

VIRTUAL **AWSOME DAY**



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Module Layout

- **Module 1: Introduction and History of AWS**
- **Module 2: Foundational Services** – Amazon EC2, Amazon VPC, Amazon S3, Amazon EBS
- **Module 3: Security, Identity, and Access Management** - IAM
- **Module 4: Databases** – Amazon DynamoDB, Amazon RDS, Machine Learning
- **Module 5: AWS Elasticity and Management Tools** – Auto Scaling, Elastic Load Balancing, Amazon CloudWatch, and AWS Trusted Advisor

Module 1

Introduction and History of AWS

V I R T U A L

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Amazon History



1994: Jeff Bezos incorporated the company.

2005: Amazon Publishing was launched.

2007: Kindle was launched.

2012: Amazon Game Studios was launched.

2014: Amazon Prime Now was launched.



1995: Amazon.com launched its online bookstore.

2006: Amazon Web Services (AWS) was launched.

2011: Amazon Fresh was launched.

2013: Amazon Art was launched.

2015: Amazon Home Services and Amazon Echo were launched.

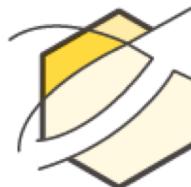


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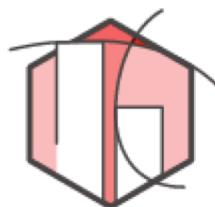
Advantages and Benefits of AWS Cloud Computing



Trade capital expense
for variable expense.



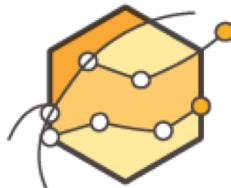
Increase speed and
agility.



Benefit from massive
economies of scale.



Stop spending money on
running and maintaining
data centers.



Stop guessing
capacity.



Go global in minutes.

AWS Customers

Enterprise Customers

Enterprise Cloud Computing with AWS

With a long history in enabling enterprises to successfully adopt cloud computing, Amazon Web Services delivers a mature set of services specifically designed for the unique security, compliance, privacy, and governance requirements of large organizations. With a technology platform that is both broad and deep, customer-obsessed Professional Services and Support organizations, robust training programs, and an ecosystem tens-of-thousands strong, AWS can help you move faster and do more.

Below are just a few of the many enterprise organizations using AWS today.



Deploy whichever architecture is right for your business



Cloud Native



Hybrid



Private

Public Sector Customers

Paving the way for innovation and supporting world-changing projects in government, education and nonprofit organizations

Contact Public Sector Sales

Government Education Nonprofits Partners Events Resources

Government, education and nonprofit organizations face unique challenges to accomplish complex missions with limited resources. Public sector leaders engaged in true cloud computing projects overwhelmingly turn to the power and speed of Amazon Web Services when they want to serve citizens more effectively, achieve scientific breakthroughs, reach broader constituents and put more of their time and resources into their core missions.

Amazon Web Services now serves more than 2,300 government, 7,000 education and 22,000 nonprofit organizations worldwide.



Watch the [Fireside Chat With Andy Jassy, CEO and Teresa Carlson, VP WWPS](#) at the AWS Public Sector Summit

Startup Customers

Startups and Amazon Web Services

From the spark of an idea, to the first customer, to IPO and beyond, the world's most progressive startups build and grow their businesses on Amazon Web Services. Our expansive technology platform allows startups of all sizes and kinds to run lean and frees them to be fast, agile, and global while still being efficient with their IT spend. And as they evolve and become more sophisticated, they don't outgrow AWS. Instead, they plug in to AWS's continuous service and feature innovations to make their ideas realities.

