



IBM Cloud Infrastructure Center

Modernize for hybrid cloud and IT efficiency –
empower how you deploy, manage, and integrate
infrastructure as a service



IT organizations worldwide have turned to the agility of hybrid cloud solutions to ease their digital transformation journey for all types of noncontainerized and containerized workloads. They are shifting workloads to a hybrid cloud approach that blends an on-premises infrastructure with private and public cloud models.

Also, IT organizations focus on IT optimization and efficiency to improve the operation and lifecycle management of the infrastructure.

The IBM Z® and IBM® LinuxONE platforms are designed to accelerate modernization and efficiency as you integrate IBM Z and IBM® LinuxONE seamlessly into your hybrid cloud, especially the IBM z16™ and IBM® LinuxONE 4 families.

With IBM Cloud Infrastructure Center, you get an infrastructure management solution in support of infrastructure-as-a-service computing.

Cloud Infrastructure Center provides a ready-to-use solution for:

- Lifecycle management of the infrastructure, including on-premises deployments of virtual machines based on IBM z/VM® and Red Hat® KVM.
- Deployment of Linux® images, which can include non-containerized workloads, such as MongoDB.
- Support to simplify the deployment of Red Hat OpenShift® Container Platform¹ clusters.
- User consumption of services via a self-service portal.
- Integration with cloud management tools to provision and orchestrate workloads, using OpenStack-compatible APIs to interact with IBM Cloud Paks®, Red Hat Ansible®, Terraform, VMware vRealize, and others.

Cloud Infrastructure Center is based on industry standards and uses common skills for cloud management.

Highlights

- Simple lifecycle management of virtual machines
- Fast Linux image deployment including noncontainerized workloads
- Simplified deployment of Red Hat OpenShift clusters
- OpenStack based integration with infrastructure and cloud management tools
- Consistent user experience

“IBM Cloud Infrastructure Center allows us to substantially improve our infrastructure management and reduce cost & complexity to manage from simple to complex environments.” ²

Infrastructure as a Service

Infrastructure-as-a-Service, referred to as ‘IaaS’, delivers fundamental compute, network, and storage resources to consumers on-demand. IaaS enables you to instantiate and decommit, scale and shrink resources on an as-needed basis.

Cloud infrastructure on IBM Z and IBM LinuxONE

Managing the infrastructure as-a-service helps to deploy the infrastructure and enables the integration into a hybrid cloud model across the enterprise. The workloads can be noncontainerized and containerized on existing infrastructure on IBM Z and IBM® LinuxONE.

The IBM Z and IBM® LinuxONE platforms are designed to empower developers with the agility to modernize existing workloads, accelerate cloud-native development, and integrate these workloads with digital services across hybrid cloud.

Operational efficiency, low latency, high throughput and improved security is provided, when workloads are co-located on IBM Z and IBM® LinuxONE³ running on IBM z/OS®, Linux, or Red Hat OpenShift.

With the industry first integrated on chip AI accelerator, IBM z16 and IBM® LinuxONE 4, deliver latency-optimized inferencing, designed to enable clients to analyze real-time transactions, at scale.⁴

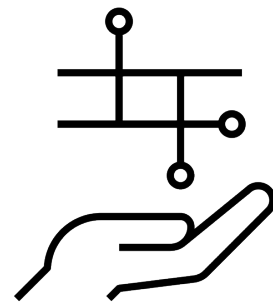
IBM Cloud Infrastructure Center capabilities

Cloud Infrastructure Center is a ready-to-use infrastructure management solution, helping to manage, automate, and integrate the IBM Z and IBM® LinuxONE based infrastructure.

Infrastructure Management

IBM Cloud Infrastructure Center can manage the full lifecycle of virtual machines that are based on IBM z/VM or Red Hat KVM, and their associated storage and network bindings, meaning that virtual machines can be created, started, stopped, restarted, resized, captured, and deleted. Also, live migration of the virtual machines is supported.

“I manage my infrastructure as a service.”



Modernize for hybrid cloud and IT efficiency

The full lifecycle includes managing the storage, such as carving/deleting volumes from the storage subsystems along with fabric management, and the management of network resources, such as IP allocation or network setup.

There are more features described in the documentation, in support to manage the full lifecycle of the virtual infrastructure with images, either based on a Linux distribution from Canonical, Red Hat, and SUSE that can include noncontainerized workloads, or Red Hat OpenShift clusters.

