

Lab 2

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1 Summary

This lab covered the EC2 instance lifecycle, AMI creation, and launch templates. Exercises included launching an EC2 instance and connecting via SSH, resizing an instance by changing its type, assessing EC2 pricing models, creating a custom AMI from a running instance and launching a new instance from it, creating and versioning a launch template, launching an instance from a launch template with a user data script to serve a web page, and launching an instance from the AWS CLI. All provisioned resources were terminated and cleaned up upon completion.

[illegible]

Figure 1: Exercise 2.1 – Launching an EC2 instance and connecting via SSH.

Change instance type [Info](#) | [Get advice](#)

You can change the instance type only if the current inst

Instance ID

 [i-0f3f3e5a2f2f336be](#) (garrett-gruss-test)

Current instance type

t3.micro

New instance type

 t2.nano



Only instance types with x86 (32-bit) / (64-bit) architecture c



EBS-optimized

EBS-optimized is not supported for this instance type

Figure 2: Exercise 2.2 (1) – Changing the instance type from t3.micro to t2.nano.

Successfully initiated starting of i-0f3f3e5a2f2f336be

Notifications 0 0 2 0 0

Instance summary for i-0f3f3e5a2f2f336be (garrett-gruss-test) Info

Updated less than a minute ago

Instance ID

i-0f3f3e5a2f2f336be

IPV6 address

—

Hostname type

IP name: ip-172-31-34-159.us-east-2.compute.internal

Answer private resource DNS name

IPv4 (A)

Auto-assigned IP address

3.14.87.88 [Public IP]

Public IPv4 address

3.14.87.88 | open address

Instance state

Running

Private IP DNS name (IPv4 only)

ip-172-31-34-159.us-east-2.compute.internal

Instance type

t2.nano

VPC ID

vpc-0dee49aa000e4dec2

Private IP

172.31.34.159

Public DNS

ec2-3-14-87-88.us-east-2.compute.amazonaws.com

Elastic IP

—

AWS Com

Opt-in

Figure 3: Exercise 2.2 (2) – Instance running with the new t2.nano type.

```
garre@garrettlaptop:~/development/notes/cloud_computing/lab2$ ssh -i "garrett-gruss-test.pem" ec2-user@ec2-3-14-87-88.us-east-2.compute.amazonaws.com
The authenticity of host 'ec2-3-14-87-88.us-east-2.compute.amazonaws.com (3.14.87.88)' can't be established.
ED25519 key fingerprint is SHA256:5pMslYubIKmQlicvTvFNhsiG80YjFPmgY0lNSiETyPo.
This host key is known by the following other names/addresses:
  ~/.ssh/known_hosts:4: [hashed name]
Are you sure you want to continue connecting (yes/no/[fingerprint])? yes
Warning: Permanently added 'ec2-3-14-87-88.us-east-2.compute.amazonaws.com' (ED25519) to the list of known hosts.

      #_
     ~\  #####
    ~\  #####\
   ~\  \###|
  ~\   \#|_____ https://aws.amazon.com/linux/amazon-linux-2023
   ~\   V~' '->
    ~~~
     ~\  _
      ~\  _/
       ~\  _/m/'
Last login: Sat Jan 31 00:48:53 2026 from 76.234.149.180
[ec2-user@ip-172-31-34-159 ~]$ touch test.txt
[ec2-user@ip-172-31-34-159 ~]$ nano test.txt
```

Figure 4: Exercise 2.4 (1) – SSH into the instance and creating a test file to be included in the AMI.

Amazon Machine Images (AMIs) (1) Info

Owned by me Find AMI by attribute or tag

	Name	AMI name	AMI ID	Source	Owner	Visibility
<input type="checkbox"/>		test-ami	ami-034c161a9f70f0b0c	349577273469/test-ami	349577273469	Private

Figure 5: Exercise 2.4 (2) – Custom AMI (test-ami) created from the running instance.

```
garre@garrettlaptop:~/development/notes/cloud_computing/lab2$ ssh -i "garrett-gruss-test.pem" ec2-user@ec2-3-17-13
5-115.us-east-2.compute.amazonaws.com
#
~_ ##### Amazon Linux 2023
~\#####\
~\###|
~\#/____ https://aws.amazon.com/linux/amazon-linux-2023
~V~' '->
~
~_._/
~_/_/_/
~/m/'
Last login: Fri Feb 6 23:19:36 2026 from 99.109.244.61
[ec2-user@ip-172-31-30-220 ~]$ ls
test.txt
[ec2-user@ip-172-31-30-220 ~]$
```

Figure 6: Exercise 2.4 (3) – New instance launched from the custom AMI, confirming test.txt is present.

MyTemplate (lt-00326302e3c59f1b0)

Actions

Delete template

Launch template details

Launch template ID lt-00326302e3c59f1b0	Launch template name MyTemplate	Default version 1	Owner arn:aws:iam::349577273469:user/garrett-gruss-admin
--	------------------------------------	----------------------	---

Details

Versions

Template tags

Launch template version details

Version

3

Description

-

Date created

2026-02-06T23:57:49.000Z

Created by

arn:aws:iam::349577273469:user/garrett-gruss-admin

Instance details

Storage

Resource tags

Network interfaces

Advanced details

AMI ID ami-06e3c045d79fd65d9	Instance type t2.nano	Availability Zone -	Availability Zone Id -
Key pair name garrett-gruss-test	Security groups -	Security group IDs sg-0700a7d16f905b70b	

Actions

Delete template version

Figure 7: Exercise 2.5 (1) – Launch template (MyTemplate) created with version 3, using a t2.nano instance type.

