

The background features a dark blue gradient on the left, transitioning into a large, vibrant, abstract shape on the right. This shape is composed of overlapping curved segments in shades of orange, pink, and purple, creating a dynamic, modern aesthetic.

# AWS re:Invent

NOV. 27 – DEC. 1, 2023 | LAS VEGAS, NV

CMP336

# Amazon Linux 2023 and beyond

**Pallavi Ravishankar**

(she/her)

Senior Product Manager Tech  
AWS

**Chris Schlaeger**

(he/him)

Director, Software Development  
AWS



© 2023, Amazon Web Services, Inc. or its affiliates. All rights reserved.

# Agenda

01 What is Amazon Linux?

02 Amazon Linux 2023

03 Why Amazon Linux?

04 Migrating to AL2023

05 Amazon Linux Engineering  
Philosophy

06 Conclusion

# What is Amazon Linux ?

- Linux operating system built by AWS and optimized for AWS
- First version was launched in 2014, AL is a general purpose OS
- 90% of AWS runs on Amazon Linux



# Amazon Linux 2023



# Introducing Amazon Linux 2023

GENERALLY AVAILABLE: MARCH 15, 2023

- SELinux support
- Predictable cadence for updates and new features
- Predictable release cadence
- Deterministic updates
- Kernel hardening and patching

# Why Amazon Linux?



# Why Amazon Linux

REASONS TO CHOOSE AMAZON LINUX TO RUN YOUR WORKLOAD ON



## Optimized for AWS

Integrated with  
tools, agents, and  
services



## Secure by default

Ensures safety  
from threats by  
fixing all CVEs



## Simple to maintain

Delivers the simplest  
maintenance  
experience



## Cost

Available at no  
additional  
licensing cost



# Why Amazon Linux

REASONS TO CHOOSE AMAZON LINUX TO RUN YOUR WORKLOAD ON



## Optimized for AWS

Integrated with  
tools, agents, and  
services



## Secure by default

Ensures safety  
from threats by  
fixing all CVEs



## Simple to maintain

Delivers the simplest  
maintenance  
experience

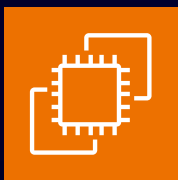


## Cost

Available at no  
additional  
licensing cost

# Amazon Linux is optimized for AWS

AMAZON LINUX CAN MEET YOU WHERE YOU ARE IN YOUR DEPLOYMENT JOURNEY



EC2 Instance

EC2 > Instances > Launch an instance

## Launch an instance [Info](#)

Amazon EC2 allows you to create virtual machines, or instances, that run on the AWS Cloud. Quickly get started by following the simple steps below.

### Name and tags [Info](#)

Name

[Add additional tags](#)

### ▼ Application and OS Images (Amazon Machine Image) [Info](#)

An AMI is a template that contains the software configuration (operating system, application server, and applications) required to launch your instance. Search or Browse for AMIs if you don't see what you are looking for below

[Recents](#) [Quick Start](#)

Amazon Linux  
aws

Amazon Linux is the default recommended AMI

Amazon Machine Image (AMI)

Amazon Linux 2023 AMI  
ami-08c8a41c585e4a2e2 (64-bit (x86)) / ami-07dcd11247b816084 (64-bit (Arm))  
Virtualization: hvm ENA enabled: true Root device type: ebs

Free tier eligible

Description

Amazon Linux 2023 AMI 2023.2.20231026.0 arm64 HVM kernel-6.1

Architecture

64-bit (Arm)

AMI ID

ami-07dcd11247b816084

Verified provider

### ▼ Summary

Number of instances [Info](#)

Software Image (AMI)

Amazon Linux 2023 AMI 2023.2.2...[read more](#)  
ami-07dcd11247b816084

Virtual server type (instance type)

t4g.nano

Firewall (security group)

New security group

Storage (volumes)

1 volume(s) - 8 GiB

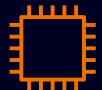
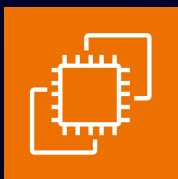
**Free tier:** In your first year includes 750 hours of t2.micro (or t3.micro in the Regions in which t2.micro is unavailable) instance usage on free tier AMIs per month, 30 GiB of EBS storage, 2 million I/Os, 1 GB of snapshots, and 100 GB of bandwidth to the internet.

[Cancel](#) [Launch instance](#) [Review commands](#)



# Amazon Linux is optimized for AWS

AMAZON LINUX CAN MEET YOU WHERE YOU ARE IN YOUR DEPLOYMENT JOURNEY



EC2 Instance

Amazon Linux macOS Ubuntu Windows Red Hat SUSE Linux

On-Demand RHEL base pricing: 0.0768 USD per Hour  
On-Demand Linux base pricing: 0.0168 USD per Hour  
On-Demand SUSE base pricing: 0.0481 USD per Hour

**t4g.medium**  
Family: t4g 2 vCPU 4 GiB Memory Current generation: true  
On-Demand Linux base pricing: 0.0336 USD per Hour  
On-Demand SUSE base pricing: 0.0899 USD per Hour  
On-Demand RHEL base pricing: 0.0936 USD per Hour

**t4g.large**  
Family: t4g 2 vCPU 8 GiB Memory Current generation: true  
On-Demand SUSE base pricing: 0.1235 USD per Hour  
On-Demand Linux base pricing: 0.0672 USD per Hour  
On-Demand RHEL base pricing: 0.1272 USD per Hour

**t4g.xlarge**  
Family: t4g 4 vCPU 16 GiB Memory Current generation: true  
On-Demand Linux base pricing: 0.1344 USD per Hour  
On-Demand SUSE base pricing: 0.1907 USD per Hour  
On-Demand RHEL base pricing: 0.1944 USD per Hour

