oVirt

Moving your Virtual Machines to oVirt with ease

Arik Hadas
Senior Software Engineer
Red Hat
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Agenda

- Motivation
- Architecture
- Demonstration
- Implementation
- Known issues
- Future improvements

Motivation

How do you 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

The goal

Introduce better conversion process to oVirt

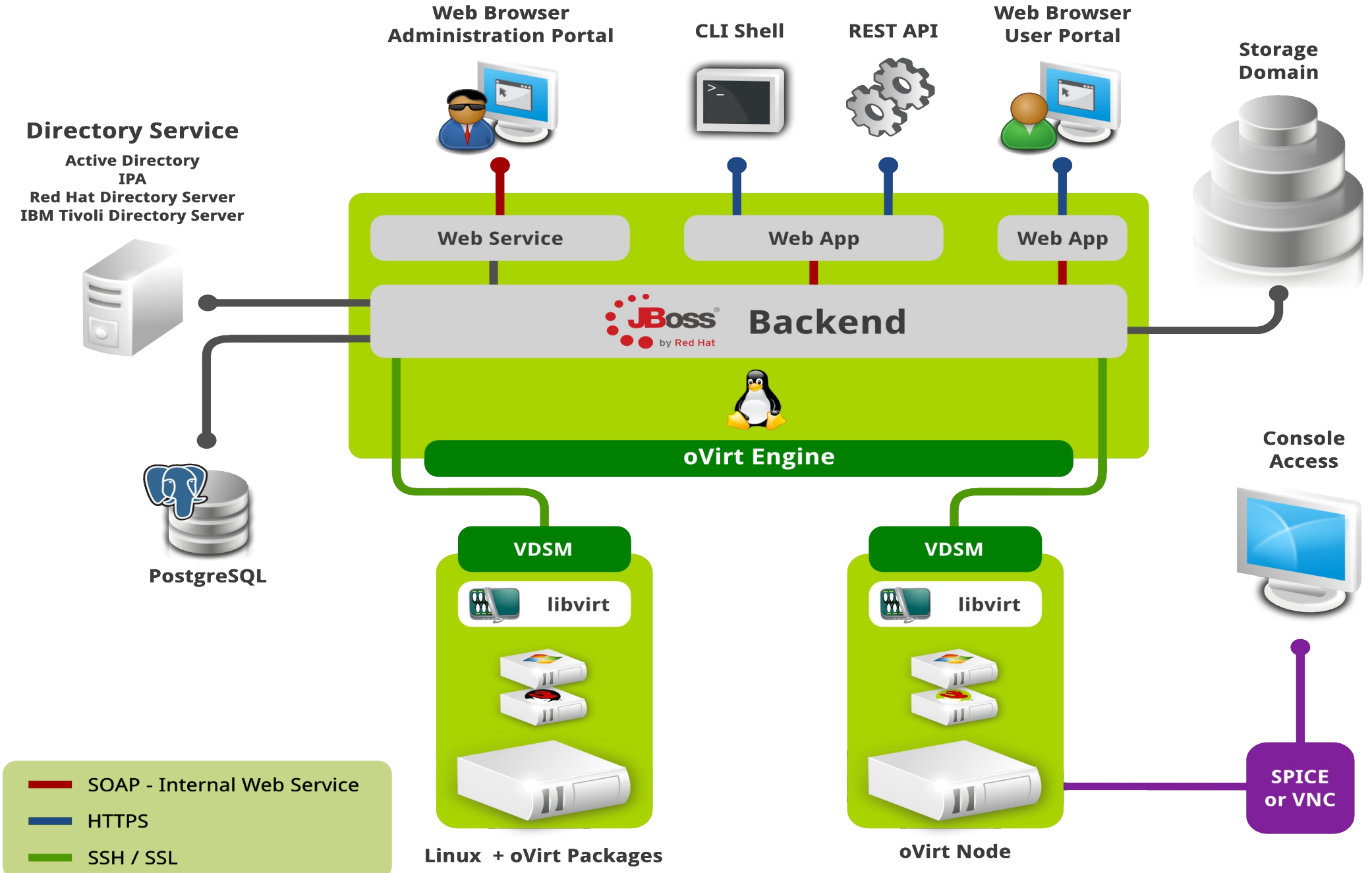
- Faster
- Tools are available
- Graphical user interface
  - To configure
  - To monitor/cancel
- Robust
- Support conversion of OVA files

Architecture

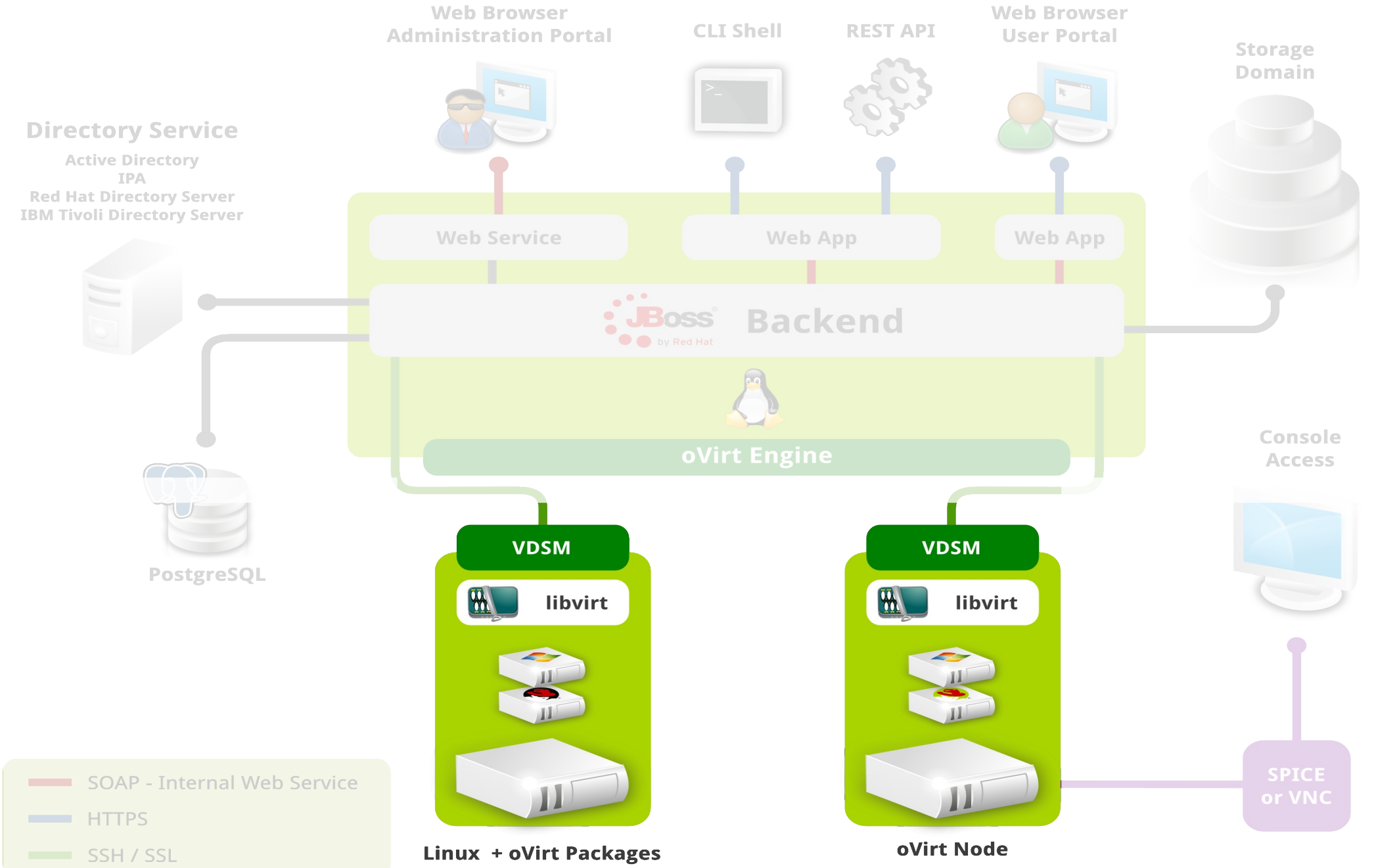
Design principles

- Use virt-v2v capabilities
  - Guest level operations
- Integrate virt-v2v with VDSM
- oVirt manages the conversion
  - Configure conversion properties in admin portal
  - Create disks
  - Monitor conversion progress
  - Cleanup on errors

