE** Support and Consulting Services

# Shadowbase Portfolio

Best in class products for a nonstop world



## Business Continuity

- Shadowbase Basic\* Data Replication
- Shadowbase Advanced\* Data Replication



## Data & Application Integration

- Shadowbase Basic\* Data and Application Integration
- Shadowbase Advanced\* Data and Application Integration



## Data Utilities

- Shadowbase Data Management Utilities
  - Audit Log
  - Audit Reader
  - Compare
  - Undo



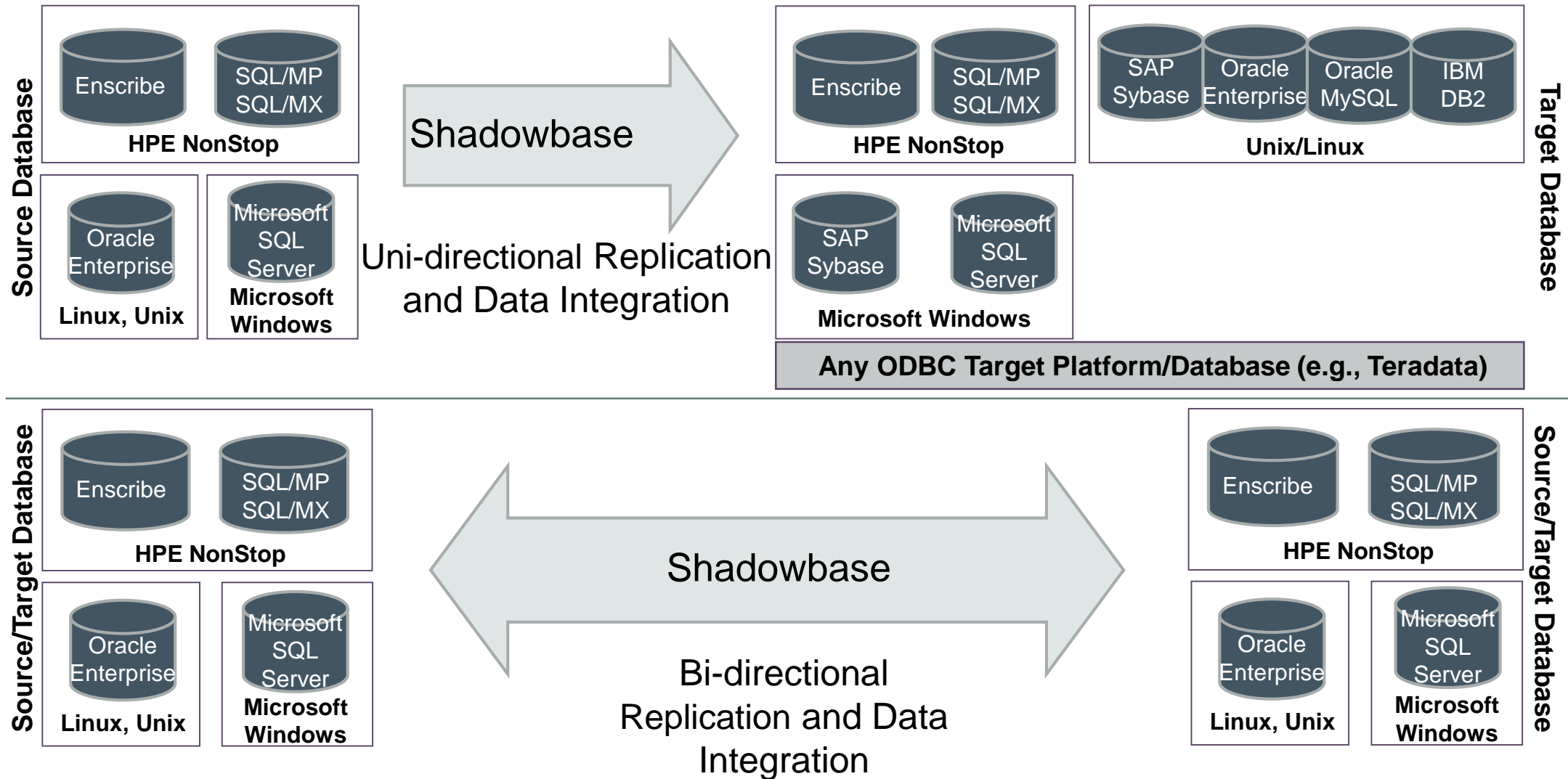
## Proven in the Market

- Large, worldwide, marquee customer base
- Shadowbase has been in the market for over 30 years

