Technical white paper

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HPE ONEVIEW ANSIBLE COLLECTION INSTALLATION AND USER GUIDE

CONTENTS

PREFACE

The **Install and User Guide of Ansible Collection for HPE OneView** can help move current customers from the legacy Ansible Module to the new Ansible collection. This enables customers to take full advantage of infrastructure automation using Ansible collection modules, in addition to helping improve the customer experience.

This guide covers various aspects including installation of Ansible collection, installation of HPE OneView Ansible Collection, and running the Ansible playbooks. This guide also provides step-by-step details to the customer for adopting, moving, and migrating to HPE OneView Ansible Collection in each of the following sections.

1. Installation of Ansible collection

2. Installation of HPE OneView Ansible Collection SDK

3. Running the playbooks

4. Examples provided in the HPE OneView Ansible Collection

5. Conversion of existing custom Ansible playbooks to Ansible collection playbooks

6. Developing new Ansible collection playbooks

TECHNICAL ASPECTS

Checklist

1. For leveraging HPE OneView Ansible Collection SDK module, the requirement is to have **Ansible 2.10 module installed**. And uninstall the Ansible Module < 2.9 from the DevOps appliance/OS if exists.

2. Python requirements: Ansible collection works with both Python versions 2.7.9 and 3.6.x—preferably Python 3.6.x version.

3. The file structure of the Ansible collection project is different from the Ansible project. The following is the screenshot of Ansible project structure.

```
collection/
├── docs/
├── galaxy.yml
├── meta/
│   └── runtime.yml
├── plugins/
│   ├── modules/
│   │   └── module1.py
│   ├── inventory/
│   └── .../
├── README.md
├── roles/
│   ├── role1/
│   ├── role2/
│   └── .../
├── playbooks/
│   ├── files/
│   ├── vars/
│   ├── templates/
│   └── tasks/
└── tests/
```

FIGURE 1. Ansible collection structure

4. Reusable scripts from existing HPE OneView Ansible Module:

   a. Python scripts from `oneview-ansible/library`: Python scripts from library module are moved to `oneview-ansible-collection/plugins/ directory`.

   b. Tasks scripts from `oneview-ansible/examples/yaml` files are moved to `oneview-ansible-collection/roles` directory.

   We use the ansible-galaxy executable to create the appropriate collection project structure.

   ```
   ansible-galaxy collection init oneview_custom_collection_use_case
   ```

INSTALLATION OF ANSIBLE COLLECTION

Requirements

1. As part of using the new Ansible collection in the DevOps appliance, we need to first uninstall the existing or old Ansible Module if an installed version exists and is <= 2.9.

