Red Hat OpenShift

Installation

Installation Paradigms

OPENSHIFT CONTAINER PLATFORM

HOSTED OPENSHIFT

Full Stack Automated (IPI)

Simplified opinionated "Best Practices" for cluster provisioning

Fully automated installation and updates including host container OS.

Red Hat Enterprise Linux CoreOS

Pre-existing Infrastructure (UPI)

Customer managed resources & infrastructure provisioning

Plug into existing DNS and security boundaries

Red Hat Enterprise Linux CoreOS

Red Hat Enterprise Linux

Red Hat OpenShift on IBM Cloud *

Deploy directly from the IBM Cloud console. An IBM service, master nodes are managed by IBM Cloud engineers.

Azure Red Hat OpenShift **

Deploy directly from the Azure console. A MSFT service, jointly managed by Red Hat and Microsoft

OpenShift Dedicated **

Get a powerful cluster, fully managed by Red Hat engineers and support; a Red Hat service.

* Based on OCP v4.3 GA slated for March; public beta available now

** Entitlements of OCP obtained through a Cloud Pak purchase are not transferable to these environments

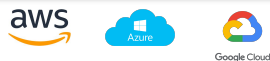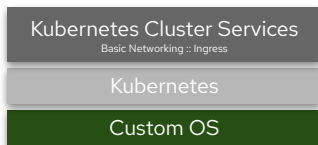**Red Hat**

xKS vs OCP vs. Managed OpenShift

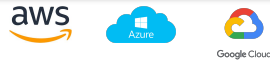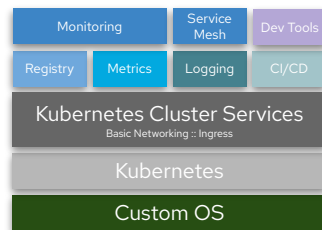## It's important to understand the apples to apples comparison
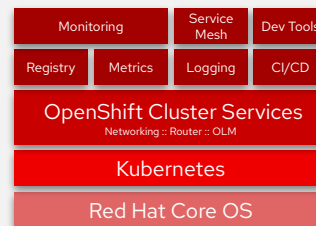

The Engine

The Parts

The Assembled Car

The Full Service

Monitoring	Service Mesh	Dev Tools
Registry	Metrics	Logging	CI/CD

Kubernetes Cluster Services
Basic Networking :: Ingress

Kubernetes

Custom OS

xKS

xKS PLUS "NATIVE" SERVICES

OPENSHIFT PLATFORM
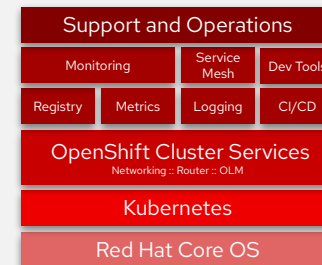
MANAGED OPENSHIFT PLATFORM

Support and Operations

| Monitoring | Service Mesh | Dev Tools |
| Registry | Metrics | Logging | CI/CD |

OpenShift Cluster Services
Networking :: Router :: OLM

Kubernetes

Red Hat Core OS

"Fully Managed"

