



# Mainline – Your Partner for IBM Z

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The Technology Partner for Business Results

# Mainline At A Glance

Founded in **1989**

- Over **400** national employees who hold nearly
- 1,000** product and technical certifications

- Top** partnership levels with industry leading technology manufacturers & providers including IBM, HPE, Dell EMC, Red Hat, CA Broadcom, NetApp and many others

# Mainline

Headquarters: **Tallahassee, FL**

**\$1B+** in revenue

- 30+** years; Experience in Hybrid Cloud, Data Center, Security, Analytics/AI, Networking, Automation, and Managed Services

# Industry Recognition

## Skills include:



- IBM Platinum Business Partner
- IBM Beacon Awards
- IBM System Storage Competency Excellence Award
- IBM Application Integration Award
- IBM Security Outstanding Achievement in NA Award
- IBM Top Infrastructure Partner
- IBM Expert and Specialist Levels
- HPE Platinum Partner
- Dell EMC Platinum Partner
- International Enterprise Architect Institute (IEAI) accredited
- Red Hat Premier Partner
- VMware Desktop Virtualization Partner of the Year
- CA Broadcom Premier Partner
- Cisco's Customer Satisfaction Excellence
- CIOReview Company of the Year
- CIOReview 10 Most Promising Storage Solution Providers
- CIOReview Top 20 Most Promising IBM Solution Provider
- CIOReview 20 Most Promising Red Hat Solution Providers
- CRN Tech Elite 250
- CRN Elite 150 of Managed Service Provider 500
- Ingram Micro Juniper Partner of the Year
- Axis Communications Gaming Market Partner of the Year
- Milestone Systems Installation Partner of the Year
- Florida Trends Best Company

# Mainline and IBM Z



## Infrastructure Implementation Focus

### 2021 IBM Beacon Award Most Innovative Solution

- IBM Operational Analytics (IzOA)
- Machine Learning modeling operational behavior
- IBM System Recovery Boost feature

### 2020 IBM Beacon Award Most Innovative Solution

- Db2, Blockchain-like solution with IBM Spark

### IBM Beta Tester

- Hyper Protect for Virtual Server
- Business Partner Innovation Center installed z15 8562-Z06, 5 IFLs, 1 zIIP, DS8884
- Multiple meetings outlining recommendations
- Red Hat OpenShift
- Demo's

### Application Modernization

- Financial institution use of IDAA: goal to offload and accelerate transactions
  - 33 IFLs with 2.5TB memory
  - CBU equivalent
- z/OS connect @ Insurance, distribution
- GDPS @ Financial
- SAP @ Government
- AI @ Government, Financial

### Security and Cloud Automation

- Pervasive Encryption @ Government, Financial, Insurance
  - Security Analysis joint with IBM
- Private Cloud @ Insurance

### ESP Customers

- North Carolina Farm Bureau z14 ZR1 4 IFLs
  - Linux ESP against x86 (.9 to .37 sec/policy)
- ASG z15 T02
  - Performance & Boost

### What's new? Containers and more

- Red Hat OpenShift @ Financial, Telecommunication & School district
  - Washington System Center
- zCX @ Insurance
- LinuxONEs for new to Z customer

### Mainline Knowledge Center

- Blogs, white papers and eBooks
- Webcast <https://mainline.com/events/>

# A Wide Range of Services Solutions

## Our Strengths



### INFRASTRUCTURE SERVICES

HW Installations, Upgrades, Deployments, etc..

Infrastructure Migration Services

Cloud Enablement & Readiness

Security, Governance, Risk and Business Continuity Services

Network Strategy & Optimization



### DATA / DATA CENTER SERVICES

Data Warehousing

Data Migrations

Data Center Design / Move / Build

Backup, Recovery, High Avail, Storage



### MIDDLEWARE & APP SERVICES

Application Migrations / Rationalization

WebSphere Services

Microsoft Services

Application Security / Remediation

'Pockets' of Application Development



### SOFTWARE ASSET MANAGEMENT

Optimize Deployment

Reduce Costs

Ensure Compliance

Reduce Regulatory Risk



### ANALYTICS

Application Modernization

Enterprise Integration (Service Bus technologies)

Analytics Solutions & Services

Analytics, Predictive, Modeling, Dashboards

Business Process Management



### CIO ADVISORY SERVICES

Enterprise Architecture & Strategy

Business & IT Alignment

Operational & Financial Efficiency

Organization Design

Disaster Recovery



### MANAGED & STAFFING SERVICES

Proactive and/or Reactive Operation Support

Management of All Types of Environments

IT Staffing - Contract/ Contract to Hire/ Direct Placement

Flexible & Strategic Staffing Alternatives

# Partnerships

## Strategic



## Eco System



# WHY LINUXONE IS RIGHT FOR IBM CLOUD PAKS

# Agenda

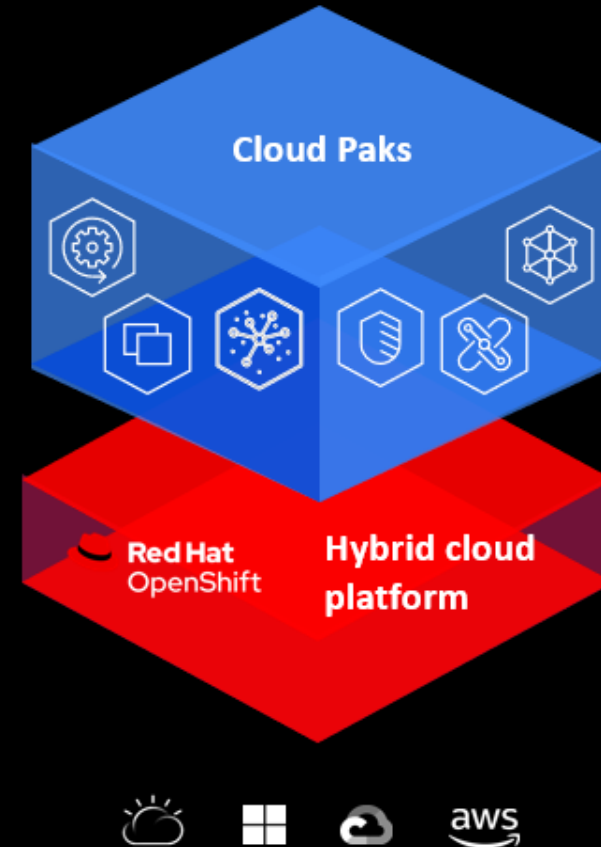
- Cloud Paks: What are they?
- Virtual Servers vs. Containers
- Cloud Paks on IBM LinuxONE
- IBM Incentive Offerings