**t4g.2xlarge**  
Family: t4g 8 vCPU 32 GiB Memory Current generation: true  
On-Demand RHEL base pricing: 0.3988 USD per Hour  
On-Demand SUSE base pricing: 0.3938 USD per Hour  
On-Demand Linux base pricing: 0.2688 USD per Hour

**c6a.medium**

**t4g.nano**  
Family: t4g 2 vCPU 0.5 GiB Memory Current generation: true  
On-Demand Linux base pricing: 0.0042 USD per Hour  
On-Demand SUSE base pricing: 0.0042 USD per Hour

Additional costs apply for AMIs with pre-installed software

**Key pair (login)**  
You can use a key pair to securely connect to your instance. Ensure that you have access to the selected key pair before you launch the instance.  
Key pair name - required  
Select Create new key pair

**Summary**  
Number of instances Info  
1  
Software Image (AMI)  
Amazon Linux 2023.2.2...read more  
ami-07dcd11247b816084

Free tier eligible

Free tier: In your first year includes 750 hours of t2.micro (or t3.micro in the Regions in which t2.micro is unavailable) instance usage on free tier AMIs per month, 30 GiB of EBS storage, 2 million IOs, 1 GB of snapshots, and 100 GB of bandwidth to the internet.

Cancel Launch instance Review commands

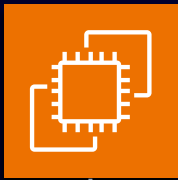
Supported on the wide selection of instance types and platforms offered by Amazon EC2

Integrated with agents such as AWS Systems Manager, Amazon CloudWatch, Amazon Inspector, and AWS CloudHSM for ease of management



# Amazon Linux is optimized for AWS

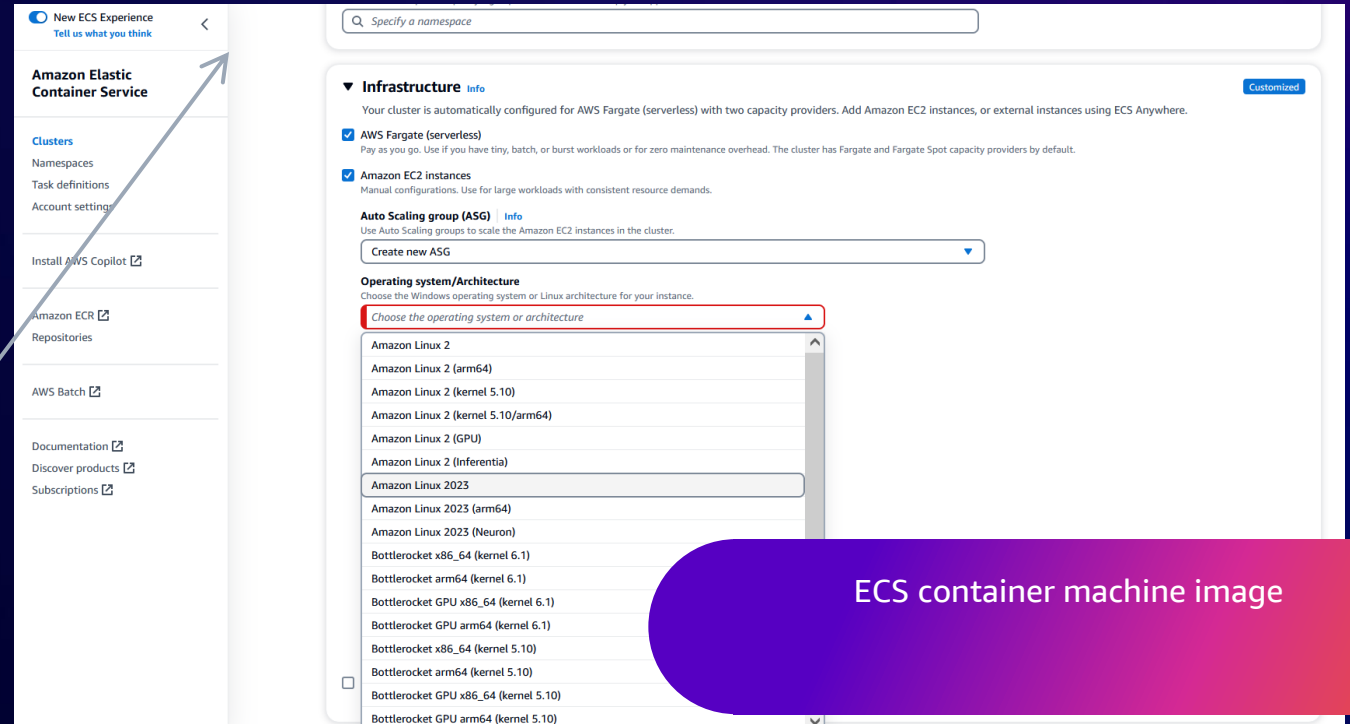
AMAZON LINUX CAN MEET YOU WHERE YOU ARE IN YOUR DEPLOYMENT JOURNEY



