Desktop Linux Management @ FB

FOSDEM 2021

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FACEBOOK Infrastructure

Agenda

Desktop fleet primer

Desktop Linux @ Facebook

Provisioning & Management

Upstream collaboration

Desktop Fleet Primer

Desktop fleet primer

What do we manage?

- Employee devices
- Mostly laptops, some desktops
- Mostly macOS and Windows, some Linux

Desktop fleet primer

How does it work?

- Client Platform Engineering manages the bare metal experience of the fleet
- OS as a platform
- Individual teams can layer their own configuration
- Built on an Open Source foundation
- Chef, rpm/yum/dnf, chocolatey

Desktop fleet primer

How does it work?

- Community sets the direction
- We move fast; open source often moves faster
- Reuse, don't reimplement
- Sharing our code means sharing the maintenance and having others extend it

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History

- Started as a grassroot efforts
- Configuration management implemented as best effort
- Pivot to first-class Fedora support
- Branching out to CentOS Stream

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Why Fedora?

- Align with the server fleet ([CentOS Dojo 2020](#))
- Reuse existing tooling and infrastructure
- "Four Foundations": Freedom, Friends, Features, and First
- Two-way conduit for collaboration

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Why /not/ Fedora?

- Fast-moving with short support period (2x6 months + 1 month)
- Fix forward vs backporting security updates
- Third-party vendor support

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Why CentOS Stream?

- Stable rolling release
- Binary compatibility
- Security updates
- Close relationship with Fedora, including EPEL
- Hyperscale SIG

Provisioning & Management

Provisioning & Management

Kickstart

- We traditionally do PXE network installations
- Transition to self-service imaging
- Modular kickstart builder
  - Prototype on GitHub: michel-slm/luks-kickstarts
  - Lorax PR 1047 to fix mkksiso EFI boot
- Chef bootstrap
  - GitHub: facebookincubator/go2chef

Provisioning & Management

Packaging

- Standard Fedora repos
- Vetted partial mirror of internal repo
- RPM Fusion
- Flatpak

Provisioning & Management

Major OS upgrades

- Fedora
  - beta testing
  - dnf system-upgrade
  - GNOME Software
- CentOS
  - Reimage
- Push notifications
- Btrfs motivation: snapshots

Provisioning & Management

Minor upgrades

- dnf-automatic
- sharding for internal packages

Provisioning & Management

Chef

- Chef for config management
- Philosophy: https://tinyurl.com/mgxb923
  - Layered configuration through attribute-based APIs
  - Separation of policy and mechanism
  - Idempotency
  - Configuration as programming
- Cookbooks in source control
- Develop locally, test on real machines

Provisioning & Management

Chef

- Documentation, best practices and tooling
  - GitHub: facebook/chef-utils
  - GitHub: facebookincubator/go2chef
  - GitHub: facebook/taste-tester
- Cookbooks
  - GitHub: facebook/IT-CPE
  - GitHub: facebook/chef-cookbooks

Provisioning & Management

Chef example: screensaver

```ruby
node['cpe_dconf']['settings']['screensaver'] = {
  'org/gnome/desktop/screensaver' => {
    'lock-enabled' => 'true',
    'lock-delay' => {
      'value' => 'uint32 0',
      'lock' => false,
    },
  },
  'org/gnome/desktop/session' => {
    'idle-delay' => 'uint32 600'
  }
}
```

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Chef example: flatpak

```ruby
node.default['cpe_flatpak']['ignore_failure'] = true
node.default['cpe_flatpak']['manage'] = true
pkgs = %w{
  com.spotify.Client
  com.obsproject.Studio
}

pkgs.sort.each do |pkg|
  node.default['cpe_flatpak']['pkgs'][pkg] = 'flathub'
end
```

Provisioning & Management

Current status

- Fedora
  - Support policy aligned with upstream (33 and 32 supported)
- CentOS Stream
  - Evaluation
  - Targeting full support this year
  - Hyperscale SIG

Upstream collaboration

Upstream collaboration

- Fedora Changes
  - [BtrfsByDefault](#) (F33)
  - [BtrfsTransparentCompression](#) (WIP, F34)
  - [EnableSystemdOomd](#) (WIP, F34)
  - [RPMCoW](#) (WIP, F34)
- Internal group of packagers
  - We package FB open source projects
  - We try and get software dependencies into EPEL
- [EPEL Packagers SIG](#)

Thank you!

Questions?

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