The Benefits of Building and Scaling Your Startup on AWS



Startups get special AWS perks



So many ways to lower costs



Going mobile - quickly and easily

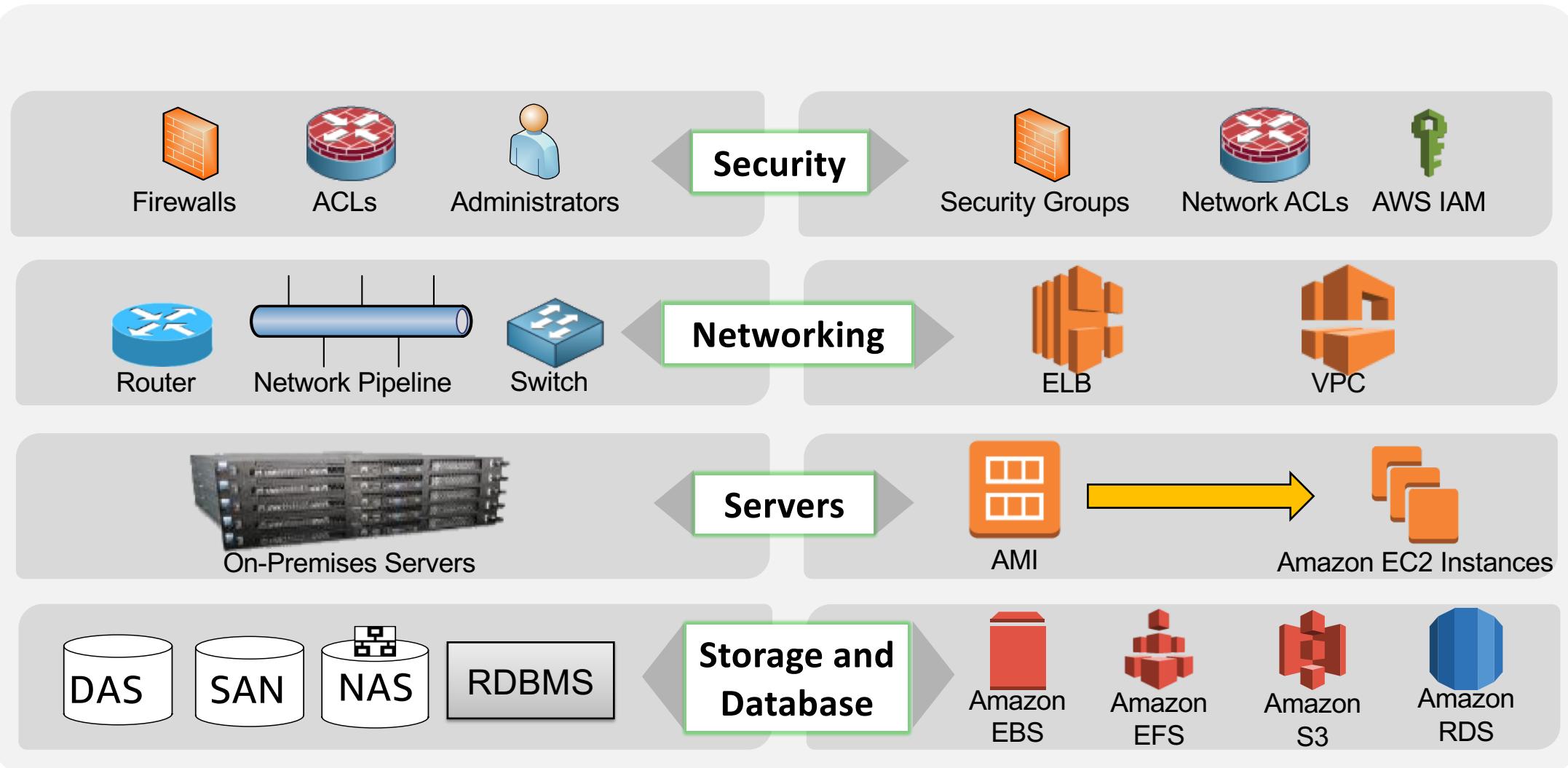


Amazon Web Service (AWS)

Enable businesses and developers to use web services to build scalable, sophisticated applications.



