

A vertical decorative graphic on the left side of the slide, rendered in various shades of red. It features a collage of icons representing cloud computing, data storage, network connectivity, and server infrastructure. The icons include a cloud with a keyhole, a database cylinder, a server rack, a network diagram with nodes and arrows, and a computer monitor. The overall style is modern and technical.

Getting started with ansible-builder

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Introducing ansible-builder

- Execution environments, what are they?
- What do the execution environments contain?
- How do I create an execution environment?
- How do I customize my execution environment?

What is an execution environment anyways?



What are in those containers?

- Based on the RHEL 8 UBI (Universal Base Image)
- Ansible
- Ansible Runner
- Ansible Collections
- Python and/or system dependencies of:
 - modules/plugins in collections
 - content in ansible-base
 - custom user needs

Where did we come from?

Python Virtual environments

- Tedious to setup and not portable
- Had to be created on each Tower node if you are using more than one
- Some commands run inside the virtual environment some run outside
-

bubblewrap

- Issues with running with privileged escalation on OpenShift type deployments.

Installing ansible-builder



- At this time it can be installed from PyPi or from source
 - With RHEL 8 you will need to install python3
 - `# yum module install python38``
 - ``$ pip3 install ansible-builder``
- ansible-builder uses podman by default, you can use docker with the following flag when building the environments
 - ``ansible-builder build --container-runtime docker``

What's next? How do I build my environment?

Definition File Contents

- Named execution-environment.yml
- Collection-level dependencies
- Base image source

requirements.yml

```
---  
collections:  
  - name: awx.awx
```

Example execution-environment.yml

```
---  
version: 1  
dependencies:  
  galaxy: requirements.yml  
  
additional_build_steps:  
  prepend: |  
    RUN whoami  
    RUN cat /etc/os-release  
  append:  
    - RUN echo This is a post-install command!  
    - RUN ls -la /etc
```

Running and testing the build

```
[root@agilley ~]# ansible-builder build --tag=awx-example
```

Running command:

```
podman build -f context/Containerfile -t awx-example context
```

Running command:

```
podman run --rm -v  
/usr/local/lib/python3.8/site-packages/ansible_builder:/ansible_builder_mount:Z awx-example  
python3 /ansible_builder_mount/introspect.py
```

Running command:

```
podman build -f context/Containerfile -t awx-example context  
Complete! The build context can be found at: /root/context
```



```
[root@agilley ~]# ansible-runner playbook --container-image=awx-example test.yml
[WARNING]: You are running the development version of Ansible. You should only
run Ansible from "devel" if you are modifying the Ansible engine, or trying out
features under development. This is a rapidly changing source of code and can
become unstable at any point.
```

```
[WARNING]: You are running the development version of Ansible. You should only
run Ansible from "devel" if you are modifying the Ansible engine, or trying out
features under development. This is a rapidly changing source of code and can
become unstable at any point.
```

```
[WARNING]: No inventory was parsed, only implicit localhost is available
```

```
[WARNING]: provided hosts list is empty, only localhost is available. Note that
the implicit localhost does not match 'all'
```

```
PLAY [localhost] *****
```

```
TASK [Gathering Facts] *****
ok: [localhost]
```

```
TASK [hostname] *****
ok: [localhost] => {
  "ansible_hostname": "fc3cf50d48ac"
}
```

```
TASK [date and time] *****
ok: [localhost] => {
  "msg": [
    "Date: 2021-05-14",
    "Timezone: UTC",
    ""
  ]
}
```

```
TASK [network info] *****
ok: [localhost] => {
  "msg": [
    "All Interface List: ['lo', 'eth0']",
    "All IP: ['10.88.0.13']",
    "Gateway: 10.88.0.1",
    "Eth0 MAC: 06:c3:25:ed:36:38",
    ""
  ]
}
```

```
PLAY RECAP *****
localhost : ok=4    changed=0    unreachable=0    failed=0    skipped=0    rescued=0    ignored=0
```

Distributing execution environments

- Execution environment build contexts and the containers themselves can be shared on public or private registries such as quay.io
- This allows workflows that can automate the build/usage of execution environments.
- <https://redhat.com/en/technologies/cloud-computing/quay>

Caveats


- At the time of this presentation/demonstration these features are still upstream and not yet a part of Red Hat repositories and channels.
- Ansible-runner is at version 2.0.0-alpha2 for the execution environments to work and the current supported version is 1.4.7.
- The ansible-builder package is also upstream from PyPi

Thank you

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