

CONFIGURATION MANAGEMENT USING PUPPET

In an industry, where there are thousands of machines, it is very difficult to configure ,manage and maintain a software manually in a machine. This is where a configuration management tool comes in to picture. This process is eased by using a configuration management tool which automates the configuration process. There are many opensource configuration management tools and puppet is one among the most widely used tools.

Puppet is an open-source configuration management utility. It runs on both microsoft windows and many Unix systems and is a cross platform tool. It is used to manage IT infrastructure very effectively and has a declarative language of its own to define configurations. A large number of systems can be configured at once using this tool thus saving a lot of time invested in configuration management. It uses master-agent communication where master acts as repository of required software packages and is responsible for configuration of Vms.

The Agent/Master Architecture:

The nodes configured to be agents runs the puppet agent application and the server nodes runs the puppet master application. Each master can handle any number of agents.

When a request for catlog is received by master from the agent, master analyses the configuration to be applied to node and how to apply the configuration on the agent.Master then gathers all configurations and resources to be applied to respective node. All the gathered configurations are then compiled in to catalog. The compiled catalog is given to the respective puppet agent.

Once it receives a catalog, Puppet agent will apply it by checking each resource that is specified for it in the catalog.

After applying the catalog, the agent will submit a report to the Puppet master.

Configuring Master and Agent:

Configuring Puppet Master:

Step 1 : Install puppet master on host machine using the following command:

apt-get install puppetmaster

Step 2 : Start the puppetmaster using the command:

sudo service puppetmaster start

Step 3 : Check the status using **service puppetmaster status**

Configuring Puppet Agent:

Step 1 : Install puppet master on host machine using the following command:

apt-get install puppet

Step 2 : Start the puppetmaster using the command:

sudo service puppet start

Step 3 : Check the status using **service puppet status**

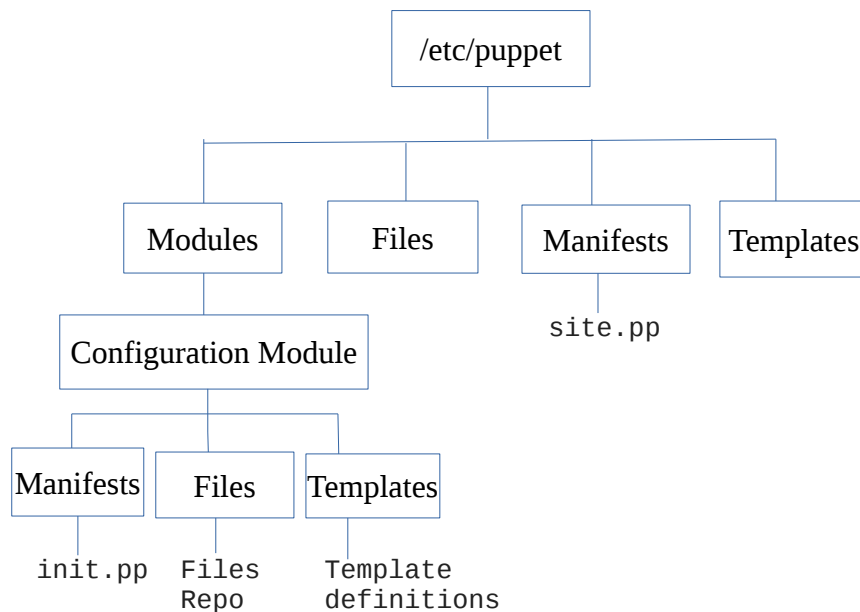
Post-install steps:

Step 1: Add the following lines in /etc/hosts of agent

ipaddress of master puppet

PUPPET MASTER DIRECTORY STRUCTURE:

A Specific directory structure has to be maintained on the puppet master.



Node definitions:

The list of agent nodes and the configuration to be pulled by them are listed in the `/etc/puppet/manifests/site.pp`. The node name of each node is specified and the required configuration classes are included in that node. The agent can pull the configuration only if its node is defined and a configuration is specified for it in `site.pp`.

Configuration Modules:

For each software configuration a separate module has to be written. Each individual module consists of three sub modules namely manifests, files and templates.

Manifests consists of `init.pp` which contains the class definitions for configuring the softwares.

Files acts as a repository holding all the required packages and files used to install softwares.

Templates consists of some template definition files with an extension of `.erb`

Working:

The communication between master and agent happens through a Secured Socket Layer(SSL). When the agent tries to connect to master for the first time a certificate is generated. The master will then sign the certificate. The communication will not happen until and unless the certificate is signed on the master's side.

The following are the commands to check the certificates on the master:

To check the unsigned certificates on the master:

sudo puppet cert list

To check both signed and unsigned certificates:

sudo puppetmaster cert list --all (the certificates with a '+' sign are the signed ones and remaining are the unsigned ones).

Once the certificate is signed, the agent will be able to pull its respective configuration from the master. The following is the command used by agent to pull the configuration from the master:

```
sudo puppet agent --test --server master_name
(or)
sudo puppet agent -t
```

RUN INTERVAL:

It is the time interval specified for the puppet agent to pull the configuration from master periodically. The default run interval for any puppet agent is 30 min. i.e; for every 30 min the agent pulls the configuration from the master automatically. If any new changes are made in master then the changes are pulled by agent for every 30 min.

We can set the default run interval by running the following command on the puppet agent:
puppet config set runinterval runinterval_in_seconds