KubeVirt

Cats and Dogs Living Together?

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...for Virtualization in a cloud-native world:

- I need a place to install, run, and manage my Kubernetes clusters.

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  => Katacontainers, gVisor

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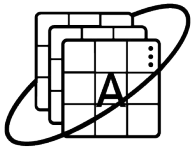
What about existing workloads?



CONTAINER INFRASTRUCTURE AND ORCHESTRATION

Container Application and Kubernetes orchestration as provided by OpenShift are becoming **the** standard for new applications.

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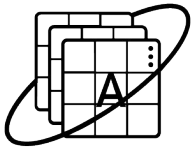

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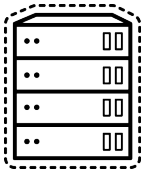

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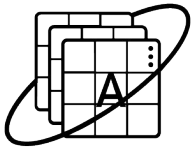

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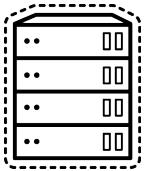

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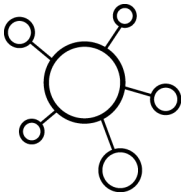

CONVERGING INFRASTRUCTURE

Existing solutions force us to manage both separately. How can we bring these two worlds closer together?

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Enter KubeVirt

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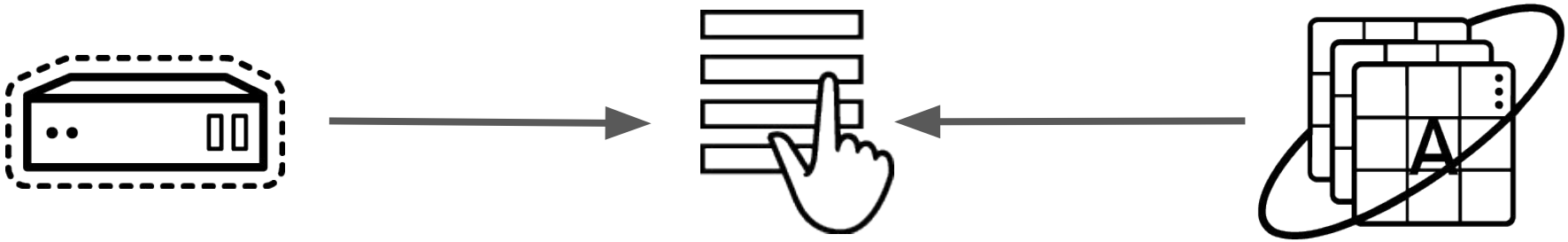
What is KubeVirt?

Technology enabling developer use of Kubernetes as a unified platform for building, modifying, and deploying applications residing in both containers and virtual machines in a common, shared environment.



Add virtual machines to your Kubernetes/OpenShift projects directly from the service catalog!

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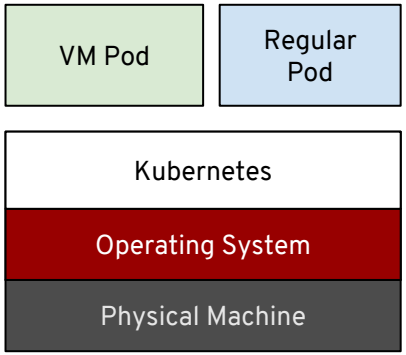
What is KubeVirt?

- Drops directly into existing Kubernetes Clusters
- Takes as K8S-native an approach as possible
- Leverage Container Networking Interface (CNI), Container Storage Interface (CSI). and other K8S-native integrations.
- Apache License, Version 2.0

http://kubevirt.io



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Components

- **KubeVirt**
  The virtual machine operator
- **Containerized Data Importer (CDI)**
  Importing disks
- **OpenShift Web Console (Optional)**
  With UI extensions
- **Virt-v2v (APB)**
  Importing a whole virtual machine

