

Guided Lab: Exploring Instance Metadata

Description

Instance metadata is a service provided by AWS that allows EC2 instances to access data about themselves. This data can be used to configure or manage the running instance. It's divided into categories, such as host name, events, and security groups.

You can also use instance metadata to access user data that you specified when launching your instance. For example, you can specify parameters for configuring your instance, or include a simple script. You can build generic Amazon Machine Images (AMIs) and use user data to modify the configuration files supplied at launch time.

Although you can only access instance metadata and user data from within the instance itself, the data is not protected by authentication or cryptographic methods. Therefore, you should not store sensitive data, such as passwords or long-lived encryption keys, as user data.

Prerequisites

This lab assumes you have experience creating EC2 instances and are familiar with its basic components.

If you find any gaps in your knowledge, consider taking the following labs:

- [Creating an Amazon EC2 instance \(Linux\)](#)

Objectives

In this lab, you will:

- Understand the concept of instance metadata
- Learn how to retrieve instance metadata.

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Lab Steps

Creating a Launch template

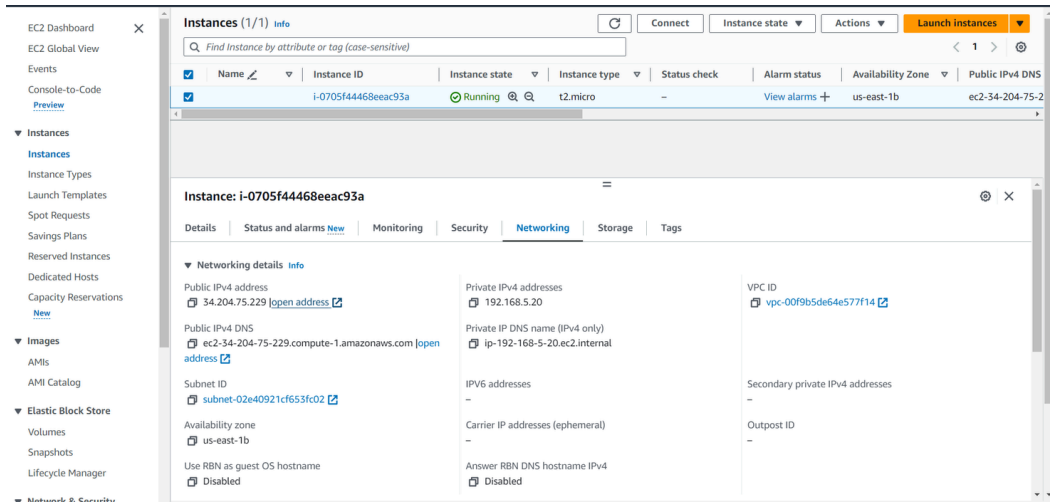
Create two EC2 instances using the following configurations:

1. **Name:**
2. **Instance type:** t2.micro
3. **AMI:** Ubuntu
4. **Key pair:** Create a new Key Pair
 - **Key Pair name:** MyKeyPair
 - **Key Pair Type:** RSA
 - **Private key file format:** .pem
 - Click **Create key pair**
5. **Network settings;**
 - **Allow SSh traffic from:** My IP

Review your instance configurations and click the **“Launch Instance”** button.

Connect to the Instance

1. After launching an instance, it may take a few minutes for it to be ready for connection.
2. Find the public DNS name or IP address of your instance to connect to it.



3. Ensure that an SSH client is installed on your local computer by typing “SSH” in the command line. If the command is not recognized, install an SSH client.

4. To connect to your instance using SSH, open a terminal and use the SSH command. Specify the path and file name of the private key (.pem), the username for your instance, and the public DNS name or IPv6 address for your instance.

```
ssh -i "path_toyour_key.pem" ec2-user@your-instance-
public-dns
```

```
$ ssh -i Downloads/MyKeyPair.pem ubuntu@ec2-34-204-75-229.compute-1.amazonaws.com
The authenticity of host 'ec2-34-204-75-229.compute-1.amazonaws.com (34.204.75.229)' can't be established.
ED25519 key fingerprint is SHA256:AXG+Fcw9yTTa3tBkXjI8LSMaAg2iXPrvYK5pCfeglj8.
This key is not known by any other names.
Are you sure you want to continue connecting (yes/no/[fingerprint])? yes
Warning: Permanently added 'ec2-34-204-75-229.compute-1.amazonaws.com' (ED25519) to the list of known hosts.
Welcome to Ubuntu 22.04.3 LTS (GNU/Linux 6.2.0-1012-aws x86_64)

 * Documentation:  https://help.ubuntu.com
 * Management:    https://landscape.canonical.com
 * Support:       https://ubuntu.com/advantage

System information as of Mon Dec 18 08:15:03 UTC 2023

System load: 0.12451171875   Processes:           100
Usage of /:  20.4% of 7.57GB   Users logged in:     0
Memory usage: 21%           IPv4 address for eth0: 192.168.5.20
Swap usage:  0%

Expanded Security Maintenance for Applications is not enabled.

0 updates can be applied immediately.

Enable ESM Apps to receive additional future security updates.
See https://ubuntu.com/esm or run: sudo pro status

The list of available updates is more than a week old.
To check for new updates run: sudo apt update

The programs included with the Ubuntu system are free software;
the exact distribution terms for each program are described in the
individual files in /usr/share/doc/*/copyright.

Ubuntu comes with ABSOLUTELY NO WARRANTY, to the extent permitted by
applicable law.

To run a command as administrator (user "root"), use "sudo <command>".
See "man sudo_root" for details.

ubuntu@ip-192-168-5-20:~$
```

