



International  
Centre for  
Radio  
Astronomy  
Research

# Set Up and Run at AWS

Ian Kemp August 2025



Government of Western Australia  
Department of the Premier and Cabinet  
Office of Science

# Background

- Curtin researchers can get \$200 credit from Curtin IT
- Log in to AWS using Curtin credentials
- Attempt 1 – installed CASA & WSClean (native install) – 3 weeks
- Attempt 2 – installed same with AMI & Docker – 4 days
- Follow this recipe you can do it in 30 minutes

A screenshot of a web browser displaying the AWS Access Portal at [curtin-digital.awsapps.com/start/#/?tab=accounts](https://curtin-digital.awsapps.com/start/#/?tab=accounts). The browser's address bar shows the URL. The page has a dark theme. At the top, there is a navigation bar with various links like BOINC, FB, Guardian, NYT, Al Jaz, Conv, Prospect, Perth Forecast, Perth Radar, SS, SS Radar, FL, SSC, Leek Duck, Webcam, ATC, Perth PoGo, Streaming, and RONIN. Below the navigation bar, the title "aws access portal" is displayed next to the AWS logo. The main content area is titled "AWS access portal" and features two tabs: "Accounts" (which is selected) and "Applications". Under the "Accounts" tab, there is a section titled "AWS accounts (1)". A search bar with the placeholder "Filter accounts by name, ID, or email address" is present. Below the search bar, a single account entry is shown: "cira\_aws\_collaboration-prod" with the ID "619071356880" and the email "cira\_aws\_collaboration-prod@curtin.edu.au". There are two buttons below this entry: "AWSPowerUserAccess" and "Access keys". On the right side of the "AWS accounts" section, there is a "Create shortcut" button. In the top right corner of the main content area, there is a link "More ways to access AWS". The overall layout is clean and modern, typical of AWS's user interface.

ap-southeast-2.console.aws.amazon.com/console/home?region=ap-southeast-2#

aws Search [Option+S] Reset to default layout + Add widgets

Region: Asia Pacific (Sydney) AWSPowerUserAc

### Console home Info

**Recently visited** Info

- EC2 (circled in red)
- Elastic Container Registry
- EC2 Image Builder
- EC2 Global View
- Billing and Cost Management
- Resource Groups & Tag Editor
- VPC
- Elastic Beanstalk

[View all services](#)

**Applications (0) Info**

Region: Asia Pacific (Sydney)

Select Region: ap-southeast-2 (Current Region) [Find applications](#)

Name Description Region Originati. [Create application](#)

No applications  
Get started by creating an application.

[Create application](#)

[Go to myApplications](#)

**Welcome to AWS**

Getting started with AWS [Info](#)  
Find out the fundamentals and valuable information to get the most out of AWS.

**AWS Health** Info

Open issues 0 Past 7 days

Scheduled changes

**Cost and usage** Info

Current month costs **US\$42.24**  
↑ 206% compared to last month for same period

Cost (US\$)

Reset to default layout + Add widgets

Region: Asia Pacific (Sydney) AWSPowerUserAc

Recently visited

EC2 (circled in red)

Elastic Container Registry

EC2 Image Builder

EC2 Global View

Billing and Cost Management

Resource Groups & Tag Editor

VPC

Elastic Beanstalk

View all services

Applications (0)

Create application

No applications

Create application

Welcome to AWS

Getting started with AWS

AWS Health

Cost and usage

Current month costs

US\$42.24

Cost (US\$)

The screenshot shows the AWS EC2 home page with a dark theme. The left sidebar contains a navigation menu for EC2, including sections for Dashboard, Instances, Images (with AMIs highlighted and circled in red), Elastic Block Store, Network & Security, and Security Groups. The main content area is titled "Compute" and features a large heading "Amazon Elastic Compute Cloud (EC2)". Below it, a sub-headline reads "Create, manage, and monitor virtual servers in the cloud." A descriptive paragraph explains that EC2 offers a broadest and deepest compute platform with over 600 instance types and various purchase models. To the right, there are three callout boxes: "Launch a virtual server" (with a "Launch instance" button), "Get started" (with "Get started walkthroughs" and "Get started tutorial" links), and "Additional actions" (with "View running instances" and "Migrate a server" links). The top of the page includes a browser header with the URL "ap-southeast-2.console.aws.amazon.com/ec2/home?region=ap-southeast-2#Overview:", a search bar, and various AWS service icons.

