AARNET Mirror and CDN update
But First...
AARNet Today

Our National Connectivity

KEY
- AARNet PoP
- Regional Site

- < 1 Gbps
- <2.5 Gbps
- < 10 Gbps
- WDM Transmission

Cities:
- Darwin
- Cairns
- Mackay
- Rockhampton
- Gladstone
- Spay Downs
- Brisbane
- Sydney
- Canberra
- Melbourne
- Hobart
- Mildura
- Broken Hill
- Victor Harbour
- Sale
- Armidale
- Perth
- Geraldton
- MRO
Mirror Update
Mirror History

• Mirror (1998)
  – 4 processor Sun SS1000 with 256M of ram and 50G of disk
  – Ram upgraded via a donation from member institution

• Mirror2 (2001)
  – Sun donated Enterprise 450, we purchased 2 x A1000 disk systems

• Mirror3 (2006)
  – Redesign to use commodity hardware backed to a SAN
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• Mirrorv4/RETAIN (2010)
  – Sited in Brisbane, Multiple servers backed with a Hitachi SMS100
  – HAProxy SSD Cache front end are 10G connected
  – Scavenger pool IP class run, ISPs found to be major users
  – Everything would fall apart as load increased.

• Mirrorv5 planned for 2011/12, but fell through the cracks between OSI Layer 8 (budget), Layer 9 (management) and Layer 10 (free time)
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- AARNetCDN is born!
- Supermicro storage chassis, 72 x HDD in 4RU
- ~100TB current storage. Upgrade path is simple.
- Two Storage nodes sited in Canberra, split between POPs, primary site also has VM hardware and a SSD Cache running ATS
- Supermicro TwinPro 4-blade server for VM provisioning for repo or ‘special petal’ projects
- Each capital city will have SSD Cache, and some international sites
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- Supermicro 6074R-E1R72L Chassis, 72 Disks in paired trays
  - Each tray is a RAID 0 pair
  - Storage growth is a matter of replacing a tray.
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- Supermicro TwinPro Chassis – Virtualisation Node
  - 4 blades per chassis
  - Mix of SSD and HDD, clustered into Ceph for HA KVM
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- Supermicro 2027R-AR24NV Chassis – Front end
  - 24 x SAS SSD = ~300Tb
  - Runs Apache Traffic Server, directly connected to BD Routers.
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• CephFS
  - Initially, ran very well.
  - Sync speeds were acceptable

• Trouble developed and things fell apart when we hit high load
• Failure of Ceph was more about the size of the hammer than the problem we were trying to fix with it.
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- Currently running ZFS as interim
  - L2ARC and ZFS Intent LOG provided an unexpected performance boost
  - Snapshot is making filesystem syncs easier
    - Snapshot the fs
    - Update that fs, keeping original fs mounted and running.
    - When COW sync is complete and confirmed, ZFS send snapshot to original fs
    - Drink Beer.
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• Gluster?
  – Suggested model is to bind all 72 disks into RAID
  – ‘Totally nothing will go wrong with that, really honest’
  – Nope

• Rsync always needs a filesystem to write to.

• When you hit a specific size, mirror or cdn file systems are hard if you don’t have infinite money and people to throw at the problem.
Thank You

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