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Datto ❤ Fedora

What we do with Fedora and lessons on contributing

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Who Are We?

Neal Gompa

- Professional technologist
- Linux user for nearly fifteen years
- Contributor and developer in Fedora, openSUSE, Mageia, and OpenMandriva Linux distributions
- Member of FESCo
- Member of many Fedora SIGs and WGs
- DevOps Engineer at Datto, Inc.

Daniel Axelrod

- Builder of platforms
- Better technology through empathy
- Linux user for 16 years
- Package management nerd
- Once wrote a terrible yum clone
- Sr. DevOps Engineer at Datto, Inc.

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All About Datto

Founded in 2007

23 offices around the world

1,800+ employees worldwide & growing

17,000+ managed service provider partners

100% channel only

What We Offer

Datto products empower our community of Managed Service Provider partners with the right technology, business tools, and support to enable each and every one of their customers to succeed. It's an approach that has made us the world's leading innovator of MSP-delivered IT solutions.

Growth Products

Unified Continuity

Reliable data protection for full IT environment maximizing up time

- SIRIS
- ALTO
- Datto Cloud Continuity for PCs
- Datto File Protection
- NAS
- SaaS Application Protection
    - Office 365
    - Google Suite

Networking

Fully cloud managed networking solutions designed for MSPs

- Datto Networking WiFi
- Datto Networking Switches
- Datto Networking Edge Routers
- Datto Managed Power

File Sync & Share

Fully managed File Sync & Share solution

- Datto Workplace

Efficiency Products

Professional Services Automation (PSA)

SaaS platform for MSPs to manage their entire business

Remote Monitoring & Management (RMM)

Cloud-based Software for MSPs to manage SMB endpoints

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Why Fedora?

Four Pillars - Four F’s

Closer to Upstream, but Stable

- **First** pillar
- The “upstream-first” philosophy leads to a good dynamic between Fedorans and software projects they ship in the distribution
- Software is integrated and continuously tested
  - Fedora CI, OpenQA, Bodhi, etc.
- Solid foundation to build upon

Composable Tooling

- **Freedom** pillar
- Fedora distribution tools have nice separation of concerns
  - Enabled picking and integrating the bits we needed
- Easily adaptable for purposes never conceived before
  - Like… using OBS instead of Koji/COPR for build system?
- Nice echo of “UNIX philosophy”
  - Fit for purpose tools that can be juggled around and adapted

Bias Towards Action

- **Features** pillar
- Lazy consensus model for changes
- Desire for continuous improvement
- Not afraid to make a splash for the betterment of all

Collaborative Community

- **Friends** pillar
- Genuine desire to help one another
- Strong bonds across subgroups
  - SIGs, WGs, Teams, etc.
- Default assumption of positive intent
  - Extends to interfacing to software projects being shipped in Fedora

How Datto Projects use Fedora

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Fedora Technologies We Use

- Packages (for backports)
- KVM + Libvirt
- Spacewalk
- Foreman
- LIO
- Fedora Linux itself
- OKD/Fedora CoreOS
- Fedora EPEL
- CentOS Stream

Datto Linux Agent

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CentOS Stream

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Datto Linux (Backup) Agent

- Part of our Business Continuity/Disaster Recovery (BCDR) solution
- Enables seamless backups of x86_64 Linux systems
- Components:
  - `dattobd`: open source kernel module
  - `dlad`: proprietary userspace daemon

Datto Linux (Backup) Agent

- More than 300 releases of the kernel and user-space components in the past five years
  - A little under a third of those have been releases to customers
- Over 50 Linux distribution releases have been supported across all versions of DLA for a range of Linux distributions
  - We support slightly under half that with the latest DLA versions

CentOS Stream: Keeping up with the Joneses

- Enables us to build and test the Datto Linux Agent for RHEL
  - Lets us keep up with changes in the RHEL kernel
- Ability to contribute gives us the capability to fix problems we discover in RHEL as it progresses through CentOS Stream
  - We want to help fix things when we know how to do so
  - Helps us prevent issues down the line in upcoming RHEL releases

Backports

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Packages

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Fedora Packages: Now on many OSes

- Fedora packages are *stable*, *recent, tested*
- debbuild: github.com/debbuild/debbuild
  - .spec to .deb
  - Works like rpmbuild
  - Single cross-distro .spec
- Ports of Fedora macros: github.com/debbuild/debbuild-macros
  - Some reimplemented, some actually ported

Package Builds

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Modularity

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Open Build Service: SUSE's "Koji"

The Open Build Service (OBS) is a software solution created by SUSE to build and manage the openSUSE and SUSE Linux Enterprise distributions. It's similar to Koji, the RHEL/Fedora build system.

However, it was designed from the beginning to support a wide variety of Linux based platforms. Notably, it can build packages, repositories, and images for Red Hat/Fedora, SUSE, and Debian/Ubuntu systems.