\* **Basic = Uni-directional / Advanced = Bi-directional**

# Shadowbase Supported Platforms & Databases

## Homogeneous & Heterogeneous Uni/Bi-directional Data Replication





# Shadowbase Support for HPE Integrity NonStop X Systems



# Shadowbase Support for HPE Integrity NonStop X Systems

General Availability (GA) March, 2015

Deployed in Production Since March, 2015



**HP SHADOWBASE**

**NOW AVAILABLE  
FOR HP INTEGRITY NONSTOP X**

CALL +1.610.647.6250 • EMAIL [Shadowbase@gravic.com](mailto:Shadowbase@gravic.com)  
VISIT [www.gravic.com/shadowbase](http://www.gravic.com/shadowbase)

Business Partner |  

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# Shadowbase Product Suite

- HPE NonStop Enscribe and SQL Enhancements

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# HPE Enscribe and SQL Enhancements

New features for Version 6.220\_AAC, released April, 2016, includes support for:

- Larger IPC and TCP/IP messages (improves thruput)
- Long rows in SQL/MX tables and Enscribe key-sequenced files
- Long keys (greater than 255 bytes) in Enscribe key-sequenced files
- SYSKEY replication for SQL/MX tables:
  - Using the SQL/MX Executor, Shadowbase can now preserve the exact source SYSKEY value in the target's SYSKEY column
  - Includes tables that use SYSKEYs as primary keys, and tables that use SYSKEYs as clustering keys within a primary key
- SYSKEY replication for SQL/MP tables:
  - Using the SQL/MX Executor, Shadowbase can now preserve the exact source SYSKEY value in the target's SYSKEY column (when there are no additional indices on the target table)
  - Speak with Gravic Support for additional details
- SYSKEY replication for Enscribe QUEUE files:
  - Replicates Enscribe queue files while maintaining the exact SYSKEY values
  - Speak with Gravic Support for additional details



# Shadowbase Product Suite

- New Features for ACI BASE24 Environments

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# New Features for Migrating ACI BASE24 Environments

Released features for Version 6.220\_AAC, released April, 2016, includes additional support for:

- Enhanced data mapping and data translation for cross-BASE24 version migrations
- Procedures for migrating a non-audited HPE NonStop BASE24 Classic environment into an audited (via AutoTMF) Shadowbase replication environment
- Enhanced HPE NonStop Enscribe BASE24 Classic to Oracle translation facilities for supporting Oracle target environments
- Working with HPE PS and partners on providing packaged services for assisting customers with BASE24 migration needs/requirements
  - BASE24 Classic and BASE24-eps environments
  - Non-audited to audited database files/tables for replication
  - Replacing your existing replication solution with Shadowbase
  - Please speak with us about your specific configurations and needs



# Shadowbase Product Suite

- Oracle Log Source Enhancements

# Oracle Log Source Enhancements



Released features for Version 6.220\_AAC, released April, 2016, includes enhancements based upon feedback from customer usage, and include:

- Support for Oracle 12c as a source (target support previously available)
- Added “Archive Redo Log” reading support (to existing “Online Redo Log” reading)
- Bi-directional replication for Oracle Log Source collection
- Added end-range (SCN) for data collection
- Improved restartability after failure
- Improved handling of constraint violation errors during replay
- Improved handling of binary/non-character data in character fields



# Shadowbase Product Suite

- IBM DB2 Log Source Introduction



# IBM DB2 Log Source Introduction



- Uni-directional DB2 source to any supported Shadowbase target
- DB2 source can be on any IBM source environment/platform
  - zOS, AIX, Linux, Windows, etc.
- Requires *IBM InfoSphere Data Event Publisher (IDEP)* to extract the transactional database changes from the DB2 journal and feed them into MQ
- Uses MQ on the source environment to deliver the source transactional database changes into Shadowbase
  - Shadowbase can run on any Shadowbase supported platform: AIX, Linux, Windows, etc. (NonStop?)
- Requires a client connection into the DB2 source database for Shadowbase to extract DB2 schema information
- Functionality largely complete and in customer testing

Note: With this new introduction, Shadowbase supports DB2 as a source, as well as DB2 as a target, uni-directionally. Bi-directional support under investigation.



