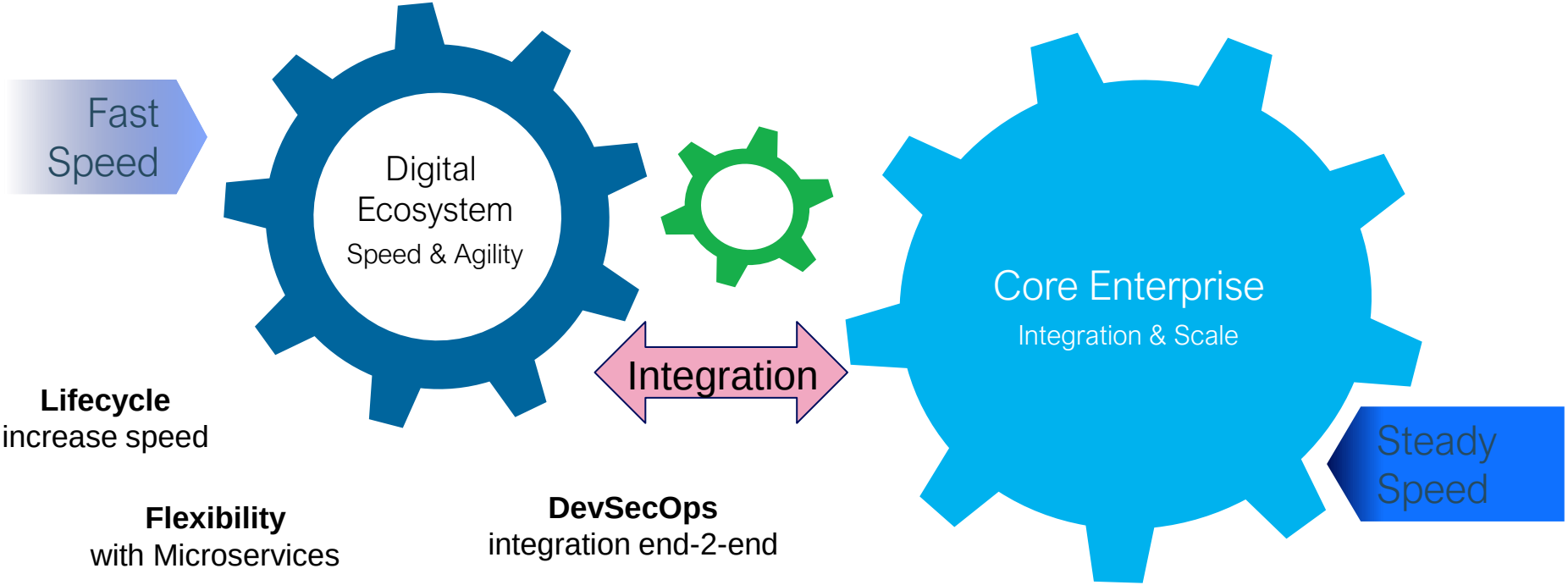
Why you should look at Red Hat OpenShift Container Platform on IBM Z & IBM LinuxONE

VM Workshop
June 11. 2021

Wilhelm Mild
IBM Executive IT Architect
Integration Architectures & Digitalization
IBM LinuxONE & IBM Z
IBM R & D Lab Germany

IT environments today - a multi-speed IT



Lifecycle
increase speed

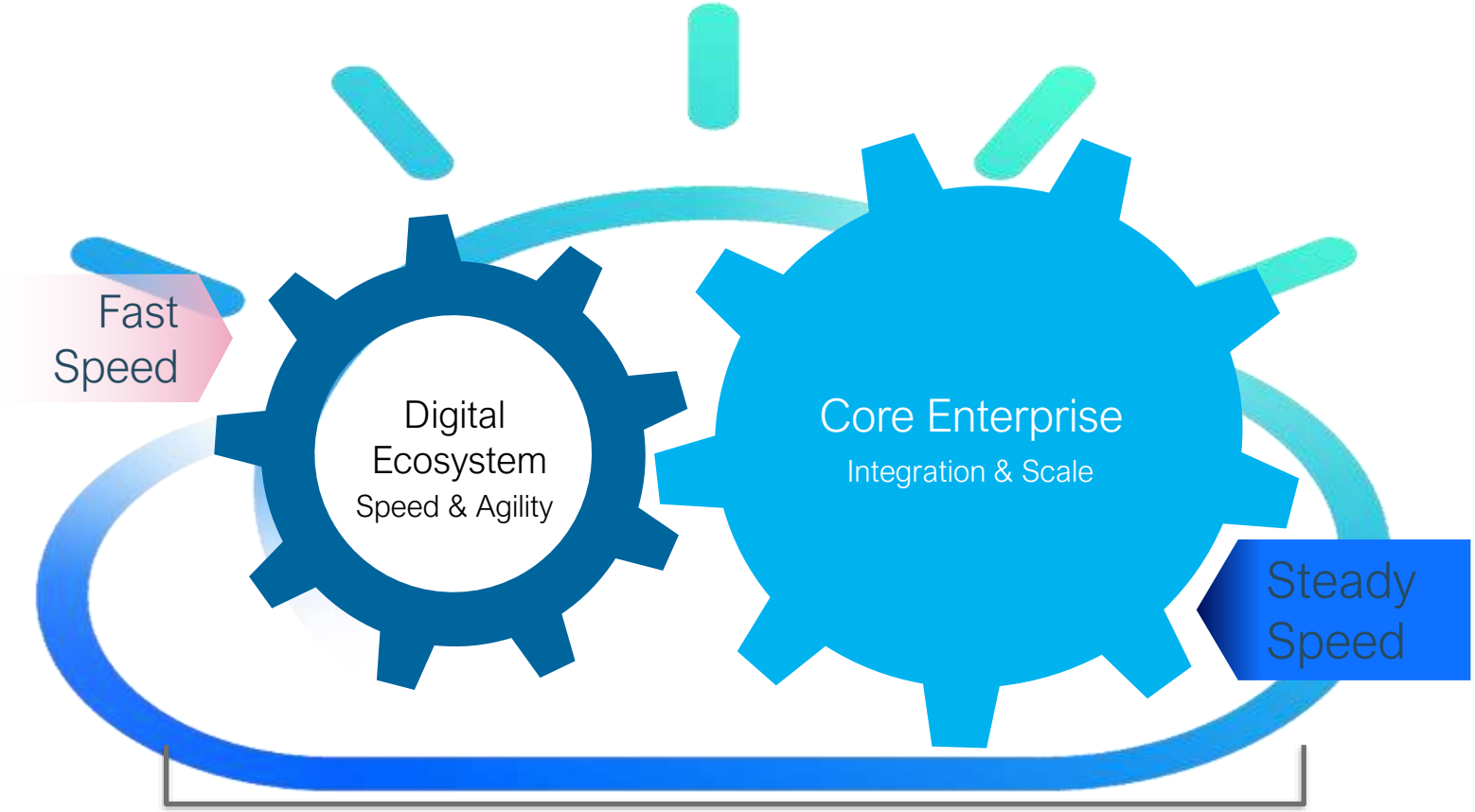
Flexibility
with Microservices

DevSecOps
integration end-2-end

Efficiency
with Containers

CI/CD
Faster deployments

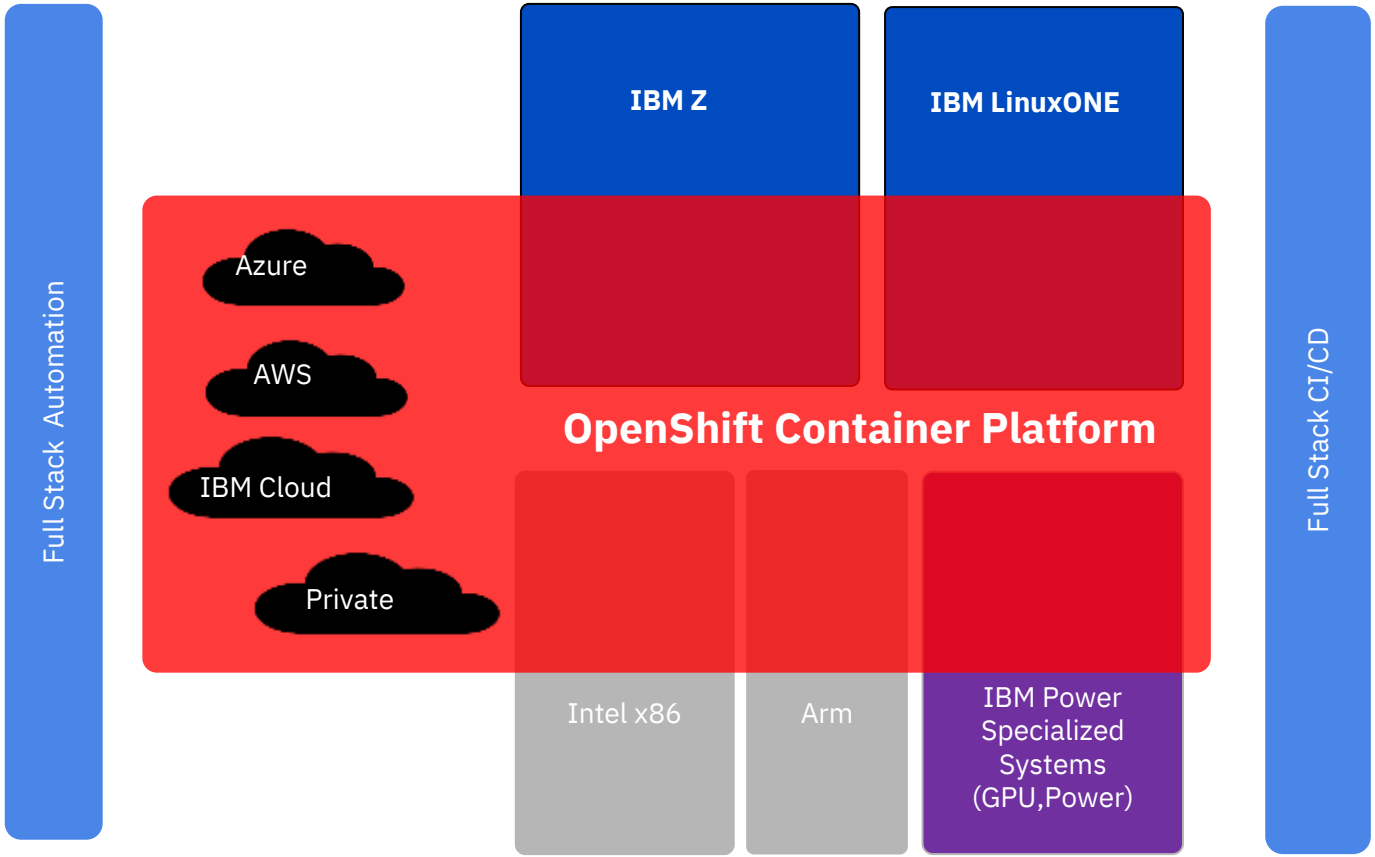
Trend: Hybrid IT services – with self service DevSecOps and CI/CD



Hybrid service orchestration and traditional transactional & data services orchestrator

The cloud service model with end-to-end orchestration capabilities

Red Hat OpenShift - the only Container Platform across different hardware Architectures



Creating the leading hybrid multi cloud provider

IBM® Hybrid Multicloud Strategy

Services

- Advise
- Move
- Build
- Manage

Certified Offerings

IBM Cloud Paks

- Multicloud Management
- Data
- Integration
- Application
- Automation
- Security

Foundation

Red Hat

- Service Mesh, Serverless, Pipelines
- **OpenShift**
- **CoreOS**

Open Hybrid Multicloud Platform

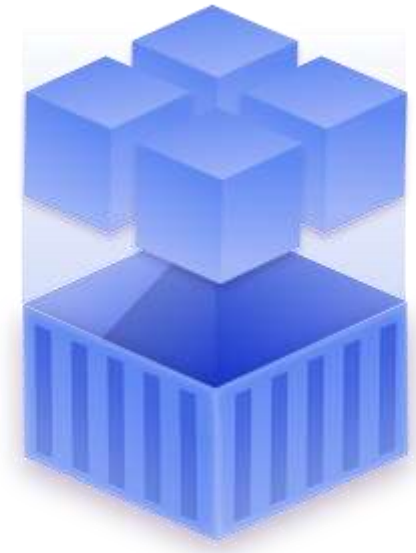
- Odo, CRW
- **Red Hat Runtimes**

Infrastructure

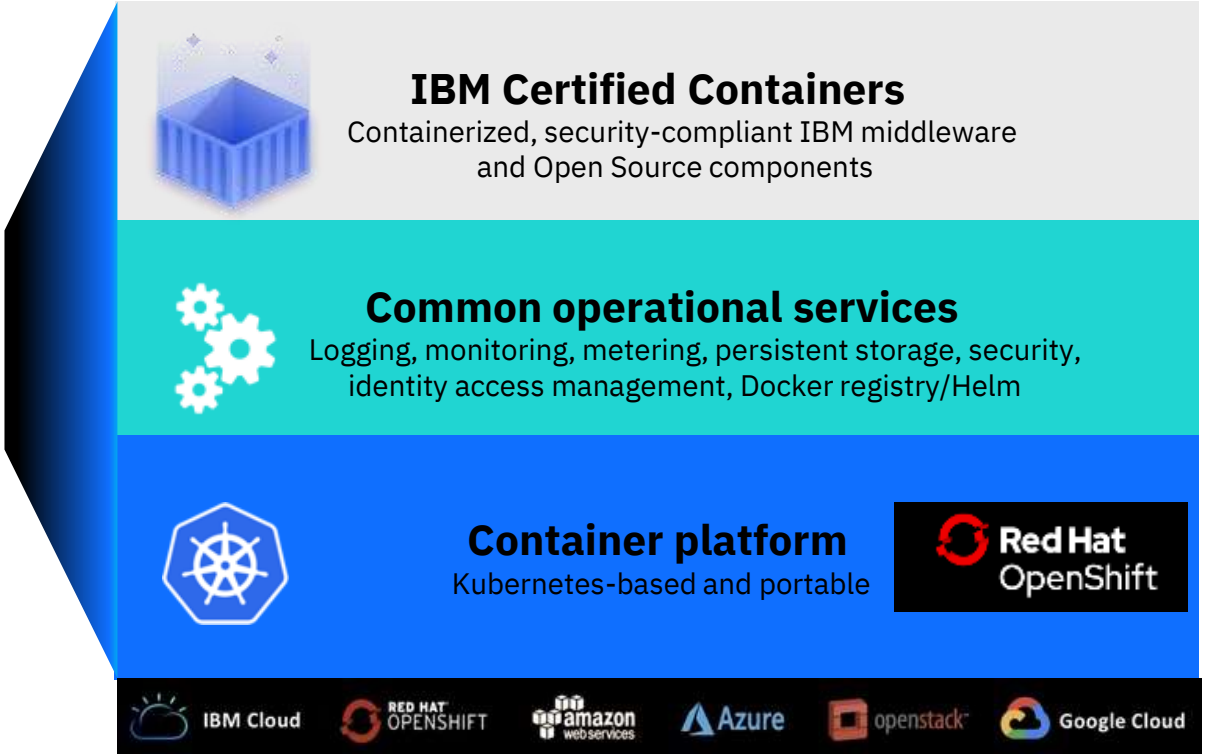
- IBM Z®
- IBM LinuxONE™
- IBM Power™
- IBM Cloud™
- AWS™
- Azure™
- Google Cloud™

IBM Cloud Paks – IBM Software in Container

Enterprise-grade, modular middleware solutions giving clients an open, faster, more reliable way to move, build, and manage on the cloud



