



oVirt Node

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Mike Burns
oVirt Project Manager
Tech Lead for oVirt Node
Red Hat, Inc

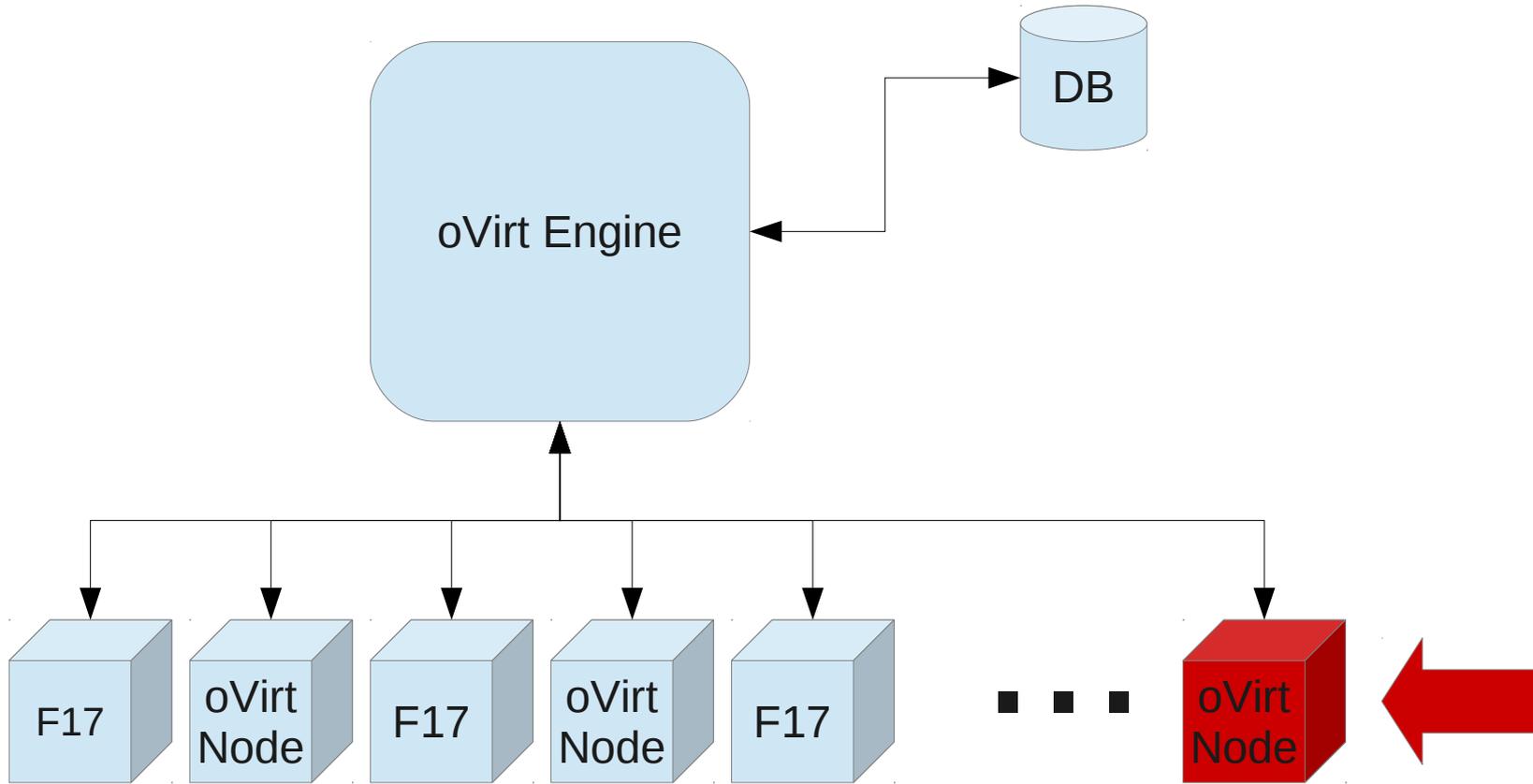
Agenda

- Introduction
- Architecture and Packaging
- Configuration Persistence
- Installation and Configuration
- Plugins
- Stateless
- Future Features
- Discussion

