



Red Hat CloudForms 5.0

Migrating to Red Hat CloudForms 5.0

Upgrading your system from an earlier version of Red Hat CloudForms Management Engine

Red Hat CloudForms 5.0 Migrating to Red Hat CloudForms 5.0

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Abstract

This document describes the process of migrating your Red Hat CloudForms 4.7 (CFME 5.10) environment to Red Hat CloudForms 5.0 (CFME 5.11). It also describes methods for applying minor updates to your CloudForms 5.0 appliances. If you have a suggestion for improving this guide or have found an error, please submit a Bugzilla report at <http://bugzilla.redhat.com> against Red Hat CloudForms Management Engine for the Documentation component. Please provide specific details, such as the section number, guide name, and CloudForms version so we can easily locate the content.

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PREFACE

This document describes the process of migrating an older Red Hat CloudForms environment to Red Hat CloudForms 5.0 (CFME 5.11). [Chapter 4, *Updating CloudForms*](#) also provides instructions for applying minor updates (errata) to your CloudForms appliances.

You can migrate directly to Red Hat CloudForms 5.0 (CFME 5.11) from the following version:

- Red Hat CloudForms 4.7.x (CFME 5.10.x)



NOTE

If you want to migrate from a version prior to CloudForms 4.7 (CFME 5.10), you must first migrate to CloudForms 4.7 (CFME 5.10) and then follow the instructions in this document.

CHAPTER 1. ORDERING MIGRATIONS

You must perform all migrations of the databases before configuring replication and high availability. This is because you will deploy new appliances for migrating to CFME 5.11.



IMPORTANT

Do not run **evmserved** if a database is in a partially migrated state.

CHAPTER 2. MODIFYING THE POSTGRESQL CONFIGURATION

This procedure modifies the strategy used for making changes to the PostgreSQL configuration. Previously, changes were made directly to the **postgresql.conf** file in the data directory. After switching to the new configuration, changes will be made by editing a separate file in the **/etc/manageiq/postgresql.conf.d** directory. This modification allows future PostgreSQL configuration changes to be made more easily.



NOTE

The **01_miq_overrides.conf** file in the **/etc/manageiq/postgresql.conf.d** directory is reserved for application overrides and will be recreated on application updates; this file should not be edited. Additional files will be read by the PostgreSQL server process according to the documentation here: <https://www.postgresql.org/docs/9.5/config-setting.html#CONFIG-INCLUDES>.

1. Back up the **postgresql.conf** file so that you have any configuration changes:

```
# cp $APPLIANCE_PG_DATA/postgresql.conf <file_location>
```

2. Copy the updated **postgresql.conf** file to the **pg_data** directory:

```
# cp $APPLIANCE_SOURCE_DIRECTORY/TEMPLATE/var/opt/rh/rh-  
postgresql95/lib/pgsql/data/postgresql.conf $APPLIANCE_PG_DATA/postgresql.conf
```

3. Optional: If you have made changes to the **postgresql.conf** file prior to following this procedure, create a new **02_user_overrides.conf** file, and add any modifications you have from the original **postgresql.conf** file. Example layout of the **02_user_overrides.conf** file:

```
#-----  
# WRITE AHEAD LOG  
#-----  
  
wal_level = 'logical'  
wal_log_hints = on  
wal_buffers = 16MB  
min_wal_size = 1GB  
max_wal_size = 2GB  
checkpoint_completion_target = 0.9
```

Once the **02_user_overrides.conf** file has been modified and saved, restart the **postgresql** service:

```
# systemctl restart $APPLIANCE_PG_SERVICE
```

All **postgresql.conf** customizations will now be made to files in the **/etc/manageiq/postgresql.conf.d** directory due to the following **include_dir** line in the default configuration. The settings in these new files will override ones in the **postgresql.conf** file.

```
include_dir = '/etc/manageiq/postgresql.conf.d'
```

CHAPTER 3. MIGRATING FROM CLOUDFORMS 4.7 (CFME 5.10) TO CLOUDFORMS 5.0 (CFME 5.11)

3.1. OVERVIEW

This procedure describes the process of migrating Red Hat CloudForms 4.7x (CFME 5.10.x) to Red Hat CloudForms 5.0 (CFME 5.11). This procedure does not necessarily include migration of all possible customer modifications, so it is recommended that you fully test any modifications before migrating your environment.



IMPORTANT

- Read through all of the steps in this procedure before beginning the migration process.
- CloudForms 5.0 appliances require 12 GB memory which is the same as the previous version. However, before migrating your appliances, adjust resources in your environment to avoid performance issues. See [Migration Considerations](#) in the *Release Notes* for more information.