# Shadowbase Product Suite

- Enhanced Support for Sybase IQ and Teradata as a Target (for Column-Oriented Databases)
- Enhanced Support for Array I/O Operations (for Row-Oriented Databases)

# Enhanced Support for Sybase IQ and Teradata as a Target



- Shadowbase is adding new/special features for columnar databases as a target
  - These features will also enable array I/O operations against row-oriented databases
- These include:
  - Enhanced bulk loading for initial database synchronization
  - Improved transactional change data appliers to keep target synchronized to source
    - In-memory statement optimization
    - In-memory transactional reduction
    - Micro-batching for faster change data updating
- Initially available for SAP Sybase IQ and Teradata as targets (columnar databases)
  - Other columnar database targets to follow based upon customer demand
  - Future release will add in array operations for sql/mx target databases



# Shadowbase Product Suite

- Shadowbase ZDL™
  - Synchronous Replication with *Zero Data Loss*
  - Available for HPE NonStop

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# Shadowbase for Business Continuity – Synchronous Replication

For many applications, asynchronous replication meets the business continuity goals

- For some, Active/Passive (A/P) configurations (e.g. classic disaster recovery) are sufficient
- For others, Sizzling-Hot-Takeover (SZT) or Active/Active (A/A) configurations are required

**But asynchronous replication has issues:**

- Data loss (A/P, SZT, and A/A)
- Application/data partitioning requirements to avoid data collisions (A/A)
- Data collision detection and resolution if they cannot be avoided (A/A)

**Asynchronous replication is not sufficient for the most critical applications, those for which any lost data or downtime will cost the business \$\$\$\$**

**Shadowbase synchronous replication resolves these issues**

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# Shadowbase Synchronous Replication

## Resolves the key issues with asynchronous replication

- No data loss (RPO = 0)
  - Source transactions are only committed if the replicated data is also safe-stored (and/or applied) on the backup system
- No need for application/data partitioning
- Data collisions can be automatically avoided when running active/active

## Enables Active/Active solutions for applications that were previously prohibited, due to either the inability to partition the application/data, or to avoid/resolve data collisions

- For some applications, requests or data cannot be partitioned to avoid data collisions
- For some applications, data collisions are unacceptable (e.g., stock trades and large EFT's)

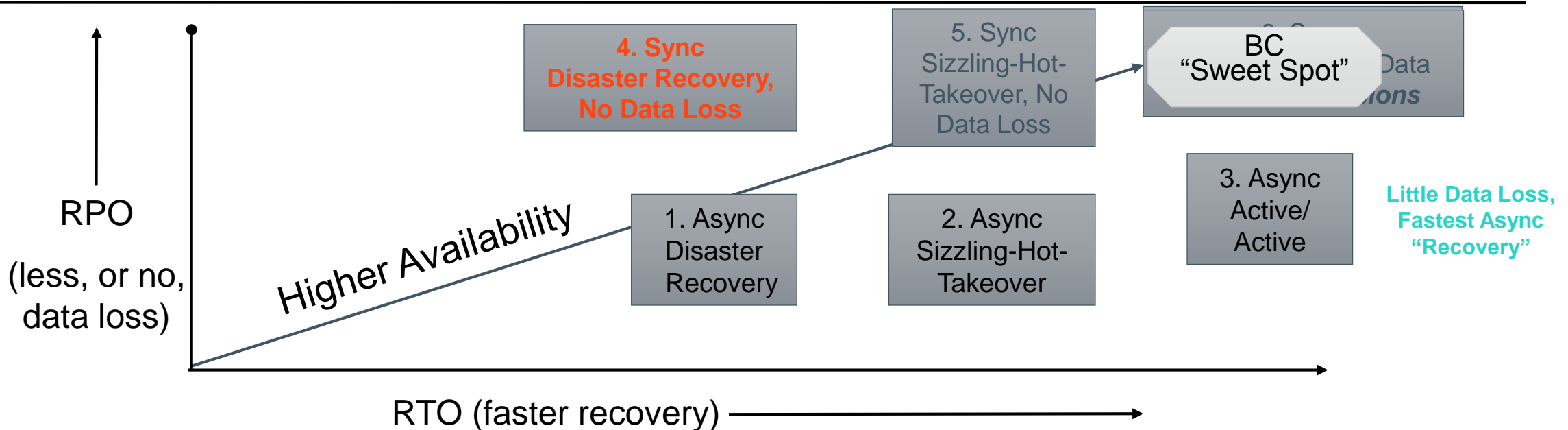
## Removes these restrictions, and enables the minimum possible outage and eliminates data loss, for the widest possible range of applications