oVirt architecture view



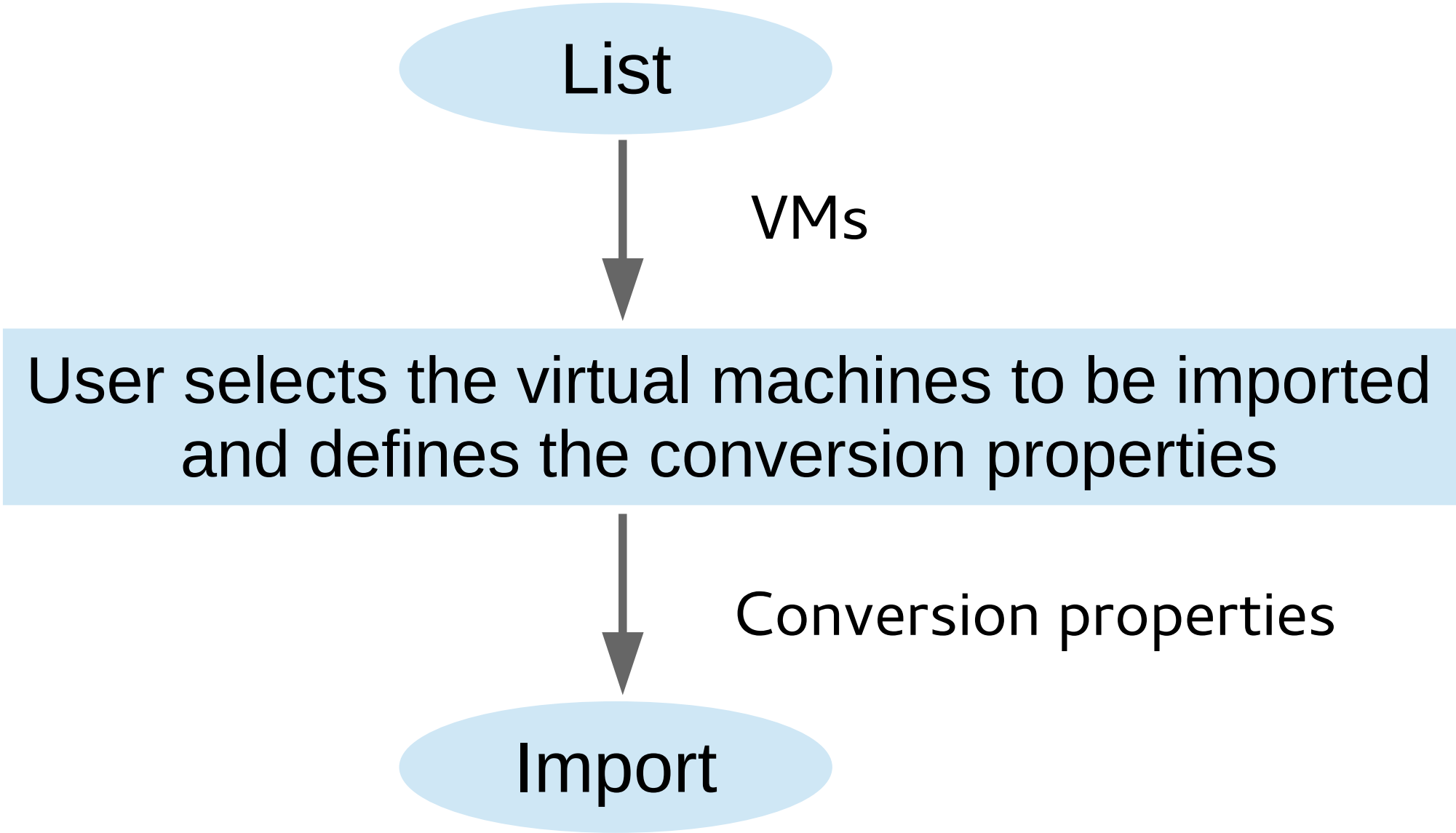
oVirt architecture view



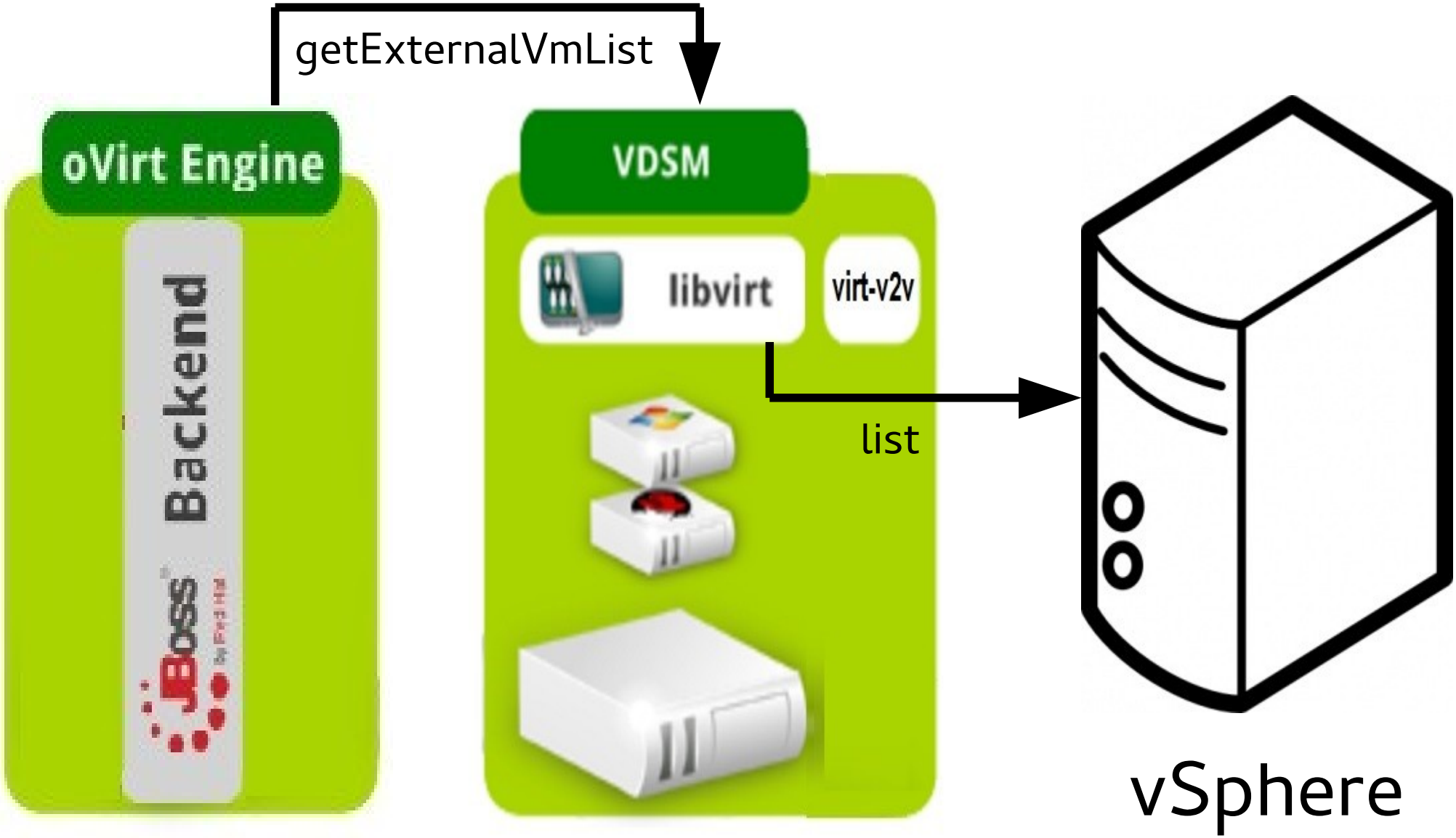
How virt-v2v is integrated in oVirt?

