High Availability Options for Oracle Database

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Who is Dan?

- Virgo
- Scuba Diver (PADI Advanced OW, Nitrox)
- Over 21, under 35
- Oracle DBA & UNIX Admin background
- Certifiable: OCM, ACE Director, RHCE
- Consultant, mostly fixing things that are broken
- Active community participant: RAC SIG, SIG Council, DBA Track Manager, blogger, tweeter
- ESA Practice Manager at Piocon Technologies

Agenda

- Database High Availability Spectrum
- Oracle Export/Import
- Oracle 10*g* Data Pump
- Oracle RMAN
- Oracle Data Guard
- Oracle Advanced Replication
- Oracle Streams
- Failover Clusters
- Oracle Real Application Clusters
- Summary

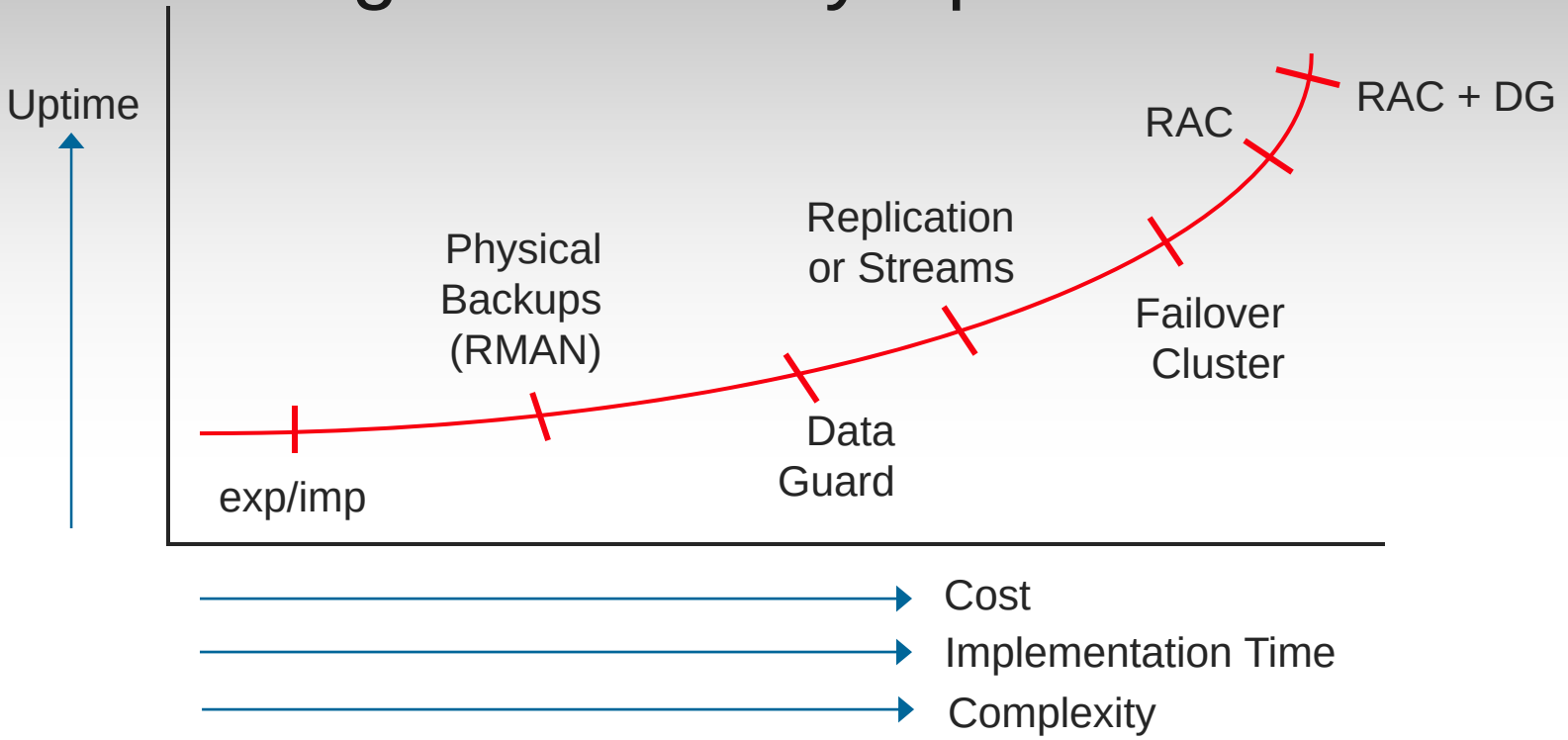
Oracle Database
High Availability Spectrum

