Ansible Overview

What Is Ansible?

Image Credit: Courtesy of Summit Entertainment

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What Is Ansible?

Change Management	Provisioning
Automation	**Orchestration**

Change Management

Define a "System State"

Enforce the System State

System State

Apache Web Installed

Apache Web at version x.xx.x

Apache Web Started

A function is idempotent if repeated applications has the same affect as a single application

IDEMPOTENCE

Provisioning

Prepare a system to make it ready

Transition from one state to a different state

Examples

Make an FTP Server

Make an Email Server

Make a DB Server

Basic OS → Web server

1. Install web software
2. Copy configurations
3. Copy web files
4. Install security updates
5. Start web service

Automation

Define tasks to be executed automatically
- Ordered Tasks
- Make decisions
- Ad-hoc tasks

Set it and Forget it
- Run the task
- Get a cup of coffee
- Walk back to desk seeing tasks finished
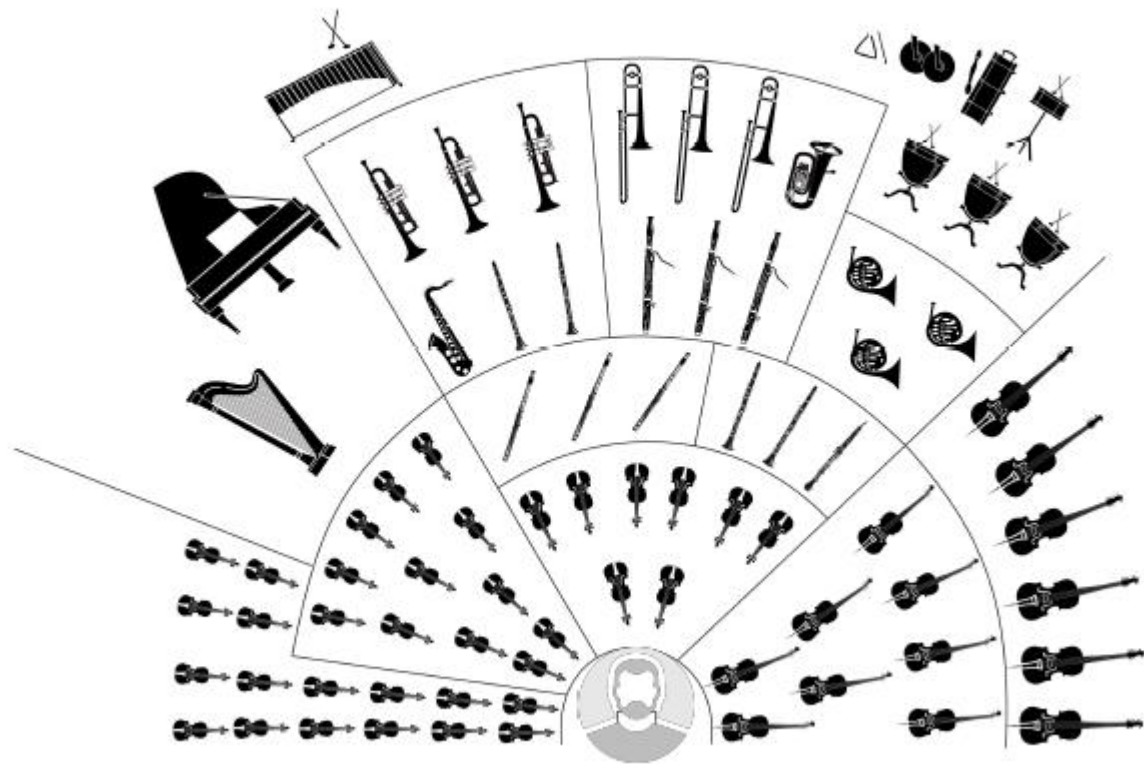- Sip your coffee and feel productive

