

Running OpenShift on AWS using Red Hat OpenShift Service on AWS (ROSA)

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Agenda

- 1. General Concerns
- 2. Containers and their use case
- 3. How does ROSA help?
- 4. Running on ROSA



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Your task



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General Concerns

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What customers ask for



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Containers solve challenges and introduce others

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Why customers adopt containers

Reduced risk



Operational efficiency



Speed



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aws

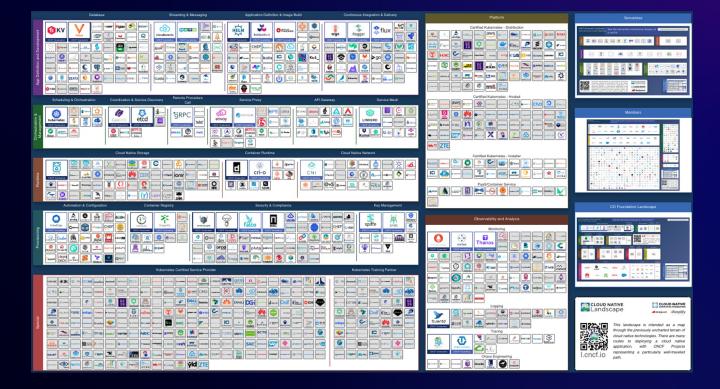
Uniform security across environment, maintained with automation

Reduced operational cost by increasing workload density

Consistent environment improves developer velocity

Automation increases speed and ease of testing and iterating

The containers landscape is vast & complicated



The containers landscape is vast & complicated



There is no shortage of amazing tooling in the K8s ecosystem, but there is no guide for how to put all the tools

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ROSA: The turnkey app platform

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AWS and Red Hat - A Unique Partnership

WORLD'S LARGEST OPEN SOURCE SOFTWARE COMPANY + WORLD'S MOST COMPREHENSIVE AND BROADLY ADOPTED CLOUD PLATFORM





DIY K8s

Amazon EKS

- Full assembly required
- Unmanaged
- No defaults

aws

• No integrations

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





DIY K8s

- Full assembly required
- Unmanaged
- No defaults

aws

• No integrations

Amazon EKS

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

ROSA

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

?	?	?	?	Amazon Cl	oudWatch	App Mesh	Dev too		
?	?	?	?	Amazon ECR	AMSP	Logging	CI/CD		
Kub	ernetes Cl Basic net		vices			Luster Serv king :: Ingress			
	Kuber	netes		Kubernetes					
	Multiple C)S options	;		Multiple (OS options	;		

Platform svo	cs Applicat	tion svcs	De	veloper svcs							
Monit	coring	Service n	nesh	Dev tools	ions						
Registry	Metrics	Loggir	ng	CI/CD	Support and operations						
	OpenShift Cluster Services Networking :: Router :: OLM										
Kubernetes											
Red Hat CoreOS											



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

Sed Hat Enterprise Linux CoreOS



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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
Worker Nodes	Customer	Customer	<mark>-</mark> Red Hat
Support	<mark>e</mark> Red Hat	🤩 Red Hat	Red Hat aws
Billing	🤩 Red Hat	ed Hat aws	aws
			Fully Managed



Running on ROSA

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ROSA architecture choices

Internet exposure

Availability needs

Deployment model







Public cluster, Private cluster Single Availability Zone, Multi-Availability Zone

ROSA classic, ROSA with hosted control planes (HCP)



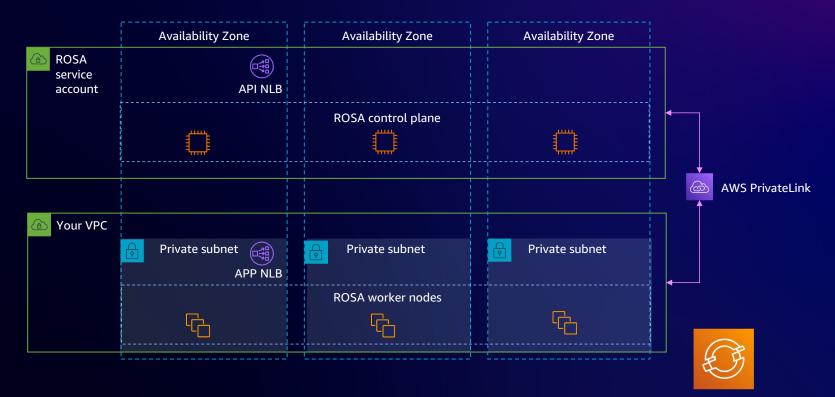
ROSA classic multi-AZ AWS PrivateLink cluster