Many options for availability

Some options are very basic, but necessary

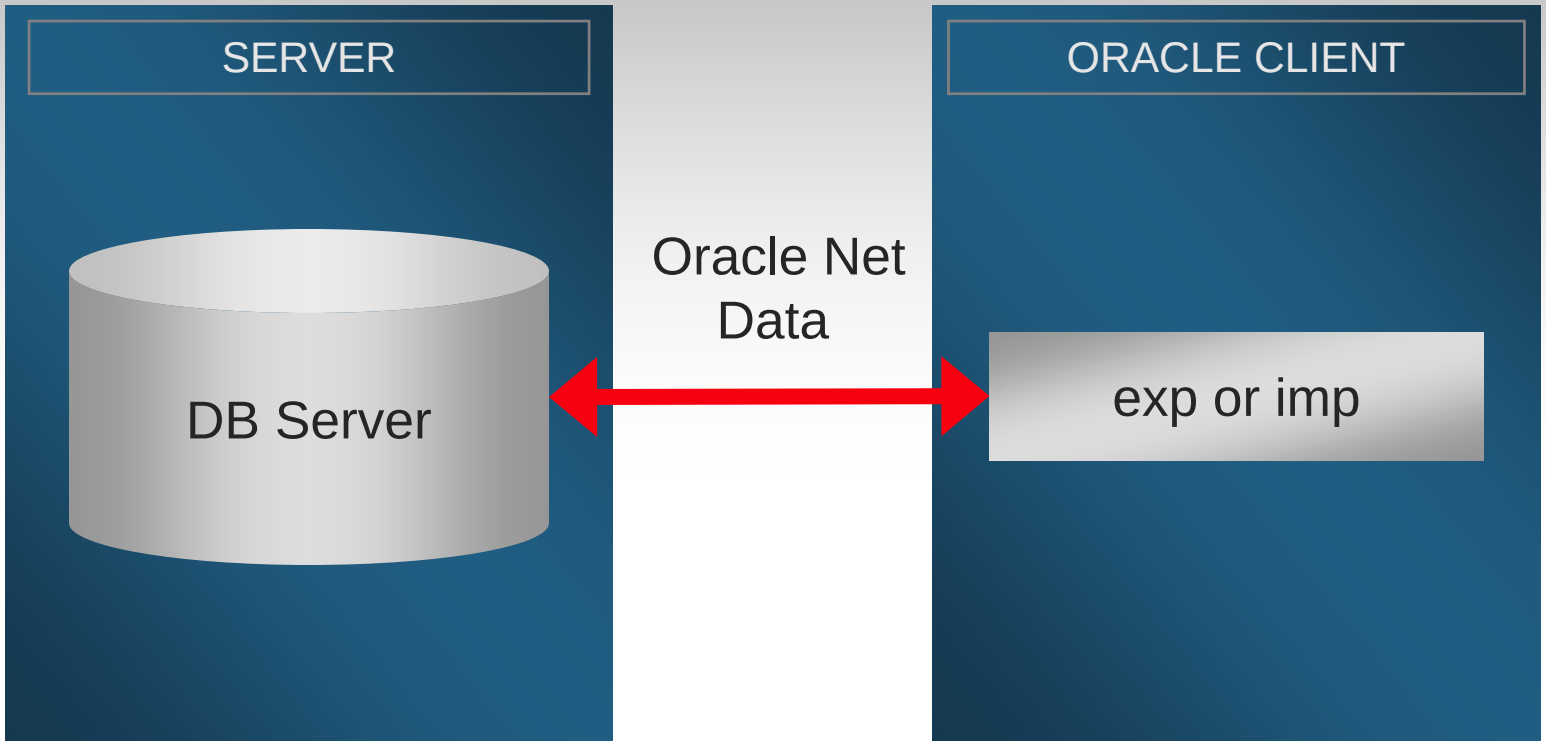
Cost, complexity, and implementation time are factors to consider

Oracle Database High Availability Spectrum



One certainty: failures will occur.

