
Ansible Tower Quick Install

Release Ansible Tower 3.5.2

Red Hat, Inc.

Jul 09, 2021

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Thank you for your interest in Red Hat Ansible Tower. Ansible Tower is a commercial offering that helps teams manage complex multi-tier deployments by adding control, knowledge, and delegation to Ansible-powered environments.

The *Ansible Tower Quick Installation Guide* covers basic installation instructions for installing Ansible Tower on Red Hat Enterprise Linux, CentOS, and Ubuntu systems. This document has been updated to include information for the latest release of Ansible Tower 3.5.2.

We Need Feedback!

If you spot a typo in this documentation, or if you have thought of a way to make this manual better, we would love to hear from you! Please send an email to: docs@ansible.com

If you have a suggestion, try to be as specific as possible when describing it. If you have found an error, please include the manual's title, chapter number/section number, and some of the surrounding text so we can find it easily. We may not be able to respond to every message sent to us, but you can be sure that we will be reading them all!

Ansible Tower Version 3.5.2; August 14, 2019; <https://access.redhat.com/>

PREPARING FOR THE TOWER INSTALLATION

This guide helps you get your Ansible Tower installation up and running as quickly as possible. At the end of the installation, using your web browser, you can access and fully utilize Tower.

1.1 Installation and Reference Guide

While this guide covers the basics, you may find that you need the more detailed information available in the [Installation and Reference Guide](#).

You should also review the [General Installation Notes](#) before starting the installation.

1.2 Prerequisites and Requirements

For platform information, refer to [Installation Notes](#) in the *Ansible Tower Installation and Reference Guide*.

Note: Tower is a full application and the installation process installs several dependencies such as PostgreSQL, Django, NGINX, and others. It is required that you install Tower on a standalone VM or cloud instance and do not co-locate any other applications on that machine (beyond possible monitoring or logging software). Although Tower and Ansible are written in Python, they are not just simple Python libraries. Therefore, Tower cannot be installed in a Python virtualenv or any similar subsystem; you must install it as described in the installation instructions in this guide. For OpenShift-based deployments, refer to [OpenShift Deployment and Configuration](#).

Ansible Tower has the following requirements:

- **Supported Operating Systems:**
 - Red Hat Enterprise Linux 8.0 or later 64-bit (only Ansible Tower 3.5 and greater can be installed)
 - Red Hat Enterprise Linux 7.4 or later 64-bit
 - CentOS 7.4 or later 64-bit
 - Ubuntu 16.04 LTS 64-bit (Ubuntu support is deprecated and will be removed in a future release)

Note: Support for Ubuntu 14.04 as a Tower platform has been removed as of Ansible Tower version 3.4.

- **A currently supported version of Mozilla Firefox or Google Chrome**
 - Other HTML5 compliant web browsers may work but are not fully tested or supported.

- **2 CPUs minimum** for Tower installations. Refer to the [capacity algorithm](#) section of the *Ansible Tower User Guide* for determining the CPU capacity required for the number of forks in your particular configuration.
- **4 GB RAM minimum** for Tower installations
 - 4 GB RAM (minimum and recommended for Vagrant trial installations)
 - 4 GB RAM (minimum for external standalone Postgres databases)
 - For specific RAM needs, refer to the [capacity algorithm](#) section of the *Ansible Tower User Guide* for determining capacity required based on the number of forks in your particular configuration
- **20 GB of dedicated hard disk space** for Tower service nodes
 - 10 GB of the 20 GB requirement must be dedicated to `/var/`, where Tower stores its files and working directories
 - The storage volume should be rated for a minimum baseline of 750 IOPS.
- **20 GB of dedicated hard disk space** for nodes containing a database (*150 GB+ recommended*)
 - The storage volume should be rated for a high baseline IOPS (1000 or more.)
 - All Tower data is stored in the database. Database storage increases with the number of hosts managed, number of jobs run, number of facts stored in the fact cache, and number of tasks in any individual job. For example, a playbook run every hour (24 times a day) across 250, hosts, with 20 tasks will store over 800000 events in the database every week.
 - If not enough space is reserved in the database, old job runs and facts will need cleaned on a regular basis. Refer to [Management Jobs](#) in the *Ansible Tower Administration Guide* for more information
- **64-bit support required** (kernel and runtime)
- **PostgreSQL version 9.6.X required** to run Ansible Tower 3.2 and later
- **Ansible version 2.2 (at minimum) required** to run Ansible Tower versions 3.2 and later

Note: You cannot use versions of PostgreSQL and Ansible older than those stated above and be able to run Ansible Tower 3.2 and later. Both are installed by the install script if they aren't already present.