virt-v2v is installed on each host

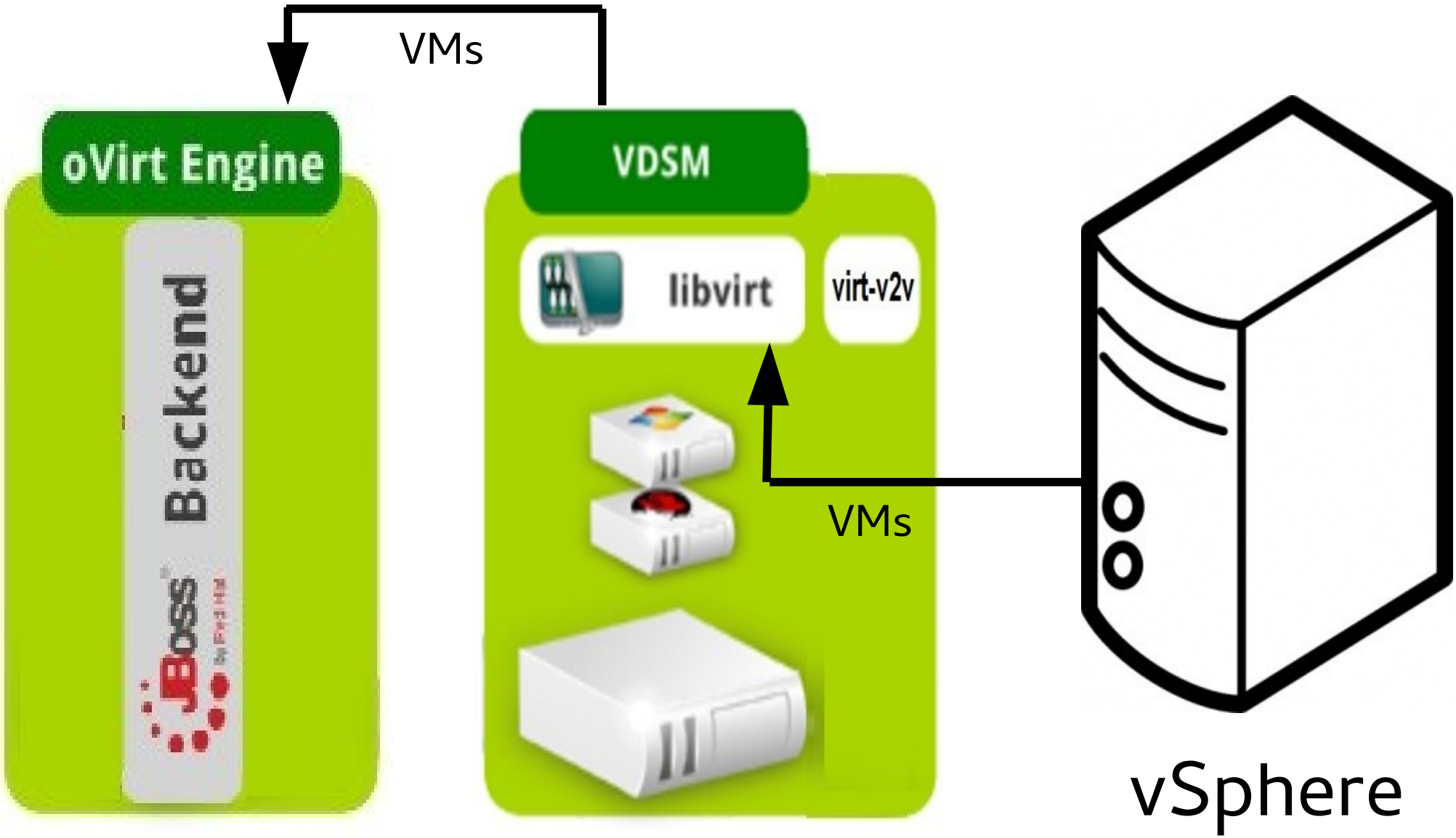
High-level view of import in oVirt



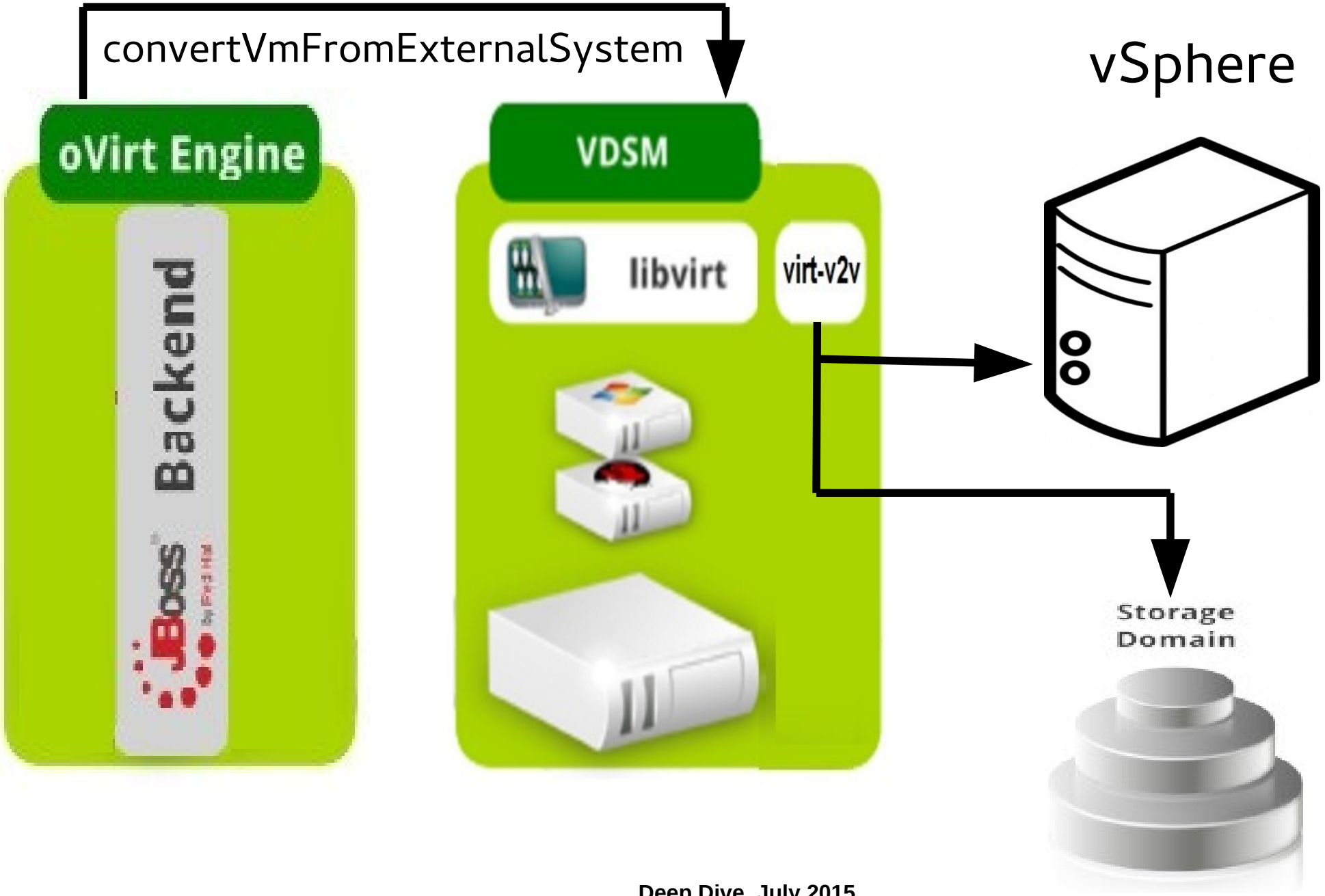
List VMs from VMware (1)