Oracle Export/Import Overview



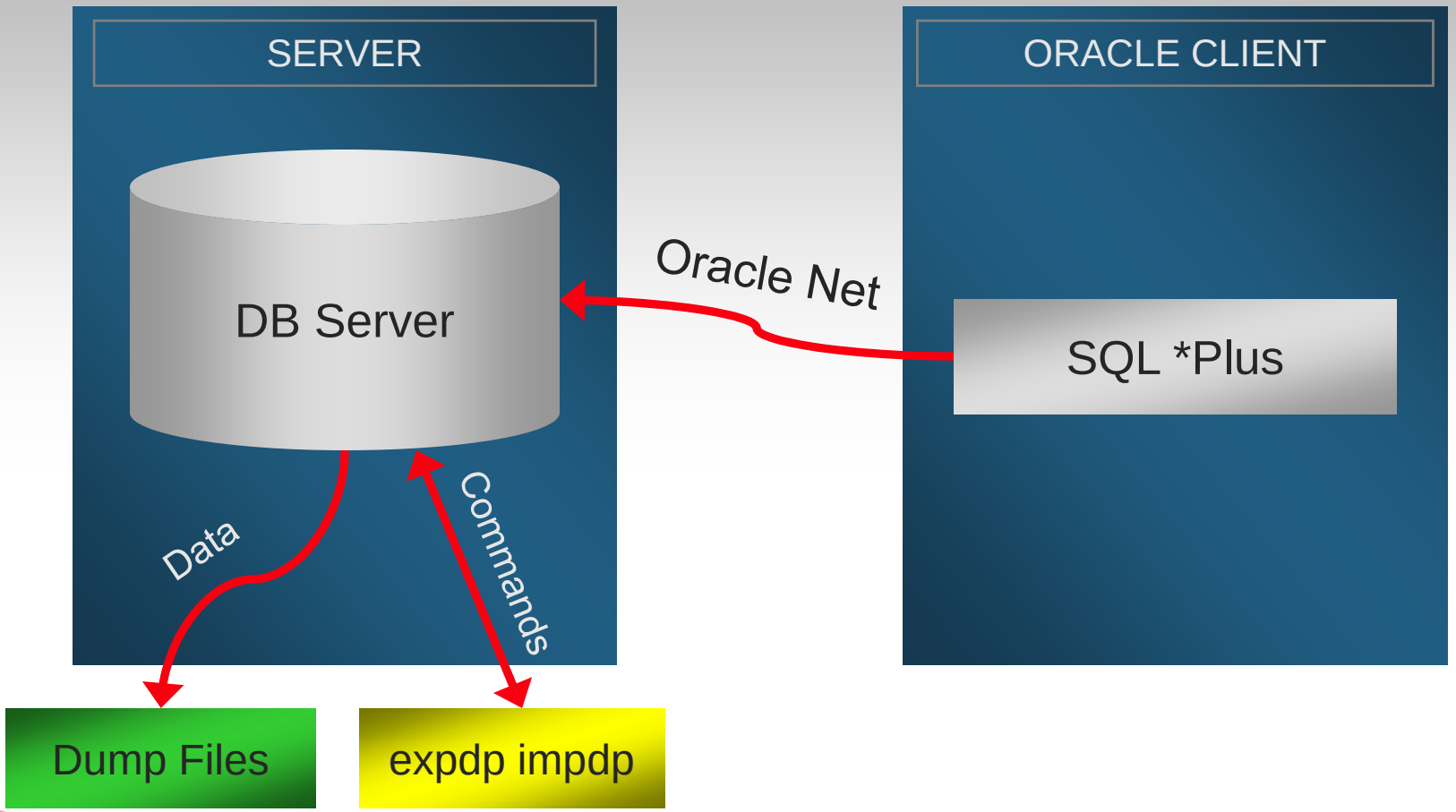
Oracle Export/Import Advantages

- Well-known, well-defined, stable
- Simple to implement, very few prerequisites
- Cross-platform, multiple version compatibility

Oracle Export/Import Disadvantages

- Time consuming
- Resource intensive
- Large files produced
- No "roll forward" capability
- Does not meet most availability requirements