You can classify the migration into three groups of appliances:

- *VMDB appliance* - An appliance with workers running, which also hosts its own database that other appliances can also connect to.
- *Non-VMDB appliance* - An appliance with workers running which does not host a database. The appliance is connected to an external database.
- *Dedicated database appliance* - A CloudForms appliance or non-CloudForms virtual machine with no workers running on it: the appliance contains only a database for other appliances to connect to.

Migration Workflow Summary

In summary, the migration process from CFME 5.10 to CFME 5.11 follows this workflow:

1. Prepare appliances:



NOTE

This step only applies for a multi-region CloudForms environment.

- a. Remove all the subscriptions from the global region before migrating the global database since the subscriptions will have to be dropped and recreated.
2. Back up the database of your 5.10 appliance.
 3. Migrate appliances:
 - a. Provision new appliances to replace each 5.10 appliance.
 - b. On the VMDB and non-VMDB appliances, copy the GUID file from the 5.10 version of the same appliance to the same location.

- c. On the VMDB and non-VMDB appliances, use the appliance console menu to configure the database and fetch the v2_key from a 5.10 appliance.
- d. Copy the 5.10 appliance database backup file and restore the database on each VMDB and dedicated database appliance.
- e. Load the new version of the pglogical library on the VMDB and dedicated database appliances.

**NOTE**

This step only applies for a multi-region CloudForms environment.

- f. Migrate the VMDB appliance databases and update the Automate Model.
 - g. Restart **evmserved** on the VMDB appliances.
4. Configure replication after the migration process is complete and appliances are running once again.

3.2. PREPARING THE APPLIANCES FOR MIGRATION

In a multi-region environment, on all database appliances in the global region:

1. Disable the CloudForms 4.7 (CFME 5.10) repositories:

```
# subscription-manager repos --disable=cf-me-5.10-for-rhel-7-rpms
```

**NOTE**

See [Enabling Supplementary and Optional Repositories](#) in *Using and Configuring Red Hat Subscription Manager* for more information.

3.3. BACKING UP CURRENT APPLIANCES

These steps will not affect the operations of your CloudForms infrastructure. However, they will help ensure that you are able to roll back if required and replicate the network settings.

1. Find the size of the databases by using the following command. Then, ensure that your volume has enough space for the backup file.

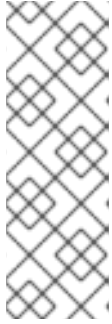
```
psql -d vmdb_production -c "SELECT
pg_size_pretty(pg_database_size('vmdb_production'));"
```

2. If it's a multi-region environment, ensure you have removed all subscriptions from the global database appliance.
3. Stop the **evmserved** process.

```
# systemctl stop evmserved
```

4. Back up the databases of your CFME 5.10 appliances in the root directory. Take a snapshot if possible.

```
pg_dumpall -c --if-exists | gzip > vmdb-5.10.pg.gz
```



NOTE

- This will create a compressed text-based backup. **pg_dumpall** is a utility for writing out (“dumping”) all PostgreSQL databases of a cluster into one script file. For more information, see the [pg_dumpall](#) documentation.
- When doing a **pg_dumpall** the **pg_replication_slots** will not get copied over causing the slots to become inactive. This will also reduce the size of the global database appliance allowing for quicker backup and restore.

5. Back up the following files noting which appliance each comes from. This is to replace the old appliances in the database and for disaster recovery.

- **/var/www/miq/vmdb/GUID**
- **/var/www/miq/vmdb/REGION**

6. During the upgrade, the iptables configuration file (**/etc/sysconfig/iptables**) is removed. If you have changed the iptables configuration from the default (run **iptables --list -n** to see the current configuration), use the following command to back up the iptables configuration:

```
# iptables-save > /etc/iptables.conf
```

You can restore your iptables configuration file with the following command:

```
# iptables-restore < /etc/iptables.conf
```

Alternatively, add this command to **/etc/rc.local** to reload the rules at every reboot.

3.4. STEPS TO FOLLOW ON NEWLY DEPLOYED CFME 5.11 APPLIANCES

Perform the following steps on your CloudForms appliances as specified to migrate to CFME 5.11.



NOTE

Some steps are run on certain appliances. Ensure you wait for each command to finish before going to the next step.

1. Provision and start the new appliances. For VMDB appliances, add a new disk for the database.
2. On the VMDB and non-VMDB appliances, run the following commands as the root user:
 - a. Copy the GUID file from the CFME 5.10 appliances.

```
# scp root@$IP_of_5.10_appliance:/var/www/miq/vmdb/GUID /var/www/miq/vmdb/
```

**NOTE**

- Perform these steps on VMDB appliances first. The non-VMDB appliances won't have a database to connect to if they're done first.
- Perform this step only if you want to keep the same appliance/miq_servers records in the database and inherit that appliance's existing settings. If you plan on deploying new appliances with new IP addresses and host name and not inherit the settings, you may prefer creating new records by not copying the GUID.