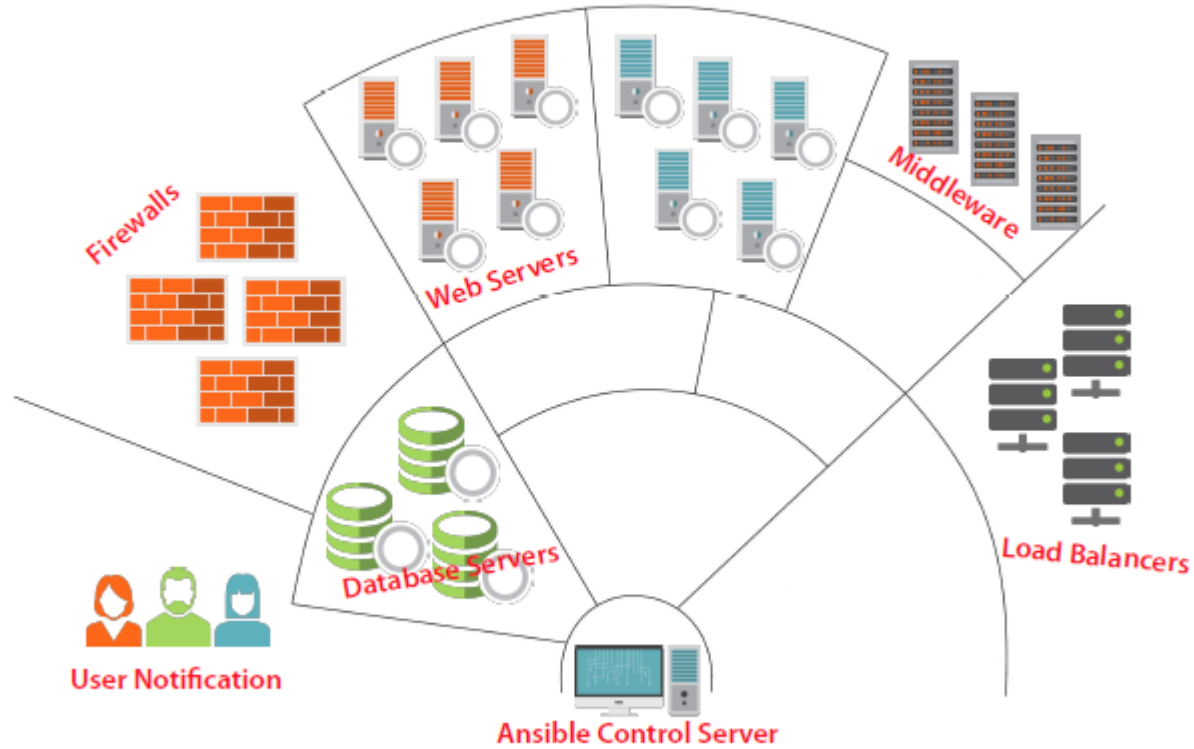## Orchestration

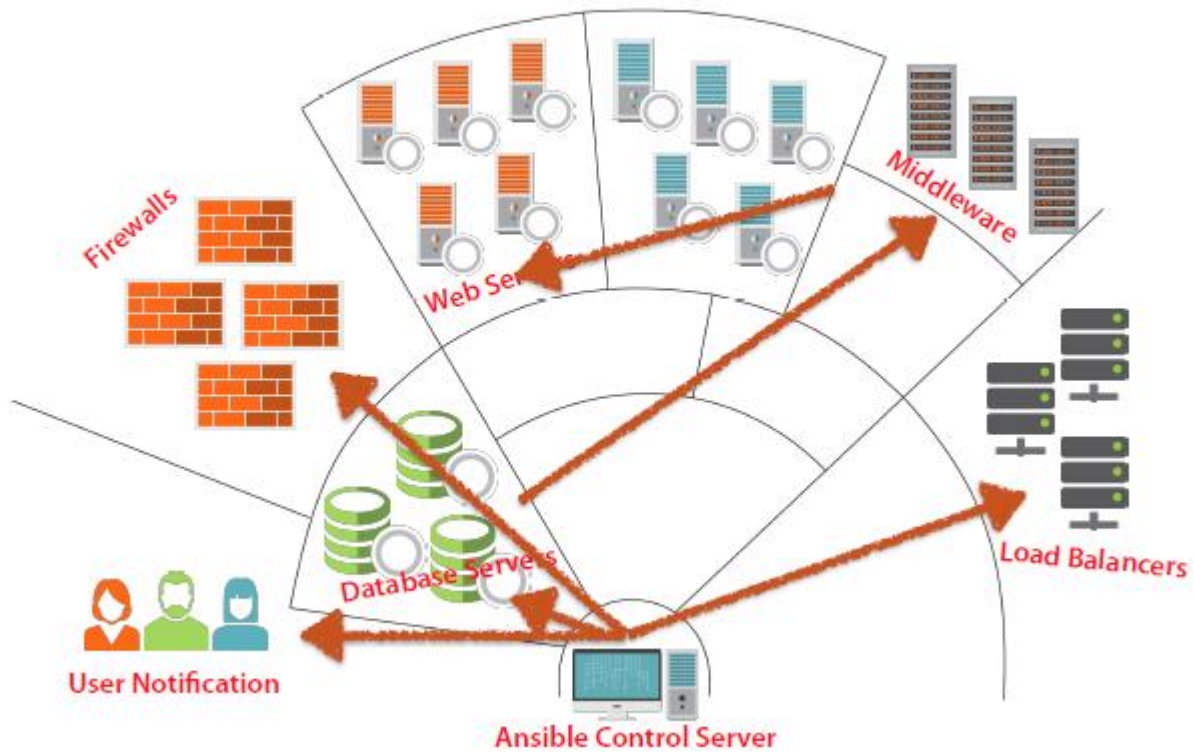Coordinates automation BETWEEN systems

Task 1 - System 1

Task 2 - System 2

Task 3 - System 3

Task 4 - System 1

Firewalls

Web Servers

Middleware

Database Servers

User Notification

Ansible Control Server

Load Balancers

Firewalls

Web Se...

Middleware

Database Servers

User Notification

Load Balancers

Ansible Control Server

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Why Ansible?

What makes it so different?

It's clean!

- No agents
- No database
- No residual software
- No complex upgrades

YAML