EC2

Dashboard

EC2 Global View

Events

Instances

Instances

Instance Types

Launch Templates

Spot Requests

Savings Plans

Reserved Instances

Dedicated Hosts

Capacity Reservations

Images

AMIs

AMI Catalog

Elastic Block Store

Volumes

Snapshots

Lifecycle Manager

Network & Security

Security Groups

Compute

# Amazon Elastic Compute Cloud (EC2)

Create, manage, and monitor virtual servers in the cloud.

Amazon Elastic Compute Cloud (Amazon EC2) offers the broadest and deepest compute platform, with over 600 instance types and a choice of the latest processors, storage, networking, operating systems, and purchase models to help you best match the needs of your workload.

## Benefits and features

### EC2 offers ultimate scalability and control

Fully resizable compute capacity to support virtually any workload. This service is best if you want:

- Highest level of control of the entire technology stack, allowing full integration with all AWS services
- Widest variety of server size options
- Widest availability of operating systems to choose from including Linux, Windows, and macOS
- Global scalability

Find out more about EC2

Launch a virtual server

Get started

Additional actions

← → ⌂ ap-southeast-2.console.aws.amazon.com/ec2/home?region=ap-southeast-2#AMICatalog:

BOINC FB Guardian NYT Al Jaz Conv Prospect Perth Forecast Perth Radar SS SS Radar FL SSC Leek Duck Webcam ATC Perth PoGo Streaming RONIN AWS

aws Search [Option+S] [x] [bell] [?] [gear] Asia Pacific (Sydney) AWS PowerUser

Search results

**EC2** <

Dashboard EC2 Global View [x]

Events

Instances

Instances Instance Types Launch Templates Spot Requests Savings Plans Reserved Instances Dedicated Hosts Capacity Reservations

Images

AMIs [x]

Elastic Block Store

Volumes Snapshots Lifecycle Manager

Network & Security

Security Groups

## AMI Catalog

An AMI is a template that contains the software configuration (operating system, application server, and applications) required to launch your instance. You can select an AMI provided by AWS, our user community, or the AWS Marketplace; or you can select one of your own AMIs.

**AMIs** Create Template with AMI

Search for an AMI by entering a search term e.g. "Windows"

**Quick Start AMIs (45)** Commonly used AMIs **My AMIs (81)** Created by me **AWS Marketplace AMIs (6018)** AWS & trusted third-party AMIs **Community AMIs (500)** Published by anyone

**Refine results** Clear all filters

Free tier only Info

**OS category**

All Linux/Unix  All Windows

**Architecture**

64-bit (Arm)  32-bit (x86)  64-bit (x86)  64-bit (Mac)

**All products (45 filtered, 45 unfiltered)**

**Amazon Linux 2023 AMI**  
ami-06a0b3348e9d1cf1 (64-bit (x86), uefi-preferred) / ami-0bc8d8ff75a022b42 (64-bit (Arm), uefi)  
**Amazon Linux** Free tier eligible Verified provider  
Platform: amazon Root device type: ebs Virtualization: hvm ENA enabled: Yes

**Amazon Linux 2 AMI (HVM) - Kernel 5.10, SSD Volume Type**  
ami-02b231863b9573c37 (64-bit (x86)) / ami-0a722176c772917ad (64-bit (Arm))  
**Amazon Linux** Free tier eligible Verified provider  
Amazon Linux 2 comes with five years support. It provides Linux kernel 5.10 tuned for optimal performance on Amazon EC2, systemd 219, GCC 7.3, Glibc 2.26, Binutils 2.29.1, and the latest software packages through extras. This AMI is the successor of the Amazon Linux AMI that is now under maintenance only mode and has been removed from this wizard.