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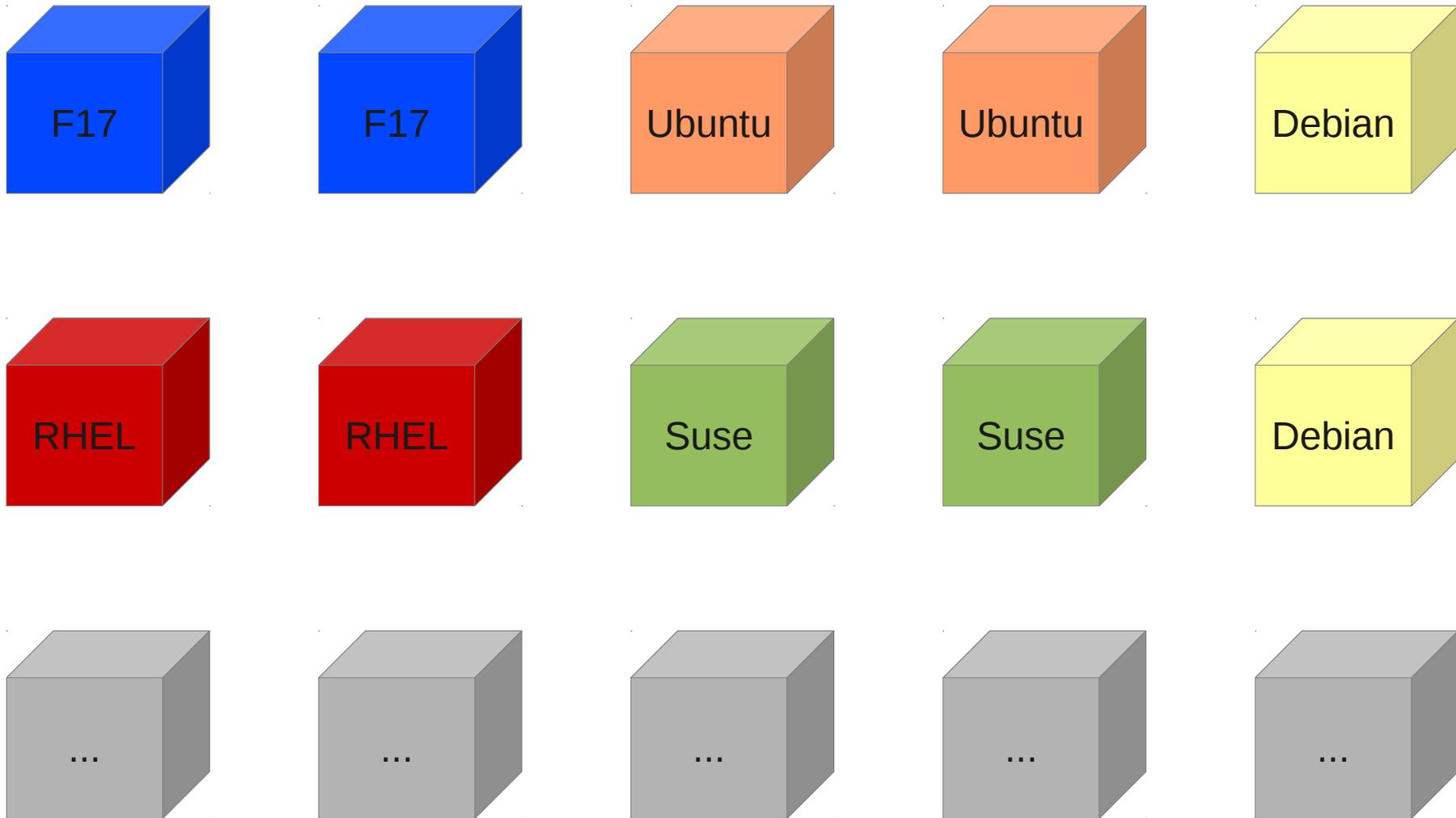
Introduction