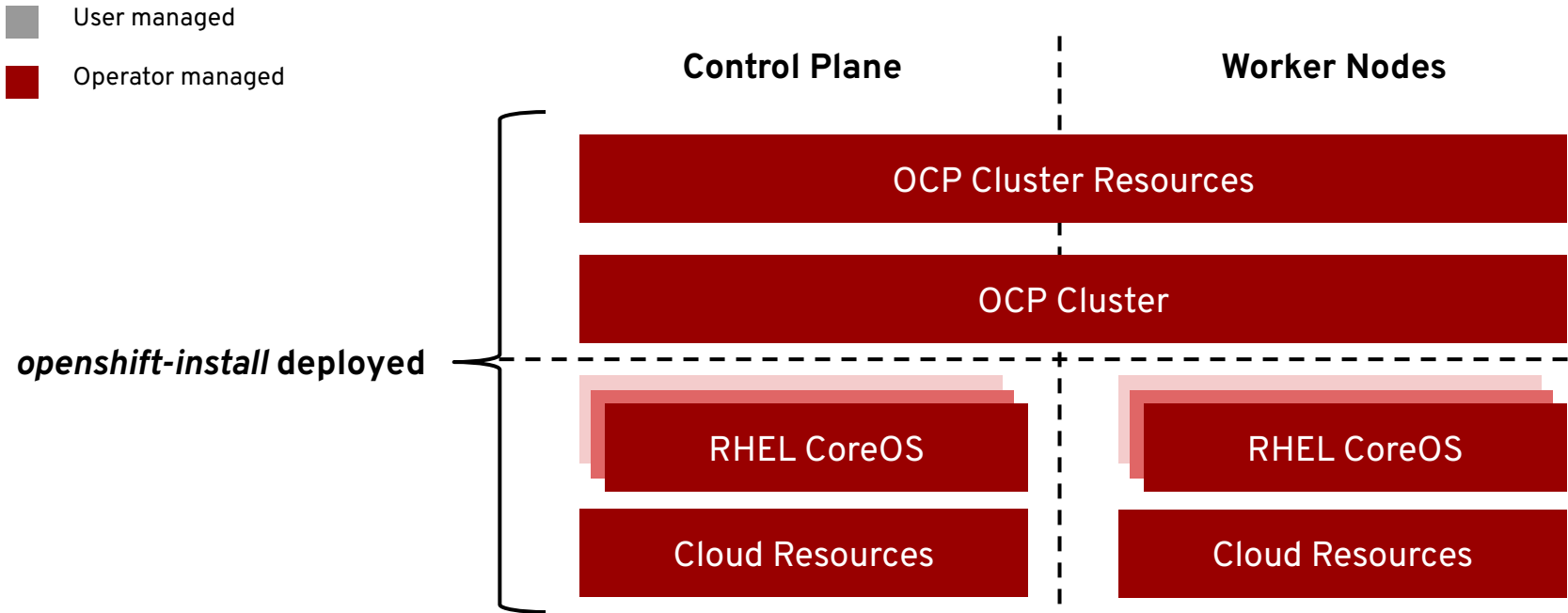Managed Kubernetes, application and data services delivered as a streamlined, consistent experience on multiple public clouds enables DevOps teams to deploy faster, simplify operations and focus on the business.

Applications/Services

Competitive differentiator → **You build and run customer apps**

Support and Operations

We manage →

Monitoring	Service Mesh	Dev Tools
Registry	Metrics	Logging	CI/CD

OpenShift Cluster Services
Networking :: Router :: OLM

Kubernetes

Red Hat Core OS

OpenShift Subscription

Infrastructure

Red Hat Site Reliability Engineers

- Provisioning, managing and upgrading platform

- Monitoring the core cluster infrastructure for security and availability

- Cluster services such as logging, metrics, monitoring, and cluster portal

- Also included is Premium (24x7) Red Hat support

Red Hat

OpenShift 4 installation

Installer and user-provisioned infrastructure, bootstrap, and more

Red Hat

Full-stack Automated Installation (aka IPI)

User managed

Operator managed

Control Plane

Worker Nodes

OCP Cluster Resources

OCP Cluster

openshift-install **deployed**

RHEL CoreOS

RHEL CoreOS

Cloud Resources

Cloud Resources

Full Stack Automated Deployments

Simplified Cluster Creation

Designed to easily provision a "best practices" OpenShift cluster

- New CLI-based installer with interactive guided workflow that allows for customization at each step
- Installer takes care of provisioning the underlying Infrastructure significantly reducing deployment complexity
- Leverages RHEL CoreOS for all node types enabling full stack automation of installation and updates of both platform and host OS content

Faster Install

The installer typically finishes within 30 minutes

- Only minimal user input needed with all non-essential install config options now handled by component operator CRD's
- See the OpenShift documentation for more details

```
$ ./openshift-install --dir ./demo create cluster
? SSH Public Key /Users/demo/.ssh/id_rsa.pub
? Platform aws
? Region us-west-2
? Base Domain example.com
? Cluster Name demo
? Pull Secret [? for help]
**********************************************************
INFO Creating cluster...
INFO Waiting up to 30m0s for the Kubernetes API...
INFO API v1.11.0+c69f926354 up
INFO Waiting up to 30m0s for the bootstrap-complete event...
INFO Destroying the bootstrap resources...
INFO Waiting up to 10m0s for the openshift-console route to be created...
INFO Install complete!
INFO Run 'export KUBECONFIG=<your working directory>/auth/kubeconfig' to
manage the cluster with 'oc', the OpenShift CLI.
INFO The cluster is ready when 'oc login -u kubeadmin -p <provided>'
succeeds (wait a few minutes).
INFO Access the OpenShift web-console here:
https://console-openshift-console.apps.demo.example.com
INFO Login to the console with user: kubeadmin, password: <provided>
```