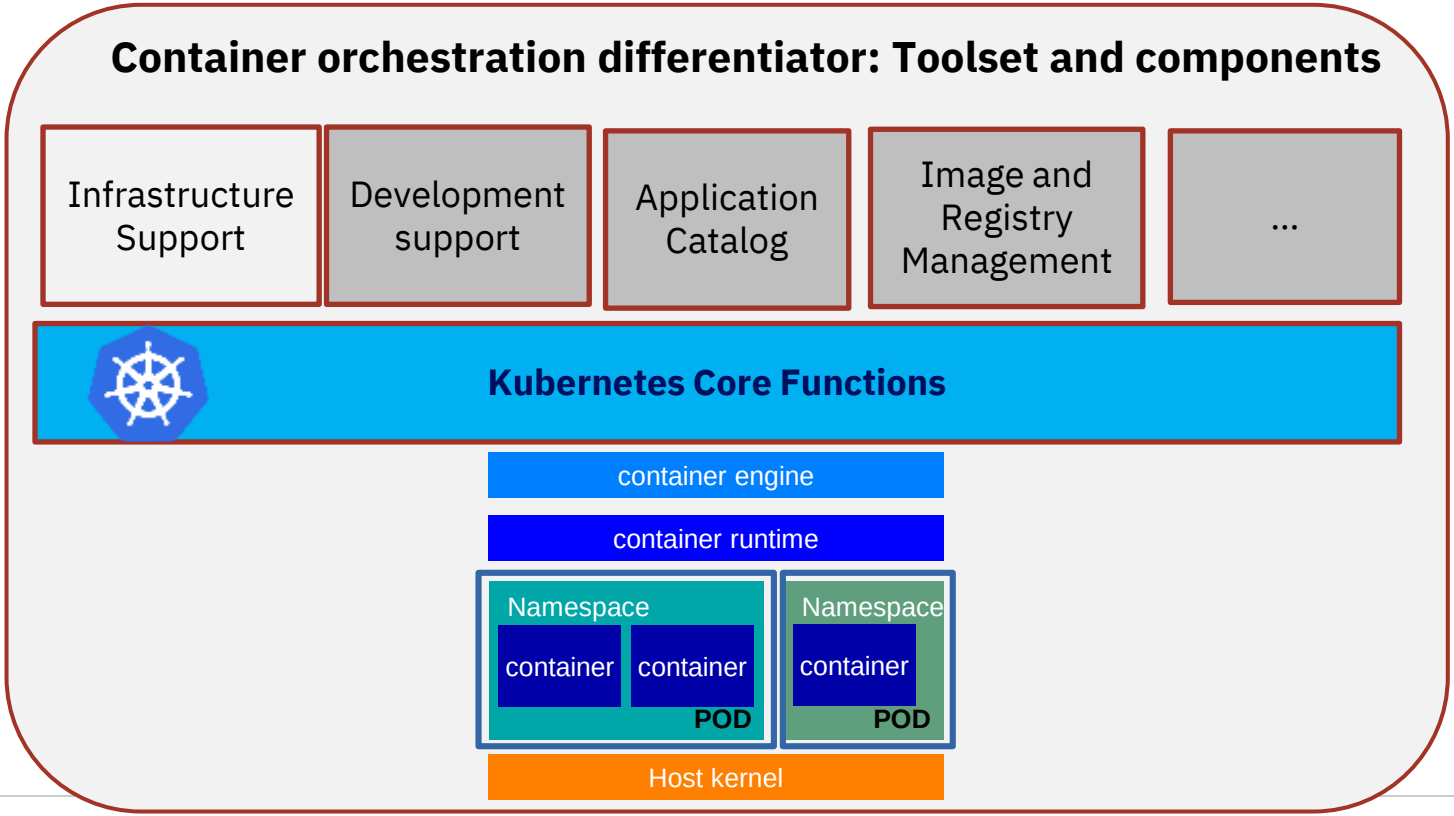
Pre-integrated for cloud use cases



https://www.ibm.com/cloud/paks/

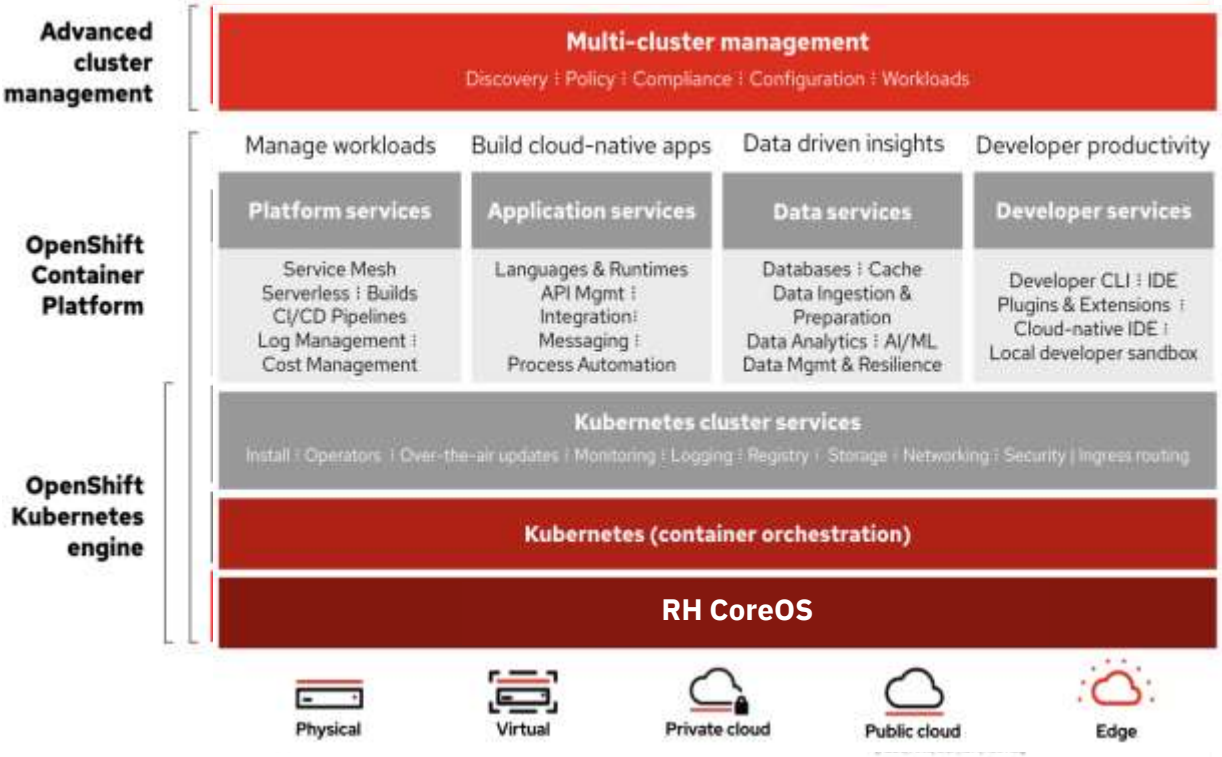
Kubernetes APIs are used in all Orchestration products

(i.e. Red Hat OpenShift, Pivotal Cloud Foundry, SUSE Rancher)



Red Hat OpenShift Container Platform (RHOCP)

A smarter Kubernetes platform



Automated, full-stack installation from the container host to application services

Seamless Kubernetes deployment to any cloud or on-premises environment

Autoscaling of cloud resources

One-click updates for platform, services, and applications

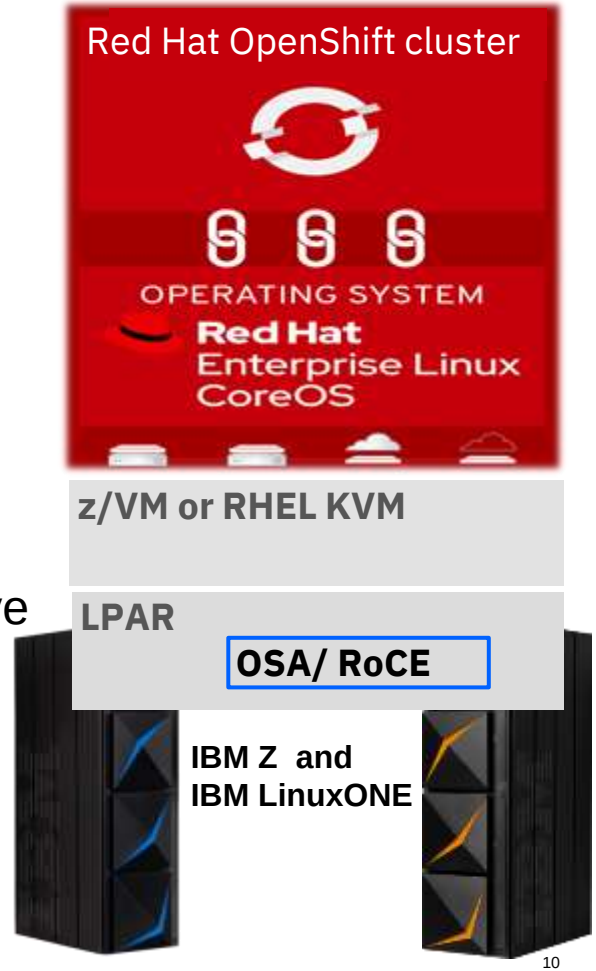
Business reasons that resonate towards a RHOCP on IBM Z & LinuxONE

- ✓ **It can solve business problems**
  - ✓ Faster time to market, perfect for dynamic workloads
- ✓ **It can solve the development challenges**
  - ✓ Develop once deploy multiple (CI/CD & DevSecOps)
- ✓ **It enables new ways for hybrid IT projects**
  - ✓ Best fit placement for applications based on SLAs
- ✓ **It helps in the Digitalization journey**
  - ✓ Global integration with standards and openness incl. IBM Z
- ✓ **Confidential computing is closer than ever**
  - ✓ Highly Secure workloads and Digital Asset Management
- ✓ **Business Continuity is empowered**
  - ✓ Inherit availability and stability from IBM Z

Why Red Hat OpenShift Container Platform (RHOCP) on IBM Z and LinuxONE

- Highest scalability
  - grow to **thousands of Linux guests**
  - and **millions of containers**
- Secured non-disruptively growth, vertical and horizontal
  - including advanced security
  - **confidential Cloud Computing**

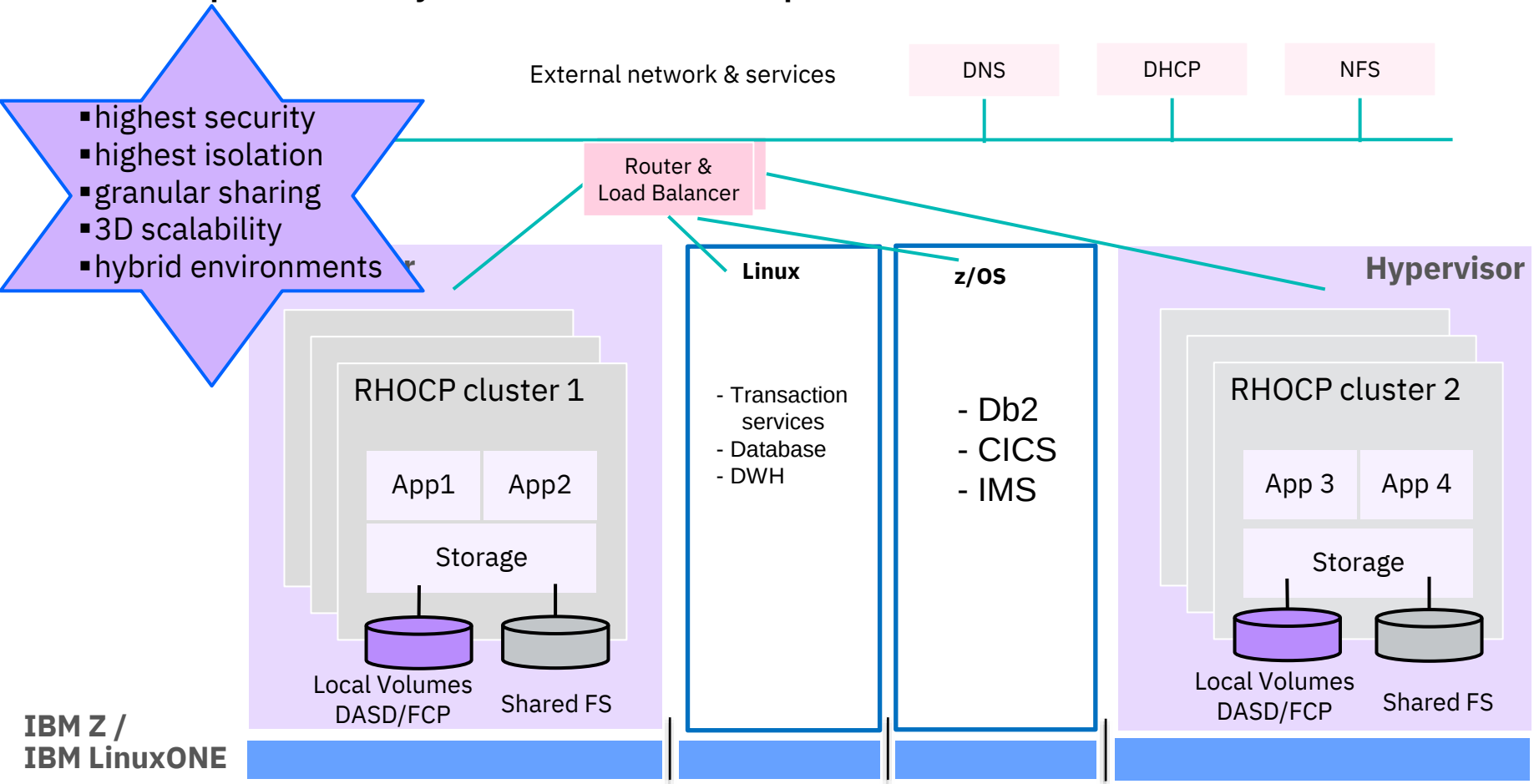
These capabilities were highlighted witt thet announcement of the IBM z15 and IBM LinuxONE III. Running Red Hat OpenShift on IBM Z and LinuxONE also enables cloud native applications to easily integrate with existing data and applications on these platforms, reducing latency by avoiding network delays.



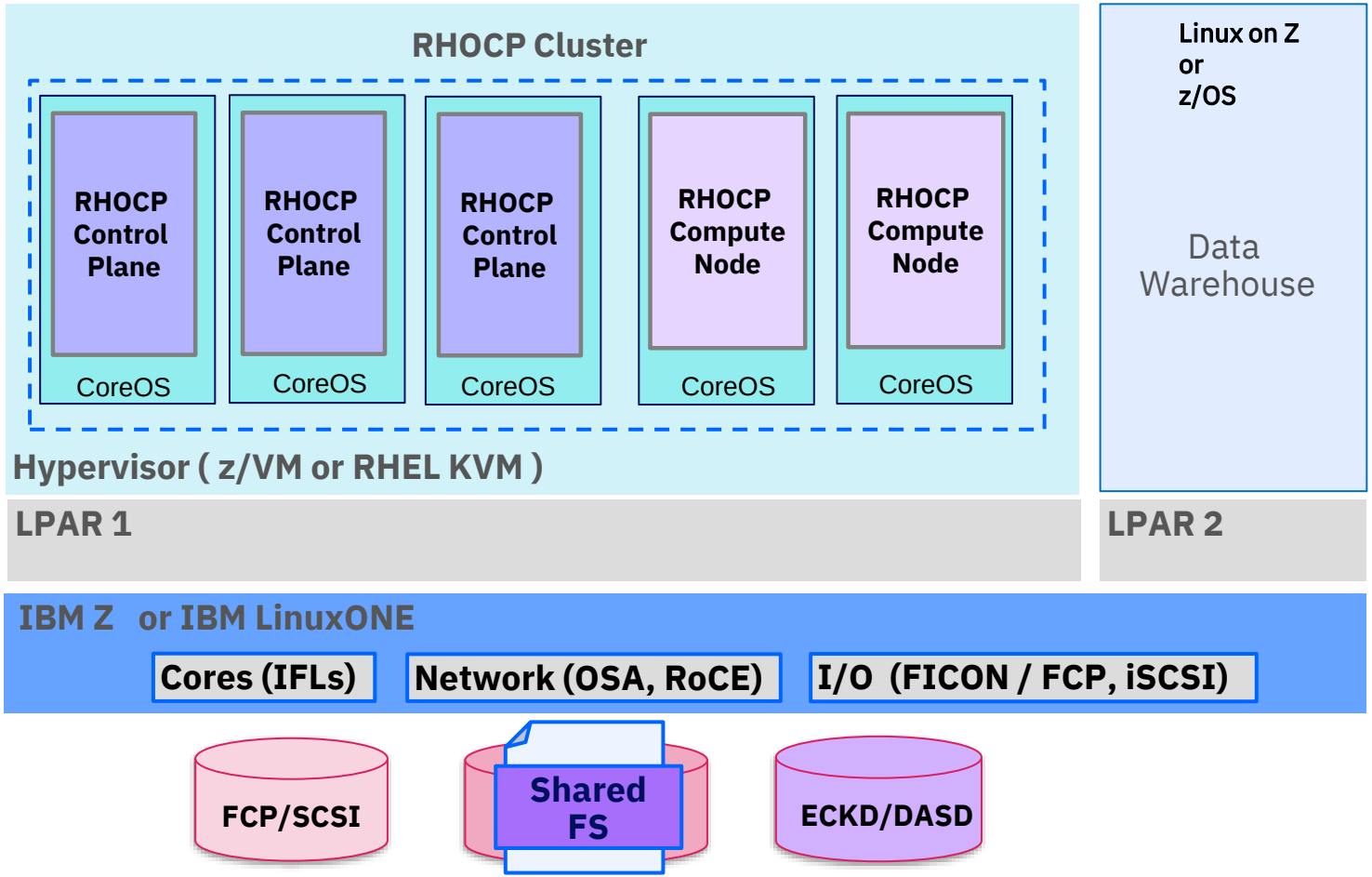
https://www.ibm.com/blogs/systems/get-ready-for-red-hat-openshift-on-ibm-z-and-linuxone/

RHOCP on IBM Z & LinuxONE exploits operational capabilities for hybrid

THE platform for Hybrid workload and multiple RHOCP environments on the same HW machine



