**Ansible**

Ansible is an open-source IT engine that automates application deployment, cloud provisioning, intra service orchestration, and other IT tools.

Ansible is easy to deploy because it does not use any **agents** or **custom security** infrastructure on the client-side, and by pushing modules to the clients. These modules are executed locally on the client-side, and the output is pushed back to the Ansible server.

It can easily connect to clients using **SSH-Keys**, simplifying though the whole process. Client details, such as **hostnames** or **IP addresses** and **SSH ports**, are stored in the files, which are called inventory files. If you created an inventory file and populated it, then Ansible can use it.

Ansible uses the playbook to describe automation jobs, and playbook, which uses simple language, i.e., **YAML**. YAML is a human-readable data serialization language & commonly used for configuration files, but it can be used in many applications where data is being stored.

Ansible uses YAML syntax for expressing Ansible playbooks. This chapter provides an overview of YAML. Ansible uses YAML because it is very easy for humans to understand, read and write when compared to other data formats like XML and JSON.

Every **YAML** file optionally starts with “---” and ends with “...”.

**Understanding YAML**

key-value pair

YAML uses simple key-value pair to represent the data. The dictionary is represented in key: value pair.

Create a Playbook

Let us start by writing a sample YAML file. We will walk through each section written in a yaml file.

---

name: install and configure DB

hosts: testServer

become: yes

vars:

oracle\_db\_port\_value : 1521

tasks:

-name: Install the Oracle DB

yum: <code to install the DB>

-name: Ensure the installed service is enabled and running

service:

name: <your service name>

The above is a sample Playbook where we are trying to cover the basic syntax of a playbook. Save the above content in a file as **test.yml**. A YAML syntax needs to follow the correct indentation and one needs to be a little careful while writing the syntax.

Abbreviation

You can also use abbreviation to represent dictionaries.

James: {name: Lohitha, rollNo: 34, div: B, sex: Female}

Representing List

We can also represent List in YAML. Every element(member) of list should be written in a new line with same indentation starting with “- “ (- and space).

Example

---

countries:

- America

- China

- Canada

- Iceland

…

**Ansible variables**

Variable in playbooks are **very similar** to using variables in any programming language. It helps you to use and assign a value to a variable and use that anywhere in the playbook. One can put conditions around the value of the variables and accordingly use them in the playbook.

Example

- hosts : <your hosts>

vars:

tomcat\_port : 8080

In the above example, we have defined a variable name **tomcat\_port** and assigned the value 8080 to that variable and can use that in your playbook wherever needed.

**Ansible Roles**

In Ansible, the role is the primary mechanism for breaking a playbook into multiple files. This simplifies writing **complex playbooks**, and it makes them easier to reuse. The breaking of playbook allows you to logically break the playbook into reusable components.

Each role is basically limited to a particular functionality or desired output, with all the necessary steps to provide that result either within that role itself or in other roles listed as dependencies.

Roles are not playbooks. Roles are small functionality which can be independently used but have to be used within playbooks. There is no way to directly execute a role. Roles have no explicit setting for which host the role will apply to.

**Creating a New Role**

The directory structure for roles is essential to create a new role.

Role Structure

Roles have a structured layout on the file system. The default structure can be changed but for now let us stick to defaults.

Each role is a directory tree in itself. The role name is the directory name within the /roles directory.

$ ansible-galaxy -h