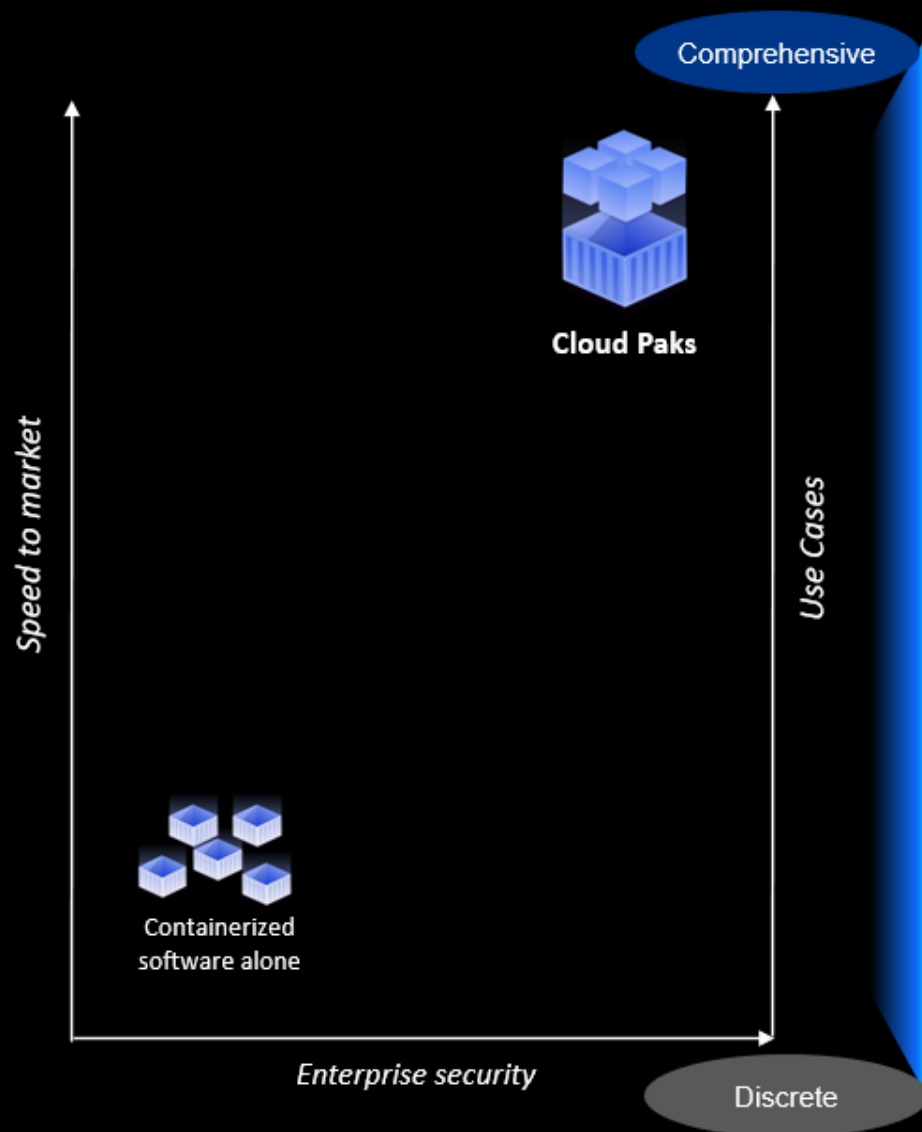
# Transformation requires a common platform and integrated solutions...

IBM helps you intelligently access, integrate and deliver your data, applications, and workflows –anywhere.

- **ACCELERATE** innovation and efficiency to unlock immediate value
- **INTEGRATE** and connect applications, data, and services across multiple clouds
- **MANAGE** applications intelligently across your environment
- **RUN** on Red Hat OpenShift, so you can build once and deploy anywhere



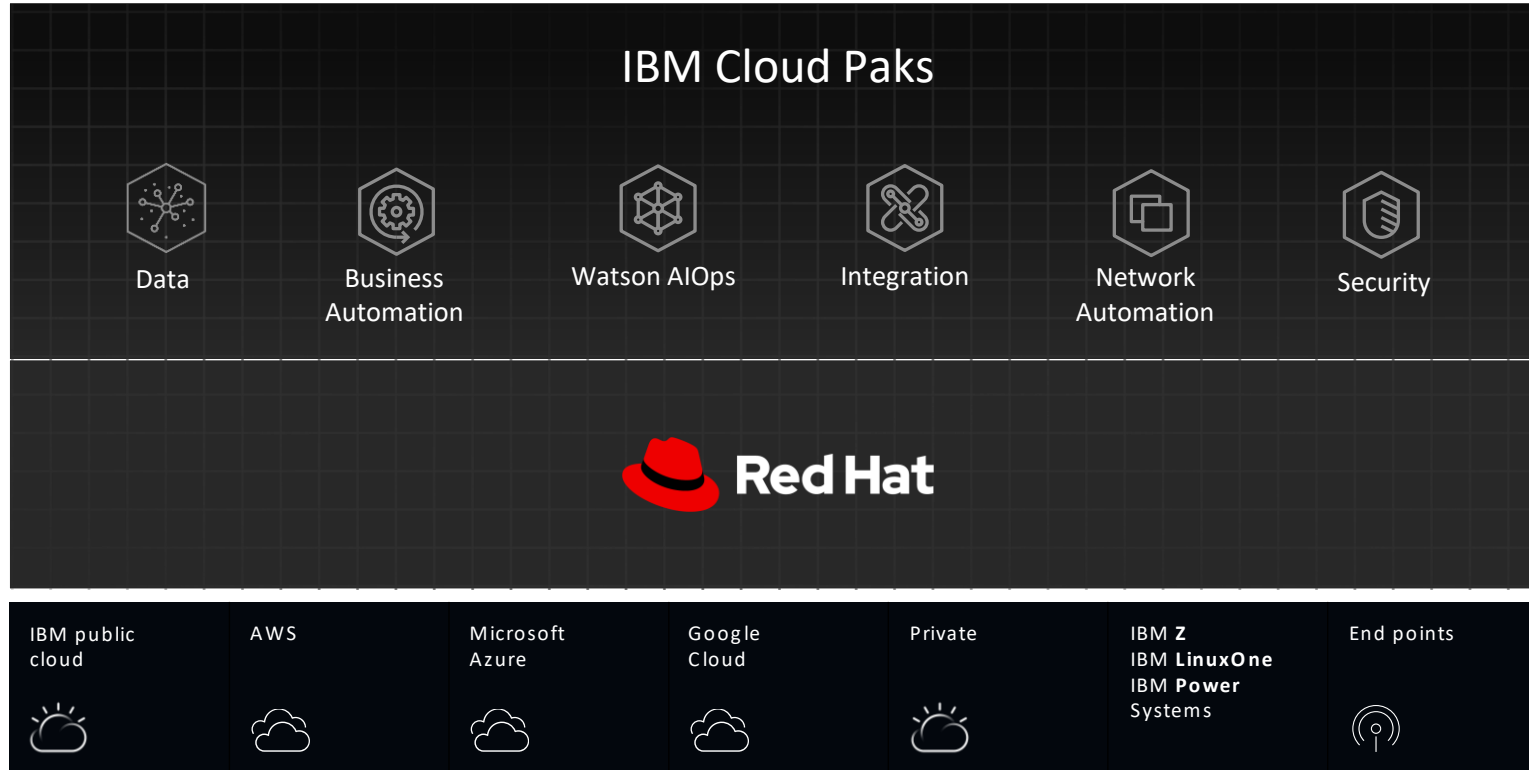
# Cloud Paks – IBM certified and production-ready