Pre-existing Infrastructure Installation (aka UPI)
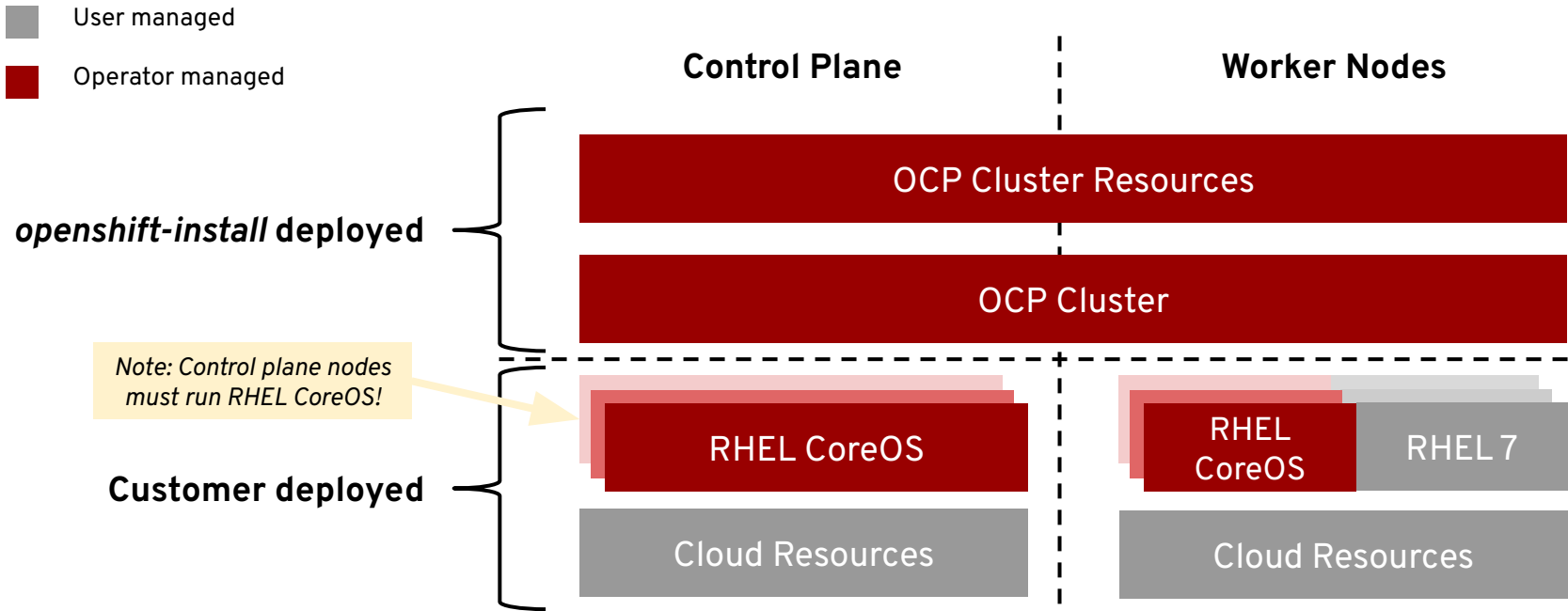
Comparison of Paradigms

	Full Stack Automation	Pre-existing Infrastructure
Build Network	Installer	User
Setup Load Balancers	Installer	User
Configure DNS	Installer	User
Hardware/VM Provisioning	Installer	User
OS Installation	Installer	User
Generate Ignition Configs	Installer	Installer
OS Support	Installer: RHEL CoreOS	User: RHEL CoreOS + RHEL 7
Node Provisioning / Autoscaling	Yes	Only for providers with OpenShift Machine API support

Red Hat

Azure Red Hat OpenShift

Azure Red Hat OpenShift

Red Hat | Microsoft

Jointly engineered, operated, and supported by Microsoft and Red Hat with an integrated support experience

Empower developers to innovate
Support for traditional, cloud native & serverless tools
Easily connect to hundreds of Azure services