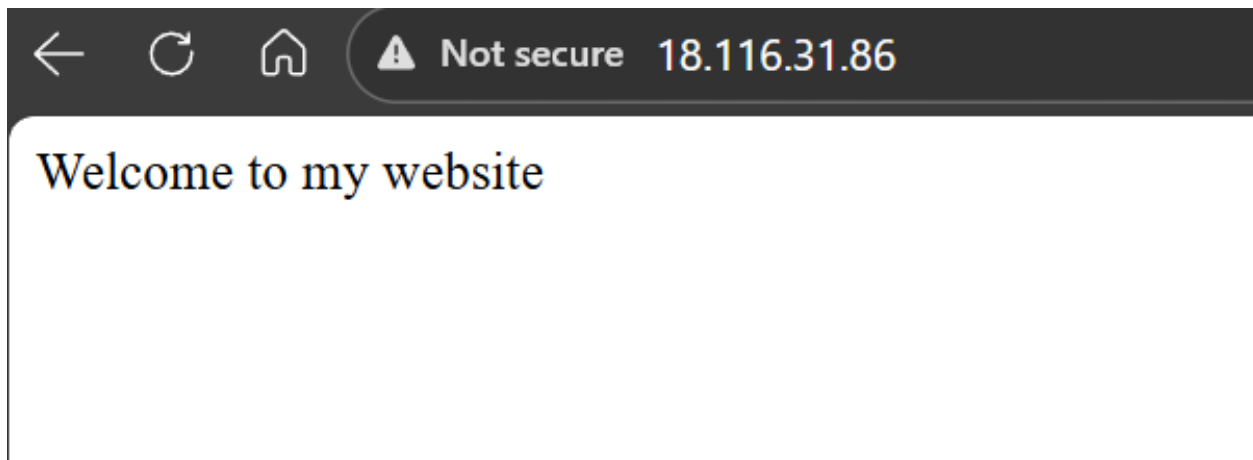


Figure 8: Exercise 2.5 (2) – Instance launched from the launch template serving a web page via user data script.

```

garre@garrettlaptop:~/development/notes/cloud_computing/lab2$ aws ec2 run-instances
--image-id ami-026992d753d5622bc --instance-type t2.micro --key-name garret
--security-group-ids default --count 1
{
  "Groups": [],
  "Instances": [
    {
      "Architecture": "x86_64",
      "BlockDeviceMappings": [],
      "ClientToken": "9ef3c548-a601-4db5-be77-1cf45a7be3a4",
      "EbsOptimized": false,
      "EnaSupport": true,
      "Hypervisor": "xen",
      "NetworkInterfaces": [
        {
          "Attachment": {
            "AttachTime": "2026-02-07T00:31:42+00:00",
            "AttachmentId": "eni-attach-0fc04cc2dcfa3c0e9",
            "DeleteOnTermination": true,
            "DeviceIndex": 0,
            "Status": "attaching",
            "NetworkCardIndex": 0
          },
          "Description": "",
          "Groups": [
            {
              "GroupId": "sg-065da4e82054f7c90",
              "GroupName": "default"
            }
          ],
          "Ipv6Addresses": [],
          "MacAddress": "0a:ff:f2:7f:be:11",
          "NetworkInterfaceId": "eni-046e096593e53fe80",
          "OwnerId": "349577273469",

```

Figure 9: Exercise 2.6 – Launching an EC2 instance from the AWS CLI using `aws ec2 run-instances`.

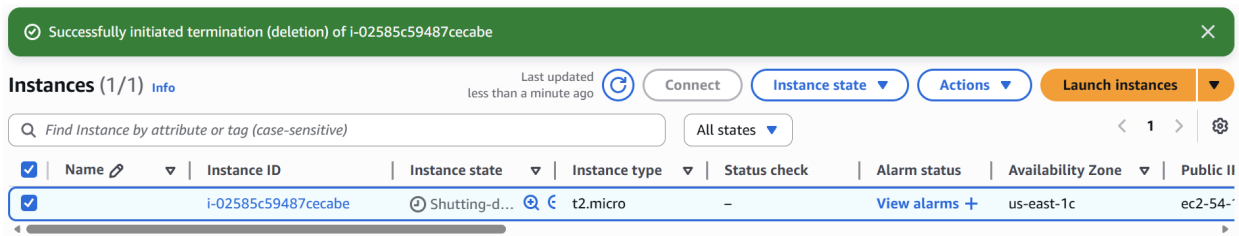


Figure 10: Exercise 2.7 – Resource cleanup: all instances terminated.

2 Exercise 2.3

Q: Imagine that your application will need to run two always-on f1.2xlarge instances (which come with instance storage and won't require any EBS volumes). To meet seasonal demand, you can expect to require as many as four more instances for a total of 100 hours through the course of a single year. How should you pay for this deployment? Bonus: Calculate your total estimated monthly and annual costs.

A: Purchase 2x f1.2xlarge on a three-year reserved instance term. Purchase 100 hours of f1.2xlarge on-demand for the seasonal burst capacity.

$$\text{Cost} = 2 \times 12 \times \$146.00/\text{month} + 100 \times \$0.362/\text{hour} = \$3,540.20/\text{year}$$