CON202

How bp gained flexibility and cost savings by migrating to ROSA

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AWS

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Red Hat

Agenda

Imagine a world . . .
What our customers tell us about their vision for the future of IT

Most are not there yet, but you're not alone
Most organizations face challenges on this journey

ROSA will help you get there faster
What is ROSA? How it can help customers realize that vision

It's not rocket science . . .
Learn from the progress and success of others who have done it
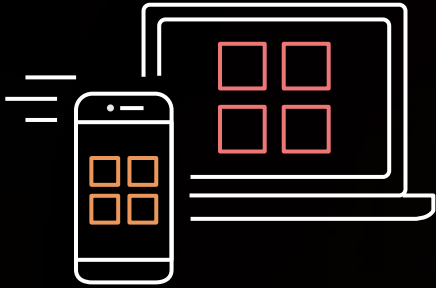
Where is ROSA heading?
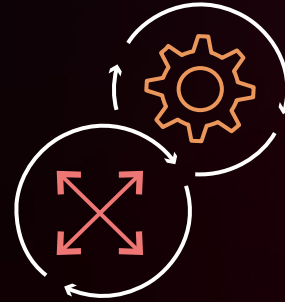
Q&A

Imagine a world . . .

What our customers ask for

Build applications, not infrastructure

Manage infrastructure to its requirements

Scale quickly and seamlessly

Security and isolation by design

What are customer requirements at scale ?

Run applications anywhere with operational consistency

| MANAGEMENT | PROVISIONING | OPERATIONS | GOVERNANCE | OBSERVABILITY |

| On premises | AWS Outposts | AWS Wavelength | AWS Local Zones | AWS Regions |

Cost savings and agility are the goal

BUSINESS BENEFITS		MODERN APP CHARACTERISTICS
Improve ROI and reduce TCO		Scales to millions of users
Increase the efficiency of developers		Global availability
Increase business agility		Responds in milliseconds
Scales with customer demand		Handles petabytes of data

5 pillars of modern applications

ARCHITECTURAL PATTERNS

Modular services

OPERATIONAL MODEL

As managed as possible

BUILDERS EXPERIENCE/ SOFTWARE DELIVERY

Automated and standardized

MANAGEMENT AND GOVERNANCE

Everyone's responsibility (Security and guardrails!)

DATA MANAGEMENT

Purpose-built
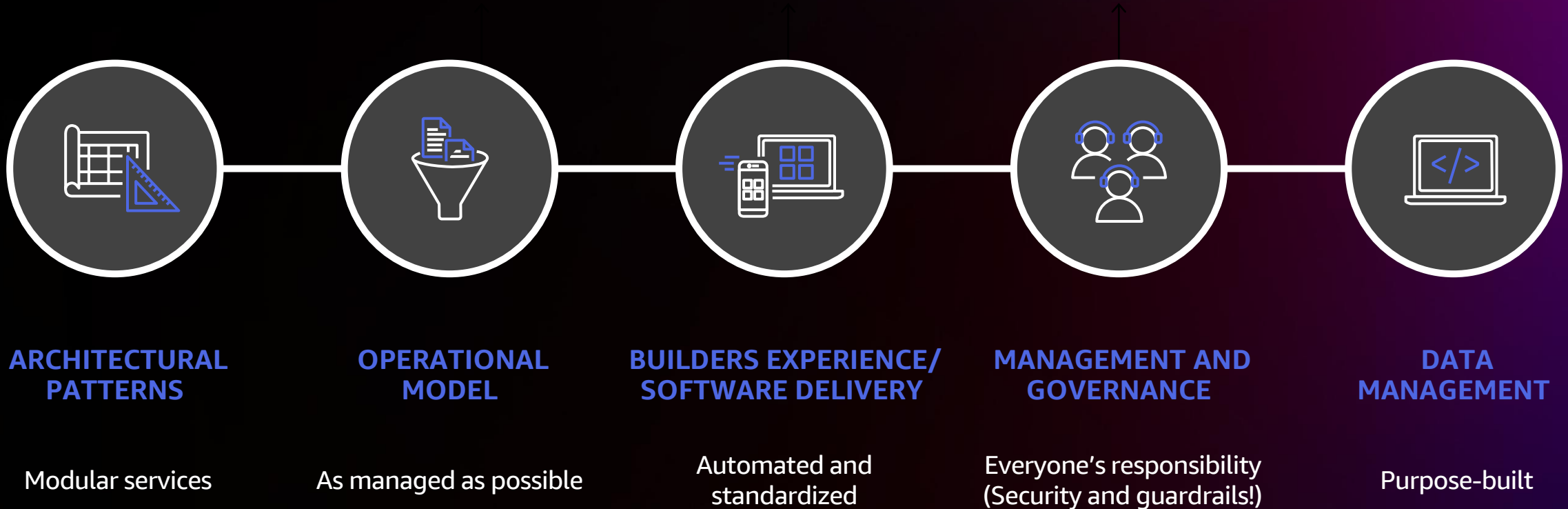
Most are not there yet, but you're not alone

Common questions we hear from customers

- How can I move my workloads to the cloud?