Oracle Data Pump Overview



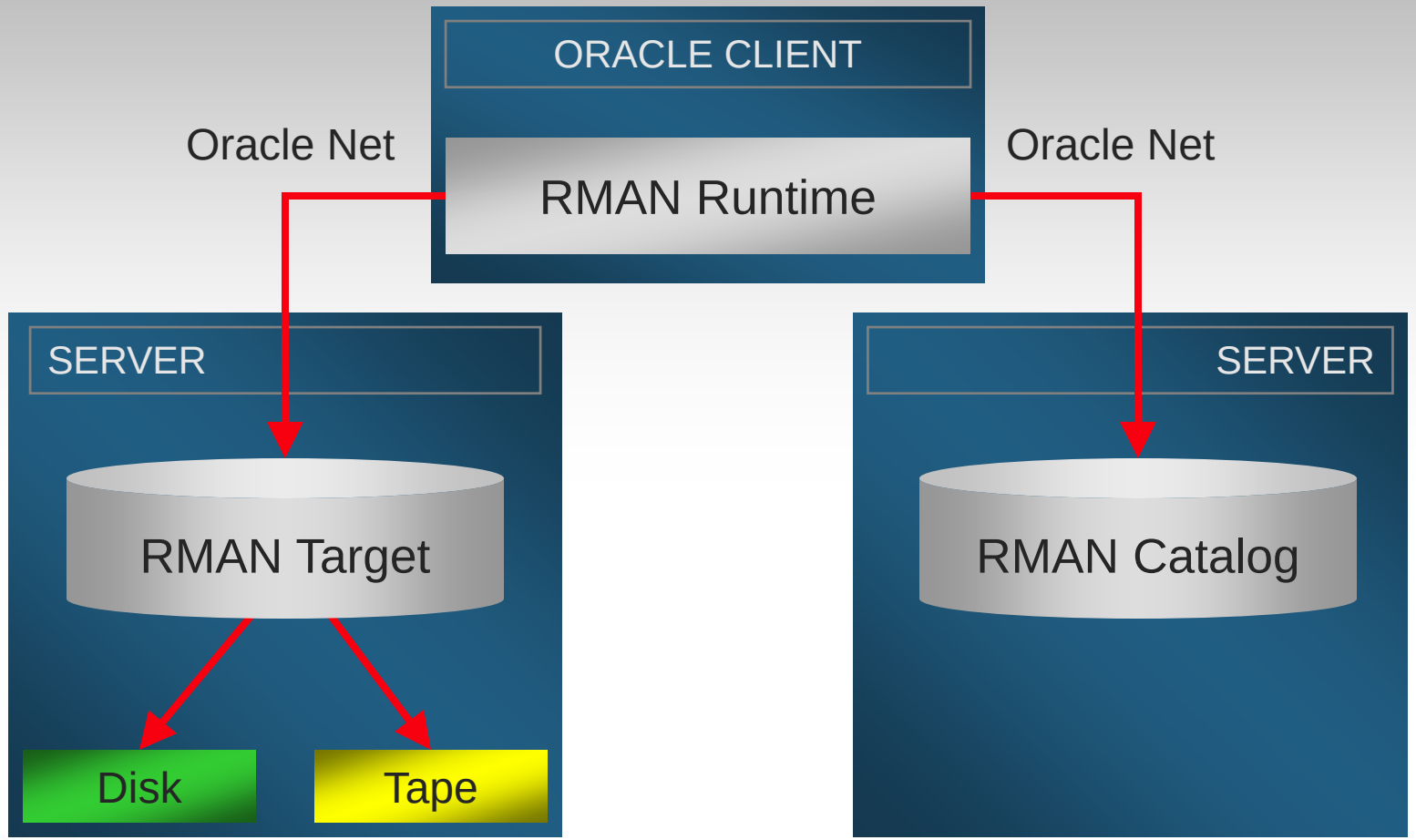
Oracle Data Pump Advantages

- Programmatic API: DBMS_DATAPUMP
- Cross-platform compatibility
- Parallelism capability for speedy operations
- Architecture allows detach and reattach to long-running jobs

Oracle Data Pump Disadvantages

- Server-side only, no client/server
- Resource intensive
- Large files produced
- Only available in 10g and higher (new technology)
- Does not meet most availability requirements