ap-southeast-2.console.aws.amazon.com/ec2/home?region=ap-southeast-2#AMICatalog:

BOINC | FB | Guardian | NYT | Al Jaz | Conv | Prospect | Perth Forecast | Perth Radar | SS | SS Radar | FL | SSC | Leek Duck | Webcam | ATC | Perth PoGo | Streaming | RONIN | AWS

aws | Search [Option+S] | [Option+S]

Search results

**EC2**

- Dashboard
- EC2 Global View
- Events

▼ Instances

- Instances
- Instance Types
- Launch Templates
- Spot Requests
- Savings Plans
- Reserved Instances
- Dedicated Hosts
- Capacity Reservations

▼ Images

- AMIs
- AMI Catalog**

▼ Elastic Block Store

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- Lifecycle Manager

▼ Network & Security

- Security Groups

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### AMIs

[Create Template with AMI](#)

**Quick Start AMIs (0)**  
Commonly used AMIs

**My AMIs (81)**  
Created by me

**AWS Marketplace AMIs (738)**  
AWS & trusted third-party AMIs

**Community AMIs (500)**  
Published by anyone

▼ Refine results

Categories

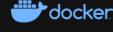
- DevOps (616)
- Infrastructure
- Software (535)
- Business Applications (78)
- Cloud Operations (30)
- Machine Learning (16)
- Industries (12)
- IoT (8)
- Professional Services (1)

▼ Publisher

- Supported Images (159)
- Websoft9 (75)

Sort By

docker (738 results) showing 1 - 50

 **Docker on Debian 11 (Bullseye)**  
By Docker, Inc. [\[?\]](#) | Ver Docker on Debian (v0.12.0)  
Starting from \$0.03 to \$0.03/hr for software + AWS usage fees  
Docker in Docker This Docker AMI is designed to support Docker-in-Docker workloads. You can use this image as is for any Docker based workload, however, this AMI has been configured to make running Docker-in-Docker workloads as easy and as secure as possible. In addition, this image enables DinD wo...

 **Docker on CentOS 10 (x86\_64 Docker)**  
By [Supported Images](#) [\[?\]](#) | Ver 20250320  
12 external reviews [\[?\]](#)

Dashboard

EC2 Global View [?]

Events

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- Volumes
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- Lifecycle Manager

Network & Security

- Security Groups
- Elastic IPs
- Placement Groups
- Key Pairs
- Network Interfaces

Load Balancing

- Load Balancers
- Target Groups
- Trust Stores

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AWS & trusted third-party AMIs

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Published by anyone

Publisher

- Clear
- Amazon Web Services (7)
- APIS (4)
- Kurian (4)
- Kinvolk (3)
- NVIDIA (3)
- Bitnami by VMware (2)
- RELEVANCE LAB (2)
- Easypanel (1)
- MATOFFO (1)
- CubeBackup Inc. (1)

Show All

Pricing model

- Clear
- Free (7)

Operating system

- All Linux/Unix

Average rating

- ★★★★★ & up (1)
- ★★★★★ & up (1)
- ★★★★★ & up (1)
- ★★★★★ & up (3)

Architecture

- 64-bit (x86) (5)
- 64-bit (Arm) (2)

Amazon EC2 Container Service makes it easy to manage Docker containers at scale by providing a centralized service that includes programmatic access to the complete state of the containers and Amazon EC2 instances in the cluster, schedules containers in the proper location, and uses familiar Amazon...

 **Amazon ECS-Optimized Amazon Linux 2023 (AL2023) arm64 AMI**  
By [Amazon Web Services](#) [?] | Ver 2023.0.20250430

Amazon EC2 Container Service makes it easy to manage Docker containers at scale by providing a centralized service that includes programmatic access to the complete cluster state, schedules containers in the proper location, and uses familiar Amazon EC2 features.