- How can I modernize my apps?

- How do I give my developers a self-service platform?

- How do we get consistent tooling and governance?

- Should I pick containers or serverless?

- How can I scale up/down quickly to react to a rapidly changing world?

Modernization paths – What to prioritize?

MODERNIZATION PATHS		FOCUS ON
Shared service platform (modern ops)		Consistent tooling, governance, guardrails, GitOps, operational model
Re-platform (migrate)		Containerization, AWS managed DB, cluster migration
Re-factor (re-architect)		Modernize architecture, software delivery, operations, and data mgmt
Build new (cloud native)		Serverless first, event-driven architecture, purpose-built DB

Customers have a wide variety of workloads

Applications

Mobile and web applications

Backend web services

IoT/Edge/5G

Game servers

HPC

Shared services platform

Management, security, and governance

Logging and monitoring
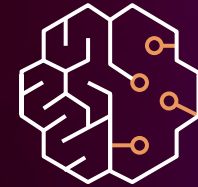
Analytics

DevOps/GitOps

CI/CD

Enterprise app migration

.NET classic Windows apps

Java apps

Linux apps

Third-party applications

Machine learning

Autonomous vehicles

Recommendation engines

Fraud detection

Chatbots

ROSA will help you get there faster

AWS container computing services landscape

Application platform

Accelerate and standardize application management

AWS App Runner

AWS Proton

Amazon CloudWatch

EKS Blueprints

AWS X-Ray

Amazon Managed Service for Prometheus

Containers orchestration

Deployment, scheduling, and scaling, containerized applications

Amazon Elastic Container Service
(Amazon ECS)

Amazon Elastic Kubernetes Service
(Amazon EKS)

Containers infrastructure

Registry, networking, CI/CD

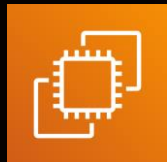Amazon Elastic Container Registry
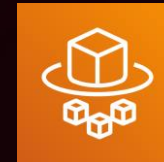(Amazon ECR)

