



## Deploy Cluster and Deployer

This section provides details of the `deployer` script and how to run it. You can run the `deployer` script to deploy both the deployer and the cluster.

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## Deploy the Deployer or Cluster

Run the `deployer` script to deploy the clusters using the following command:

```
$ ./deploy
Usage: ./deploy -c <config_file> <options>
with the following optional parameters or flags:
  -i <install_opt> : Cluster installation option: deploy, redeploy, or upgrade
  -u                : Deployer upgrade flag
  -v                : Config validation flag
```

The following options are available in the `deployer` script:

- `-c <config_file>`: Configuration file (Mandatory Argument). This option is the first option in the command.
- `-i <install_opt>`: Cluster installation options: deploy, redeploy, or upgrade [Optional]
- `-u`: Cluster Upgrade Flag [Optional]
- `-v`: Config Validation Flag, [Optional]

The `-u` flag is for updating the deployer. When this flag is present, the script processes all deployers in the `deployers` section in the configuration file. Also, ignores clusters in the `clusters` section.

For cluster installation, use one of the following options in the `-i` flag section:

- `deploy`: The default installation mode when you do not provide the `-i` option in the command. In this mode, the cluster is pinged. If it is not pingable, the cluster is deployed. Otherwise, no operation is performed on the cluster.
- `redeploy`: In this mode, the cluster is uninstalled, if it is already available. Then the new cluster is redeployed.  
With the `redeploy` option, all data in the original cluster is lost.
- `upgrade`: In this mode, the cluster is upgraded with the software in the package.

The `deployer` script triggers the `docker` command that requires root permission to run. Depending on your setting, you can use the `sudo` to the `deploy` command.

The `deployer` script does the following operations:

- If you are running the `deployer` script for the first time, it prompts you to enter all passwords required for installation.
  - For vCenter environment: vCenter password for the user specified in the environment configuration.
  - For deployer: SSH password of the user `admin` for the deployer's Operation Center.
  - For Smart PHY cluster: SSH password for all VMs in the cluster; for user specified in the cluster's config. Also, the SSH passwords for the three Operation Centers (Cisco Smart PHY, Operations Hub, and CEE); for user `admin`.

You are prompted twice to enter each password. The password is saved inside the staging directory in encrypted form for future use.

- Passwords for the deployer, the cluster, and the Operation Centers should be eight characters long, and should have a lowercase letter, uppercase letter, a digit, and a special character.
- The `deployer` script generates an SSH key pair when the `private-key-file` line is missing for the deployer or the cluster in the configuration file. The generated private key files are in the `.sec` sub directory under the staging directory, with `<cluster-name>_auto.pem` filename.
- The root user owns the generated private keys. When logging in using SSH and these private key files, make sure that you run it with `sudo`.
- If the deployer is not running, the `deployer` script installs the deployer.
- The `deployer` script checks if the deployer is missing any of the product packages that are found in the `offline-images` directory, and if it finds any missing, it uploads them to the deployer.
- The script also generates the configuration for each cluster and pushes them to the deployer.
- The `deployer` script triggers the deployer to perform the `sync` operation for the cluster. The `sync` operation applies the configuration to the cluster. If you have not set up the cluster, it installs the cluster. Or the `sync` operation updates the cluster with the configuration.
- If the `sync` operation times out, the `deployer` script triggers the `sync` operation again. The script waits for the `sync` operation to complete, and then continues to monitor the cluster to make sure that all helm charts are deployed and all pods are created.

You can repeat the `deployer` script to deploy more than one cluster by providing the corresponding configuration files. Alternatively, you can run this command appending a `-v` flag. The `-v` flag forces the `deployer` script to skip the `sync` operation and the rest. Use this option to push the configuration of a cluster to the deployer without deploying or updating the cluster.