Backups - The Most Important Topic of the Semester

Systems Administration

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The Sysadmin's Lifeboat

Good backups solve a range of problems.

- Somebody deletes important files: restore from backup.
- Your server's hard drive burns up: restore from backup.
- Bad guys break into your server: wipe it and restore from backup.
- Your office burns down: set up in a new location, restore from backup.
- You need to archive old data: store it on backup media

Start with a plan

- What to back up
- When to back up
- How to store and manage your backup media
- How to restore from backup

Backup everything!

- Whatever you may need, you'll have it.
- It's easy to restore after a major problem.
  However,
- You'll wind up storing a lot of data, much of it redundant.
- Larger backups are more time consuming to create and to restore.
- You may not want to retain some data.

Backup selectively

- Identify data that is valuable.
- Identify data that you can't get elsewhere.
- Identify data that you don't want to save.
- Consult applicable regulations and policies.

When to back up

- Should you back up hourly, daily, weekly?
- Do you want full or incremental backups?
- How much can you afford to lose?
- How long does it take to perform a backup?
- Do you need to take any services offline while backing up?

Managing backup media

- We may back up to tape, disk, or an offsite service.
- We need a rotation schedule for media.
- We must maintain a catalogue of backup media.

Backup and Rotation Strategies

There are many different strategies. Currently popular:

- Home/Small Office (Disk Storage): 3-2-1
  $\rightarrow$ 3 total backups, 2 on disk (1 online, 1 offline), 1 off site
- Enterprise (traditionally for Tape Storage): Grandfather-Father-Son
  $\rightarrow$ 3 tape sets that are changed on daily, weekly, and monthly basis (+ quarterly, yearly cold storage); specification of tape retention rules

A more comprehensive overview: `http://searchdatabackup.techtarget.com/tip/An-introduction-to-data-backup-tape-rotation-schemes`

Restoring from backup

- There's no point in backing up if we can't restore.
- Typically a complicated process.
  - Identify storage media
  - Mount and restore in the correct order
  - Execute restore commands
- The process needs to be well documented and tested regularly.

A backup system is needed

- It identifies what is to be backed up.
- It performs the backups automatically according to a schedule.
- It manages storage media.
- It helps automate the restore process.

Many systems are available

- ARCServe
- Arkeia
- Barracuda
- AMANDA
- Bacula

Bacula

We will use Bacula, which is documented here:
http://www.bacula.org/5.0.x-manuals/en/main/main/index.html