

Linux RedHat Certified Engineer (RHCE - EX294)

Ansible Tools and Resources

Other Automation Tools

- **Puppet and Chef**

- Uses Ruby language which is more difficult to learn, and their support is declining day by day
- These tools require agents to be installed on clients
- The installation process is very complex
- Lack of documentation

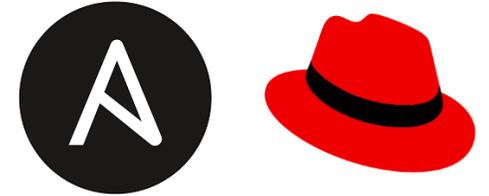
- **Ansible**

- Uses simple YAML
- Agentless (Only requires SSH access)
- Easy installation
- Well documented product



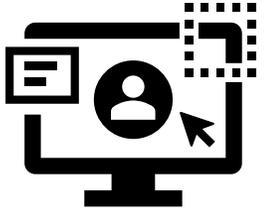
Open Source Ansible vs. Red Hat Ansible

- Ansible is an open-source software
- It was purchased by Red Hat in 2015
- Ansible software itself is free even though it is owned by Red Hat
- Ansible is the same software across all platforms
- The only difference is, Red Hat provides additional product **Ansible Tower** and **Consulting or Technical Support** for Ansible
- Learn more about Red Hat Ansible at www.redhat.com



- Red Hat Ansible Tower
 - Red Hat provides Ansible tower which is GUI based tool to manage Ansible automation
 - Ansible tower is a paid product by Red Hat
 - Manages multiple Ansible servers for large enterprise environment
- Ansible AWX
 - Open source
 - Free software.

Ansible Management Tools



- Ansible management tool provides centralized web interface to manage your playbooks, inventories and everything you do through a command line
- These tools also manage multiple Ansible control nodes
- There are 2 Ansible management tools
 - Ansible AWX (Free)
 - Ansible Tower (Licensed product)

Ansible AWX



- AWX stands for Ansible WorkX
- AWX is a web application that provides a user interface, REST API, and task engine for Ansible
- The AWX allows you to manage Ansible playbooks, inventories, run reports and schedule jobs
- Ansible AWX is an open-source, community driven management tool
- It is the upstream product, meaning all the changes are done on AWX first before it get to Ansible Tower
- The AWX Project is hosted on GitHub and Red Hat welcomes community contributions.
- The AWX project uses GitHub for its issue tracking as well. You can file your issues here:
 - <https://github.com/ansible/awx/issues>
- Red Hat does **NOT** recommend AWX for production environments.

Ansible AWX



Ansible AWX Pros and Cons

- **Pros**
 - Full enterprise features and functionality of Tower
 - This is available for free download and use
 - Not limited the number of nodes to be added
 - Great for POC/dev/lab or QA environments
- **Cons**
 - No technical support by Red Hat
 - Multiple releases in a single day are possible
 - Not recommended by Red Hat to be used in production environments.

Ansible AWX

Ansible AWX Install *(Please note: AWX is deployed from the docker containers)*



- Update the system
`# yum update -y`
- Reboot
`# reboot`
- Install epel-release repository
`# yum/dnf install epel-release`
- Install additional packages
`# dnf install git gcc gcc-c++ ansible nodejs gettext device-mapper-persistent-data lvm2 bzip2 python3-pip`
- Add docker repository
`# dnf config-manager --add-repo=https://download.docker.com/linux/centos/docker-ce.repo`
- Install Docker
`# dnf install docker-ce --nobest -y`
`# dnf install docker-ce --nobest --allowerase`
- Check Docker version
`# docker --version`

Ansible AWX



- Start docker
`# systemctl start docker`
- Enable docker at boot
`# systemctl enable docker`
- Install docker-compose
`# pip3 install docker-compose`
- Verify the docker-compose version
`# docker-compose --version`
- Set python command to use python3
`# alternatives --set python /usr/bin/python3`
- Download the latest version of Ansible AWX from the Git Hub repository
`# git clone https://github.com/ansible/awx.git`
- Generate a secret key for encryption of the inventory file and copy the output to a text file
`# openssl rand -base64 30`