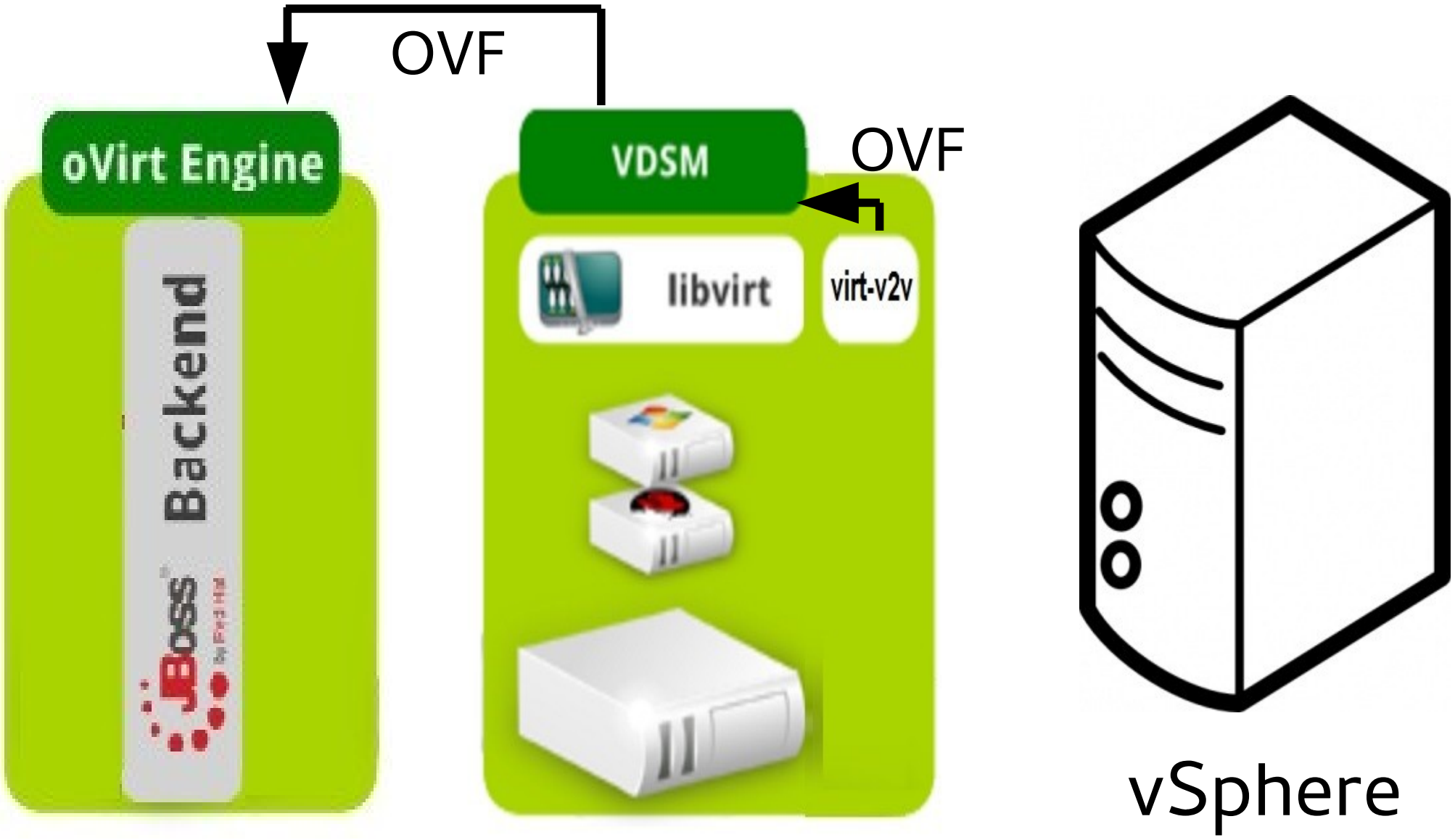
List VMs from VMware (2)



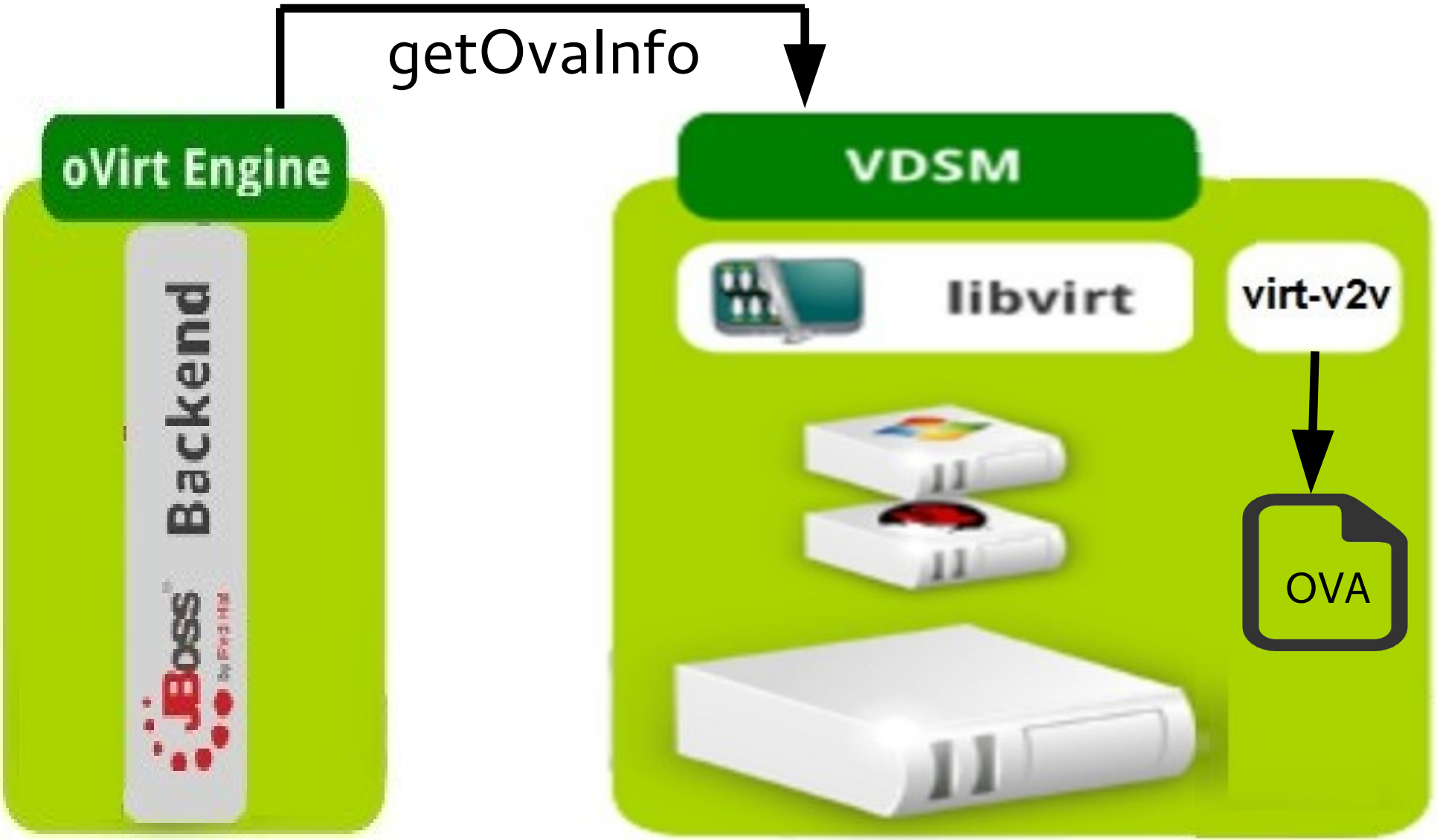
Convert VM from VMware (1)