2. Download and install the Ansible 2.10 version from Red Hat® portal.

3. HPE OneView Python SDK.
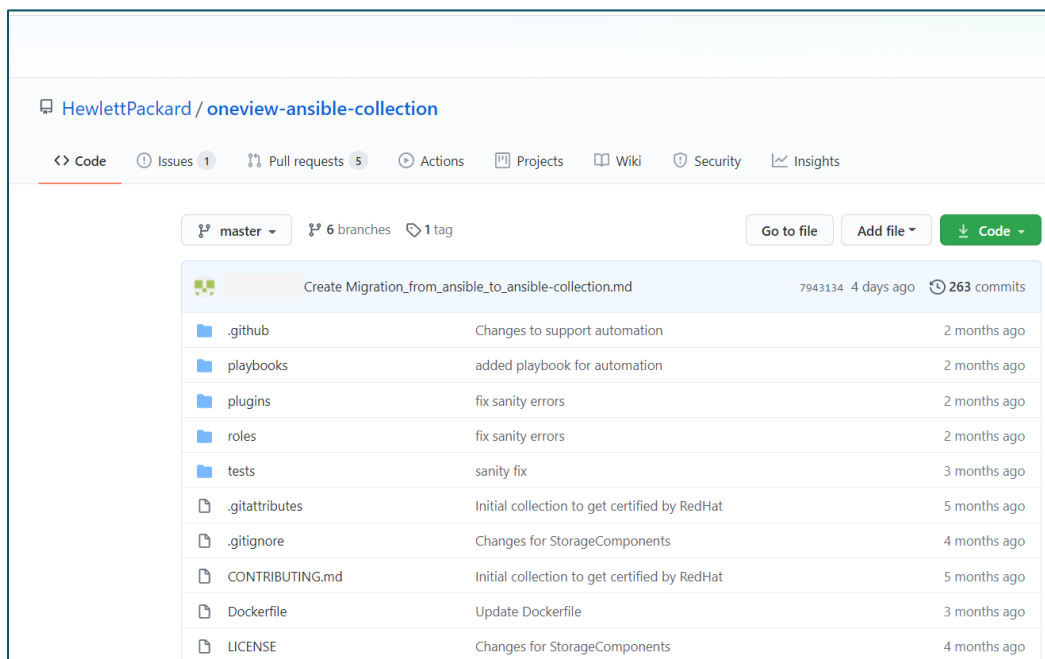
INSTALLATION OF HPE ONEVIEW ANSIBLE COLLECTION

The HPE OneView Ansible Collection includes roles, modules, sample playbooks, and module_utils. We can install HPE OneView Ansible Collection modules through multiple ways as listed in the following table.

TABLE 1. Download locations for HPE OneView Ansible Collection

Repositories	HPE GitHub	Ansible Galaxy	Ansible Automation Hub	Docker image
HPE OneView Ansible Collection	Open-source community project.	Community portal: Ansible Galaxy provides prepackaged units of work known to Ansible as roles and collections.	Red Hat subscription and support: Ansible certified content backed by HPE and Red Hat.	Open source: The containerized version of the GitHub oneview-ansible-collection module is available in the Docker Store.

Install HPE OneView collection from GitHub

github.com/HewlettPackard/oneview-ansible-collection

FIGURE 2. HPE OneView Ansible Collection—GitHub repository

```
$ git clone https://github.com/HewlettPackard/oneview-ansible-collection.git

$ cd oneview-ansible-collection

$ ansible-galaxy collection build
```

The build process creates hpe.oneview in tar file format.

```
$ ansible-galaxy collection install hpe.oneview
```

Install HPE OneView collection dependency packages

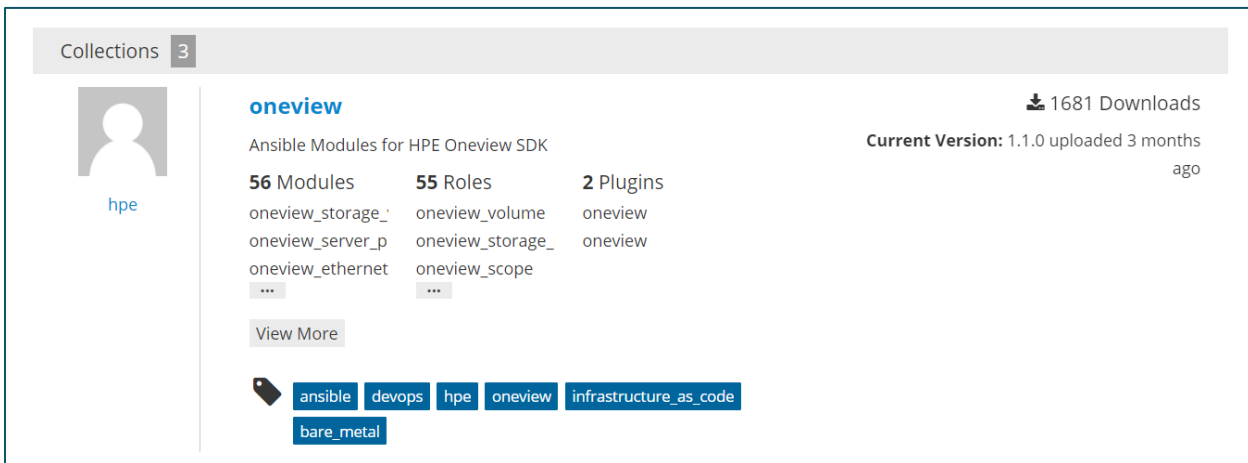Run the following command to install HPE OneView collection dependency packages:

```
$ pip install -r requirements.txt
```

Installation HPE OneView Ansible collection from Ansible Galaxy

The HPE OneView Ansible Collection can be installed using Ansible Galaxy. Content from roles and collections can be referenced in Ansible playbooks and immediately put to work.

Installing collections with ansible-galaxy is only supported in Ansible version > 2.9.

galaxy.ansible.com/hpe/oneview

FIGURE 3. HPE OneView Ansible Collection—Ansible Galaxy

To install HPE OneView collection hosted in Galaxy:

```
$ ansible-galaxy collection install hpe.oneview
```

Run the following command for upgrading HPE OneView Ansible Collection to the latest version of HPE OneView:

```
$ ansible-galaxy collection install hpe.oneview -force
```

Install HPE OneView collection dependency packages

Run the following command to install HPE OneView collection dependency packages:

```
$ pip install -r requirements.txt
```

Installation HPE OneView Ansible collection from Red Hat Automation Hub

The HPE OneView Ansible Collection can be installed using Red Hat Automation Hub. We may want to leverage Automation Hub for downloading and using the HPE OneView collection module certified by Red Hat. At a high level, Automation Hub provides Ansible-certified, -supported content by HPE and Red Hat.

