A Simple, Single-System Private Cloud with Kimchi

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Kimchi is

an HTML5-based virtualization management
platform created with ease of use and good
design in mind.
It is perfect for any small organization that wants
to create their own private cloud without a
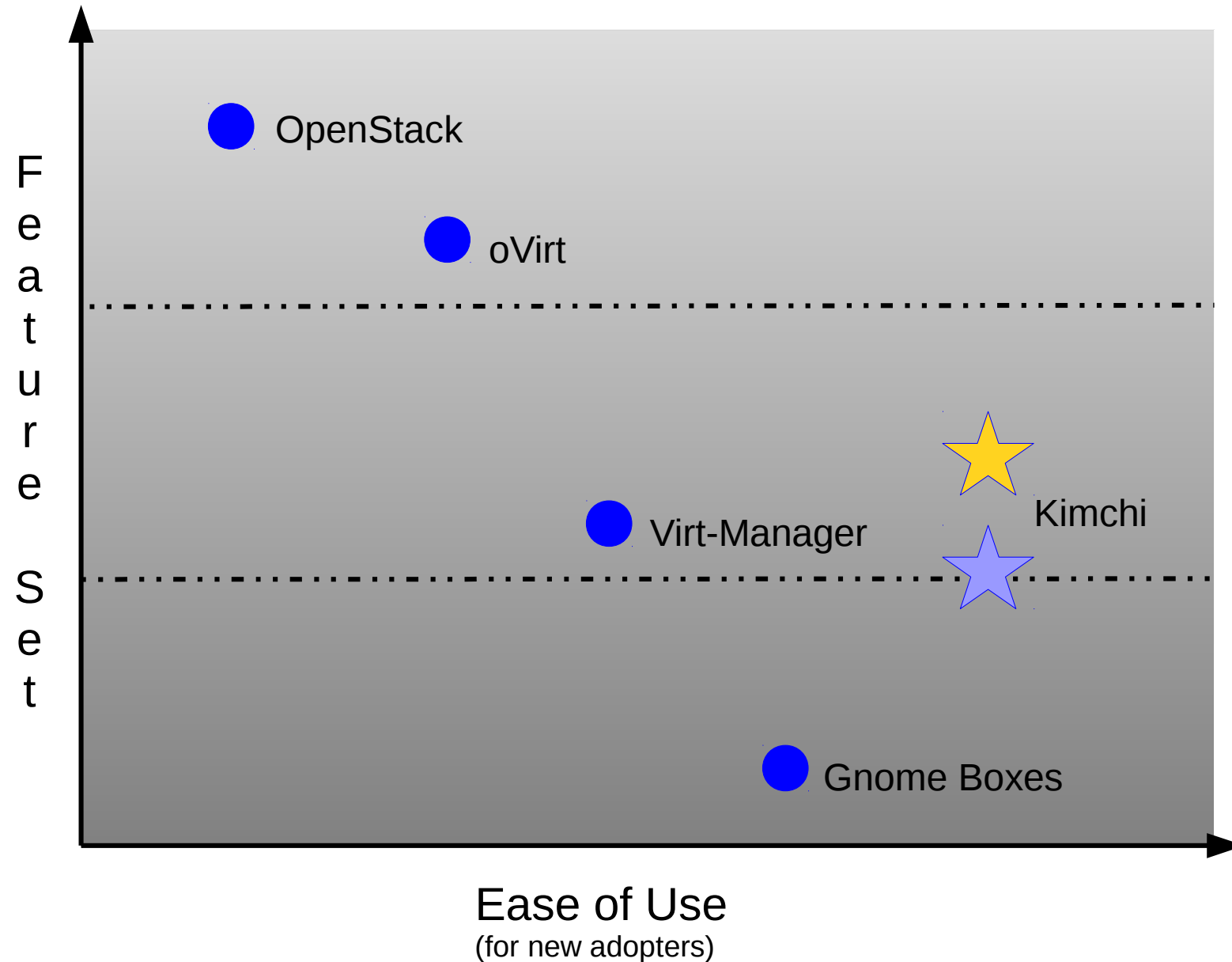virtualization expert.