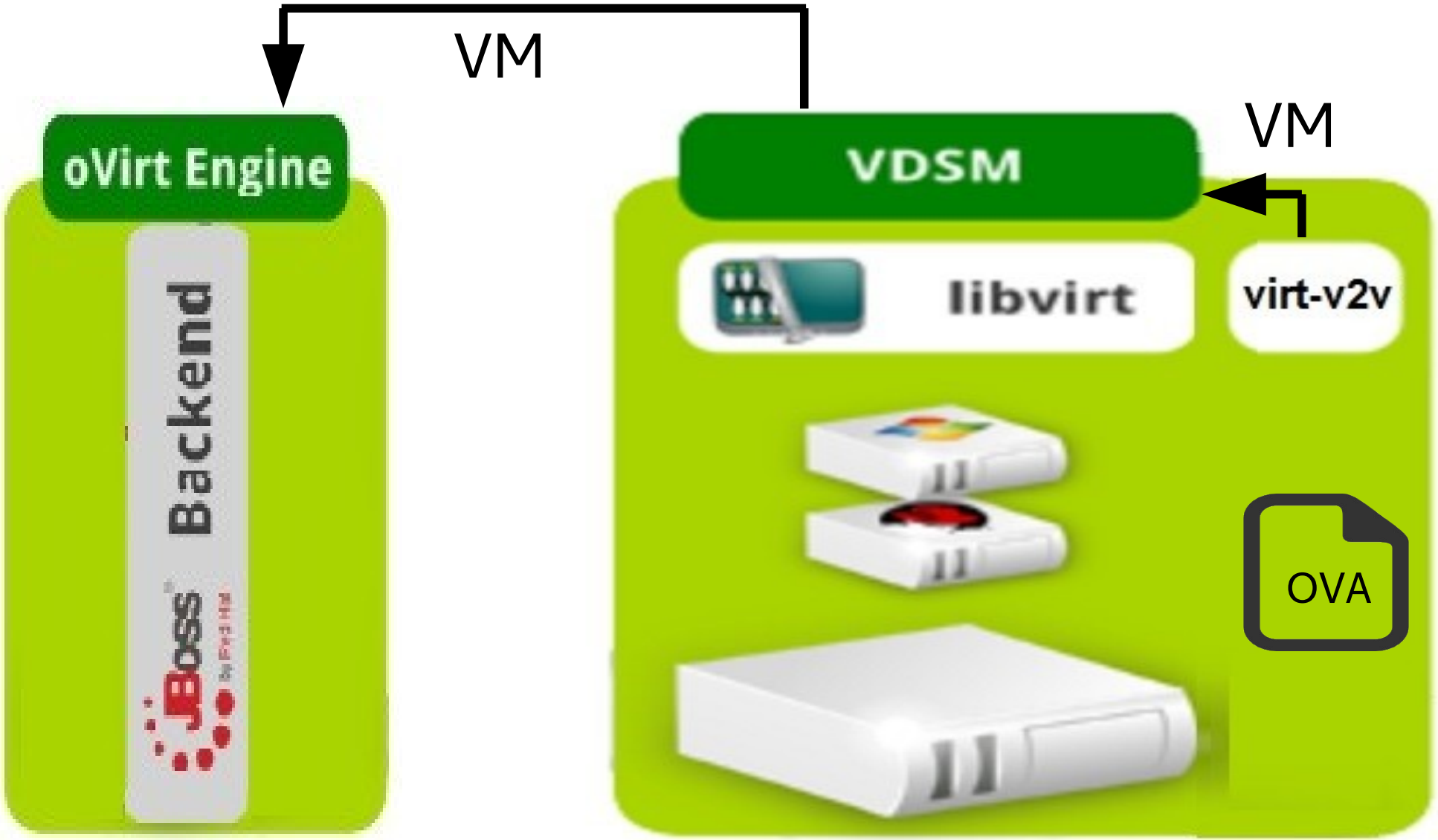
Convert VM from VMware (2)



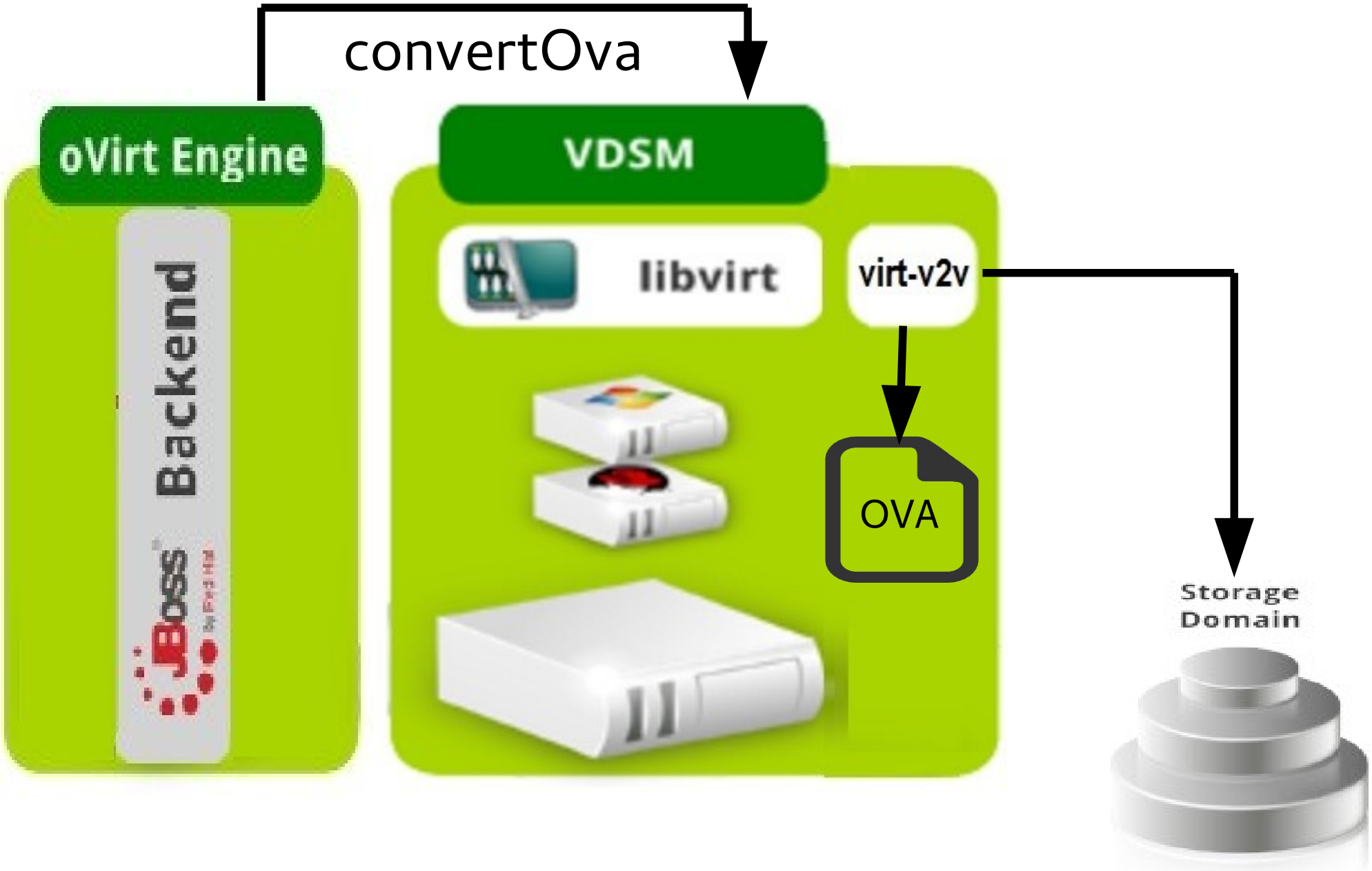
List VM from virtual appliance (1)