AWS Core Infrastructure and Services



AWS Cloud Computing

Applications



Virtual Desktops



Collaboration and Sharing

Platform Services

Databases

Relational
NoSQL
Caching

Analytics

Cluster Computing
Real-time
Data Warehouse
Data Workflows

App Services

Queuing
Orchestration
App Streaming
Transcoding
Email
Search

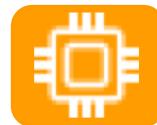
Deployment and Management

Containers
Dev/ops Tools
Resource Templates
Usage Tracking
Monitoring and Logs

Mobile Services

Identity
Sync
Mobile Analytics
Notifications

Foundation Services



Compute
(Virtual, Auto-scaling and Load Balancing)

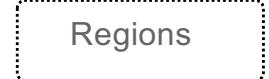


Networking



Storage
(Object, Block and Archive)

Infrastructure



Regions



Availability Zones



Edge Locations

AWS Global Infrastructure

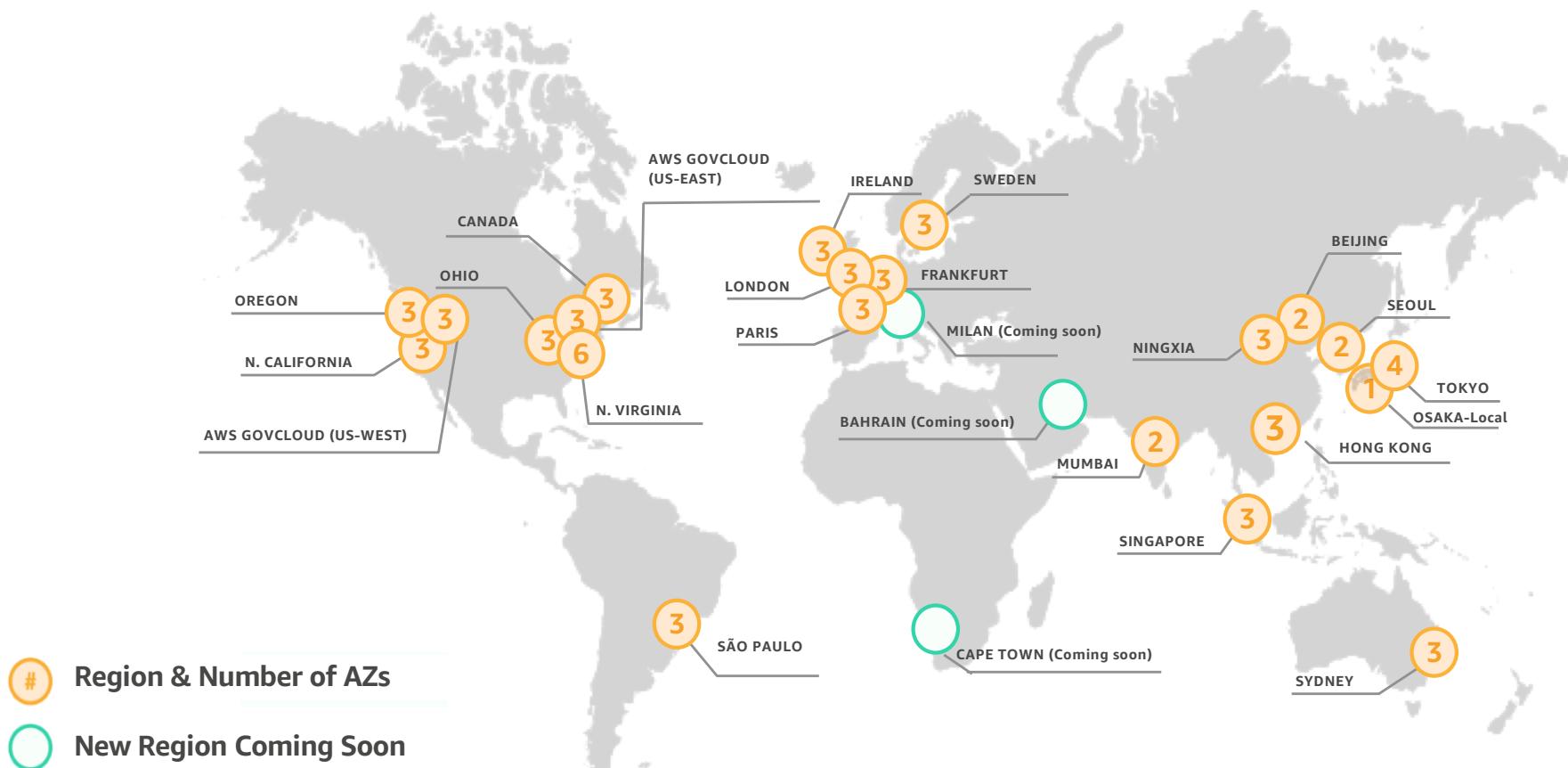
Regions

- Geographic locations
- Consist of at least two Availability Zones

Availability Zones

- Clusters of data centers
- Isolated from failures in other Availability Zones

AWS Global Infrastructure



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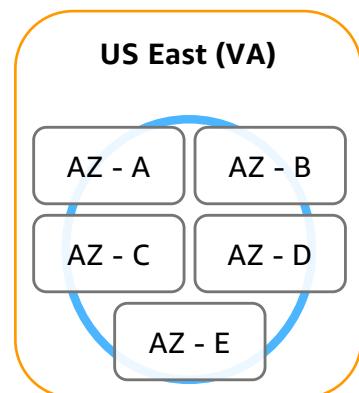
AWS Global Infrastructure

At least 2 Availability Zones per region.

Examples:

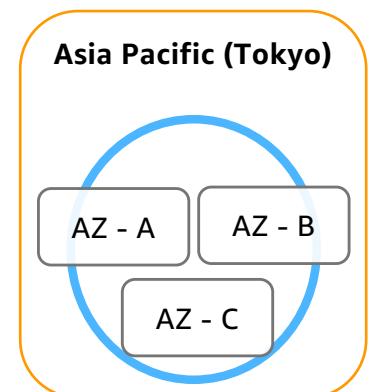
US East (N. Virginia)

- us-east-1a
- us-east-1b
- us-east-1c
- us-east-1d
- us-east-1e



Asia Pacific (Tokyo)

- ap-northeast-1a
- ap-northeast-1b
- ap-northeast-1c



Note: Conceptual drawing only. The number of Availability Zones (AZ) may vary.

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AWS Console Demonstration

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Knowledge Check

