Practical Backups with AMANDA

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Backup Administrator Woes

• Finish backup in desired backup window
• When it hits the fan comes the real test
  • Is your backup plan REALLY tested?
• Backup differing environments / differing media
  • OS’es, Distros, Databases, Apps
  • Tapes, Disks, . . . Cloud
Homegrown Backup Scripts

• Many system administrators start with home grown backup scripts
  – No initial budget for backup software and backup server
  – Initially problem seems relatively easy for a Perl hacker
  – This was the case when I started at my current $JOB

• Backup scripts don’t scale
  – Changing needs of the organization
  – New platforms and applications
  – New administrators

• Amanda uses similar formats as typical home-grown scripts
  – Tar for Linux/UNIX
  – Zip for Windows
  – Script API: Allows for pre- and post- backup plug-ins
Backup Scheduling

• tight backup windows

• Difficult to predict which data set will change when
  – Traditional backup methods require extensive planning and on-going maintenance
Backup Scheduling: Traditional Approach

Data Size

Backup window will be different for each backup run and there will be spikes in resource utilization during full backups

...but you mostly use THIS
Backup Scheduling: The Amanda Way

Backup window and resource utilization are consistent for each backup run.

Utilization is normalized!
AMANDA Reporting

• Email report every night
• Easily setup to do a check for the next scheduled backup in cron (amcheck <config name>
Architecture
Advantage of Open

• Open Formats
  – Proprietary format for backup archives comes with huge cost and pain
  – In my unique position I get to see both: Backup Exec (main ITS backups) and AMANDA (Computer Science Dept)

• Ability to recover with native tools:
  • Position tape to correct file with native tape device tool (mt, etc)
  • /usr/bin/gzip -dc |/bin/tar -xpGf –
  • One just has to keep a backup of one’s index files (easy with rsync) so that you know which file to position tape to.

• Open discussions!
  – forums.zmanda.com
  – wiki.zmanda.com
Case Study: Hamilton College Computer Science Dept.

- 2006
  - Each with separate backup device
  - No testing of restores
  - No plan
  - Year I was hired

- Now
  - Central Backup machine for all servers using AMANDA
  - Tested restore plan
  - All machines backed up on 1 technology (LTO 3)
  - Very easily scaled
  - If backup server dies? No Problem!!
Case Study: Wadsworth

• NY-based bio/medical labs and research
  – Subject to HIPPA and other legal mandates
• Amanda Admin: Brian Cuttler
Case Study: Wadsworth

• ~20 Amanda servers - departmental, divisional, some standalone
• Variety of tape drives: DLT, SDLT, and changers: SL24/LTO4, C2/LTO3
• Mostly Solaris, but some Mac OS and RHEL, even some IRIX?
• Tens of TB daily
Case Study: Wadsworth

• Offsiting:
  – some move tapes to/from offsite nightly
  – some move entire magazines weekly
  – some force "fulls" onto a tape and send that offsite

• Problems:
  – interactions of ZFS snapshots with many partitions (155+ on one server)
  – users tend to keep adding disk -> long restores
Amanda Through the Ages

• Originally developed at University of Maryland beginning 1992
  — James da Silva
  — UMD BSD-style license
• Adopted by Zmanda, Inc. about 4 years ago
  — Jean-Louis Martineau came along
• "2005 Linux Journal Readers' Choice Award"
Amanda Myths

• Amanda can't dump across multiple tapes
  – It can since at least v2.4.5 -- early 2005

• Amanda only supports tape drives
  – Not so! And the Device API adds a lot of new support!

• Amanda can't do fulls on weekends
  – It can, but ask yourself, "why"?
The Amanda you Don't Know

• Data Storage:
  – now: cloud, tape, RAIT
  – coming: NDMP
  – Coming: CD-RW (Written by Sam Couter)

• Applications:
  – now: MySQL, Postgres, ZFS snapshot, "raw", samba
  – coming: other snapshots
  – coming: DirectTCP support
The Amanda you Don't Know

• Features:
  – now: Vaulting
  – coming: Multi-drive changers
  – coming: DirectTCP support
Amanda Limitations

- Append-to-tape, varying tape sizes
  - Really config/backward-compat problems
- Recovery requires reading entire dump
  - Application API will fix this
- All data passes through the Amanda server
  - DirectTCP can fix this
DEMO

• Demonstration of simple setup using 1 backup server, 2 clients.
• http://www.zmanda.com/download-amanda.php
• RTFM: a little knowledge goes a long way in this case.
Conclusion

AMANDA can (affordably) provide reliable backups that are not saved in a proprietary format.

Questions (and maybe answers. . . )
Credits

• Some images and slides used with permission of Chander Kant, CEO Zmanda, Inc.

• Thanks Dustin!