- **For Amazon EC2:**
 - Instance size of m4.large or larger
 - An instance size of m4.xlarge or larger if there are more than 100 hosts

1.3 Additional Notes on Tower Requirements

While other operating systems may technically function, currently only the above list is supported to host an Ansible Tower installation. If you have a firm requirement to run Tower on an unsupported operating system, please contact Ansible via the Red Hat Customer portal at <https://access.redhat.com/>. Management of other operating systems (nodes) is documented by the Ansible project itself and allows for a wider list.

Actual RAM requirements vary based on how many hosts Tower will manage simultaneously (which is controlled by the `forks` parameter in the job template or the system `ansible.cfg` file). To avoid possible resource conflicts, Ansible recommends 1 GB of memory per 10 forks + 2GB reservation for Tower, see the [capacity algorithm](#) for further details. If `forks` is set to 400, 40 GB of memory is recommended.

For the hosts on which we install Ansible Tower, Tower checks whether or not `umask` is set to 0022. If not, the setup fails. Be sure to set `umask=0022` to avoid encountering this error.

A larger number of hosts can of course be addressed, though if the fork number is less than the total host count, more passes across the hosts are required. These RAM limitations are avoided when using rolling updates or when using the provisioning callback system built into Tower, where each system requesting configuration enters a queue and is processed as quickly as possible; or in cases where Tower is producing or deploying images such as AMIs. All of these are great approaches to managing larger environments. For further questions, please contact Ansible via the Red Hat Customer portal at <https://access.redhat.com/>.

The requirements for systems managed by Tower are the same as for Ansible at: http://docs.ansible.com/intro_getting_started.html

1.3.1 Postgres Configurations

Optionally, you can configure the Postgres database as separate nodes that are not managed by the Tower installer. When the Tower installer manages the database server, it configures the server with defaults that are generally recommended for most workloads. However, you can adjust these PostgreSQL settings for standalone database server node where `ansible_memtotal_mb` is the total memory size of the database server:

```
max_connections ==1024
shared_buffers == ansible_memtotal_mb*0.3
work_mem == ansible_memtotal_mb*0.03
maintenance_work_mem == ansible_memtotal_mb*0.04
```

Refer to [PostgreSQL documentation](#) for more detail on [tuning your PostgreSQL server](#).

1.4 Ansible Software Requirements

While Ansible Tower depends on Ansible Playbooks and requires the installation of the latest stable version of Ansible before installing Tower, manual installations of Ansible are no longer required.

Beginning with Ansible Tower version 2.3, the Tower installation program attempts to install Ansible as part of the installation process. Previously, Tower required manual installations of the Ansible software release package before running the Tower installation program. Now, Tower attempts to install the latest stable Ansible release package.

If performing a bundled Tower installation, the installation program attempts to install Ansible (and its dependencies) from the bundle for you (refer to *Using the Bundled Tower Installation Program* for more information).

If you choose to install Ansible on your own, the Tower installation program will detect that Ansible has been installed and will not attempt to reinstall it. Note that you must install Ansible using a package manager like `yum` and that the latest stable version must be installed for Ansible Tower to work properly. At minimum, Ansible version 2.2 is required for Ansible Tower versions 3.2 and later.

For convenience, summaries of those instructions are in the following sections.

1.5 Platform-specific Installation Notes

Tower can run on systems where FIPS mode is enabled, though there are a few limitations to keep in mind:

- Only Enterprise Linux 7+ is supported. The standard python that ships with RHEL must be used for Ansible Tower to work in FIPS mode. Using any non-standard, non-system python for Tower is therefore, unsupported.
- By default, Tower configures PostgreSQL using password-based authentication, and this process relies on the usage of md5 when `CREATE USER` is run at install time. If you intend to run the Tower installer from a FIPS-enabled system, you'll need to pre-compute an md5 hash yourself at install time and add its value to the inventory file described in *Setting up the Inventory File*.