 **Amazon ECS-Optimized Amazon Linux AMI**  
By [Amazon Web Services](#) [?] | Ver 2018.03.20250224

Amazon Linux AMI amzn-ami-2018.03.20240201 x86\_64 ECS HVM GP2

 **Amazon ECS-Optimized Amazon Linux 2 (AL2) x86\_64 AMI**  
By [Amazon Web Services](#) [?] | Ver 2.0.20250505

★★★★★ 2 AWS reviews [?]

Amazon Linux AMI 2.0.20250505 x86\_64 ECS HVM GP2

 **Amazon ECS-Optimized Amazon Linux 2 (AL2) arm64 AMI**  
By [Amazon Web Services](#) [?] | Ver 2.0.20250505

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By [Amazon Web Services](#) [?] | Ver 2023.0.20250505

Amazon EC2 Container Service makes it easy to manage Docker containers at scale by providing a centralized service that includes programmatic access to the complete cluster state, schedules containers in the proper location, and uses familiar Amazon EC2 features.

Select

Select

Select

Select

ap-southeast-2.console.aws.amazon.com/ec2/home?region=ap-southeast-2#AMICatalog:

Search results

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Key Pairs

Networking Services

Search: docker

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Clear

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APIS (4)

Kurian (4)

Kinvolk (3)

NVIDIA (3)

Bitnami by VMware (2)

RELEVANCE LAB (2)

Easypanel (1)

MATOFFO (1)

CubeBackup Inc. (1)

Show All

Pricing model

Clear

Free (7)

Operating system

All Linux/Unix

Average rating

★★★★ & up (1)

★★★★ & up (1)

★★★★ & up (1)

★★★★ & up (3)

Architecture

64-bit (x86) (5)

**Amazon ECS-Optimized Amazon Linux 2023 (AL2023) x86\_64 AMI**

Amazon Web Services

★★★★★ 0 AWS reviews

Free Tier

Overview Product details Pricing Usage Support

Amazon Linux AMI 2023.0.20250430 x86\_64 ECS HVM EBS

Typical total price \$0.096/Hr

Total pricing per instance for services hosted on m5.large in us-east-1.

See additional pricing information.

Latest version 2023.0.20250505

Delivery methods

Amazon Machine Image

Operating systems

Amazon Linux 2023.0.20250505

Amazon Linux 2023.0.20250318

**ⓘ A subscription to this AMI is required before you can launch an instance. Check the pricing details in the pricing tab before continuing.**

You can subscribe to this AMI now or we will automatically subscribe for you when you launch this instance. We recommend that you 'Subscribe now' if you are sure this is the AMI you want to use to launch as it will reduce wait time on launch. Choose 'Subscribe on instance launch' if you are still choosing an AMI and don't want to commit to a subscription yet. By subscribing to this AMI you agree that your use of this software is subject to the pricing terms and the seller's End User License Agreement

Cancel Subscribe on instance launch **Subscribe now**

By Amazon Web Services Ver 2.0.20250505

★★★★★ 2 AWS reviews

Amazon EC2 Container Service makes it easy to manage containers at scale by providing a centralized service that includes programmatic access to the complete state of the containers and Amazon EC2 instances in the cluster, schedules containers in the proper location, and uses familiar Amazon EC2...

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  - Load Balancers
  - Target Groups
  - Trust Stores
- Auto Scaling
  - Auto Scaling Groups