Ansible AWX

- Change directory to and edit inventory file
`awx/installer`
OR # `awx/tools/docker-compose`
`vim inventory`
- Add or modify the following parameters

```
[all:vars]
dockerhub_base=ansible
awx_task_hostname=awx
awx_web_hostname=awxweb
postgres_data_dir="/var/lib/pgdocker"
host_port=80
host_port_ssl=443
docker_compose_dir="/root/awx/tools/docker-compose"
pg_username=awx
pg_password=awxpass
pg_database=awx
pg_port=5432
pg_admin_password=password
rabbitmq_password=awxpass
rabbitmq_erlang_cookie=cookiemonster
admin_user=admin
admin_password=password
create_preload_data=True
secret_key=R+kbcDEUS8D1AftAbfWafVqLZ01Uy+Paqo4fEtgp
awx_official=true
awx_alternate_dns_servers="8.8.8.8,8.8.4.4"
project_data_dir=/var/lib/awx/projects
```

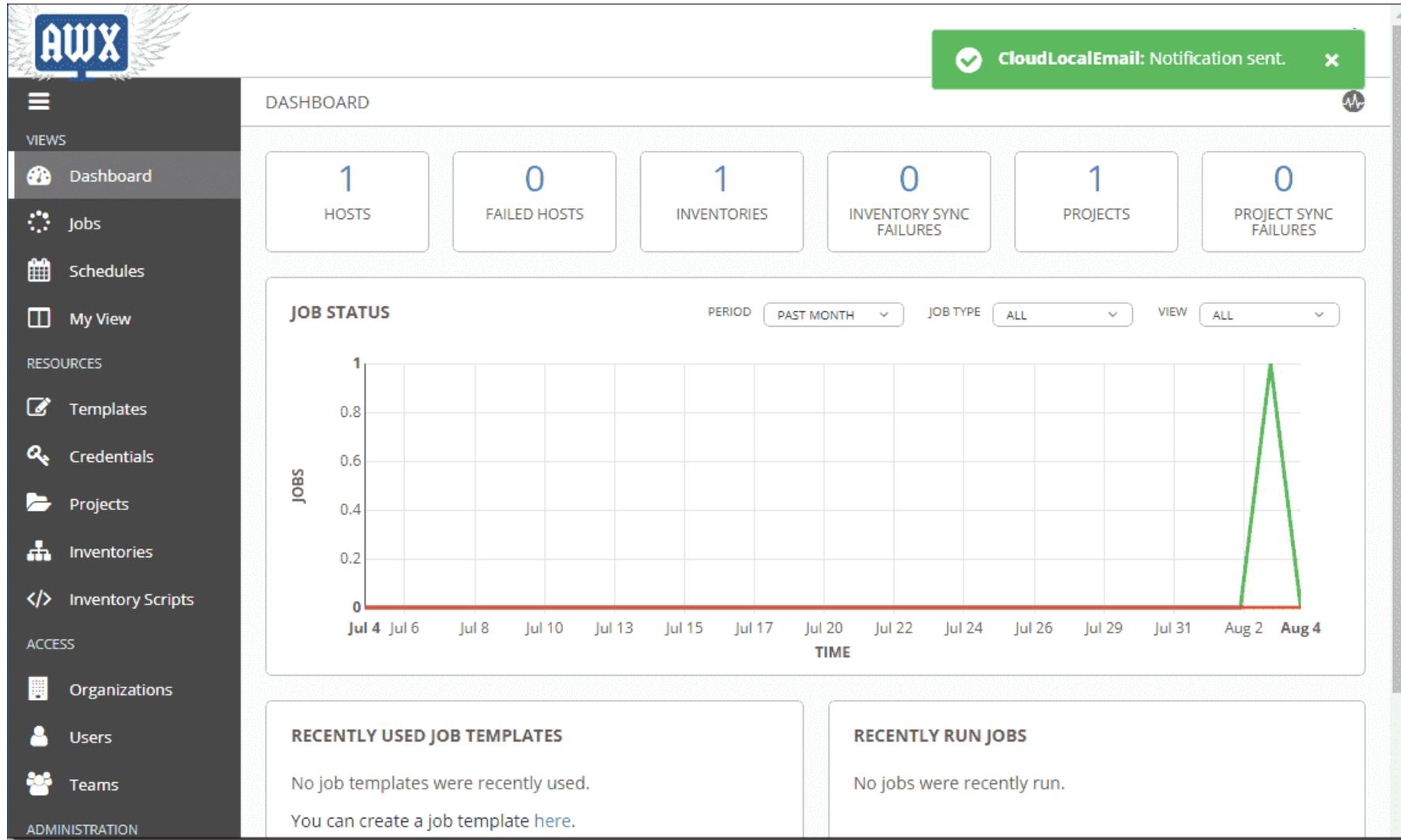


Ansible AWX

- Create directory for postgres
`# mkdir /var/lib/pgdocker`
- Install AWX
`# ansible-playbook -i inventory install.yml`
- Open Firefox on your Linux
`# http://localhost`



