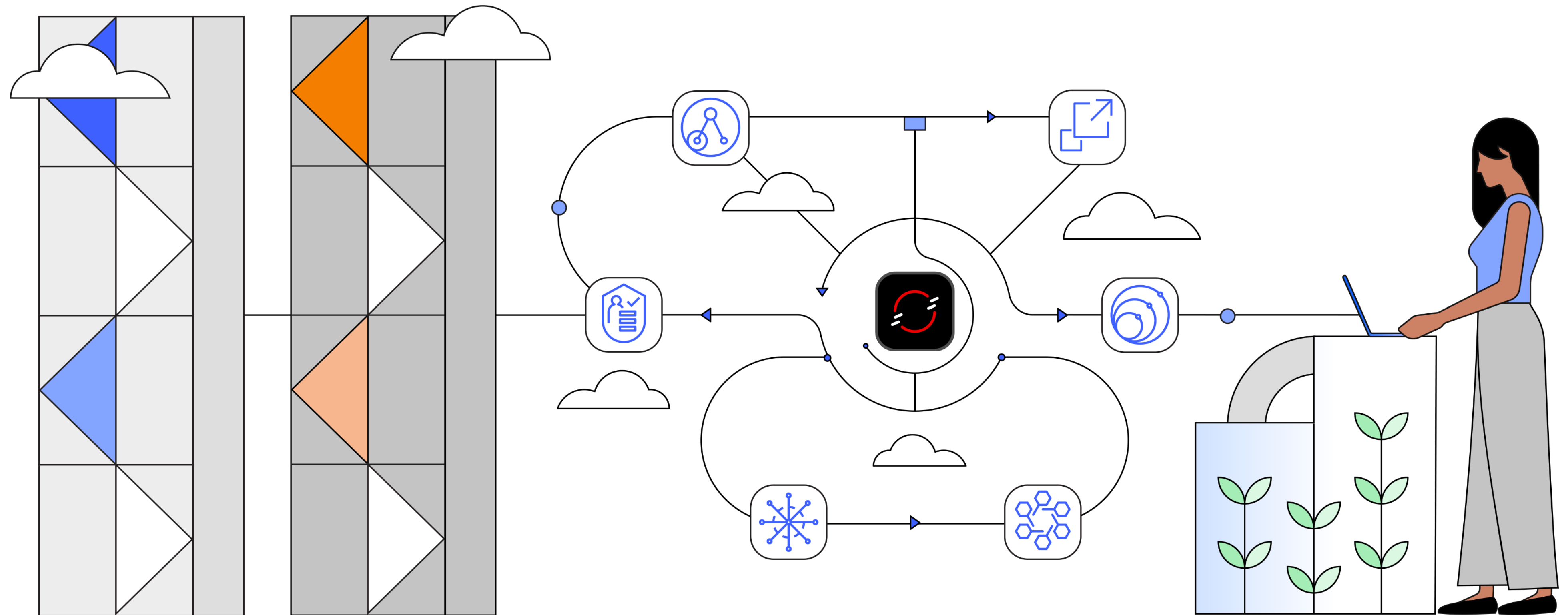


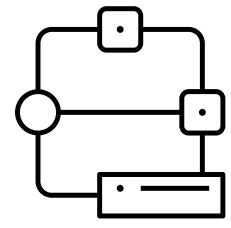
Red Hat OpenShift Virtualization – Tech Preview with IBM Z and IBM LinuxONE



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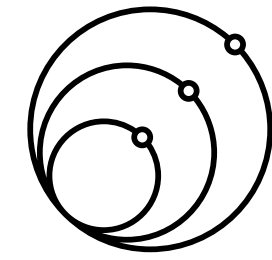
Nourhane Bziouech
Product Owner – Red Hat OpenShift
Virtualization on IBM Z and LinuxONE
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The management of virtual machines and containers in a fragmented IT



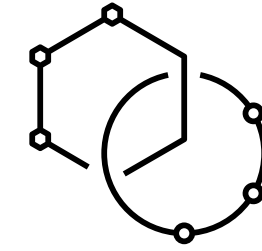
Complex, siloed IT
hinders agility
and security

