

IBM Z running Red Hat OpenShift Container Platform

The cloud platform you want, with the privacy and security you need

Highlights

- Privacy and security
 - Co-location efficiencies
 - Resiliency and availability
 - Scalability and agility
 - Economy
-

The Red Hat® OpenShift® Container Platform on IBM Z® empowers your organization to integrate and modernize your applications with great agility through integrated tooling and a secure and resilient foundation for cloud-native development and cloud deployment on IBM Z.

Red Hat OpenShift is a trusted Kubernetes enterprise platform that supports, similar to IBM Cloud Paks®, modern, hybrid-cloud application development and a consistent foundation for applications anywhere across your enterprise.

IBM Z

With IBM Z technology as an infrastructure cornerstone of your hybrid cloud approach, you get the power to optimize digital services delivery and accelerate business innovation.

Privacy and security

“With the IBM Z server handling all the encryption, I can rest assured that all of our customer data is safe, without the need for any developer input on the application layer – which makes my life a lot easier,” banking client.

IBM Z is designed to prevent security threats and protect data across a hybrid cloud environment with certified multitenant workload isolation as well as transparent, pervasive encryption with optimized performance.

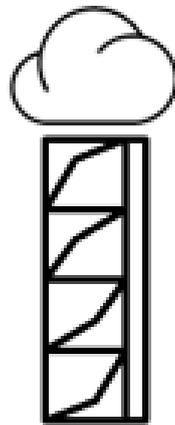
IBM Z protects the integrity and confidentiality of data with Crypto Express adapters (Hardware Security Modules)

designed to meet the strong security requirements of Federal Information Processing Standards (FIPS) 140-2 Level 4.

As well, data is encrypted when written to the Linux® etcd directory, including Kubernetes secrets. IBM Secure Execution provides a trusted execution environment (TEE), and IBM Hyper Protect Data Controller (formerly IBM Data Privacy Passports) provides data protection across hybrid cloud.

Bottom line: the unique combination of the IBM Z cryptographic hardware plus Red Hat OpenShift container security creates a highly differentiated, security-rich solution.

*“I need cloud in
my data center!”*



Modernize and deploy cloud on IBM Z

Co-location efficiencies

“The bank needed to increase their competitive business offerings by extending and modernizing integration with existing assets while optimizing SLAs and minimizing risk,” banking client.

Co-locating Red Hat OpenShift workloads and IBM Cloud Paks side-by-side with IBM z/OS®, Linux, IBM z/VSE®, or IBM z/TPF workloads on a physical IBM Z server, benefits not only from great performance and operational efficiency, but also leverages investments in existing assets. Cloud-native applications can be located close to existing workloads to improve throughput and reduce latency, empowering organizations to integrate and modernize without disrupting current services as they take their cloud-native journey.

An IBM internal study demonstrated: Run an OLTP workload on Red Hat OpenShift Container Platform 4.4 with up to 4.7x lower latency co-located to the used database on IBM z15™ T01 using a HiperSocket™ connection versus on compared x86 platform using a 10 Gb TCP/IP connection to the same database.¹

Resiliency and availability

“The reliability of IBM Z is outstanding—in the 20 years I’ve worked with the IBM Z platform, we’ve never experienced an hour of unplanned downtime,” government client.

The IBM Z enterprise platform is designed for resiliency and availability, meaning the ability to adapt to events, either planned or unplanned, while keeping services and operations running. IBM Z servers help to avoid or recover from failures to minimize business disruptions, realized through component reliability, redundancy and features that assist in providing fault avoidance and tolerance, as well as permitting concurrent maintenance and repair.

Scalability and agility

“It’s easy to expand the IBM Z environment as and when we want, giving us the flexibility to act fast on growth opportunities,” insurance client.

IBM Z can scale out to millions of containers on a single system for non-disruptive vertical and horizontal growth to accommodate workload increases on demand. This is provided with the immense resource capabilities of an IBM Z system in combination with the IBM z/VM® and KVM virtualization technologies. Resources can be shared and prioritized dynamically and efficiently between workloads, providing agility by delivering them whenever and wherever they are needed.