EC2 instance

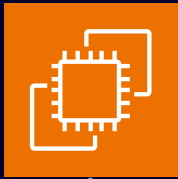


ECS container



# Amazon Linux is optimized for AWS

AMAZON LINUX CAN MEET YOU WHERE YOU ARE IN YOUR DEPLOYMENT JOURNEY



EC2 instance



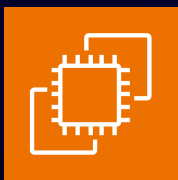
ECS container



EKS container

# Amazon Linux is optimized for AWS

AMAZON LINUX CAN MEET YOU WHERE YOU ARE IN YOUR DEPLOYMENT JOURNEY



EC2 instance



AWS Lambda



ECS container



AWS Elastic  
Beanstalk



EKS container

# Why Amazon Linux

REASONS TO CHOOSE AMAZON LINUX TO RUN YOUR WORKLOAD ON



## Optimized for AWS

Integrated with tools, agents, and services



## Secure by default

Ensures safety from threats by fixing all CVEs



## Simple to maintain

Delivers the simplest maintenance experience



## Cost

Available at no additional licensing cost

# Amazon Linux is secure by default

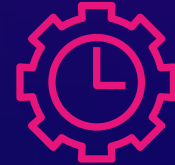
SECURITY IS OUR HIGHEST PRIORITY



Smaller package  
footprint



SELinux



Kernel Live Patching



Biweekly security  
updates



Kernel hardening



# Amazon Linux is Secure by default

## CVE EVALUATION METRICS

3636

CVEs evaluated YTD

$\leq 3$  days

P95 CVE evaluation time

# Amazon Linux is Secure by default

## CVE PATCHING METRICS

232

CVEs patched on AL1

1018

CVEs patched on AL2

592

CVEs patched on AL2023

# Amazon Linux is Secure by default


SECURITY IS OUR HIGHEST PRIORITY

Amazon Linux Security Center			Amazon Linux 1	Amazon Linux 2	Amazon Linux 2023	Announcements	FAQs
Below are bulletins for security or privacy events pertaining to <a href="#">Amazon Linux 2</a> . You can also subscribe to our <a href="#">RSS feed</a> .							
Date Created	Date Updated	ALAS	Severity	Package	CVE(s)		
2023-10-31 00:18	2023-11-01 00:49	<a href="#">ALASDOCKER-2023-034</a>	Important	amazon-ecr-credential-helper	<a href="#">CVE-2023-39325</a>		
2023-10-31 00:17	2023-11-01 00:49	<a href="#">ALASKERNEL-5.15-2023-029</a>	Medium	kernel	<a href="#">CVE-2023-34324</a>		
2023-10-31 00:17	2023-11-01 00:49	<a href="#">ALASKERNEL-5.10-2023-042</a>	Important	kernel	<a href="#">CVE-2023-31085</a> <a href="#">CVE-2023-34324</a> <a href="#">CVE-2023-4244</a> <a href="#">CVE-2023-42754</a> <a href="#">CVE-2023-4881</a>		
2023-10-31 00:17	2023-11-01 00:49	<a href="#">ALASECS-2023-019</a>	Important	docker	<a href="#">CVE-2023-24538</a> <a href="#">CVE-2023-24540</a> <a href="#">CVE-2023-39325</a>		
2023-10-31 00:17	2023-11-01 00:49	<a href="#">ALASECS-2023-018</a>	Important	runc	<a href="#">CVE-2023-39325</a>		
2023-10-31 00:17	2023-11-01 00:49	<a href="#">ALASECS-2023-017</a>	Important	containerd	<a href="#">CVE-2023-39325</a>		
2023-10-31 00:17	2023-11-01 00:49	<a href="#">ALASECS-2023-016</a>	Important	ecs-service-connect-agent	<a href="#">CVE-2023-38546</a> <a href="#">CVE-2023-39323</a> <a href="#">CVE-2023-44487</a>		
2023-10-31 00:16	2023-11-01 00:48	<a href="#">ALASLIVEPATCH-2023-155</a>	Important	kernel-livepatch-5.10.186-179.751	<a href="#">CVE-2023-3777</a> <a href="#">CVE-2023-4207</a> <a href="#">CVE-2023-4622</a> <a href="#">CVE-2023-4921</a>		
2023-10-31 00:16	2023-11-01 00:49	<a href="#">ALASLIVEPATCH-2023-154</a>	Important	kernel-livepatch-4.14.320-243.544	<a href="#">CVE-2023-4206</a> <a href="#">CVE-2023-4622</a> <a href="#">CVE-2023-4623</a> <a href="#">CVE-2023-4921</a>		
2023-10-31 00:16	2023-11-01 00:49	<a href="#">ALASKERNEL-5.4-2023-055</a>	Medium	kernel	<a href="#">CVE-2023-31085</a> <a href="#">CVE-2023-34324</a> <a href="#">CVE-2023-42754</a>		
2023-10-31 00:15	2023-11-01 00:49	<a href="#">ALASLIVEPATCH-2023-153</a>	Important	kernel-livepatch-4.14.322-244.539	<a href="#">CVE-2023-4207</a> <a href="#">CVE-2023-4622</a> <a href="#">CVE-2023-4623</a> <a href="#">CVE-2023-4921</a>		
2023-10-31 00:15	2023-11-01 00:49	<a href="#">ALASLIVEPATCH-2023-152</a>	Important	kernel-livepatch-4.14.322-244.536	<a href="#">CVE-2023-4207</a> <a href="#">CVE-2023-4622</a> <a href="#">CVE-2023-4623</a> <a href="#">CVE-2023-4921</a>		
2023-10-31 00:15	2023-11-01 00:49	<a href="#">ALASLIVEPATCH-2023-151</a>	Important	kernel-livepatch-4.14.322-246.539	<a href="#">CVE-2023-4207</a> <a href="#">CVE-2023-4622</a> <a href="#">CVE-2023-4623</a> <a href="#">CVE-2023-4921</a>		
2023-10-31 00:15	2023-11-01 00:49	<a href="#">ALASLIVEPATCH-2023-150</a>	Important	kernel-livepatch-5.10.192-182.736	<a href="#">CVE-2023-4623</a> <a href="#">CVE-2023-4921</a>		

Stay up to date on security patching by viewing the RSS feed on Amazon Linux Security Center