oVirt Architecture

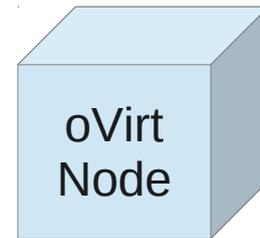
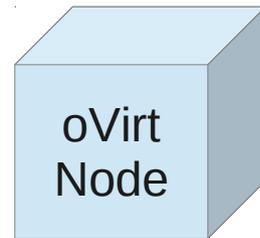
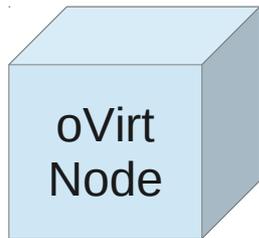
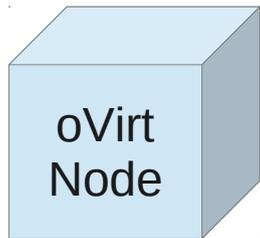
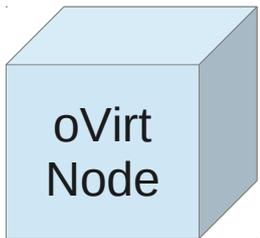
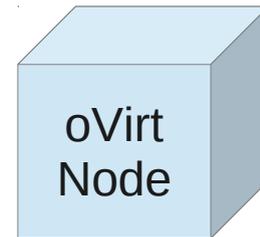
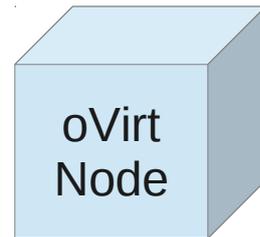
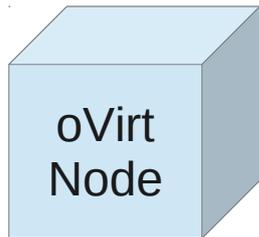
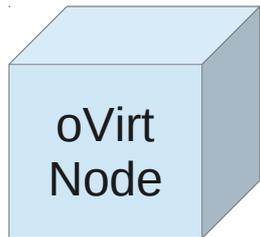
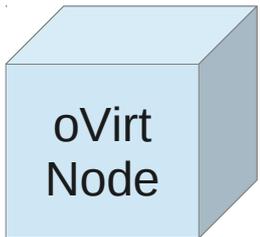
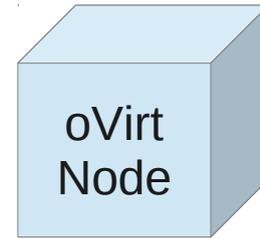
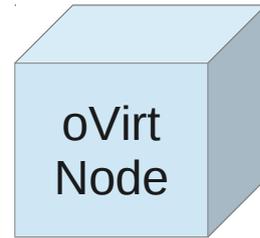
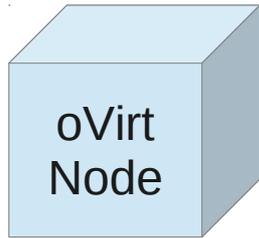
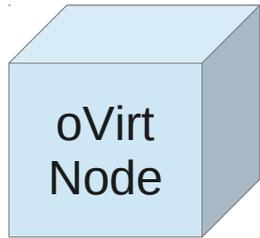
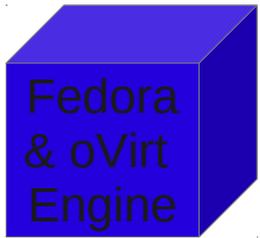


Virtual Machine Hosts
oVirt Node
Fedora

Is your datacenter this diverse?



What if it could look like this?



What is oVirt Node?

- Dedicated hypervisor
- JEOS
- livecd
- Built on Fedora
- Firmware
 - Install and forget about it
 - Similar to ESXi or OpenWRT
- Small Footprint (< 200MB)

Advantages and Disadvantages

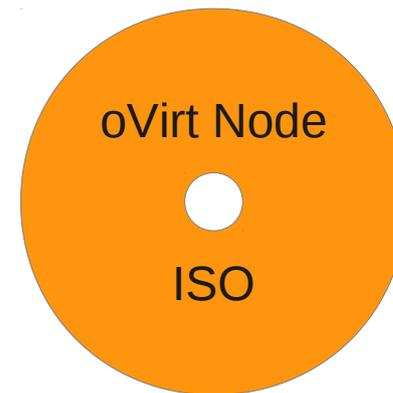
- Advantages
 - Single image
 - Easy Upgrades
 - No managing individual package updates
 - Upgrade directly from management
- Disadvantages
 - Lack of Customization
 - No easy shell access
 - More difficult to debug problems