Oracle RMAN Overview



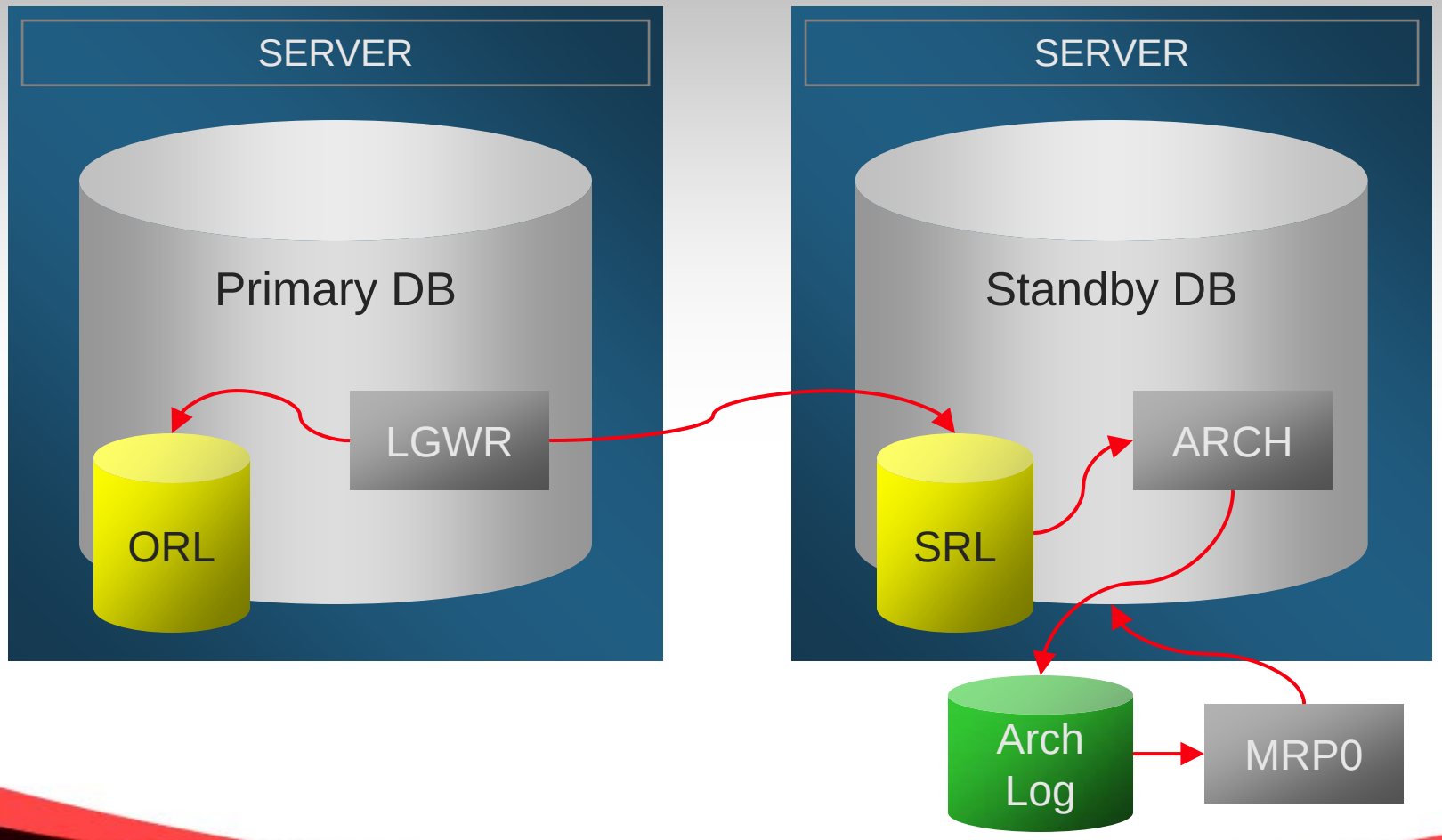
Oracle RMAN Advantages

- Common interface for all platforms
- Incremental backup functionality
- OS-independent scripting language
- Backup automation with very few commands
- Parallelism built in to speed up all operations

Oracle RMAN Disadvantages

- Separate catalog database needed for some features
- Proprietary syntax
- Learning RMAN can be challenging for some DBAs
- Compatibility can be tricky between releases

Oracle Data Guard Overview



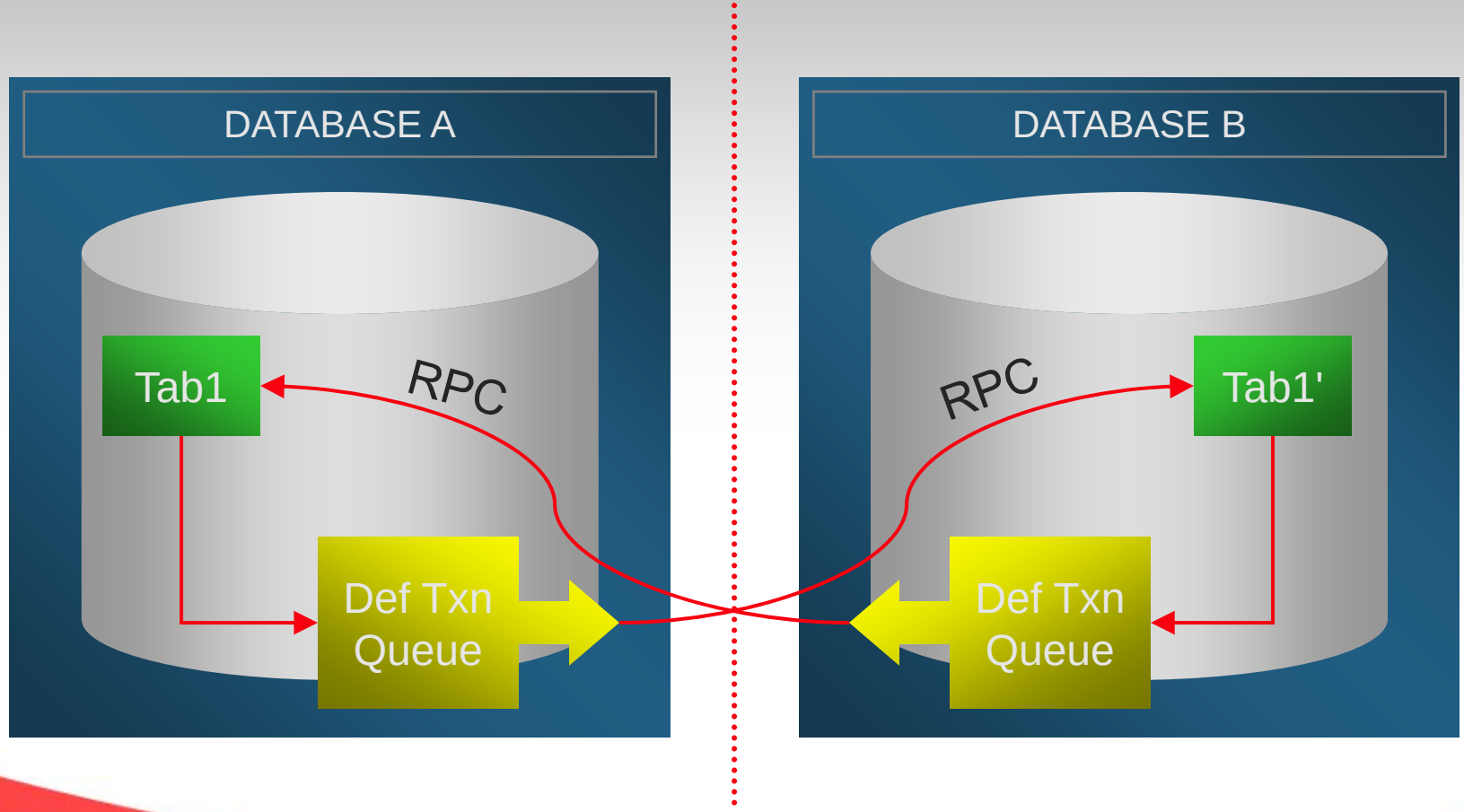
Oracle Data Guard Advantages

- Geographically dispersed sites
- Useful for logical data corruptions if lag behind used
- Flexible configuration options for protection level
- Reporting and backups can be diverted to standby
- Automatic resync for failed primary