AWS App Mesh
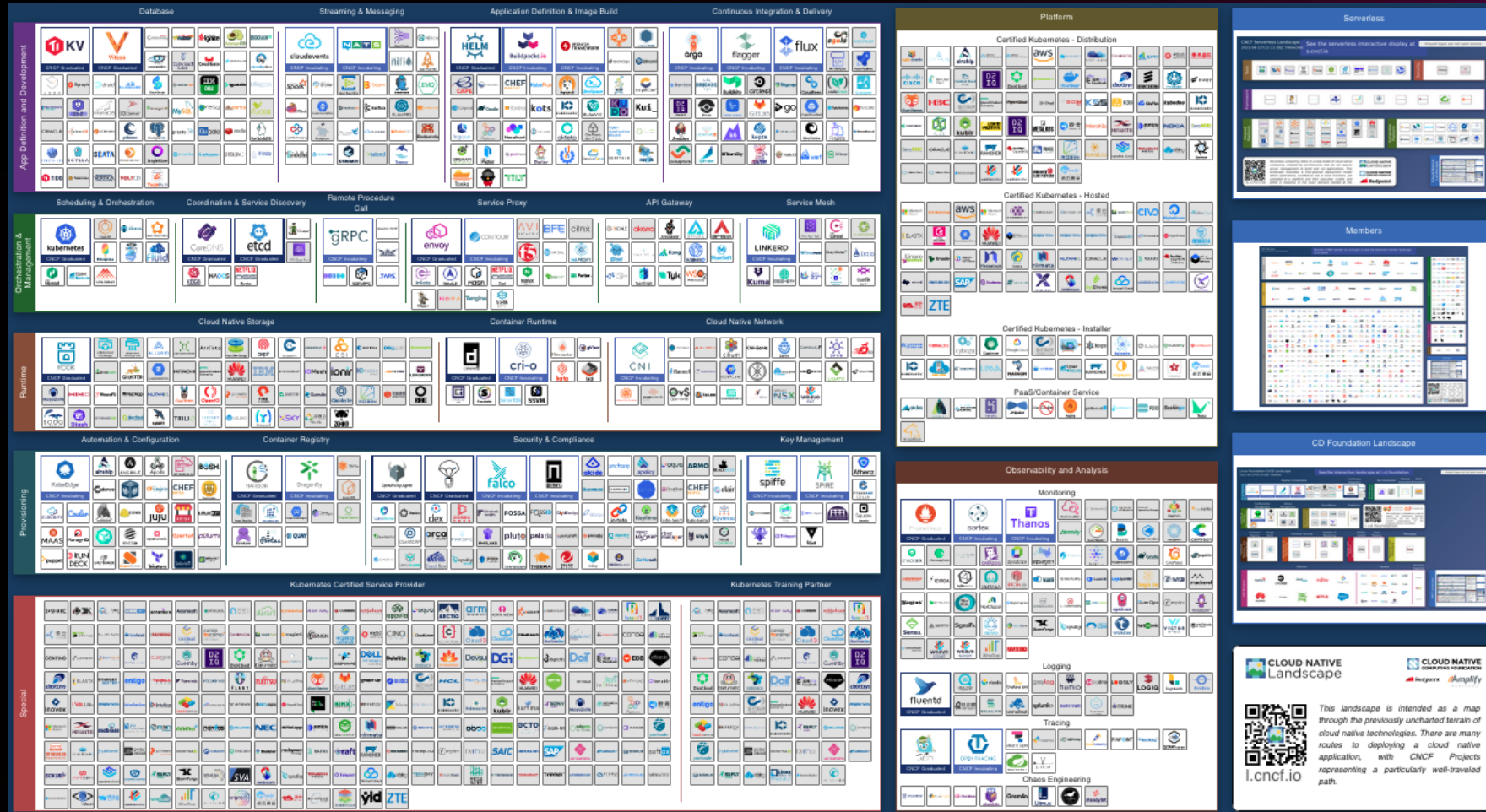
AWS Cloud Map

AWS CodePipeline

Compute

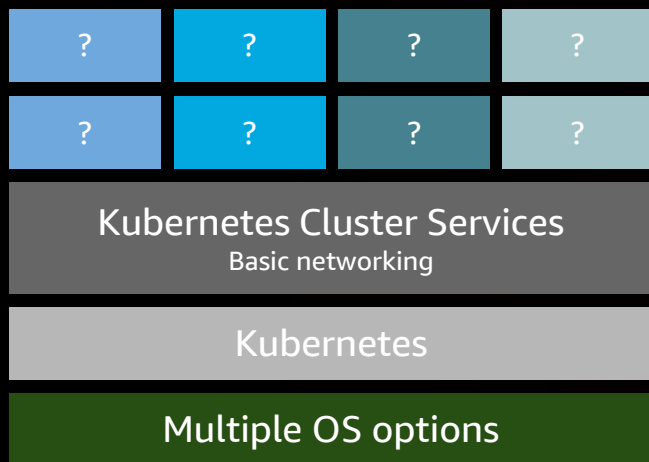Amazon Elastic Compute Cloud
(Amazon EC2)