Architecture and Packaging

Architecture

- ISO Image
- Created using standard packages in Fedora
- Generated based on layered kickstarts
- %post scripts handle default configuration and setup
- TUI provided for installation and configuration post install
- Source Repositories
 - ovirt-node
 - ovirt-node-iso



Packaging

- Packaged into 4 distinct RPMs
 - ovirt-node – configuring the ISO
 - ovirt-node-tools – working with ISO
 - ovirt-node-recipe – building the ISO
 - ovirt-node-iso – wraps the ISO
- Additional RPMs to be added in the future
 - ovirt-node-plugin-* - customizations for the ISO

Key Technologies

- qemu-kvm - <http://www.linux-kvm.org/>
- libvirt - <http://libvirt.org/>
- spice - <http://spice-space.org/>
- device-mapper-multipath
 - <http://christophe.varoqui.free.fr/>
- newt/snack
 - [http://en.wikipedia.org/wiki/Newt_\(programming_library\)](http://en.wikipedia.org/wiki/Newt_(programming_library))
- Livecd-tools
 - <http://fedoraproject.org/wiki/FedoraLiveCD>



Configuration Persistence

Configuration Persistence

- Root FS is non-persistent by default
 - On reboot, the original filesystem is loaded
- Root FS is mounted readonly
- Some things do need to be persisted across reboots
 - persist and unpersist commands added
- Persistent changes are stored in /config
 - Limited space available by default (8 MB)
 - bind-mounted automatically at boot time
- Some packages will handle this automatically
 - vdsmd and ovirt-node



Installation and Configuration

Deployment Modes

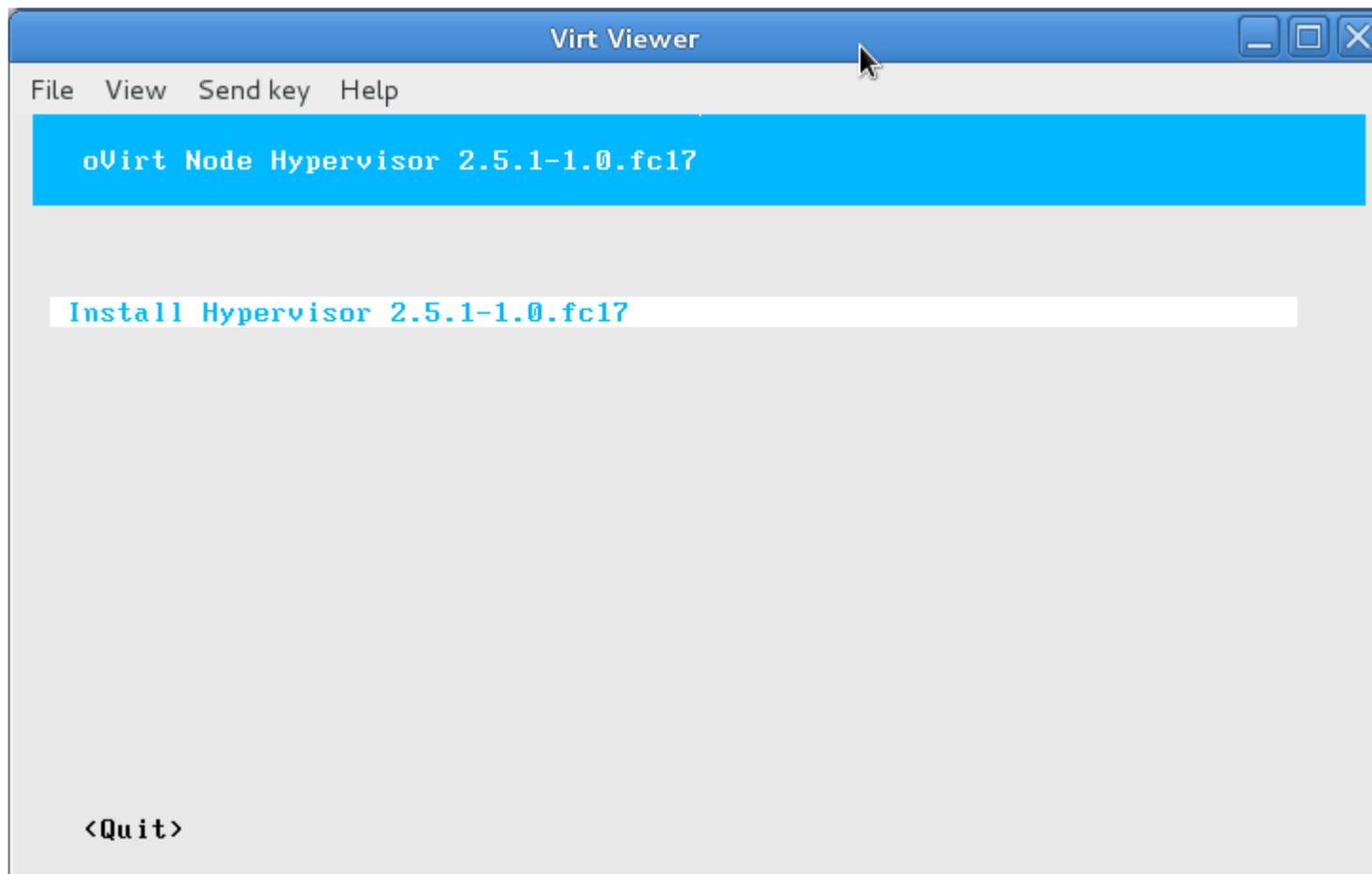
- oVirt Node can be installed using a variety of methods
 - CD/DVD-Rom (including virtual CD)
 - Flash Memory (USB or SD Card)
 - Network (PXE)
- Limited stateless support
- Install to disk
 - Can be either HDD or Flash disk (USB or SD Card)
- Installation Methods
 - Automatic
 - Manual