Ansible Execution

No programming required

NOT a markup language

Structured

Easy to read and write

Built-in security

Uses SSH

Root / Sudo usage

Encrypted vault

No PKI needed

Architecture and Process Flow

Remote Server

Ansible Control Server

Ansible Requirements
(Control Server)

Python 2.6+

Must be *NIX
(Linux/Unix/Mac)

Windows not
supported

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Ansible Requirements
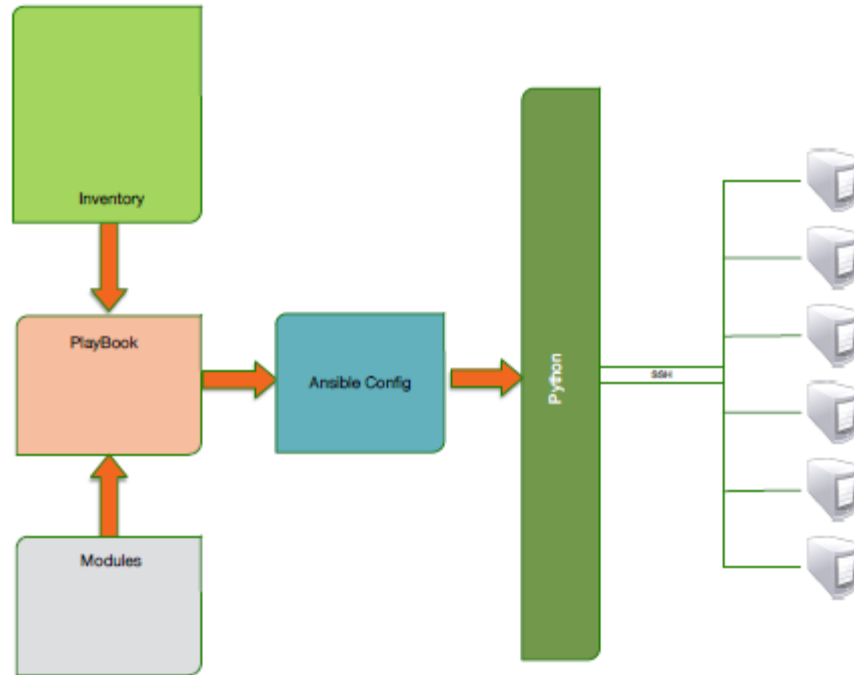# (Remote Server)

*NIX:

Python 2.4 (simplejson)

Python 2.5+

SSH

Windows:

Remote Powershell

Enabled

Module

A programmed unit of work to be done.

