Managed Conversion of Guests to oVirt

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21/8/15
Agenda

- Motivation
- Architecture
- Demonstration
- Implementation
- Future work
Many ways to run Virtual Machines

• There are many virtualization tools
• Different hypervisors
  – KVM, ESX/ESXi, Xen, VirtualBox, ...
• Different management systems
  – oVirt, virt-manager, vSphere, Ganeti, ...
“I don't want to lose my VMs”

• Virtualization technologies are used for a long time
• No standardization
• People are tied up to the technologies they currently use
• Conversion tools are needed!
virt-v2v

- Part of virt tools
  - Open source virtualization management tools
- Foreign hypervisor -> KVM
- Standalone conversion tool
Conversion to oVirt using virt-v2v

- Converts disk formats
- Enables VirtIO drivers (If needed)
  - Network, Storage
- Fixes boot-loader
- Produces full oVirt-compatible OVF
- Outputs the VM in oVirt's export domain
Drawbacks

- Slow
- Tedious
- Error-prone
- Requires separate installation
- Do not support conversion of OVA files
- Error handling
Our goal

Improve the conversion process to oVirt

- Faster
- Tools are available
- Graphical user interface
  - To configure
  - To monitor/cancel
- Robust
- Support conversion of OVA files
Design principles

• Use virt-v2v capabilities
  – For guest-level operations

• oVirt manages the conversion
  – Configure conversion properties in admin portal
  – Create disks
  – Monitor conversion progress
  – Cleanup on errors
How virt-v2v is integrated in oVirt?
virt-v2v is installed on each host
High-level view of import in oVirt

1. User selects the virtual machines to be imported and defines the conversion properties.
2. Import
3. Conversion properties
4. VMs
5. List

KVM Forum, August 2015
List VMs from VMware (1)

- getExternalVmList
- vSphere
- list

KVM Forum, August 2015
List VMs from VMware (2)
Convert VM from VMware (1)

convertVmFromExternalSystem

vSphere

oVirt Engine

VDSM

libvirt

virt-v2v

Storage Domain
Convert VM from VMware (2)

- oVirt Engine
- VDSM
- libvirt (virt-v2v)
- vSphere
List VM from virtual appliance (1)

getOvaInfo
List VM from virtual appliance (2)
Convert VM from virtual appliance (1)

convertOva

 virt-v2v

 OVA

Storage Domain

KVM Forum, August 2015
Convert VM from virtual appliance (2)

OVF → OVF

OVF

ova

libvirt

virt-v2v

ovirt Engine

VDSM
Faster and more efficient (1)

(1) Convert using virt-v2v  
(2) Import using oVirt
Faster and more efficient (2)

Convert

External Storage

Export Domain

Import

Data Domain

KVM Forum, August 2015
Faster and more efficient (3)
Faster and more efficient (4)

External Storage → Export Domain → Data Domain

Convert

External Storage → Data Domain
Using a proxy
Robustness

• Validations to prevent failures
  – Free space validation
  – Block import of running Vms

• Rollback upon conversion failure
Demonstration

https://www.youtube.com/watch?v=yEjckA-FriU
Implementation principles

• Adjust virt-v2v to conversion that is managed by oVirt

• Generalize the existing import command in oVirt to support VMware & OVA as sources
  – Leverage existing functionality
  – Extensible for other sources
virt-v2v

- Support VDSM as an output
  - Copies to given disks
  - Produce VM configuration in a given path
  - Configurable virtio-win drivers

- Support virtual appliance as a source

- Support u/s virtio-win iso
- VDSM bridges the engine and virt-v2v
- Generalize import from export-domain

- New import-VM dialog & VM-providers
Support additional sources

- Sources that are supported by virt-v2v
  - Xen, Libvirt, Hyper-V
  - Should be similar to import from VMware
- Enhance import of virtual appliance
  - OVA files from ISO-domain
  - Uploaded OVA file
- Physical hosts
  - Using virt-p2v
Improve the API with virt-v2v

• Stable API for monitoring virt-v2v progress
  - Alternative for parsing output stream
  - Error codes
  - Events

• Enhance the API with virt-v2v
  - Support multiple destination storage domains
  - Support volume type per-disk
Inside oVirt

- Generalize 'v2v jobs' to non-SPM jobs
- Common configuration for imported VM
- Extend configurable properties of imported VM
THANK YOU!

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