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AFS/DFS – Migrating to NFSv4

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Recap – AFS and DFS

- AFS: CMU to Transarc to IBM
 - Benefits: caching, Internet-wide naming, good security, replication, backup
 - OpenAFS and Arla available now
- DCE/DFS – from various vendors through OSF and back
 - AFS technology ported to DCE framework
- IBM: EOSL for both by 12/2004



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So I'm moving to NFSv4...

What do I need to think about?

- Data Migration
- Backup
- Security
 - Group and ACL differences
- Global namespace
- Caching
- Vendor differences



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Data Migration

- AFS data visible only from AFS
 - Can't move disk packs
 - Could write through NFS client
 - Could read through AFS-NFS gateway
- DFS may permit local access
- Strategy: local access is best, and try your tools before you need 'em



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Backup

- AFS and DFS had integrated backup
 - So does each NFS systems vendor, but often they are not the same :-)
- Some backup software designed to be cross-platform
- Strategy: figure one out for backup



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Security

- Don't panic - basic security is just as strong in NFSv4!
 - Kerberos V5 mandatory-to-implement
 - Authentication/Integrity/Privacy with good key strength
 - Ability to map remote users to local creds
 - Future: PKI-based key management



Security, cont'd

- AFS and DFS groups very flexible
 - Groups are global to cell and hierarchical
- NFS groups more limited
 - Numeric GIDs same as on local Unix
- ACLs: AFS (rwlidka) and DFS (rwxcid) vs just rwx for NFS
- Strategy: simplify groups, use Unix ACLs and rwx perms



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Global Namespace

- AFS and DFS very good here
- Work going on in NFSv4 space to address this, so watch this space
- Strategy: use an automounter to mirror your AFS cell's structure



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Local Caching

- AFS and DFS support local cache
- Some NFS implementations do it
 - But they don't always work the same
- In NFS, this is considered distinct technology – not part of protocol
- Strategy: talk to your vendor



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Vendor Differences

- NFS protocol is standard
 - But management can vary
- Automounters, mount & utility command syntax can vary (scripts)
 - Some work in SNIA on this
- Agreement on the critical stuff
- Strategy: pick vendors wisely



So Why NFSv4?

In case I've just scared you :-)

- AFS, DCE/DFS EOSL
- OpenAFS might not feel OK
 - Do you have the right staff for it?
- NFSv3 available now
- NFSv4 is an open standard
- NFSv4 is the thought leader in distributed filesystems now



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So Why NFSv4? cont'd

- Many server vendors with support and innovative features
- RDMA support on the way
- Replication/Migration, Namespace on the way
- NFSv4 is good now and great soon!



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Questions?