Experiment no 10

Aim: To install and Configure Pull based Software Configuration Management and provisioning tools using Puppet.

Theory:

Puppet :

Puppet is an open source software configuration management and deployment tool. It's most commonly used on Linux and Windows to pull the strings on multiple application servers at once. But you can also use Puppet on several platforms, including IBM mainframes, Cisco switches, and Mac OS servers.

Like other DevOps programs, Puppet does more than automate system administration. It changes the human workflow, and enables developers and system administrators to work together. Programmers can write, test, and launch applications without waiting on Ops staff to deliver the resources needed.

For example, Microsoft and Puppet recently partnered with the RISCO Group, an Israeli security project company, to create a Puppet and Azure Resource Manager-powered self-service web portal. The result, says Ido Vapner, RISCO Group's head of DevSecOps and technology, is a development workflow that enables the company to "provision an entire environment with a single click" instead of it taking "a week to build a new environment."

Puppet Versions :

Puppet comes in two versions:-

1. Open Source Puppet-

It is a basic version of Puppet configuration management tool, which is also known as Open Source Puppet. It is available directly from Puppet's website and is licensed under the Apache 2.0 system.

2. Puppet Enterprise-

Commercial version that offers features like compliance reporting, orchestration, role based access control, GUI,API, and command-line tools for effective management of nodes.

Functions:

1) Puppet allows you to define distinct configurations for every host.
2) The tool allows you to continuously monitor servers to confirm whether the required configuration exists or not and it is not altered. If the config is changed, Puppet tool will revert to the pre-defined configuration on the host.
3) It also provides control over all the configured system, so a centralized change gets automatically effected.
4) It is also used as deployment tools as it automatically deploys software to the system. It implements the infrastructure as a code because policies and configuration are written as code.

How Puppet Works?

Puppet is based on a Pull deployment model, where the agent nodes check in regularly after every 1800 seconds with the master node to see if anything needs to be updated in the agent. If anything needs to be updated the agent pulls the necessary puppet codes from the master and performs required actions.

Puppet Blocks:

Puppet provides the flexibility to integrate Reports with third-party tools using Puppet APIs.

Four types of Puppet building blocks are

- Resources
- Classes
- Manifest
- Modules

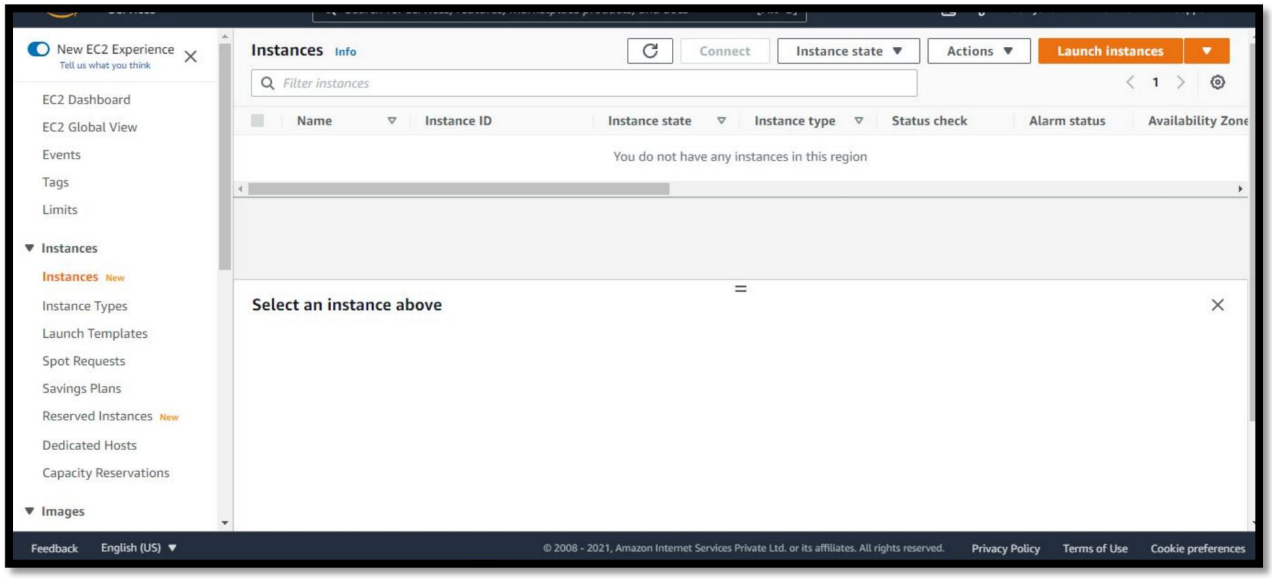
Configuration Management?

Configuration management is the process of maintaining software and computer systems (for example servers, storage, networks) in a known, desired and consistent state. It also allows access to an accurate historical record of system state for project management and audit purposes.

System Administrators mostly perform repetitive tasks like installing servers, configuring those servers, etc. These professionals can automate this task, by writing scripts.

However, it is a difficult job when they are working on a massive infrastructure.