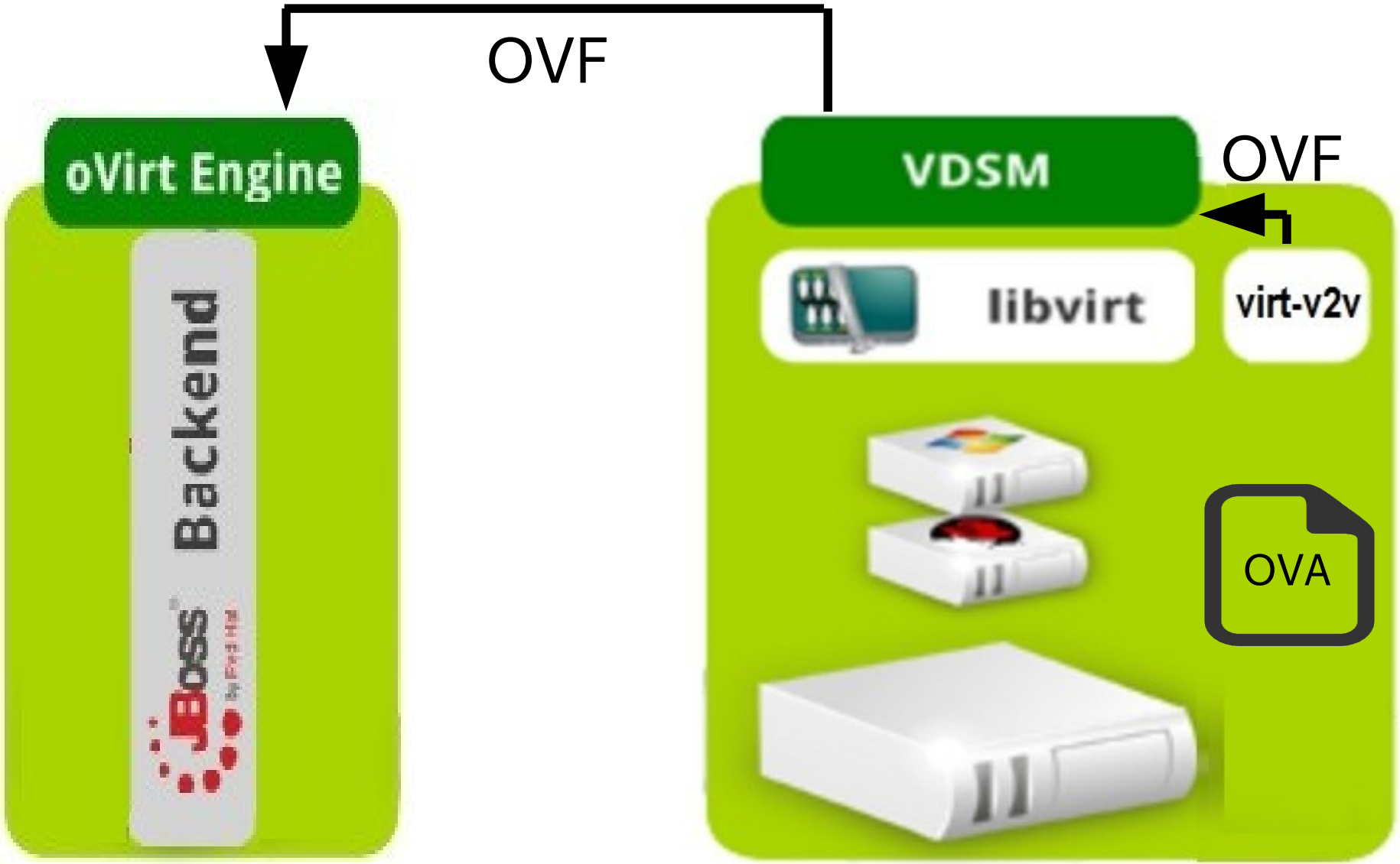
List VM from virtual appliance (2)



oVirt Convert VM from virtual appliance (1)



Convert VM from virtual appliance (2)

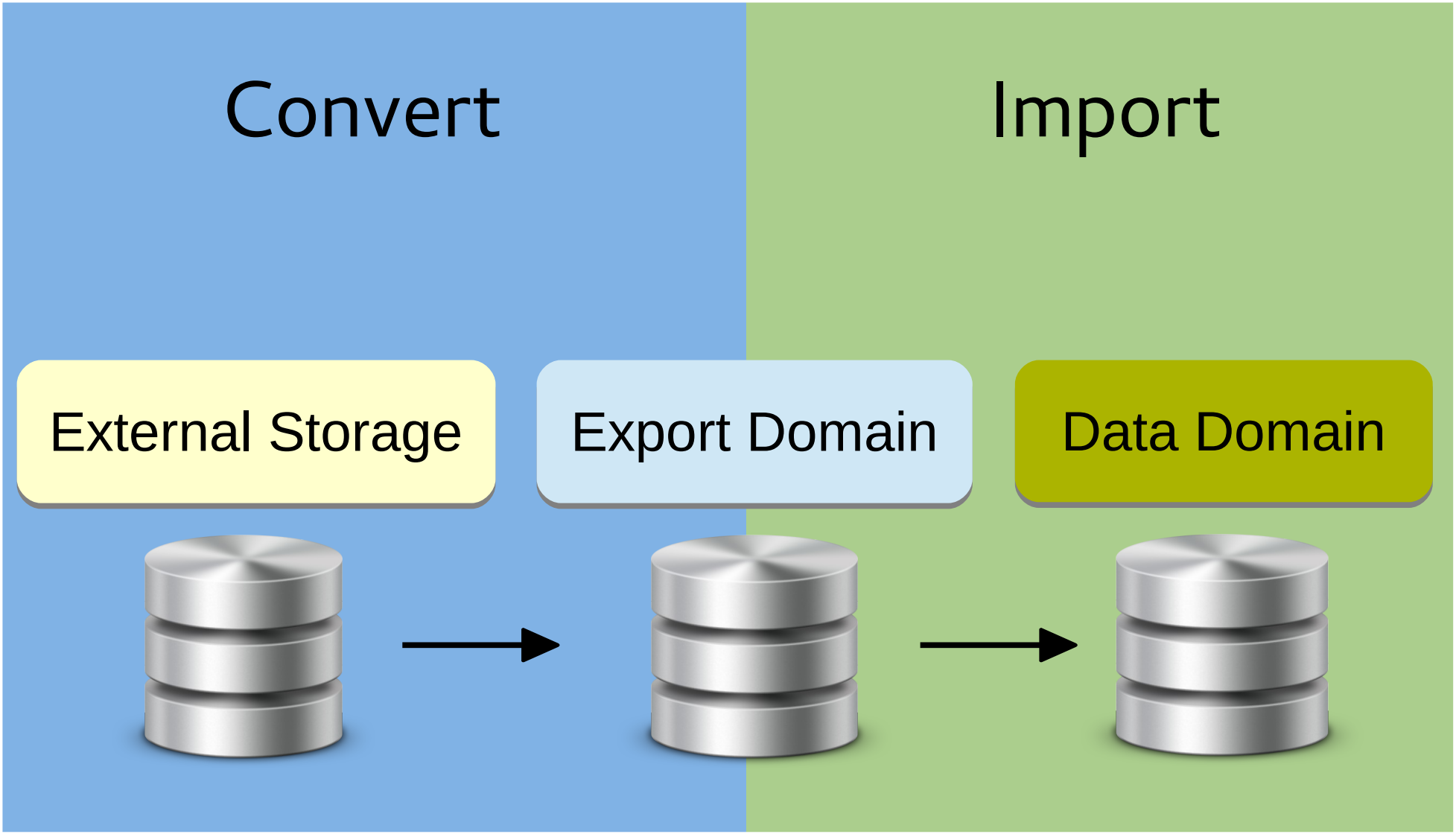


Faster and more efficient (1)