## Is the only choice for the most business-critical applications where even milliseconds of lost data or downtime potentially means \$\$\$\$ in costs

# Shadowbase Business Continuity Continuum

1. Shadowbase Basic: Disaster Recovery (Async, A/P)
2. Shadowbase Advanced: Sizzling-Hot-Takeover (Async, SZT)
3. Shadowbase Advanced: Continuous Availability (Async, A/A)
4. **Future - Shadowbase ZDL: Disaster Recovery with No Data Loss (Sync, A/P)**
5. Future – **Shadowbase ZDL**: Sizzling-Hot-Takeover and Continuous Availability (Sync, SZT, A/A)
6. Future – **Shadowbase ZDL Plus SR**: Active/Active **with No Data Collisions** (Sync, A/P, SZT, A/A)

No Data Loss,  
Fastest Sync  
"Recovery"



Little Data Loss,  
Fastest Async  
"Recovery"

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# Shadowbase Sync Release Staging (1 of 2)

## Shadowbase ZDL™ (Zero Data Loss)

### Shadowbase ZDL Version 1 (“V1”)

- V1: Active/Passive – Data Safe Stored on Target for Replay
- Expected Availability for HPE NonStop platforms**
  - Controlled Availability (CA), requires application qualification
  - A special “Monitor Mode” is available to determine your *Application Latency*

### Shadowbase ZDL Version 2 (“V2”)

- V2: Active/Active – Data Safe Stored on Target for Replay
  - Data Collisions are still possible (if an Route-Anywhere/Update-Anywhere model is being used)
  - However, Shadowbase Data Collision Identification & Resolution logic is available to resolve them
- Development underway...
- Beta Program to follow **Shadowbase ZDL V1** (Speak with Gravic)

*Specifications are subject to change without notice and delivery dates are not guaranteed...*



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# Shadowbase Sync Release Staging (2 of 2)

*Shadowbase ZDL™* (Zero Data Loss)

*Shadowbase ZDL Plus SR™*

- Builds upon **Shadowbase ZDL V2** to provide:
  - Zero Data Loss on failure
  - PLUS Collision Avoidance in Active/Active architectures
    - Even if a Route-Anywhere/Update-Anywhere model is used
    - No need for application/data partitioning
    - Data applied into target database before source transaction commits
- Beta Program to follow **Shadowbase ZDL V2**



# Shadowbase Support for HPE S-Series Systems

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# Shadowbase Support for HPE S-Series Systems

Shadowbase for S-Series systems is available directly from Gravic or from HPE via a SoW (Statement of Work), but not via the normal HPE SB software ordering systems (QMS)

- HPE termination of support for the S-Series:

- HP.COM NonStop eServices Portal shows the HPML/SPML as follows: All S-Series h/w went *EOSL* (End of Support Life) 2014-12-31, all s/w went *Obsolete* 2015-12-31

- Shadowbase version 6.100 is the last Shadowbase release that supports S-Series systems

Gravic will continue to make critical fixes to version 6.100 for the S-Series

- On an *as-needed* basis for our customers (“as-needed” defined by Gravic!)