Ansible AWX



Ansible Tower

- Ansible Tower is a commercial Ansible management product by Red hat which comes with support from Red Hat as well
- Red Hat Ansible Tower is available in two editions that are differentiated by support and features. Pricing is based on the number of nodes (systems, hosts, instances, VMs, containers or devices) that you are managing
 1. Standard
 2. Premium

<https://www.ansible.com/products/pricing>



Ansible Tower



Ansible Tower Pros and Cons:

- **Pros**
 - 24hrs full technical support
 - Release cycles
 - Fully tested for quality and engineering issues before release
 - Install/upgrades are well-documented and supported
- **Cons:**
 - Expensive
 - You may need more than 10 nodes for a dev/POC environment
 - May be overkill for what you are trying to do.

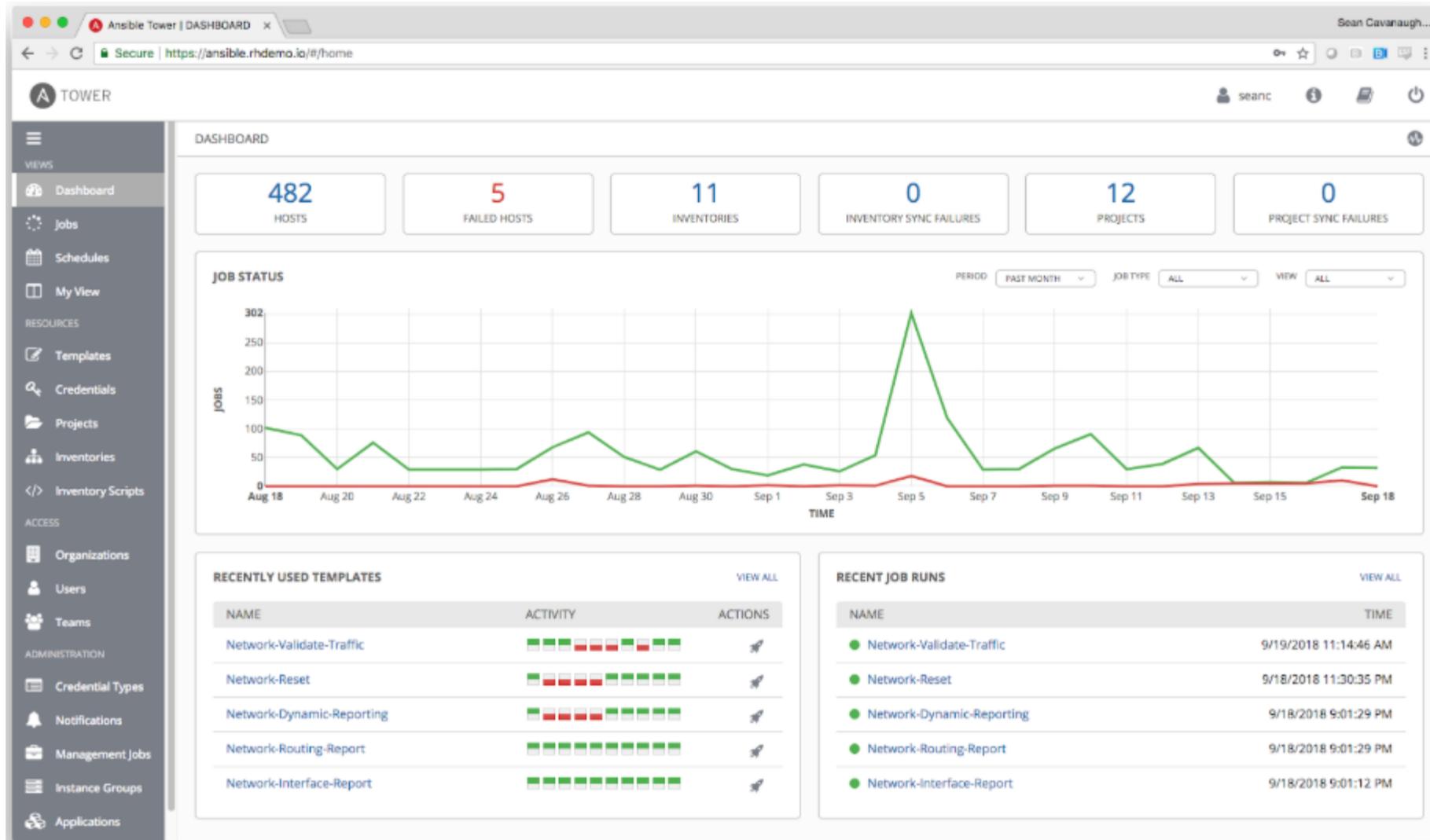
Ansible Tower

Ansible Tower Installation

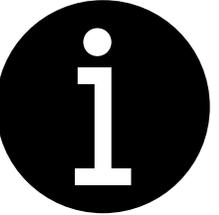
- <https://access.redhat.com/products/ansible-tower-red-hat>



Ansible Tower



Ansible Additional Commands

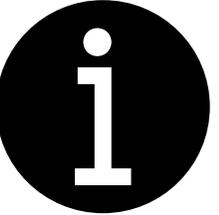


- Ansible software comes with additional resources and we can utilize those resources through built-in commands comes with Ansible software
- Following are the list of Ansible commands as of now:
 - **ansible**
 - **ansible-playbook**
 - **ansible-vault**

 - **ansible-config**
 - Shows or modifies Ansible configuration
 - Not all configuration options are present in the command line, just the ones deemed most useful or common. Settings in the command line will override those passed through the configuration file and the environment

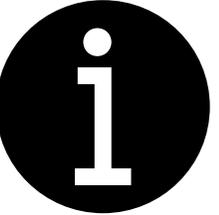
 - **ansible-connection**
 - Connection command for the remote clients.

Ansible Additional Commands



- **ansible-console**
 - Allows for running ad-hoc tasks against a chosen inventory from a nice shell with built-in tab completion
 - It supports several commands, and you can modify its configuration at runtime
 - You can run name of the listed command followed by help
 - E.g. `# help dnf`
 - To copy a file on the remote client = `# cp /tmp/ans5 /home/iafzal`
