About Paychex, Inc.

• Paychex is a leading provider of payroll, human resource, insurance, and benefits outsourcing solutions
• Founded in 1971 - Serves approximately 570,000 small and medium-sized businesses.
• Based in Rochester, NY – 100+ offices in U.S. and Germany
• 12,000+ Employees
• Fiscal 2013 highlights (ended May 31, 2013):
  • $2.3 billion total service revenue
  • $569 million net income
• Computerworld list of “Top 100 Best Places to Work in IT”
• Information Week list of “Top 250 Technology Innovators”
Paychex Database Operations & Services

• Located in Webster, NY - 15 Miles NE of Rochester
• 3 Managers – 2 Oracle & 1 SQL Server
  • 27 DBA’s – 18 Oracle, 9 SQL Server
• Database Security Analyst
• Lead Oracle Database Architect
• Team Responsibilities:
  • Design and Standards, Project Participation, Database Security
  • Installation, Maintenance, Patching, DB Performance Management
  • 365x24x7 On-Call Support
  • Exadata Platform
  • Active Data Guard
  • GoldenGate
  • Oracle Enterprise Manager
ENTERPRISE REPORTING ENVIRONMENT

- EXADATA – ENABLER FOR A NEW OPPORTUNITY
  - Enterprise Reporting Warehouse

- PAYROLL Transactional DBs
  - Nine 2-Node RAC Clusters, HP DL785, RH LINUX, 11.2.0.2 DB, 7 TB

- Oracle GoldenGate sends transactions to EXADATA
  - Loads to Staging Tables

- Oracle Data Integrator transforms
  - Loads Enterprise Reporting Database

- Oracle Business Intelligence used to create reports
- Active Data Guard used for Disaster Recovery
PAYCHEX EXADATA ENVIRONMENT

- ASR currently Set up
- Platinum Services in progress
- All Backups are offloaded to the ZFS
PAYCHEX EXADATA ENVIRONMENT

GoldenGate will continuously capture changes from the DLTP database redo logs. It will put committed changes into trail files that will reside on NAS storage which is NFS mounted to each Pay Cluster. The GG agent on the Exadata server will pull those trail files and convert them into backend trail files that will reside within DBFS on Exadata. GoldenGate continuously processes the backend trail files and loads data from them into the staging tables within ERPRDB.
MAA ASSESSMENT

• RECOVERY POINT OBJECTIVE – 0 DATA LOSS
• RECOVERY TIME OBJECTIVE – 2 HOURS
• Fault Protection “Out of the Box”
  • Cell Server, Disk, Network, Database
• Review of Data Guard Configuration
  • Active Data Guard used to update Physical Standby DB
  • Currently using ASYNC mode (SYNC used for transactional DB’s)
• Use of Test and Performance Testing Platform
  • Support Testing through use of Real Application Testing tool
  • Validate Operational and Recovery Best Practices, Test Patches & SW changes
MAA ASSESSMENT

• Monitoring/Alerting
  • Validation of Auto Service Request (ASR)
  • Review Oracle Enterprise Manager integration
• Patching – Minimum once/6 months
  • Working with ACS to begin Platinum Services
  • 2-4 Patching events / year
• Implement FLASHBACK
  • Logical corruption protection
• Enhance Backup/Recovery
  • ZFS Storage Appliance
• Implement health check process
  • Run and review exactchk weekly
  • Standard DB Health Checks
7420 ZFS STORAGE FOR BACKUPS

• One in each data center
  • Backing up both Prod and Standby

• RMAN Nightly Incremental with Image Copies
  • Using RMAN Catalog

• Moving GG files (Trail files) off Exadata to ZFS

• We are getting 9TB/Hour backup rates!
TO-DO LIST

• EXTEND ZFS STORAGE FOOTPRINT – Oct 2013

• SCHEDULE PATCHING WITH ACS – Nov 2013

• UPGRADE OEM TO 12c – Feb 2014
  • Evaluating use of the ODA for our OEM platform

• CONFIGURE USE OF DATA GUARD BROKER – Dec 2013

• UPGRADE GG TO 11.2 or 12 - 2014
  • Replace GG Monitor with 12c EM Plug-In

• DETERMINE TIMELINE FOR ORACLE DATABASE 12c UPGRADE - 2014
PARTING THOUGHTS, LESSONS LEARNED…

• Platform and Application are evolving together
  • 20% client base to date, big push in 2014
• Dedicated Team within DBA Organization
  • But don’t leave IT OPS Partners out of the discussion....
• Work with Oracle – They built it, they are the experts !
  • End-End Single Vendor Support
  • Unified Monitoring of all components
• 3x Disk Mirroring – Not using it, paid the price once
• Practice Fail-Over and other recovery scenarios
• Standard Oracle DB – Same MAA Best Practices Apply !
• THANK YOU and have a GREAT week !!