	Containers Alone Client creates containers or receives software as standalone container(s)	IBM Cloud Paks Complete solutions certified for enterprise use cases
<b>Runs anywhere</b>	Yes	Yes
<b>Vulnerability scanned</b>	Yes	Yes
<b>Red Hat container certification</b>	Depends on product	Yes
<b>Complete solution w/ container platform</b>	No	Yes
<b>Flexible &amp; modular: Pay for what you use</b>	No	Yes
<b>IBM certified/orchestrated for production</b> <small>(Built for Kubernetes by experts; certified against 250+ criteria)</small>	No	Yes
<b>Multicloud validation</b>	No	Yes
<b>Integrated deployment experience</b>	No	Yes
<b>Full stack support by IBM</b> <small>(Base OS, software, and container platform)</small>	No	Yes
<b>License metering integration</b>	No	Yes
<b>Scalable and resilient</b>	No	Yes
<b>Encrypted secrets / limited privileges</b>	Do it yourself	Yes
<b>Management and operations</b>	Build your own	Yes
<b>Lifecycle Management</b>	Manage it yourself	Yes

# Cloud Paks: AI-powered software for hybrid cloud

Accelerate outcomes by enabling automated, intelligent, and secure workflows



## Complete integrated solutions

- Services for business and IT operations, development, data science, security, and management
- Accelerators for use cases, blueprints by industry
- Delivered as a service with a modular architecture

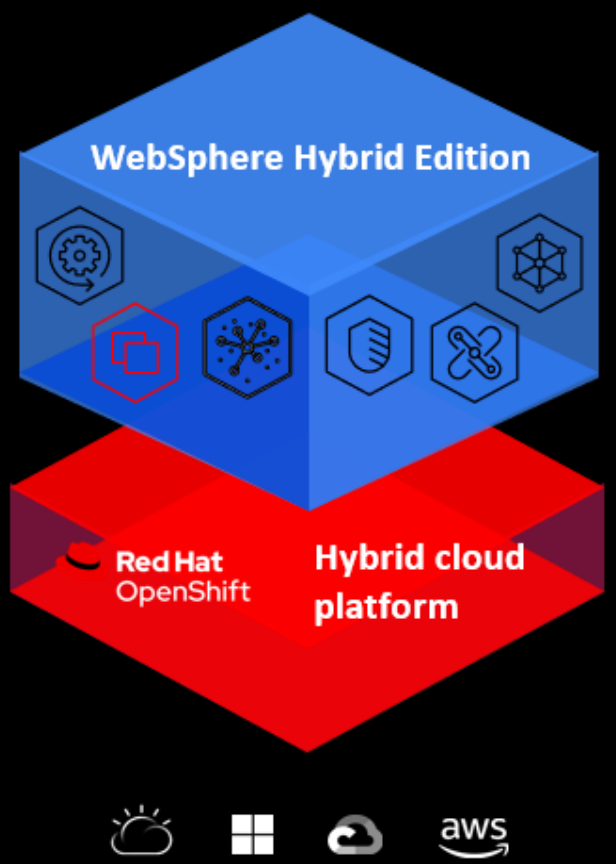
## Applies AI for business with IBM Watson

- Understands the language of business and code
- Explains AI outcomes and builds trust
- Automates AI that builds AI

## Built on an open hybrid cloud platform

- Build once, deploy anywhere
- Leading Linux, container and Kubernetes platforms
- Richest open source ecosystem

# WebSphere Hybrid Edition (WSHE)



	Capability	Available Standalone	Included in WebSphere Hybrid Edition
Available Standalone and Included in WebSphere Hybrid Edition	IBM WebSphere Application Server Network Deployment	✓	✓
	IBM WebSphere Application Server (Base)	✓	✓
	IBM Liberty Core	✓	✓
	IBM Cloud Foundry Migration Runtime <sup>1</sup>	✓	✓
Unique Components	IBM Cloud Transformation Advisor (Supported)		✓
	Mono2Micro (Supported)		✓
	Red Hat OpenShift	✓	
	Red Hat CodeReady Workspaces	✓	
	Red Hat Runtimes	✓	
Licensing/Packaging Benefits	License Flexibility to Move between Above Capabilities/Components		✓
	Perpetual and Subscription licensing available		✓
	Virtual Processor Core Licensing Metric		✓

**Footnotes:**

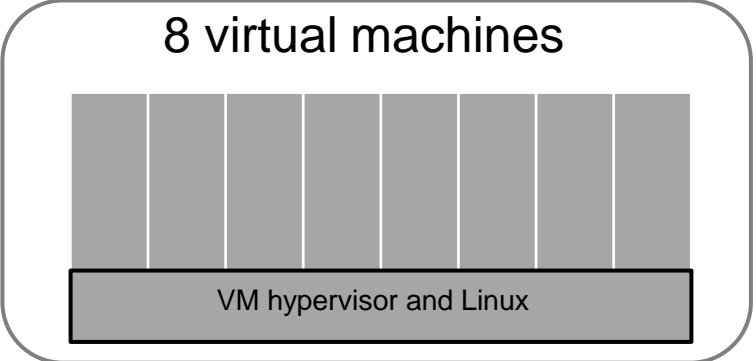
1. Cloud Foundry Migration Runtime requires OpenShift, but OpenShift is optional for other components of WSHE. OpenShift entitlement can be obtained from Red Hat.