Specifically, you must pre-compute the hashed value on a system *without* FIPS enabled:

```
$ python -c 'from hashlib import md5; print("md5" + md5("choose-a-password" + "awx"
→).hexdigest())'
md57d08dde7e95e862eaadfff09565e92e6
```

...and specify **both** `pg_password` and `pg_hashed_password` in your inventory file:

```
pg_password='choose-a-password'
pg_hashed_password='md57d08dde7e95e862eaadfff09565e92e6'
```

The “awx” implies the Postgres username. If you have an alternative username, provide that rather than “awx”.

- The `ssh-keygen` command generates keys in a format (RFC4716) which uses the md5 digest algorithm at some point in the process (as part of a transformation performed on the input passphrase). On a FIPS-enforcing system, md5 is completely disabled, so these types of encrypted SSH keys (RFC4716 private keys protected by a passphrase) will not be usable. When FIPS mode is enabled, any encrypted SSH key you import into Ansible Tower **must** be a PKCS8-formatted key. Existing AES128 keys can be converted to PKCS8 by running the following `openssl` command:

```
$ openssl pkcs8 -topk8 -v2 aes128 -in <INPUT_KEY> -out <NEW_OUTPUT_KEY>
```

For more details, see: <https://access.redhat.com/solutions/1519083>

- Use of Ansible features that use the `paramiko` library will not be FIPS compliant. This includes setting `ansible_connection=paramiko` as a transport and using network modules that utilize the `ncclient` `NETCONF` library.
- The TACACS+ protocol uses md5 to obfuscate the content of authorization packets; [TACACS+ Authentication](#) is not supported for systems where FIPS mode is enabled.
- The RADIUS protocol uses md5 to encrypt passwords in `Access-Request` queries; [RADIUS Authentication](#) is not supported for systems where FIPS mode is enabled.
- In order for Ansible Tower to run on RHEL 8, Ansible 2.8 or greater must be installed. Ansible 2.8 and greater are supported versions for RHEL 8.
- Starting with Ansible Tower 3.5, Tower runs with Python 3, which is automatically installed on RHEL 8 when installing Tower.
- PackageKit can frequently interfere with the installation/update mechanism. Consider disabling or removing PackageKit if installed prior to running the setup process.
- Only the “targeted” SELinux policy is supported. The targeted policy can be set to disabled, permissive, or enforcing.
- When performing a bundled install, refer to *Using the Bundled Tower Installation Program* for more information.

- When installing Ansible Tower, you only need to run `setup.sh`, any repositories needed by Tower are installed automatically.
- The latest version of Ansible is installed automatically during the setup process. No additional installation or configuration is required.

Ubuntu support is deprecated in Ansible Tower 3.5, and will be removed in a future release. Refer to previous versions of the *Ansible Tower Installation and Reference Guide* for details on Ubuntu.

For OpenShift-based deployments, refer to [OpenShift Deployment and Configuration](#).

1.6 Tower Installation Scenarios

Tower can be installed using one of the following scenarios:

Single Machine:

- **As an integrated installation:**
 - This is a single machine install of Tower - the web frontend, REST API backend, and database are all on a single machine. This is the standard installation of Tower. It also installs PostgreSQL from your OS vendor repository, and configures the Tower service to use that as its database.
- **With an external database (2 options available):**
 - Tower with remote DB configuration: This installs the Tower server on a single machine and configures it to talk to a remote instance of PostgreSQL 9.6 as its database. This remote PostgreSQL can be a server you manage, or can be provided by a cloud service such as Amazon RDS.
 - Tower with a playbook install of a remote Postgres system: This installs the Tower server on a single machine and installs a remote Postgres database via the playbook installer (managed by Tower).

Note: 1). Tower will not configure replication or failover for the database that it uses, although Tower should work with any replication that you have. 2). The database server should be on the same network or in the same datacenter as the Tower server for performance reasons.

