INFRASTRUCTURE AS CODE WITH HPE ONEVIEW AND ANSIBLE

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INTRODUCTION

This white paper and accompanying GitHub repository are meant to assist customers and partners in provisioning physical infrastructure, under the HPE OneView management, using Red Hat® Ansible playbooks. These playbooks then can be checked into source control (such as Git) allowing you to treat infrastructure as code.

The benefits of this infrastructure-as-code approach include complete data center automation, consistent reproducibility, versioning, and rollback.

SETUP

You will need the HPE OneView and Ansible modules. See the README for installation instructions. The playbooks for this example can be found here. Or, you can skip the installation and run the Ansible playbooks from a containerized version on the Docker Store.

HPE ONEVIEW ESSENTIALS

HPE OneView provides software-defined resources, including templates, profiles, and groups that provide an innovative way to manage the entire data center. These logical constructs let an application or IT organization compose compute, networking, and storage into configurations that are specific to the desired workloads or applications.

Server profiles templates enable you to provision bare-metal infrastructure quickly and consistently. Server profile templates can be used to capture best practices once, and then roll them out multiple times in an efficient and error-free way. A server profile template captures key aspects of a server configuration in one place, including:

- BIOS settings

- Boot order configuration

- Unique IDs such as MAC addresses

- Firmware update selection and scheduling

- OS deployment settings

- Local storage and SAN storage

- Local RAID configuration

- Network connectivity

INFRASTRUCTURE AS CODE EXAMPLE

This example will configure a hardware server with boot settings and a network connection, and then boot the server.

CONFIGURATION

- Edit oneview-config.json and provide the IP address and credentials for the HPE OneView appliance or HPE Synergy Composer module.

- Edit infrastructure config.yml and provide names for the server profile template and server profile that will be created. Provide the names of the enclosure group, hardware server type, hardware server, and network that will be provisioned. These names can be discovered via the HPE OneView web interface.

CREATE THE SERVER PROFILE TEMPLATE

The playbook server_profile_template.yml will create the server profile template.

Run the command:

```
ansible-playbook -i hosts server_profile_template.yml
```

After the server profile template is created, the playbook returns information about the created resource. You can also see the result of the template creation in OneView.

FIGURE 1. Server profile template

CREATE AND APPLY THE SERVER PROFILE

Now that we have a server profile template, we can run server-profile.yml, which will create a server profile and assign it to a specific server, which will configure the hardware. Then the playbook will boot the server.

```
ansible-playbook -i hosts server_profile.yml
```

This playbook will also return a lot of information about the newly provisioned server. You can see the result of the Server Profiles creation in OneView.
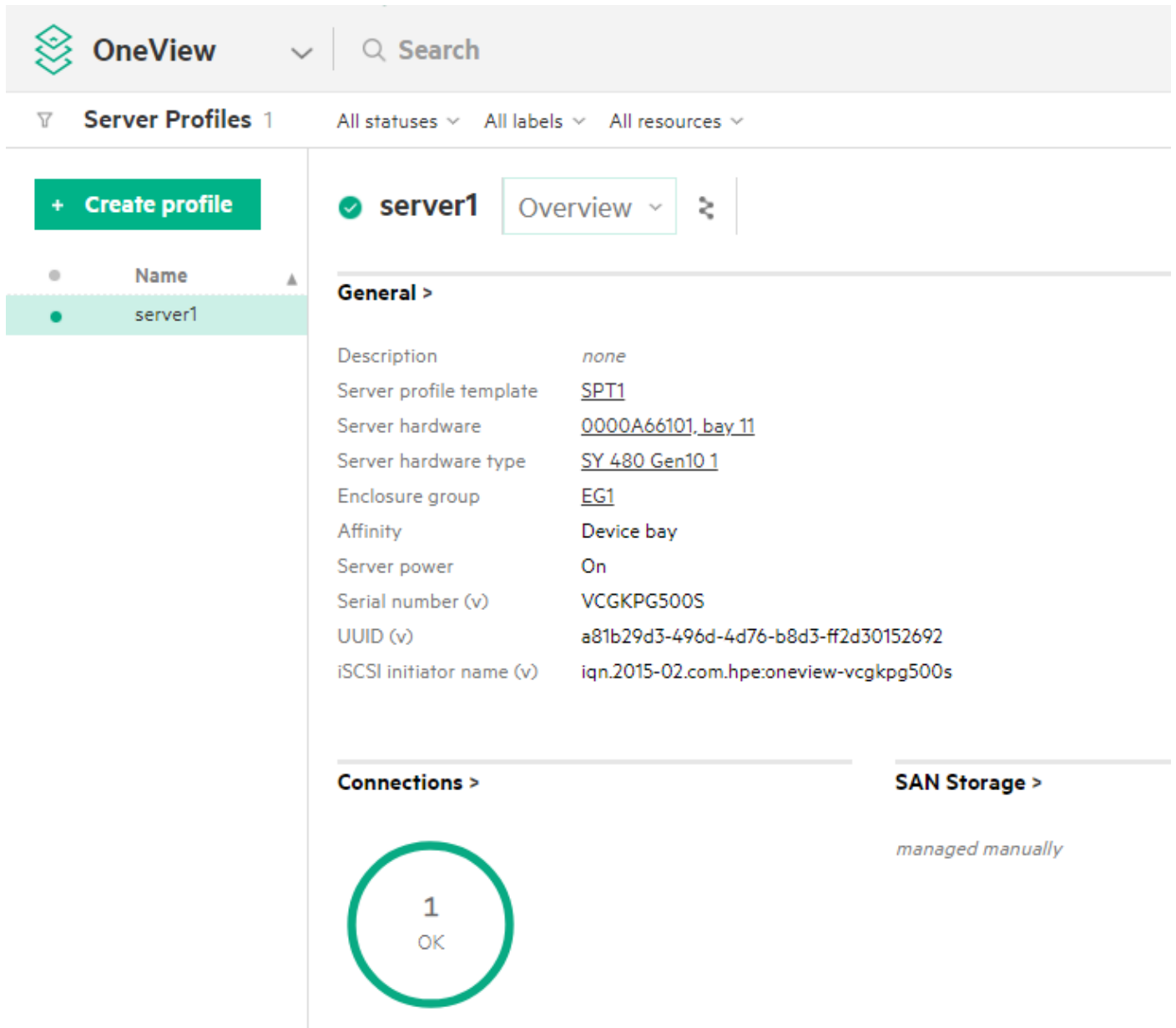

FIGURE 2. Server profile

CLEAN UP

clean.yml will power off the server, delete the server profile, and delete the server profile template, restoring the system to the state before the example.

CONCLUSION

With an HPE OneView and a few Ansible playbooks, it is possible to easily provision physical infrastructure with complete automation and get a more streamlined operational workflow in the data center.

Resources

GitHub organization and HPE
github.com/HewlettPackard

HPE OneView and Ansible modules
github.com/HewlettPackard/oneview-ansible

HPE OneView and Ansible samples
github.com/HewlettPackard/oneview-ansible-samples

HPE OneView Developers Hub
hpe.com/developers/oneview

HPE OneView documentation
hpe.com/info/oneview/docs

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