Scale on-demand. Pay as you go
Scale as your application demand changes
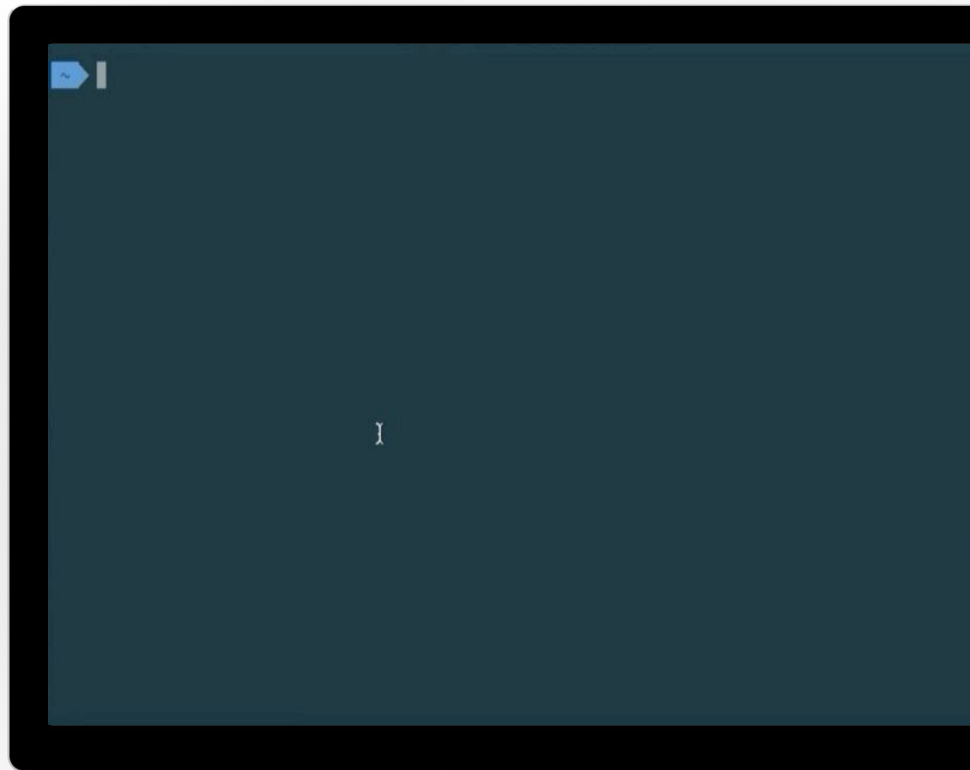Leverage your Azure monetary commits

Enterprise-grade operations, security, and compliance
SLA: 99.95%, 24*7 premium support
Compliant with PCI DSS, HITRUST, FedRAMP, SOC2 Type 2, ISO 27001, and HIPAA

Red Hat

Flexible, self-service deployment

Create fully managed OpenShift clusters
in minutes using az aro create

Highlights – Azure Red Hat OpenShift on OpenShift 4

Enhanced Features, Availability and Control

- **Full cluster admin** – Full cluster admin support for advanced customization

- **Private clusters / Express Route support** – Create fully managed clusters in a custom VNet with no public endpoints

- **Bring your own VNet** – Deploy OpenShift 4 based clusters into your own VNet

- **Cluster Autoscaling** – Automatically adjust the size of your cluster

- **Multi-AZ clusters** – Clusters automatically deploy across three availability zones

Operator Support

- **Operator/CRD support** – Support for Operators and Custom Resource Definitions

Improved Developer Productivity

- **Developer Productivity tools** – Service Mesh, CodeReady Workspaces, serverless etc.

- **Azure Portal Integration** – Easily view OpenShift clusters in the Azure web portal

Regulatory Compliance

- **Compliance Certifications:** PCI DSS, HiTrust, FedRAMP High, SOC 2, ISO 27001 (HIPAA coming soon)

Red Hat OpenShift Service on AWS

Red Hat OpenShift Service on AWS

Red Hat | a

Fully-managed Red Hat OpenShift service on AWS, jointly supported by both Red Hat and AWS

Clear path to hybrid cloud deployments

Delivers the production-ready Kubernetes that many enterprises already use on-premises today, simplifying the ability to shift workloads to the AWS public cloud as business needs dictate.

Empower developers to innovate

Give your team the focus and tools to accelerate the development process with familiar APIs, API management and existing Red Hat OpenShift tools for deployment in AWS

Flexible, consumption-based pricing

Scale as per your business needs and pay as you go with flexible pricing with an on-demand hourly or annual billing model.