# Cloud Pak Summary

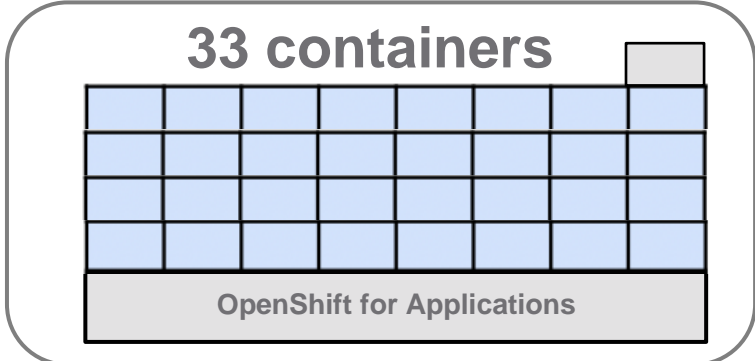
- Cloud Paks are a software bundle of products, not a product, with a strategic objective
- Cloud Paks are primarily subscriptions model pricing (more on that later)
- Red Hat OpenShift Container Platform (OCP) is platform of choice for Cloud Pak products but the products may run in virtual machines
- Cloud Paks container implementation based on Red Hat OCP provides a comprehensive production ready platform for hybrid cloud.
- Cloud Paks are a subset of IBM software products, i.e IBM Db2 Advanced Edition Cartridge for IBM Cloud Pak for Data

# Virtual Servers vs. Containers

# VM environments waste significant amounts of memory leaving only a small percentage of memory available for productive work



One 16-core x86 server with 128GB memory



One 16-core x86 server with 128GB memory

versus

### Memory requirements for VM environment

Cache duplication 4GB for 8 VMs	32GB
Linux (8 VMs @ 2GB) + WAS (7 VMs @ 4GB)	44GB
Reserve memory (20%)	24GB
<b>Total Wasted Memory</b>	<b>100GB</b>

100GB / 128GB memory = **78% of memory is wasted**

12% - 14% average CPU with 36% peak CPU

### System memory is shared between containers

Container environments enable productive use of memory and higher CPU usage as well

**4X Throughput in  
1/2 Response Time**

46%+ average CPU with 95% peak CPU

<sup>1</sup> IBM tests were performed to replicate conditions in observed customer environments for transaction workloads running in virtual machines versus Red Hat OpenShift containers on x86 servers. Workloads were run to simulate a variance in CPU demand with a peak-to-average ratio of 7 to 1 on 16-core Cascade Lake x86 servers configured with 128 GB memory as well as a separate server for Control Plane functionality. Software included RHEL, x86 hypervisor, OpenShift containers, and an OLTP application driven by JMeter. The OCP environment required 15,536 MHz to deliver a total of 2,676 TPS collectively over 33 containers with a per-container average of 81 TPS and a response time of 3 milliseconds and a CPU consumption of 5.81 MHz per TPS. Using identical workloads 8 VMs required 3,911 MHz to deliver a total of 627 TPS with a per VM average of 78 TPS and a response time of 6.4 milliseconds and CPU consumption of 6.24 MHz per TPS.

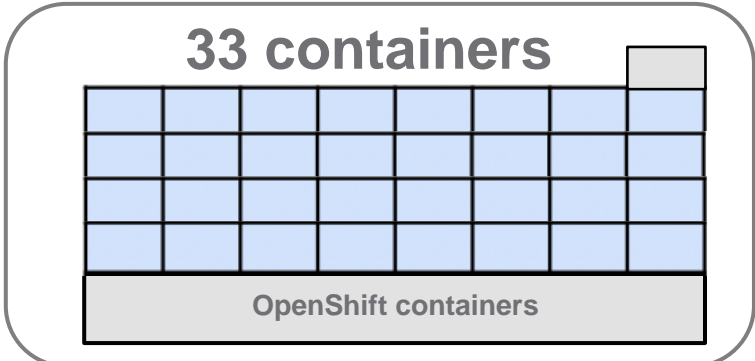
# The Tested Environment Delivered 4x Throughput and Lower Response Time Compared to virtual machines

## x86 OCP containers

TPS per container	Response time per transaction	MHz per TPS	Total System TPS
81 TPS	3 ms	5.81 MHz	2,676 TPS

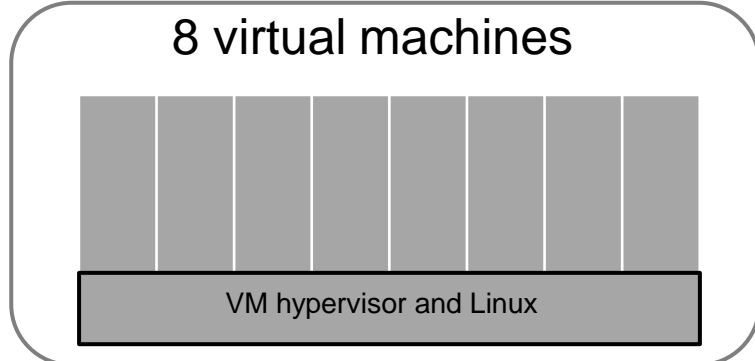
## x86 virtual machines

TPS per VM	Response time per transaction	MHz per TPS	Total System TPS
78 TPS	6.4 ms	6.24 MHz	627 TPS



One 16-core x86 server with 128GB memory

versus



One 16-core x86 server with 128GB memory

<sup>1</sup> IBM tests were performed to replicate conditions in observed customer environments for transaction workloads running in virtual machines versus Red Hat OpenShift containers on x86 servers. Workloads were run to simulate a variance in CPU demand with a peak-to-average ratio of 7 to 1 on 16-core Cascade Lake x86 servers configured with 128 GB memory as well as a separate server for Control Plane functionality. Software included RHEL, x86 hypervisor, OpenShift containers, and an OLTP application driven by JMeter. The OCP environment required 15,536 MHz to deliver a total of 2,676 TPS collectively over 33 containers with a per-container average of 81 TPS and a response time of 3 milliseconds and a CPU consumption of 5.81 MHz per TPS. Using identical workloads 8 VMs required 3,911 MHz to deliver a total of 627 TPS with a per VM average of 78 TPS and a response time of 6.4 milliseconds and CPU consumption of 6.24 MHz per TPS.