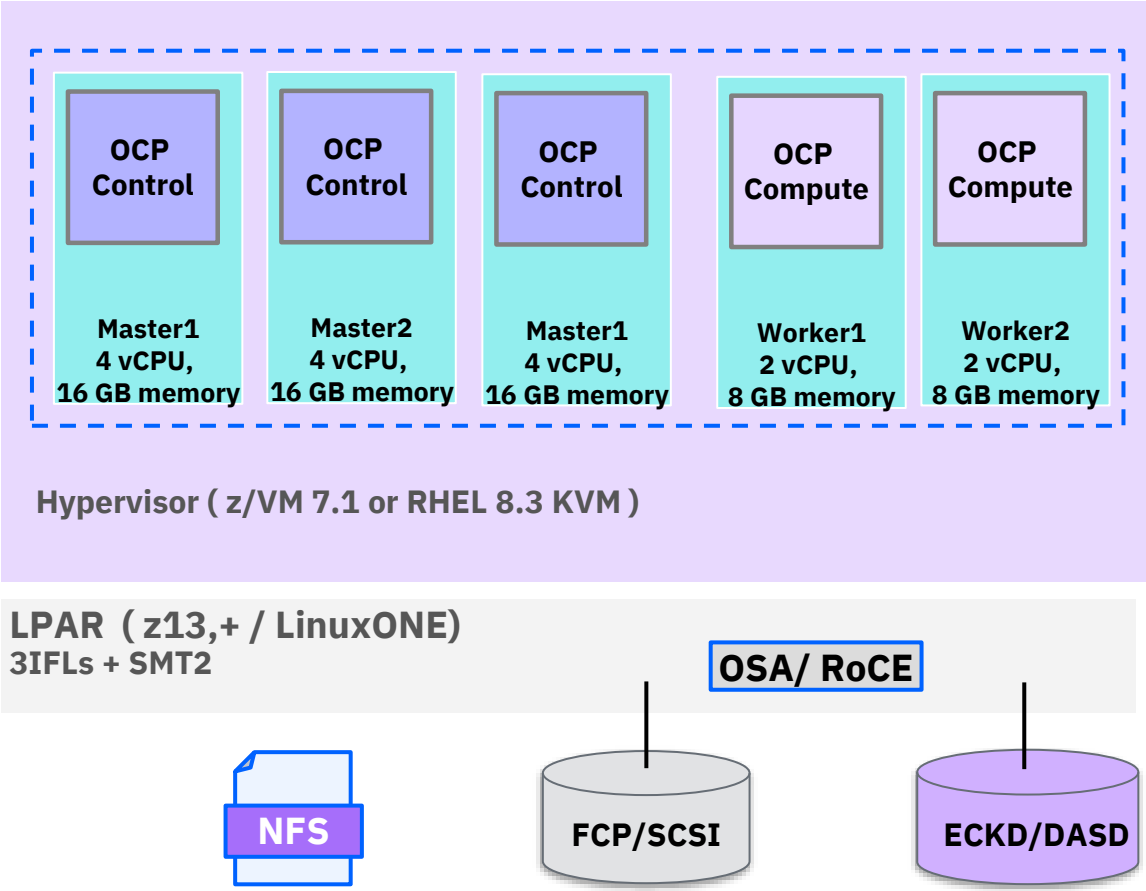
Minimal RHOCP cluster environment diagram



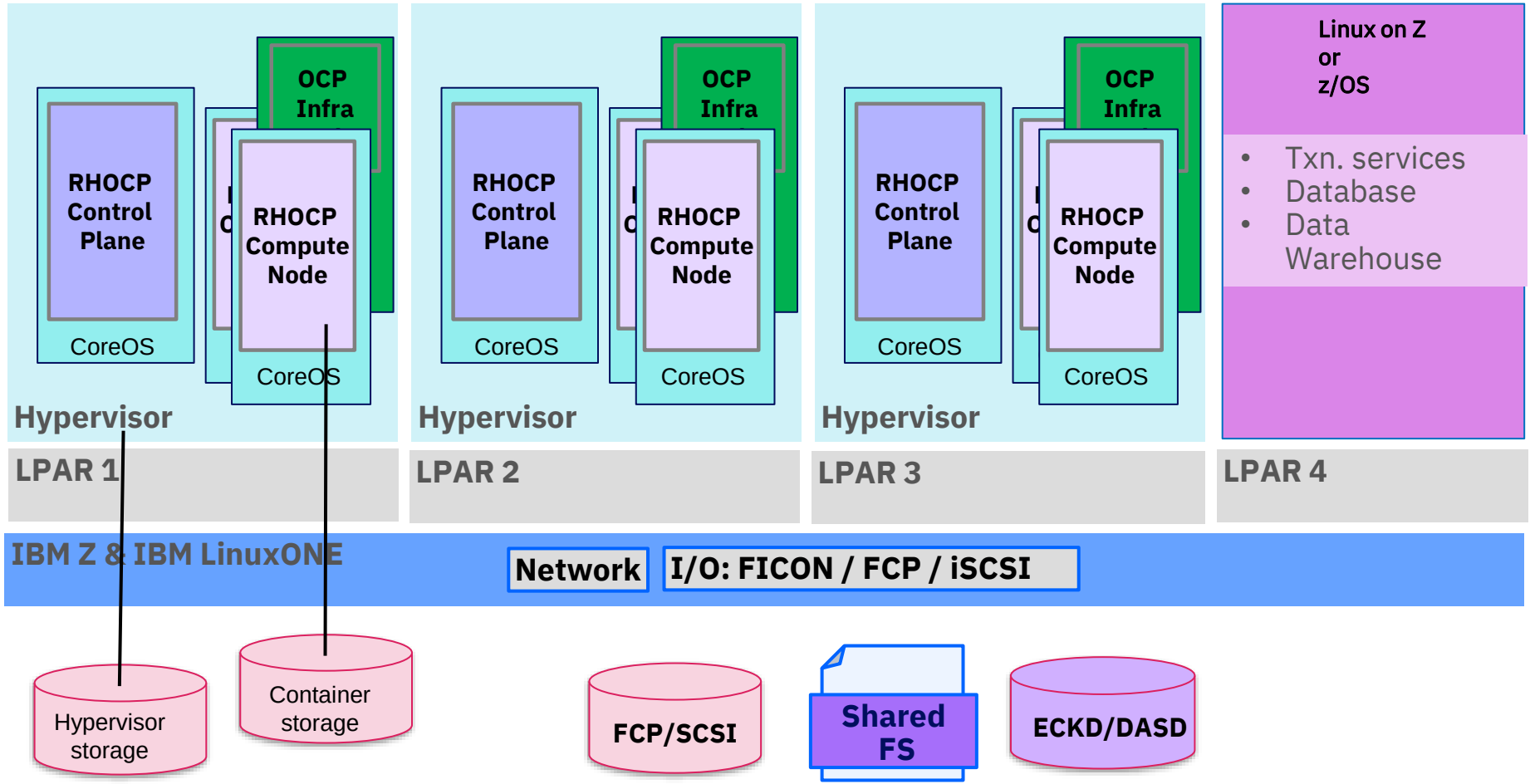
Basic environment: Minimum RHOCP cluster nodes on IBM Z & LinuxONE

The minimum system requirements for an RHOCP cluster are:

- Hardware:
  - IBM z13 or newer
  - any IBM LinuxONE
  - 1 LPAR, SMT2 with 3 IFLs,
- Memory
  - 72 GB RAM for nodes
  - 16 GB RAM for temp bootstrap
- Hypervisor
  - z/VM 7.1
    - EAV function (HyperPAV recom)
  - RHEL 8.3 KVM
- Networking options
  - OSA, RoCE
  - 1 Network interface avail. per Node
- Storage
  - RHOCP Master, 120 GB each
  - RHOCP Worker, 120 GB workl. dep.
  - NFS, min. 100 GB



RHOCP cluster production like Overview diagram

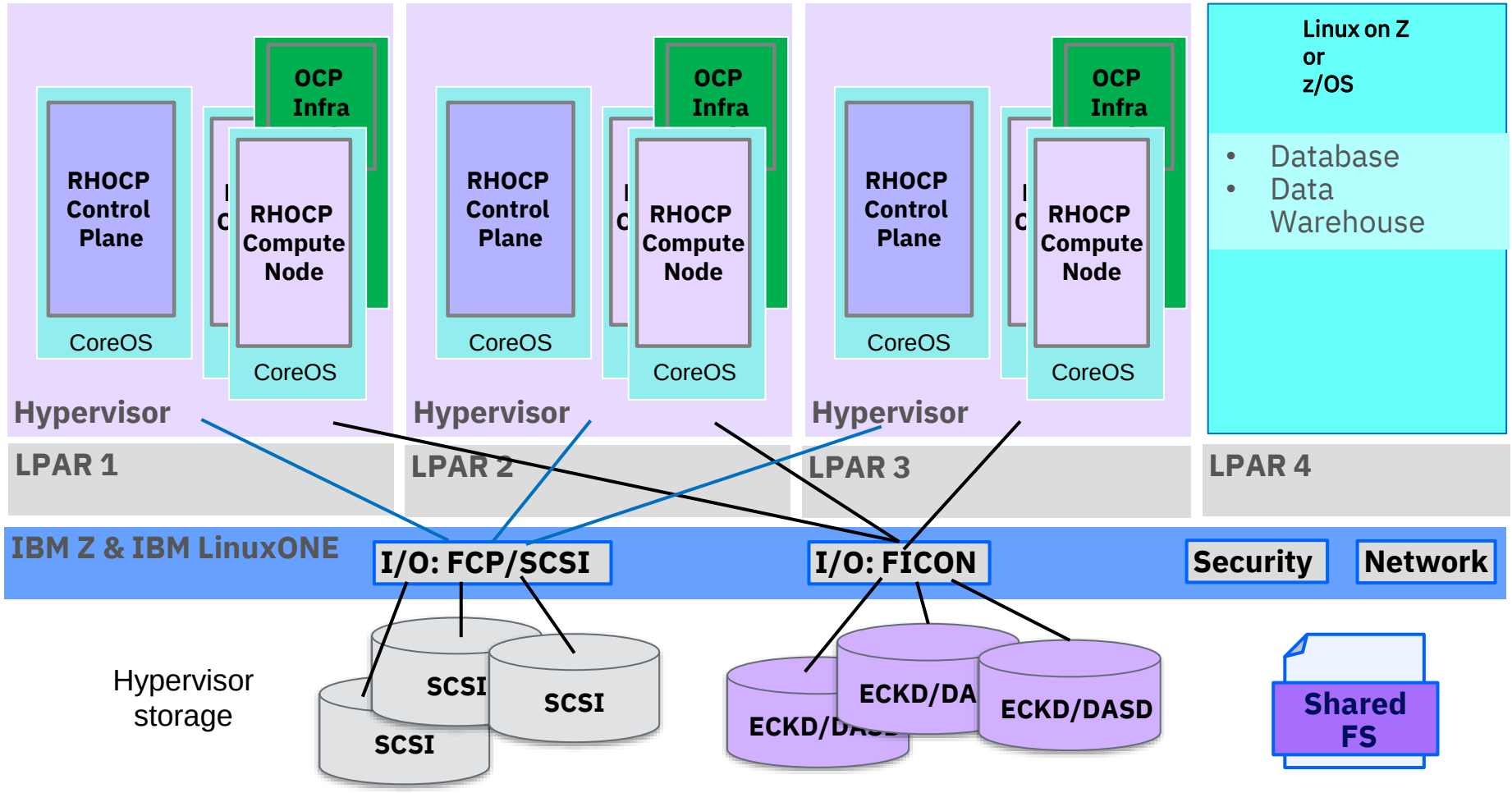


Storage for RHOCP on IBM Z and IBM LinuxONE

‘Hypervisor Storage’

- **Control Plane and Compute Nodes** & **Infrastructure nodes** are VMs
  - *They **need local storage** to be installed on*
  - *They potentially share the physical cores – even across LPARs*
- All VMs need to be virtualized with KVM or z/VM
- The base OS in all VMs / nodes is CoreOS
- The **local disks are made available to the hypervisor or OCP CSI (FCP)**
  - in the hypervisors you can have local storage
    - **Attached via FICON, FCP, iSCSI**