# Amazon Linux is Secure by default

SECURITY IS OUR HIGHEST PRIORITY

Amazon Linux Security Center			Amazon Linux 1	Amazon Linux 2	Amazon Linux 2023	Announcements	FAQs
Below are bulletins for security or privacy events pertaining to <a href="#">Amazon Linux 2</a> . You can also subscribe to our <a href="#">RSS feed</a> .							
Date Created	Date Updated	ALAS	Severity	Package	CVE(s)		
2023-10-31 00:18	2023-11-01 00:49	<a href="#">ALASDOCKER-2023-034</a>	Important	amazon-ecr-credential-helper	<a href="#">CVE-2023-39325</a>		
2023-10-31 00:17	2023-11-01 00:49	<a href="#">ALASKERNEL-5.15-2023-029</a>	Medium		<a href="#">CVE-2023-34324</a>		
2023-10-31 00:17	2023-11-01 00:49	<a href="#">ALASKERNEL-5.10-2023-042</a>	Important		<a href="#">CVE-2023-31085</a> <a href="#">CVE-2023-34324</a> <a href="#">CVE-2023-4244</a>		
2023-10-31 00:17	2023-11-01 00:49	<a href="#">ALASECS-2023-019</a>	Important		<a href="#">CVE-2023-42754</a> <a href="#">CVE-2023-42754</a>		
2023-10-31 00:17	2023-11-01 00:49	<a href="#">ALASECS-2023-018</a>	Important		<a href="#">CVE-2023-245</a>		
2023-10-31 00:17	2023-11-01 00:49	<a href="#">ALASECS-2023-017</a>	Important		<a href="#">CVE-2023-39325</a>		
2023-10-31 00:17	2023-11-01 00:49	<a href="#">ALASECS-2023-016</a>	Important	e	<a href="#">CVE-2023-39325</a>		
2023-10-31 00:16	2023-11-01 00:48	<a href="#">ALASLIVEPATCH-2023-155</a>	Important	k	<a href="#">CVE-2023-38546</a> <a href="#">CVE-2023-39323</a> <a href="#">CVE-2023-44487</a>		
					<a href="#">CVE-2023-3777</a> <a href="#">CVE-2023-4004</a> <a href="#">CVE-2023-4147</a> <a href="#">CVE-2023-4206</a> <a href="#">CVE-2023-4207</a> <a href="#">CVE-2023-4208</a> <a href="#">CVE-2023-4622</a> <a href="#">CVE-2023-4623</a> <a href="#">CVE-2023-4921</a>		
2023-10-31 00:16	2023-11-01 00:49	<a href="#">ALASLIVEPATCH-2023-154</a>	Important	kernel-livepatch-4.14.320-243.544	<a href="#">CVE-2023-4206</a> <a href="#">CVE-2023-4207</a> <a href="#">CVE-2023-4208</a> <a href="#">CVE-2023-4622</a> <a href="#">CVE-2023-4623</a> <a href="#">CVE-2023-4921</a>		
2023-10-31 00:16	2023-11-01 00:49	<a href="#">ALASKERNEL-5.4-2023-055</a>	Medium	kernel	<a href="#">CVE-2023-31085</a> <a href="#">CVE-2023-34324</a> <a href="#">CVE-2023-42754</a>		
2023-10-31 00:15	2023-11-01 00:49	<a href="#">ALASLIVEPATCH-2023-153</a>	Important	kernel-livepatch-4.14.322-244.539	<a href="#">CVE-2023-4207</a> <a href="#">CVE-2023-4622</a> <a href="#">CVE-2023-4623</a> <a href="#">CVE-2023-4921</a>		
2023-10-31 00:15	2023-11-01 00:49	<a href="#">ALASLIVEPATCH-2023-152</a>	Important	kernel-livepatch-4.14.322-244.536	<a href="#">CVE-2023-4207</a> <a href="#">CVE-2023-4622</a> <a href="#">CVE-2023-4623</a> <a href="#">CVE-2023-4921</a>		
2023-10-31 00:15	2023-11-01 00:49	<a href="#">ALASLIVEPATCH-2023-151</a>	Important	kernel-livepatch-4.14.322-246.539	<a href="#">CVE-2023-4207</a> <a href="#">CVE-2023-4622</a> <a href="#">CVE-2023-4623</a> <a href="#">CVE-2023-4921</a>		
2023-10-31 00:15	2023-11-01 00:49	<a href="#">ALASLIVEPATCH-2023-150</a>	Important	kernel-livepatch-5.10.192-182.736	<a href="#">CVE-2023-4623</a> <a href="#">CVE-2023-4921</a>		
2023-10-31 00:14	2023-11-01 00:49	<a href="#">ALASKERNEL-5.10-2023-033</a>	Important	kernel	<a href="#">CVE-2023-31085</a> <a href="#">CVE-2023-34324</a> <a href="#">CVE-2023-42754</a>		

Stay informed of available CVE patches with Amazon Inspector

# Klarna.

**Klarna is an AI powered global payments network  
and shopping assistant of the future.**

“At Klarna, security is paramount. The shift to AL2023, coupled with our atomic upgrades strategy, has fortified our immutability standards. With AL2023's versioned repositories, we ensure that a specific AMI version runs exact library versions, laying the foundation for a deterministic Software Bill of Materials, significantly enhancing our security posture.