Agenda

- Current Popular (Free) Virtualization Solutions

- History of Kimchi

- Kimchi's Goal

- Under the Hood

- Features

- Ginger Plugin

- Team

- Future Items

- Contributing

Current KVM Solutions

Feature Set

OpenStack

oVirt

Kimchi

Virt-Manager

Gnome Boxes

Ease of Use
(for new adopters)

Small Cloud Scenarios

- Shared sandboxes

- Open Source + Existing Hardware = Free!

- Local, simplified user access

Kimchi's Goal

- Simple

- Well-Designed

- Feature-Balanced

- Cross-Platform

- Extensible

History

2012

Started by Adam Litke and Anthony Liguori

2013

March: Moved to community (v 0.1)

Sept: v 1.0.0

Oct: oVirt Incubator Project

Dec: v 1.1.0

2014

March: v 1.2.0

Under the Hood

- MVC model

- unittest framework

- HTML5 + CSS + JavaScript + Jquery front end

- CherryPy + Python backend

- nginx proxy server

- PAM & existing system users for authentication

- noVNC/Websockets or Spice for in-browser console

- KVM & libvirt

Features

l18n

- English

- Portuguese

- Chinese

- Maintained by devs when adding new function

Web-Based

Design-Oriented

Template-Based VM Creation

Template Creation

Add Template   (X)

Where is the source media for this template?

📥	Local ISO Image

🌐	Remote ISO Image

Local ISO Search

Add Template   (X)

← Local ISO Image

The following ISOs are available:

☐ All

VM	RHEL-7.0-20140409.0-Server-x8…		**VM**	RHEL6.4-20130130.0-Server-x8…		**VM**	X17-24209.b663c296371d3bd83…
	OS: rhel	Size: 3.9G		OS: rhel	Size: 3.5G		OS: windows	Size: 3.1G
	Version: 7.0			Version: 6.4			Version: 7	

VM	X17-24281.f844a19c3ec70dce6…		🔴	ubuntu-14.04-server-amd64.be9…
	OS: windows	Size: 3.1G		OS: ubuntu	Size: 564.0M
	Version: 7			Version: 14.04	

[⟳ Please, wait…]   [Create Templates from Selected ISO]

☐ **I want to use a specific ISO file**

Remote ISO Streaming

Add Template   (X)

← Remote ISO Image

The following ISOs are available:

☐ All

	Fedora 18			Fedora 19			Fedora 20
	OS: fedora Arch: x86_64			OS: fedora Arch: x86_64			OS: fedora Arch: x86_64
	Version: 18			Version: 19			Version: 20

	Ubuntu 13.04 (Raring Ringtail)			Ubuntu 13.10 (Saucy Salaman...)			opensuse-12.3
	OS: ubuntu Arch: x86_64			OS: ubuntu Arch: x86_64			OS: opensuse Arch: x86_64
	Version: 13.04			Version: 13.10			Version: 12.3

Create Templates from Selected ISO

☑ I want to use a custom URL

http://releases.ubuntu.com/14.04/ubuntu-14.04-server-amd64.iso   Create

Customizing Templates

Edit Template

Name

SS-Desktop-Spice

Vendor

ubuntu

Version

13.10

CPU Number

1

Memory (MB)

1024

Disk (GB)

10

CDROM

http://ubuntu-releases.cs.umn.edu/13.10/ubuntu-13.10-desktop-am

Graphics

VNC

Storage Pool

default

Network

Host_Bridged

default

✓ isolated

Save

Template-Based VM Creation (cont')

Create a New Virtual Machine

1. Virtual Machine Name
The name used to identify the virtual machine. If omitted, a name will be chosen based on the template used.