RHOCP cluster – Hypervisor storage attachments overview diagram

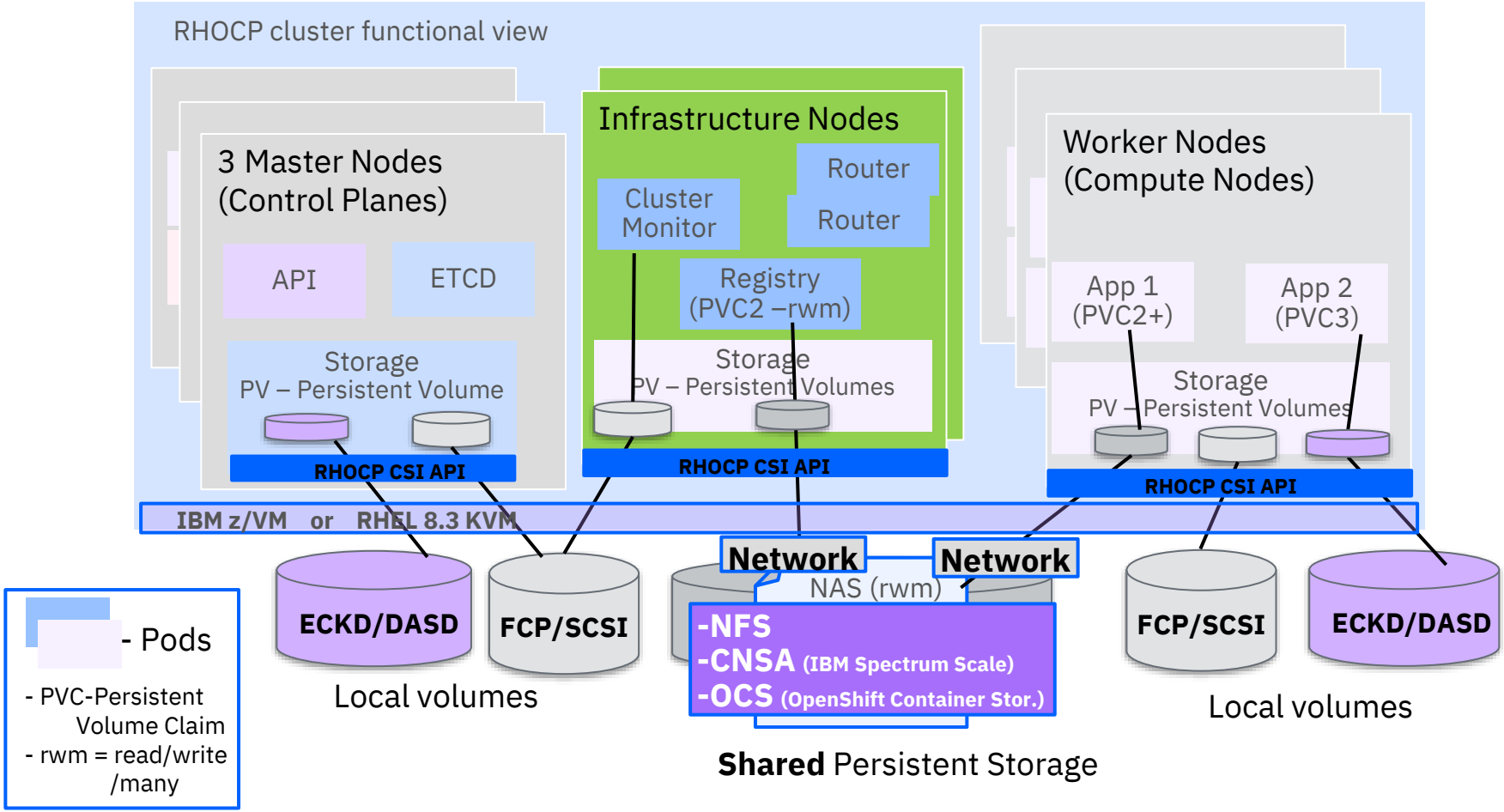


Storage for RHOCP on IBM Z and IBM LinuxONE

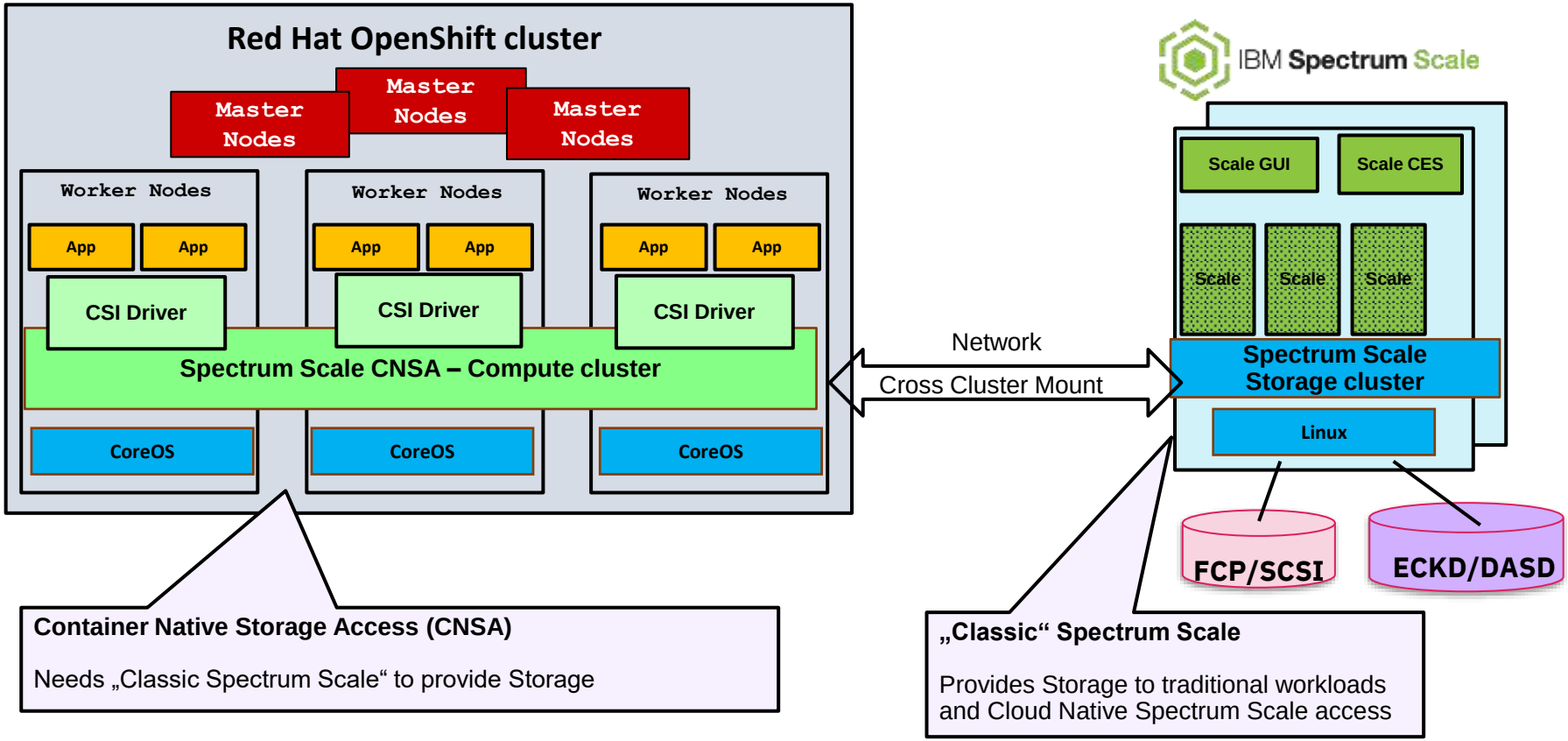
‘Container Storage’

- ***RHOCP needs shared persistent storage (rwm)*** **for at least the container registry**
  - The shared storage is typically a Network Attached Storage (NAS)
  - The NAS sw/server part can reside on IBM Z or outside
  - The options for NAS attached with CSI driver are **NFS**, **IBM Spectrum Scale CNSA and OCS**(tech. preview)
- **Physical attached storage to RHOCP on Z can be via RHOCP CSI interface**
  - Local storage can be attached using an IBM CSI driver (DS8K, FCP, FlashSystem,…)
- The storage for RHOCP is represented by Persistent Volumes (PVs)
- The Pods on OCP initiate Persistent Volume Claims (PVCs) for PVs

Major Operational Components and Persistent Container Storage options



IBM Spectrum Scale Container Native Storage Access (CNSA)



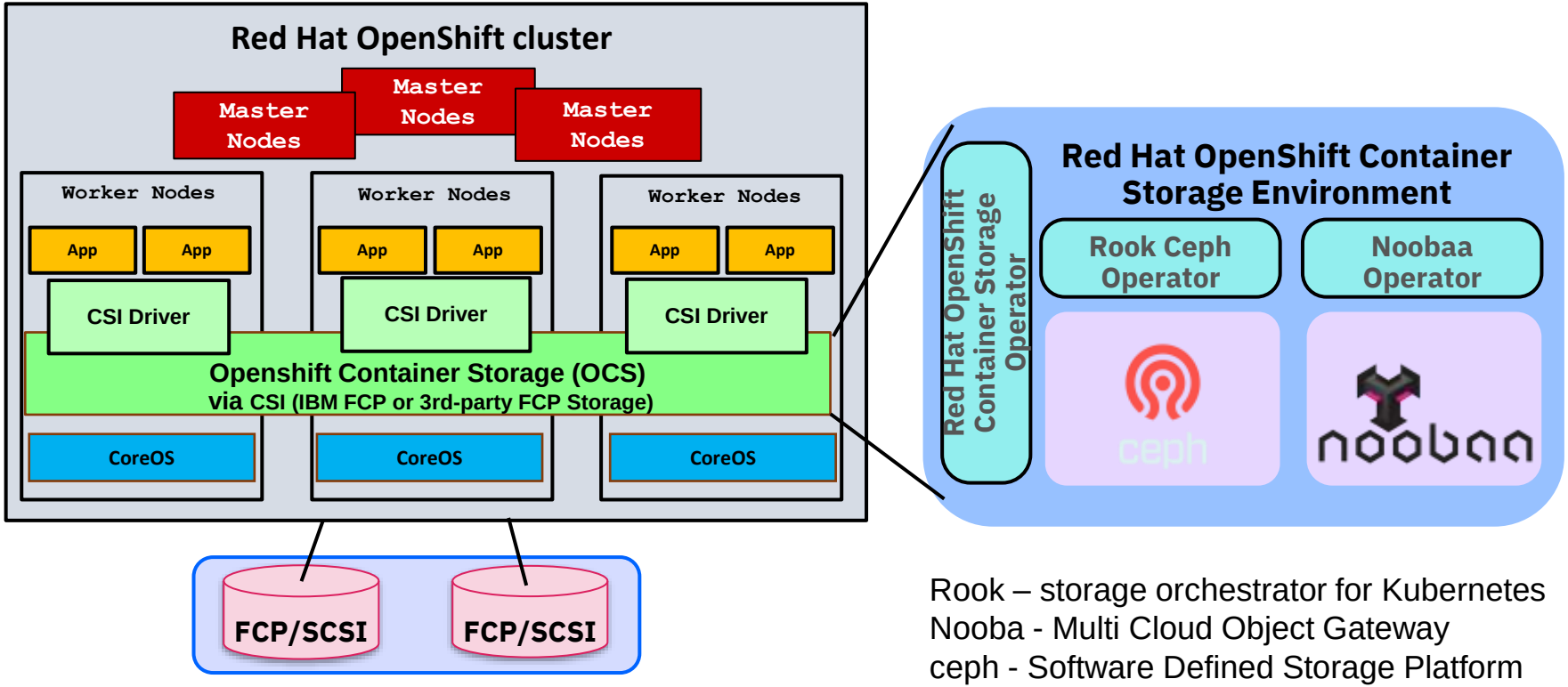
Container Native Storage Access (CNSA)

Needs „Classic Spectrum Scale“ to provide Storage

„Classic“ Spectrum Scale

Provides Storage to traditional workloads and Cloud Native Spectrum Scale access

Red HAT Openshift Container Storage (OCS) – internal mode



Shared Persistent Container Storage

Rook – storage orchestrator for Kubernetes
Nooba - Multi Cloud Object Gateway
ceph - Software Defined Storage Platform based on Rados (Reliable Autonomic Distributed Object Store)

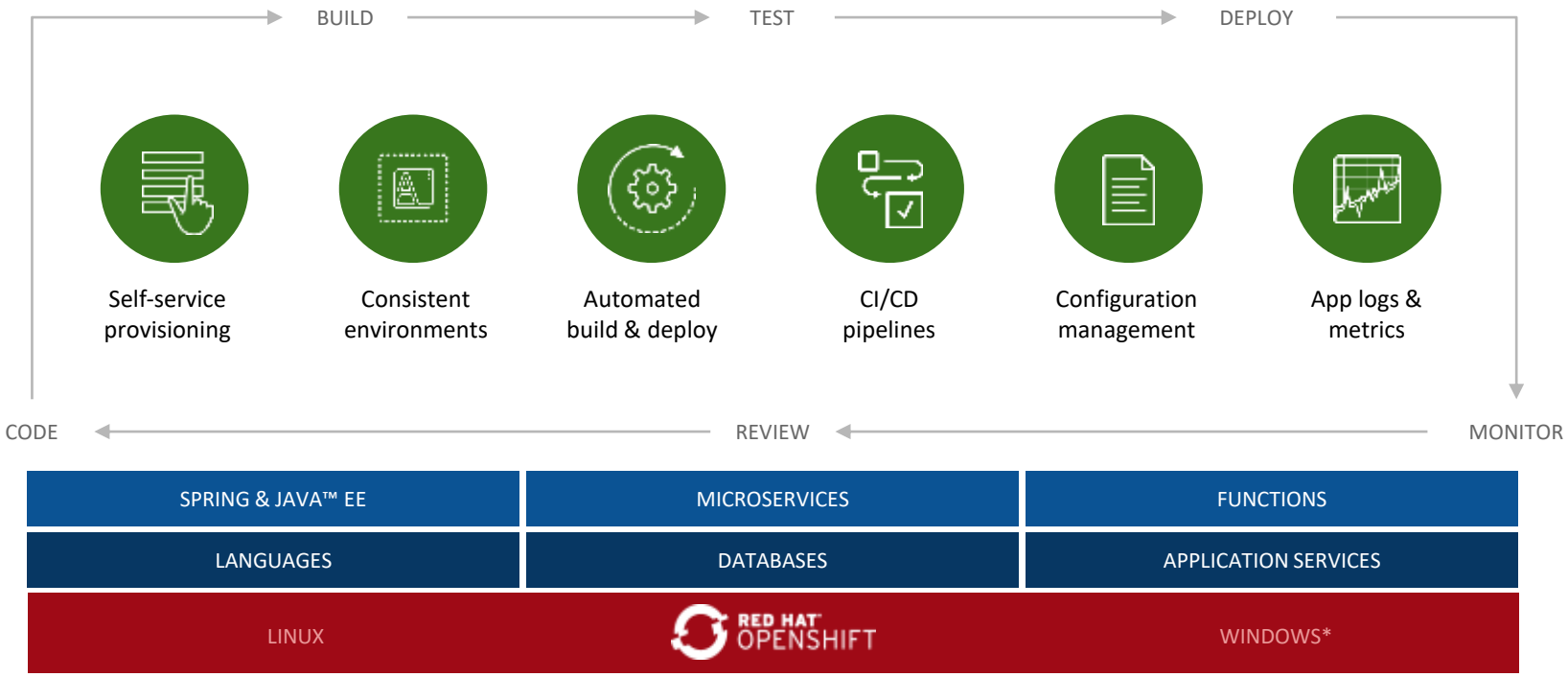
Storage for RHOCP on IBM Z and IBM LinuxONE

1. **Use Case 1: RHOCP Applications access z/OS Db2 or Oracle on Linux on Z**
    1. In this case the performance requirement is low for shared storage
    2. For just Container images NFS might be feasible (not recommended for Prod.)

2. **Use Case 2: RHOCP Apps are working with PostgreSQL in RHOCP**
    1. In this case the shared storage is performance relevant
    2. For PostgreSQL a NAS solution with IBM Spectrum Scale CNSA or OCS would fit and not an NFS approach

3. **Use Case 3: RHOCP Apps require shared storage and HA across 2 IBM HW machines**
    1. In this case the shared function of the storage is relevant & performance
    2. A NAS cluster solution with IBM Spectrum Scale CNSA or OCS would fit best
    3. If the 2 HW machines are in 2 datacenters – further considerations apply to stretch the NAS cluster or define 2 clusters and replication, logical or physical based

OpenShift enables developer productivity



DevOps for IBM Z can be seen as interrelated enterprise capabilities

"Culture" is in the center of DevOps

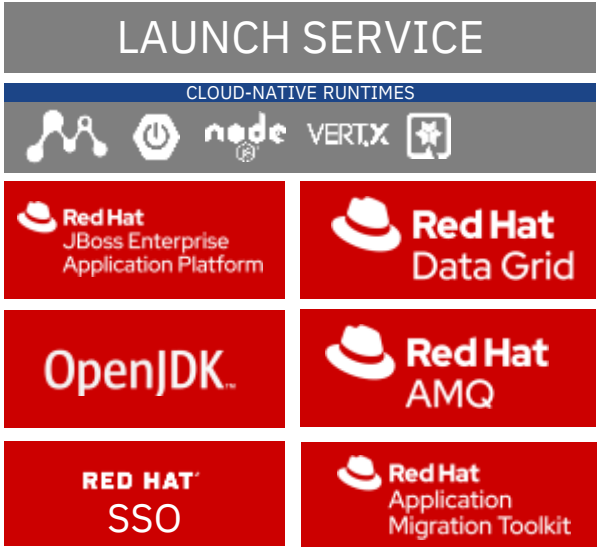
Transform and Innovate with Speed and Agility

- Couple business, technology, and process innovation
- Empower small, autonomous teams to make decisions
- Experiment in the market and fail fast
- Create a flexible team structure and minimize team distractions
- Build trust and alignment with better communication and transparency
- Take ideas to market with speed and deliver business outcomes fast

Cloud-native Development Readiness with RHOCP on Z & LinuxONE

Red Hat Runtimes (available since 06/20)

Lightweight middleware runtimes and frameworks for developing cloud-native applications on RHOCP



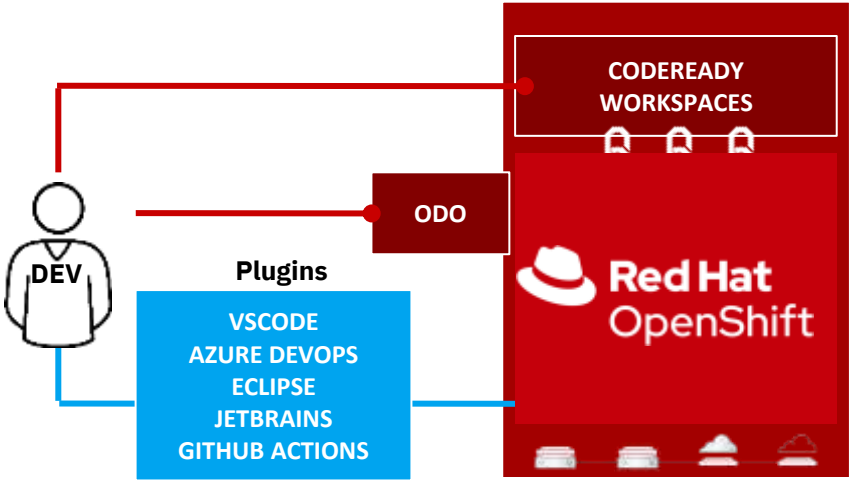
https://catalog.redhat.com/software/containers/search?p=1&architecture=s390x

Developer CLI – OpenShift do (odo)

- odo 1.2.6 and 2.0 available for IBM Z & LinuxONE since 09/20

CodeReady Workspaces 2.7

Kubernetes-native development solution with **in-browser IDE** for rapid cloud application development



Red Hat OpenShift Pipelines Technology 1.4

A pipeline in software development is an automated process that drives software through a path of building, testing, and deploying code.

OpenShift Pipelines 1.4 (GA) was released in 04/21 for IBM Z & LinuxONE on RHOCP 4.7

- https://docs.openshift.com/container-platform/4.7/cicd/pipelines/op-release-notes.html#op-release-notes-1-4_op-release-notes

Enabling Kubernetes-native declarative and serverless CI/CD pipelines with Tekton:

- Seamlessly integrate RHOCP into a DevOps environment
- Implement continues integration and delivery
- Foster agile and cloud-native development processes

The benefits of Red Hat OpenShift Service Mesh

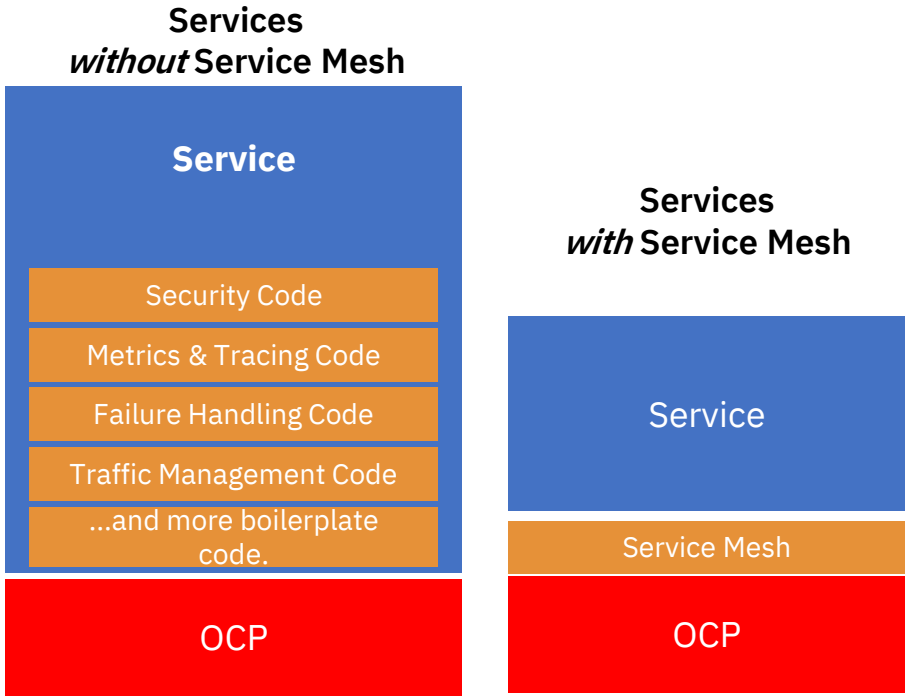
Service Mesh 2.0.3 now on RHOCP 4.7 on Z

Red Hat OpenShift Service Mesh provides a uniform way to connect, manage, and observe microservices-based applications.