Red Hat

ROSA Benefits

Native AWS Service

- Access on-demand from the AWS console
- AWS integrated experience for cluster creation and management
- Foundation based on RHEL, providing a stable and secure platform for hybrid deployments

Unified Bill

- Leverage your existing AWS commitment to use OpenShift
- Get a single unified bill from AWS for both OpenShift and AWS consumption

Joint Support

- Integrated support systems
- Contact Red hat or AWS support
- Built on Red Hat and AWS' decades of enterprise IT knowledge and experience

Integration with AWS Services

- Build containerized applications that integrate natively with the more than 170 AWS cloud-native services

Red Hat

Red Hat OpenShift Service on AWS

Amazon Red Hat OpenShift is located in the Amazon Console along with other container services and can access all AWS and OpenShift services

All services

DataSync

Networking & Content Delivery
VPC
CloudFront
Route 53
API Gateway
Direct Connect
AWS App Mesh
AWS Cloud Map
Global Accelerator ⬈

Developer Tools
CodeStar
CodeCommit
CodeArtifact
CodeBuild
CodeDeploy
CodePipeline
Cloud9
CloudShell
X-Ray
AWS FIS

Robotics
AWS RoboMaker

Amazon Grafana
Amazon Prometheus
AWS Proton

Media Services
Kinesis Video Streams
MediaConnect
MediaConvert
MediaLive
MediaPackage
MediaStore
MediaTailor
Elemental Appliances & Software
Amazon Interactive Video Service
Elastic Transcoder

AWS Data Exchange
AWS Glue
AWS Lake Formation
MSK
AWS Glue DataBrew

Security, Identity, & Compliance
IAM
Resource Access Manager
Cognito
Secrets Manager
GuardDuty
Inspector
Amazon Macie
AWS Single Sign-On
Certificate Manager
Key Management Service
CloudHSM
Directory Service
WAF & Shield
AWS Firewall Manager
Artifact
Security Hub
Detective
AWS Audit Manager
AWS Signer
AWS Network Firewall

End User Computing
WorkSpaces
AppStream 2.0
WorkLink

Internet of Things
IoT Core
FreeRTOS
IoT 1-Click
IoT Analytics
IoT Device Defender
IoT Device Management
IoT Events
IoT Greengrass
IoT SiteWise
IoT Things Graph

Game Development
Amazon GameLift

Containers
Elastic Container Registry
Elastic Container Service
Elastic Kubernetes Service
Red Hat OpenShift Service on AWS

Red Hat

Red Hat OpenShift Service on AWS

Enable ROSA directly from the console page

User Experience

```
[ ~]$ rosa describe cluster rosa-demo
Name:                    rosa-demo
DNS:                     rosa-demo.y4a3.p1.openshiftapps.com
ID:                      1gmvvosttfgln598vhb16sprct8ma0vo
External ID:             a0413f1a-edcf-4ac0-90c9-46ea0cf68e4d
AWS Account:             021212686670
API URL:                 https://api.rosa-demo.y4a3.p1.openshiftapps.com:6443
Console URL:             https://console-openshift-console.apps.rosa-demo.y4a3.p1.openshiftapps.com
Nodes:                   Master: 3, Infra: 2, Compute: 5
Region:                  us-east-1
State:                   ready
Channel Group:           stable
Created:                 Nov  2 2020 18:20:20 UTC
Details Page:            https://cloud.redhat.com/openshift/details/1gmvvosttfgln598vhb16sprct8ma0vo
```

Users can create and manage clusters using the *rosa* command line utility

Red Hat OpenShift Kubernetes Service on IBM Cloud

Red Hat OpenShift on IBM Cloud

Highly available, OpenShift clusters as-a-service on IBM Cloud, that leverage the enterprise security of IBM.

Fully Managed

Automated provisioning, installation and configuration of infrastructure, including compute, network and storage as well as automatic upgrades of components and 24x7 global SRE support and a 99.99% SLA

Resilient and Secure

Automatic multi-zone deployments with failure recovery, enterprise isolation including dedicated compute, bare metal servers and private clusters and optimized for compliance

Complete Platform

Easily integrate AI with Watson APIs to extend the power of your apps. Includes built-in services for monitoring, logging, load-balancing, storage and isolation to enable rapid delivery of apps, while leveraging 190+ IBM Cloud services.