**Instance summary for i-0fe65fd540b796b2f (AMZN x86 Docker)** [Info](#)

Updated less than a minute ago

Instance ID	Public IPv4 address	Private IPv4 addresses
i-0fe65fd540b796b2f	3.26.99.238   <a href="#">open address</a>	172.31.22.218
IPv6 address	Instance state	Public IPv4 DNS
-	Running	ec2-3-26-99-238.ap-southeast-2.compute.am   <a href="#">open address</a>
Hostname type	Private IP DNS name (IPv4 only)	Elastic IP addresses
IP name: ip-172-31-22-218.ap-southeast-2.compute.internal	ip-172-31-22-218.ap-southeast-2.compute.internal	-
Answer private resource DNS name	Instance type	AWS Compute Optimizer finding
IPv4 (A)	m5.large	Over-provisioned.   <a href="#">View detail</a>
Auto-assigned IP address	VPC ID	Auto Scaling Group name
3.26.99.238 [Public IP]	vpc-090a9022e55941d61	-
Instance profile arn	Subnet ID	Managed
arn:aws:iam::619071356880:instance-profile/curtin-default-profile-ap-southeast-2	subnet-02632a9f5a5754ff	false
IMDSv2	Instance ARN	
Required	arn:aws:ec2:ap-southeast-2:619071356880:instance/i-0fe65fd540b796b2f	
Operator		

**Storage**

**Root device details**

Root device name	Root device type	EBS optimization
/dev/xvda	EBS	enabled

**Block devices**

Volume ID	Device name	Volume size (GiB)	Volume State	Attachment status	Attachment time	Encrypted	KMS key ID
<a href="#">vol-06ef39373f20a45f4</a>	/dev/xvda	30	<span style="color: green;">In-use</span>	<span style="color: green;">Attached</span>	2025/04/25 19:56 GMT+8	Yes	9dd00676-9e
<a href="#">vol-092951560dad53080</a>	/dev/sdb	20	<span style="color: green;">In-use</span>	<span style="color: green;">Attached</span>	2025/05/06 14:18 GMT+8	Yes	9dd00676-9e

- ssh to your new VM

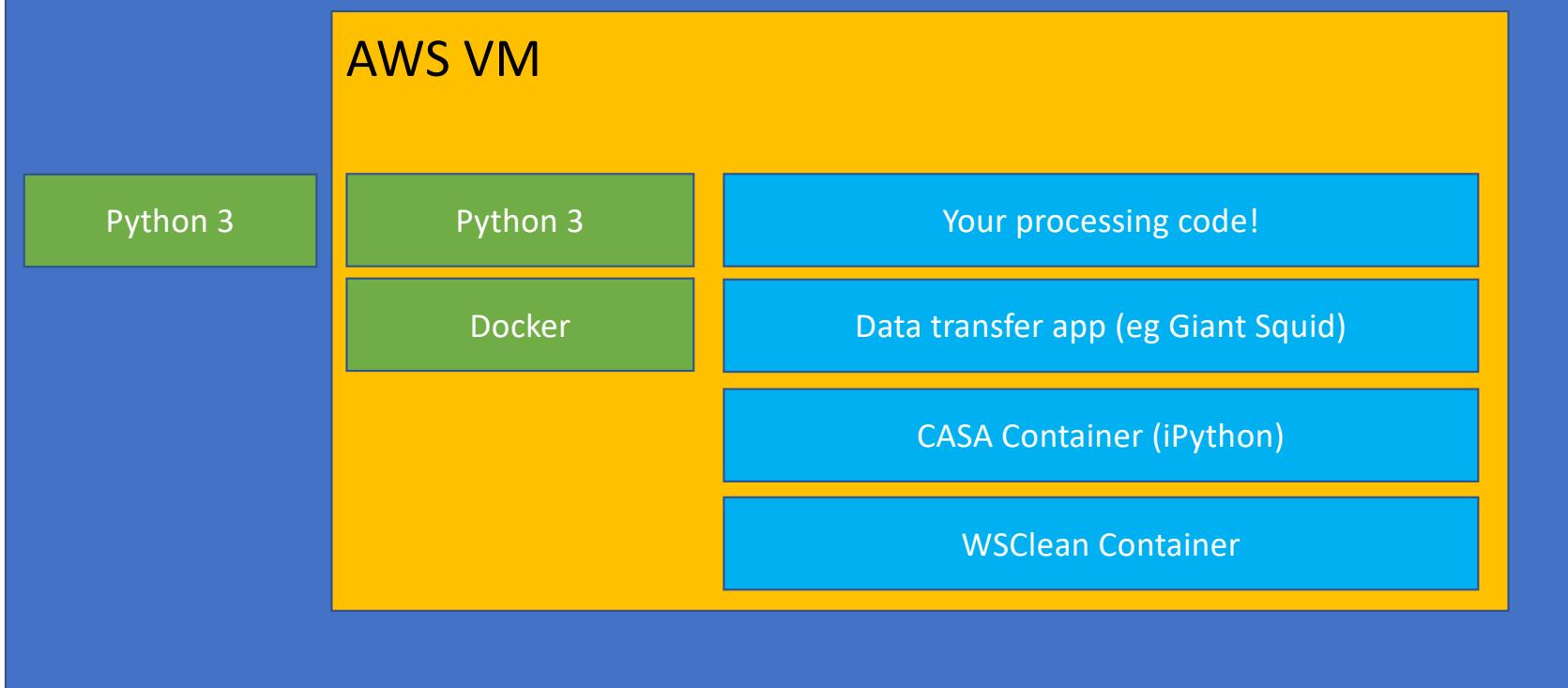
```
ssh -i "id_aws.pem" ec2-user@ec2-54-252-221-111.ap-southeast-2.compute.amazonaws.com
```