Oracle Data Guard Disadvantages

- Same platform and OS required
- Additional database copies require storage and maintenance
- Specific knowledge required, training may be needed
- Typically a DR option, not "true" HA

Oracle Advanced Replication Overview (Asynchronous)



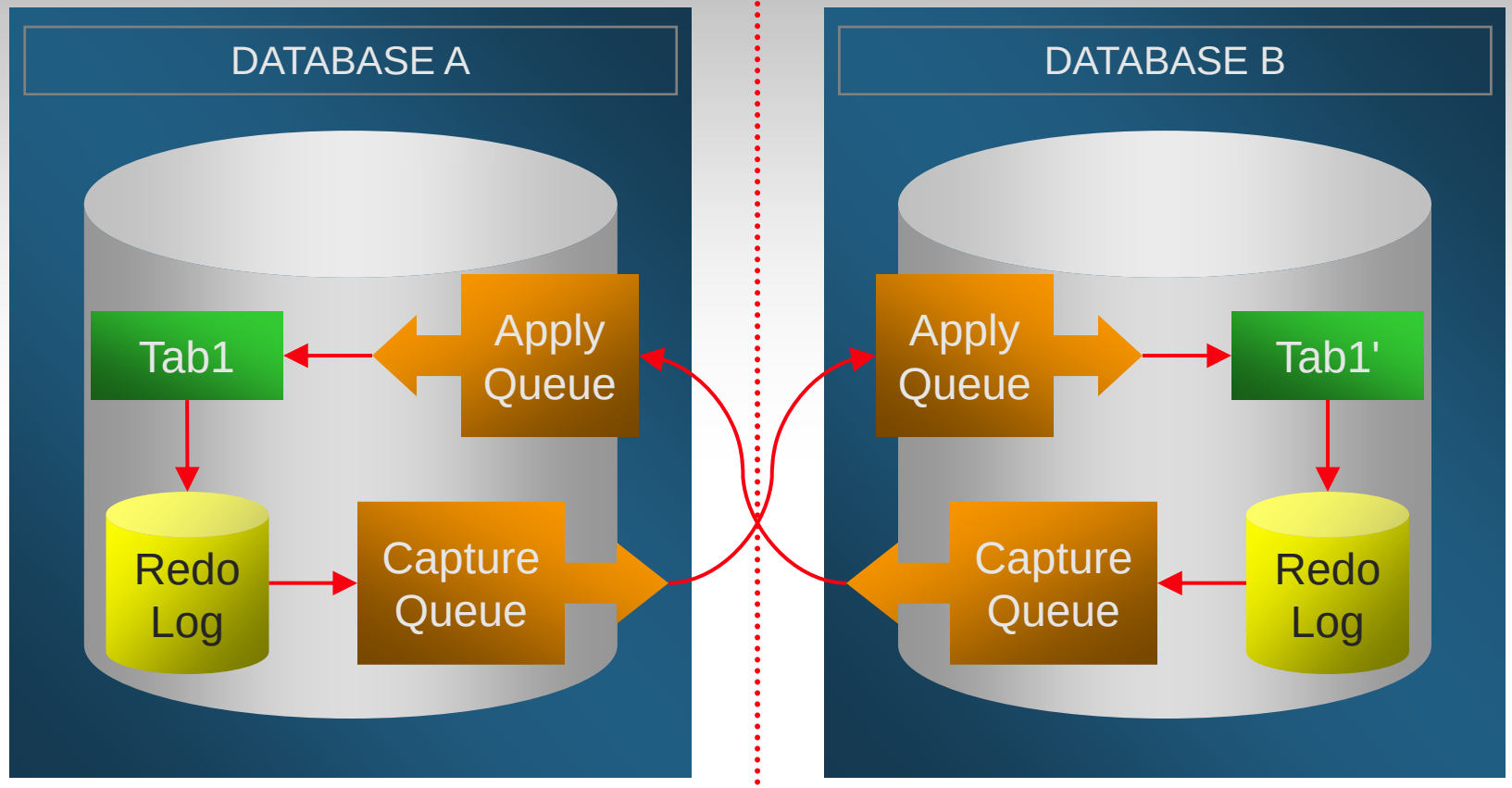
Oracle Advanced Replication Advantages

- Geographically dispersed sites
- Long history, well-deployed
- Any platform, any OS, most DB versions
- Relatively simple architecture