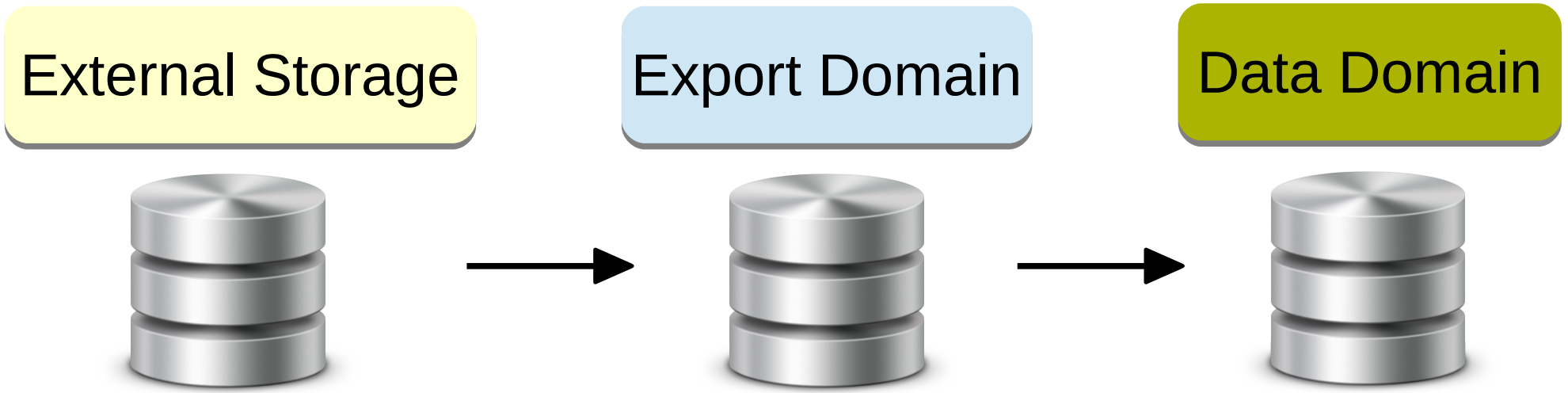
(1) Convert using virt-v2v

(2) Import using oVirt

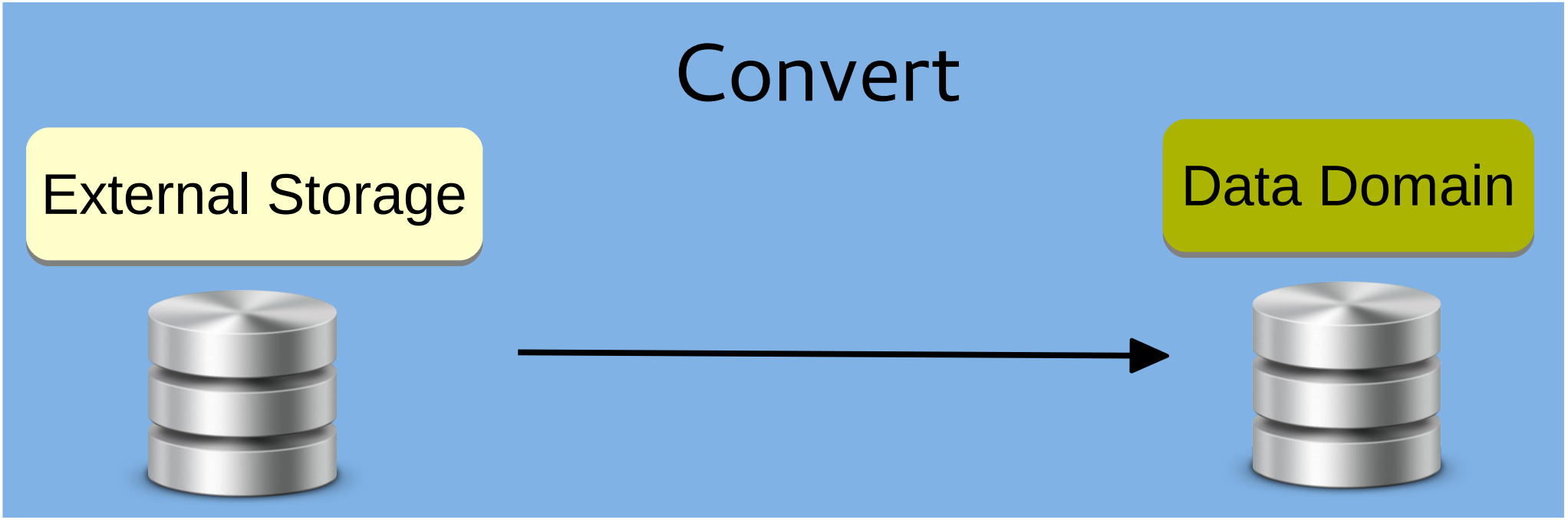
Faster and more efficient (2)



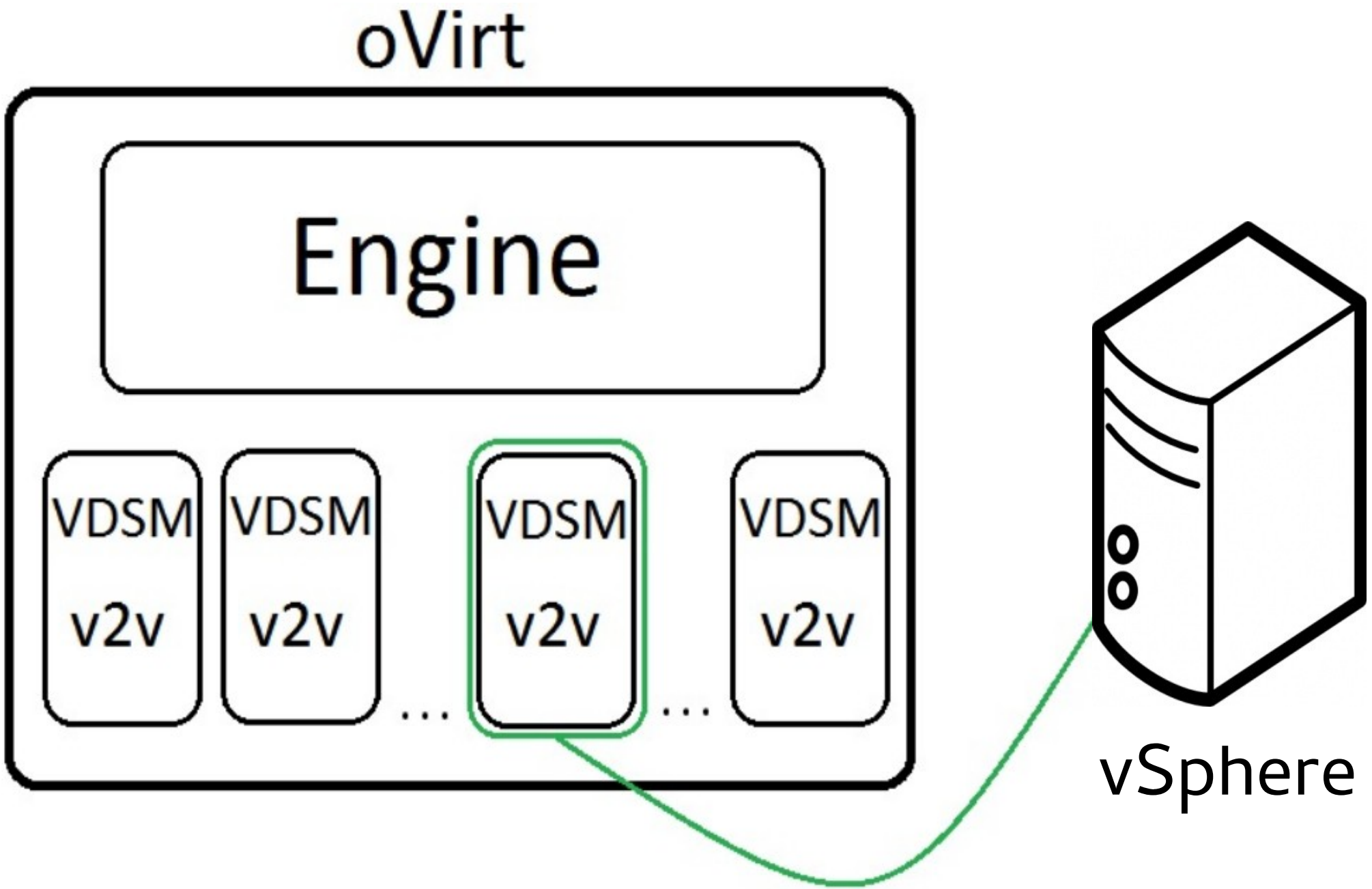
Faster and more efficient (3)