Automatic Installation

- Triggered using kernel command line parameters
 - Requires `storage_init` and `BOOTIF`
 - Should include additional options or `adminpw` if you want to configure things later
- All configurations done on the TUI can be done through kernel command line options
- After installation completes, machine will reboot automatically

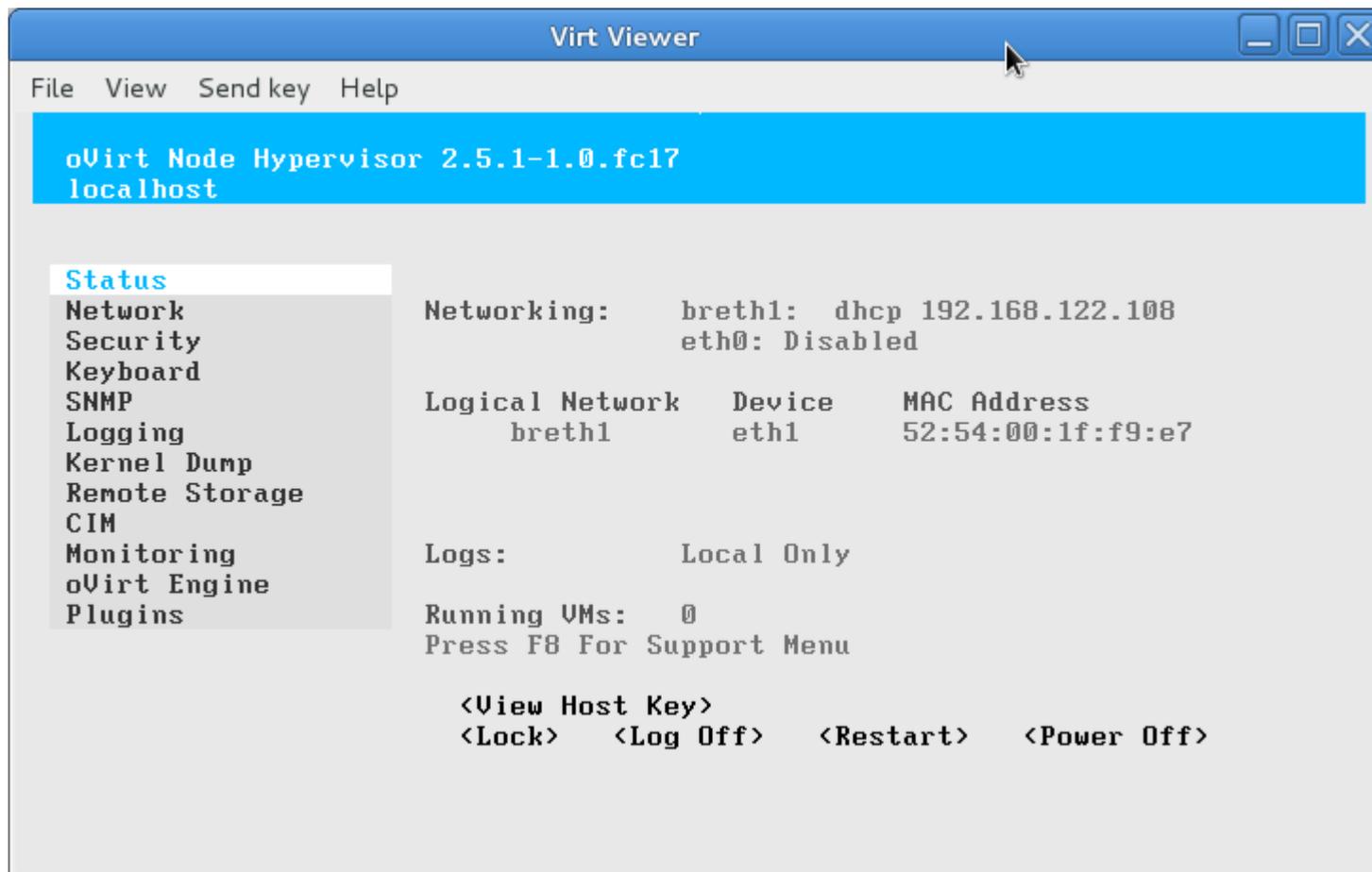
Manual Installation

- Done using a TUI interface
- Keyboard driven

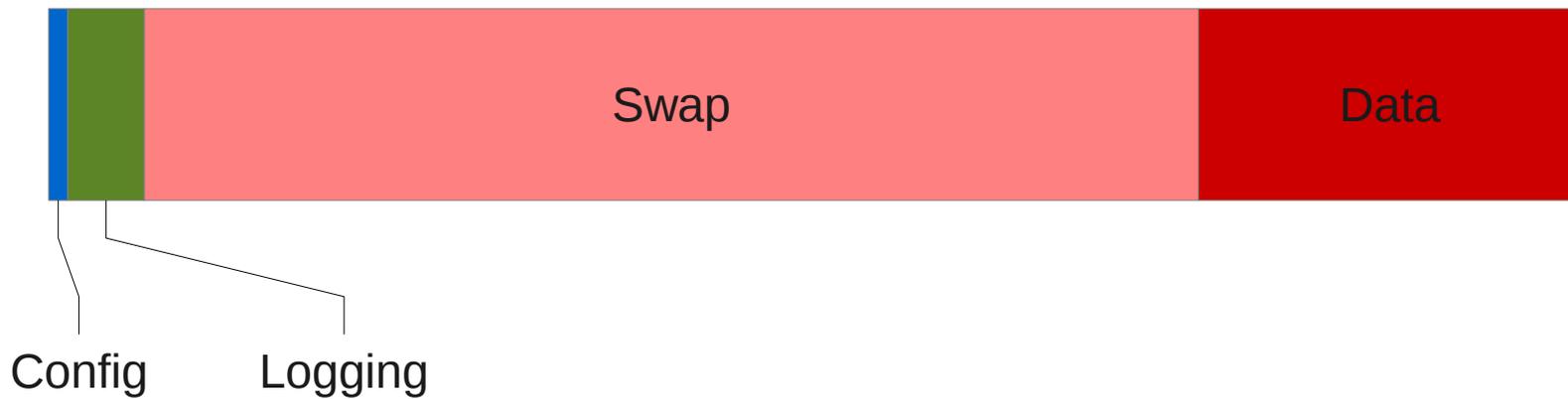
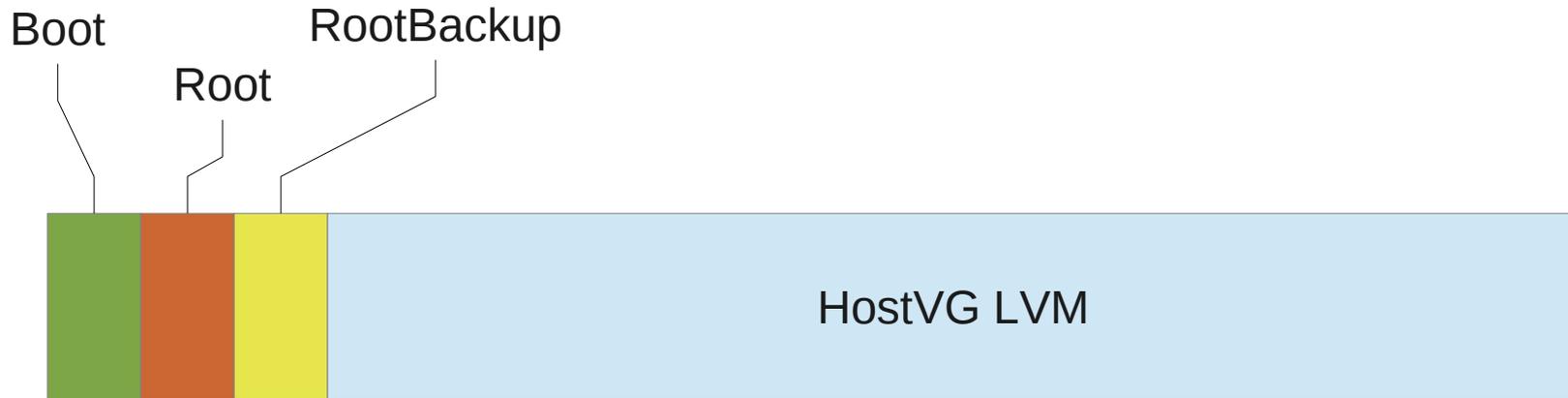