Oracle Advanced Replication Disadvantages

- Triggers on tables cause overhead
- Not all DBAs have experience with Adv Rep
- No easy way to fail over users to remote site
- Conflict resolution can be challenging
- Replication delay typically at least 60 seconds

Oracle Streams Overview



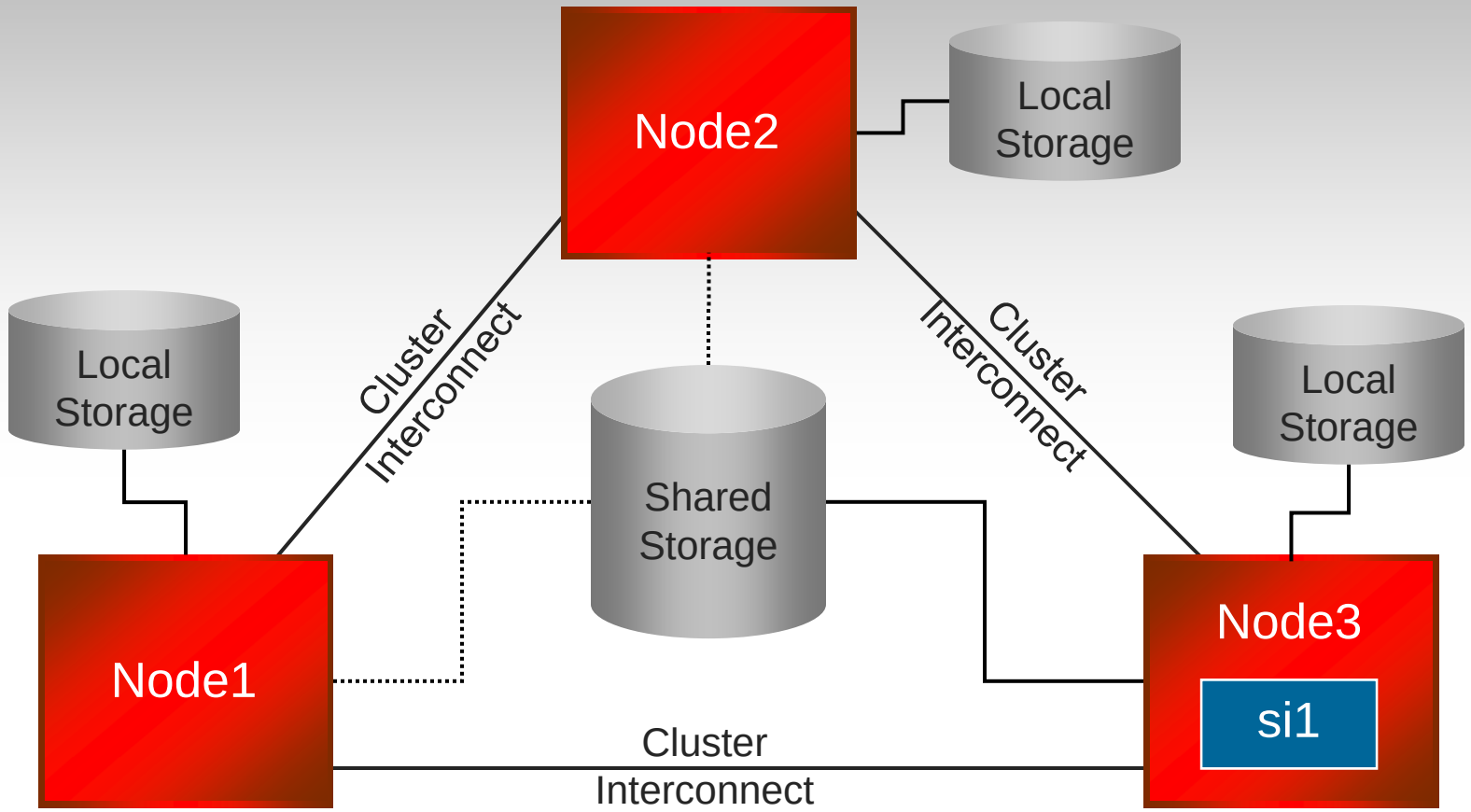
Oracle Streams Advantages

- Geographically dispersed sites
- Included with Enterprise Edition
- Source site continues even if capture is disabled
- Typically quick propagation (seconds)
- Oracle is encouraging Streams usage

Oracle Streams Disadvantages

- New technology, not as much knowledge available
- Relatively complex architecture
- Conflict resolution can be challenging
- Learning curve can be steep
- Troubleshooting can be challenging

Failover Cluster Overview



Failover Cluster Advantages

- Straightforward implementation, no application changes
- Clusterware vendors support Oracle directly
- Oracle Clusterware is free in most cases
- Automatic monitoring and failover actions