Access Instance Metadata

Once you're connected to the instance, you can access the instance metadata. Most cloud providers make this available at a specific IP address. For example, on AWS, you can use the following command:

```
TOKEN=`curl -X PUT
"http://169.254.169.254/latest/api/token" -H "X-aws-
ec2-metadata-token-ttl-seconds: 21600"` \
&& curl -H "X-aws-ec2-metadata-token: $TOKEN" -v
http://169.254.169.254/latest/meta-data/
```

This will return a list of available metadata categories.

```
ubuntu@ip-192-168-5-20:~$ TOKEN=`curl -X PUT "http://169.254.169.254/latest/api/token" -H "X-aws-ec2-metadata-token-ttl-seconds: 21600"` \
&& curl -H "X-aws-ec2-metadata-token: $TOKEN" -v http://169.254.169.254/latest/meta-data/
% Total % Received % Xferd Average Speed Time Time Time Current
Dload Upload Total Spent Left Speed
100 56 100 56 0 0 8928 0 --:--:-- --:--:-- --:--:-- 9333
* Trying 169.254.169.254:80...
* Connected to 169.254.169.254 (169.254.169.254) port 80 (#0)
> GET /latest/meta-data/ HTTP/1.1
> Host: 169.254.169.254
> User-Agent: curl/7.81.0
> Accept: */*
> X-aws-ec2-metadata-token: AQAAAIyTBw-DY21XOV2UGEBwbFgO986owyra_VK2h8jc2J53BHufKg==
>
* Mark bundle as not supporting multiuse
* HTTP 1.0, assume close after body
< HTTP/1.0 200 OK
< Accept-Ranges: bytes
< Content-Length: 320
< Content-Type: text/plain
< Date: Mon, 18 Dec 2023 08:18:50 GMT
< Last-Modified: Mon, 18 Dec 2023 08:12:30 GMT
< X-Aws-Ec2-Metadata-Token-Ttl-Seconds: 21600
< Connection: close
< Server: EC2ws
<
ami-id
ami-launch-index
ami-manifest-path
block-device-mapping/
events/
hostname
identity-credentials/
instance-action
instance-id
instance-life-cycle
instance-type
local-hostname
local-ipv4
mac
metrics/
network/
placement/
profile
public-hostname
public-ipv4
public-keys/
reservation-id
security-groups
services/
* Closing connection 0
systemubuntu@ip-192-168-5-20:~$
```

Explore Different Metadata Categories

You can explore different metadata categories, such as `ami-id`, `hostname`, `public-keys`, etc., by appending the category name to the end of the URL. For example, to get the instance's public hostname on AWS, you can use:

```
TOKEN=`curl -X PUT
"http://169.254.169.254/latest/api/token" -H "X-aws-
ec2-metadata-token-ttl-seconds: 21600"` && curl -H "X-
aws-ec2-metadata-token: $TOKEN" -v
http://169.254.169.254/latest/meta-data/public-hostname
```

```

ubuntu@ip-192-168-5-20:~$ TOKEN=$(curl -X PUT "http://169.254.169.254/latest/api/token" -H "X-aws-ec2-metadata-token-ttl-seconds: 21600") && curl -H "X-aws-ec2-metadata-token: $TOKEN" -v http://169.254.169.254/latest/meta-data/public-hostname
* Total    % Received % Xferd  Average Speed   Time    Time     Time  Current
   100    36  100    36    0     0    9403      0 --:--:-- --:--:-- --:--:-- 11200
* Trying 169.254.169.254:80...
* Connected to 169.254.169.254 (169.254.169.254) port 80 (#0)
> GET /latest/meta-data/public-hostname HTTP/1.1
> Host: 169.254.169.254
> User-Agent: curl/7.81.0
> Accept: */*
> X-aws-ec2-metadata-token: AQAAAAIyTBw_nD024PFZMuJak8M8GlfXoSIBDA-7UVDeZuNHPPAddA==
* Mark bundle as not supporting multiuse
* HTTP/1.0, assume close after body
< HTTP/1.0 200 OK
< Accept-Ranges: bytes
< Content-Length: 41
< Content-Type: text/plain
< Date: Mon, 18 Dec 2023 08:21:51 GMT
< Last-Modified: Mon, 18 Dec 2023 08:12:30 GMT
< X-Aws-Ec2-Metadata-Token-Ttl-Seconds: 21600
< Connection: close
< Server: EC2ws
* Closing connection 0
curl -M 204-71-229.compute-1.amazonaws.com ubuntu@ip-192-168-5-20:~$ %C

```

Congratulations! You've successfully explored Instance Metadata. You can explore more about Instance Metadata from here as you like. Happy exploring!