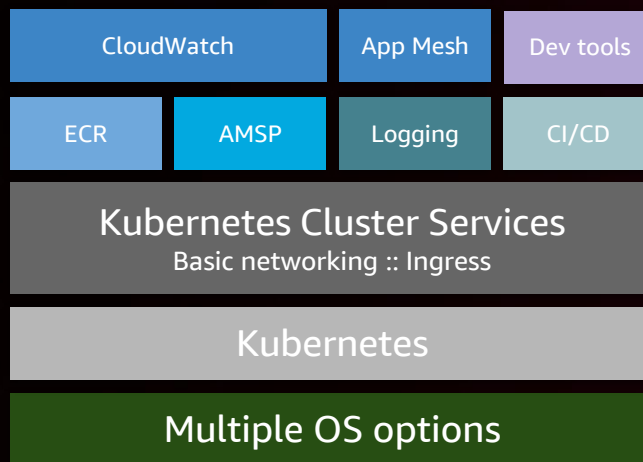AWS Fargate

The containers landscape is vast & complicated

DIY K8s

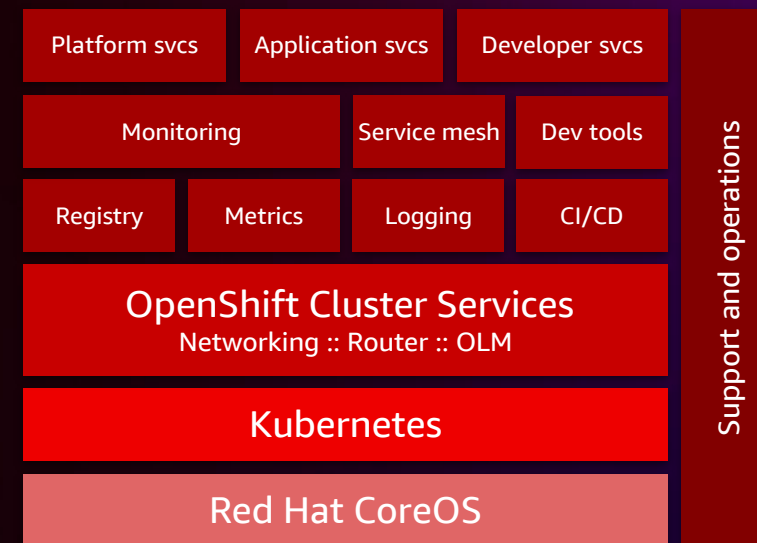- **Full assembly required**
- **Unmanaged**
- **No defaults**
- **No integrations**

?	?	?	?
?	?	?	?

Kubernetes Cluster Services
Basic networking

Kubernetes

Multiple OS options

Amazon EKS

- **Some assembly required**
- **Managed cluster**
- **Some defaults**
- **Some integrations**

CloudWatch		App Mesh	Dev tools
ECR	AMSP	Logging	CI/CD

Kubernetes Cluster Services
Basic networking :: Ingress

Kubernetes

Multiple OS options

ROSA

- **No assembly required**
- **Managed platform stack**
- **Opinionated defaults**
- **Supported set of integrations**

Platform svcs	Application svcs	Developer svcs
Monitoring	Service mesh	Dev tools
Registry	Metrics	Logging	CI/CD

OpenShift Cluster Services
Networking :: Router :: OLM

Kubernetes

Red Hat CoreOS

Support and operations

What is Red Hat OpenShift?

Manage workloads | Build cloud-native apps | Developer productivity

OpenShift container platform

Platform services	Application services	Developer services
Service mesh | Serverless Builds | CI/CD pipelines Full-stack logging Chargeback	Databases | Languages Runtimes | Integration Business automation 100+ ISV services	Developer CLI | VS code Extensions | IDE plugins CodeReady workspaces CodeReady containers

OpenShift Kubernetes engine

Cluster services
Automated ops | Over-the-air updates | Monitoring | Registry | Networking | Router | Virtualization | OLM | Helm

Kubernetes

Red Hat Enterprise Linux & Red Hat Enterprise Linux CoreOS

Physical   Virtual   Public cloud   Managed cloud   Edge

AWS and Red Hat collaboration helps customers meet digital needs

Red Hat and AWS are industry leaders with extensive experience in **IT infrastructure, hybrid cloud, digital transformation, and open-source innovation**

Through **collaborative engineering** activities, they offer integrated, certified solutions to meet modern, digital business needs

Consistent, enterprise-grade platforms with advanced security and management features help organizations build IT infrastructure that supports their business efficiently and cost-effectively and adapts on their schedule

Red Hat and AWS by the numbers

AWS Partner since
2008

>60,000
of AWS customers consume Red Hat products and solutions

"Given that Red Hat is the world's leading provider of open-source solutions, our enterprise customers have been passionate about seamlessly running Red Hat Enterprise Linux and various other Red Hat solutions on AWS."

Andy Jassy | President and CEO, Amazon

Red Hat OpenShift Service on AWS (ROSA)

- Red Hat OpenShift Service on AWS (ROSA) provides a managed OpenShift experience integrated with AWS

- Red Hat OpenShift is a turnkey containerized application platform built on Kubernetes, with runtimes, developer tools, CI/CD, and monitoring built in

AWS container computing services landscape

Application platform
Accelerate and standardize application management

Containers orchestration
Deployment, scheduling, and scaling, containerized applications

Containers infrastructure
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Compute

Build your own application platform

AWS App Runner

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Amazon Elastic Compute Cloud (Amazon EC2)

AWS Fargate

Elastic Compute Cloud (Amazon EC2)