different hardware platforms

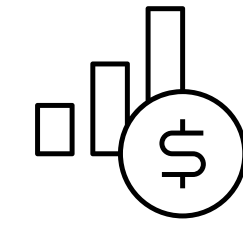


Inefficient,
different
technologies used
in the enterprise

*e.g., IBM z/VM[®], KVM, VMware,
Red Hat[®] OpenShift[®]*



Unproductive,
different tooling to
manage VMs and
containers



Costly, lack of
common tooling
and skills

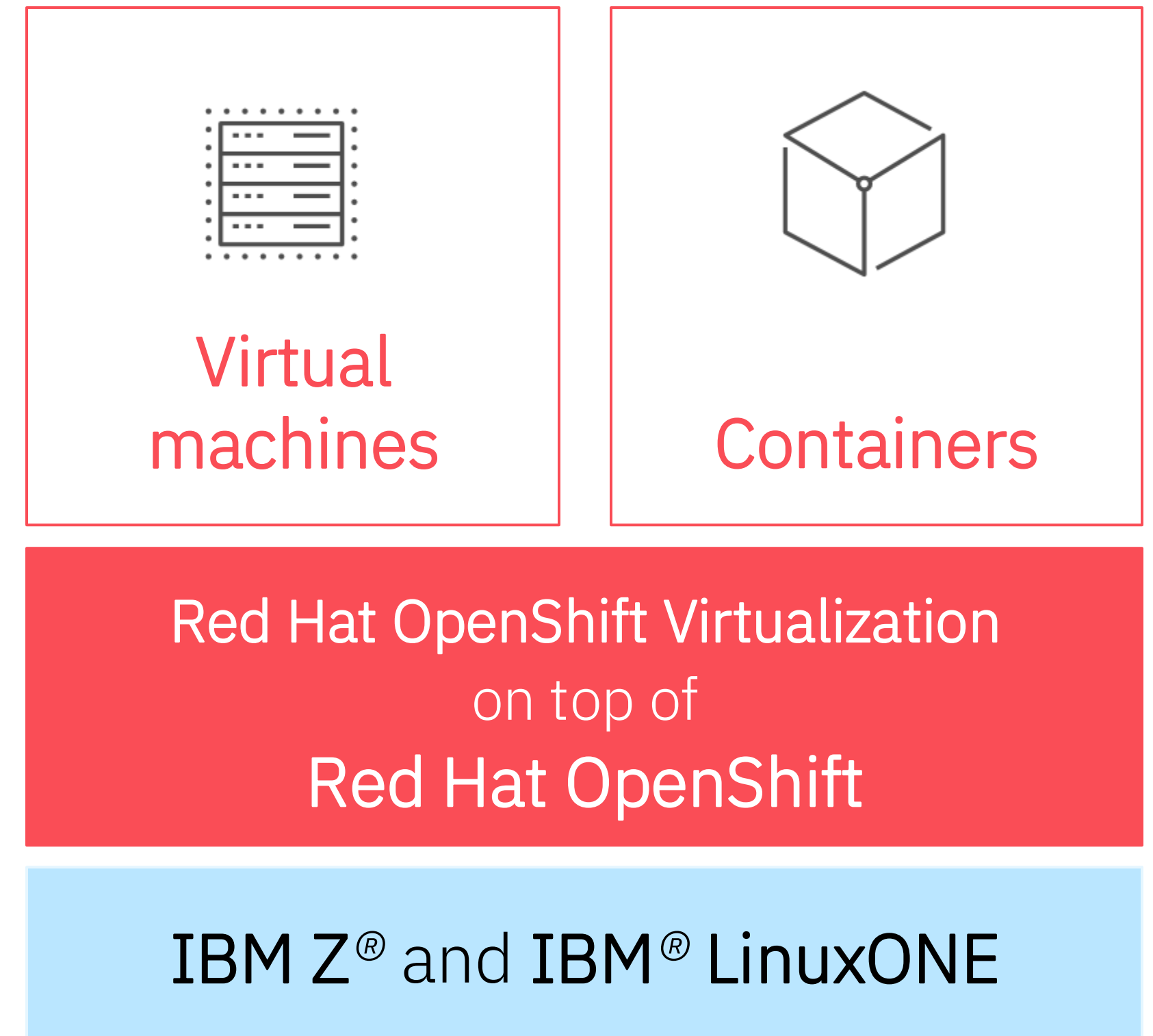
Virtual machines and containers in a single platform with Red Hat OpenShift Virtualization

- *Bringing two worlds together*
- *One solution for VM and container workloads*

OpenShift Virtualization provides the solution to

- run VMs and containers on the same environment
- manage modern and legacy workloads with the same tools and within the same interface
- orchestrate the communication between VMs and containers

Removes the need to maintain different technologies, different skills, and different teams



OpenShift Virtualization 4.18 - Tech Preview

on IBM Z and IBM® LinuxONE

OpenShift Virtualization 4.18 is released as **Tech Preview** on IBM Z and IBM® LinuxONE.

[Release notes](#)

[Technology Preview Features - Scope of Support](#)