Automation Hub is available as software as a service (SaaS) offering to existing Red Hat Ansible Automation Platform customers and can be accessed via cloud.redhat.com. Hub content can be accessed via CLI, as part of your automation workflows. For this, an offline token is required, which can be obtained via the web UI at cloud.redhat.com/ansible/automation-hub/token.
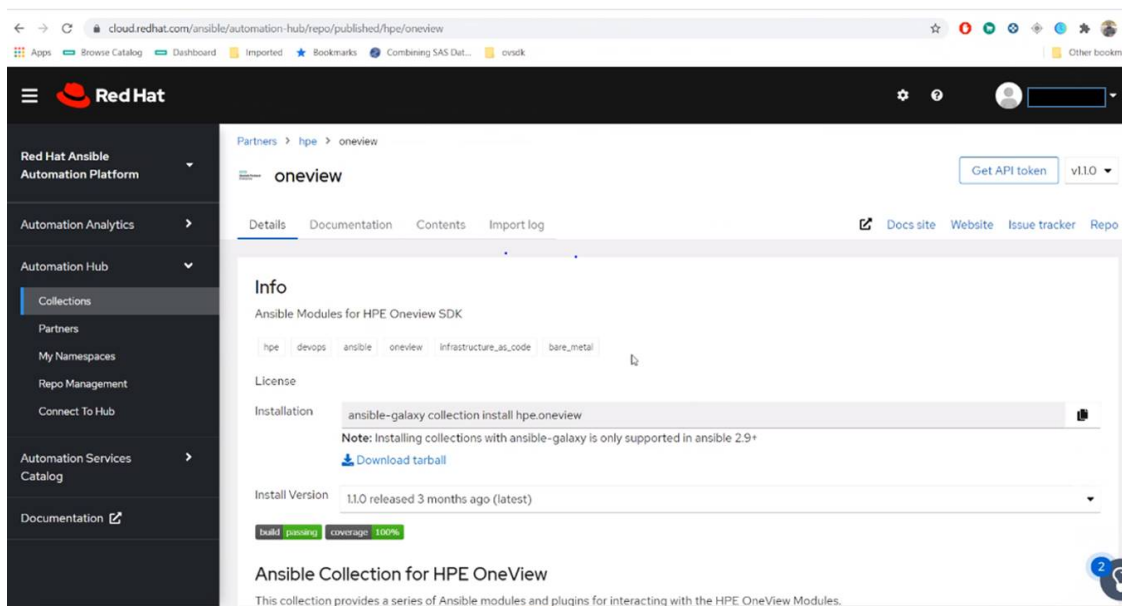
FIGURE 4. HPE OneView Ansible Collection—Red Hat Automation Hub

URL and token needs to be added to the configuration file as follows:

```
[galaxy]

server_list = automation_hub, galaxy

[galaxy_server.automation_hub]

url=https://cloud.redhat.com/api/automation-hub/

auth_url=https://sso.redhat.com/auth/realms/redhat-external/protocol/openid-connect/token

token=AABBccddeeff112233gghh

[galaxy_server.galaxy]

url=https://galaxy.ansible.com/
```

Run the following command for installing HPE OneView Ansible Collection from the Automation Hub using the previously mentioned configuration file.

```
$ ansible-galaxy collection install hpe.oneview:1.0.3
```

NOTE

Automation Hub supports versioning, enabling users to specify the version. Visit the following link for the steps on Automation Hub: ansible.com/blog/getting-started-with-automation-hub.

Install HPE OneView collection from Docker image

The containerized version of the oneview-ansible-collection module is available in the Docker Hub built on top of Ubuntu OS with prebuilt Python and Ansible environments.

Run the following commands to install HPE OneView collection from Docker image.

```
docker build -t oneview-ansible-collections

docker run -it --rm -v (pwd)/:/root/oneview-ansible-collections oneview-ansible-collections
```

That's it. To modify any role, simply modify role and rerun the image.

RUNNING THE PLAYBOOKS

To use a module from HPE OneView collection, we need to reference the full namespace, collection name, and modules name that customers want to use:

```
$ cd ~/.ansible/collections/ansible_collections/hpe/oneview
```

Run the ansible-test sanity to make sure the build passes all sanity tests.