Configuration

- After installation or stateless boot
 - Login as admin to access the TUI to make changes



Installation Disk Layout



Upgrades

- Usually as simple as booting the new image
 - Update the PXE image
 - Boot new CD/USB/SD
 - In Place Upgrade
 - Upload new image to running system
 - Trigger Upgrade logic
 - Used by oVirt Engine
- Can be done automatically using the command line
- Can be done through TUI
- Clean installs can be triggered with a command line option as well

RootBackup

- Provide roll back capability in the case of a bad upgrade
- Using Grub savedefault
- Upgrade ISO gets installed into RootBackup partition
- Partitions are renamed
 - RootBackup -> RootNew
 - Root -> RootBackup
 - RootNew to Root
- If machine fails to boot, it rolls back to RootBackup

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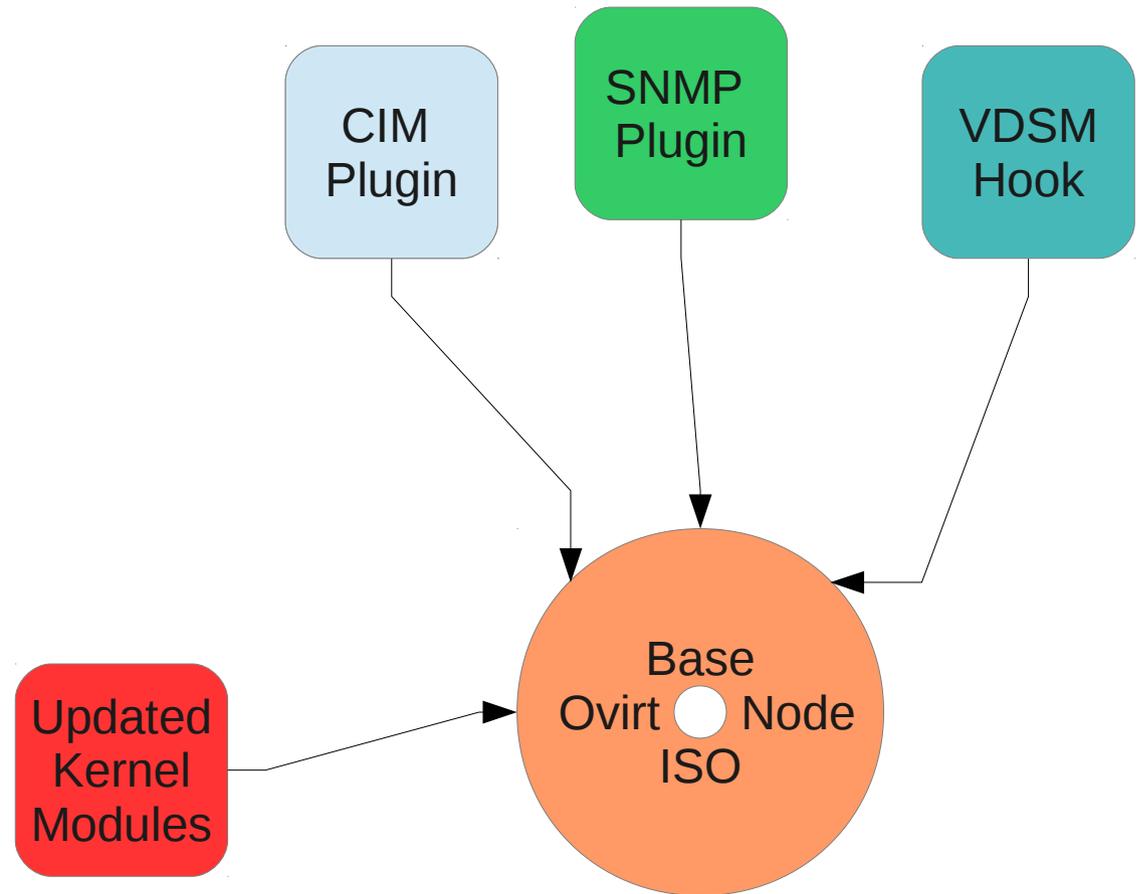
Plugins