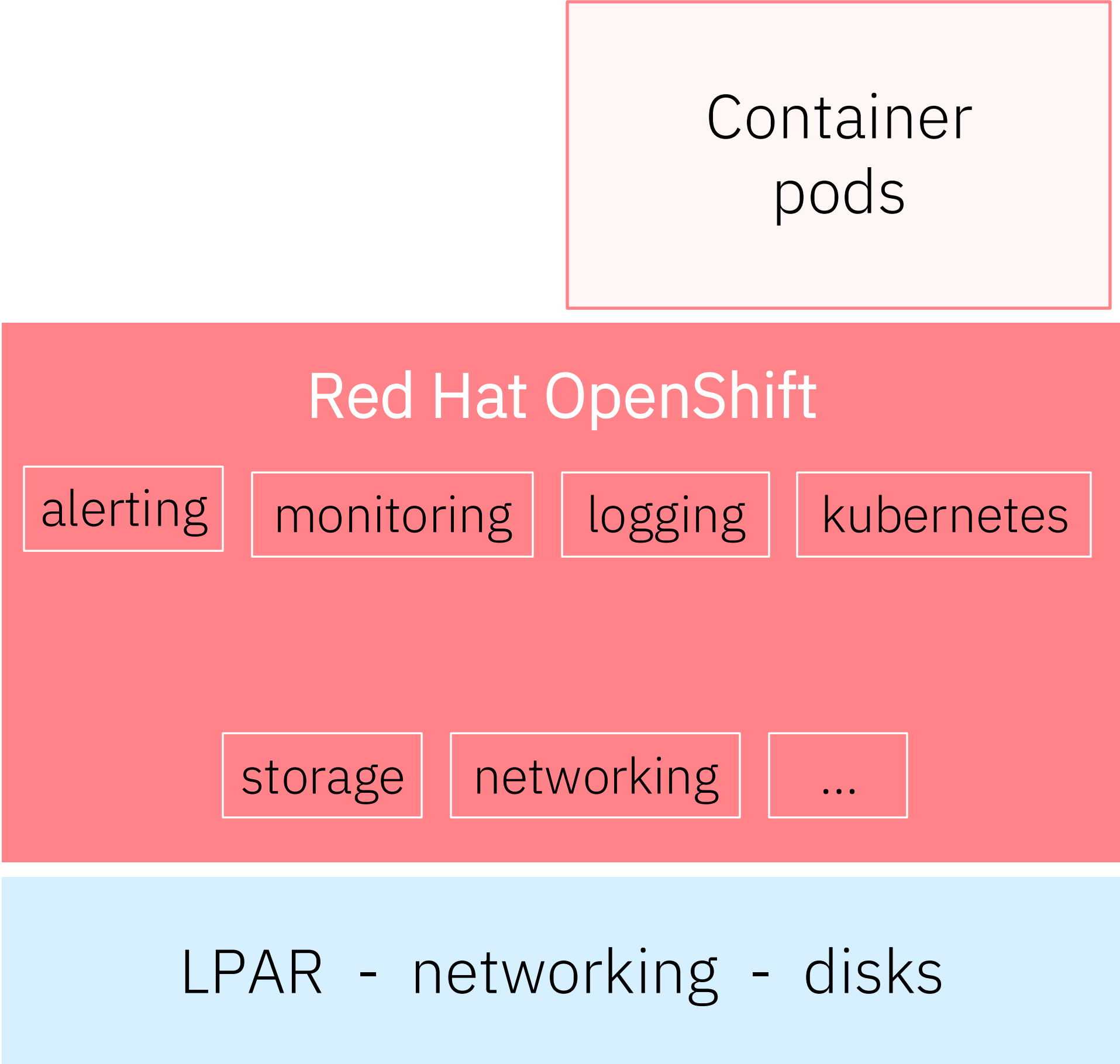
- OpenShift Virtualization Operator **must be installed** on top of a Red Hat OpenShift cluster
⇒ [OpenShift Virtualization does not come pre-installed](#)
- **OpenShift Virtualization Operator** allows to run and manage VM workloads alongside container workloads in a Red Hat OpenShift cluster.
⇒ [no other product installation required \(e.g., no separate KVM or other hypervisor installation\)](#)

Red Hat OpenShift

Containers running in pods

Red Hat OpenShift Container Platform
Add-ons / Storage / Operators – including
OpenShift Virtualization Operator / ...