Q: What is the AWS term for physically distinct groups of data centers within a region?

Availability Zone

True or False: There are more Regions than Edge locations.

False

True or False: AWS owns and maintains the infrastructure required for application services. You provision and use them as needed.

True

AWS Foundation Services

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Module 2 Layout

- Amazon Elastic Compute Cloud (EC2)
 - Amazon ECS
 - Lambda and Serverless architecture
- Amazon Virtual Private Cloud (VPC)
- Amazon Storage Services
 - Amazon Simple Storage Service (S3)
 - Amazon Elastic Block Store (EBS)

Amazon Elastic Compute Cloud (EC2)

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Amazon Elastic Compute Cloud (EC2)



Amazon
EC2

- **Resizable** compute capacity
- Complete control of your computing resources
- **Reduced time required** to obtain and boot new server instances

Amazon EC2 Facts



- **Scale capacity** as your computing requirements change
- Pay only for capacity that you actually use
- Choose **Linux** or **Windows**
- Deploy across **AWS Regions** and **Availability Zones** for reliability
- Use **tags** to help manage your Amazon EC2 resources

Launching an Amazon EC2 Instance via the Management Console



- 1. Determine the AWS Region** in which you want to launch the Amazon EC2 instance.
- 2. Launch** an Amazon EC2 instance from a pre-configured Amazon Machine Image (AMI).
- 3. Choose an instance type** based on CPU, memory, storage, and network requirements.
- 4. Configure** network, IP address, security groups, storage volume, tags, and key pair.