Play

A single task from a module, executed on a host or set of hosts

Playbook

A set of plays built in specific order sequence to produce an expected outcome or outcomes.

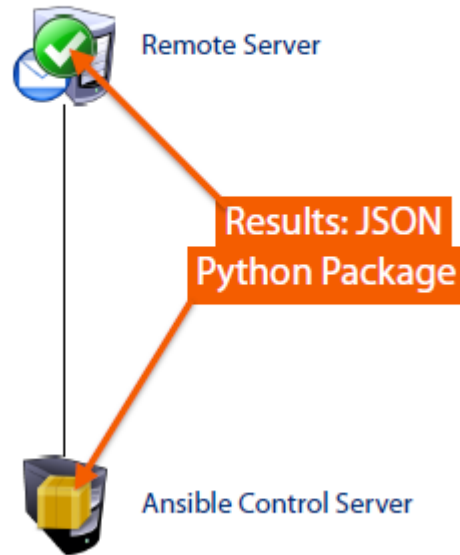# Variables

Host Variables
Use variables defined in Inventory per host or group
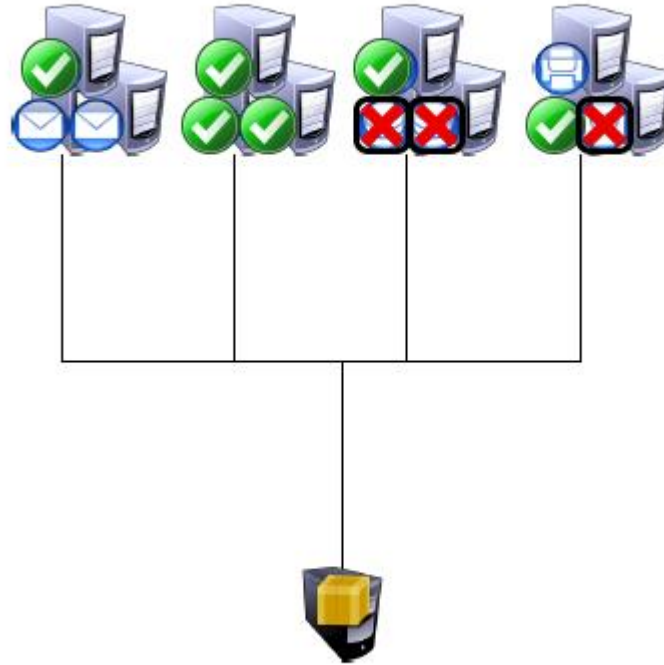
Facts
Use data gathered from the remote managed host

