Business Benefits of Recovery Appliance

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About Evergy

Evergy, Inc.

Evergy is committed to delivering clean, safe, reliable sources of energy today and well into the future. So we're embracing alternative energy sources to generate more power with less impact to our environment, and adopting new technologies that let our customers manage their energy use in ways that work for them. Whether it's new ways to connect with us, electric vehicle charging stations, or the next innovation around the corner, we're dedicated to empowering a better future.

Energy that moves us forward.

Evergy, Inc. (NYSE: EVRG), through its operating subsidiaries, Kansas City Power & Light Company (KCP&L) and Westar Energy, Inc, provides clean, safe and reliable energy to 1.6 million customers in Kansas and Missouri. By combining KCP&L and Westar Energy, Inc., in 2018, a leading energy company was created that provides value to shareholders and a stronger company for customers.

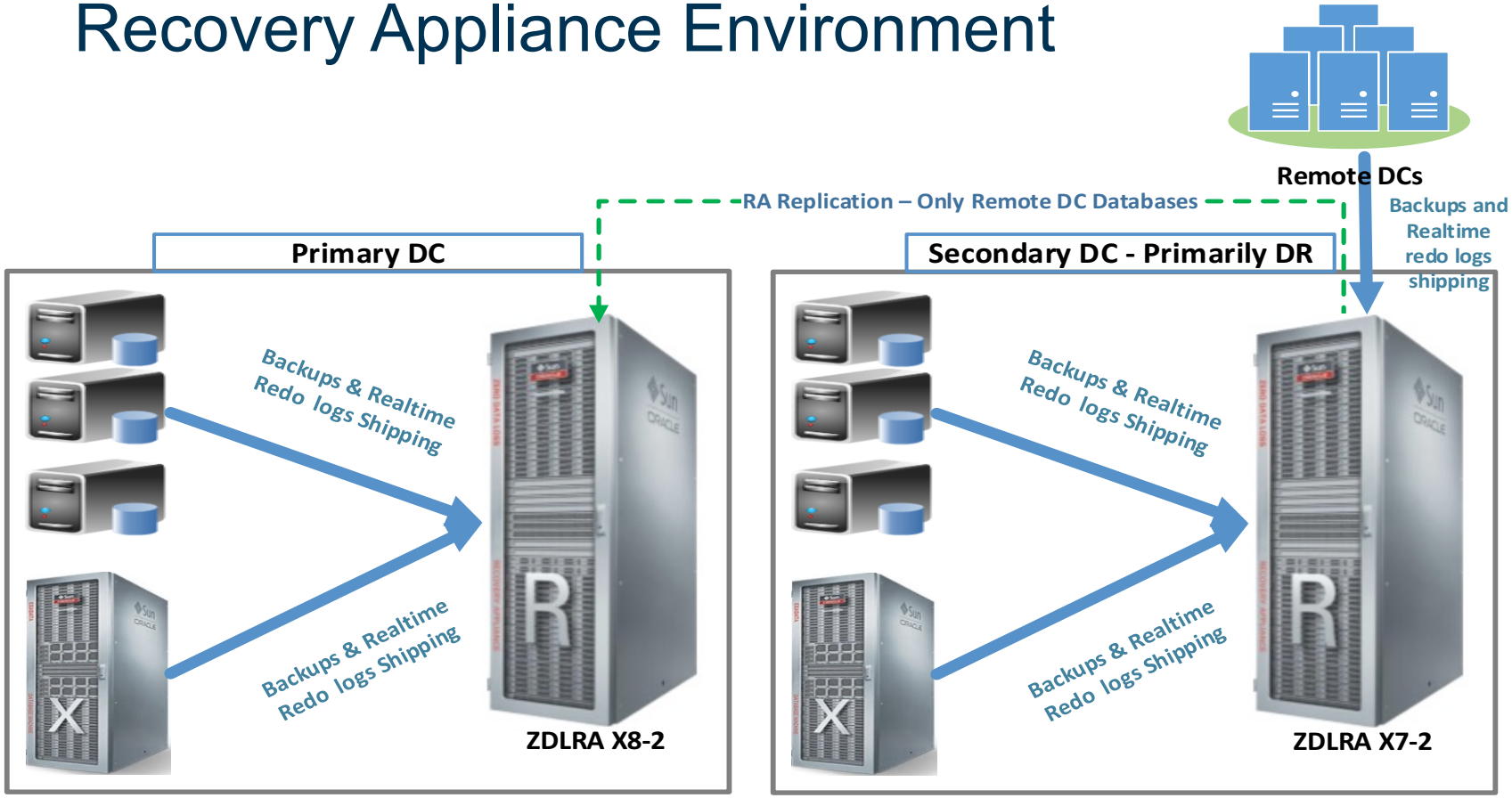
Environment Overview and Legacy Backup Practices

- Critical utilities applications with complex, integrated systems
  - 365 x 24 x 7 uptime requirements
  - Strict SLAs for monitoring and availability
- 300+ Oracle Databases ranging from few GB's to ~50 TB
  - Varying Recovery Point Objectives (RPO) and Recovery Time Objectives (RTO) based on criticality
  - Mix of Oracle Engineered systems and other vendors
- Legacy database backup strategy:
  - In house script for backups to the data domain
    - Sunday : L0 Backup
    - Weekly : Cumulative L1 Backup
    - Archive logs backup to local drive then to the Data Domain every 30 minutes

Challenges with Legacy Backups

- Application performance impacted due to backup processing
  - High resource utilization on database servers during backup
  - Long and unpredictable backup time - *as high as 24+ hours*
- Operational challenges resulting in excessive time demands
  - Monitoring backups and space
  - Managing Archive logs was very tedious and cumbersome
- Backup integrity was never tested
- Refreshing lower environments (test/dev) had a turn around time of 2+ days using export/import
- Merger introduced new and increased existing operational hurdles

Recovery Appliance Environment



- Recovery Appliance deployed at Primary (Prod) and Secondary (DR) data centers
  - Databases at each backup to the local Recovery Appliance, and real-time redo transport enabled for sub-second RPO
- Databases at remote data centers backup over the LAN to DR data center Recovery Appliance, then are replicated to Recovery Appliance at Primary data center
- VLAN tagging to isolate backup network from corporate network

Recovery Appliance to the Rescue

- One time L0 and forever L1 reduced resource utilization on database servers by manifolds
- Improved backup timings - 50 TB database taking approx. 40 minutes for backup.
  - About 10x less time spent on L1 backup
- Incredibility less time spent managing backups environment
  - Scheduling, Alerting, Monitoring, and Reporting through OEM
  - Protection policies simply different retention windows by tier
- Eliminated archived log backups scheduling with real-time redo transport – *their protected automatically*
- Backup space saving - Achieved very high Dedupe ratios
  - Engineered systems 15:1 to 35:1
  - Non-engineered systems as high as 150:1
- Lower environment refresh through RA backups and Data Guard. Reduced turn around time to 15 minutes from 2+ days.

Recovery Appliance Simplified Cross Platform Migration for Data Consolidation

- Challenge of moving big Endian databases (~ 15 TB) from remote datacenters to Exadata over the thin bandwidth.
- Recovery Appliance Database Migration Tool simplified the whole database migration process

1. L0, then periodic L1 backup of big Endian databases (AIX) to Recovery Appliance
2. Use Recovery Appliance migration script to automate:
    1. Tablespace restore to little Endian (Exadata)
    2. Apply Incremental backup
    3. Apply final incremental backup with read only tablespaces
3. Export/Import of metadata for tablespace plugin
4. Synced database with GoldenGate and handover to data conversion team