IBM Z allows for high workload density, with up to thousands of virtual servers on a z15, usually resulting in fewer components and cables, lower management effort, and fewer software licenses compared to competitive platforms. As well, IBM Z servers provide the ability to grow inside an existing server, simply by adding system resources, without affecting the running business.

Economy

“With the IBM Z mainframe, we can keep our TCO low. The simplicity and reliability of the IBM Z platform continue to mean it is the right choice for us,” computer services client.

Considering all the aspects mentioned above – *Privacy and security, Co-location efficiencies, Resiliency and availability, Scalability and agility* – it seems obvious that they can also provide an *economic* advantage when running Red Hat OpenShift on IBM Z compared to other platforms. The potential cost advantages are based on the total capacity of IBM Z servers, the integrated IBM Z system design, providing high performance and throughput, the centralized operation, enabling low management and administration effort, and the built-in features for security and continuity.

A hybrid cloud platform deployed on IBM Z can provide benefits that span across operations, development, IT cost optimization, and business growth.



Why IBM?

As you transform your business and differentiate yourself in a trust economy, IBM remains your partner.

We have the total expertise in systems, software, delivery, and financing to help you create a secure and intelligent foundation for your cloud on IBM Z.

Our experts can help you design, configure, and implement Red Hat OpenShift, as well as IBM Cloud Paks, on IBM Z not only as your on-premises cloud as part of your hybrid cloud approach, but always optimized for your needs.

For more information

To learn more about IBM Z and Red Hat OpenShift, please contact your IBM representative, your Red Hat representative, or IBM Business Partner, or visit:

- ibm.com/products/z15
- redhat.com/openshift

¹ IBM internal study designed to replicate banking OLTP workload usage in the marketplace deployed on OpenShift Container Platform (OCP) 4.4.12 on z15 T01 using z/VM versus on compared x86 platform using KVM accessing the same PostgreSQL 12 database running in a z15 T01 LPAR. 3 OLTP workload instances were run in parallel driven remotely from JMeter 5.2.1 with 16 parallel threads. Results may vary. z15 T01 configuration: The PostgreSQL database ran in a LPAR with 12 dedicated IFLs, 256 GB memory, 1TB FlashSystem 900 storage, RHEL 7.7 (SMT mode). The OCP Master and Worker nodes ran on z/VM 7.1 in a LPAR with 30 dedicated IFLs, 448 GB memory, DASD storage, and HiperSocket connection to the PostgreSQL LPAR. x86 configuration: The OCP Master and Worker nodes ran on KVM on RHEL 8.2 on 30 Skylake Intel® Xeon® Gold CPU @ 2.30GHz with Hyperthreading turned on, 448 GB memory, RAID5 local SSD storage, and 10Gbit Ethernet connection to the PostgreSQL LPAR.

© Copyright IBM Corporation 2021.
IBM Corporation
New Orchard Road
Armonk, NY 10504
U.S.A.
10/21

IBM, the IBM logo, ibm.com, IBM Cloud Pak, IBM Z, HiperSockets, z15, z/OS, z/VM and z/VSE are trademarks of International Business Machines Corp., registered in many jurisdictions worldwide. Other product and service names might be trademarks of IBM or other companies. A current list of IBM trademarks is available on the Web at <https://www.ibm.com/legal/us/en/copytrade.shtml>, and select third party trademarks that might be referenced in this document is available at https://www.ibm.com/legal/us/en/copytrade.shtml#section_4.

This document contains information pertaining to the following IBM products which are trademarks and/or registered trademarks of IBM Corporation

Red Hat®, JBoss®, OpenShift®, Fedora®, Hibernate®, Ansible®, CloudForms®, RHCA®, RHCE®, RHCSA®, Ceph®, and Gluster® are trademarks or registered trademarks of Red Hat, Inc. or its subsidiaries in the United States and other countries.

The registered trademark Linux® is used pursuant to a sublicense from the Linux Foundation, the exclusive licensee of Linus Torvalds, owner of the mark on a world-wide basis.

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