User Experience
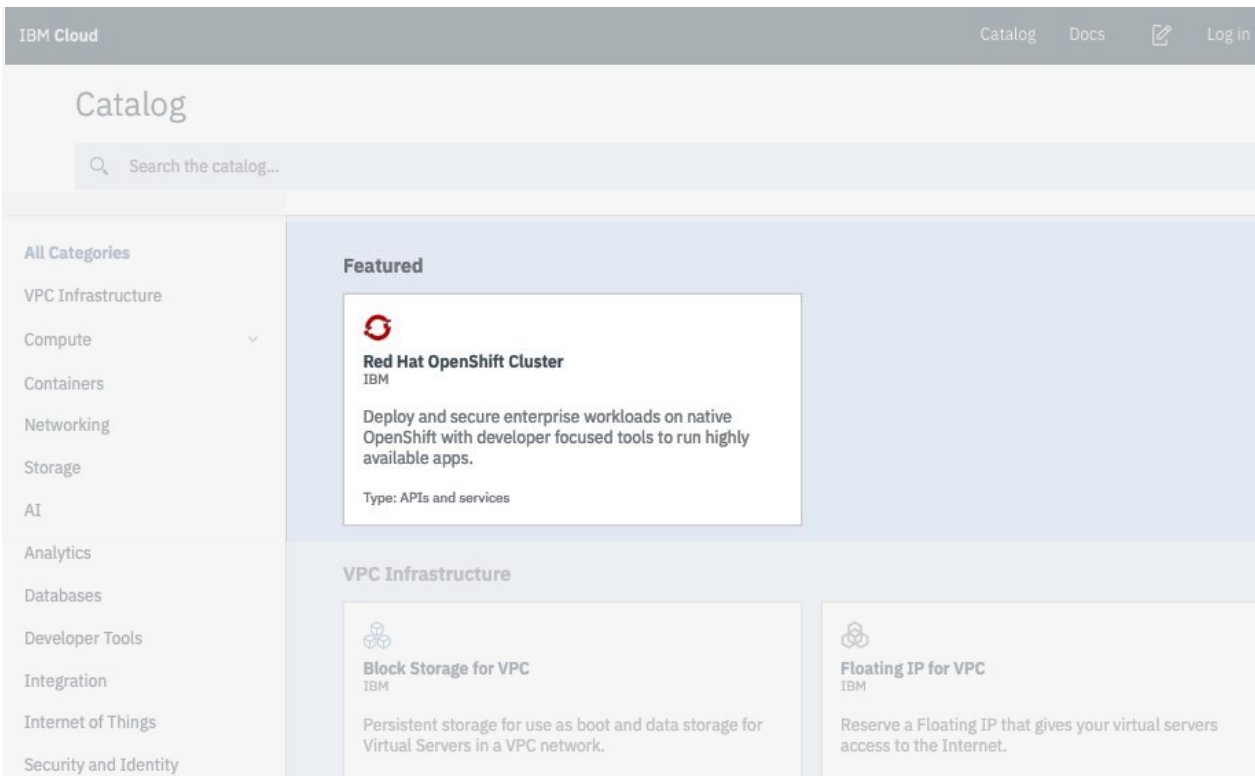
What is it?

- Public Cloud service for OpenShift Container Platform, a Kubernetes framework

- Button-click provisioning of RHEL clusters

- Automated ops, managed by expert IBMers

What does it do?

- Deploys secure clusters across the globe

- Orchestrates and scales containerized workloads

- Provides RH-native developer tools and dashboards

- Connects to hybrid workloads

Highlights - Red Hat OpenShift on IBM Cloud

- **Automated provisioning** and configuration of Infrastructure (compute, network and storage)

- Automated **installation and configuration of OpenShift,** including HA cross zone configuration

- **Automatic upgrades** of all components (operating system, OpenShift components, and in cluster services)

- **Security patch management** for OS and OpenShift

- Automatic f**ailure recovery** for OpenShift components and worker nodes

- Automatic **scaling** of OpenShift configuration

- **Automatic backups** of core OpenShift ETCD data

- **Built in integration with cloud platform** - monitoring, logging, KeyProtect, IAM, ActivityTracker, Storage, COS, Security Advisor, Service Catalog, Container Registry and Vulnerability Advisor

-

- **Built-in Security i**ncluding image signing, image deployment enforcement, and hardware trust

- **24/7 global Site Reliability Engineering (SRE)** team to maintain the health of the environment and help with OpenShift

- Global SRE has deep experience and skill in IBM Cloud Infrastructure, Kubernetes and OpenShift, resulting in much faster problem resolution

- **Automatic compliance** for your OpenShift environment (HIPAA, PCI, SOC2, ISO)

- Capacity expansion through a single click

- Automatic **multi-zone deployment** in MZRs, including integration with CIS to do cross zone traffic routing

- Automatic Operating System **performance tuning and security hardening**

- Built in Load Balancer, VPN, Proxy, Network edge nodes, Private Clusters and VPC capabilities

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