High Availability Multi-Machine Cluster:

Tower can be installed in a high availability cluster mode. In this mode, multiple Tower nodes are installed and active. Any node can receive HTTP requests and all nodes can execute jobs.

- **A Clustered Tower setup must be installed with an external database (2 options available):**
 - Tower with remote DB configuration: This installs the Tower server on a single machine and configures it to talk to a remote instance of PostgreSQL as its database. This remote PostgreSQL can be a server you manage, or can be provided by a cloud service such as Amazon RDS.
 - Tower with a playbook install of a remote Postgres system: This installs the Tower server on a single machine and installs a remote Postgres database via the playbook installer (managed by Tower).
- For more information on configuring a clustered setup, refer to [Clustering](#).

Note: Running in a cluster setup requires any database that Tower uses to be external—Postgres must be installed on a machine that is not one of the primary or secondary tower nodes. When in a redundant setup, the remote Postgres version requirements is *PostgreSQL 9.6*.

DOWNLOAD THE TOWER INSTALLATION PROGRAM

Note: To obtain a trial version of Ansible Tower, visit: <http://www.ansible.com/tower-trial>

For pricing information, visit: <http://www.ansible.com/pricing>

To download the latest version of Tower directly (note, you must also obtain a license before using this), visit: <https://releases.ansible.com/ansible-tower/setup/ansible-tower-setup-latest.tar.gz>

You may install standalone Tower or use the bundled installer:

- if you set up Tower on an environment with a direct Internet access, you can download the standalone Tower installer
- if you set up Tower on an environment without direct access to online repositories, or your environment enforces a proxy, you must use the bundled installer

Download and then extract the Ansible Tower installation/upgrade tool: <http://releases.ansible.com/ansible-tower/setup/>

```
root@localhost:~$ tar xvzf ansible-tower-setup-latest.tar.gz
root@localhost:~$ cd ansible-tower-setup-<tower_version>
```

To install or upgrade, start by editing the inventory file in the `ansible-tower-setup-<tower_version>` directory, replacing `<tower_version>` with the version number, such as `2.4.5` or `3.0.0`. directory.

2.1 Using the Bundled Tower Installation Program

Beginning in Ansible Tower version 2.3.0, Tower installations can be performed using a bundled installation program. The bundled installation program is meant for customers who cannot, or would prefer not to, install Tower (and its dependencies) from online repositories. Access to Red Hat Enterprise Linux or CentOS repositories is still needed.

To download the latest version of the bundled Tower installation program directly (note, you must also obtain a license before using this), visit: <https://releases.ansible.com/ansible-tower/setup-bundle/>

Note: The bundled installer only supports Red Hat Enterprise Linux and CentOS. Ubuntu is not available in the bundled installer, and Ubuntu support is deprecated and will be removed in a future release.

Next, select the installation program which matches your distribution (e17):

```
ansible-tower-setup-bundle-latest.el7.tar.gz
```

Note: On Red Hat Enterprise Linux 7, Ansible Tower 3.5.0 requires the Python 3 Software Collection. If you are installing Tower offline, you need either CentOS-SCL or RH-SCL repositories enabled through a local mirror:

- Red Hat Subscription Manager: `rhel-server-rhsc1-7-rpms`
- Red Hat UI: `rhui-rhel-server-rhui-rhsc1-7-rpms`
- CentOS: `centos-release-scl`

A list of package dependencies from Red Hat Enterprise Linux repositories can be found in the `bundle/base_packages.txt` file inside the setup bundle. Depending on what minor version of Red Hat Enterprise Linux you are running, the version and release specified in that file may be slightly different than what is available in your configured repository.

2.2 Using Vagrant/Amazon AMI Images

One easy way to try Ansible Tower is to use a Vagrant box or an Amazon EC2 instance, and launching a trial of Ansible Tower just takes a few minutes.

If you use the Vagrant box or Amazon AMI Tower images provided by Ansible, you can find the auto-generated admin password by connecting to the image and reading it from the *message of the day* (MOTD) shown at login.