Infrastructure



Red Hat OpenShift

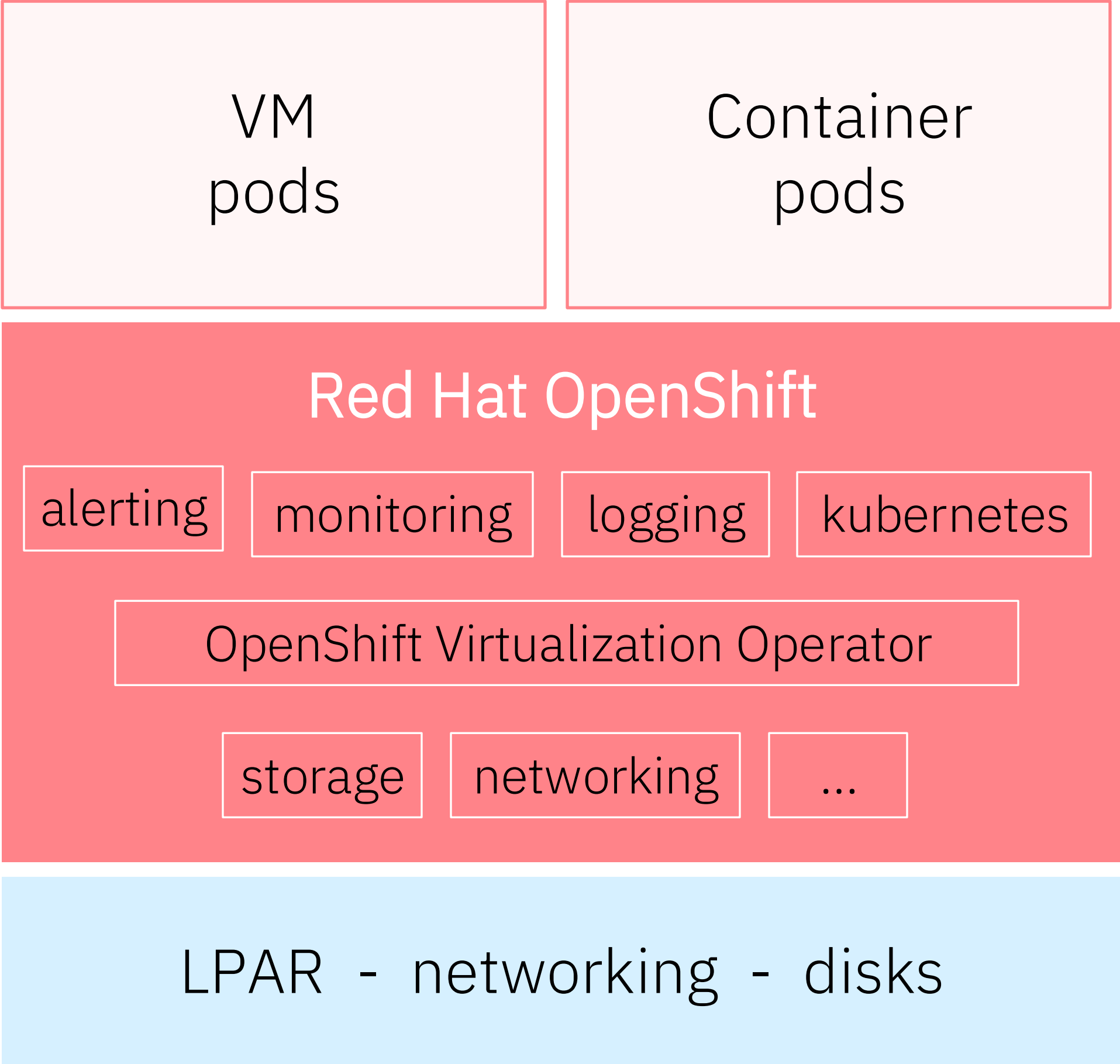
VMs and containers run in pods

Pods exist side-by-side and have the same access to the resources provided by the Red Hat OpenShift platform

Red Hat OpenShift Container Platform

Add-ons / Storage / Operators – including OpenShift Virtualization Operator / ...