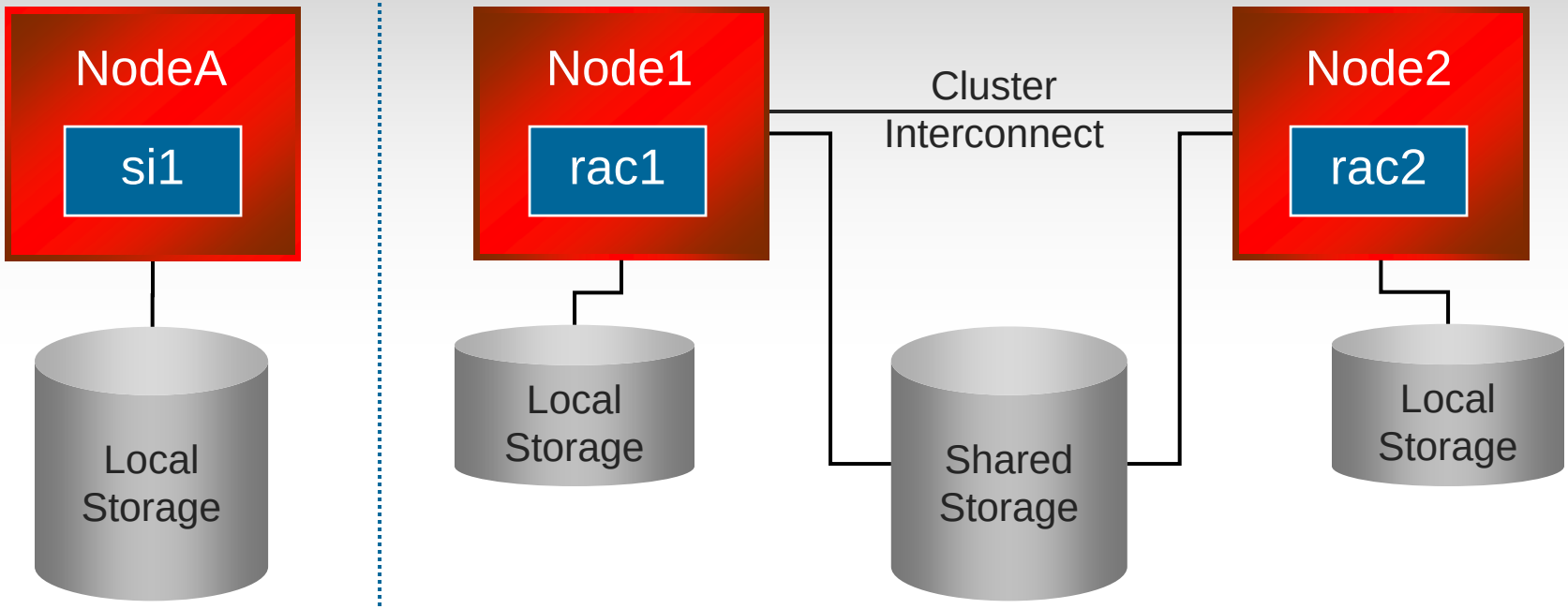
Failover Cluster Disadvantages

- Additional testing required
- Some additional training and management planning needed
- Clusterware can be expensive
- Troubleshooting can be more challenging
- Outage is typically 2 to 5 minutes

Failover Cluster Products

- Microsoft Cluster Server (w/ Oracle Failsafe)
- Veritas Cluster Server
- PolyServe Matrix Server (now Novell's)
- Red Hat Cluster Server
- HP MC ServiceGuard
- IBM HACMP

Oracle Real Application Clusters Overview



Oracle RAC Advantages

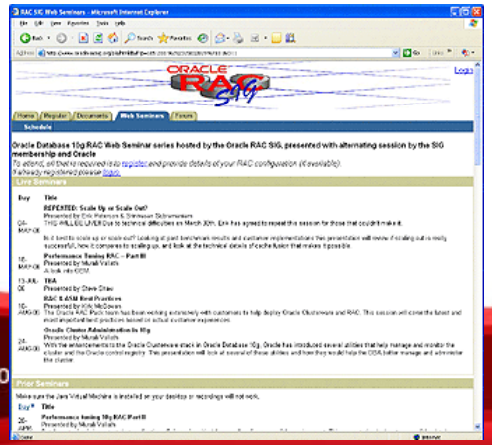
- Most applications require no changes
- Incredible scalability and zero downtime capable
- Well-defined, mature product with active community of support (www.oracleracsig.org)
- No third-party software required
- No special hardware required

Oracle RAC Disadvantages

- RAC license can be expensive (except for SE)
- Some applications require additional exception handling
- Extensive testing required for configuration changes
- Third-party application vendors have certified RAC
- DBA training necessary for success

RAC SIG Events

- See www.oracleracsig.org for details
  - **Webcasts: Average** 2x per month, live
  - **Conference Events:** Panels, Networking/QA sessions
  - **Forums (via OTN):** Lots of participation from RAC SIG as well as Oracle gurus
- Join the RAC SIG at www.oracleracsig.org!



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Save the Date!

April 13 – 17, 2008

Colorado Convention Center

Denver, Colorado

www.ioug.org/collaborate08

Thank You!

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