Automation

Cloud Infrastructure Center enables administrators to capture and maintain a library of virtual machine images to quickly deploy a virtual machine environment. They can launch a stored image from the library, instead of manually recreating a virtual machine image, as well, they can move virtual machines to available systems, thereby expediting deployment and improving productivity.

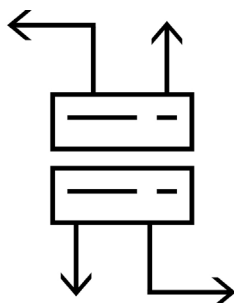
Cloud Infrastructure Center comes with a self-service portal that provides users easy access to exploit the infrastructure services. The self-service portal enables the automation of the infrastructure management, allowing the administrator to define infrastructure services that can be invoked by users in an automated manner with an industry-standard user experience and without worrying about any infrastructure details and technical skills.

To improve efficiency with automation, Cloud Infrastructure Center provides an environment checker, a diagnosis tool, and an upgrade validation tool. The environment checker helps to verify resources, versions, and the service status for the management and compute nodes. The diagnose tool helps users to collect diagnostic data, for example information about the product, operating system, configuration, database, message queue, service status, error logs, and more. The upgrade validation tool provides pre-upgrade and post-upgrade validation, helping the administrator to validate whether there are potential issues before and after the upgrade.

Integration with cloud management tools

Cloud Infrastructure Center provides scalable IaaS management to connect, provision, and orchestrate virtual machine instances, running Linux based noncontainerized or Red Hat OpenShift based containerized workloads on the IBM Z and IBM® LinuxONE platforms.

With its built-in OpenStack compatible APIs, Cloud Infrastructure Center is based on the de facto standard for vendor-agnostic IaaS management, enabling an easy integration to infrastructure and cloud management tools, such as IBM Cloud Paks, Red Hat tools, Terraform, or VMware vRealize.



Together, the integration of Cloud Infrastructure Center and the infrastructure and cloud management tools can simplify the lifecycle management of the virtual machines across the enterprise and can provide a unified hybrid cloud with a single pane of glass for the IBM Z and IBM® LinuxONE platforms. The ability to use common skill, helps to increase the flexibility and to improve the operational efficiency.

Popular use cases of IBM Cloud Infrastructure Center

Simplified experience with virtualization on IBM Z and IBM® LinuxONE

The capabilities of Cloud Infrastructure Center in ‘infrastructure management’, ‘automated deployment’, and the ‘integration of IBM Z and IBM® LinuxONE into enterprise cloud computing’ are all based on the vendor-agnostic OpenStack technology for IaaS management and deliver a major step towards simplifying the management of the infrastructure.

Providing a consistent, industry-standard user experience to manage the lifecycle of virtual infrastructure on IBM Z and IBM® LinuxONE platforms, helps users to do their first deployments by using existing skills and tooling.

Infrastructure as a service management for service providers

Cloud Infrastructure Center can serve as the management system for the virtualized infrastructure, supporting several types of cloud computing service models. With the built-in OpenStack-compatible APIs, Cloud Infrastructure Center can satisfy a wide range of infrastructure management demands and can integrate various components to automate infrastructure services. This can result in reduced cost and complexity, while delivering predictability and repeatability in a secure, multitenant safe way.

Accurate charging of the allocated and consumed resources to each client is important. Cloud Infrastructure Center, integrated with the IBM Cloud Pak for Watson™ AIOps, enables metering of the resources consumed by the virtual machines that are managed by Cloud Infrastructure Center.

Deployment of on-premises database-as-a-service

As described above, Cloud Infrastructure Center can manage the virtual infrastructure, which includes the deployment of Linux based images with noncontainerized workloads. Using this capability, an administrator can build an image that consists of a Linux distribution and a database. This image can be deployed by users via a created service on IBM Z and IBM® LinuxONE, and thus it is a database-as-a-service.

The administrator can build multiple variations of such a database-as-a-service, using different Linux distributions, different data bases - MongoDB is an example, and different configuration settings. Each variation can be saved, and the collection can be offered to the users as services in the service portal.

The thought behind it: create once and deploy quickly and easily.

Deployment support of Red Hat OpenShift clusters

Cloud Infrastructure Center supports the simplification and automation of the deployment of Red Hat OpenShift Container Platform cluster, and the management of the virtual machines used for the deployment of the cluster.

A Red Hat OpenShift image can be deployed into a virtual machine, based on z/VM or Red Hat KVM, like any other image.

Cloud Infrastructure Center can ease an automated Red Hat OpenShift cluster deployment in a user provisioned infrastructure model (UPI) via Red Hat Ansible or Terraform.