Infrastructure



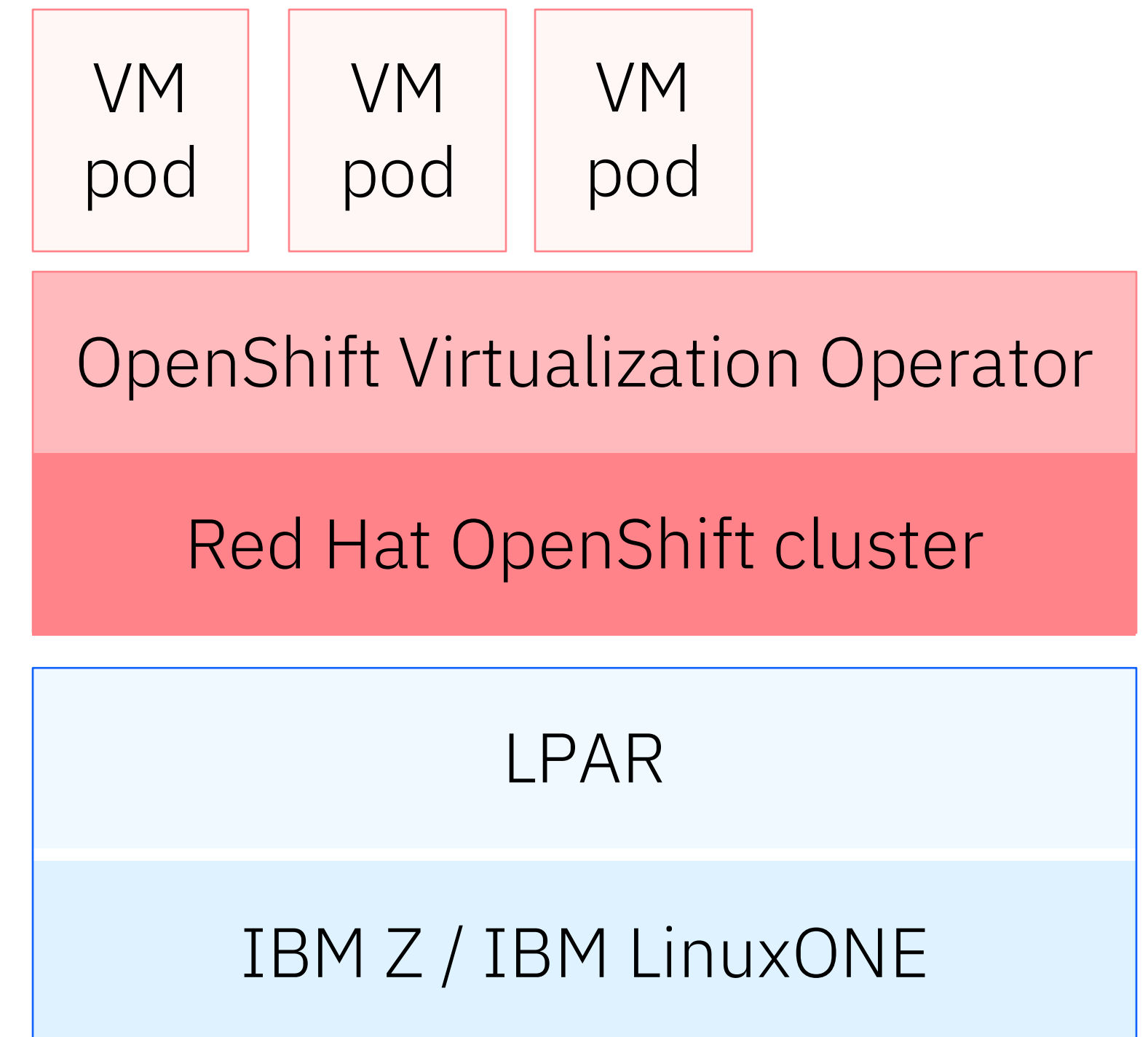
OpenShift Virtualization Operator

Requirements

- OpenShift Virtualization 4.18 must be installed on a Red Hat OpenShift cluster 4.18 on LPAR.
⇒ [Installation of or upgrade to 4.18 required](#)
- Minimum required resources for OpenShift Virtualization Operator are aligned with the minimum required resources for an OpenShift Cluster.
- It's recommended to [plan ahead](#) for additional resources: IFLs, memory, and storage for the individual workload on top of the cluster.
- Each deployed VM requires additional resources, depending on the VM specifics or the T-shirt size of the VM.

OpenShift Virtualization is based on the open-source project Kubevirt and uses underneath KVM technology to provision the virtual machines.

- ⇒ [Manages KVM guests only](#)
 - [KVM guests based on s390x architecture](#)
- ⇒ [Does not manage z/VM, VMware, or any other hypervisor](#)



OpenShift Virtualization

Extends the Red Hat OpenShift platform capabilities to VMs

OpenShift Virtualization provides integration with:

- OperatorHub for easy installation
 - * Disconnected mode is not verified with OpenShift Virtualization 4.18
- OpenShift UI and CLI for management
- Storage management with IBM Fusion Data Foundation (FDF), Red Hat OpenShift Data Foundation (ODF), or Local Storage
 - * Storage scale is not yet validated in the scope of TP
- Network management with SDN for VMs
- Cluster Logging and Monitoring of the VMs
- High Availability within the cluster

OpenShift Virtualization provides

- ⇒ Same look & feel
- ⇒ Management of the VMs and the environment of the VMs
 - Orchestration of VMs, network, storage, logging, etc. - the environment where the VMs run
- ⇒ Same tooling as for containers
 - If used to containers, it is the same for VMs now

More capabilities for hypervisor and VM life-cycle

OpenShift Virtualization provides:

- Managing the hypervisor deployment and its lifecycle
- Managing the lifecycle of VMs
Secure Execution mode for VMs is not available with 4.18
- Managing VM Images
- Importing VM images
- Easy deployment from templates and/or instances types
 - Creation of new templates
- Providing pre-built guest images* for use by OpenShift Virtualization
([RHEL8](#), [RHEL9](#), [RHEL10 – beta](#), ...)

* Additional community images for Ubuntu, Fedora and CentOS Stream are available on quay:
<https://quay.io/repository/containerdisks/fedora>
<https://quay.io/repository/containerdisks/centos-stream>
<https://quay.io/repository/containerdisks/ubuntu?tab=tags>

More capabilities for hypervisor and VM life-cycle

OpenShift Virtualization provides:

- Live guest migration within the same cluster
 - * Automated migration from other hypervisors not yet available
- Migration of VM disks
- Customize and manage resources quotas for VMs (vcpu / memory)
- CPU hot plugin
- Memory ballooning
 - Memory hot plugin for VMs is not available
- Snapshot of VMs
- Cloning of VMs images and VMs disks
- Integration with OADP for Backup and Restore
- Integration with OpenShift pipelines (CI/CD framework) for automating VMs management

OpenShift Virtualization

Low effort, high gain

OpenShift Virtualization, an open-source project based on open-source technologies

OpenShift Virtualization skills are easily gained:

- [Same experience](#) on IBM Z and IBM LinuxONE as on any other architecture
- [Large community](#) behind it that is working together and welcomes new members
- Publicly available resources and materials to learn about it and [onboard easily](#) within the world of OpenShift Virtualization