Service Mesh provides capabilities to:

- Secure the communication between the micro services
- Visualize the topology and traffic metrics between the micro services
- Connect and route requests from one micro service to the next
- ...

without requiring any changes to the service source code.



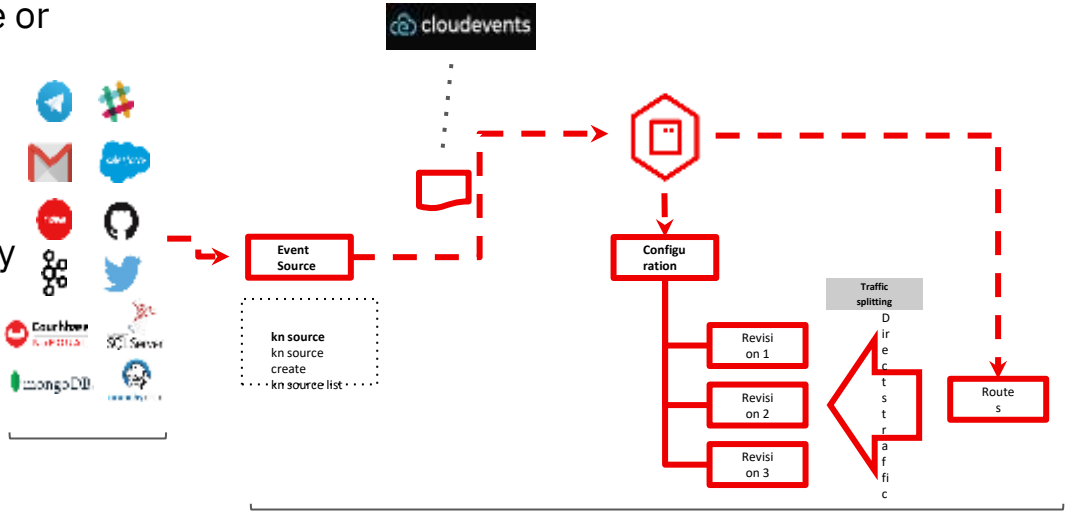
https://docs.openshift.com/container-platform/4.7/service_mesh/v2x/ossm-vs-community.html

Exploit Red Hat OpenShift Serverless

Serverless is a deployment model that allows you to build and run applications without requiring deep insight into the underlying infrastructure.

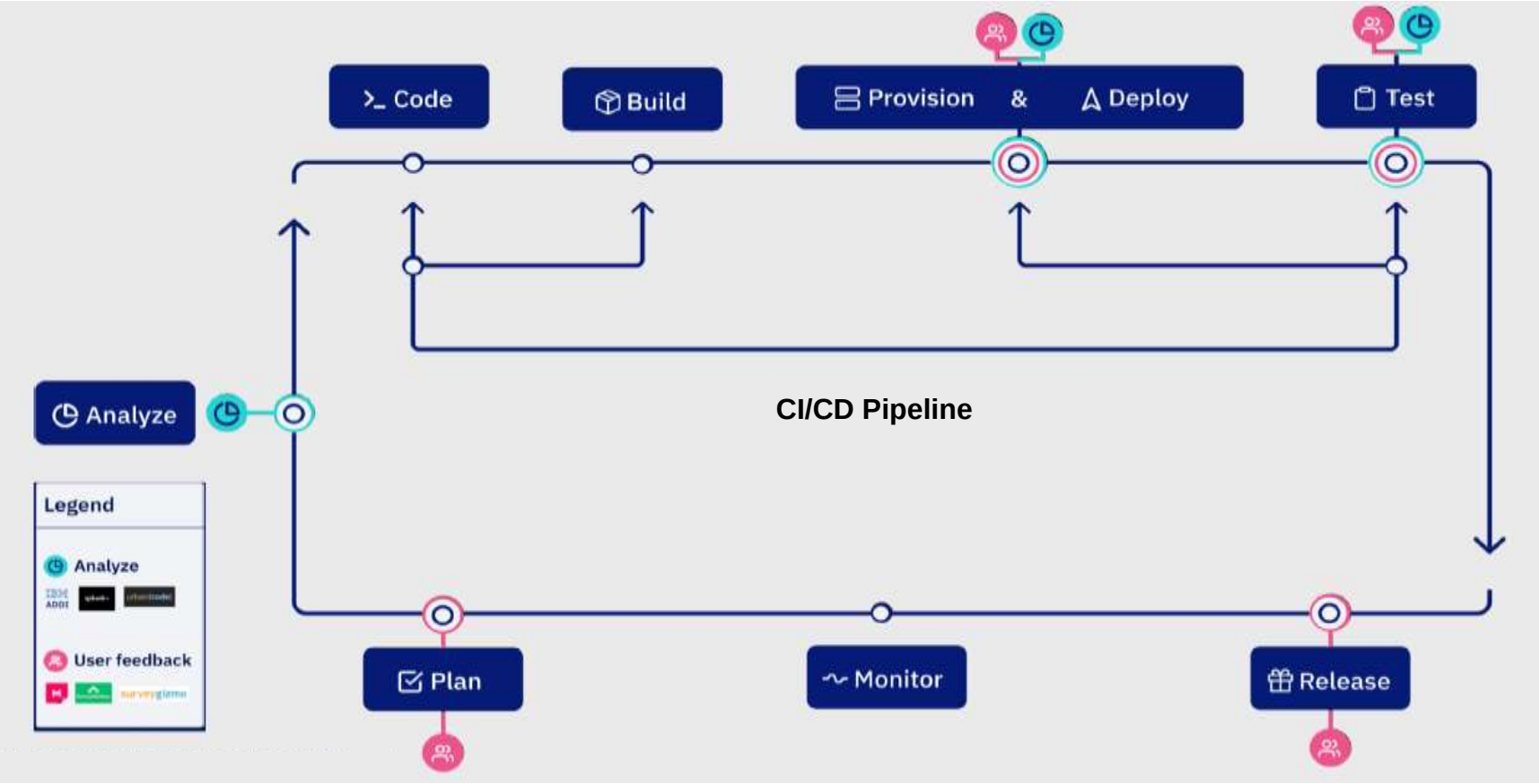
Serverless 1.14 now Gaon RHOCP 4.6 and 4.7 on Z/LinuxONE

- Does your application have an unpredictable or bursty number of requests?
- Are you trying to build event-driven, loosely coupled systems?
- Do you want to perform A/B testing or canary deployments for your applications?

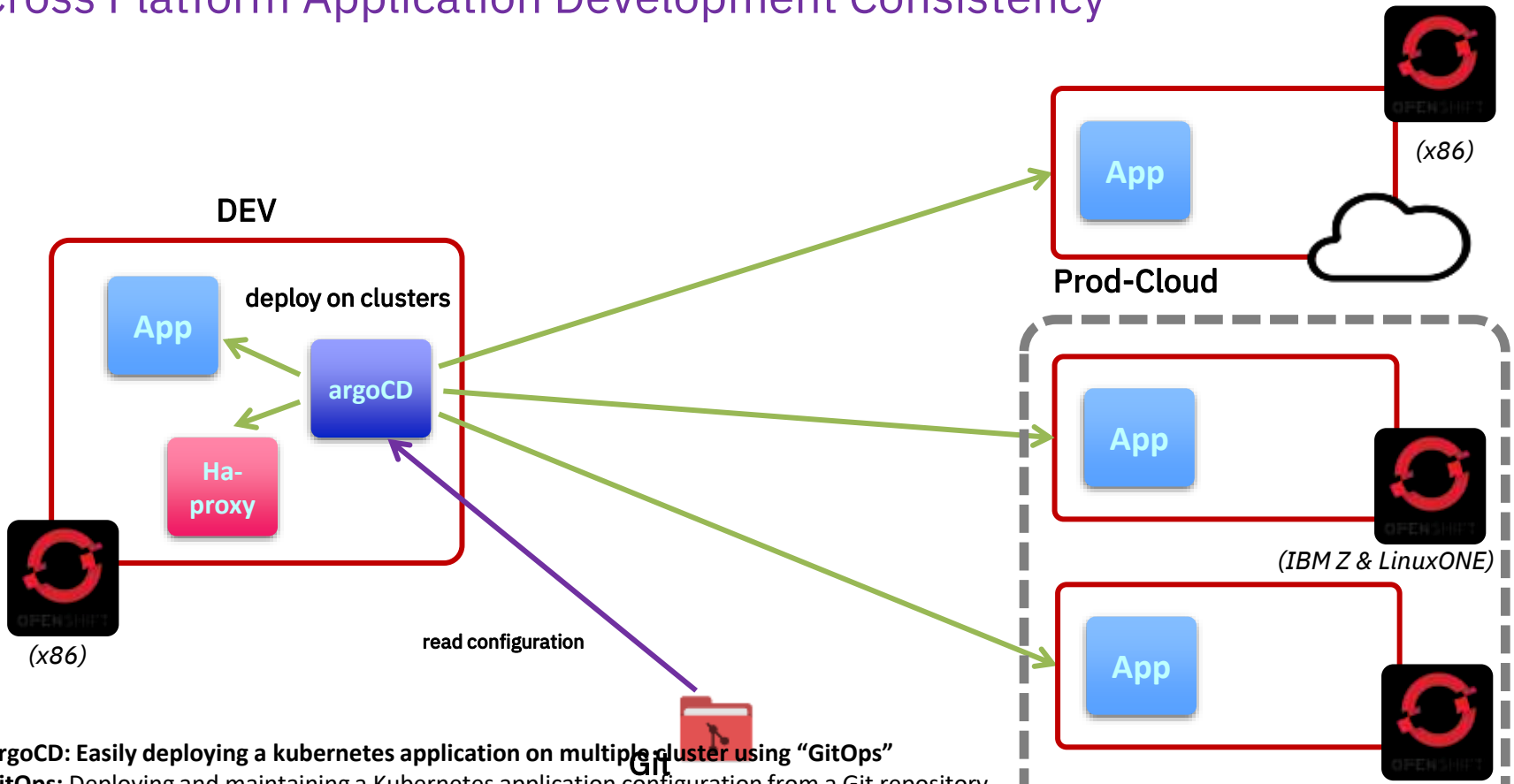


https://www.redhat.com/en/resources/451-research-red-hat-openshift-serverless

What makes up DevOps



Cross Platform Application Development Consistency



ArgoCD: Easily deploying a kubernetes application on multiple cluster using "GitOps"
GitOps: Deploying and maintaining a Kubernetes application configuration from a Git repository

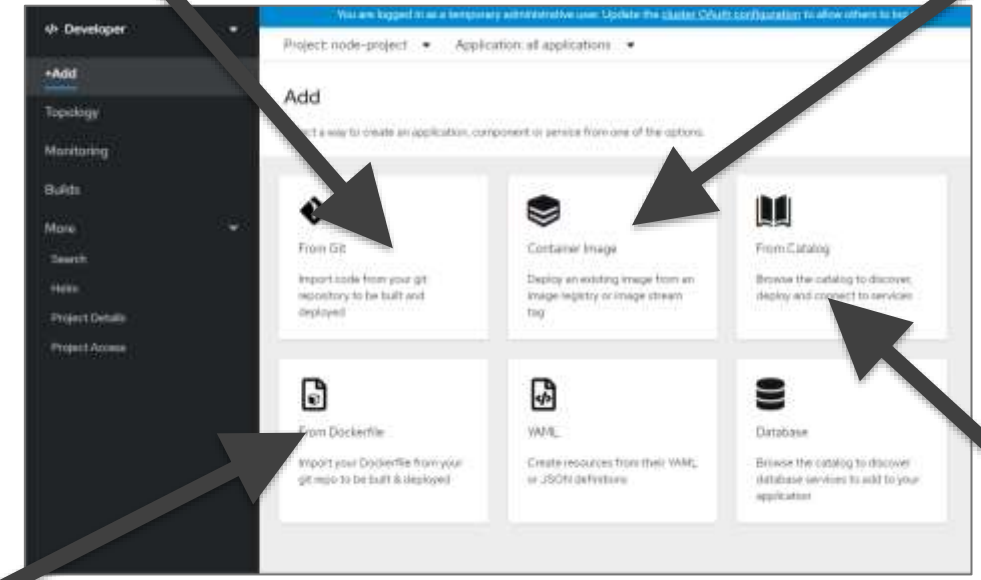
Container application build with Red Hat OpenShift Container Platform on IBM Z & IBM LinuxONE

From source code (in code repo)

i.e. GitHub

From custom container image (in image repo)

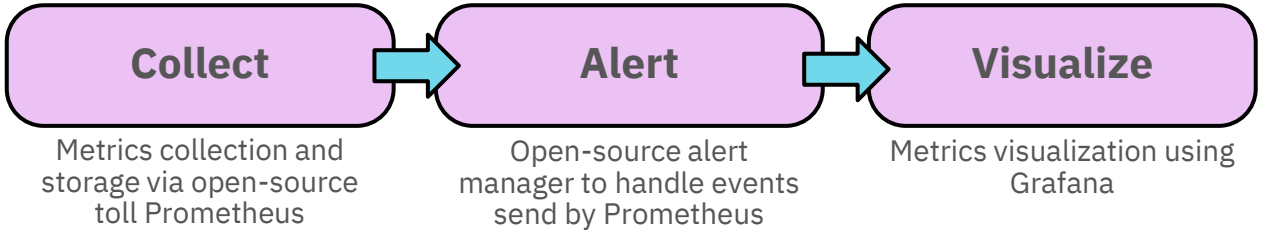
i.e. DockerHub

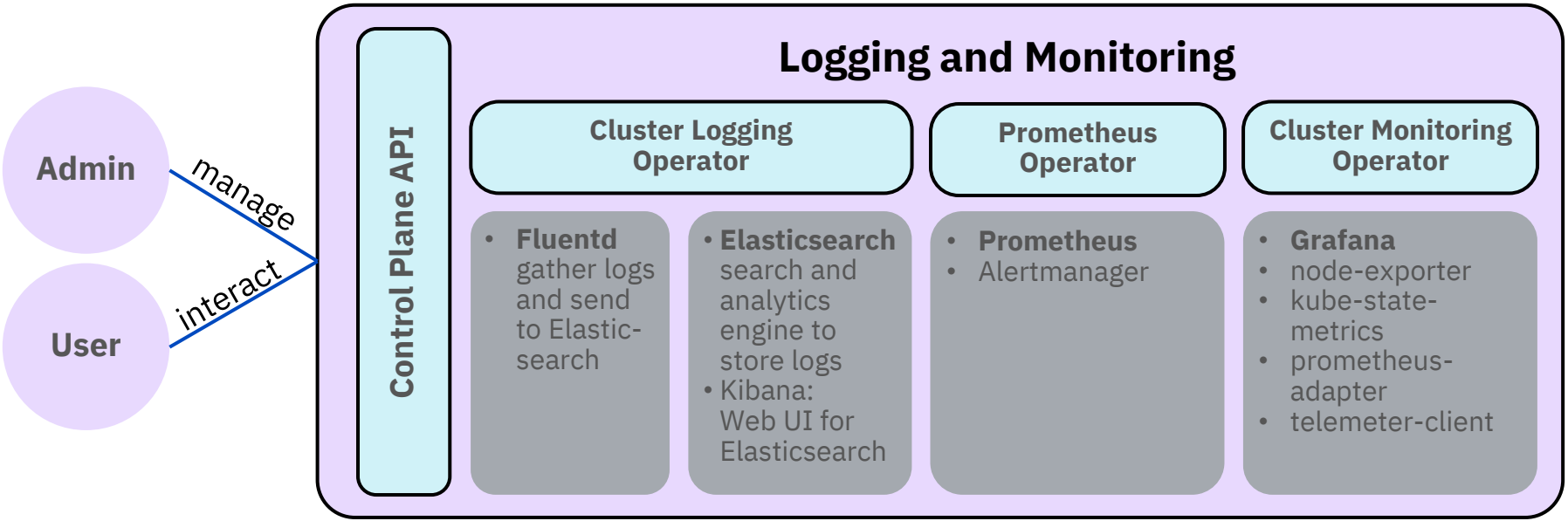


From a Dockerfile

From OCP catalog

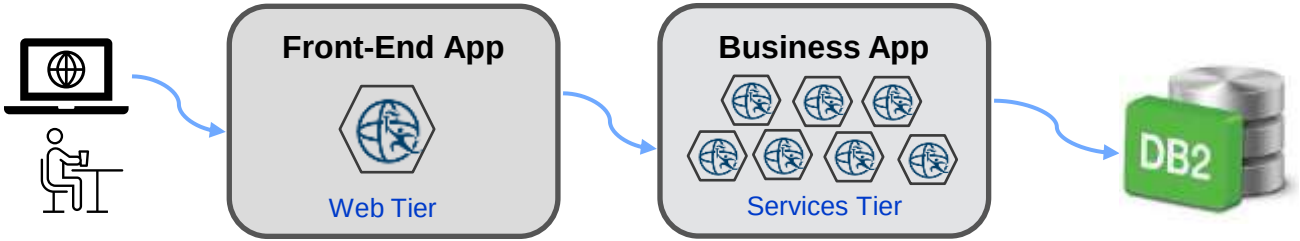
Red HAT OpenShift operational experience included