**Simone Marzola, Senior Engineering Manager | Klarna Engineering Platform**

**Klarna.**

# Why Amazon Linux

REASONS TO CHOOSE AMAZON LINUX TO RUN YOUR WORKLOAD ON



## Optimized for AWS

Integrated with  
tools, agents, and  
services



## Secure by default

Ensures safety  
from threats by  
fixing all CVEs



## Simple to maintain

Delivers the simplest  
maintenance  
experience



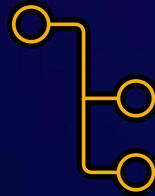
## Cost

Available at no  
additional  
licensing cost

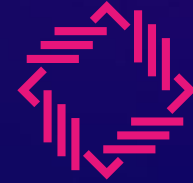
# Maintaining your workload on Amazon Linux



Repository locking



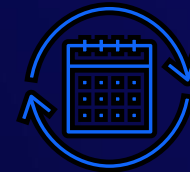
Major changes with  
major versions



Integrated with Patch  
Manager, a capability of  
AWS Systems Manager



Biweekly security  
updates



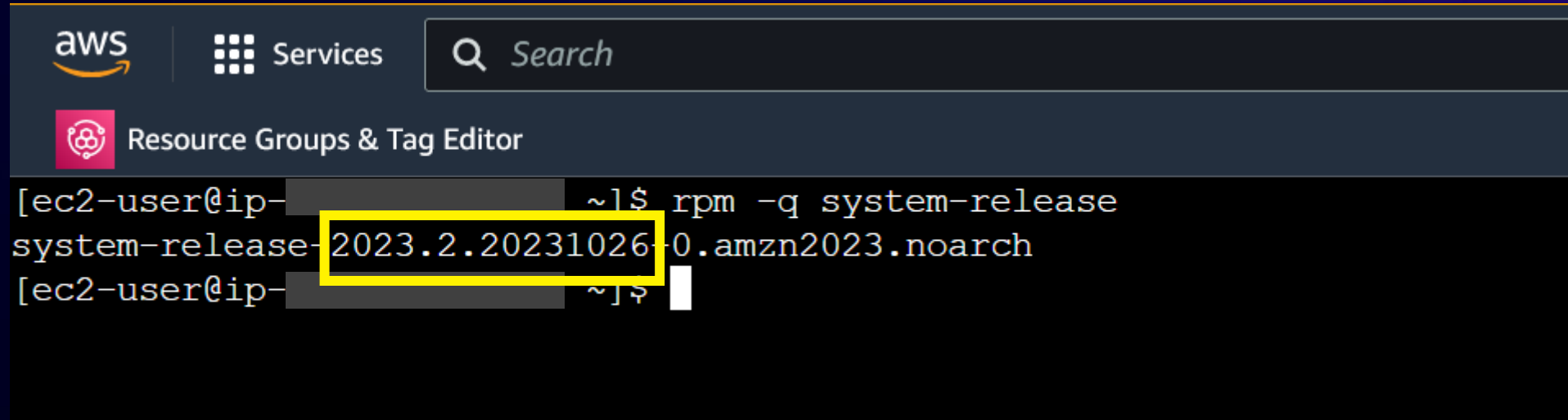
Batched updates every  
quarter



# DEMO – Deterministic Updates

# DEMO – Deterministic Updates

STEP 1: QUERY THE CURRENT INSTALLED VERSION OF THE OS



```
aws Services Search
Resource Groups & Tag Editor
[ec2-user@ip-10.0.0.1 ~]$ rpm -q system-release
system-release-2023.2.20231026-0.amzn2023.noarch
[ec2-user@ip-10.0.0.1 ~]$
```

# DEMO – Deterministic Updates

## STEP 2: RUNNING DNF UPGRADE

```
Resource Groups & Tag Editor
[ec2-user@ip-10-0-1-10 ~]$ sudo dnf upgrade
Last metadata expiration check: 1 day, 3:38:59 ago on Thu Nov  2 18:44:21 2023.
=====
WARNING:
  A newer release of "Amazon Linux" is available.

Available Versions:

Version 2023.2.20231030:
  Run the following command to upgrade to 2023.2.20231030:
  dnf upgrade --releasever=2023.2.20231030

Release notes:
  https://docs.aws.amazon.com/linux/al2023/release-notes/relnotes-2023.2.20231030.html
=====
Dependencies resolved.
Nothing to do.
Complete!
[ec2-user@ip-10-0-1-10 ~]$
```

"releasever" option specifies what OS version the repo is locked to

# DEMO – Deterministic Updates

## STEP 3: RUNNING DNF UPGRADE WITH RELEASEVER

```
ec2-user@ip-10-10-10-10 ~]$ sudo dnf upgrade --releasever=2023.2.20231030
Last metadata expiration check: 0:00:05 ago on Fri Nov 3 22:29:05 2023.
Dependencies resolved.
Package Architecture Version Repository Size
Installing:
kernel x86_64 6.1.59-84.139.amzn2023 amazonlinux 29 M
Upgrading:
amazon-ec2-net-utils noarch 2.4.1-1.amzn2023.0.1 amazonlinux 17 k
amazon-linux-repo-a3 noarch
binutils x86_64
ca-certificates noarch
cloud-init noarch
glibc x86_64
glibc-all-langpacks x86_64
glibc-common x86_64
glibc-gconv-extra x86_64
glibc-locale-source x86_64
grub2-common noarch
grub2-efi-x64-ec2 x86_64
grub2-pc-modules noarch
grub2-tools x86_64
grub2-tools-minimal x86_64
kernel-livepatch-repo-a3 noarch
kernel-tools x86_64
libxml2 x86_64
libxstd x86_64
openssl x86_64
openssl-libs x86_64
system-release noarch
vim-common x86_64
vim-data noarch
vim-enhanced x86_64
vim-filesystem noarch
vim-minimal x86_64
xz x86_64
zlib x86_64
zstd x86_64
Installing weak dependencies:
cloud-init-cfg-ec2 noarch 22.2.2-1.amzn2023.1.12 amazonlinux 12 k
Transaction Summary
Install 2 Packages
Upgrade 30 Packages
Total download size: 81 M
Proceed with this transaction? [y/N]:
```

Resource Groups & Tag Editor

```
[ec2-user@ip-10-10-10-10 ~]$
[ec2-user@ip-10-10-10-10 ~]$ sudo dnf upgrade --releasever=2023.2.20231030
```

