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
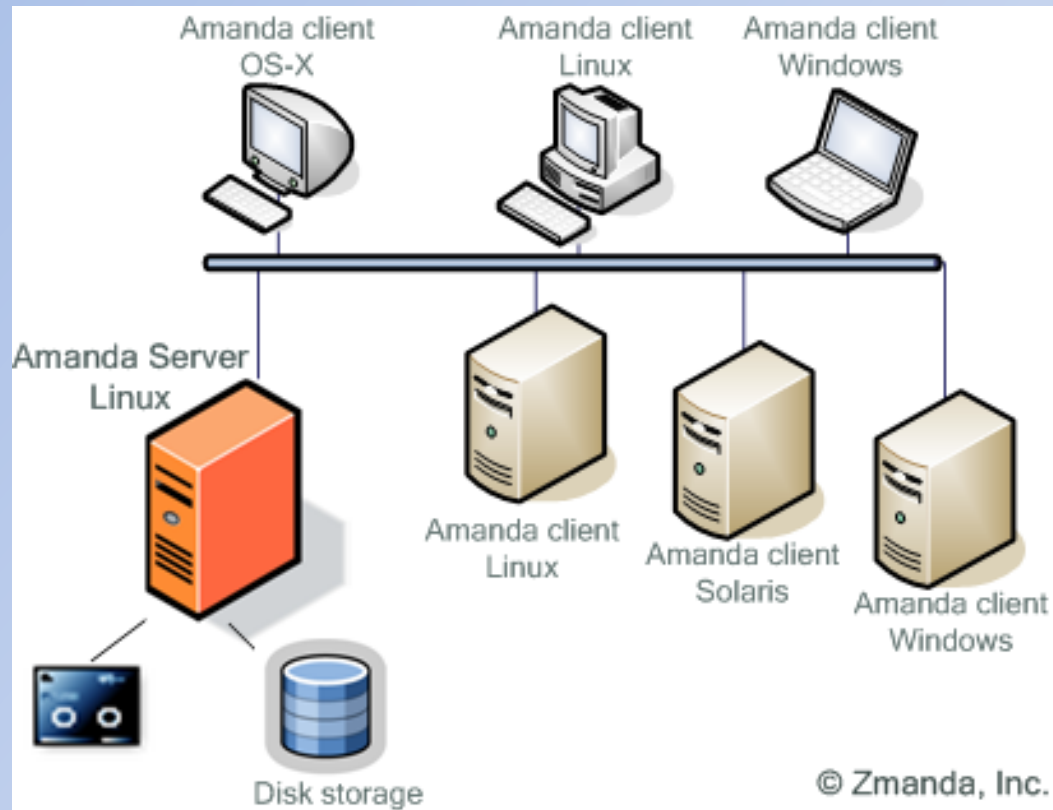
Backup Scheduling: Traditional Approach
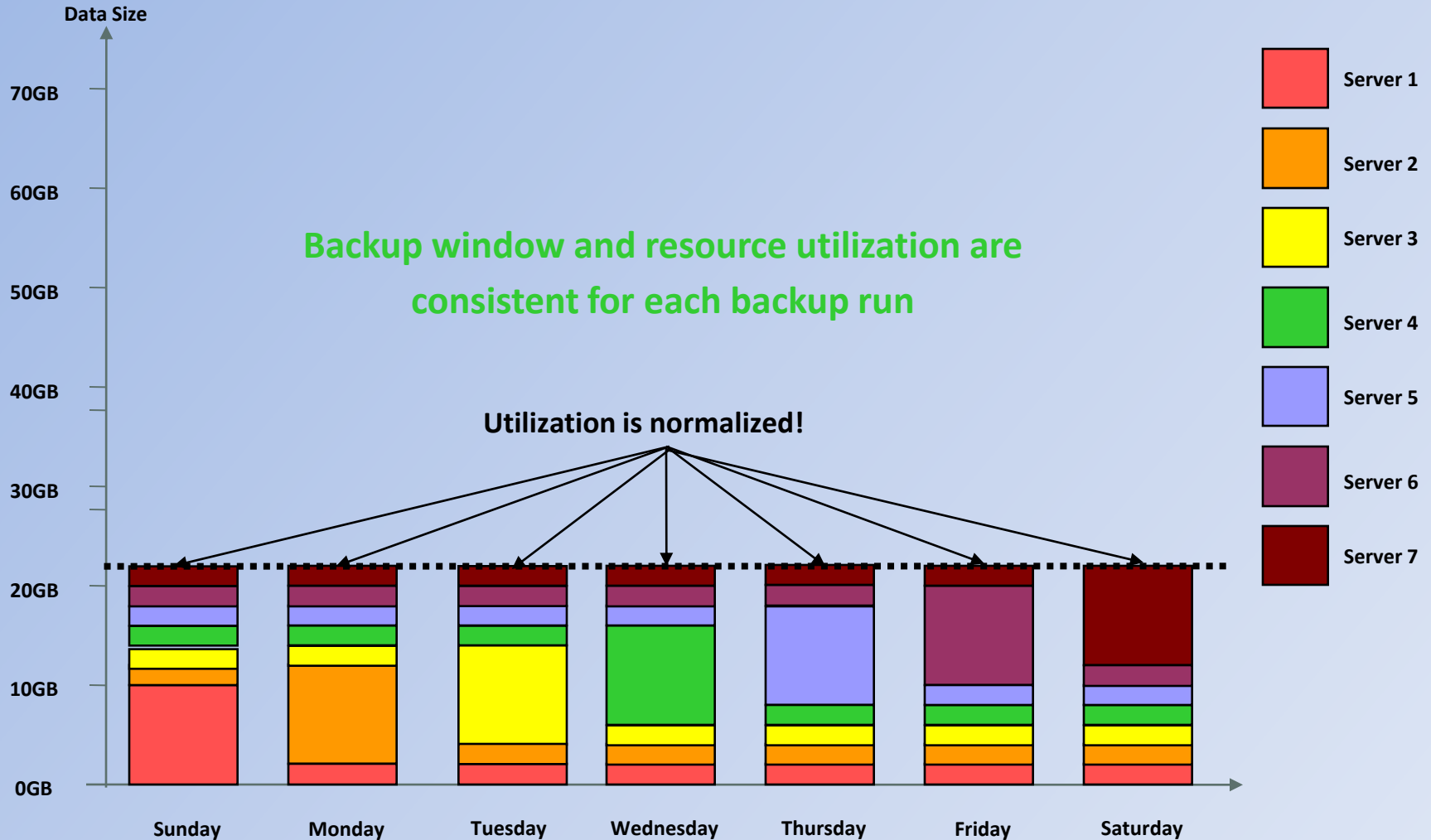
AMANDA Reporting

- 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

Downloads

- 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
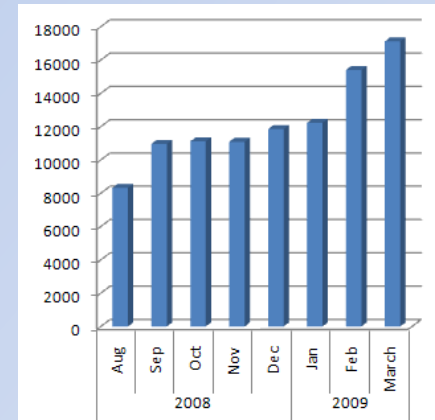
Amanda Myths

- 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!