OpenShift on IBM Z versus x86

- A traditional multi-tier application modernized as a microservices-based application can provide 4.4 times better throughput per core at 22% lower cost on IBM Z than x86



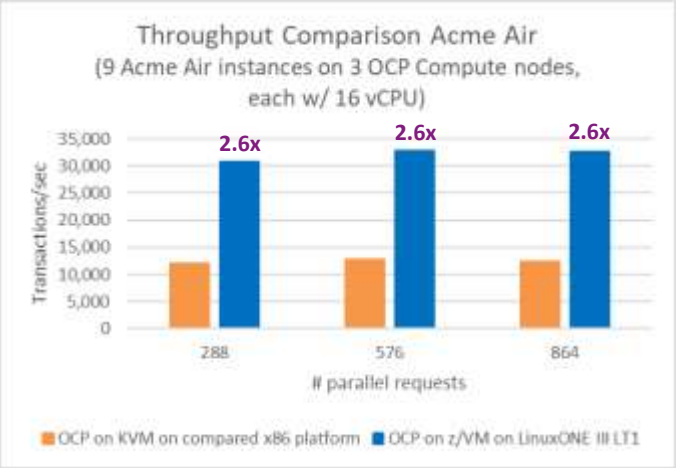
Multi-Tier Microservices

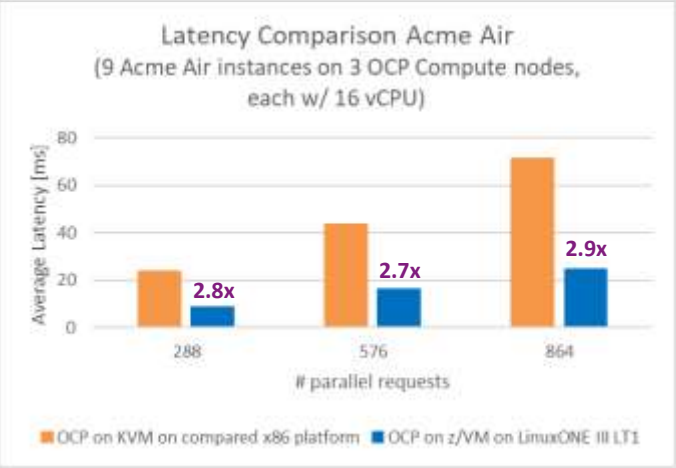
- OpenShift V4 and WebSphere Liberty deliver significantly better performance on IBM Z than x86

OpenShift Container Platform (OCP)

Acme Air Performance on OpenShift Container Platform on LinuxONE III LT1 versus x86 Skylake

Achieve 2.6x more throughput per core and 2.9x lower latency on OpenShift Container Platform 4.5 on LinuxONE III LT1 using z/VM versus compared x86 platform using KVM, when running 3 compute nodes each with 3 instances of Acme Air benchmark



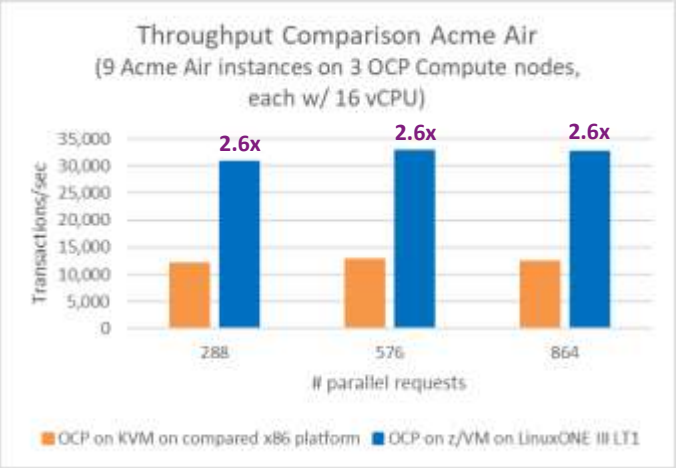


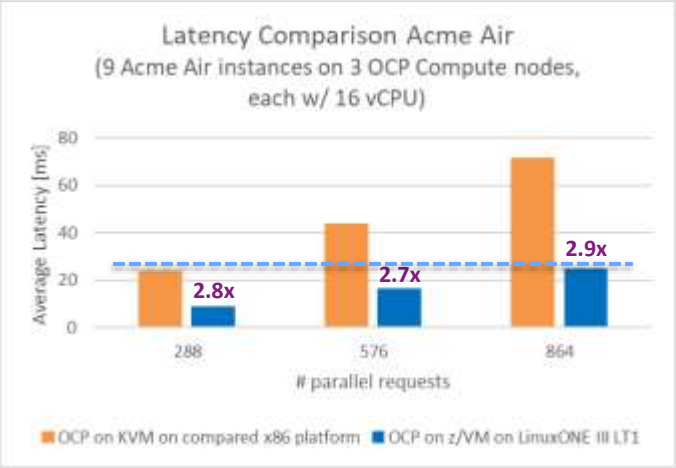
DISCLAIMER: Performance results based on IBM internal tests running the Acme Air microservice benchmark (https://github.com/blueperf/acmeair-mainservice-java) on OpenShift Container Platform (OCP) 4.5.18 on LinuxONE III LT1 using z/VM versus on compared x86 platform using KVM. The z/VM and KVM guests with the OCP Management nodes were configured with 4 vCPUs and 16 GB memory each, the OCP Infrastructure nodes with 4 vCPUs and 32 GB memory each, and the OCP Compute nodes with 16 vCPUs and 32 GB memory each. Results may vary. LinuxONE III LT1 configuration: The OCP Management, Infrastructure and Compute nodes ran on z/VM 7.1 in a LPAR with 34 dedicated cores, 512 GB memory, and DASD storage. x86 configuration: The OCP Management, Infrastructure and Compute nodes ran on KVM on RHEL 8.1 on 34 Skylake Intel® Xeon® Gold CPU @ 2.30GHz with Hyperthreading turned on, 512 GB memory, and RAID5 local SSD storage.

OpenShift Container Platform (OCP)

Acme Air Sustainability on OpenShift Container Platform on LinuxONE III LT1 versus x86 Skylake

Serve up to 3x more parallel requests with an average latency smaller than 25 ms on OpenShift Container Platform 4.5 on LinuxONE III LT1 using z/VM versus compared x86 platform using KVM, when running 3 compute nodes each with 3 instances of Acme Air benchmark





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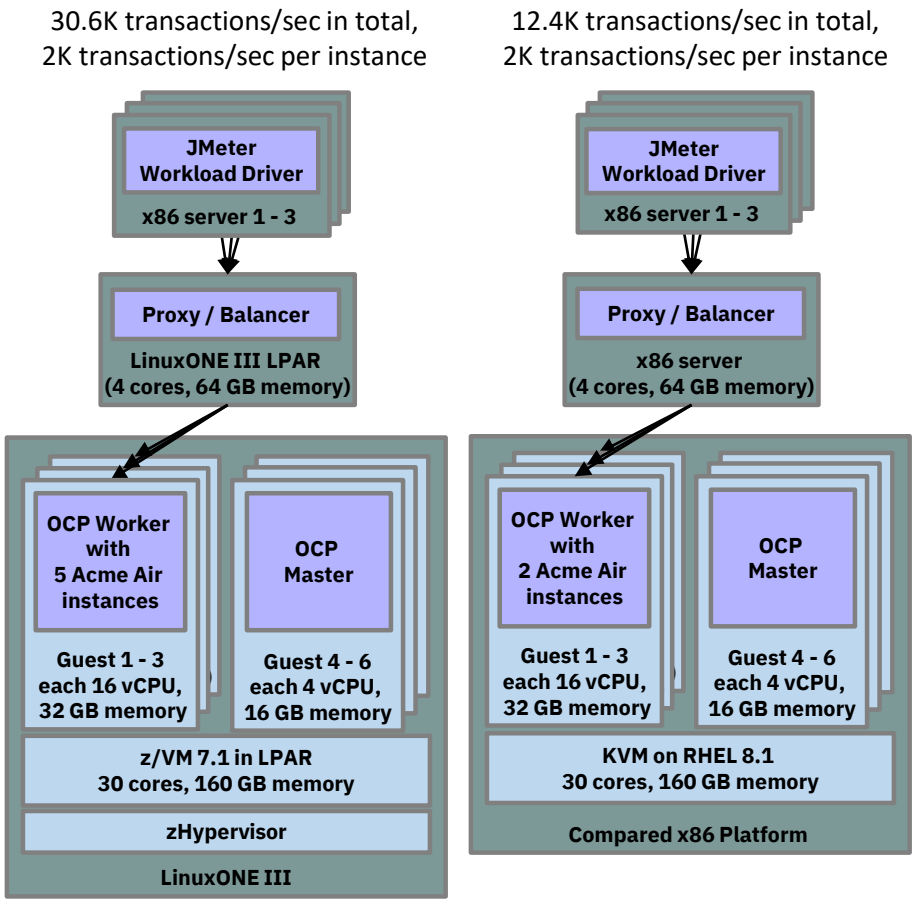
OpenShift Container Platform (OCP)

Acme Air Density on OpenShift Container Platform on LinuxONE III LT1 vs. x86 Skylake

Run up to 2.5x more Acme Air benchmark instances per core on OpenShift Container Platform 4.2 on LinuxONE III using z/VM versus on a compared x86 platform using KVM, each processing an identical transaction load



DISCLAIMER: Performance results based on IBM internal tests running the Acme Air microservice benchmark (https://github.com/blueperf/acmeair-mainservice-java) on OpenShift Container Platform (OCP) 4.2.19 on LinuxONE III using z/VM versus on compared x86 platform using KVM. The z/VM and KVM guests with the OCP Master nodes were configured with 4 vCPUs and 16 GB memory each. The z/VM and KVM guests with the OCP Worker nodes were configured with 16 vCPUs and 32 GB memory each. Results may vary. LinuxONE III configuration: The OCP Proxy server ran native LPAR with 4 dedicated cores, 64 GB memory, RHEL 8.1 (SMT mode). The OCP Master and Worker nodes ran on z/VM 7.1 in a LPAR with 30 dedicated cores, 160 GB memory, and DASD storage. x86 configuration: The OCP Proxy server ran on 4 Intel® Xeon® Gold 6126 CPU @ 2.60GHz with Hyperthreading turned on, 64 GB memory, RHEL 8.1. The OCP Master and Worker nodes ran on KVM on RHEL 8.1 on 30 Intel® Xeon® Gold 6140 CPU @ 2.30GHz with Hyperthreading turned on, 160 GB memory, and RAID5 local SSD storage.

Performance Experiences in the Linux on IBM Z & IBM LinuxONE Knowledge center

https://www.ibm.com/support/knowledgecenter/de/linuxonibm/liaaf/lnz_r_perf_latest.html

Red Hat OpenShift on IBM Z - Performance Experiences, Hints and Tips

- Performance measurement and tuning approach
- Observations and recommendations
  - CPU-intensive workloads
  - Network-intensive workloads
- General tips for cloud-native applications

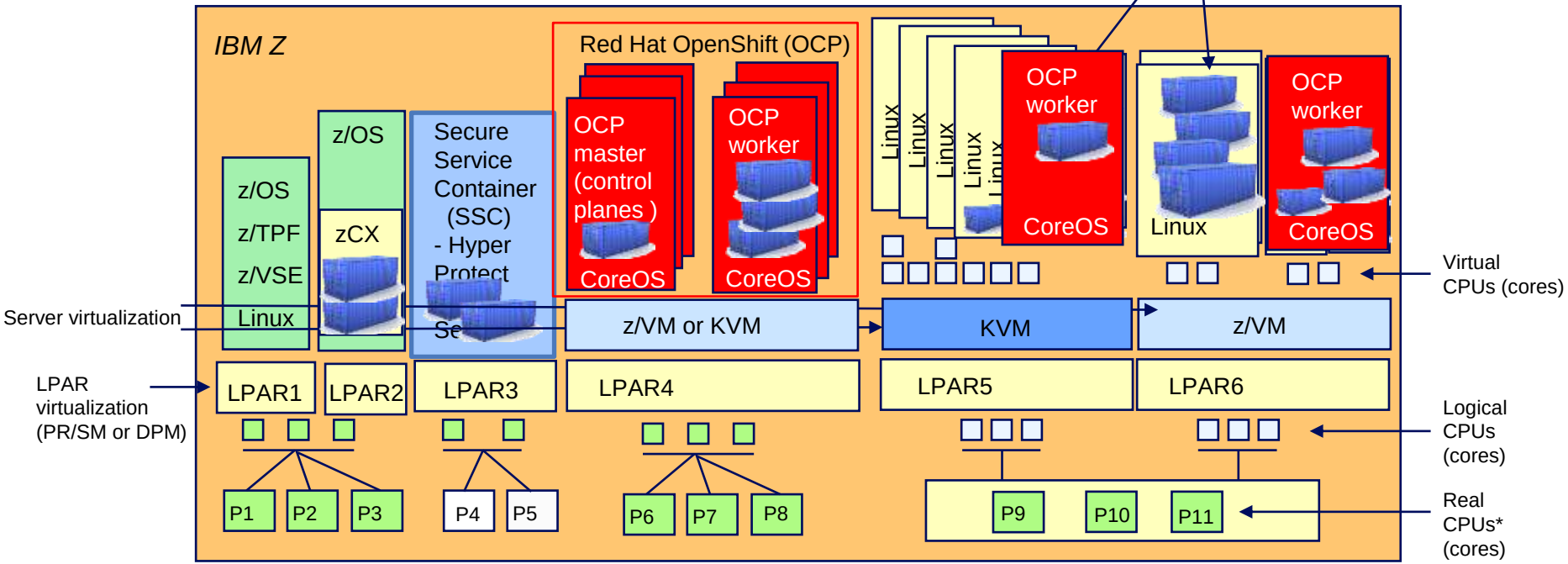
http://public.dhe.ibm.com/software/dw/linux390/perf/OpenShift_on_IBM_Z_-_Performance_Experiences_V11.pdf

IBM Z Virtualization and Container options

Server virtualization. There are typically dozens or hundreds of Linux servers in a LPAR virtualized using z/VM or KVM or SSC.

Red Hat OpenShift is an Enterprise grade Kubernetes environment. It can be installed in a z/VM environment.

Application isolation.
There are typically thousands of Containers in Linux on IBM Z.