ROSA cluster

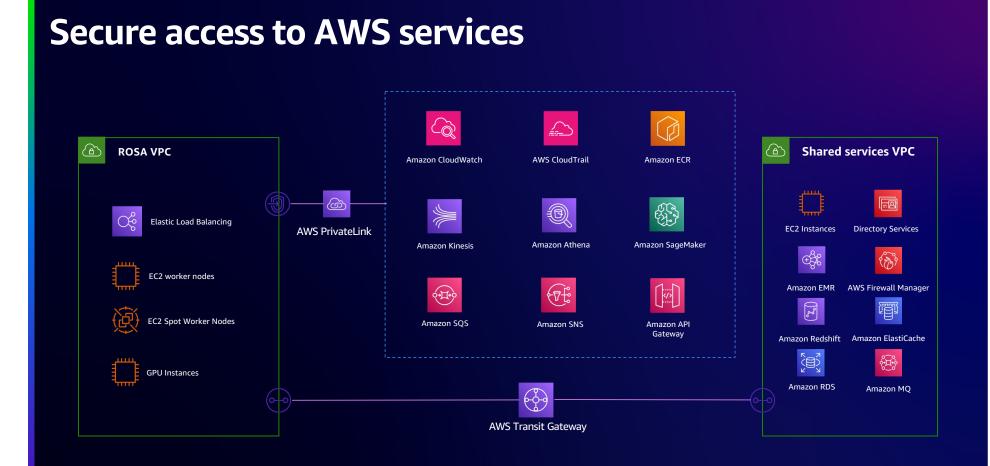
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ROSA with hosted control planes (HCP)



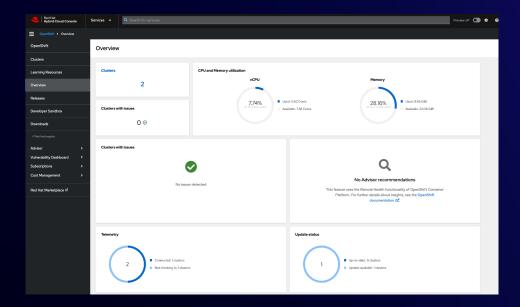
ROSA cluster

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Migration and hybrid environment support



Red Hat Hybrid Cloud Console

Migration Toolkit for Containers (MTC)

Source-to-image

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OpenShift Virtualization Integrated Consistent Lift and shift VMs workflows to ROSA management App App App container container VM VM container container Controller API Agent Agent Worker Control plane Worker

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Get started

ROSA Hands-on Experience

ROSA workshops

No-cost proof of concept





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Let's grow your business together



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Red Hat OpenShift on AWS (ROSA)



- Create OpenShift clusters from the AWS console or CLI
- AWS integrated experience for cluster creation and management
- Foundation based on RHEL



- 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

 Build containerized applications that integrate natively with the more than 170 AWS cloudnative services

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ROSA Pricing

ROSA Classic Pricing:

- •On-demand hourly pricing based on worker node vCPU and memory
- •Example: \$0.25 per vCPU per hour for m5.xlarge worker nodes
- •No upfront costs or long-term commitments required

ROSA with Hosted Control Planes (HCP) Pricing:

- •On-demand hourly pricing for worker nodes (same as classic)
- •Plus an additional on-demand hourly fee per cluster for the hosted control plane
- •Example: \$0.48 per hour for a single-node cluster in addition to worker node pricing
- •Option to purchase upfront RI-like pricing via Annual Upfront Contracts for discounts

So in the HCP model, you pay the standard per worker node pricing based on the EC2 instance types, plus this additional per cluster hourly fee for Red Hat to host and manage the control plane components.

However, the hosted control plane approach reduces the overall AWS infrastructure footprint in your account, resulting in lower overall TCO compared to the classic self-managed model.

Red Hat offers Annual Upfront Contracts for ROSA with HCP that provide discounted all-in hourly pricing if you can commit upfront similar to AWS Reserved Instances.

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Example

The example compares the costs of running a ROSA cluster with 10 m5.2xlarge worker nodes (8 vCPUs each) for a month in the US East (N. Virginia) region, between the classic ROSA deployment model and the new ROSA with Hosted Control Planes (HCP) model.

•Worker node costs: \$1,122

•Control plane costs (3 x m5.xlarge nodes): \$421

•Other infrastructure service costs: ~\$100

•Total monthly cost: \$1,643

For the HCP model:

•Worker node costs: \$1,122 (same as classic)

•Hosted control plane cost: \$350 (\$0.48/hour)

•Total monthly cost: \$1,472

The HCP model costs around \$171 (10%) less per month compared to the classic model. The savings come from:

1.Not having to run and pay for EC2 instances hosting the control plane components

2.Not incurring costs for other managed services required to run the control plane

As the cluster scales up with more worker nodes, the relative savings with HCP increase further since the control plane costs stay constant.

Actual costs may vary based on factors like instance types, region, number of clusters, and pricing model (on-demand vs upfront/reserved).

The example illustrates how the HCP model can provide a more cost-optimized deployment for running ROSA on AWS.