Turnkey application platform

ROSA

Red Hat OpenShift Service on AWS

Accelerate migration to the cloud with integrated AWS services

Application development and monitoring

Amazon DynamoDB | Amazon RDS | Amazon Aurora | Amazon API Gateway | AWS CodeCommit | Amazon EventBridge | Amazon CloudWatch

ROSA

AWS Controllers for Kubernetes (ACK) is an open-source project built by AWS, which lets you define and use AWS service resources directly from Kubernetes

Infrastructure and operations

Amazon EC2 | Amazon EBS | Amazon EFS | Amazon FSx | Elastic Load Balancing (ELB) | Amazon VPC | Amazon Route 53 | AWS PrivateLink

Amazon ECR

ROSA: Batteries included but swappable

OpenShift Service Mesh with Istio to connect, secure, and observe services

OpenShift Serverless with Knative to enable hybrid serverless, FaaS, and event-driven architectures

OpenShift builds with Shipwright to build images from code using S2I + others and integrate with GitHub Actions

OpenShift Pipelines with Tekton to provide Kubernetes-native CI/CD pipelines

OpenShift GitOps with ArgoCD to enable declarative GitOps-based continuous delivery

Application-level observability for developers to build and manage their apps

Log management of infrastructure, application, and audit logs + forwarding capabilities

Cost management visibility, mapping, and modeling across hybrid infrastructure in order to stay on budget

Kubernetes Cluster Services

Install | Over-the-air updates | Networking | Ingress | Storage | Monitoring | Log forwarding | Registry | Authorization | Containers | Operators | Helm

Kubernetes

Linux

Red Hat
Enterprise Linux
CoreOS

Benefits of ROSA turnkey application platform

Developers

Fully managed clusters in minutes to build, deploy, and run applications using built-in developer UI that abstracts the complexity of Kubernetes

Collaborate across teams via shared projects

Administrators

Standardized and streamlined operations across on-premises and AWS environments

Built-in monitoring, logging, and networking

Choose platform version upgrade as required for the business
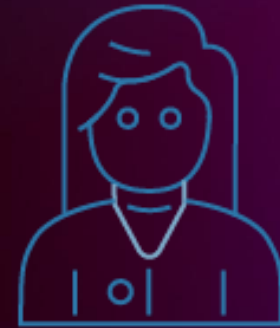
Business leaders

Consolidated billing and cost management across the business

Consumption-based pricing for surge and R&D usage

24/7 full-stack management and support

Financially backed 99.95% SLA

Move from 24/7 operations to 9x5 innovation

24/7 operations

Customer sets up monitoring, alerting

Customer responds to alerts

Customer runs upgrades and maintenance

Customer integrates and validates components

9x5 innovation

Simplify operations so your teams can refocus on innovation, not managing infrastructure

Accelerate time to value

Quickly build, deploy, and manage applications that scale as needed

ROSA private cluster architecture example

ROSA cluster

AWS Cloud

VPC

- Hosted zone
- Internal load balancer
- API load balancer
- Ingress/App load balancer

Availability Zone 1

Private subnet

Availability Zone 2

Private subnet

Availability Zone 2

Private subnet

OpenShift control plane (API server, etcd, controller manager, scheduler)

M5 instance | M5 instance | M5 instance

OpenShift infrastructure nodes (registry, router, monitoring)

R5 instance | R5 instance | R5 instance

OpenShift worker nodes

Instances | Instances | Instances

AWS PrivateLink

Amazon Route 53

Amazon EBS

Amazon S3

ROSA – Joint offering from AWS & Red Hat

WHO'S RESPONSIBLE FOR WHAT?

	On premises	Cloud	
	OpenShift Container Platform (OCP)	OpenShift Container Platform (OCP) on AWS	Red Hat OpenShift Service on AWS (ROSA)*
Control plane	Customer	Customer	🔴 **Red Hat**
Compute	Customer	Customer	🔴 **Red Hat**
Data plane	Customer	Customer	🔴 **Red Hat**
Support	🔴 **Red Hat**	🔴 **Red Hat**	🔴 **Red Hat** aws *
Billing	🔴 **Red Hat**	🔴 **Red Hat**	aws