# OpenShift on LinuxONE lowers cost

# 34%

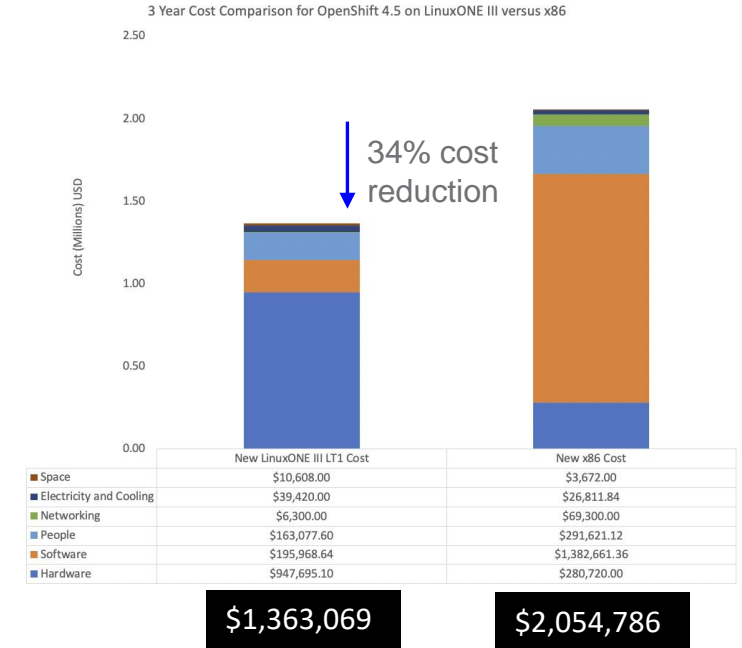
## Lower TCO

# 4x

## Better performance

- IBM tests show that the same multi-tier OLTP workloads on OpenShift deliver 4x better performance on LinuxONE III LT2 at a 34% lower TCO over three years than compared x86 servers<sup>1</sup>

Remember 4 x86 cores to 1 IFL



## Application modernization with Red Hat OpenShift on IBM LinuxONE

<sup>1</sup> This is an IBM internal study designed to replicate multi-tier banking OLTP workload usage in the marketplace on an IBM LinuxONE III LT2 using 14 4.7 GHz IFLs across three LPARs. Seven IFLs and a total of 320 GB memory were allocated to one LPAR for two OpenShift masters and two worker nodes. Another six IFLs and a total of 320 GB memory were allocated to a second LPAR for one OpenShift master and two workers. One IFL and a total of 128 GB memory were allocated to a third LPAR for the OpenShift load balancer. IBM Storage DS8886 was used to create four 100 GB minidisks for four z/VM guest and four 250 GB DASD minidisks for another 4 z/VM guests running in the LPARs. The OpenShift cluster version 4.5.5, using Red Hat Enterprise Linux CoreOS (RHCOS) for IBM LinuxONE, was running across seven z/VM guests and the remaining eighth z/VM guest was running the OpenShift load balancer. SMT was enabled across all IFLs.

The x86 configuration was comprised of two servers running VMWare ESXi 6.7 with 7 guests (three masters and four workers) for the OpenShift cluster version 4.5.6 with RHCOS and a third server was used for the load balancer on RHEL 8. For x86 storage each guest operating system was configured with a 120 GB of virtual disk. Each guest had access to all vCPUs of the physical server on which it was running. Compared x86 models for the cluster were all 2-socket servers containing a mix of 8-core Sandy Bridge, 12-core Haswell, 8-core Skylake x86 processors using a total of 56 cores with a total of 1,280 GB memory. The load balancer was a 2-socket 8-core Sandy Bridge server with a total of 384 GB memory. Both environments used JMeter to drive maximum throughput against four OLTP workload instances and were sized to deliver maximum throughput of 15,786 responses per second (RPS) with IBM LinuxONE III LT2 and 15,744 RPS with x86 at a service level agreement response time of 236 milliseconds. The results were obtained under laboratory conditions, not in an actual customer environment. IBM's internal workload studies are not benchmark applications. Prices, where applicable, are based on U.S. prices as of 09/20/2020 from our website and x86 hardware pricing is based on IBM analysis of U.S. prices as of 09/20/2020 from IDC. Price comparison is based on a three-year total cost of ownership including HW, SW, networking, floor space, people, energy/cooling costs and three years of service & support for production and non-production (devtest and high availability) environments.

# Virtual Servers vs Container Summary

- Red Hat OpenShift Containers provide 4x's more throughput than virtual servers on x86
- Red Hat OpenShift Containers on z provides 4x's more throughput than x86 OCP containers

# New LinuxONE announcement

# Extending IBM z15 and LinuxONE III



IBM z15  
Model T02

IBM LinuxONE III  
Model LT2



IBM LinuxONE III  
Model LT1

IBM z15  
Model T01

Built on IBM z15 chip technology to address new markets

Cloud native development and deployment

Encryption everywhere to ensure data privacy

Resiliency and availability in simplified package

# NEW LinuxONE Express

Starting at \$135K USD, the IBM LinuxONE III Express runs more of your enterprise data for less cost compared to mid-market x86 servers

- Three-sized of configuration to fit most workloads, as an alternative to public cloud
- Improved time-to-value: a single configuration with predictable pricing ensures more rapid delivery

Features	Express – Small	Express – Medium	Express – Large
Memory (GB)	384	512	768
Cores	4	6	12
End-user pricing	Starting at \$135K USD	Starting at \$165K USD	Starting at \$275K USD

