Virtualization on Desktops

Michal Prívozník
mprivozn@redhat.com

Linuxwochen Wien 2012
Introduction

What for?

- **security**  Guest is isolated from host
- **reliability**  Guest is host independent
- **recovery**  Guest can be saved at any point
- **testing**  One can run many different environments
- **shareability**  Guest can be shared among multiple users
Stable: protection from hypervisor API changes
Portable: Linux, Windows, OS-X, ...
Secure: TLS, SASL, (lib-)SSH, PolicyKit
Simple: rapid application development
Open: LGPLv2+
Supported HV: QEMU, KVM, ESX, Xen (XenD, XenStored, Xen Hypervisor), LXC, VirtualBox, UML, Hyper-V, OpenVZ, Phyp, VMWare, test
What else?

- Storage: LVM, disk, SCSI, iSCSI, NFS
- Network: bridge, bonding, vlan, VEPA, OpenVSwitch
- QoS, filtering (iptables + ebtables)
- CGroups: CPU, memory, disk I/O limits
- PCI/USB device passthrough
- Guest agent
- Host management
Language bindings:
- Core: C
- Perl, Python, Java, Ocaml, Ruby, C#, PHP

Mappings to different models:
- CIM/DMTF: libvirt-cim
- AMQP/QMF: libvirt-qmf
- SNMP: libvirt-snmp
- GObject: libvirt-glib
```
zippy@bart ~ $ virsh -c qemu:///system
Welcome to virsh, the virtualization interactive terminal.
Type: 'help' for help with commands
     'quit' to quit

virsh # list --all
   Id  Name              State
    1  f17               running
    -  f16              shut off
    -  f16_nfs          shut off
    -  win7             shut off

virsh # start f16
Domain f16 started
```

CLI for managing libvirt
virsh

- Nearly every API is exposed
- Ported to many platforms: Linux, OS-X, Windows, Solaris, ...
- Capable of talking to some HVs directly
- Remote access
- Stable output ⇒ easily usable in scripts
virt-manager

Desktop management UI
Other virt-* utilities

- virt-what
- virt-top
- virt-dmesg
- virt-addr
- virt-install
- virt-clone
- virt-image
libguestfs

- **virt-df** guest filesystem usage
- **virt-cat** read file
- **virt-ls** list directory
- **virt-resize** change virtual disk size
- **virt-win-reg** edit Windows registry
- **virt-v2v** covert guests between hypervisors
- **guestmount** mount guest disk via FUSE
Sandbox on the top of LXC/KVM with libvirt

- Host filesystem passtrhough bind mounts or P9FS
- small overheads: LXC 200ms, KVM 3000ms
- Boot kernel+initrd (KVM) “init” binary (LXC)

Usage scenarios: run apache per virtual host inside sandbox, mock RPM build
Where to go?

- Libvirt http://libvirt.org
- libguestfs http://libguestfs.org
- libvirt-sandbox http://berrange.com/tags/sandbox/

 GNOME Shell - not standalone mgmt applications, but virtualization builtin desktop(gnome-boxes)
Questions?