Automation Techniques

ISOC ccTLD Workshop
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The basic risk of automation is that machines are stupid.

Not only are machines stupid, but they don’t care that they are stupid.

Some of them are ugly, too.
Risks

• The basic risk of not automating processes is that people are lazy

• Not only are they lazy, but after a while they don’t care that they are lazy

• Some of them are stupid, too
  • and ugly
Benefits

• A well-automated process can produce much more reliable results than a manual process

• (not always better results, though)

• Automation can make things cheaper

• The person who rules the machines is their god
General Advice

• Assume that things will fail, and plan to abort and request manual intervention where necessary

• Check the results of automation through an independent path

• Log everything

• Measure everything
Unexpected Failures

- Disk full
- Table space exhausted
- DNS server unavailable
- Network down
- Timeouts
Nasty Failure Modes

• Truncated zones
• “domain deletion”
• Authentication failures
• Cascading service failures
• Runaway truck
Log, Measure

- Measurement allows you to identify trends, and characterise normality
  - you can predict failures before they happen if you measure everything you possibly can
- Logging allows you to diagnose and troubleshoot
  - it also allows you to back out or restore transactions, which might pacify customers
Backups

• Move your logs and measurement data away from production servers when possible

• Check your logs, and make sure they are still being written to

• Think hard before throwing away measurement data or logs
Precautions

• Check the exit status of everything
• Write start and end markers in data, maybe with line counts, byte counts or CRCs
• Compare the last-generated data set with the just-generated data set, and abort if there appear to be too many differences
Audit

• Auditing is the process of looking at processed data, and comparing it with source data, and looking for discrepancies

• number of A records in the zone; number of NS records in the zone

• SOA serial number
Script, where possible

- Scripts can be quickly prototyped, modified and understood
  - if they’re written properly
  - even if they’re in Perl
- Write every script as if you plan to keep it for ever
Test

- Even the most trivial script can cause hideous problems
- test
- test after making modifications
- test failure modes
End of Day One