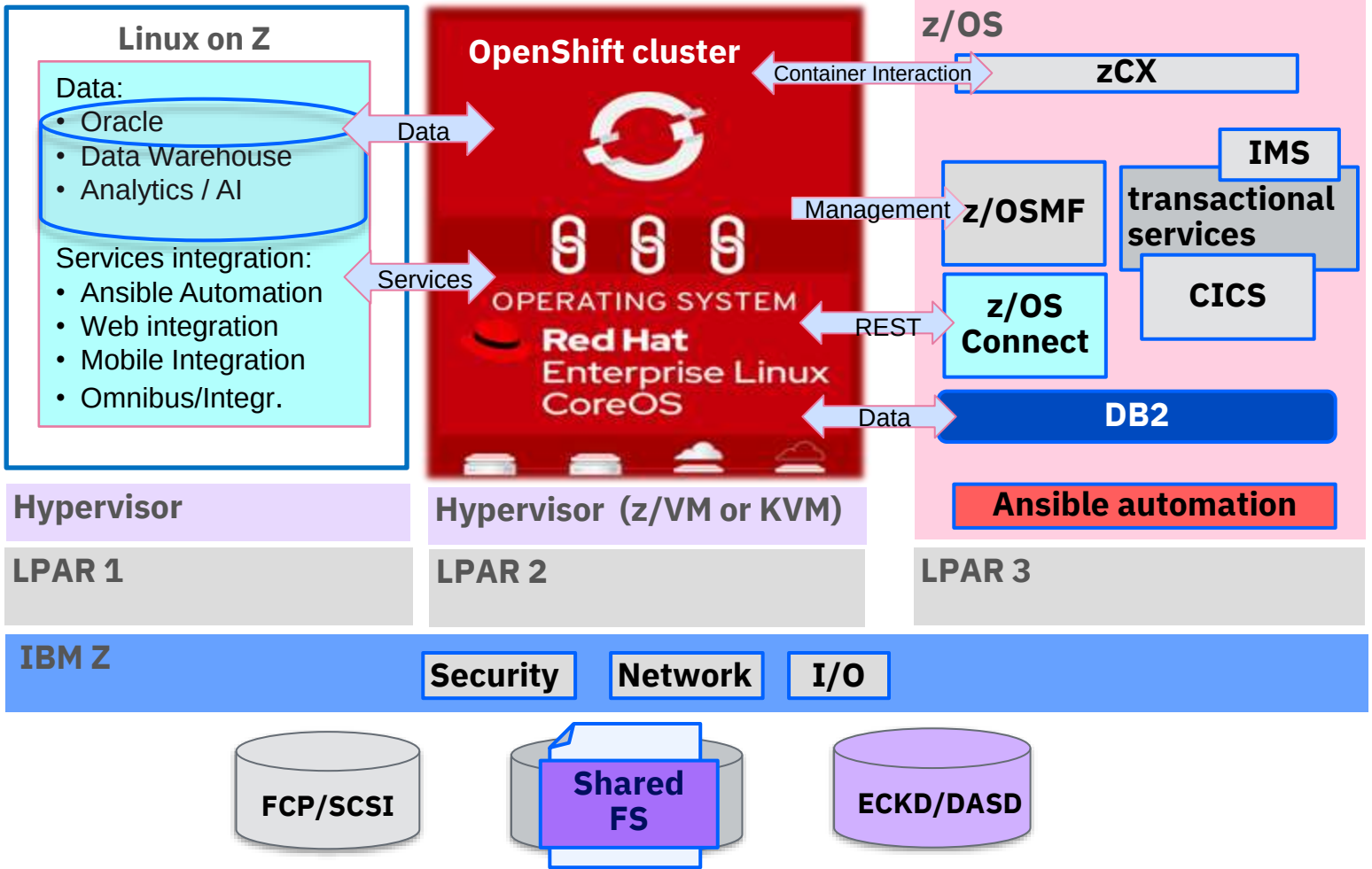


P1 – P11 are Central Processor Units (CPU -> core) or Integrated Facility for Linux (IFL) Processors (IFL -> core)

* - One shared Pool of cores per System only

Note: - LPARs can be managed by traditional PR/SM in IBM Z and additional with Dynamic Partition Manager (DPM) in LinuxONE

Use cases overview: Red Hat OpenShift Container Platform on IBM Z



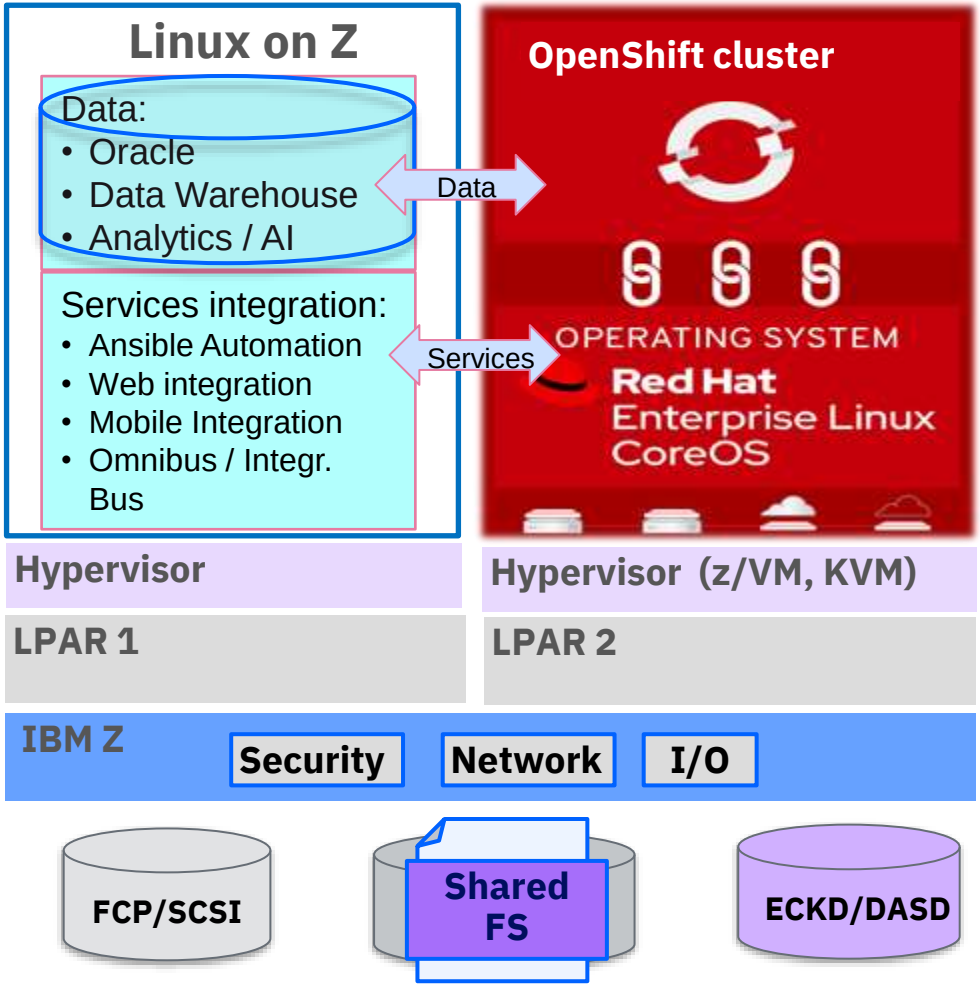
Ideal Use Cases for RHOCP on IBM Z and IBM LinuxONE

1. **Data gravity on IBM Z**
   - co-location implementation of containerized applications with traditional workloads, like Datalakes, Enterprise databases, transactional services in z/OS or Linux on IBM Z
2. **Application Development Consistency**
   - DevSecOps to develop once and deploy options, SLA based, on the most securable platform with cross architecture portability, enabling / disabling and shifting compute capacity for highest dynamic workloads
3. **Consolidation and TCO Reduction**
   - Adopt 3-dimension scalability, vertical, horizontal and combined for highest flexibility without new hardware footprint and unpredicted growth
4. **Blockchain and Digital Asset Management with RHOCP**
   - Build Digital Assets and Blockchain extensions with Confidential Computing
5. **Business Continuity**
   - high predictability and resiliency on IBM Z vs. on distributed servers
   - latency between LPARs is much more predictable vs many distributed servers

The Use Cases Webcast: [The best Use Cases for RH Openshift Container Platform for IBM Z and LinuxONE]

Red Hat OpenShift Container Platform collocated with Linux on IBM Z

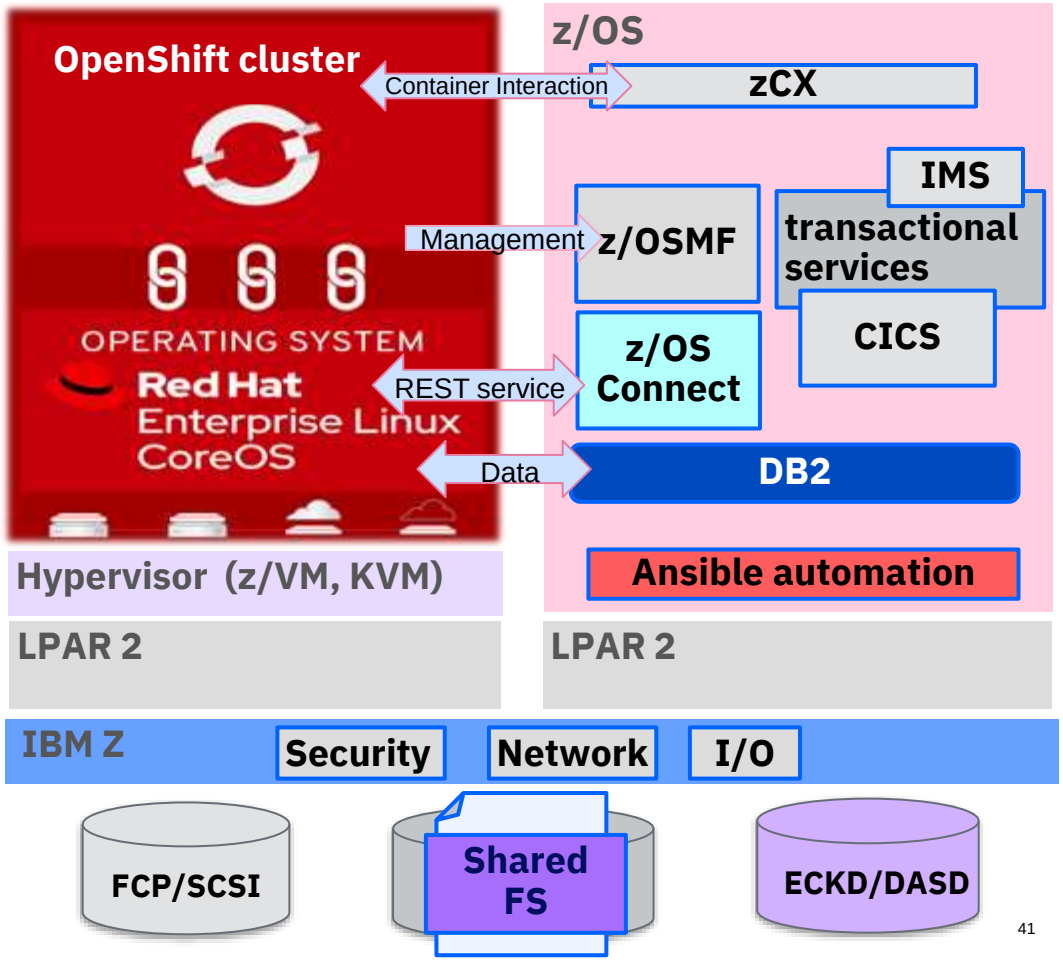
- **RHOCP environment integrates with Linux on Z transactional systems**, bidirectional capabilities (e.g. Temenos T24 for banking)
- **RHOCP workload interacts with enterprise data**, like a Data Lake, Oracle or Db2 Data Warehouse
- **RHOCP implements the Front end for Web or Mobile applications**, for high dynamic workloads, scalability, resource sharing and reliability
- **RHOCP extends Linux on Z** Systems of Record with Open-Source technologies



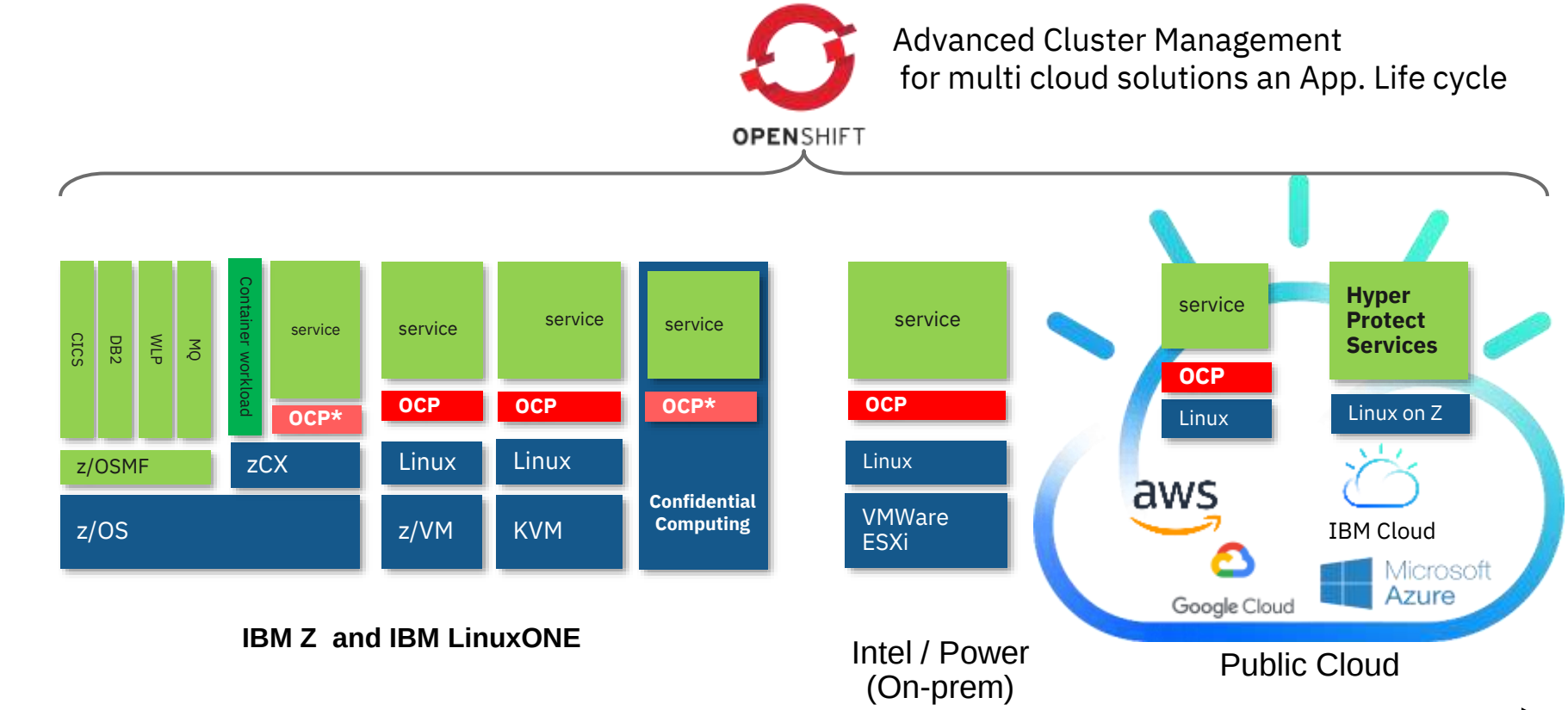
Use Cases for Red Hat OpenShift in colocation with z/OS

RHOCP co-location to z/OS major use cases:

- **Unpredicted scalable workload** in RHOCP accesses z/OS services & data
- RHOCP logic **access to DB2 z/OS**
- **RHOCP to provision z/OS subsystems,** using z/OS Cloud Broker
- **Development environment** integrates via x86 RHOCP with z/OS Wazi
- **RHOCP interacts with z/OS services** in CICS / IMS or via zCX with containerized applications and Open Source technology
- **Batch workload** executed in RHOCP with z/OS data access



Outlook: The Hybrid Multicloud Vision with OpenShift



* Roadmap item

** All statements regarding IBM's future direction and intent are subject to change or withdrawal without notice and represent goals and objectives only.*

Infrastructure management with IBM Cloud Infrastructure Center

Architecture Overview

End users or Enterprise Service Management

Infrastructure Mgmt | **Automation** | **Cloud Integration**

IBM Cloud Automation Manager | vmware | OPENSHIFT® | Ansible® | Terraform | RED HAT CLOUDFORMS | other, 3rd party tools

Platform-as-a-Service & cloud automation tools

End users

IBM Cloud Infrastructure Center

- Extended OpenStack APIs
- Self-Service portal
- Controller components
- Infrastructure Services
- Value Add Features

Infrastructure-as-a-Service

Compute

- z/VM
- KVM

- KVM
- HPVS[2]*
- DPM*
- LPAR*

Storage: block, file, object

- FCP
- ECKD
- Spectrum® Scale*
- SAN Switches*
- 3rd party plug-ins*

Network

- VLAN
- Flat
- Overlay Networks*
- NFV*
- Network Switches*
- 3rd party plug-ins*

[1] *IBM Hyper Protect Virtual Server*

** All statements regarding IBM's future direction and intent are subject to change or withdrawal without notice, and represent goals and objectives only.*

Can provision RHEL, CoreOS, SLES 15 SP1 und Ubuntu 20.04 guests

IBM Z and IBM LinuxONE can be the core of your secure hybrid cloud

- Unparalleled trust and security for mission critical workloads and data
- Delivers single-point secure management and integration across environments and cloud platforms
- Agility in operations and development across the cloud ecosystem
- Remove skills barriers with open technology and tooling
- Support mobility of workloads, services and data across the hybrid cloud ecosystem