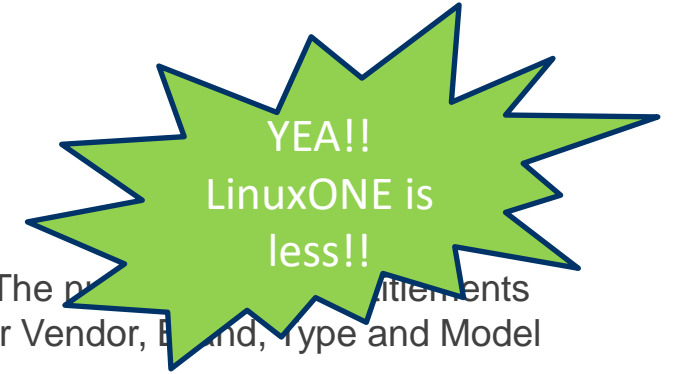
On [ibm.com](https://www.ibm.com)

<https://www.ibm.com/blogs/systems/announcing-ibm-linuxone-iii-express-and-tailored-fit-pricing/>

# The Financial Comparison

# How is IBM Software Priced

- By Authorized User
- By Core
  - A Processor Value Unit (PVU) is a unit of measure by which the Program can be licensed. The number of PVUs required is based on the processor technology (defined within the PVU Tables by Processor Vendor, Brand, Type and Model Number) and by the number of processors made available to the Program
    - WEIGHTED CORE MEASUREMENT
  - A Virtual Processor Core (VPC) is a unit of measurement that is based on the number of virtual cores (vCPUs) that are available to the product. If the number of virtual cores exceeds the number of physical cores, then the number of VPCs that you must license is equal to the number of physical cores.
    - CORE MEASUREMENT
- IBM License vs Subscriptions
  - The core **difference between** the two is that a **subscription software** is priced on a yearly (term) or monthly basis and is an on-going **subscription**.
  - A perpetual **software license**, on the other hand, is **paid up-front in one, big lump sum**. Then, you will typically pay a yearly maintenance fee which covers upgrades and support.



IBM's Distributed Server software pricing model is migrating to VPC measurements with subscription pricing.

# Example of X86 Financials

3-year Study

		x86 Lenovo Servers	
	# of Cores		x86 RH OCP
	40	(1) server 1TB	
HW			\$93,093
RH OCP			\$240,000
			<b>\$333,093</b>
	120	(3) servers total 3 TB	
HW			\$279,279
RH OCP			\$720,000
			<b>\$999,279</b>
	360	(9) servers total 9TB	
HW			\$837,837
RH OCP			\$2,160,000
			<b>\$2,997,837</b>

Lenovo 40 core 1TB memory VMWare & RH Linux	\$93,093
RH OCP (\$2,000/year/core)	\$6,000



# WebSphere ND in a Red Hat OCP Container

- WebSphere Subscription Pricing
- Virtualization software: VMWare on x86, KVM on LinuxONE
- Software on all cores

Lenovo 40 core 1TB memory VMWare & RH Linux	\$93,093
Red Hat OpenShift (\$2,000/year/core)	\$6,000

NOTE: LinuxONE LT2 capped at 8TB memory for this example

		Monthly	3 years	
D1NZALL	IBM WebSphere Application Server Network Deployment per Virtual Processor Core Monthly License	351	12636	SUBSCRIPTION PRICING
D1NZBLL	IBM WebSphere Application Server Network Deployment for Linux on z Systems per Virtual Processor Core Monthly License	351	12636	SUBSCRIPTION PRICING

Percent of configuration that is WebSphere



# WebSphere ND

## With Subscription Pricing:

Containers With

**LinuxONE Express, LinuxONE & OCP 3-year TCO**

	x86 Lenovo Servers		LinuxONE	
	# of Cores	x86 RH OCP		4:01
	40	(1) server 1TB	10	768GB
HW		\$93,093		\$ 383,944
			232GB	\$ 69,600
RH OCP		\$240,000		\$ 60,000
Middleware		\$505,440		\$ 126,360
		<b>\$838,533</b>		<b>\$ 639,904</b>
	120	(3) servers total 3TB	30	1920GB
HW		\$279,279		\$ 1,264,569
			1TB	\$ 300,000
RH OCP		\$720,000		\$ 180,000
Middleware		\$1,516,320		\$ 379,080
		<b>\$2,515,599</b>		<b>\$ 2,123,649</b>
	360	(9) servers total 9TB	90	8960GB*
HW		\$837,837		\$ 4,066,908
RH OCP		\$2,160,000		\$ 540,000
Middleware		\$4,548,960		\$ 1,137,240
		<b>\$7,546,797</b>		<b>\$ 5,744,148</b>



← **\$198,629**

← **\$391,950**

← **\$1,802,649**

Lenovo 40 core 1TB memory VMWare & RH Linux	\$93,093
RH OCP (\$2,000/year/core)	\$6,000

Monthly 3 years

D1NZALL IBM WebSphere Application Server Network Deployment per Virtual Processor Core Monthly License 351 12636

D1NZBLL IBM WebSphere Application Server Network Deployment for Linux on z Systems per Virtual Processor Core Monthly License 351 12636

# More with WebSphere Hybrid

With Subscription Pricing:

Containers With

**LinuxONE Express, LinuxONE  
& OCP 3-Year TCO**

Lenovo 40 core 1TB memory VMWare & RH Linux	\$93,093
RH OCP (\$2,000/year/core)	\$6,000

	x86 Lenovo Servers		LinuxONE	
	# of Cores	x86 RH OCP	4:01	
	40	(1) server 1TB	12	768GB
HW		\$93,093		\$ 383,944
			232GB	\$ 69,600
RH OCP		\$240,000		\$ 72,000
Middleware		\$983,520		\$ 295,056
		<b>\$1,223,520</b>		<b>\$ 820,600</b>
	120	(3) servers total 3TB	30	1920GB
HW		\$279,279		\$ 1,264,569
			1TB	\$ 300,000
RH OCP		\$720,000		\$ 180,000
Middleware		\$2,950,560		\$ 737,640
		<b>\$3,949,839</b>		<b>\$ 2,482,209</b>
	360	(9) servers total 9TB	90	8960GB*
HW		\$837,837		\$ 4,066,908
RH OCP		\$2,160,000		\$ 540,000
Middleware		\$8,851,680		\$ 2,212,920
		<b>\$11,849,517</b>		<b>\$ 6,819,828</b>