 - Certain commands are misleading e.g. = `cd` which changes the hosts instead of changing the directory
- **ansible-doc**
 - You can access manuals on plug-ins and modules through this command
 - `# ansible-doc -l` (*To list all modules*)
- **ansible-galaxy**
 - command to manage Ansible roles in shared repositories, the default of which is Ansible Galaxy <https://galaxy.ansible.com>

Ansible Additional Commands



- **ansible-inventory**

- Using the ansible-inventory command provides you with details of your host inventory files
- It can be useful if you want to get an idea of how your hosts are grouped. For example, run the following:

```
# ansible-inventory -i hosts --graph
```

- To get a full list of hosts in hosts file

```
# ansible-inventory --list
```

- **ansible-pull**

- A mode called 'ansible-pull' can also invert the system and have systems 'phone home' via scheduled git checkouts to pull configuration directives from a central repository

Ansible Documentation

- Online documentation
 - <https://docs.ansible.com/>
 - <https://docs.ansible.com/ansible/latest/>
 - <https://www.ansible.com/resources>
 - <https://www.redhat.com/en/topics/automation/learning-ansible-tutorial>
- Ansible Webinars and Trainings
 - <https://www.ansible.com/resources/webinars-training>
- Ansible module documentation
 - https://docs.ansible.com/ansible/2.9/modules/list_of_all_modules.html



Community Help

- Ansible has a large and engaged community of users who can help answer your questions
- For real-time chat join these Matrix rooms:
 - Social for general introductions and chat
 - <https://matrix.to/#/#social:ansible.com>
 - User Help for technical questions
 - <https://matrix.to/#/#users:ansible.com>
 - Community for collections and maintainers
 - <https://matrix.to/#/#community:ansible.com>
 - Community Space for the whole list of rooms
 - <https://matrix.to/#/#space:ansible.com>
- For Ansible via Internet Relay Chat and the AWX mailing list.
 - **IRC** = <https://web.libera.chat/#ansible-awx>
 - **AWX Mailing List** = <https://groups.google.com/g/awx-project>
- GitHub
 - Help or get up to date information on newer modules or versions
<https://github.com/ansible/ansible>