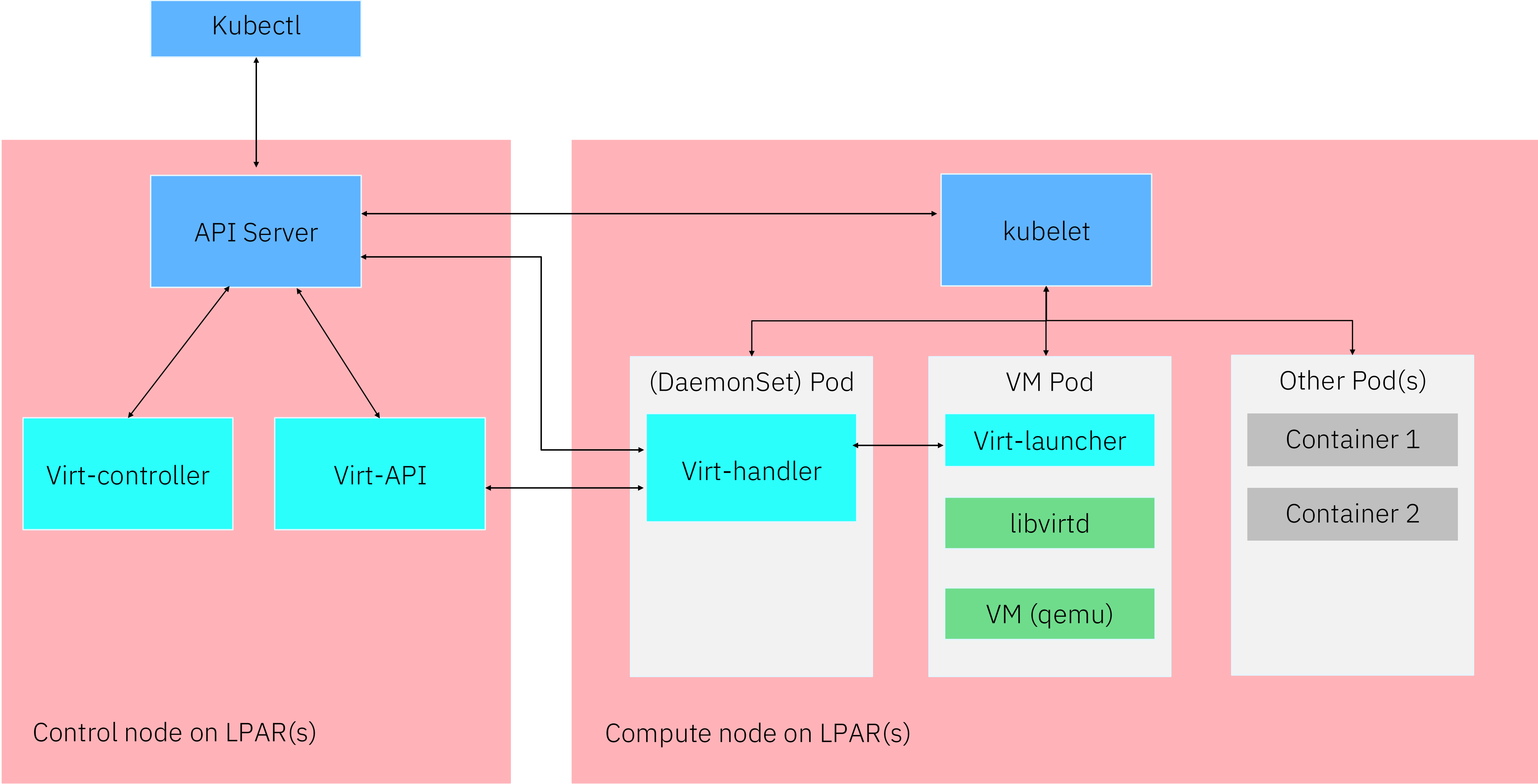
OpenShift Virtualization is

⇒ [Open technology](#)

⇒ [Community based](#)

