JPL's Move From StorageTek Redwood to 9940 Drives/media

Cris Windoffer

Jet Propulsion Laboratory

Pasadena, California

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Introduction

- JPL needed to replace the Redwood tape drive system for our DMF data.
- Chose the StorageTek 9940 tape drive.
- Supported on the Cray SV1.
- Better reliability.

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The Problem

- Eight terabytes of data
- Primary and backup copies
- Minimize user impact

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Hardware

- StorageTek 9940 drives
  - Microcode 1.29.208
- Powderhorn silo (ACSLS v6.0.1)
- SCSI connection

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Configure/Test Tape Devices

- Drives set to 3590 emulation
- text_tapeconfig file
  - "type=VTAPE"
  - Define group 9940
- Add UDB limit "jtapelim" for second tape group access
- Tapes labeled with "tplabel -g 9940"
- Testing with "dump" and "restore"

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Configure/Test DMF

- dmf_config file
  - "MSP_NAMES redwd1 redwd2 silo3 silo4"
  - "silo3 MSP_TYPE tape"
  - "9940 DEVICE_TYPE 3490 VERIFY_POSITION on"
- "dmvoladm –m silo3"
  - "create B02100-B02199 tt 9940 zs 200m"
- UDB test user limit "archmed:1:"
- Testing with "dmput", "dmget" and "dmdidle"

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Moving Redwood Data to 9940

- "MSP_NAMES silo3 silo4 redwd1 redwd2"
- Mark Redwood tapes "read only"
- Turn off DMF sparse and hard-delete scripts
- Sort dmselect output by tape VSN using dmcatadm to match on "handle"
- Dmmove – one VSN at a time
  - "cat $VSN | dmmove –s 50000 silo3 silo4"

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Tips

- Ldcache – not recommended
- Renice all processes
- Cut back on system dump and cron jobs
- Leave hard-delete to end
  - “cat $VSN | dmmove redwd1 redwd2 silo3 silo4”
- Trim log and journal files
- Borrow additional tape drives
- Automate “reply” for bad tape mounts

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Ongoing Problems

- Dirty tapes
- Dirty drives
- Hung channels and processes
- Crash

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Summary

- User impact light
- Moderate support required by operations and StorageTek
- Improvements sped job from 100 days to 65 days, to 38 days
- 8 terabytes double copied
- Success

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