ss-isolated-test

2. Template
Please choose a template.

VM	**VM**	**VM**
RHEL6.4-20130130.0-Server-x86_64-DVD11402432212122	RHEL7-RC3	RHEL7_RC2

VM	OS / OS Version / CPUS / Memory	
RHEL7_Snap13	OS: ubuntu / OS Version: 13.10 / CPUS: 1 / Memory: 1024M	ubuntu-13.10-desktop-amd6413988 76524435

Create

Secure Graphical Console

· Browser-based

· Spice or VNC
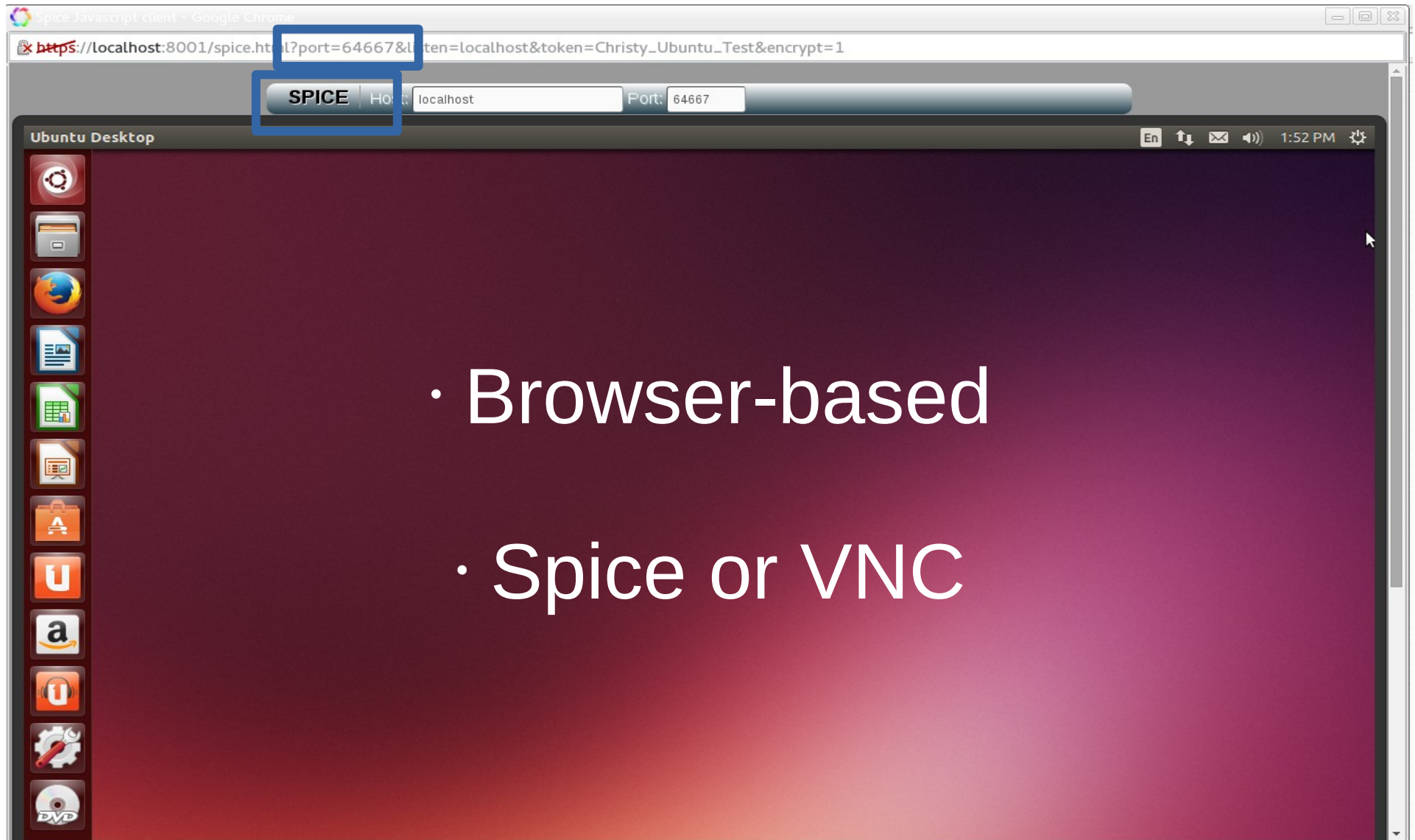
Host Software Management

▼ Software Updates

Software Updates

Update All

Package Name	Version	Architecture	Repository
qt3	3.3.8b-58.fc20	x86_64	updates
qemu-common	1.6.2-6.fc20	x86_64	updates
ibus-wayland	1.5.7-2.fc20	x86_64	updates
grilo-plugins	0.2.9-3.fc20	x86_64	updates
qemu-kvm	1.6.2-6.fc20	x86_64	updates
ibus	1.5.7-2.fc20	x86_64	updates
python3-libs	3.3.2-15.fc20	x86_64	updates

▼ Repositories

Repositories

Add   Enable   Edit   Remove

ID	Name	Enabled
Fedora-20-x86_64-...	Open Client for Linux Fedora 20 x86_64 - Community Test	true
adobe-linux-x86_64	Adobe Systems Incorporated	true
fedora	Fedora 20 - x86_64	true
fedora-debuginfo	Fedora 20 - x86_64 - Debug	false

Debug Reports

Network Management

Storage Integration

- Directory
- Logical
- NFS
- iSCSI
- SCSI Fib

Define a New Storage Pool ⊗

1. Storage Pool Name

The name used to identify the storage pools, and it should not be empty.

2. Storage Pool Type

DIR ▼

3.

NFS

iSCSI

LOGICAL

SCSI Fibre Channel

Storage Pool must have a unique path.
when it does not already exist in your system.

Create

REST API

- REST is REpresentational State Transfer

- "...is a way to create, read, update or delete information on a server using simple HTTP calls." (Wikipedia)

- Most often used with curl to send GET, PUT or POST requests to a server

- Often uses *verbs* like 'create', 'delete,' and 'update' on resources (e.g. a Virtual Machine)