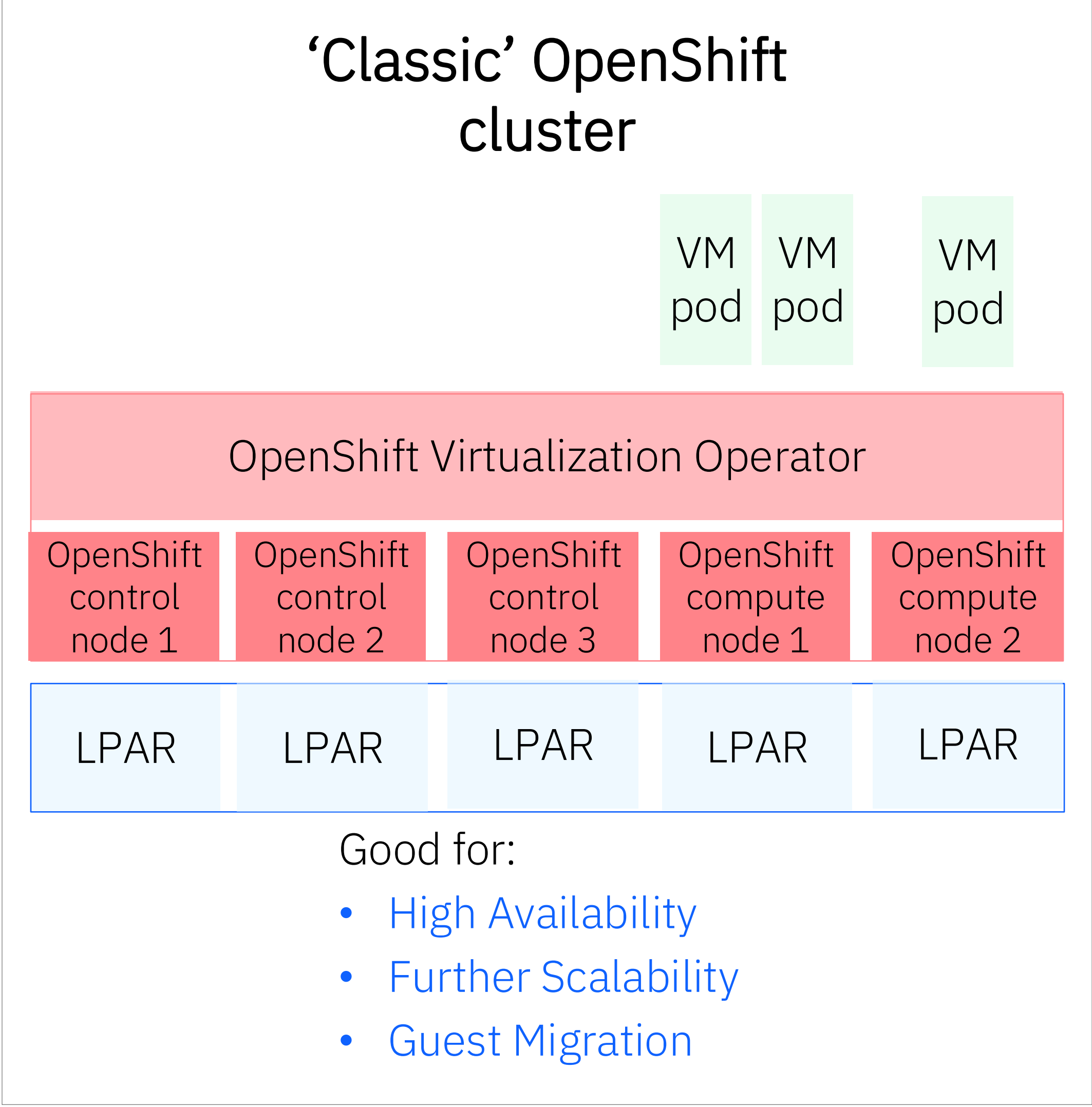
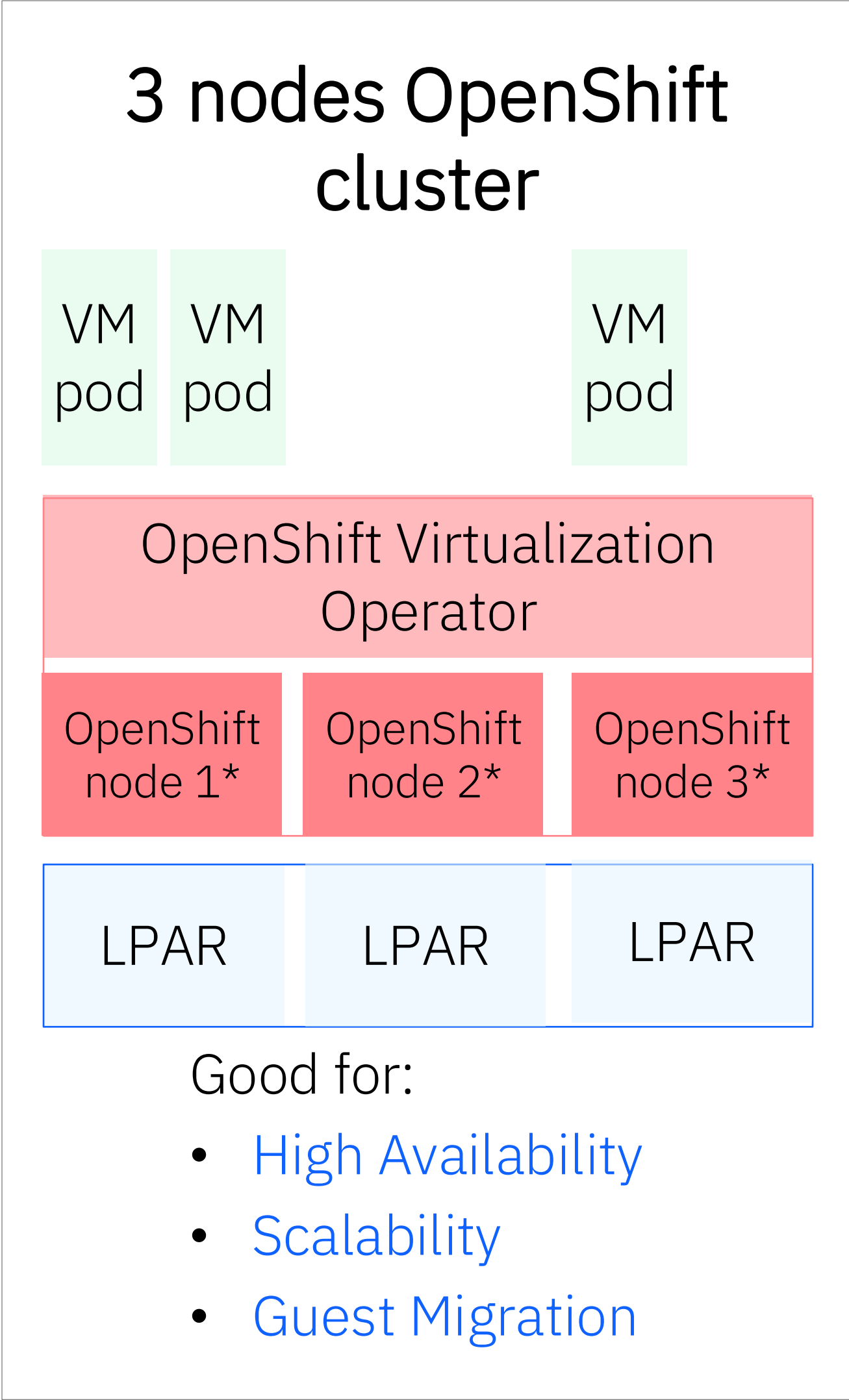
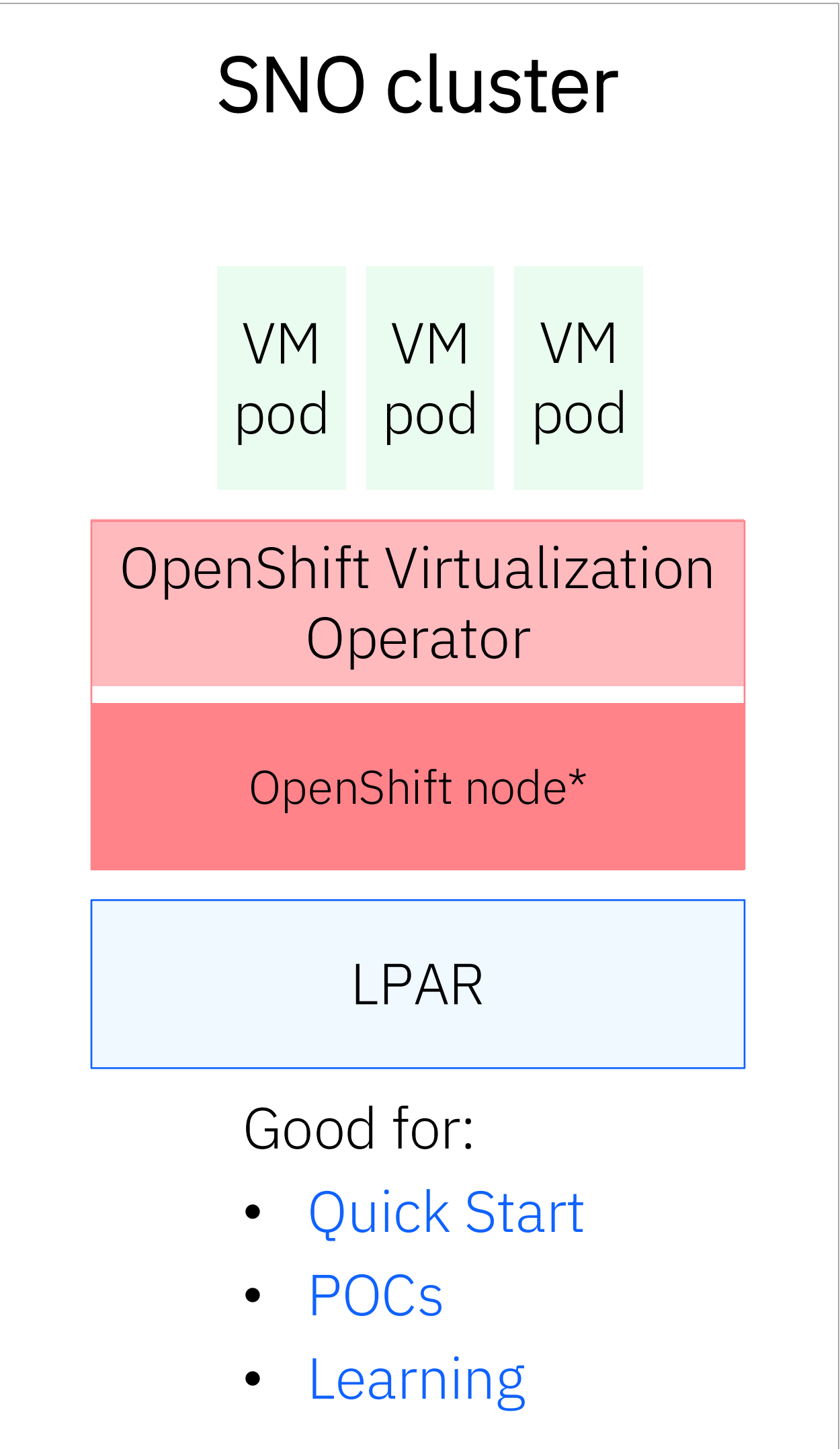
⇒ [Common skills](#)

OpenShift Virtualization



OpenShift Virtualization Installation Options

- OpenShift Virtualization - Tech Preview **requires** OpenShift on LPAR(s) cluster
- Existing OpenShift Cluster on LPAR(s) can be used when upgraded to **4.18**



* includes control and compute node

Thank you

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