2.2.1 Vagrant

For Vagrant images, use the following commands to connect:

```
$ vagrant init ansible/tower
$ vagrant up --provider virtualbox
$ vagrant ssh
```

That last command provides your admin password and the Tower log-in URL. Upon login, you will receive directions on obtaining a trial license.

An up-to-date link to Ansible's Vagrant image is available from the [LAUNCH TOWER IN VAGRANT](#) section of Ansible's main website.

2.2.2 Amazon EC2

To launch the AMI, you must have an AMI ID (which varies based on you particular AWS region). A list of regions with links to AMI IDs is available in the [LAUNCH TOWER IN AMAZON EC2](#) section of Ansible's main website.

To connect to Amazon AMI images, use the following command:

```
ssh centos@<your amazon instance>
```

You must use the SSH key that you configured the instance to accept at launch time.

INSTALLING ANSIBLE TOWER

Tower can be installed in various ways by choosing the best mode for your environment and making any necessary modifications to the inventory file. For OpenShift-based deployments, refer to [OpenShift Deployment and Configuration](#).

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 - This is a single machine install of Tower - the web frontend, REST API backend, and database are all on a single machine. This is the standard installation of Tower. It also installs PostgreSQL from your OS vendor repository, and configures the Tower service to use that as its database.
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- For more information on configuring a clustered setup, refer to [Clustering](#).

Note: Running in a cluster setup requires any database that Tower uses to be external—Postgres must be installed on a machine that is not one of the primary or secondary tower nodes. When in a redundant setup, the remote Postgres version requirements is *PostgreSQL 9.6*.

3.2 Setting up the Inventory File

As you edit your inventory file, there are a few things you must keep in mind:

- The contents of the inventory file should be defined in `./inventory`, next to the `./setup.sh` installer playbook.
- For **installations and upgrades**: If you need to make use of external databases, you must ensure the database sections of your inventory file are properly setup. Edit this file and add your external database information before running the setup script.
- For **upgrading an existing cluster**: When upgrading a cluster, you may decide that you want to also reconfigure your cluster to omit existing instances or instance groups. Omitting the instance or the instance group from the inventory file will not be enough to remove them from the cluster. In addition to omitting instances or instance groups from the inventory file, you must also [deprovision instances](#) or [instance groups](#) before starting the upgrade. Otherwise, omitted instances or instance groups will continue to communicate with the cluster, which can cause issues with tower services during the upgrade.
- For **clustered installations**: If you are creating a clustered setup, you must replace `localhost` with the hostname or IP address of all instances. All nodes/instances must be able to reach any others using this hostname or address. In other words, you cannot use the `localhost ansible_connection=local` on one of the nodes *AND* all of the nodes should use the same format for the host names.

Therefore, this will *not* work:

```
[tower]
localhost ansible_connection=local
hostA
hostB.example.com
172.27.0.4
```

Instead, use these formats:

```
[tower]
hostA
hostB
hostC
```

OR

```
hostA.example.com
hostB.example.com
hostC.example.com
```

OR

```
[tower]
172.27.0.2
172.27.0.3
172.27.0.4
```

- For **all standard installations**: When performing an installation, you must supply any necessary passwords in the inventory file.

Note: Changes made to the installation process now require that you fill out all of the password fields in the inventory file. If you need to know where to find the values for these they should be:

```
admin_password='' ← Tower local admin password
pg_password='' ← Found in /etc/tower/conf.d/postgres.py
rabbitmq_password='' ← create a new password here (alpha-numeric with no special characters)
```

Example Inventory file

- For **provisioning new nodes**: When provisioning new nodes add the nodes to the inventory file with all current nodes, make sure all passwords are included in the inventory file.
- For **upgrading a single node**: When upgrading, be sure to compare your inventory file to the current release version. It is recommended that you keep the passwords in here even when performing an upgrade.