--releasever overrides system-release and /etc/dnf/vars/releasever

# DEMO – Deterministic Updates

## STEP 4: UPGRADE COMPLETE

```
Resource Groups & Tag Editor
Verifying      : vim-data-2:9.0.2010-1.amzn2023.noarch
                  61/62
Verifying      : vim-data-2:9.0.1882-1.amzn2023.0.2.noarch
                  62/62

Upgraded:
amazon-ec2-net-utils-2.4.1-1.amzn2023.0.1.noarch      amazon-linux-repo-s3-2023.2.20231030-1.amzn2023.noarch
0.10.x86_64
ca-certificates-2023.2.62-1.0.amzn2023.0.1.noarch    cloud-init-22.2.2-1.amzn2023.1.12.noarch
7.x86_64
glibc-all-langpacks-2.34-52.amzn2023.0.7.x86_64      glibc-common-2.34-52.amzn2023.0.7.x86_64
.amzn2023.0.7.x86_64
glibc-locale-source-2.34-52.amzn2023.0.7.x86_64      grub2-common-1:2.06-61.amzn2023.0.9.noarch
61.amzn2023.0.9.x86_64                               grub2-tools-1:2.06-61.amzn2023.0.9.x86_64
grub2-pc-modules-1:2.06-61.amzn2023.0.9.noarch        grub2-tools-minimal-1:2.0
6-61.amzn2023.0.9.x86_64                             libxml2-2.10.4-1.amzn2023
.kernel-livepatch-repo-s3-2023.2.20231030-1.amzn2023.noarch  openssl-libs-1:3.0.8-1.am
0.6.x86_64                                             openssl-libs-1:3.0.8-1.am
libzstd-1.5.5-1.amzn2023.0.1.x86_64                  vim-common-2:9.0.2010-1.amzn2023.x86_64
zn2023.0.9.x86_64                                     vim-data-2:9.0.2010-1.amz
system-release-2023.2.20231030-1.amzn2023.noarch      vim-minimal-2:9.0.2010-1.
n2023.noarch                                           vim-minimal-2:9.0.2010-1.
vim-enhanced-2:9.0.2010-1.amzn2023.x86_64             zstd-1.5.5-1.amzn2023.0.1
amzn2023.x86_64
xxd-2:9.0.2010-1.amzn2023.x86_64                      zstd-1.5.5-1.amzn2023.0.1
.x86_64
Installed:
cloud-init-cfg-ec2-22.2.2-1.amzn2023.1.12.noarch      kernel-6.1.59-84.139.amzn2023.x86_64

Complete!
[ec2-user@ip-107 ~]$
```

The upgrade locks the system to the repository for the new version of system-release

```
Resource Groups & Tag Editor
[ec2-user@ip-107 ~]$
[ec2-user@ip-107 ~]$ rpm -q system-release
system-release-2023.2.20231030-1.amzn2023.noarch
[ec2-user@ip-107 ~]$
```

# DEMO – Deterministic Updates

SELECTIVE UPGRADES



Resource Groups & Tag Editor

```
[ec2-user@ip- / ~]$ sudo dnf check-update --releasever=latest --security
```

Selectively consume security updates while keeping the repository locked to a version

# Migrating to Amazon Linux 2023



# Migrating to Amazon Linux 2023

## STEP 1: LAUNCHING AN AL2023 INSTANCE

[EC2](#) > [Instances](#) > Launch an instance

### Launch an instance [Info](#)

Amazon EC2 allows you to create virtual machines, or instances, that run on the AWS Cloud. Quickly get started by following the simple steps below.

#### Name and tags [Info](#)

Name

[Add additional tags](#)


#### ▼ Application and OS Images (Amazon Machine Image) [Info](#)

An AMI is a template that contains the software configuration (operating system, application server, and applications) required to launch your instance. Search or Browse for AMIs if you don't see what you are looking for below


Recents

Quick Start


Amazon Linux




macOS




Ubuntu




Windows



Red Hat



SUSE Linux



[Browse more AMIs](#)  
Including AMIs from AWS, Marketplace and the Community

#### Amazon Machine Image (AMI)

Amazon Linux 2023 AMI

ami-08cba41c585e4a2e2 (64-bit (x86)) / ami-07dcd11247b816084 (64-bit (Arm))

Virtualization: hvm    ENA enabled: true    Root device type: ebs

Free tier eligible

#### Description

Amazon Linux 2023 AMI 2023.2.20231026.0 arm64 HVM kernel-6.1

**Architecture**

64-bit (Arm)

**AMI ID**

ami-07dcd11247b816084

Verified provider

#### ▼ Summary

Number of instances [Info](#)

**Software Image (AMI)**  
Amazon Linux 2023 AMI 2023.2.2...[read more](#)  
ami-07dcd11247b816084

**Virtual server type (instance type)**  
t4g.nano

**Firewall (security group)**  
New security group

**Storage (volumes)**  
1 volume(s) - 8 GiB

[Free tier](#): In your first year includes 750 hours of t2.micro (or t3.micro in the Regions in which t2.micro is unavailable) instance usage on free tier AMIs per month, 30 GiB of EBS storage, 2 million IOs, 1 GB of snapshots, and 100 GB of bandwidth to the internet.

