Experiment 13 - Puppet

Roll No.	37
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Class	D15-B
Subject	DevOps Lab
LO Mapped	LO1: To understand the fundamentals of DevOps engineering and be fully proficient with DevOps terminologies, concepts, benefits, and deployment options to meet your business requirements. LO6: To Synthesize software configuration and provisioning using Ansible/Puppet.

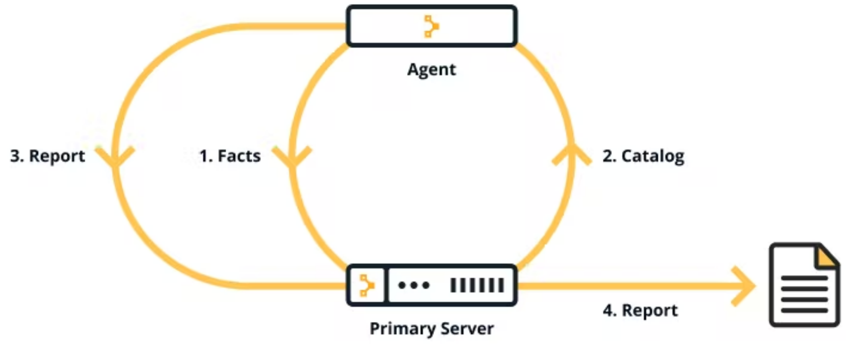
Aim:

To learn Software Configuration Management and provisioning using Puppet Blocks(Manifest, Modules, Classes, Function)

Introduction:

What is Puppet?
Puppet is an open-source Software Configuration Management and Deployment tool. It's mostly used in Linux Cloud environments to automate infrastructure, management of different servers, etc.

Puppet Architecture



Puppet uses a Master-Agent architecture in which the Master and Slave communicate through a secure encrypted channel with the help of SSL.

Puppet Master
Puppet Master is the Hub or the main node in the network of systems that handles all the configuration across systems. It is capable of applying different configurations to other nodes called Puppet Agents.

Puppet Agent
Puppet Agents are working machines in which different servers are set up for different use cases. These servers and their configurations are managed by the Puppet Master.

Use Cases
Server and Database Management
Multiple Servers and Databases can be controlled in one place using Puppet.
System Configuration

A key feature of Puppet is that multiple systems can be configured at once from the Puppet Master device.

Networking

Due to Puppet's architecture, it can be used for secure networking and data transfer across systems.

Container Management

Puppet makes it easy to integrate containers with existing IT infrastructure.

PUPPET MANIFESTS

Puppet programs are called manifests. Manifests are composed of Puppet code and their filenames use the .pp extension. The default main manifest in Puppet installed via apt is /etc/puppet/manifests/site.pp.

Classes

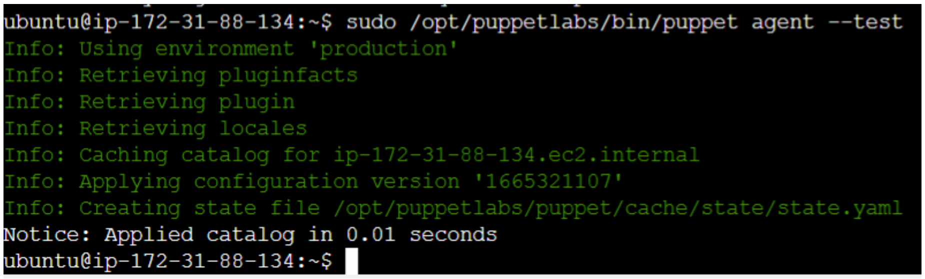
In Puppet, classes are code blocks that can be called in a code elsewhere. Using classes allows you to reuse Puppet code, and can make reading manifests easier.

Class Definition

A class definition is where the code that composes a class lives. Defining a class makes the class available to be used in manifests, but does not actually evaluate anything.

The above defines a class named “example_class”, and the Puppet code would go between the curly braces.

1. To test your cluster setup, run this command -
   sudo /opt/puppetlabs/bin/puppet agent --test

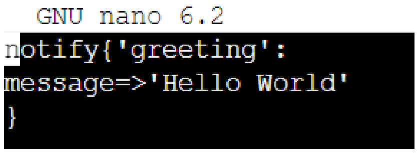
   ```
   ubuntu@ip-172-31-88-134:~$ sudo /opt/puppetlabs/bin/puppet agent --test
   Info: Using environment 'production'
   Info: Retrieving pluginfacts
   Info: Retrieving plugin
   Info: Retrieving locales
   Info: Caching catalog for ip-172-31-88-134.ec2.internal
   Info: Applying configuration version '1665321107'
   Info: Creating state file /opt/puppetlabs/puppet/cache/state/state.yaml
   Notice: Applied catalog in 0.01 seconds
   ubuntu@ip-172-31-88-134:~$
   ```

   If the output is normal, you can proceed.

2. Create new directories
   mkdir puppet_code
   mkdir puppet_code/manifests
3. Create a new puppet manifest file and open it using nano.
   nano /puppet_code/manifests/helloworld.pp

4. Enter the following contents inside the file.
   notify { 'greeting':

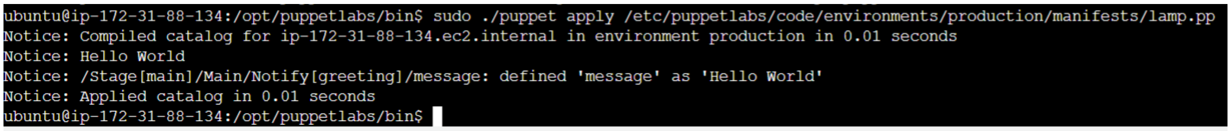
```
message => 'Hello, world!'
}
```



```
  GNU nano 6.2
notify{'greeting':
message=>'Hello World'
}
```

5. Change directory to /opt/puppetlabs/puppet/bin
   cd /opt/puppetlabs/puppet/bin

6. Now, apply the file.
   ./puppet apply /home/ubuntu/manifests/helloworld.pp



```
ubuntu@ip-172-31-88-134:/opt/puppetlabs/bin$ sudo ./puppet apply /etc/puppetlabs/code/environments/production/manifests/lamp.pp
Notice: Compiled catalog for ip-172-31-88-134.ec2.internal in environment production in 0.01 seconds
Notice: Hello World
Notice: /Stage[main]/Main/Notify[greeting]/message: defined 'message' as 'Hello World'
Notice: Applied catalog in 0.01 seconds
ubuntu@ip-172-31-88-134:/opt/puppetlabs/bin$
```

Conclusion:

Thus, we successfully learned about the syntax of manifest files and created our first puppet script to print a ‘hello world’ message.