Example Single Node Inventory File

```
[tower]
localhost ansible_connection=local

[database]

[all:vars]
admin_password='password'

pg_host=''
pg_port=''

pg_database='awx'
pg_username='awx'
pg_password='password'

rabbitmq_port=5672
rabbitmq_username=tower
rabbitmq_password='password'
rabbitmq_cookie=rabbitmqcookie

# Needs to be true for fqdns and ip addresses
rabbitmq_use_long_name=false
# Needs to remain false if you are using localhost
```

Example Multi Node Cluster Inventory File

```
[tower]
clusternode1.example.com
clusternode2.example.com
clusternode3.example.com

[database]
dbnode.example.com

[all:vars]
```

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```
ansible_become=true

admin_password='password'

pg_host='dbnode.example.com'
pg_port='5432'

pg_database='tower'
pg_username='tower'
pg_password='password'

rabbitmq_port=5672
rabbitmq_username=tower
rabbitmq_password=tower
rabbitmq_cookie=rabbitmqcookie

# Needs to be true for fqdns and ip addresses
rabbitmq_use_long_name=true
```

Example Inventory file for an external existing database

```
[tower]
node.example.com ansible_connection=local

[database]

[all:vars]
admin_password='password'
pg_password='password'
rabbitmq_password='password'

pg_host='database.example.com'
pg_port='5432'

pg_database='awx'
pg_username='awx'
```

Example Inventory file for external database which needs installation

```
[tower]
node.example.com ansible_connection=local

[database]
database.example.com

[all:vars]
admin_password='password'
pg_password='password'
rabbitmq_password='password'

pg_host='database.example.com'
pg_port='5432'

pg_database='awx'
pg_username='awx'
```

Once any necessary changes have been made, you are ready to run `./setup.sh`.

Note: Root access to the remote machines is required. With Ansible, this can be achieved in different ways:

- `ansible_user=root ansible_ssh_pass="your_password_here"` inventory host or group variables
- `ansible_user=root ansible_ssh_private_key_file="path_to_your_keyfile.pem"` inventory host or group variables
- `ANSIBLE_BECOME_METHOD='sudo' ANSIBLE_BECOME=True ./setup.sh`
- `ANSIBLE_SUDO=True ./setup.sh` (Only applies to Ansible 2.7)

The `DEFAULT_SUDO` Ansible configuration parameter was removed in Ansible 2.8, which causes the `ANSIBLE_SUDO=True ./setup.sh` method of privilege escalation to no longer work. For more information on become plugins, refer to [Understanding Privilege Escalation](#) and the [list of become plugins](#).

3.3 The Setup Playbook

Note: Ansible Tower 3.0 simplifies installation and removes the need to run `./configure/` as part of the installation setup. Users of older versions should follow the instructions available in the v.2.4.5 (or earlier) releases of the Tower Documentation available at: <http://docs.ansible.com/>

The Tower setup playbook script uses the `inventory` file and is invoked as `./setup.sh` from the path where you unpacked the Tower installer tarball.