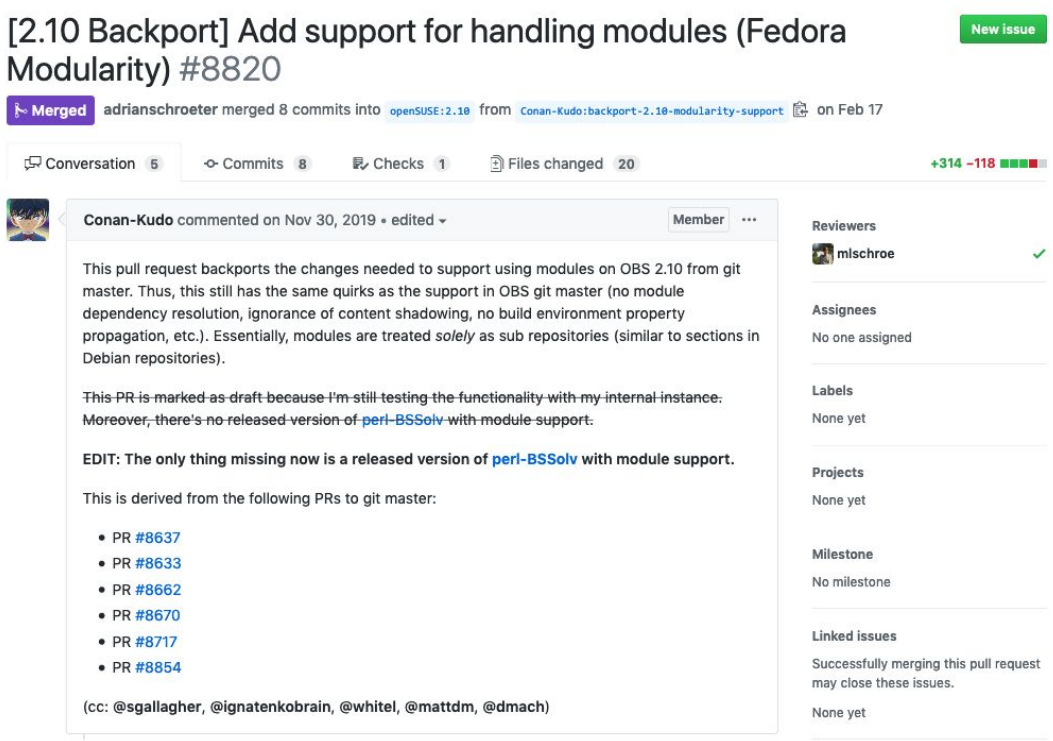
SUSE offers a hosted version as the openSUSE Build Service, and the appliance image is freely available for you to set up your own.

Why we use the Open Build Service?

- Source input flexibility through “source services” that allow scripted retrieval and processing of sources
- Easy scaling of resources through OBS workers that detect the orchestrator and auto-connect
- Automatic reverse dependency rebuilding on package updates to ensure dependencies are linked correctly
- Easy to deploy and get started with using the official appliance provided on the website
- Lets us build packages natively for RPM and Debian distributions using RPM spec files (using debbuild for Debian/Ubuntu)

OBS and Modularity

- Worked with the OBS team along with members of the DNF/YUM and Fedora Modularity teams to hash out a strategy to support modules in OBS
- The upstream OBS project implemented some of this over the course of last year, which led us to refocus on porting that to the stable OBS release
- Support for consuming modules was released with OBS version 2.10.1 with our assistance
- Enabled us to start taking advantage of modules at scale



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Containerized Web Apps

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Modularity

Packages

OKD

CentOS

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Modularity: Everyone wants a different “stable”

- Application Engineers - Language Stack
  - Version tied to application framework
  - Common tooling requires coordination for version changes
- Infrastructure Engineers - OS
  - Version tied to security and compatibility
- Everybody: Wants distro-maintained software
- LTS OS, new PHP
  - UBI 8/CentOS 8 containers
  - PHP modules: 7.2, 7.3, (soon 7.4)

Packages: making PHP extensions pleasant

- PHP extensions
  - native code loaded into PHP runtime
  - manual dependency management
  - manual management of runtime .so load order
  - badly needs package manager - Do Not Fret
- Upstreams, composed together
  - PHP modules from OS
  - Backports from Fedora

OKD/Fedora CoreOS

- Production OKD3
  - Container Image Builds
  - Container Registry
- POC OKD4: Great developer experience
  - odo
  - admin console
- CoreOS: Great admin experience
- Member of the OKD Working Group

Workstation Systems Management

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Spacewalk

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Spacewalk: Wrangling our Workstations

- Engineers choose any distro
- Compliance through auditing, not control
- Contribute packaging for new distro versions

Virtualization Restores

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KVM

libvirt

libvirt-php

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KVM/Libvirt: VM backups

- libvirt is used to orchestrate hypervisors that our products back up (KVM, Hyper-V, VMware, etc.)
- KVM is used as the hypervisor for running VMs of machine backups taken by our Business Continuity & Disaster Recovery products

Fedora Participation:

Making Great Even Better

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Easy to participate, could be easier to figure out

- Fedora has well-defined contribution processes
- Tools support drive-by and sustained contributions well
  - Fan favorite: Pagure remote pull requests!
- Getting started is overwhelming
  - Monster wiki pages…
  - We currently handle this via mentoring
- Breaking up the contribution flow into more bite-sized chunks would make it a lot less scary

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Questions?