IBM Cloud Infrastructure Center 1.2.2 enhancements

- Storage related:
 - Advanced scheduler for volume creation with IBM Storage FlashSystem™ FC host awareness
 - Advanced scheduler for boot-from-volume with FC physical connectivity and IBM Storage FlashSystem FC host awareness
 - Support the setting of blocked storage providers or allowed storage providers per compute node
 - Volume protection related enhancements for IBM Storage FlashSystem, including add volume protect health check
 - Boot From Volume enhancement: only provide FCP device(s) number to rd.zfcp in IPL parameter for Red Hat Enterprise Linux (RHEL) 8 and 9 virtual machine
- Support to attach a NIC to given virtual machine on the fly or detach a NIC from the virtual machine.
- New for z/VM:
 - Support to indicate the max memory during deployment for a z/VM virtual machine.
- Support to use a VDISK as swap disk for deployment of a z/VM virtual machine, optionally.
- New for KVM:
 - Support to attach a volume with the multi-attach capability to multiple KVM virtual machines.
 - RoCE card support as KVM virtual machine's uplink port through macvtap and workload spread across multiple RoCE cards.
- Added 2 new roles: the security administrator and the network administrator for managing the security and network, respectively.
- SMTP TLS client certificate enablement: support the input of the SMTP TLS client certificate during the SMTP setup.

- User experience improvements
 - Control the VM startup process to avoid a startup storm that leads to instability of the hypervisor
 - Display all virtual machines from all projects and operate those virtual machines
 - Export virtual machine information from UI page
 - Operational enhancement including RAS/IVP/service applied processes
 - Various updates in backup/restore and upgrade processes

1.2.2 software and hardware requirements

- IBM Cloud Infrastructure Center 1.2.2 supports any of the following software⁴:
 - As a managed hypervisor one of the following:
 - z/VM 7.3 or z/VM 7.2
 - KVM as part of Red Hat Enterprise Linux (RHEL) 8.6 or 8.8
 - As a host environment on z/VM and Red Hat KVM one of the following:
 - RHEL 8.6 or 8.8
 - As guest operating system instance on z/VM any of the following:
 - Canonical Ubuntu 20.04 or 22.04
 - RHEL 7.9, 8.2-8.9, 9.0-9.3
 - Red Hat CoreOS 4.12, 4.13, 4.14 or 4.15 as part of Red Hat OpenShift
 - SUSE Linux Enterprise Server 15 SP2-SP4
 - As guest operating system instance on Red Hat KVM any of the following:
 - RHEL 7.9, 8.2-8.9, 9.0-9.3
 - Red Hat CoreOS 4.12, 4.13, 4.14, or 4.15 as part of Red Hat OpenShift
- IBM Cloud Infrastructure Center 1.2.2 supports any of the following hardware:
 - IBM z16, IBM z15™, IBM z14*, and IBM® LinuxONE 4, IBM® LinuxONE III, IBM® LinuxONE II

Why IBM?

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

With IBM Z and IBM® LinuxONE we built the powerful and secure platform for business, let us build the future of yours. We have the total expertise in cloud, systems, software, delivery, and financing to help you create a secure, open, and intelligent foundation for you.

Our experts can help you configure, design, and implement the IBM Cloud Infrastructure Center optimized for your needs.

For more information

IBM Cloud Infrastructure Center is designed to improve administrator productivity, providing IaaS management for your on-premises environment on IBM Z and IBM® LinuxONE, and the integration of IBM Z and IBM® LinuxONE into infrastructure and cloud management tools. Cloud Infrastructure Center fits perfectly in your hybrid cloud approach.

To learn more about IBM Cloud Infrastructure Center, please contact your IBM representative, your Red Hat representative, or IBM Business Partner.

Learn more:

[IBM Cloud Infrastructure Center](#)

[IBM Z](#)

[IBM LinuxONE](#)

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New Orchard Road
Armonk, NY 10504

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1. Coming as part of Red Hat OpenShift Container Platform, Red Hat Enterprise Linux CoreOS is deployed.
2. IBM CIO Office integrates IBM Z into the hybrid cloud, www.ibm.com/blogs/systems/ibm-cio-office-integrates-ibm-z-into-the-hybrid-cloud
3. IBM z/OS is not supported on IBM® LinuxONE
4. Cited by a third-party industry analyst.
5. Refer to the individual IBM hardware announcements for the certified Linux distributions and Red Hat OpenShift Container Platform versions.