```
root@localhost:~$ ./setup.sh
```

The setup script takes the following arguments:

- `-h` – Show this help message and exit
- `-i INVENTORY_FILE` – Path to Ansible inventory file (default: `inventory`)
- `-e EXTRA_VARS` – Set additional Ansible variables as `key=value` or YAML/JSON (i.e. `-e bundle_install=false` forces an online installation)
- `-b` – Perform a database backup in lieu of installing
- `-r` – Perform a database restore in lieu of installing (a default restore path is used unless `EXTRA_VARS` are provided with a non-default path, as shown in the code example below)

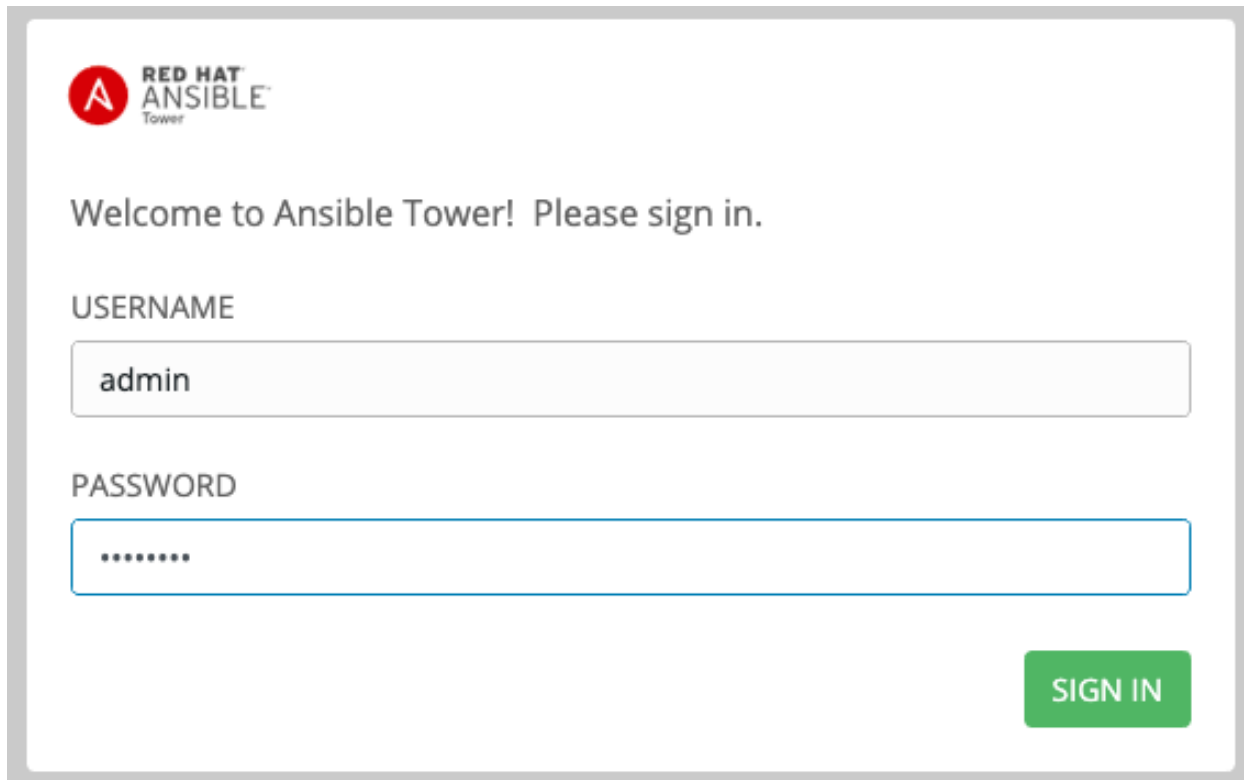
```
./setup.sh -e 'restore_backup_file=/path/to/nondefault/location' -r
```

Note: Please note that a issue was discovered in Tower 3.0.0 and 3.0.1 that prevented proper system backups and restorations.

If you need to back up or restore your Tower v3.0.0 or v3.0.1 installation, use the v3.0.2 installer to do so.

After calling `./setup.sh` with the appropriate parameters, Tower is installed on the appropriate machines as has been configured. Setup installs Tower from RPM or Deb packages using repositories hosted on [ansible.com](https://www.ansible.com).

Once setup is complete, use your web browser to access the Tower server and view the Tower login screen. Your Tower server is accessible from port 80 (https://<TOWER_SERVER_NAME>/) but will redirect to port 443 so 443 needs to be available also.



RED HAT
ANSIBLE
Tower

Welcome to Ansible Tower! Please sign in.

USERNAME

admin

PASSWORD

.....

SIGN IN

If the installation of Tower fails and you are a customer who has purchased a valid license for Ansible Tower, please contact Ansible via the Red Hat Customer portal at <https://access.redhat.com/>.

3.4 Changing the Password

Once installed, if you log into the Tower instance via SSH, the default admin password is provided in the prompt. You can then change it with the following command (as root or as AWX user):

```
awx-manage changepassword admin
```

After that, the password you have entered will work as the admin password in the web UI.

CONGRATULATIONS

Once the installation of Tower is complete, you are ready to set up and launch your first Ansible Playbook using Tower.

If you are wondering what to do next, refer to the following list of Ansible documentation sets for information on getting started, administration, and more:

- [Ansible Tower Quick Setup Guide](#)
- [Ansible Tower Installation and Reference Guide](#)
- [Ansible Tower User Guide](#)
- [Ansible Tower Administration Guide](#)
- [Ansible Tower API Guide](#)
- <http://docs.ansible.com/>

- genindex

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