

OARC Systems Update

DNS-OARC Workshop
Dublin, Ireland
May 12, 2013



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Domain Name System Operations Analysis and Research Center

System Status

- Today we have many aging servers that are in need of a refresh for themselves (simply new disks)
- We were still running on older versions of OS which are holding back the ability to adopt new technologies that would help OARC and its members
- Due to platform resource issues (ie., not enough hardware), we are combining duties of the following within the same servers:
 - Serving operational requirements (web, email, DNS, jabber etc.)
 - Conducting experiments and analysis (ZFR, ODVR, DITL, DSC, etc)
 - Data warehousing (DSC, DITL. Etc)
- Despite all that, what we have today works.
- But:



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DNS-OARC Systems

- To recap, there are a number of services DNS-OARC provides
 - Access to data archives via host “an1”
 - Mailings lists, websites, collections, accounts, database servers, ODVR, ZFR, DSC, don't-probe, kitchen sinks, etc. via host “in1”,
 - A small army of file servers containing past data collections (fs2, fs3, fs4)
 - Dedicated capture systems to receive and process imported data
 - Various collections of support systems, like DNS resolver (res1), out-of-band management and switches
- Most in a state of a rather delicate nature (out-of-date OS versions, software, filesystem layout schemes, etc)
 - Almost all systems running FreeBSD-6.4-PRERELEASE (!) with some on 8.0
 - Many partitions too small to handle modern demand, with sym-links ad nauseum
 - Dead things too, like a backup server, one fileserver, capture servers.....
- OttIX loaned the server for this workshop and supporting software, to add insult to injury because OARC just don't have the resources



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Towards the future

- We are pleased to say that through an ongoing simple reshuffling of existing hardware and a sprinkle of new hardware, we're set on a path of growth
- The most visible of these is the revival of DITL data for researchers using an1
- Relatively new file server (fs4) is now hosting most of the recent data



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Data Archives, then

- Firstly, the state of data collection archives:
 - Rather precariously spread out:
 - fs1, dead, data had already been moved to fs2 previously
 - fs2, wobbly, major data holder
 - fs3, full of data, good state
 - ISC's thump2, even more data, but not our server, full
 - ISC's thump4, even MORE data, but not our server, full
 - Needed to find a way to rescue and centralise at least some of this data, preferably kept within our own house
- Thanks to Geoffrey Sisson, we had a plan to start with to go forward



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...now

- fs2, rebuilding, 20TB of projected free space for next DITL collections in late May
- fs3, rebuilt, all fs1 and fs2 data is here (20TB of 22TB)
- fs4, new box, all data from thump2, thump4 and some of fs3 is now here (38TB of 45TB)
- In other words, we reduced the footprint from 5 servers to 3 of our own, all three now running FreeBSD 9.1-p3
- Access to that data available now via an1!
- Fs1, planned box for some time next year
 - Dedicated to housing live data from ODVR, ZFR, etc.



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Infrastructure Rebuilds

- Most of the support infrastructure for OARC was cleaned-up and rebuilt
 - DNS Lab now has *metered* power
 - DNS Lab rack retrofitted to allow OARC to expand its hardware resources to allow the foundation for growth, complete with an extension of the network and out-of-band
- om1, our console server was rebuilt and upgraded to FreeBSD 9.1-p3
- Old or deprecated hardware was removed for the sake of reclaiming power and precious rack space



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Planned Rejuvenation

- In1 is the box that handles practically all aspects of DNS-OARC operations, from corporate websites to research hacking
 - lx1, new box, to be the new operational face (web, DNS, email, wiki, Indico, Etherpad – most likely Debian Linux – being built now)
 - lx2, new box, to be the processing face for the analysis and crunching work (essentially anything else that shouldn't belong above – most likely FreeBSD – planned start Q3)
 - ICANN-donated box (Dell server) will come in very handy as a swing box for porting or moving applications around in a pinch (being built now)
- Expendable sandboxes are needed for development, experimental and otherwise unknown stuff, using FreeBSD or Linux or otherwise as needed
 - CIRA grant of IBM blade servers has gone a long way towards this and is being prepared already
 - This too assumes the work that in1 also is doing and doesn't belong above
- Most systems in the meantime have been re-built and upgraded to the latest OS versions of FreeBSD (9.1-p3)



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Network Separation

- DNS-OARC currently lives off a VLAN within the ISC infrastructure (thank you ISC!)
- Has served its purpose well, but being within that infrastructure is much like a mouse sleeping next to an elephant: No matter how well-tempered the beast, we are prone to feeling every twitch and grunt.
- We need to isolate the VLAN behind a router of our own and firewall (longer-term) to protect against the odd DDOS attack meant for ISC
 - The firewall will especially help scale the protection of systems instead of fiddling with ipfw on each one
 - On the other hand, there's nothing like finer-grain controls



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Future Considerations

- Consideration must be given first of all to the data:
 - What to do with this data?
 - Where else to store a copy?
 - What to do about where it resides?



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Passing Images



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More Pictures



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Final Pictures



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