- Install CASA and WSClean containers

```
[ec2-user@ip-172-31-22-218 ~]$ docker pull rxastro/casa6
base: Pulling from rxastro/casa6
429d73c2ce7f: Pull complete
```

```
[ec2-user@ip-172-31-22-218 ~]$ docker pull alecthomson/wsclean
base: Pulling from rxastro/casa6
429d73c2ce7f: Pull complete
```

## Laptop console



- Run a session interactively in the CASA container

```
docker run -it -v /home/ec2-user/data:/data rxastro/casa6 bash  
root@a2aa586b831a:~# cd /data  
root@a2aa586b831a:/data# ls -l
```

```
total 40  
drwxr-xr-x. 2 1000 1000 4096 Apr 26 03:24 1064763472  
drwxr-xr-x. 2 1000 1000 4096 Apr 25 21:46 1064935560  
drwxr-xr-x. 2 1000 1000 4096 Apr 26 03:08 1066572976  
drwxr-xr-x. 2 1000 1000 4096 Apr 25 13:25 1160578192  
drwxr-xr-x. 2 1000 1000 4096 Apr 25 13:16 1221926008  
drwxr-xr-x. 2 1000 1000 4096 Apr 25 13:11 1222704120  
drwx----- 2 root root 16384 Apr 25 13:03 lost+found  
root@a2aa586b831a:/data# exit
```

- Run a command in the CASA container

```
[ec2-user@ip-172-31-22-218 scripts]$ docker run -v ~/scripts:/scripts -v  
~/data:/data rxastro/casa6 python '/scripts/03average.py'
```

- Run a session interactively in the WSClean container

```
docker run -it -v /home/ec2-user/data:/data alecthomson/wsclean bash  
root@9cefd3d623b9:/wsclean# wsClean -version
```

WSClean version 3.5 (2024-07-30)

Git commit hash: v3.5

This software package is released under the GPL version 3.

Author: André Offringa (offringa@gmail.com).

EveryBeam is available.

IDG is available.

WGridder is available.

```
root@ 9cefd3d623b9:/wsClean # exit
```

- Run a command in the WSClean container

```
[ec2-user@ip-172-31-22-218 scripts]$ docker run -v ~/scripts:/scripts -v  
~/data:/data alecthomson/wsclean wsclean -options
```

- Script the ‘docker run’ commands to call CASA tasks and WSClean tasks
- Either use VM’s Python or AWS Lambda

```
import os  
os.system("docker run -v ~/scripts:/scripts -v ~/data:/data  
alecthomson/wsclean wsclean --options --options")
```