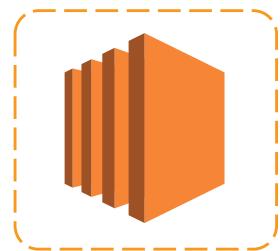
Amazon Machine Image (AMI) Details



An AMI includes the following:

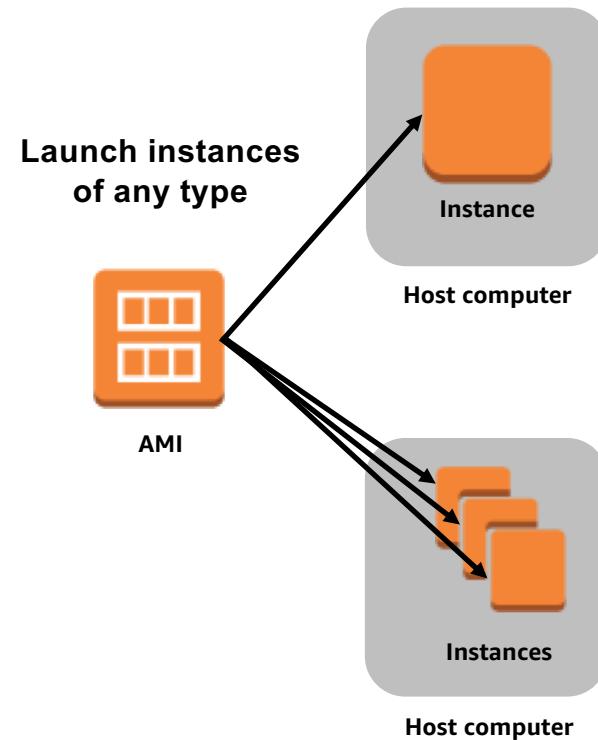
- A template for the **root volume** for the instance (for example, an operating system, an application server, and applications).
- **Launch permissions** that control which AWS accounts can use the AMI to launch instances.
- A block device mapping that specifies the **volumes to attach** to the instance when it is launched.

Instances and AMIs



Select an AMI based on:

- Region
- Operating system
- Architecture (32-bit or 64-bit)
- Launch permissions
- Storage for the root device



Instructor Demo – EC2

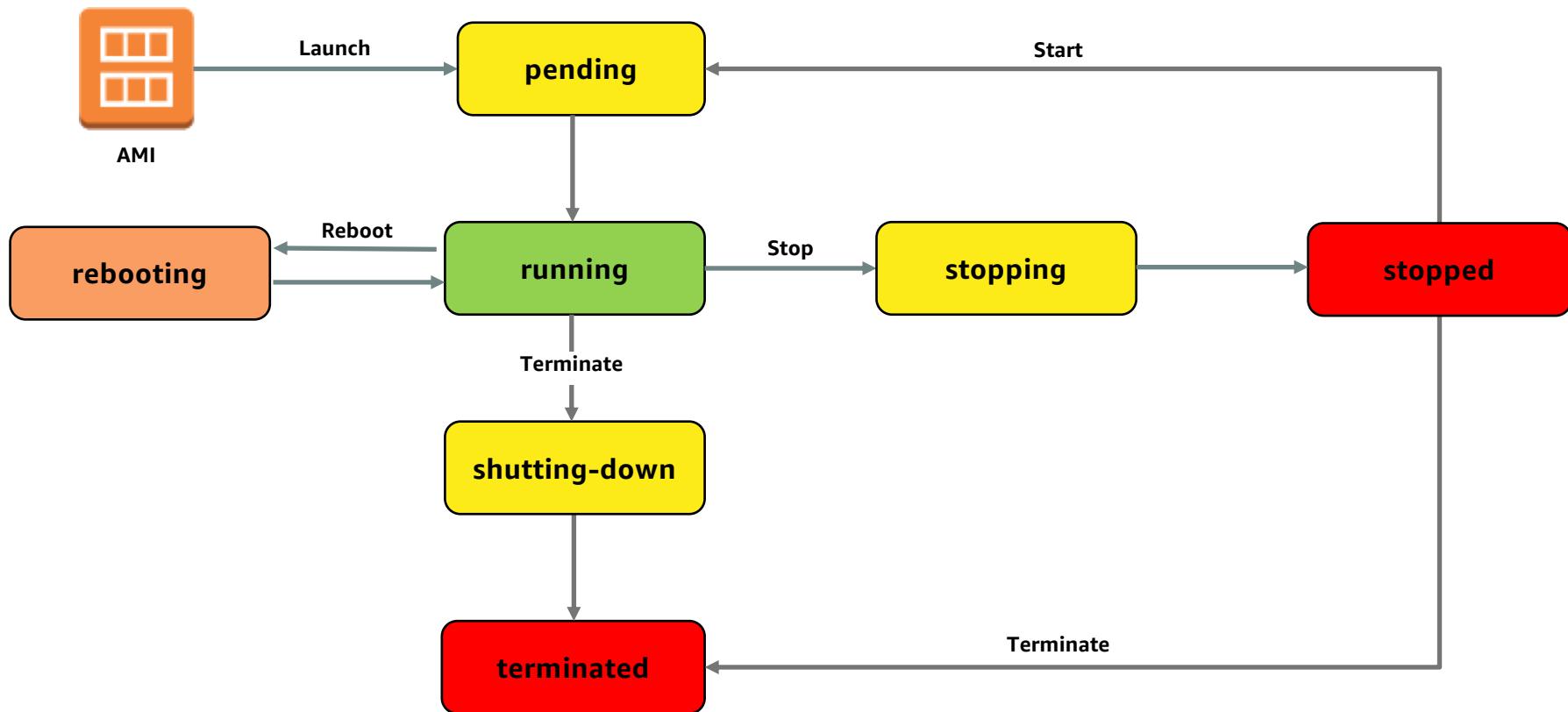
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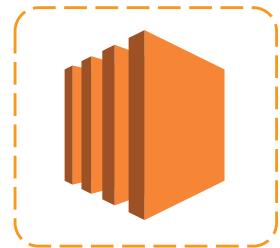
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Instance Lifecycle