Faster and more efficient (4)



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

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

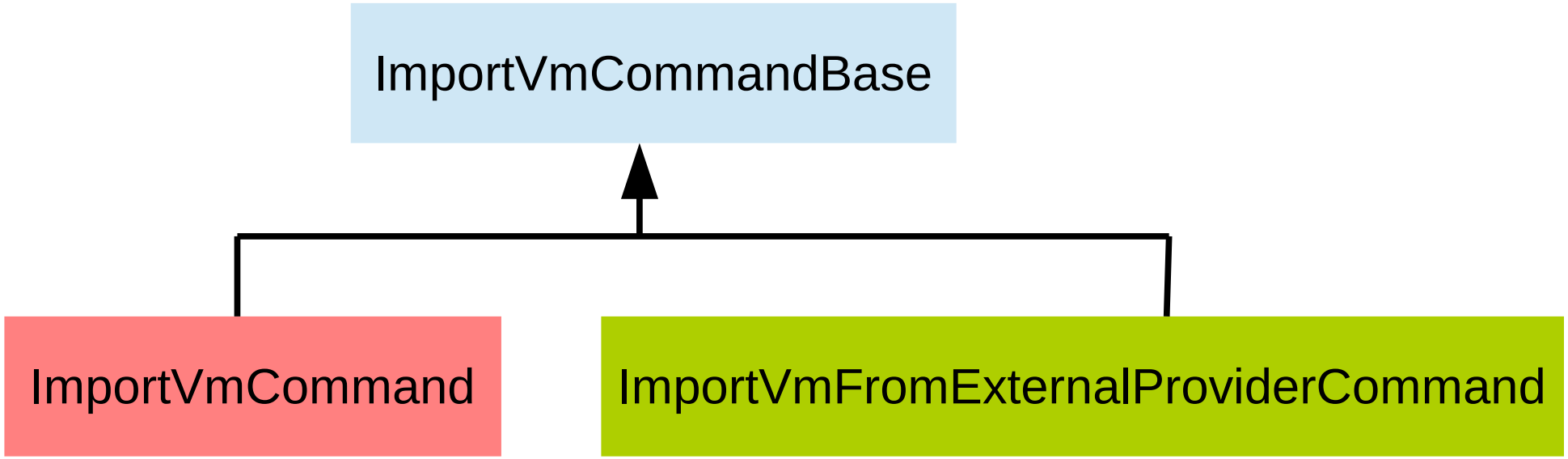
- Support VDSM as an output
  - Copies to given disks
  - Produce VM configuration in a given path
  - Configurable virtio-win drivers
- Support virtual appliance as a source
- Support u/s virtio-win iso

VDSM

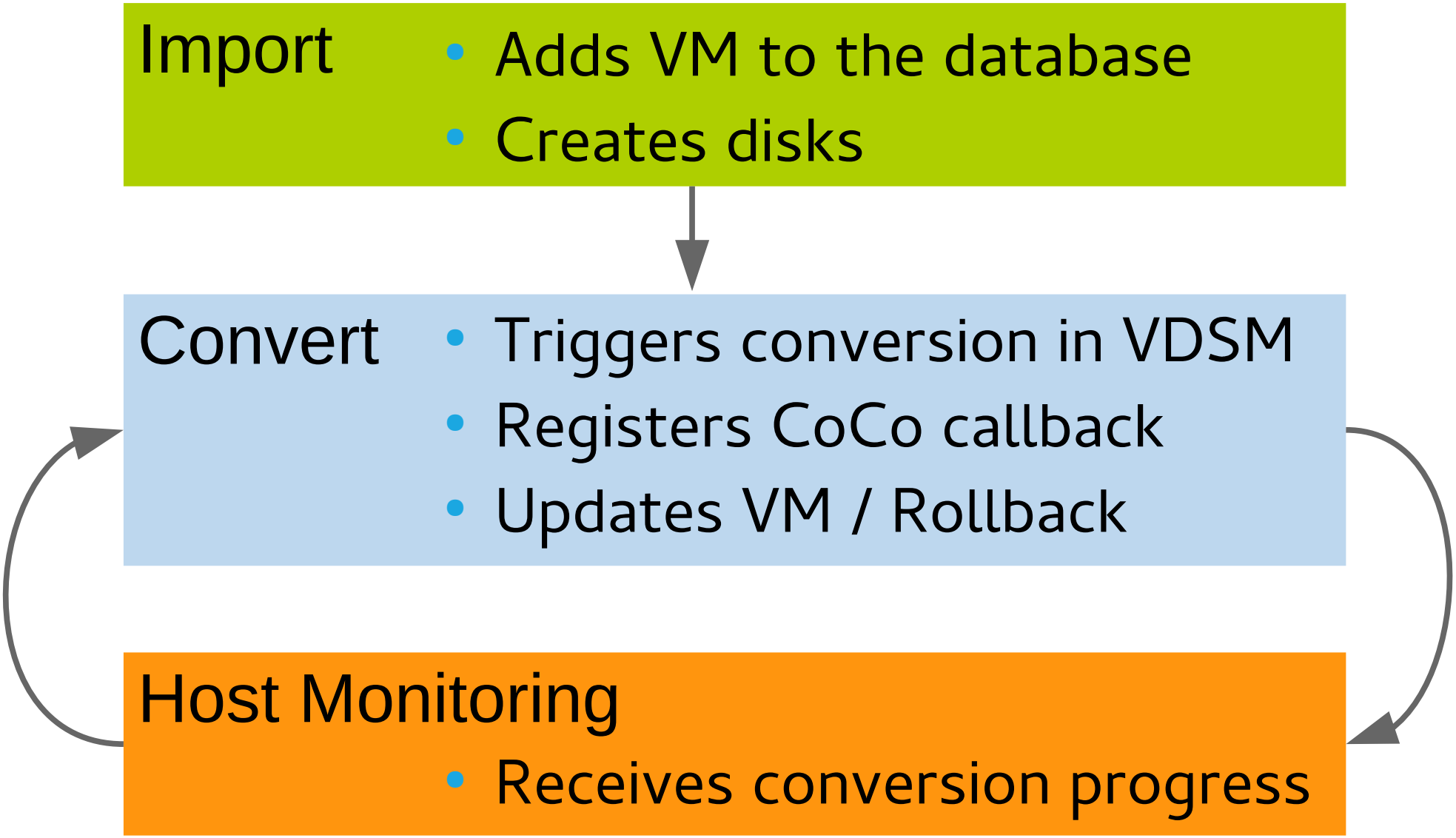
- New verbs:
  - getExternalVmList
  - convertVmFromExternalSystem
  - getConvertedVm
  - deleteV2VJob
  - abortV2VJob (In progress)
  - getOvaInfo
  - convertOva (In progress)
- Conversion progress was added to VdsStats

Back-end (1)

- List queries
  - getVmsFromExternalProviderQuery
  - getOvaInfoQuery (In progress)
- Generalize ImportVmCommand



Back-end (2)


Import
Adds VM to the database
Creates disks
Convert
Triggers conversion in VDSM
Registers CoCo callback
Updates VM / Rollback
Host Monitoring
Receives conversion progress

Front-end

- New dialog for import virtual machines
  - Supports VMware and OVA as sources
  - Also includes export domain as a source
- Progress bar for VM conversion
- VMware as a VM-provider

Known issues

- Only one destination storage domain
- Host lifecycle ignores VM conversions
- Thin disks on block storage not work (bz 1221603)
- VM is not locked after engine restart (bz 1226561)
- VDSM might terminate in the middle (bz 1243935)

Future improvements

- Stable API for monitoring virt-v2v progress
- Enhance the API with virt-v2v
  - To support multiple destination storage domains
- Support additional import sources
  - Xen, libvirt, OVA on iso domain, physical host (P2V)
- Enhance previously used import sources
  - Add them to the new import dialog
  - Monitor their progress using a progress-bar

THANK YOU!

http://www.ovirt.org
ahadas@redhat.com
ahadas@irc.oftc.net#ovirt