

# RDB Issues at SLAC

Archiver Store

General EPICS Support

# Oracle Archiver data store

- Oracle 9 based
- Used partitioning feature
- This year's bill \$30,000 (for this feature)
  
- New collaboration archiver has now fixed the problems we solved with Oracle
- New collaboration archiver promises much more functionality soon; strong team at work here.
  
- Oracle is MUCH slower at retrieval

# Oracle vs. File-based Retrieval

Retrieval test	Oracle (with partitioning)	New file-based
86,000 points of scalar data	48 seconds	5-6 seconds
4050 points of length-4 array	12 seconds	< 1 second
4050 points of length 3072 array	56 seconds	11 seconds

# Why is Oracle so bad?

- Heavily indexed
- Partitioning improved performance x2
- Simple tables
  
- Data not organized well with respect to minimizing number of disk reads in Oracle.
- Oracle archiver with few PVs works much faster (fewer disk reads).

# RDB supporting EPICS

- Very hot area of interest
- Many talks in last several EPICS meetings
- Split between “as-is” (reactive) and “generating” (proactive) RDB
- Collaborations (or collaboration wishes) are strong
- Issues include scope, data capture, tools - pretty much everything.

# Recent Work

(Which I remember)

- Diamond (big plans)
- SNS
- Argonne
- BESSY
- DESY
- TJNAF
- SPEAR

# EPICS Schema contains

(Diamond Talk)

- **Domain, Subdomain, Technical Area, Component**
- **Crate**
- **Device**
- **IOC**
- **DBD**
- **DBGroups**
- **DB File**
- **DB file Templates**
- **Slot**
- **Carrier & IP Cards**
- **Connection Between the Cards & the Device**

# SLAC's long-standing idea

- “UPV” Universal PV database
  - Generation type
  - Support many subsystems
    - Alarm handler configs
    - Channel watcher configs
    - Archiver configs
    - EPICS .db and .template files
  - NOT device oriented
  - NOT including cabling, maintenance, etc.

# SLAC prototyping (J. Rock)

- Oracle developer ER diagrams
- Scripts to expand EPICS db templates
- Experimentation with tools for maintenance
  - Mass modifications
  - Grouped modifications
  - Single modifications
- Experimentation with scripts for generating subsystem configs (and .db)

# SPEAR

(S. Allison)

- PV information gathered upon reboot (triggered from IOC)
- Database is NOT Oracle
- TCP server on host for transfer
- Does data restore too
- Database User Interface is php
- ODBC interface for Excel export

# Tools

- Pre-Java oracle tools (webforms, etc.)
- JDeveloper
- JDBC
- PHP, Apache servers
- Excel interfaces

# Biggest problem with RDB

- Projects always start WAY TOO LATE with the RDB support part
- The bigger the planned scope (Include maintenance? Include wiring? Include fieldbus connections?) the more important an early start is.
- Can the SNS/Argonne/?? Collaboration help us “legacy installations” catch up?