In-Flight Aircraft Mechanics
A Software Package Conversion Project

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What We Started With

- 7500 production servers
- Nondeterministic software pushes
- Automated install of dependencies
  - same as any other packaging system
**Goals**

- Repeatable software pushes
- Exact specification of installs
- All Apps All Environments
  - Every machine gets every package!
- Rollback to previous releases
Tools

- Tools already existed at Yahoo
  - don’t reinvent the wheel
- Package management: yinst
- Servers state definition: igor
- Release assembly: SRM
- Software deployment: Pogo
Architecture

- 'the farm' - about 20 servers
- mailstore and access
- where a user’s mail resides
- mostly independent from other farms
Where to Begin?

- map packages to functional areas
  - dev team signoff
- find hidden package deps and assumptions
- do we really need 1300 packages?
  - sadly, yes
Modeling

- VM test environment
- install package list with igor
- did it work?
  - not the first 50 times!
- rinse, lather, repeat
Production Conversion

- rolling upgrade on live hosts
  - OS reinstall required!
- 6 person team (SNV/BLR)
  - 1 scout, audit ahead of others
- 9 months work total
- Lots of IRC & late nights
  - shared between US & Bangalore
Release Assembly

- dev groups submit packages/settings as igor tags
  - tags specify role revision
  - exact list of packages/settings
- RM team assembles into release using SRM
  - also performs basic testing
- QA does functional testing
- QA Signoff - we have a train!
- Repeat every 3 weeks forever
Production Deployment

- Release Management Team responsible for schedule
- Currently about 10 days to completion
- 4 stages
  - 1 farm
  - 100 farms
  - 200 farms
  - 200 farms
- Stop and rollback at any point if needed
  - Yes, it does happen every few months!
What Worked Great

- Defining system state at the package level
- All Apps All Environments
- Rollback!
Speaking of Rollback

- Yes, it does work!
- Requirements
  - extensive up-front release testing
    - can’t rollback in production without testing in QA!
  - commitment to quality packages
  - decoupling packages from settings
    - central config servers
Do-Overs

- Create audit tools first
- Create push tool first
  - pogo came along 6 months after start
- Reduce vulnerable mixed-state window during conversion
- Set up a longer release cycle
  - started with two weeks, now three
Ongoing Issues

- Continuing to remove configuration from packages
  - Yinst settings
  - Central config servers

- Igor sync monitoring

- Deal with emergencies more smoothly
  - Best case release push to all hosts: several days!
To Sum It Up

KEEP IT STUPID, SIMPLE!

- Install the same packages everywhere
- Don’t use inheritance for system state
- Basically just don’t be clever!
Thanks for Listening!

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