- Will not enhance the S-Series software beyond version 6.100

- The plan is to assist customers to MIGRATE OFF S-Series to a newer NonStop platform, not to add new replication environments to existing S-Series systems



# Shadowbase Software Product Release (SPR) Process

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# Shadowbase Software Product Release (SPR) Process (1 of 3)

- Gravic has standardized terminology and process for the Shadowbase software release model, to more closely align with the HPE process and usage
- Gravic Shadowbase versions are numbered numerically (e.g., N.MMM) in ascending order, with an attached “\_xxx” suffix to match the corresponding HPE Shadowbase release. The “N” is the release major number, the “MMM” is the release minor number. For example:
  - v6.100, initial release, 2014-08-08, DVD
  - v6.101\_AAA, released 2014-10-31, SCOUT
  - v6.200\_AAB, released 2015-03-16, DVD
  - V6.220\_AAC, released 2016-04-16, SCOUT
  - Etc.

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# Shadowbase Software Product Release (SPR) Process (2 of 3)

These are the most important terms and acronyms used in the Shadowbase software release model:

- **SUT** and **IP** are the two ways all HPE NonStop software are initially delivered.
- **SUT** – the media, where the HPE NonStop O/S and a number of other products (both free and licensed) are delivered all together in a bundle. A SUT is custom-built for each customer, based on the software they have licensed. **HPE Shadowbase is not SUT-based.**
- **IP (Independent Product)** – A software product delivered separately via DVD, as opposed to being bundled on the SUT. **HPE Shadowbase is distributed by HPE as an IP.** Typically, you must order and receive a DVD for HPE Shadowbase before you are able to download more recent software product release versions (SPRs) from SCOUT. Keep this in mind as DVD shipments may take several days up to two weeks to order/deliver from HPE.
- **SCOUT** – HPE online tool for customers to download SPRs from the HPE website. [Note: The customer must already possess a valid product license in order to download any SPR from SCOUT.]

**This typically means that HPE Shadowbase SPRs can be downloaded from Scout once you have previously received a DVD (very rarely will you use the ‘older’ version contained on the**

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# Shadowbase Software Product Release (SPR) Process (3 of 3)

These are the most important terms and acronyms used in the Shadowbase software release model (continued):

- **SPR** – a software update available from **SCOUT**, either a **TCD** or a **TCF**.
- **TCD** – a restricted software update delivered via an **SPR** downloadable from **SCOUT**. A **TCD** is an early version of a bug fix, intended for customer testing only (not production). A **TCD** by definition is restricted to certain customers. [Note: a “**Gravic TCD**” is delivered directly from Gravic, not via **SCOUT**, but otherwise has the same attributes.]
- **TCF** – a software update delivered via an **SPR** downloadable from **SCOUT**. A **TCF** is fully QA'd and ready for production use. A **TCF** may be generally available (GA) or restricted to certain customers. [Note: a “**Gravic TCF**” is delivered directly from Gravic, not via **SCOUT**, but otherwise has the same attributes.]



# Summary and Further Information



# Why Choose Shadowbase?

## Proven Technology

- Shadowbase is deployed at hundreds of sites, including many of the most-demanding NonStop sites

## Flexible Solutions for Your Business Challenges

- Business Continuity, Data Integration & Synchronization, Data Warehouse Feeds, Application Integration, Real-time Business Intelligence

## Global Sales Organization

- Global Reseller Presence from HPE Sales, and local time zone/language support from select regional resellers

## Global 24x7 Support Organization

- Global Support Presence from the HPE GNSC, and local time zone/language support from select regional resellers

## Affordable, and Committed to the NonStop Platform

- Improves TCO via Overall Cost Advantage and Features
  - “One Product, Many Solutions”
- We are partnering and investing with HPE in many innovative enhancements
  - “Only on NonStop”



# For More Information

## Breaking the Availability Barrier Book Series

### Volume 1

**Survivable Systems for Enterprise Computing**

### Volume 2

**Achieving Century Uptimes with Active/Active**

### Volume 3

**Active/Active Systems in Practice**

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# Thank you



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