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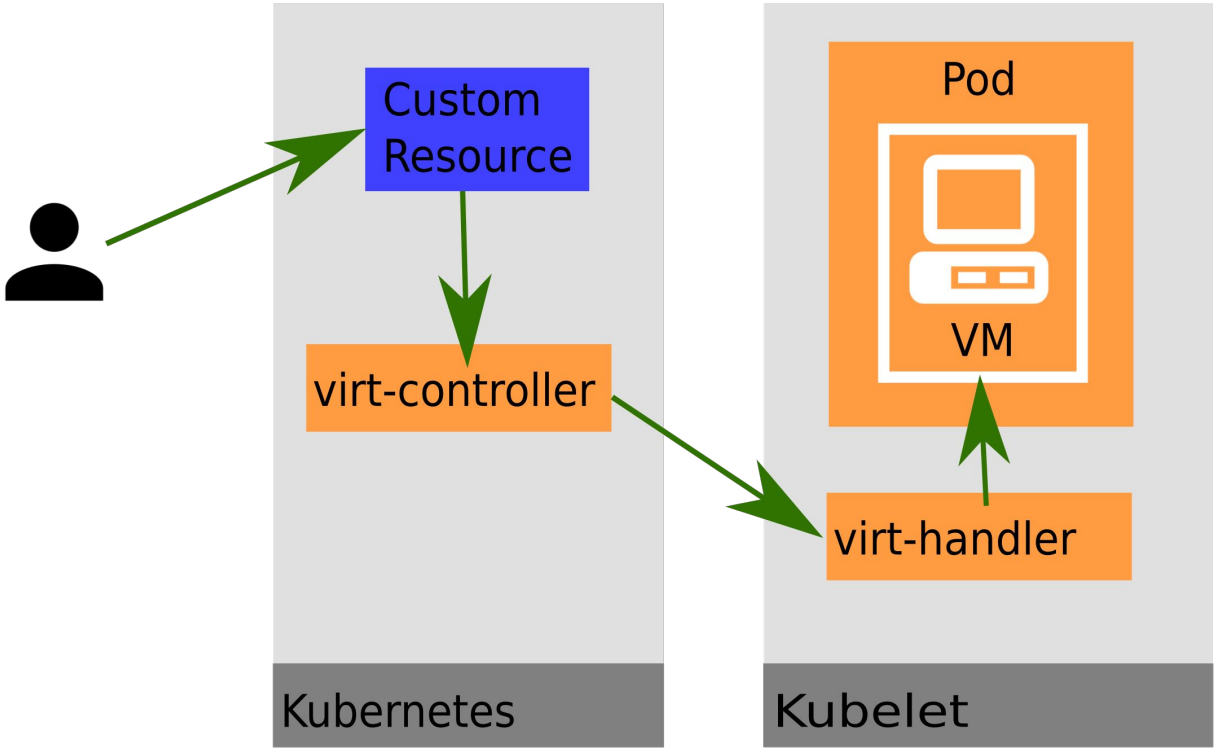
High Level Architecture



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VirtualMachine Operator and API

- Virtual Machines have their own kind
  - Ability to express all common virtual machine parameters and actions
  - Targeted feature set is comparable to libvirt

- Implemented as a CRD
  - Inheriting authn, authz, client ool support, ...

```
apiVersion: kubevirt.io/v1alpha1
kind: VirtualMachine
metadata:
  name: vm-fedora
spec:
  domain:
    devices:
      disks:
      …
    resources:
      requests:
        memory: 1024M
  volumes:
  …
status:
  interfaces:
  - ipAddress: 172.17.0.12
  nodeName: localhost
  phase: Running
```

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Example Use Case

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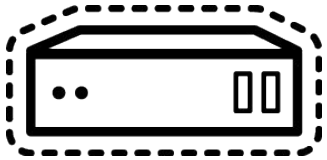
Example Use Case: We have a VM!



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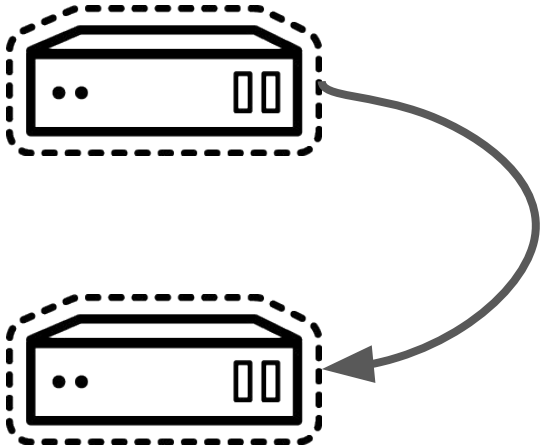
Example Use Case: Import



Import Using V2V or from an image.