[Cancel](#) [Launch instance](#) [Review commands](#)

Launch a new instance with the Amazon Linux 2023 AMI or a custom AL2023 AMI



# Migrating to Amazon Linux 2023

## STEP 2: TESTING YOUR WORKLOAD ON AMAZON LINUX 2023

```
Updates Information Summary: available
  1 Security notice(s)
    1 Important Security notice(s)
Security: kernel-6.1.59-84.139.amzn2023.x86_64 is an installed security update
Security: kernel-6.1.56-82.125.amzn2023.x86_64 is the currently running version
```

```

/      #_
~\      ###_      Amazon Linux 2023
~~\      #####\
~~      \###|
~~      \#/      https://aws.amazon.com/linux/amazon-linux-2023
~~      V~' '->
      ~~~
      ~~-.-
      -/-
      -/-
      -/m/'
Last login: Fri Nov 3 22:20:14 2023 from [REDACTED]
[ec2-user@ip-[REDACTED] ~]$

```

## Test a fresh installation of your application on AL2023 thoroughly

# Alternatively: Migrating to Amazon Linux 2023

## STEP 3: SOME CHANGES TO EXPECT



**SELinux  
mode**



**Language  
runtimes**

**DNF**

**Package  
manager**

**IMDs**

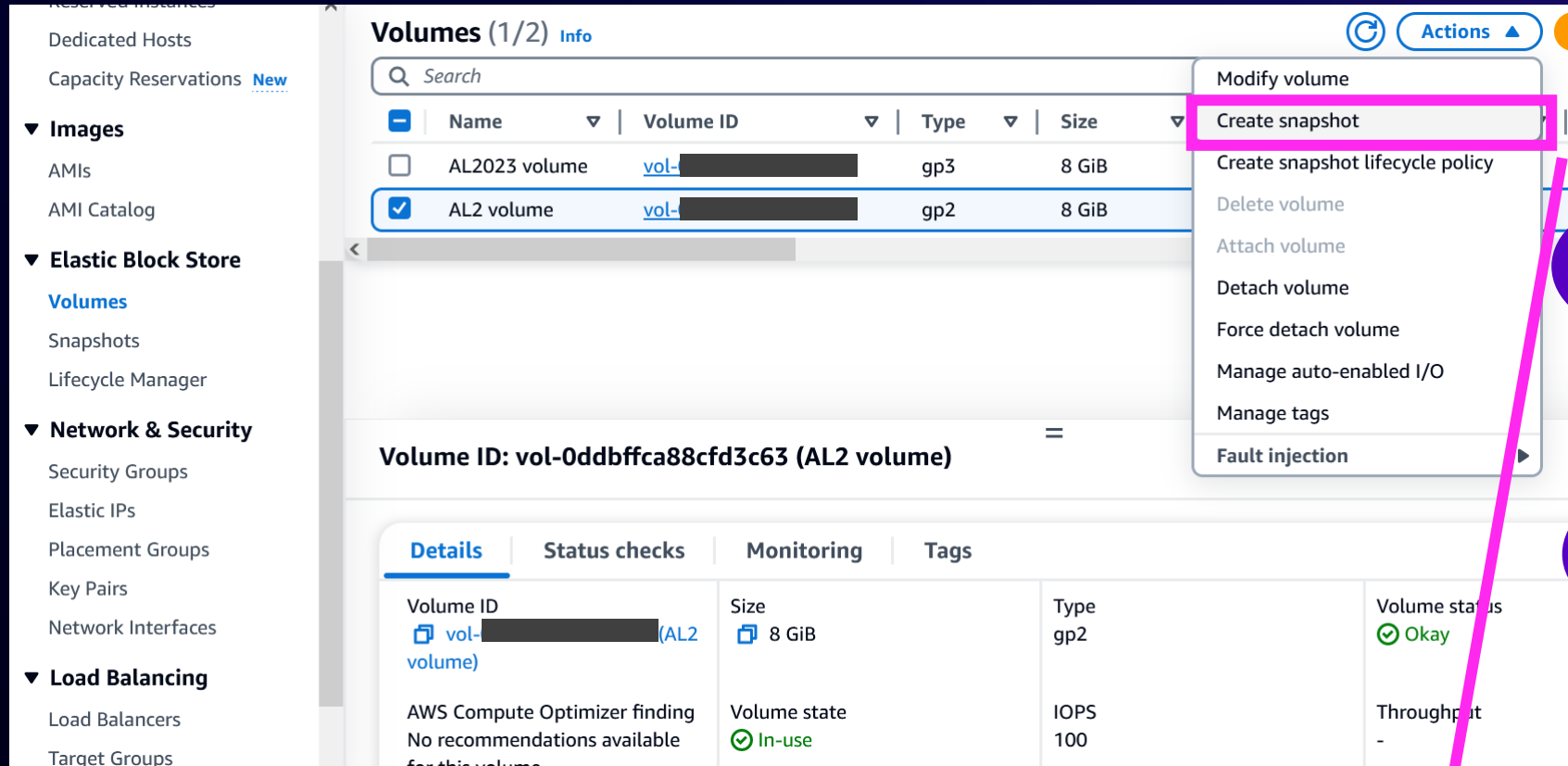
**Instance  
Metadata**



**AWS CLI**

# Migrating to Amazon Linux 2023

## STEP 4: TAKING A SNAPSHOT OF THE EBS VOLUME



**Volumes (1/2)** Info

Search

	Name	Volume ID	Type	Size
<input type="checkbox"/>	AL2023 volume	vol-██████████	gp3	8 GiB
<input checked="" type="checkbox"/>	AL2 volume	vol-██████████	gp2	8 GiB