**\$402,920**

**\$1,467,630**

**\$5,029,690**

annual 3 years

D29A0LL

IBM WebSphere Hybrid Edition Virtual Processor Core Subscription License

683

24588

SUBSCRIPTION PRICING

D29A1LL

IBM WebSphere Hybrid Edition for IBM Z Virtual Processor Core Subscription License

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SUBSCRIPTION PRICING

# Cloud Pak for Data Enterprise Edition VPC Pricing & Containers

LinuxONE Express, LinuxONE & OCP 3-Year TCO

**Add Year 4 and 5 savings too!!**

Lenovo 40 core 1TB memory VMWare & RH Linux	\$93,093
RH OCP (\$2,000/year/core)	\$6,000

	x86 Lenovo Servers	LinuxONE
	# of Cores	4:01
	x86 RH OCP	
	40 (1 server 1TB)	12 768GB
HW	\$93,093	\$ 383,944
		Add Memory 232GB \$ 69,600
RH OCP**	\$0	\$ 0
Middleware	\$1,006,560	\$ 251,640
	<b>\$1,099,653</b>	<b>\$ 705,184</b>
	120 (3 servers total 3TB)	30 1920GB
HW	\$279,279	\$ 1,264,569
		Add Memory 1TB \$ 300,000
RH OCP	\$0	\$
Middleware	\$1,019,680	\$ 754,920
	<b>\$3,298,959</b>	<b>\$ 2,319,489</b>
	360 (9 servers total 9TB)	90 8960GB*
HW	\$837,837	\$ 4,066,908
		Add Memory
RH OCP	\$ 0	\$ 0
Middleware	\$9,059,040	\$ 2,264,760
	<b>\$9,896,877</b>	<b>\$ 6,331,668</b>

**Savings**

**\$394,469**

**\$979,470**

**\$3,565,210**

\* LinuxONE LT1

\*\* RH OCP is included in the Cloud Pak for Data

Monthly 3 years

# Red Hat OpenShift Soft Bundle




# 1 Red Hat OpenShift's strength in completeness and depth of its platform resonate with customers

## Attribute

## Red Hat OpenShift position

## Customer quotes

Completeness and depth of platform

Pre-certified capabilities & workloads on the Platform 	Data & AI	
	App Hosting	
	Integrations	
	Automation	
PaaS layer 	Development & Deployment	Flexible Development
		Consistent Deployment
	Operations	Multi-cloud Mgmt.
		Automation
Day 2 Operations		
Security layer	Encryption	
	Orchestration	
	IAM	
	Monitoring / Logging	
Infrastructure 	Core Operating System	
	Container / VM Orchestration	
	Physical Infrastructure	

“One of the major selling points with OpenShift is the **micro-segmentation of security architecture**...we’re achieving more security that’s more targeted, with less involvement from our own security team, who don’t understand container security”

“Other platforms like GKE are getting there in terms of functionality, but they’re still **experimenting with large enterprise tools**; they don’t have the **reliability** of an OpenShift or Tanzu”

“OpenShift has an **in-place upgrade for clusters**, which is great – you don’t need to do an entire cluster outage to upgrade”

“OpenShift technical features have everything in working order with **minimal IT footprint required from us**”

# Buying the IFLs for running Red Hat OpenShift

## If you are:

- adding incremental IFL cores to an existing IBM z14<sup>®</sup>, IBM z15<sup>™</sup>, LinuxONE III, LinuxONE Rockhopper II, or LinuxONE Emperor II
- purchasing a new z15 or LinuxONE III build with Max21 or higher

## and:

- buying a minimum of 6 IFL cores per cluster (you may have multiple clusters), and
- the 3 Red Hat OpenShift control plane node IFL cores are ONLY running Red Hat OpenShift (enforced with T's & C's)

## Then:

**Three IFL cores per cluster running Red Hat OpenShift are free of charge.**

**The other IFL cores running in the same cluster are sold at market value.**

## Notes:

- For incremental IFLs, first-time activated IFLs get 1-year HW maintenance included; beyond a year, standard TSS rates in geo and/or per customer will apply.
- For new z15 or LinuxONE III builds with 10 IFLs or more being activated in a Max21 or larger, TSS will apply a deeper discount for the three free IFLs provided appropriate confirmation for use with Red Hat OpenShift.
- If you shift the IFLs from Red Hat OpenShift to run other workloads, you will be required to pay for the IFLs that you got for free.

# Red Hat OpenShift Soft Bundle for IBM Z and LinuxONE

KVM z/VM

New build

Add to existing


<b>Red Hat OpenShift</b> (for 6 IFLs)	<p>No charge for Red Hat OpenShift control plane nodes.            Bastion node included with Red Hat OpenShift Stock Keeping Unit (SKU) for use with Red Hat OpenShift only.            Minimum of 3 Red Hat OpenShift compute nodes at <b>\$2K / IFL / year.</b> <sup>(1)</sup></p>
<b>KVM</b> (for 6 IFLs)	<p><b>Included</b> with Red Hat OpenShift SKU, and for use with Red Hat OpenShift only.</p>
<b>IBM Cloud Infrastructure Center</b> (for 6 IFLs)	<p>Can be added at approved IBM Z or LinuxONE prices.</p>
<b>1-year Hardware Warranty</b>	<p><b>Included</b> for the first year. Maintenance for years 2-3 is incremental cost at approved IBM Z or LinuxONE prices.</p>
<b>IBM z15 or LinuxONE III with 6 IFLs and 384 GB RAM</b>	<p><b>Buy 6 IFLs, Pay for 3</b> <sup>(2)</sup>            A special price is available when buying a z15 T01, z15 T02 Max21 or higher, LinuxONE III T01 or LinuxONE III LT2 Max21 or higher when purchased with Red Hat OpenShift. The system is configured to run 1 Red Hat OpenShift cluster with 6 active IFLs. Additional IFLs and memory may be purchased at market rates.</p>

Optional features include:

- IBM WebSphere® Hybrid Edition
- Red Hat Enterprise Linux
- Red Hat Runtimes (including JBoss® App Server, Quarkus)

<sup>(1)</sup> Red Hat OpenShift may be ordered directly from Red Hat (use this [Red Hat seller lookup tool](#) or contact your geo Synergy office) or via ESW / CFSW / ShopZ which does not require engaging Red Hat sellers

<sup>(2)</sup> The 3 IFLs running the control plane nodes are free of charge.