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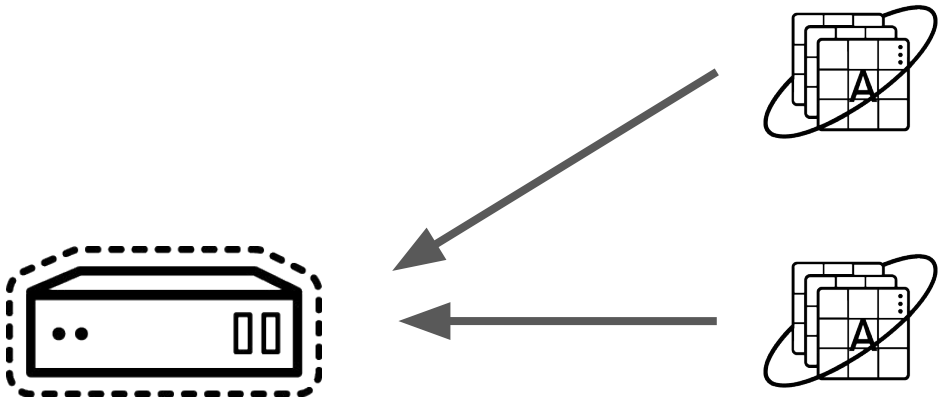
Example Use Case: New Functionality



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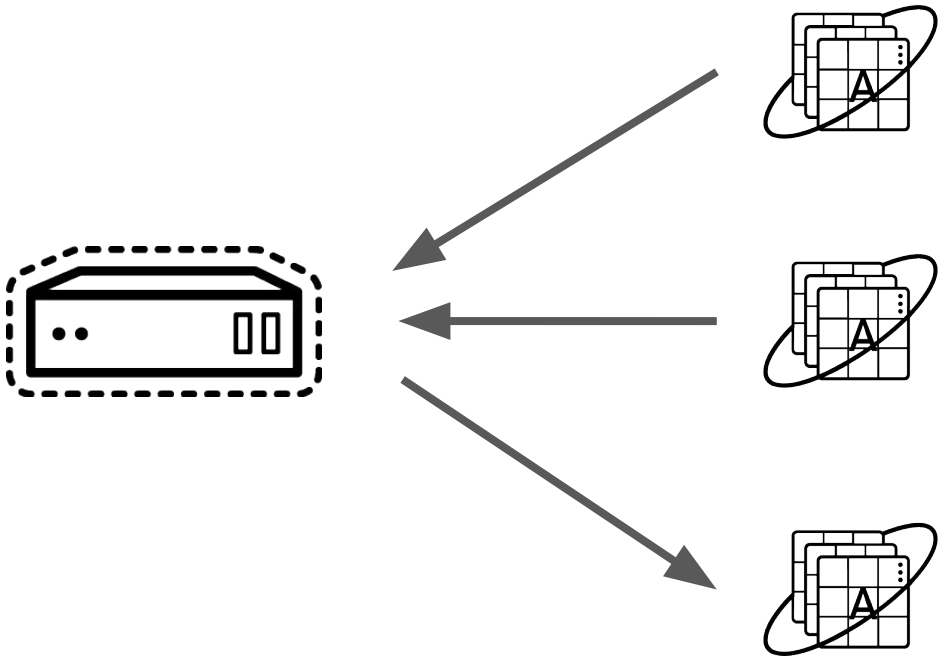
Example Use Case: Decomposition



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Demo

Demo

Pre-requisites:

- kubectl
- minikube/minishift

http://kubevirt.io/get_kubevirt/

NB: Yes, we're running nested virt here - fine for getting started!

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Future Plans

- Operators for KubeVirt, Common Data Importer, etc.
- Additional VM life-cycle actions.
- Additional Networking options (Multiple Networks, SR-IOV).
- Add more flows to the UI.
- Turn-Key storage solutions.
- VM ReplicaSets, DaemonSets, etc.
- Initial Istio support.

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Collaborating

- Website:
  - https://kubevirt.io
- GitHub:
  - https://github.com/kubevirt/
- Mailing List:
  - https://groups.google.com/forum/#!forum/kubevirt-dev
- IRC:
  - #kubevirt on irc.freenode.net
- Slack (K8S virtualization working group):
  - #virtualization on kubernetes.slack.com

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