Fully managed

*AWS Business Support Plan required

Red Hat OpenShift Service on AWS – Summary
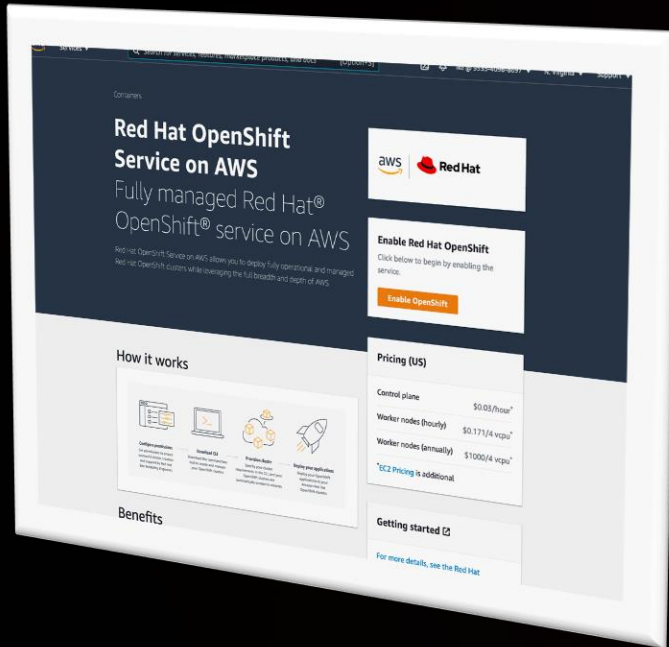
- Focus on **innovation** to add value to your business

- Lower costs by increasing **resource utilization**

- Reduce **operational** overhead

- Increase **scaling** capabilities

- Increase **security** and **compliance**

- No need to **re-architect** existing applications

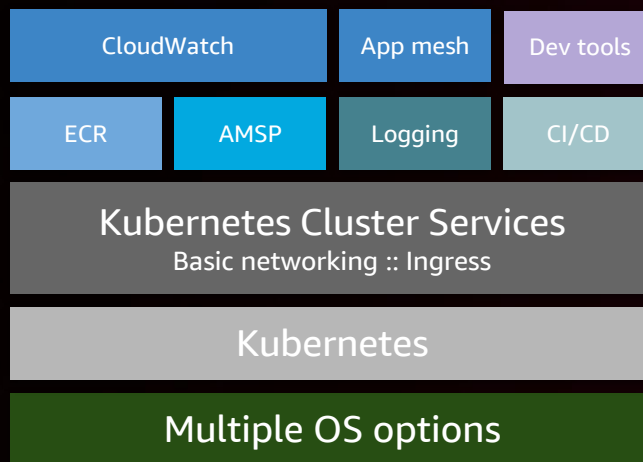- Helps to **accelerate** your cloud migration journey

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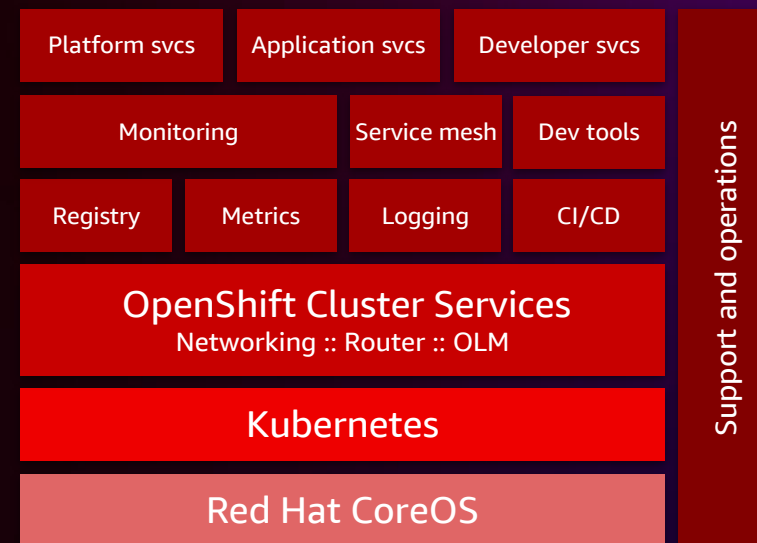- **Unmanaged**
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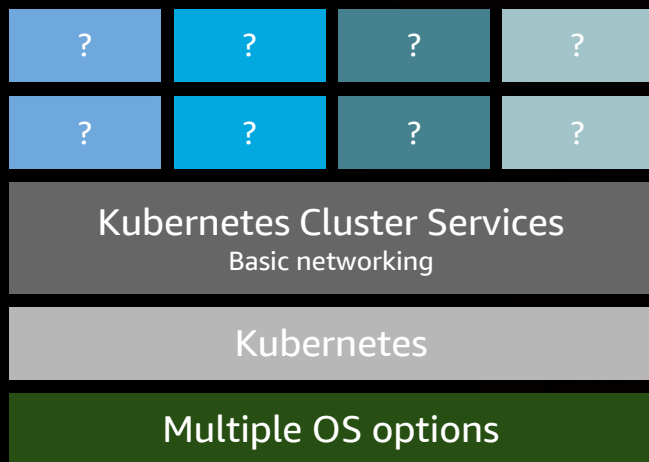
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Support and operations