Visit the following link for more information on the ansible sanity test options:

docs.ansible.com/ansible/latest/dev_guide/testing_sanity.html

```
$ ansible-test sanity
$ cd playbooks
Add roles in sample or example.yml file to be used while running the playbook.
[hpe.oneview.oneview_fc_network]---> hpe/oneview/roles/oneview_fc_network/tasks/main.yml

---

- name: Using HPE OneView collection
  hosts: all
  collections:
   - hpe.oneview
    roles:
     - hpe.oneview.oneview_fc_network
     - hpe.oneview.oneview_fc_network_facts
$ ansible-playbook example.yml
```

EXAMPLES PLAYBOOKS PROVIDED WITH HPE ONEVIEW ANSIBLE COLLECTION

Multiple examples are provided with the HPE OneView Ansible Collection covering all the HPE OneView key resource endpoints such as networks, LIG, EG and LE, server profile template, server profile, HPE Image Streamer, and others. This is to help customers and partners for seamless migration.

Repository path of examples

Let us consider a key resource HPE OneView server profile that is very frequently used for server deployment.

`oneview_server_profile` example directory in the repo such as github.com/HewlettPackard/oneview-ansible-collection/tree/master/roles, follows the Ansible collection file structure.

It consists of the key files such as `oneview_server_profile/tasks/main.yml`, `oneview_server_profile/files/oneview_config.json`, `oneview_server_profile/defaults/main.yml`, `oneview_server_profile/meta/main.yml`, `oneview_server_profile/vars/main.yml`, `oneview_server_profile/tasks/main.yml` and consists of various tasks (ansible code) for creating a server profile, updating server profile, and deleting server profile.

HPE OneView configuration parameters such as host name, IP address, and password are read from `oneview_server_profile/files/oneview_config.json`.

Parameter values are read from `oneview_server_profile/defaults/main.yml` and `oneview_server_profile/vars/main.yml`. Parameter values from /vars/main.yml take precedence compared to /defaults/main.yml.

`oneview_server_profile/meta/main.yml` is meant for version and author information.

CONVERT CUSTOM HPE ONEVIEW ANSIBLE MODULE PLAYBOOKS TO HPE ONEVIEW ANSIBLE COLLECTION (2.10)

The file structure of the Ansible collection project is different from the Ansible project.

See the Technical Aspects section for more details and the screenshot of Ansible project structure. As part of conversion of custom HPE OneView module playbooks to Ansible collection, we would be leveraging the Task scripts from existing HPE OneView Ansible Module. Respective Task scripts from `oneview-ansible/examples/yaml` files are moved to `oneview-ansible-collection/roles` directory.

Step 1: Creating a collection skeleton for the custom playbook

To start a custom collection:

```
$ cd ~/.ansible/collections/ansible_collections/hpe/oneview
$ cd roles/
$ ansible-galaxy collection init oneview_custom_collection_use_case
```

Once the skeleton is created, add the content to the collection. The skeleton consists of the following subfolders:

```
oneview_custom_collection_use_case/tasks/main.yml

oneview_custom_collection_use_case/files/oneview_config.json

oneview_custom_collection_use_case/defaults/main.yml

oneview_custom_collection_use_case/meta/main.yml

oneview_custom_collection_use_case/vars/main.yml
```

Step 2: Adding the content

1. Add the Ansible tasks related code in `oneview_custom_collection_use_case/tasks/main.yml`

   Custom HPE OneView module Task scripts from `oneview-ansible/examples/yaml` files are moved to `oneview-ansible-collection/roles directory`. If custom HPE OneView module has Python scripts in the `oneview-ansible/library`, they need to be moved to `oneview-ansible-collection/plugins/` directory.

2. Add the HPE OneView configuration such as host name, IP address, and password to `oneview_custom_collection_use_case/files/oneview_config.json`.

3. Parameter values used in the tasks are read from `oneview_custom_collection_use_case/defaults/main.yml` and `oneview_custom_collection_use_case/vars/main.yml`. Populate the parameter values into `/defaults/main.yml` and `/vars/main.yml` based on the requirement.

4. Note that parameter values in the `/vars/main.yml` take precedence when compared to `/defaults/main.yml`.

5. `oneview_custom_collection_use_case/meta/main.yml` is meant for meta info like version, author, tags, and such. Fill the version information and author details.