**Volume ID: vol-0ddbffca88cfd3c63 (AL2 volume)**

**Details** | Status checks | Monitoring | Tags

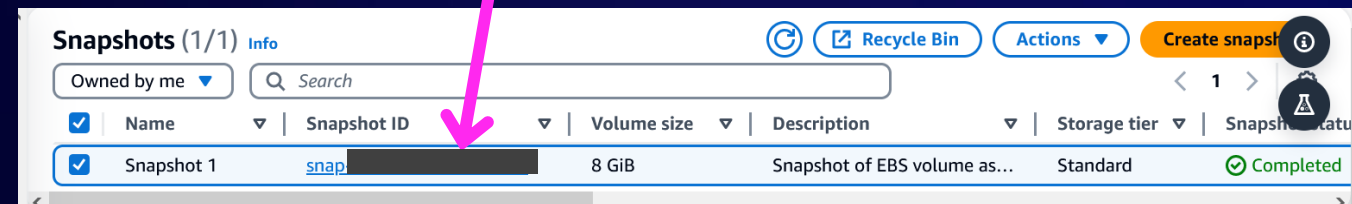
Volume ID vol-██████████ (AL2 volume)	Size 8 GiB	Type gp2	Volume status ✓ Okay
AWS Compute Optimizer finding No recommendations available for this volume	Volume state ✓ In-use	IOPS 100	Throughput -

**Actions**

- Modify volume
- Create snapshot
- Create snapshot lifecycle policy
- Delete volume
- Attach volume
- Detach volume
- Force detach volume
- Manage auto-enabled I/O
- Manage tags
- Fault injection

Take a snapshot of the EBS volume associated with the AL2 instance

Back up your application data



**Snapshots (1/1)** Info

Owned by me Search

	Name	Snapshot ID	Volume size	Description	Storage tier	Snapshot status
<input checked="" type="checkbox"/>	Snapshot 1	snap-██████████	8 GiB	Snapshot of EBS volume as...	Standard	✓ Completed

# Migrating to Amazon Linux 2023



## STEP 5: RESTORING YOUR APPLICATIONS AND DATA ON AL2023

Reserved Instances

Dedicated Hosts

Capacity Reservations [New](#)

▼ **Images**

AMIs

AMI Catalog

▼ **Elastic Block Store**

Volumes

[Snapshots](#)

Lifecycle Manager

▼ **Network & Security**

### Snapshots (1/2) Info

Owned by me ▼

<input type="checkbox"/>	Name	Snapshot ID	Volume size	Description
<input checked="" type="checkbox"/>	Snapshot 1	snap-██████████	8 GiB	Snapshot
<input type="checkbox"/>	-	snap-██████████	8 GiB	AL2

Snapshot ID: ██████████ (Snapshot 1)

[Details](#) [Permissions](#) [Storage tier](#) [Tags](#)

[Recycle Bin](#) [Actions](#)

- Create volume from snapshot
- Create image from snapshot
- Copy snapshot
- Modify permissions
- Manage fast snapshot restore
- Archive snapshot
- Restore snapshot from archive
- Change restore period
- Delete snapshot

Create snapshot ⓘ

< 1 > ⓘ

Create a new volume from the AL2 snapshot

Replace the AL2023 volume with the new volume you created

Launch Templates

Spot Requests

Savings Plans

Reserved Instances

Dedicated Hosts

Capacity Reservations [New](#)

▼ **Images**

AMIs

AMI Catalog

▼ **Elastic Block Store**

[Volumes](#)

Snapshots

Lifecycle Manager

### Volumes (1/3) Info

<input type="checkbox"/>	Name	Volume ID	Type	Size
<input type="checkbox"/>	AL2 volume	vol-██████████	gp2	8 GiB
<input checked="" type="checkbox"/>	New Volume	vol-██████████	gp2	8 GiB

Volume ID: vol-██████████ (New Volume)

[Details](#) [Status checks](#) [Monitoring](#) [Tags](#)

[Actions](#)

- Modify volume
- Create snapshot
- Create snapshot lifecycle policy
- Delete volume
- Attach volume**
- Detach volume
- Force detach volume
- Manage auto-enabled I/O
- Manage tags
- Fault injection

“ In Klarna's large-scale containerized setup, migrating to AL2023 significantly boosted our operational efficiency and security posture. AL2023's cgroup v2 support is key, enabling features like container-aware OOM killer and rootless container management, vital to our infrastructure.

Simone Marzola, Senior Engineering Manager | Klarna Engineering Platform

**Klarna.**

# Why Amazon Linux

REASONS TO CHOOSE AMAZON LINUX FOR RUNNING YOUR WORKLOAD ON



## Optimized for AWS

Integrated with  
tools, agents and  
services



## Secure by default

Ensures safety  
from threats by  
fixing all CVEs



## Simple to maintain

Delivers the  
simplest  
maintenance  
experience



## Cost

Available at no  
additional  
licensing cost

# Amazon Linux Engineering Philosophy

- Independent open source rpm-based distribution
- Source packages from multiple upstream repositories
- We provide additional value for our customers:
  - Deterministic updates
  - EC2 instance type optimizations
  - Faster and more comprehensive CVE patching
  - Release cadence aligned with other AWS services

# Amazon Linux Partners





# Conclusion

- Amazon Linux is the optimized OS to run workloads on AWS
- Amazon Linux 2023 the latest version
  - Simplifies maintenance with deterministic updates
  - Improves security with kernel patching, CVE patching and kernel live update
- AWS makes it easy to manage your Amazon Linux instances at scale with key integrations with services like AWS Systems Manager, Amazon Inspector, and Amazon CloudWatch

# Get started with Amazon Linux

USE QR CODES TO ACCESS ADDITIONAL RESOURCES



[Amazon Linux 2023](#)



[Amazon Linux User  
Guide](#)



[Amazon Linux  
Partners](#)



[GitHub](#)

# Thank you!



Please complete the session survey in the mobile app

**Pallavi Ravishankar**

✉ [pnarve@amazon.com](mailto:pnarve@amazon.com)

[in linkedin.com/in/pallaviravishankar](https://www.linkedin.com/in/pallaviravishankar)

**Chris Schlaeger**

✉ [cschlaeg@amazon.com](mailto:cschlaeg@amazon.com)

[in linkedin.com/in/chrisschlaeger](https://www.linkedin.com/in/chrisschlaeger)