REST API

- /vms
  - /vms/:name
  - /vms/:name/screenshot
  - /vms/:name/storages
  - /vms/:name/storages/:dev
  - /vms/:name/ifaces
- /templates
- /storagepools
- /storageservers
- Full API @ https://github.com/kimchi-project/kimchi/blob/master/docs/API.md

REST API Example

$ curl -k -u christy -H "Accept: application/json" https://localhost:8001/host

```
{

 "os_distro":"Fedora",

 "os_codename":"Heisenbug",

 "os_version":"20",

 "cpu":"Intel(R) Core(TM) i5-3320M CPU @ 2.60GHz",

 "memory":8245620736

}
```

Plugin Framework

- Add function seamlessly

- Example plugin shipped

- Can add

  - Tabs

  - New [i18n] error messages

  - REST verbs and resources

Ginger Admin Plugin

- Firmware Update

    - Power only

    - RPM-based

- Configuration [Files] Backup

- Power Profile management

- Host NIC Configuration and Rollback

- To be moved to community along with Kimchi

Kimchi on Power

- IBM Power8

- Bi-Endian

  - Little Endian guests, e.g. Ubuntu LE

- Included in PowerKVM

  - Kimchi

  - Ginger plugin

  - PowerKVM Redbook : www.redbooks.ibm.com/Redbooks.nsf/RedpieceAbstracts/sg248231.html

Kimchi Future Items

- PCI Passthrough (patchset submitted)

- Node *Federation* (patchset submitted)

- Enhanced Authorization Control

- OVS bridges

- Logical Storage Pool extension

- OVA support

- VM/Template Hooks

- oVirt node integration

Ginger Future Items

- Electronic Service Agent

- Sensors Data

- PCI Hotplug

Team

- World-Wide
  - Brazil
  - China
  - USA
- Kimchi Maintainer – Aline Manera (Brazil)
- Ginger Maintainer – Mark Wu (China)

Contributing

- Hosted on Github

  - https://github.com/kimchi-project

- ovirt mailing list

- More info:

  - https://github.com/kimchi-project/kimchi/wiki/Communications