User Data Example Linux



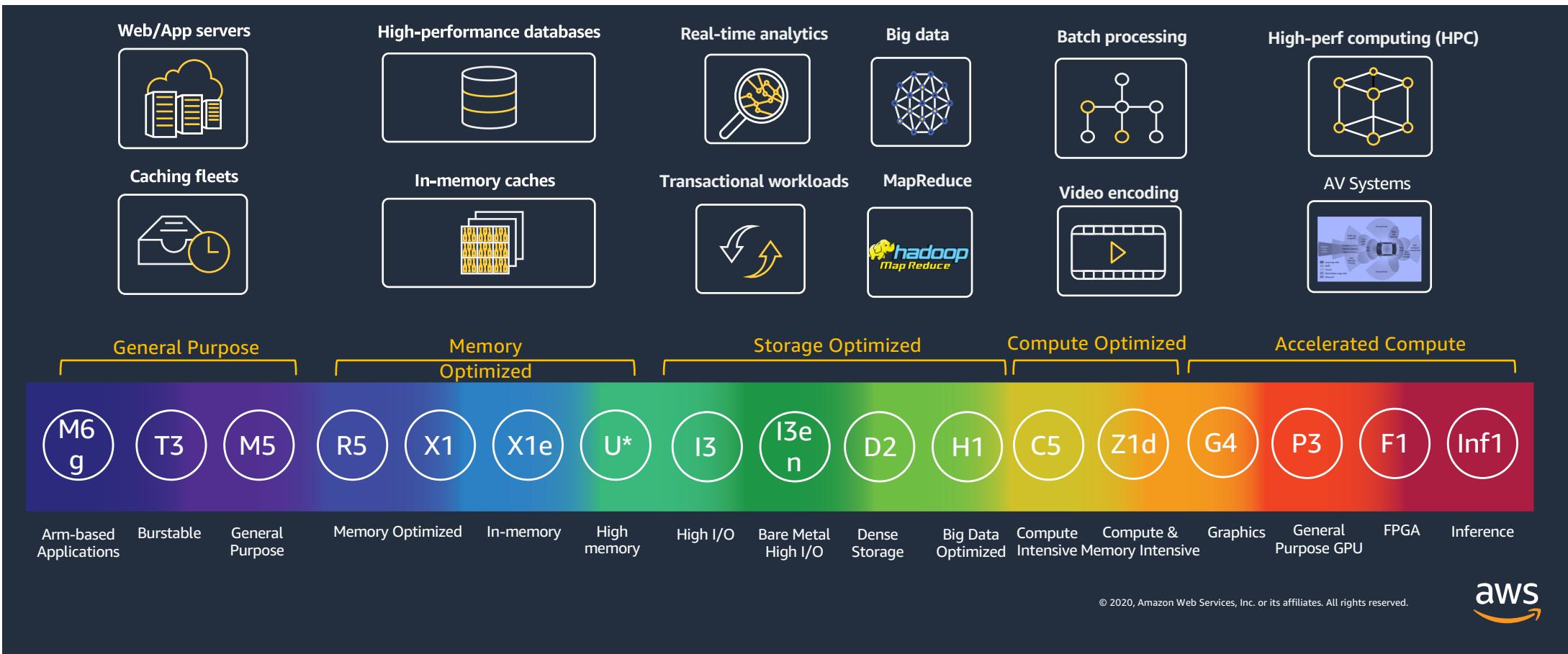
```
#!/bin/sh
```

```
yum -y install httpd  
chkconfig httpd on  
/etc/init.d/httpd start
```