What are Plugins?

- Preview in oVirt Node 2.5.1
- Add functionality not included in the base image
- Packaged as RPMs
- Installed offline using edit-node tool (ovirt-node-tools)
 - Start with oVirt Node ISO image
 - Run edit-node tool
 - Get a different oVirt Node ISO image
- Can install arbitrary number of plugins

Plugin Examples

- Update default passwords
- Install or update packages
- Install new kernel modules
- Add vdsms hooks



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Stateless

Current Support

- Enabled by passing “stateless” on the command line
- Ignores all local storage
- persist and unpersist commands do nothing
- Configuration TUI works the same as in an installed system
- Honors all regular kernel command line options except those having to do with local storage

Current Limitations

- No support for swap
 - This means that you need to disable overcommit in oVirt Engine
- No local storage partition
 - Local Storage Domains in oVirt Engine are not supported
- oVirt Engine does not understand the concept of stateless nodes
 - Have to re-register and approve every reboot

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Roadmap

Additional Use Cases

- Non-oVirt use cases
- Can be done by utilizing Plugins
- Investigating OpenStack and Gluster as possible consumers
- Steps needed
 - Remove vdsmd from ovirt-node default build and make it a plugin
 - Develop plugins that would pull in appropriate packages for OpenStack and/or Gluster
- Base image is generic and not used for anything
- Admin would use edit-node to install their plugin(s)

Plugin Enhancements

- Add some net-new plugins
 - OpenStack, Gluster, etc...
- Remove some functionality from base image to minimize size
 - SNMP, CIM, etc...
- Additional supported features
 - Service enablement
 - Firewall configuration
 - Auto-installation process
 - Security Profiles

Other Future Features

- Software iSCSI Root Support
- Network Manager
 - Move away from using ifcfg scripts directly to using NM libraries
 - Depends on NetworkManager support for bridges, bonds, and vlans
- Stateless
 - Fix the limitations on swap and local storage domain
- UI Enhancements
 - Make code more re-usable to ease TUI Plugin design
 - Allow different size screens (currently only 80x20)

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Discussion and Questions

More information

- Please fill out our survey at: <http://>
- <http://www.ovirt.org/get-ovirt/> (Installation guide available)
- Mailing Lists:
 - node-devel@ovirt.org
 - users@ovirt.org
- IRC: #ovirt on OFTC
- Web Site: <http://www.ovirt.org>
- Git Repository: <git://gerrit.ovirt.org/ovirt-node.git>
- Documents: <http://www.ovirt.org/wiki/Special:AllPages>
- Bugzilla: <https://bugzilla.redhat.com> (Community->oVirt)

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THANK YOU !

<http://www.ovirt.org>