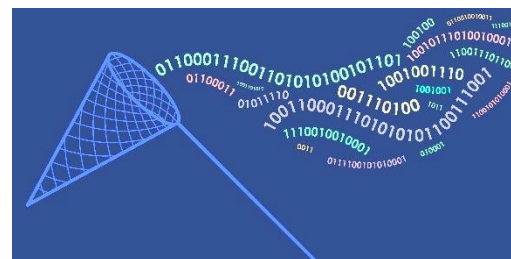# Shadowbase Zero Data Loss (ZDL)

One of the most significant IT costs following catastrophic failure is data loss. Even with a business continuity solution in place, there is still the possibility of data loss when an unplanned outage occurs. The data loss is caused by application database changes made on a source system that have not yet been replicated to the target (backup) system before the source system fails. Such data loss can cost a company millions of dollars, including other significant impacts, such as loss of customer confidence, negative publicity, regulatory violations, and even threats to human health and safety.

Reduce Outage Costs with Zero Data Loss

With Shadowbase ZDL software, these concerns are a thing of the past – Shadowbase ZDL saves a company from all of the costly impacts of data loss. Using unique and patented synchronous replication technology, Shadowbase ZDL ensures that all database changes made on a source system are successfully replicated to the target system before the source application is allowed to commit (make permanent) those changes. Thus, if the source system fails, no committed changes made to the source database will be lost; they will be present on the backup system and applied to the backup database. Unlike some synchronous replication products, Shadowbase ZDL does not require any specific disk hardware technology (e.g., an HPE XP array is **not** required), and there are no imposed distance limitations between source and target systems.

The Best Business Continuity Solution – Synchronous Replication

Shadowbase ZDL uses patented synchronous data replication technology – what is the difference between this and other data replication methods? There are two main business continuity data replication technologies: asynchronous and synchronous.

The primary attributes of asynchronous replication are:
- Replication activity is decoupled from the application making database changes on the source system:
  - o The application on the source does work and commits the database changes.
  - o The data changes are read after-the-fact and replicated to the target database.
- Thus, there can be application data changes committed on the source system which are not yet replicated to the backup (this time delay is called the "replication latency"), and this data can be lost if the source system fails. In technical terms, the Recovery Point Objective, or RPO, is greater than zero (RPO > 0).
- Data collisions[1] are possible with active/active architectures; such collisions must either be avoided (e.g., by application or data partitioning), or identified and resolved if they occur.

The primary attributes of Shadowbase ZDL synchronous replication are:
- Replication activity is synchronized with the application making database changes on the source system:
  - o The application does work and calls to commit the transaction.
  - o The data changes are not committed on the source system until those changes have been replicated to the backup system.
- Thus, there cannot be application data changes committed on the source system which are not yet replicated to the backup, and no data is lost if the source system fails (the RPO = 0).
- With Shadowbase ZDL, data collisions are also possible with active/active architectures; such collisions must either be avoided (e.g., byapplication or data partitioning), or identified and resolved if they occur[2].

Consequently, asynchronous replication is insufficient for many critical applications – those for which *any* lost data will incur unacceptable levels of business cost. For such applications, Shadowbase ZDL with synchronous replication provides the solution to avoid data loss.

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[1] Data collisions occur in asynchronous active/active architectures when the same database record is changed simultaneously during the replication latency window on two or more systems in the configuration. Each change is then replicated to the other system(s), overwriting the original changes. Thus, all database copies are made inconsistent and incorrect. Data collisions only occur with active/active architectures and not with active/passive architectures

Shadowbase Synchronous Replication – Product Rollout

Shadowbase synchronous replication features are planned for incremental release as follows:[2]

1. **Shadowbase ZDL R1[3]**
   - Supports zero data loss for active/passive system architectures (uni-directional)
   - Supports NonStop Enscribe and SQL/MP databases, and Expand communications
   - Sizzling-Hot-Takeover (SZT) and active/active (bi-directional) architectures are not supported
2. **Shadowbase ZDL R2[3]**
   - Adds support for zero data loss for SZT and active/active architectures
   - Data collisions will still be possible in active/active environments; existing Shadowbase data collision identification and resolution solutions can be used (if needed)
3. **Shadowbase ZDL R3[3]**
   - Adds in support for SQL/MX databases, and TCP/IP communications

	Shadowbase ZDL R1	Shadowbase ZDL R2	Shadowbase ZDL R3
Zero data loss?	A/P: Yes SZT: Not supported A/A: Not supported	A/P: Yes SZT: Yes A/A: Yes	A/P: Yes SZT: Yes A/A: Yes
Communications **Databases**	Expand Enscribe, SQL/MP	Expand Enscribe, SQL/MP	Expand and TCP/IP Enscribe, SQL/MP, SQL/MX
Are data collisions possible in an active/active environment?	N/A	Yes	Yes

Shadowbase Synchronous Replication Features by Release

Summary

The Shadowbase ZDL business continuity replication solution is for those applications where no data loss can be tolerated. Shadowbase synchronous replication is the only choice for the most business critical applications where even milliseconds of lost data are unacceptable. Shadowbase ZDL provides unique, differentiating product capabilities for the HPE NonStop market.

Learn more:
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Please follow:

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[2] Data collisions can also happen with Shadowbase ZDL. Check with Gravic for future capability in this area.

[3] Shadowbase ZDL product licensing requires application prequalification. Shadowbase ZDL product release specifications are subject to change without notice. Shadowbase ZDL product delivery dates are not provided nor guaranteed. Shadowbase ZDL product purchasing decisions should not be made based on information provided by this material.