User data shell scripts must start with the `#!` characters and the path to the interpreter you want to read the script.

Install Apache web server
Enable the web server
Start the web server

So many instance types!



Broadest choice of processors

RIGHT COMPUTE FOR THE WORKLOAD



INTEL® Xeon Scalable
(Skylake and Cascade
Lake) processors

AMD EPYC processor

AWS Graviton Processor

AWS Marketplace

- Online store to discover, purchase, and deploy IT software on top of the AWS infrastructure.
- Catalog of 4000+ IT software solutions including Paid, BYOL, Open Source, SaaS, and free-to-try options.
- Pre-configured to operate on AWS.
- Software checked by AWS for security and operability.
- Deploys to AWS environment in minutes.
- Flexible, usage-based billing models.
- Software charges billed to AWS account.

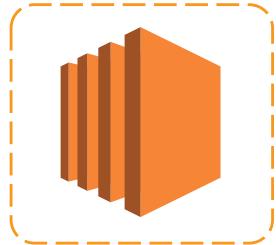
Includes [AWS Test Drive](#).

<https://aws.amazon.com/marketplace>

The screenshot shows the AWS Marketplace homepage. At the top, there's a navigation bar with links for 'Sign in or Create a new account', 'Your Account | Help | Sell on AWS Marketplace', and a search bar labeled 'Search AWS Marketplace'. Below the navigation is a main content area with a large orange header banner featuring a 3D bar chart icon. The banner text reads: 'Production-ready cluster deployments in minutes with AWS Marketplace and AWS CloudFormation' and 'Deploy AMI clusters with multiple AWS resources, all in one easy transaction [Learn more »](#)'. To the right of the banner is a diagram of a central processing unit (CPU) with multiple connections, symbolizing cloud integration. The page then displays sections for 'Featured Products' and 'Popular Products'. Under 'Featured Products', there are cards for 'WebSphere Application Server Base Edi...', 'Matillion ETL for Redshift', 'TIBCO Clarity', and 'CentOS 7 (x86_64) with Updates HVM'. Under 'Popular Products', there are cards for 'SOPHOS', 'SoftNAS', 'TIBCO Jaspersoft', 'Ubuntu Server 14.04 LTS (HVM)', and 'Red Hat Enterprise Linux (RHEL) 7...'. Each product card includes a logo, name, a brief description, and a 'Free Trial' link if applicable. The footer of the page contains the AWS logo and the text '© 2019, Amazon Web Services, Inc. or its affiliates. All rights reserved.'



Amazon EC2 Purchasing Options



On-Demand Instances

Pay by the
hour.
Or
Pay by the
Second

Reserved Instances

Purchase, at a
significant
discount,
instances that
are always
available

1-year to 3-
year terms.

Spot Instances

Bid on unused
instances,
which can run
as long as
they are
available and
your bid is
above the
Spot price.

Dedicated Hosts

Pay for a
physical host
that is fully
dedicated to
running your
instances.