Amazon EKS vs. ROSA is a build vs. buy decision

Typical EKS customer

Platform team

- Has willingness to build/assemble
- Larger ops team
- Advanced K8s skills
- Interested in customizing the cluster
- Needs very large clusters
- Welcomes component choice/flexibility
- Operates their own clusters/fleet

Typical ROSA customer

App team/BU

- Prefers to buy complete solution/turnkey
- Usually smaller ops team (1–3 people)
- Range of skills (beginner to advanced)
- Less customization
- Small to medium clusters (<500 nodes)
- Less interested in component choices
- Wants to outsource day-to-day management

It's not rocket science . . .

IT orgs have a complicated estate to manage

- Have experience running OpenShift on premise but not necessarily in the cloud

- Have workloads running on OpenShift 3.11 with no easy upgrade path

- Multiple applications and components require refactoring/remediation

- Dozens to thousands of applications spanning a range of complexity and technology stacks

And they typically face similar challenges

Delivery challenges

Resourcing – size of program

Storage architecture

Disaster recovery testing approach

DNS mapping issues

Skills development

Performance tuning

Operations

Self-managed to managed service

Clustering "good apps" with "bad apps"

Cybersecurity

End-to-end SLA/incident management

Managing the hybrid state for 12+ months

The modernization journey can take time

2–3 year journey

Application estate

100%

0%

Legacy on-premises apps

$$$$

Modernized, cloud-native

Legacy apps migrated to the cloud (into VMs or containers)

On-premises apps

$$$

Modernized, cloud-native apps

Legacy apps migrated to the cloud (into VMs or containers)

On-premises apps

$$

Modernized, cloud-native apps

$

Decreasing cost of IT + Increasing business velocity

1. Conduct assessment/ pilot

2. Migrate legacy apps

3. Containerize, modernize, or build new cloud-native apps

4. Transition migrated legacy apps to modernized apps

5. Complete cloud-native transformation

aws

But ROSA can help deliver results

Expected benefits

- A fully managed platform – reduces resource-critical knowledge risk

- More reliable operations with less effort

- Empowers teams to leverage new platform capabilities

The unexpected benefits

- Flexible cost scaling based on need

- Capacity on-demand to meet performance needs

- Reduced reliance on third-party

- Compute resource tuning for specific applications

ROSA enhancements in 2023

ROSA improved provisioning workflows

- Automated requirement checks

- Actionable guidance from within the getting started experience

- AWS managed IAM policies for ROSA

- Full cluster install from AWS Console

ROSA-hosted control plane architecture

- Control plane and infrastructure nodes centralized in service account
  - Moving from customer account
  - Reducing infrastructure costs
- Faster provisioning: <15 mins
- Flexible upgrade options
  - Upgrade node pools independently