Step 1:


New EC2 Experience
Tell us what you think
EC2 Dashboard
EC2 Global View
Events
Tags
Limits
Instances
Instances New
Instance Types
Launch Templates
Spot Requests
Savings Plans
Reserved Instances New
Dedicated Hosts
Capacity Reservations
Images
Instances Info
Connect
Instance state
Actions
Launch instances
Filter instances
Name
Instance ID
Instance state
Instance type
Status check
Alarm status
Availability Zone
You do not have any instances in this region
Select an instance above
Feedback
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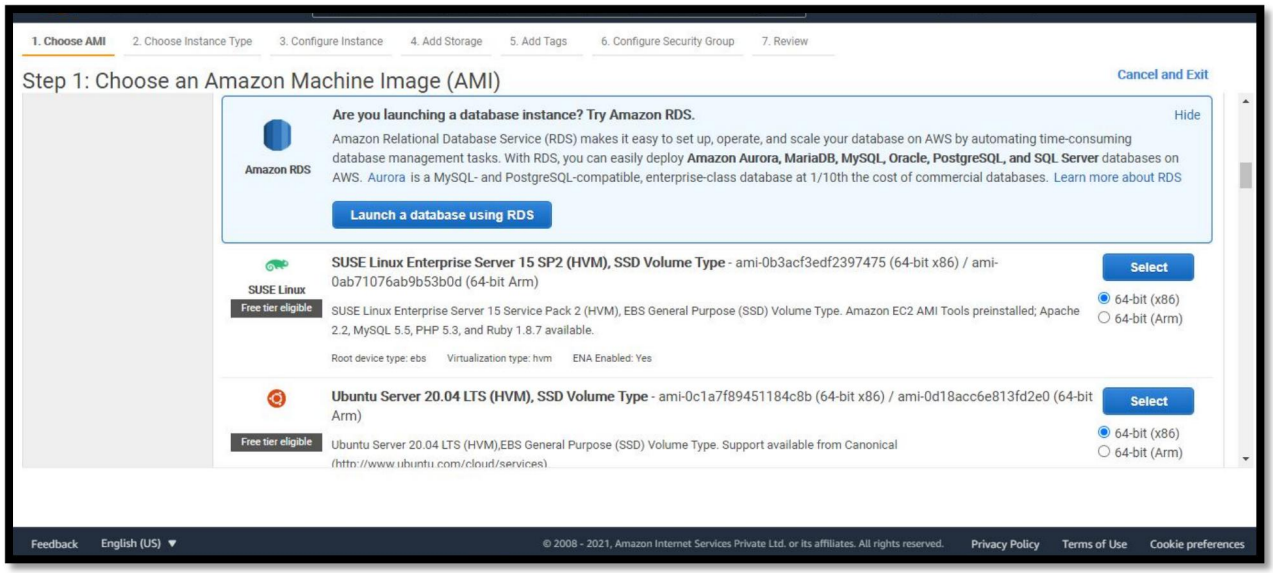
Step 2:


1. Choose AMI
2. Choose Instance Type
3. Configure Instance
4. Add Storage
5. Add Tags
6. Configure Security Group
7. Review
Step 1: Choose an Amazon Machine Image (AMI)
Cancel and Exit
Are you launching a database instance? Try Amazon RDS.
Hide
Amazon RDS
Amazon Relational Database Service (RDS) makes it easy to set up, operate, and scale your database on AWS by automating time-consuming database management tasks. With RDS, you can easily deploy Amazon Aurora, MariaDB, MySQL, Oracle, PostgreSQL, and SQL Server databases on AWS. Aurora is a MySQL- and PostgreSQL-compatible, enterprise-class database at 1/10th the cost of commercial databases. Learn more about RDS
Launch a database using RDS
SUSE Linux
Free tier eligible
SUSE Linux Enterprise Server 15 SP2 (HVM), SSD Volume Type - ami-0b3acf3edf2397475 (64-bit x86) / ami-0ab71076ab9b53b0d (64-bit Arm)
Select
64-bit (x86)
64-bit (Arm)
SUSE Linux Enterprise Server 15 Service Pack 2 (HVM), EBS General Purpose (SSD) Volume Type. Amazon EC2 AMI Tools preinstalled; Apache 2.2, MySQL 5.5, PHP 5.3, and Ruby 1.8.7 available.
Root device type: ebs
Virtualization type: hvm
ENA Enabled: Yes
Ubuntu Server 20.04 LTS (HVM), SSD Volume Type - ami-0c1a7f89451184c8b (64-bit x86) / ami-0d18acc6e813fd2e0 (64-bit Arm)
Select
Free tier eligible
Ubuntu Server 20.04 LTS (HVM),EBS General Purpose (SSD) Volume Type. Support available from Canonical
64-bit (x86)
64-bit (Arm)
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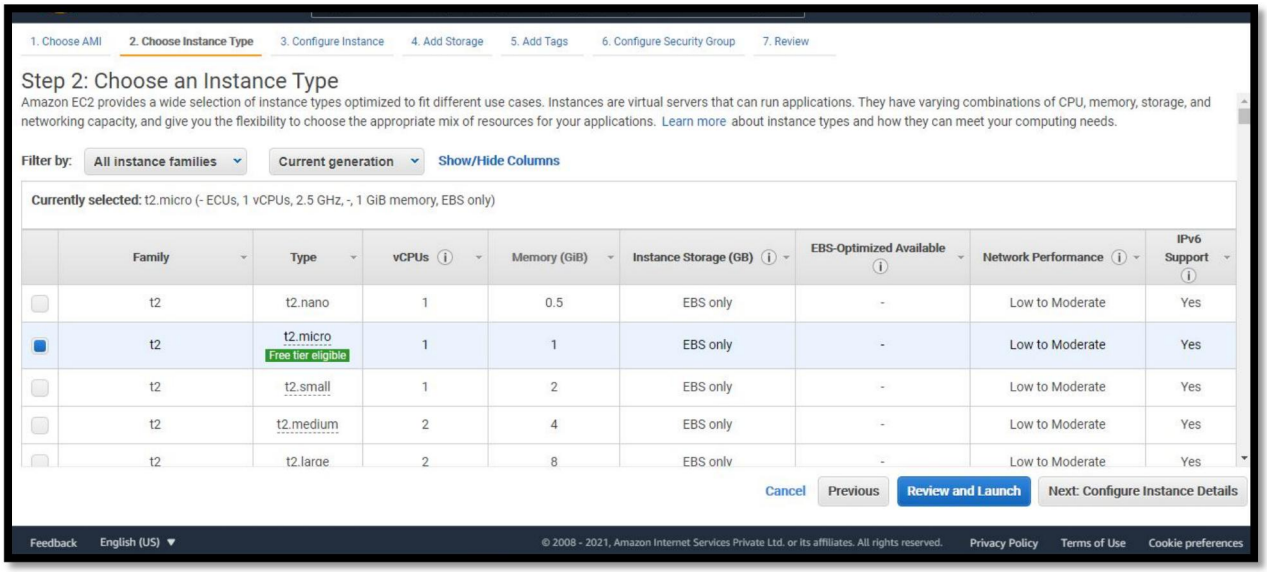
Step 3:


1. Choose AMI
2. Choose Instance Type
3. Configure Instance
4. Add Storage
5. Add Tags
6. Configure Security Group
7. Review
Step 2: Choose an Instance Type
Amazon EC2 provides a wide selection of instance types optimized to fit different use cases. Instances are virtual servers that can run applications. They have varying combinations of CPU, memory, storage, and networking capacity, and give you the flexibility to choose the appropriate mix of resources for your applications. Learn more about instance types and how they can meet your computing needs.
Filter by:
All instance families
Current generation
Show/Hide Columns
Currently selected: t2.micro (- ECUs, 1 vCPUs, 2.5 GHz, -, 1 GiB memory, EBS only)
Family
Type
vCPUs
Memory (GiB)
Instance Storage (GB)
EBS-Optimized Available
Network Performance
IPv6 Support
t2 t2.nano 1 0.5 EBS only - Low to Moderate Yes
t2 t2.micro Free tier eligible 1 1 EBS only - Low to Moderate Yes
t2 t2.small 1 2 EBS only - Low to Moderate Yes
t2 t2.medium 2 4 EBS only - Low to Moderate Yes
t2 t2.large 2 8 EBS only - Low to Moderate Yes
Cancel
Previous
Review and Launch
Next: Configure Instance Details
Feedback
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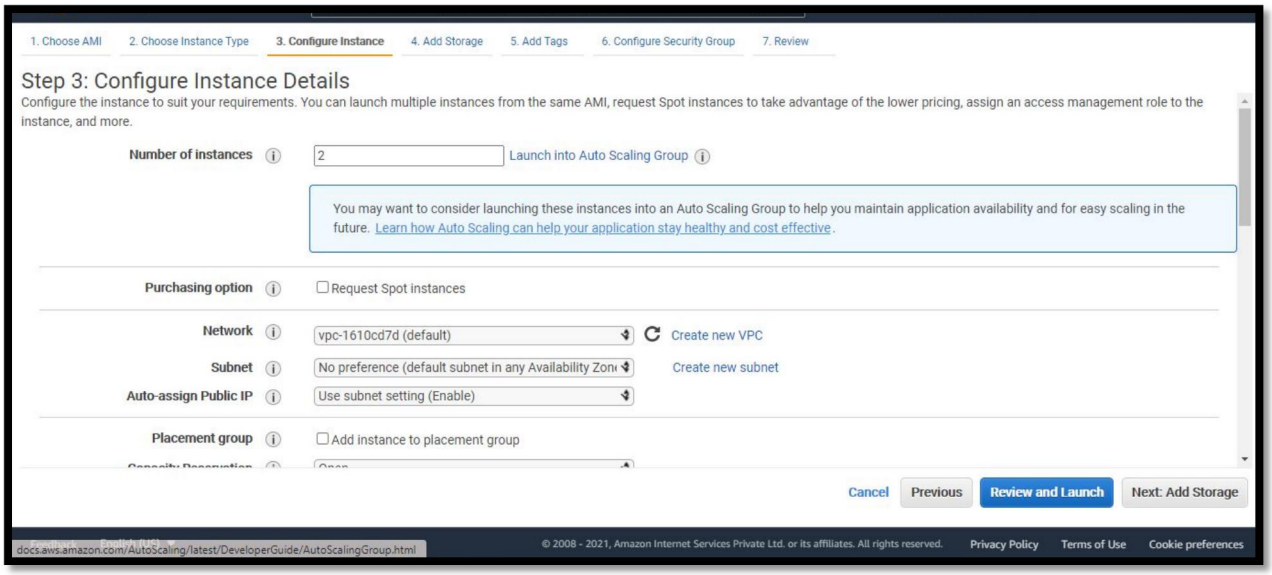
Step 4:


1. Choose AMI
2. Choose Instance Type
3. Configure Instance
4. Add Storage
5. Add Tags
6. Configure Security Group
7. Review
Step 3: Configure Instance Details
Configure the instance to suit your requirements. You can launch multiple instances from the same AMI, request Spot instances to take advantage of the lower pricing, assign an access management role to the instance, and more.
Number of instances
2
Launch into Auto Scaling Group
You may want to consider launching these instances into an Auto Scaling Group to help you maintain application availability and for easy scaling in the future. Learn how Auto Scaling can help your application stay healthy and cost effective.
Purchasing option
Request Spot instances
Network
vpc-1610cd7d (default)
Create new VPC
Subnet
No preference (default subnet in any Availability Zone
Create new subnet
Auto-assign Public IP
Use subnet setting (Enable)
Placement group
Add instance to placement group
Cancel
Previous
Review and Launch
Next: Add Storage
docs.aws.amazon.com/AutoScaling/latest/DeveloperGuide/AutoScalingGroup.html
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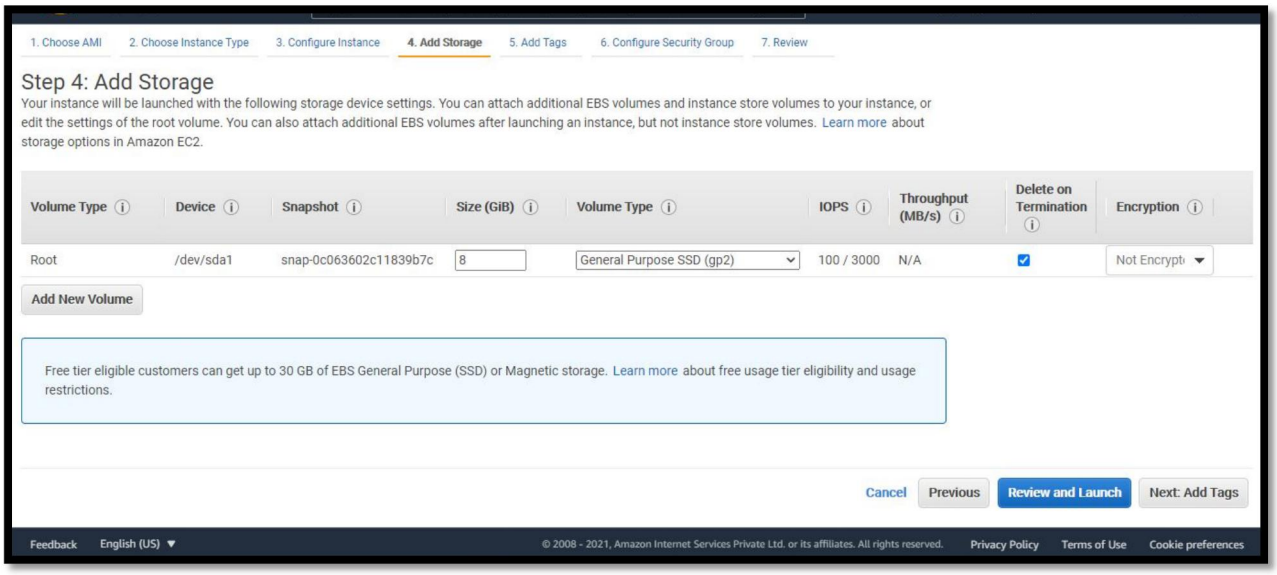
Step 5:


1. Choose AMI
2. Choose Instance Type
3. Configure Instance
4. Add Storage
5. Add Tags
6. Configure Security Group
7. Review
Step 4: Add Storage
Your instance will be launched with the following storage device settings. You can attach additional EBS volumes and instance store volumes to your instance, or edit the settings of the root volume. You can also attach additional EBS volumes after launching an instance, but not instance store volumes. Learn more about storage options in Amazon EC2.
Volume Type
Device
Snapshot
Size (GiB)
Volume Type
IOPS
Throughput (MB/s)
Delete on Termination
Encryption
Root
/dev/sda1
snap-0c063602c11839b7c
8
General Purpose SSD (gp2)
100 / 3000
N/A
Not Encrypt
Add New Volume
Free tier eligible customers can get up to 30 GB of EBS General Purpose (SSD) or Magnetic storage. Learn more about free usage tier eligibility and usage restrictions.
Cancel
Previous
Review and Launch
Next: Add Tags
Feedback
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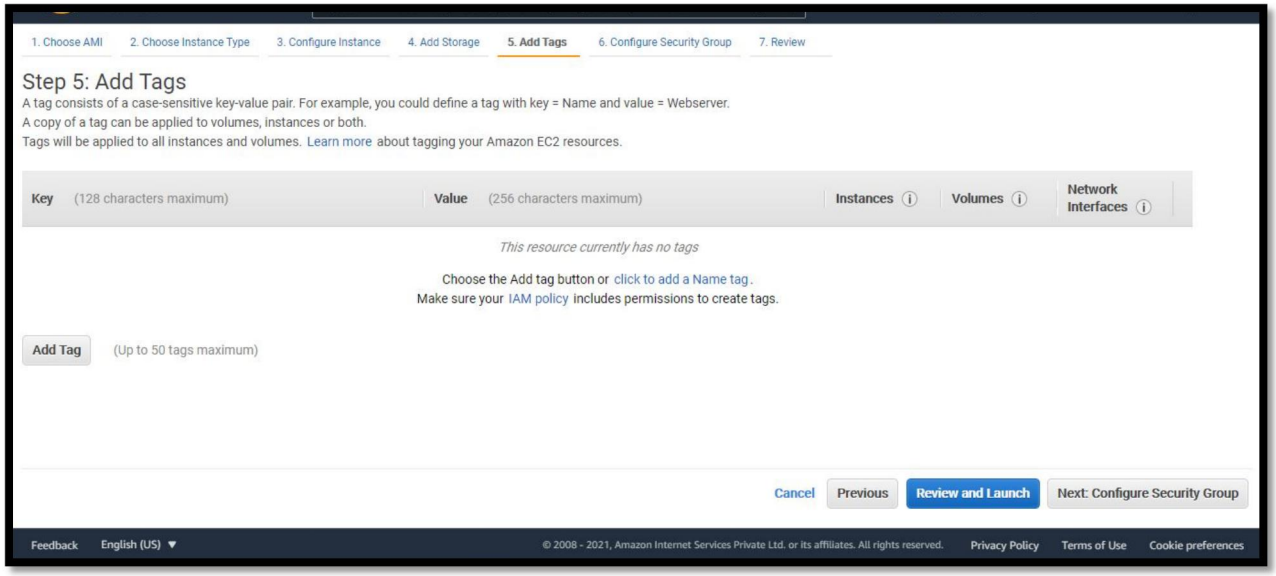
Step 6:


1. Choose AMI
2. Choose Instance Type
3. Configure Instance
4. Add Storage
5. Add Tags
6. Configure Security Group
7. Review
Step 5: Add Tags
A tag consists of a case-sensitive key-value pair. For example, you could define a tag with key = Name and value = Webserver.
A copy of a tag can be applied to volumes, instances or both.
Tags will be applied to all instances and volumes. Learn more about tagging your Amazon EC2 resources.
Key (128 characters maximum)
Value (256 characters maximum)
Instances
Volumes
Network Interfaces
This resource currently has no tags
Choose the Add tag button or click to add a Name tag.
Make sure your IAM policy includes permissions to create tags.
Add Tag
(Up to 50 tags maximum)
Cancel
Previous
Review and Launch
Next: Configure Security Group
Feedback
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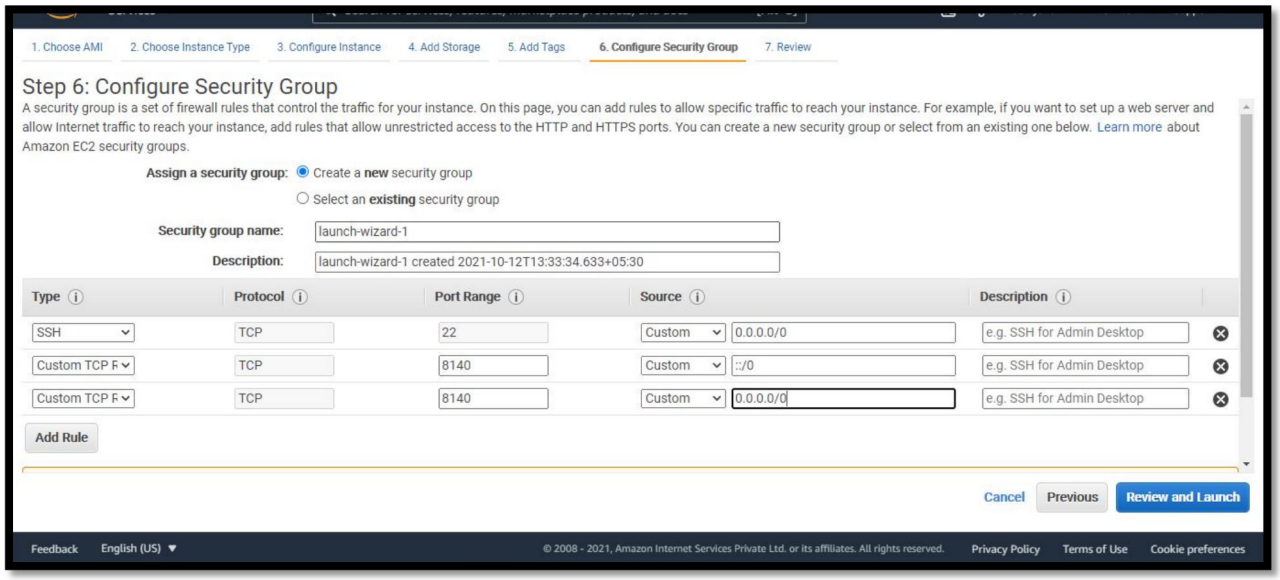
Step 7:


1. Choose AMI
2. Choose Instance Type
3. Configure Instance
4. Add Storage
5. Add Tags
6. Configure Security Group
7. Review
Step 6: Configure Security Group
A security group is a set of firewall rules that control the traffic for your instance. On this page, you can add rules to allow specific traffic to reach your instance. For example, if you want to set up a web server and allow Internet traffic to reach your instance, add rules that allow unrestricted access to the HTTP and HTTPS ports. You can create a new security group or select from an existing one below. Learn more about Amazon EC2 security groups.
Assign a security group: Create a new security group
Select an existing security group
Security group name: launch-wizard-1
Description: launch-wizard-1 created 2021-10-12T13:33:34.633+05:30
Type
Protocol
Port Range
Source
Description
SSH
TCP
22
Custom
0.0.0.0/0
e.g. SSH for Admin Desktop
Custom TCP R
TCP
8140
Custom
::/0
e.g. SSH for Admin Desktop
Custom TCP R
TCP
8140
Custom
0.0.0.0/0
e.g. SSH for Admin Desktop
Add Rule
Cancel
Previous
Review and Launch
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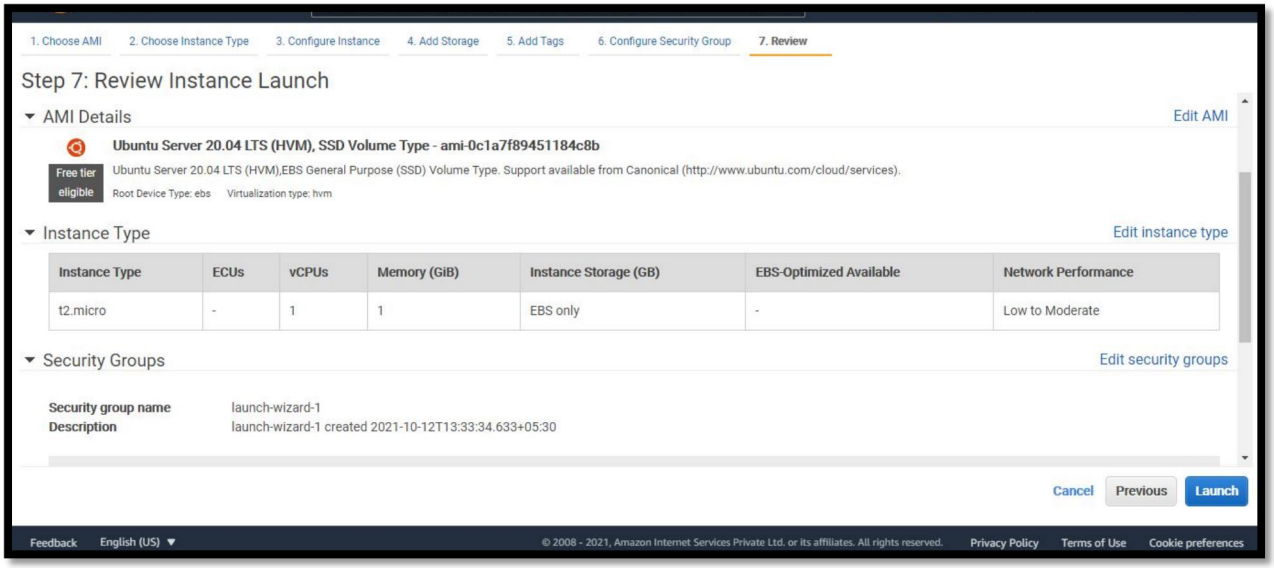
Step 8:


1. Choose AMI
2. Choose Instance Type
3. Configure Instance
4. Add Storage
5. Add Tags
6. Configure Security Group
7. Review
Step 7: Review Instance Launch
AMI Details
Edit AMI
Ubuntu Server 20.04 LTS (HVM), SSD Volume Type - ami-0c1a7f89451184c8b
Free tier eligible
Ubuntu Server 20.04 LTS (HVM),EBS General Purpose (SSD) Volume Type. Support available from Canonical (http://www.ubuntu.com/cloud/services).
Root Device Type: ebs
Virtualization type: hvm
Instance Type
Edit instance type
Instance Type
ECUs
vCPUs
Memory (GiB)
Instance Storage (GB)
EBS-Optimized Available
Network Performance
t2.micro
-
1
1
EBS only
-
Low to Moderate
Security Groups
Edit security groups
Security group name
launch-wizard-1
Description
launch-wizard-1 created 2021-10-12T13:33:34.633+05:30
Cancel
Previous
Launch
Feedback
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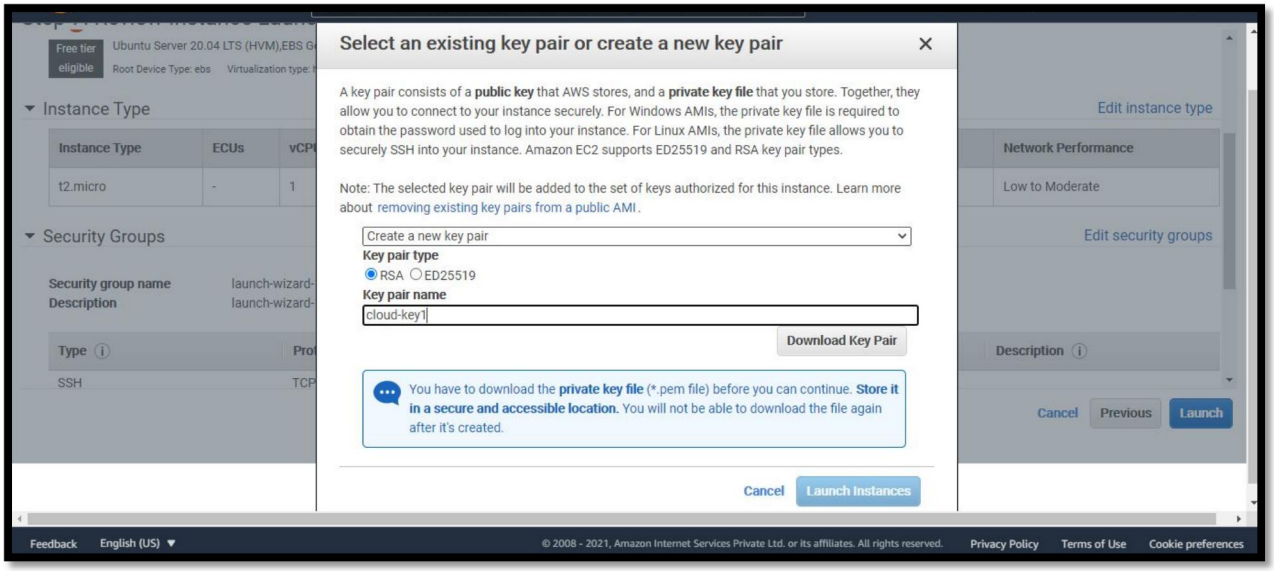
Step 9:


Select an existing key pair or create a new key pair
A key pair consists of a public key that AWS stores, and a private key file that you store. Together, they allow you to connect to your instance securely. For Windows AMIs, the private key file is required to obtain the password used to log into your instance. For Linux AMIs, the private key file allows you to securely SSH into your instance. Amazon EC2 supports ED25519 and RSA key pair types.
Note: The selected key pair will be added to the set of keys authorized for this instance. Learn more about removing existing key pairs from a public AMI.
Create a new key pair
Key pair type
RSA
ED25519
Key pair name
cloud-key1
Download Key Pair
You have to download the private key file (*.pem file) before you can continue. Store it in a secure and accessible location. You will not be able to download the file again after it's created.
Cancel
Launch Instances
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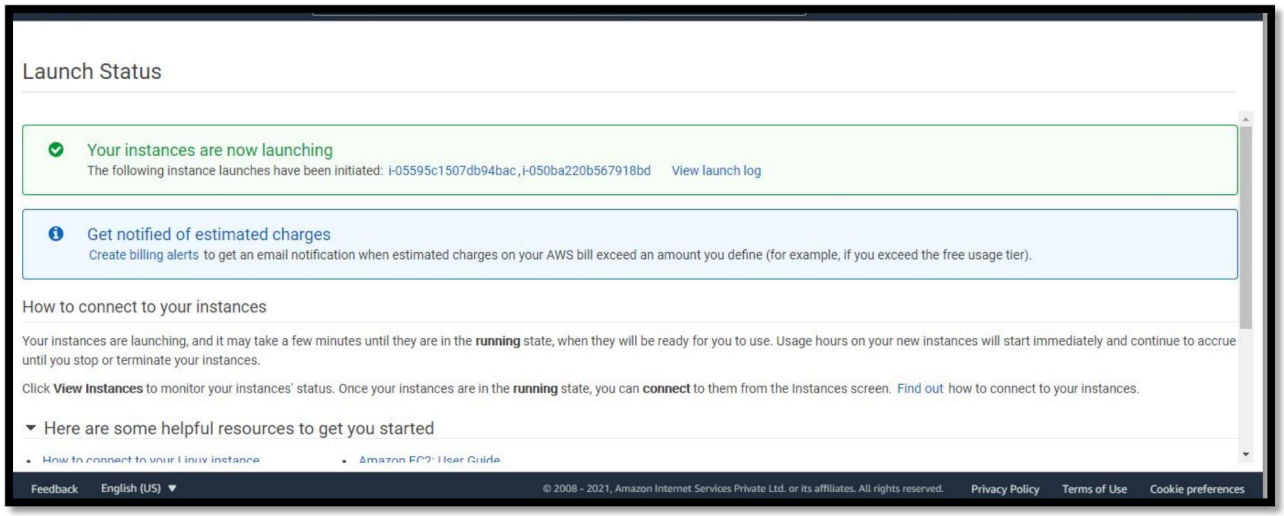
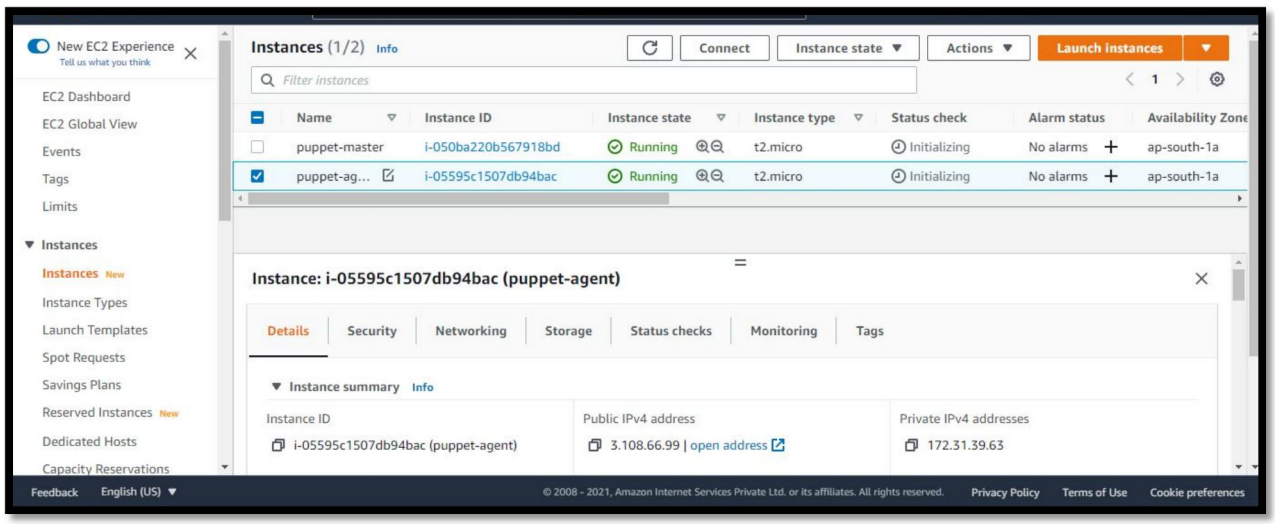
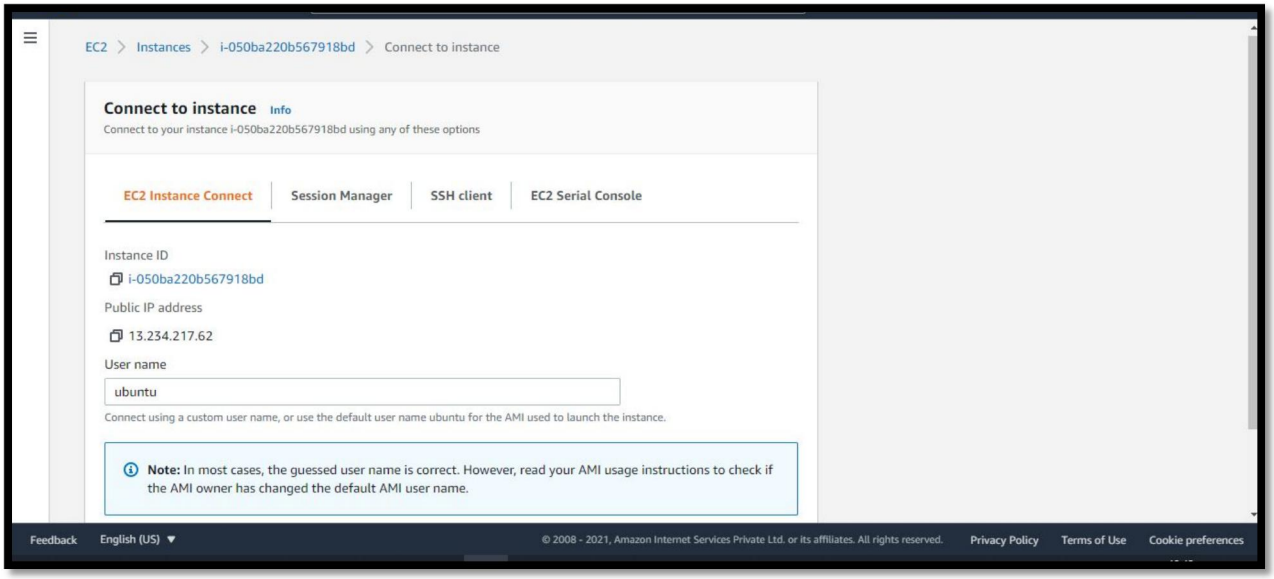
Step 10:



Step 11:



Step 12:


EC2 > Instances > i-050ba220b567918bd > Connect to instance
Connect to instance Info
Connect to your instance i-050ba220b567918bd using any of these options
EC2 Instance Connect
Session Manager
SSH client
EC2 Serial Console
Instance ID
i-050ba220b567918bd
Public IP address
13.234.217.62
User name
ubuntu
Connect using a custom user name, or use the default user name ubuntu for the AMI used to launch the instance.
Note: In most cases, the guessed user name is correct. However, read your AMI usage instructions to check if the AMI owner has changed the default AMI user name.
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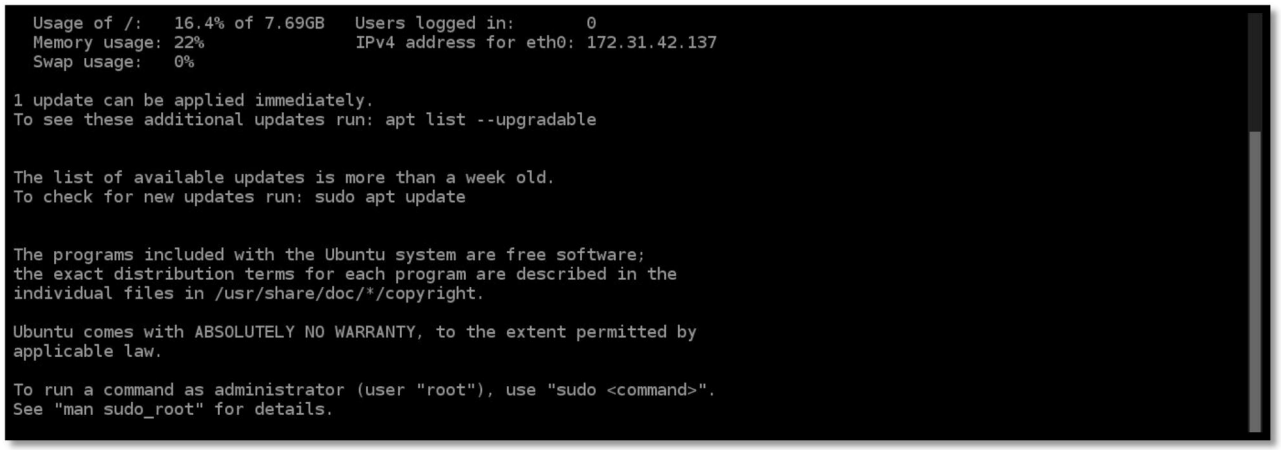
Step 13:



Conclusion:

Hence, We Successfully installed and Configured Pull based Software Configuration Management and provisioning tools using Puppet.