Benefits of running OpenShift workloads on IBM Z

https://www.ibm.com/downloads/cas/2RZP23XG

Need access to IBM Z / LinuxONE for RHOCP ?
Try the **LinuxONE Community Cloud**

The IBM LinuxONE Community Cloud provides

- Free access for developers, students, and entrepreneurs
- Virtual servers and services for testing and piloting emerging applications for evaluation purposes
- Fast Start Guides https://www.ibm.com/community/z/linuxone-cc/faststart

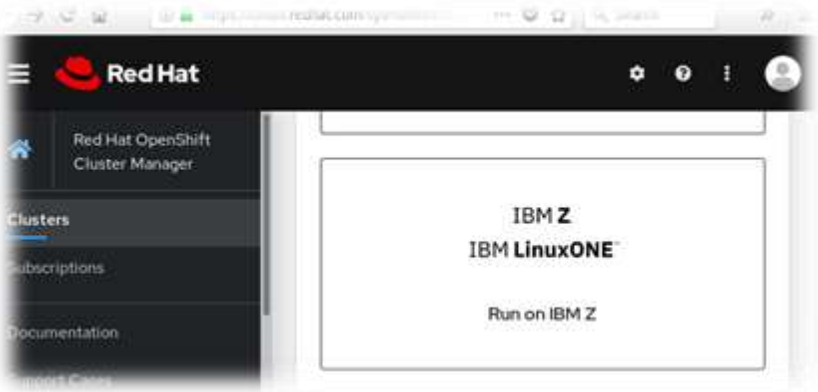
Try OpenShift Container Platform on the LinuxONE Community Cloud

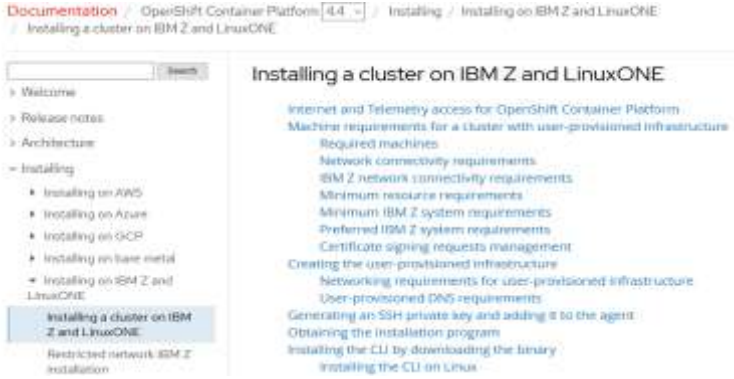
https://www.ibm.com/community/z/linuxone-cc/request-oc

https://developer.ibm.com/components/ibm-linuxone/gettingstarted/

Where can you download RHOCP?

try.openshift.com
cloud.redhat.com





Full support

- **RHOCP 4.7 on Z was released on 02/24/21**
- RHOCP 4.6 on Z was released on 10/27/20 (EUS)

Maintenance

- RHOCP 4.5 on Z was released on 7/30/20
- RHOCP 4.4 on Z was released on 6/22/20

End of life

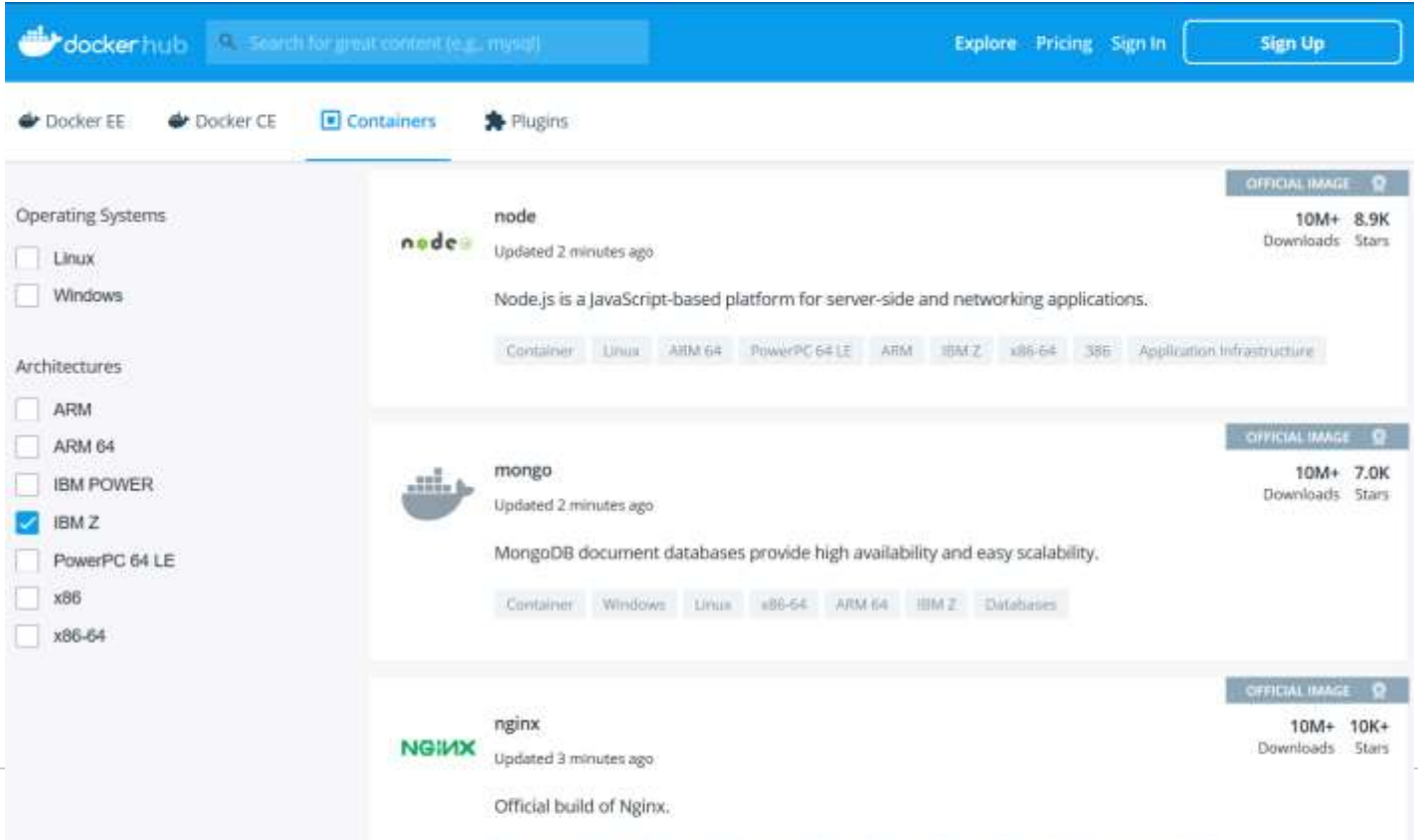
- RHOCP 4.3 on Z was released on 4/30/20
- RHOCP 4.2 on Z was released on 2/11/20

https://access.redhat.com/support/policy/updates/openshift
https://docs.openshift.com/container-platform/4.7/release_notes/ocp-4-7-release-notes.html
https://docs.openshift.com/container-platform/4.7/installing/installing_ibm_z/installing-ibm-z.html

Docker-Hub containerized software for Linux on IBM Z & IBM LinuxONE

https://hub.docker.com/search?q=HTTPd&type=image&architecture=s390x

The search provides public container images that have been built for Linux with version of Linux on Z and LinuxONE



Open-source containerized Software for Linux on IBM Z & IBM LinuxONE

https://www.ibm.com/community/z/open-source-software/

Validated Open Source Software

The table below provides up-to-date information on open source packages that have been ported and/or validated on corresponding distro versions by IBM.

Log in or Sign up

What is in the table?

The table provides up-to-date information on open source packages that have links to packaged binaries and/or document for building them on Linux on IBM packages. Binaries/Docker images once made available by community, are no

How up-to-date is it?

As we continue to port/test new packages, this table will be updated wheneve

What if a package I'm interested in is not in the table?

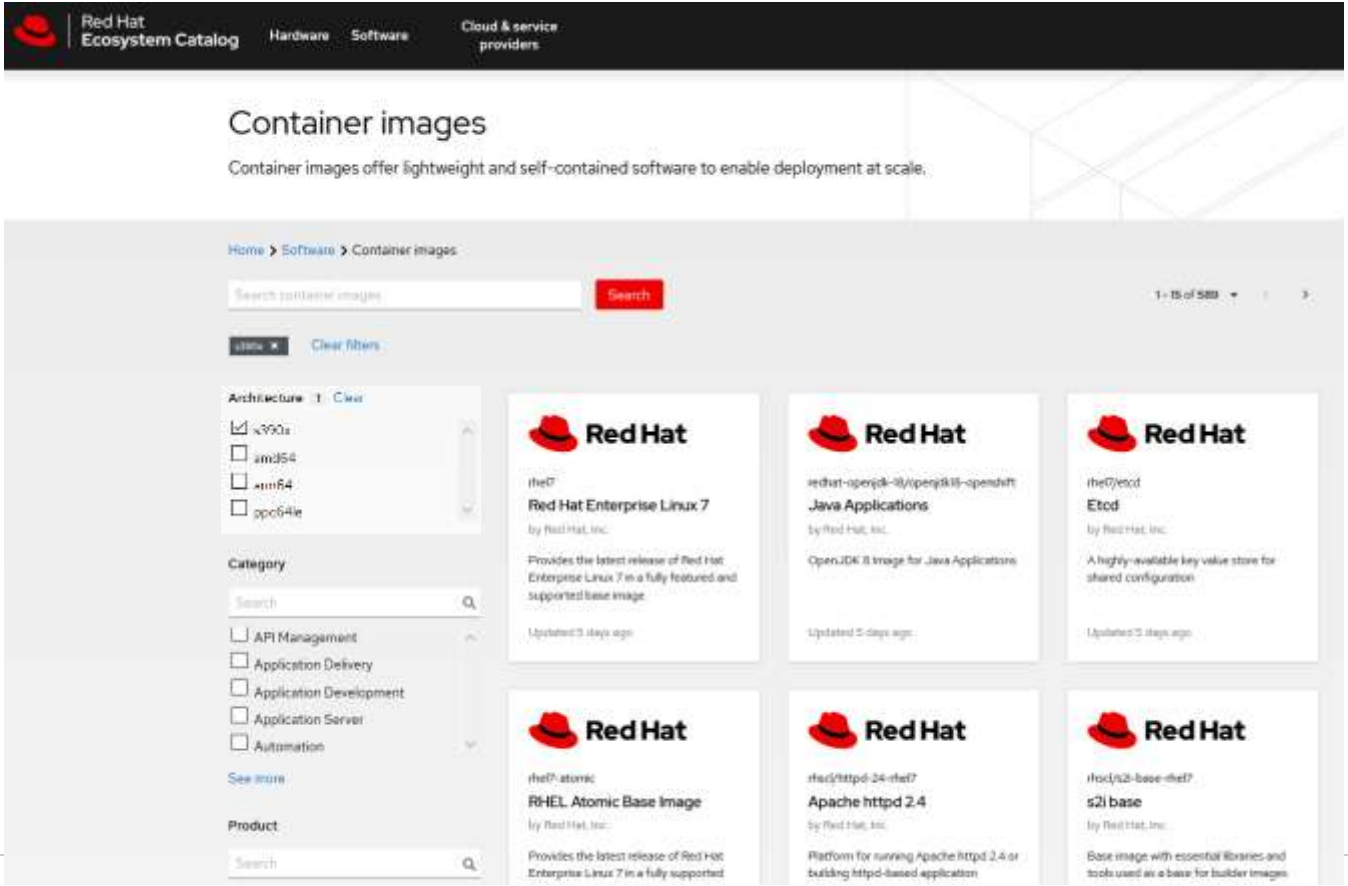
Please submit request via email or in our group. We will prioritize based on bu them work out of box, especially those written in languages that don't need to not in this table doesn't necessarily mean it doesn't work on the platform, the

Search | Search packages | Package | All packages | OS | 7 shown | 110 of 110 packages | Clear filters

Packages	RHEL 8.x	Ubuntu 20.x	SLES 15.x	Dockerfile/Image	RHEL 7.x	Ubuntu 18.x	SLES 12.x
Alfresco	7.x	7.x	7.x	Via 7.x	7.x	7.x	7.x
Ansible	Distro Latest	Distro Latest	Distro Latest	NA	Distro Latest	Distro Latest	Distro Latest
AntLR	4.x	Distro 4.x	4.x	NA	3.x, 4.x	Distro 3.x, 4.x	3.x, 4.x
Apache ActiveMQ	Latest	Distro Latest	Latest	NA	Latest	Distro Latest	Latest
Apache Camel	Latest	Latest	Latest	NA	Latest	Latest	Latest
Apache Cassandra	3.x	3.x	3.x	3.x Image	2.x, 3.x	2.x, 3.x	2.x, 3.x
Apache Flume	Download	Download	Download	NA	Download	Download	Download

Red Hat catalog with container images

https://catalog.redhat.com/software/containers/search?p=1&architecture=s390x



LinuxONE Partner Network (LPN)

Digital-first model

Let LinuxONE drive your business success

- Accelerate onboarding & certification (individuals & applications) via access to complimentary, self-service pathways
- Reduce time to market by accessing world-class partner marketing, enablement and sales resources
- Increase revenue via access to co-marketing funding

BUILD | **Market** | **Grow**

1. Sign up

- Single integrated portal, using existing PartnerWorld functionalities
- Helps create personalized ISV experiences to grow advocacy

2. Education and skills

- Unlock full LinuxONE potential by enabling pathways (technical and sales) to training and education
- Digital badges to demonstrate individual competency Determine lessons learned from benchmarks

3. Certify application

- Self-service access to HW resources for certification across hybrid multi-cloud environments.
  - On-premises traditional
  - On-premises cloud-native
  - IBM Cloud®
- Integrate with RH OpenShift and operator certification

4. Go to market

- Presence in IBM Global Solutions Directory, IBM and RedHat marketplaces to drive customer attention
- Access to My Digital Marketing to drive self-serve campaigns
- Initiate co-marketing funding as on-ramp to PartnerWorld programs

5. Retention

- Pathway to embed cloud services and access to IBM Marketplace platforms including Red Hat Marketplace.
- Hyper Protect services for Digital assets, crypto and secure data
- IBM Cloud catalog and Red Hat Marketplace to drive new revenue streams

Red Hat Ecosystem Catalog

Red Hat Marketplace
Operated by IBM

Visit LPN at: https://www.ibm.com/partnerworld/systems/ibm-linuxone-isv-partner-network-program

Contact LPN team via lpnhelp@us.ibm.com

Useful links for Linux on IBM Z & LinuxONE

- **Technical Linux on Z and LinuxONE customer webinars from the Labs**
  - **http://ibm.biz/LinuxonZandLinuxONEwebcasts**

- **IBM Knowledge Center for Linux on Z and LinuxONE**
  - Blog: Linux and Mainframe
  - News and tips for running Linux on IBM Z and LinuxONE

- **Red Hat OpenShift**
  - **The Reference Architecture:** https://www.ibm.com/support/knowledgecenter/linuxonibm/liaaf/lnz_r_rhocp.html
  - **Red Hat OpenShift blog**
  - OpenShift on IBM Z

- **Virtualization on IBM Z & LinuxONE**
  - z/VM resources
  - KVM on Z blog

- **Containers on IBM Z**
  - IBM Z container blog: Linux on Z and Containers

YOUR Community for Linux on IBM Z and IBM LinuxONE

Commpass L !

https://ibm.biz/BdfzFY

Technology
Interchange
Community

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Become a Linux crewmate and join this exchange platform for LinuxONE and Linux on Z! In our series of barcamp-styled events, you can engage with peers, give valuable input to next gen products, and receive IBM expertise and consulting on topics that interest you. Topics may cover technical problems / pain point discussions, tutorials, best practices etc.

Get help and help others!

To join:

1. Sign up to the event wi https://ibm.biz/BdfzFY
2. Suggest topics that are interesting to you, vote topics
3. Join the event and share your view!

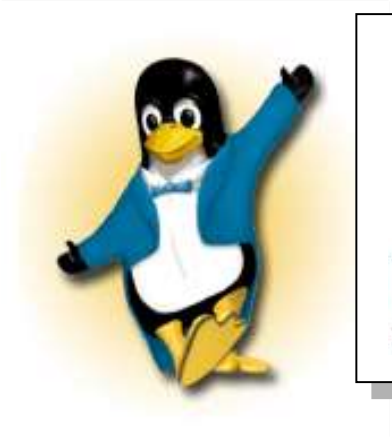
Join the crew and navigate the waters with CompassL!

Working with Linux on IBM Z or LinuxONE? Join the conversation!

Navigate the Waters with Compass L

Working with Linux on IBM or LinuxONE? Join the conversation!

Questions?



Wilhelm Mild

IBM Executive IT Architect

The Open Group Open Certified Distinguished Architect

IT Architecture Chief/Lead IT Architect

IBM Deutschland Research & Development GmbH
Schönaicher Strasse 220
71032 Böblingen, Germany

Office: +49 (0)7031-16-3796
wilhelm.mild@de.ibm.com

Twitter: @mildw

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