ROSA cluster

aws

AWS PrivateLink   Amazon Route 53   Amazon EBS   Amazon S3

| Availability Zone 1 | Availability Zone 2 | Availability Zone 2 |

VPC

Private subnet   Private subnet   Private subnet

Hosted zone

OpenShift worker nodes

Instances   Instances   Instances

Internal load balancer
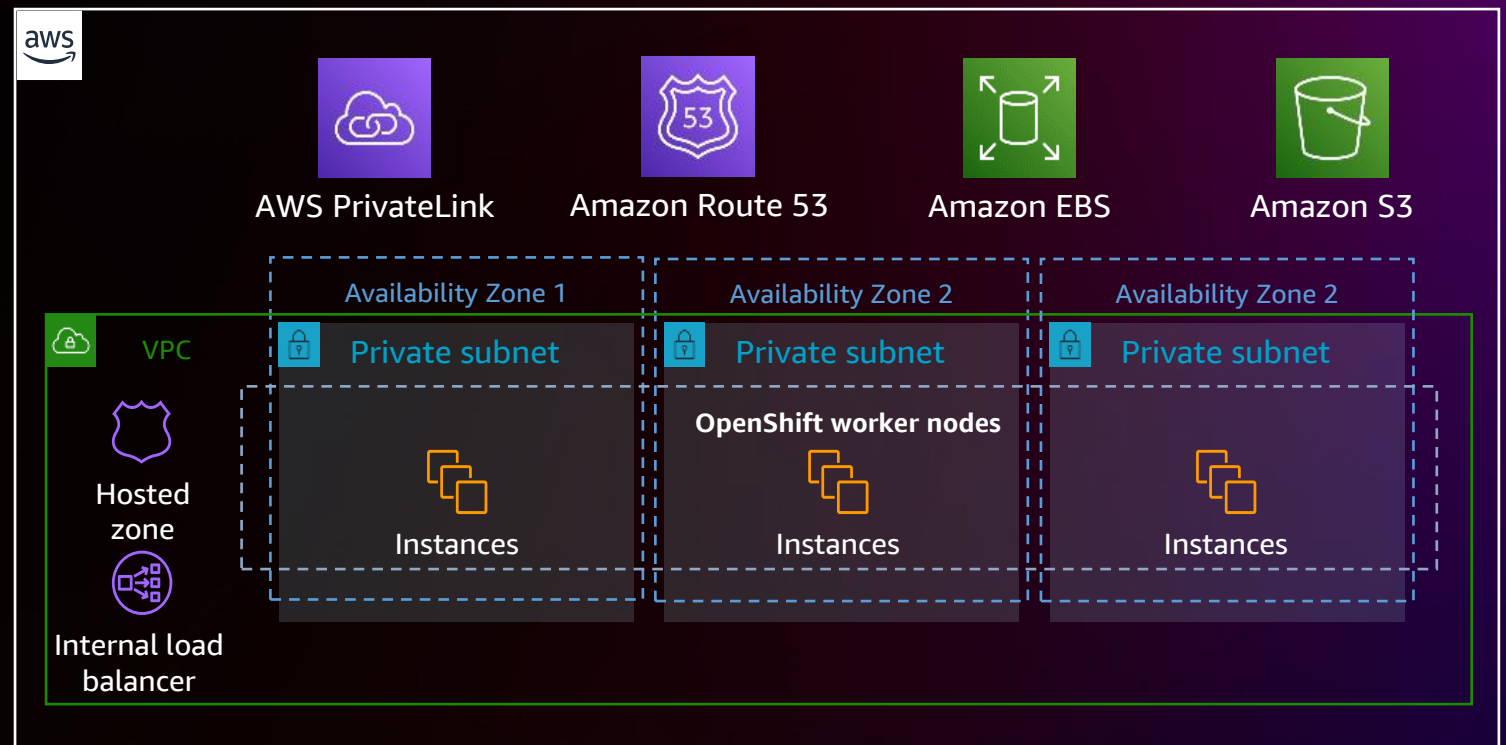
ROSA expanded deployment options

AWS Local Zones   Quarter 4 2022 *next week!*

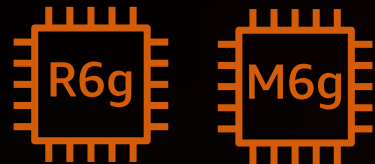**AWS Wavelength**   Quarter 1 2023

AWS Outposts   Quarter 2 2023

ROSA expanded instance types

Accelerated computing
instances (GPUs)

P3	P3dn	P4
G4dn	G4ad	P4d
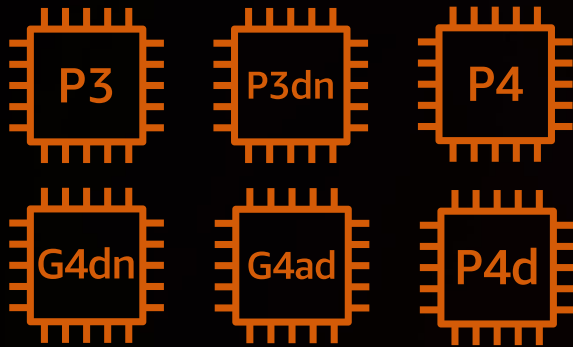
Quarter 1 2023

Graviton instances

R6g	M6g

Quarter 2 2023

Additional resources

[AWS ROSA product page](#)
Main AWS ROSA web page

[ROSA pricing](#)
Pricing details for ROSA

[ROSA Documentation](#)
ROSA documentation pages

[ROSA Videos](#)
Curated YouTube playlist of ROSA videos

Thank you!

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Please complete the session survey in the **mobile app**

aws