Step 3: Build the collection

To build the collection, run ansible-galaxy collection build from inside the root directory of the collection.

```
collection_dir#> ansible-galaxy collection build

$ cd ~/.ansible/collections/ansible_collections/hpe/oneview

$ ansible-galaxy collection build
```

This creates a group of files collected together as one of the built collection in the current directory.

Step 4: Running the playbook

Run the ansible-test sanity to make sure the build passes all sanity tests.

```
$ ansible-test sanity
```

```
$ cd playbooks
```

Create a sample or example oneview_custom_collection_use_case.yml file to be used for running the playbook in the following playbooks' directory.

Add the respective roles to the sample (or) example playbook oneview_custom_collection_use_case.yml as shown in the following:

```
---

- name: Using HPE OneView collection oneview_custom_collection_use_case

  hosts: all

  collections:

   - hpe.oneview

    roles:

     - hpe.oneview.oneview_custom_collection_use_case.yml
```

Step 5: Run the playbook as shown in the following

```
$ ansible-playbook oneview_custom_collection_use_case.yml
```

DEVELOPING NEW PLAYBOOK IN THE HPE ONEVIEW ANSIBLE COLLECTION MODULE

Step 1: Creating a collection skeleton for the new playbook

To start a new collection:

```
$ cd ~/.ansible/collections/ansible_collections/hpe/oneview
```

```
$ cd roles/
```

```
$ ansible-galaxy collection init oneview_new_collection_use_case
```

Once the skeleton is created, add the content to the collection. The skeleton consists of the following subfolders:

```
oneview_new_collection_use_case/tasks/main.yml
```

```
oneview_new_collection_use_case/files/oneview_config.json
```

```
oneview_new_collection_use_case/defaults/main.yml
```

```
oneview_new_collection_use_case/meta/main.yml
```

```
oneview_new_collection_use_case/vars/main.yml
```

Step 2: Adding the content

1. Add the ansible tasks related content in `oneview_new_collection_use_case/tasks/main.yml`.

2. Add the HPE OneView configuration such as host name, IP address, and password to `oneview_new_collection_use_case/files/oneview_config.json`.

3. Parameter values used in the tasks are read from `oneview_new_collection_use_case/defaults/main.yml` and `oneview_new_collection_use_case/vars/main.yml`. Populate the parameter values into `/defaults/main.yml` and `/vars/main.yml` based on the requirement.

4. Note that parameter values in the `/vars/main.yml` take precedence when compared to `/defaults/main.yml`.

5. `oneview_new_collection_use_case/meta/main.yml` is meant for meta info such as version, author, tags, and such. Fill the version information and author details.

Step 3: Build the collection

To build the collection, run ansible-galaxy collection build from inside the root directory of the collection.

```
collection_dir#> ansible-galaxy collection build

$ cd ~/.ansible/collections/ansible_collections/hpe/oneview

$ ansible-galaxy collection build.
```

This creates a tar ball of the built collection in the current directory.

Step 4: Running the playbook

Run the ansible-test sanity to make sure the build passes all sanity tests.

```
$ ansible-test sanity

$ cd playbooks
```

Create a sample or example oneview_new_collection_use_case.yml file to be used for running the playbook in the following playbooks' directory.

Add the respective roles to the sample (or) example playbook oneview_new_collection_use_case.yml as shown in the following:

```
---
- name: Using HPE OneView collection oneview_new_collection_use_case

  hosts: all

  collections:

    - hpe.oneview

     roles:

       - hpe.oneview.oneview_new_collection_use_case.yml
```

Step 5: Run the playbook as shown in the following

```
$ ansible-playbook oneview_new_collection_use_case.yml
```

SUMMARY

Moving from the legacy Ansible Module to the new Ansible collection enables the user to take full advantage of infrastructure automation using Ansible collection modules. The new Ansible collection architecture streamlines and focuses Ansible development by providing an updated approach to managing the dramatically increasing volume of related content. By migrating from the HPE OneView Ansible Module to the HPE OneView Ansible Collection, users ensure full alignment with Ansible's development path and compatibility with Ansible products.

This document shows that there are multiple paths to migration. That the process is straightforward and can be adjusted to suit a user's particular circumstances to achieve a seamless migration with limited effort. GitHub, Ansible Galaxy, or Automation Hub can be used to move and migrate to HPE OneView Ansible Collection. Additionally, converting existing playbooks into playbooks for use with collections is a straightforward process. As is the creation of new customized playbooks for use in the new collection format. Moving from the legacy Ansible Module to the new Ansible collection requires limited effort and provides benefits, which make migration a worthwhile investment.

LEARN MORE AT

HPE OneView

HPE OneView Ansible Collection GitHub

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