

# User Perspective on CDF dCache Analysis Diskpool

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# Unofficial Levels of DH Organization

## Production

- ◆ collaboration-wide, raw and reconstructed data
- ◆ not addressed here

## Physics Groups

- ◆ 5 groups: B, Top, Exotic, QCD, Ewk
  - > groups have their own priorities, special needs
- ◆ ntuples
  - > producing, validating, staging, skimming
- ◆ large MC datasets, and their ntuples

## Small Analysis Groups

- ◆ data ntuple sub-skims or personal, derived ntuples
- ◆ analysis specific MC
- ◆ special study samples

*Diskpool is used by Physics and Analysis groups*

# Snapshot

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## Current use by group:

	Size (TB)	group (%)	subgroup (%)	Personal (%)
<i>bnt</i>	3		20	80
<i>ewk</i>	7	100		
<i>exo</i>	2			100
<i>qcd</i>	5	95	5	
<i>stn</i>	27	100		
<i>top</i>	7	96	2	2

## Current use by type:

primary ntuples: ~75% (being moved to tape)

secondary ntuples: ~20%

Monte Carlo: ~ 5%

*Diskpool is being used as expected*

# Ongoing Corrupt File Investigation

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## Problem

- ◆ Created 50K Stntuple files, all validated for readability
- ◆ About every two or three weeks, one becomes unreadable
- ◆ Response is to exclude and eventually replace
- ◆ Level is low ( $6e-4$  bad/file-year) but can change final events

## Checksum Study

- ◆ ran checksum on 25K file subset in May, Jul, Aug, Oct
- ◆ found 6 differences in Jul→Aug, all traced to a bad disk
- ◆ one bad file in checksum list, but had unchanged checksum
  - corrupt before first checksum?
- ◆ 5 bad files not in checksum list
- ◆ ~5 bad files before the problem was tracked
  - no corruptions in SAM+general dCache with  $\frac{1}{4}$  the exposure
  - dCache CRC now seems to be the same as original
  - copying file out of diskpool keeps error and original CRC

*Some low-level problem exists - seems most likely user code?*

# Some User Comments

Observations from informal survey of a few power users...

## Flexibility

- ◆ Offline was able to add disk quickly on short notice
  - > even on Thanksgiving eve...
- ◆ changes can occur while the system is in use
- ◆ easy to re-assign space in arbitrary units

## Uniformity of one effective partition

- ◆ allows trivial scripting for writing and reading
- ◆ allows trivial monitoring of space, and who is using what
- ◆ easy to pack data densely
- ◆ easy to shuffle data over multi-TB space

## Reliability

- ◆ the system is taken down occasionally, but no real grumbling
- ◆ CDF support has been responsive
- ◆ occasional file corruptions are manageable, just below “annoying”

# Some User Comments

## Performance

- ◆ generally good speed,  
essentially equivalent to rootd servers

## Complaints

- ◆ one user (TP) is having severe trouble with reading slowness
- ◆ several users mentioned the early problems with doors sticking
  - now apparently completely fixed
- ◆ several users mentioned moving dccp function to non-CDF machines,  
farms is not simple, convenient
- ◆ one noticed that dccp has “noclobber” as default (not expected)
- ◆ no wildcards allowed (dccp \*.root /pnfs/diskpool)
- ◆ single user with write privileges (cdfdata)

*Overall, users were very positive about diskpool*

# Summary

- ◆ a simple a flexible multi-TB space is valuable
- ◆ the system is employed to good effect
- ◆ use cases are as expected
- ◆ a low-level corruption exists, not pinned down yet  
(looking more like not the diskpool's fault)
- ◆ users are overall very positive

*Diskpool is a convenient, practical way to provide large disk space to Physics/Analysis groups*