Dynamic Variables
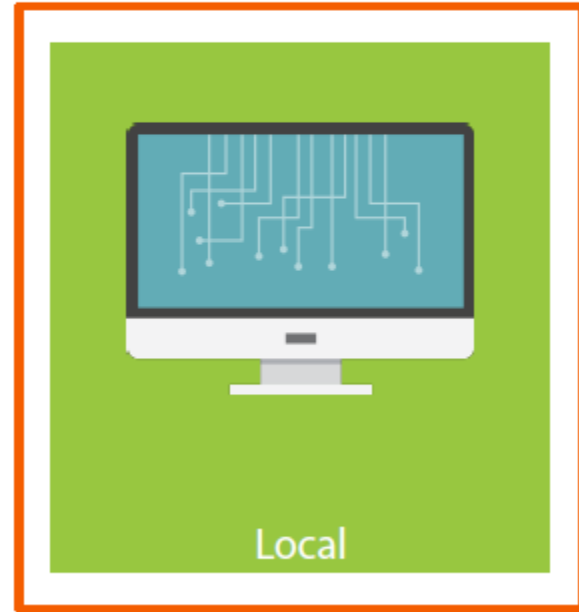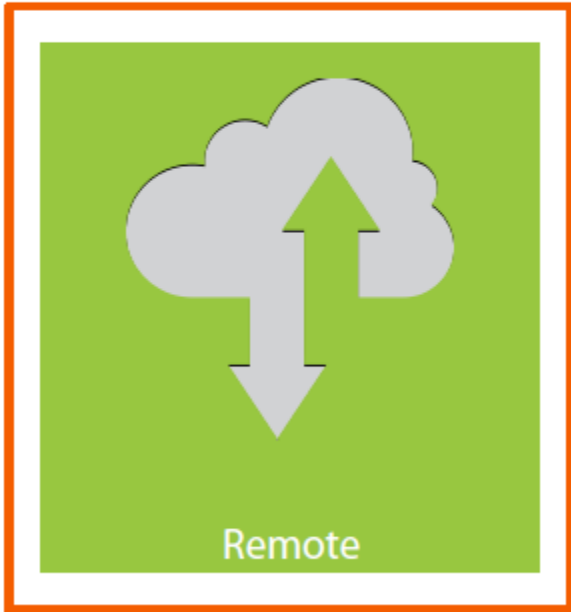Use data gathered by tasks or created at runtime

Remote Server
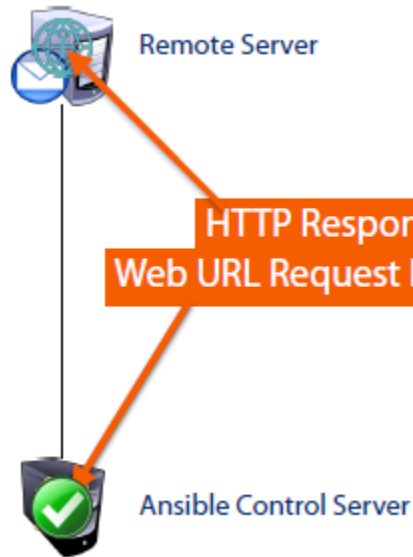
Results: JSON
Python Package

Ansible Control Server

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Execution Types

Remote

Local

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Remote Server

Results: JSON
Python Package

Ansible Control Server
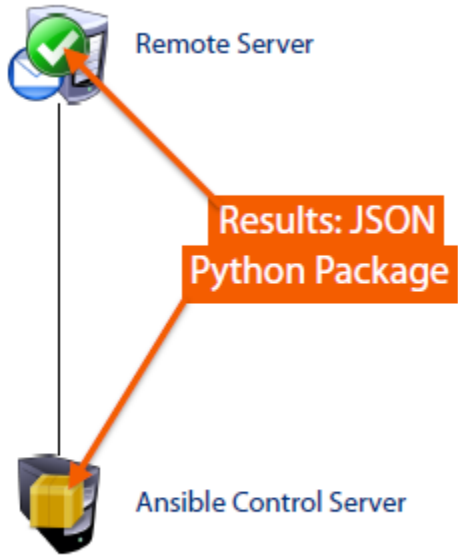
Packaged Tasks Executed on Remote-End

Remote Server

HTTP Response
Web URL Request HTTP(s)

Ansible Control Server

Packaged Tasks Executed on Ansible Server

Mostly used for webservice/API calls

Ansible Architecture

Inventory maps hosts	Configuration sets Ansible parameters	Modules define actions

Ansible Architecture

| Playbooks to coordinate multiple tasks | Python to build the execution | SSH to deliver the tasks |

Execution Types

Remote

Remote execution of plays

Local

When remote box is not executing plays

Install Ansible (Debian)	$ sudo apt-get install ansible
Install Ansible (CentOS)	$ sudo yum install epel-release $ sudo yum install ansible
PIP Install (All others)	Install Libraries (gcc, python-devel) Install Python SetupTools Install Ansible

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GitHub examples

https://github.com/ansible/ansible-examples