# Red Hat OpenShift Soft Bundle for IBM Z and LinuxONE

KVM z/VM

New build

Add to existing


<b>Red Hat OpenShift</b> (for 6 IFLs)	No charge for Red Hat OpenShift control plane nodes. Bastion node included with Red Hat OpenShift Stock Keeping Unit (SKU) for use with Red Hat OpenShift only. Minimum of 3 Red Hat OpenShift compute nodes at <b>\$2K / IFL / year.</b> <sup>(1)</sup>
z/VM + Ops Mgr + Cloud Infrastructure Center <sup>(3)</sup> (for 6 IFLs)	Can be added at approved IBM Z or LinuxONE prices.
1-year Hardware Warranty	<b>Included</b> for the first year. Maintenance for years 2-3 is incremental cost at approved IBM Z or LinuxONE prices.
IBM z15 or LinuxONE III with 6 IFLs and 384 GB RAM	<b>Buy 6 IFLs, Pay for 3</b> <sup>(2)</sup> A special price is available when buying a z15 T01, z15 T02 Max21 or higher, LinuxONE III T01 or LinuxONE III LT2 Max21 or higher when purchased with Red Hat OpenShift. The system is configured to run 1 Red Hat OpenShift cluster with 6 active IFLs. Additional IFLs may be purchased at market rates.

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<sup>(3)</sup> Price includes z/VM 7.2 + RACF Security Server feature + DirMaint feature + Performance Toolkit for VM feature + Cloud Infrastructure Center + Ops Mgr (OTC and 1 year S&S must be prepaid). Features can be bought together or separately.

# Red Hat OpenShift Soft Bundle for IBM Z and LinuxONE

KVM z/VM

New build

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	<input type="checkbox"/>	<input type="checkbox"/>
	<input checked="" type="checkbox"/>	<input type="checkbox"/>

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1-year Hardware Warranty	<b>Included</b> for the first year. Maintenance for years 2-3 is incremental cost at approved IBM Z or LinuxONE prices.
6 IFLs (and 384 GB RAM)	<b>Buy 6 IFLs, Pay for 3</b> <sup>(2)</sup> This special price is only available when adding 6 IFLs and 384 GB memory (microcode only) to an existing z14, z14 ZR1, z15 T01, z15 T02, LinuxONE Emperor II, LinuxONE Rockhopper II, LinuxONE III LT1 or LinuxONE III LT2 when purchased with Red Hat OpenShift. Memory may be purchased at approved IBM Z or LinuxONE prices.

Optional features include:

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- Red Hat Enterprise Linux
- Red Hat Runtimes (including JBoss® App Server, Quarkus)

<sup>(1)</sup> Red Hat OpenShift may be ordered directly from Red Hat (use this [Red Hat seller lookup tool](#) or contact your geo Synergy office) or via ESW / CFSW / ShopZ which does not require engaging Red Hat sellers

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# Red Hat OpenShift Soft Bundle for IBM Z and LinuxONE

	KVM z/VM	
New build	<input type="checkbox"/>	<input type="checkbox"/>
Add to existing	<input type="checkbox"/>	<input checked="" type="checkbox"/>

Red Hat OpenShift (for 6 IFLs)	No charge for Red Hat OpenShift control plane nodes. Bastion node included with Red Hat OpenShift Stock Keeping Unit (SKU) for use with Red Hat OpenShift only. Minimum of 3 Red Hat OpenShift compute nodes at <b>\$2K / IFL / year.</b> <sup>(1)</sup>
z/VM + Ops Mgr + Cloud Infrastructure Center <sup>(3)</sup> (for 6 IFLs)	Can be added at approved IBM Z or LinuxONE prices.
1-year Hardware Warranty	<b>Included</b> for the first year. Maintenance for years 2-3 is incremental cost at approved IBM Z or LinuxONE prices.
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# Try & Buy special pricing for Red Hat OpenShift

for z15, z14, LinuxONE III, LinuxONE Emperor II, and LinuxONE Rockhopper II

## Try

Up to 6 IFL cores and Red Hat  
OpenShift  
free for 90 days



Create a program that would loan a customer every-thing needed to run Red Hat OpenShift for a **90 days**:

- **1 to 6 IFLs** loaned *via microcode*
- **Activation of memory** that is already installed on the machine
- **Red Hat OpenShift 4.5** or newer
- **IBM Cloud Infrastructure Center**  
(PIDs: OTC: 5635-017; S&S: 5635-018)
- *Hypervisor*: **IBM z/VM or Red Hat KVM**
  - z/VM 7.2 + RACF Security Server feature + DirMaint feature + Performance Toolkit for z/VM feature (PIDs: OTC: 5741-A09; S&S: 5741-SNS + Ops Mgr: 5697-J10)
  - Note: Red Hat KVM is included with the Red Hat OpenShift SKU for use with Red Hat OpenShift only



## Buy

Purchase 6 or more IFL cores per cluster running Red Hat OpenShift, and get the first 3 IFLs cores at no charge and the remaining at market rates

# Links

## ***Mainline Blogs***

<https://mainline.com/blog-linuxone-express-server/>

<https://mainline.com/blog-red-hat-openshift-on-linuxone-and-ibm-z>

<https://mainline.com/benefits-of-ibm-z-for-private-cloud/>

## ***Red Hat OpenShift Container Platform (OCP)***

OCP 4.7 Release Notes: [https://docs.openshift.com/container-platform/4.7/release\\_notes/ocp-4-7-release-notes.html](https://docs.openshift.com/container-platform/4.7/release_notes/ocp-4-7-release-notes.html)

OCP 4.7 Installation Notes for KVM: [https://docs.openshift.com/container-platform/4.7/installing/installing\\_ibm\\_z/installing-ibm-z-kvm.html](https://docs.openshift.com/container-platform/4.7/installing/installing_ibm_z/installing-ibm-z-kvm.html)

Building multi-arch containers: <https://developer.ibm.com/components/cloud-native-dev-tools-ibmz/tutorials/multi-architecture-cri-o-container-imagesfor-re>

Reference Architecture: <http://public.dhe.ibm.com/software/dw/linux390/docu/RHOCP-reference-architecture.pdf>

## ***Kubernetes management with Rancher***

[https://more.suse.com/Mainline\\_Rancher\\_Dummies\\_Guide\\_Download.html](https://more.suse.com/Mainline_Rancher_Dummies_Guide_Download.html)

# Questions?

# Mainline

The Technology Partner for Business Results