- b. On VMDB and dedicated appliances only, select the option to configure a new internal database using the appliance console menu. For non-VMDB appliances, connect to an external database, then join region in external database. Note that as part of the database configuration step, fetch the **v2_key** from one of the CFME 5.10 appliances.
 - c. Select the same region number and database password as the old installation. You can find the region number used for an installation listed as **Database/Region:** in the **appliance_console** summary information.
 - d. Allow the appliance to start.
3. On the new VMDB and new dedicated database appliances:
 - a. Stop the **evmserved** process.


```
# systemctl stop evmserved
```
 - b. Drop the default database.


```
# dropdb vmdb_production
```
 - c. Copy the database dump from the 5.10 appliance.


```
# scp root@$IP_of_5.10_appliance:~/vmdb-5.10.pg.gz ~/
```
 - d. Decompress and restore the database dump backup file.


```
gunzip < vmdb-5.10.pg.gz | psql postgres
```
 - e. Change to the **vmdb** directory.


```
# cd /var/www/miq/vmdb/
```
 - f. Run the below command appropriate to your environment to migrate everything in the database to work with the latest 5.11 configuration. If you run into an error, contact Red Hat Support.


```
# rake db:migrate
```
 4. Update the Automate Model to the latest version. This resets the ManageIQ and Red Hat domains (base domains) to a new and upgraded version. Run the command appropriate to your environment to update the Automate Model:

- a. In a single (standalone database) or replicated environment, run this command on each VMDB appliance.

```
# rake evm:automate:reset
```

5. Start the **evmserved** process.

- a. In a single (standalone database) or replicated environment, run this command on each VMDB appliance:

```
# systemctl start evmserved
```

The migration process is now complete. Once appliances are running again, you can configure database replication in your environment; see [Configuring Database Replication and Centralized Administration](#) in the General Configuration guide for more information.

CHAPTER 4. UPDATING CLOUDFORMS

This chapter details applying software package minor updates (referred to as *errata*) to CloudForms 5.0 (CFME 5.11) appliances.

Appliances must be registered to Red Hat Subscription Manager and subscribed to the update channels required by CloudForms in order to access updates. See *Registering Red Hat CloudForms* in [General Configuration](#) to register and subscribe the appliance.

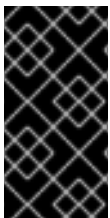
Note the default repository names when subscribing your CloudForms 5.0 (CFME 5.11) appliances for software updates:

- cfme-5.11-for-rhel-8-x86_64-rpms
- ansible-2.9-for-rhel-8-x86_64-rpms
- rhel-8-for-x86_64-baseos-rpms
- rhel-8-for-x86_64-appstream-rpms

4.1. UPDATING THE CLOUDFORMS APPLICATION

An important part of securing CloudForms is to ensure your appliances use the latest software packages.

The **Red Hat Updates** tab in the CloudForms user interface enables you to check for updates and update registered appliances. Any services requiring a restart to apply updates are automatically restarted as part of the **Red Hat Updates** process.



IMPORTANT

Using the **Red Hat Updates** tab only applies software updates for the CloudForms application. To run the update from the command line, run **yum update cfme***. See [Section 4.2, “Updating All Packages on the Appliance”](#) for instructions on applying Red Hat errata.

To apply updates to the CloudForms application:

1. From the settings menu, select **Configuration**.
2. Select **Region** in the accordion menu and click the **Red Hat Updates** tab.
3. Click **Check For Updates** to search the Content Delivery Network (CDN) for any updated CloudForms packages. If an appliance update is available, it will be listed with the available version.
4. Click **Apply CFME Update** to install and update CloudForms packages. The CloudForms service will be automatically restarted as needed.



NOTE

If the appliance is registered to Red Hat Satellite, you can use content views to manage updates for CloudForms. For more information, see [Creating Content Views](#) in the Red Hat Satellite 6 *Content Management Guide*.

The following options are available in the **Appliance Updates** section of **Red Hat Updates**:

Table 4.1. Options Available in Appliance Updates

Option	Use
Refresh List	Refreshes the list of appliances.
Check for Updates	Checks for all available CloudForms updates using yum .
Register	Attempts to register the appliance if it is not already registered. CloudForms subscribes to the ansible-2.9-for-rhel-8-x86_64-rpms cfme-5.11-for-rhel-8-x86_64-rpms rhel-8-for-x86_64-baseos-rpms rhel-8-for-x86_64-appstream-rpms repositories, and to the products designated by Red Hat product certification for subscription-manager registered appliances. The Red Hat Enterprise Linux channels are enabled by default on registration. In addition, CloudForms automatically checks for updates after registering.
Apply CFME Update	Applies updates to CloudForms packages only. Specifically, this option runs the yum -y update cfme-appliance command. This command installs every package listed in the dependency tree if it is not already installed. If a specific version of a package is required, that version of the package is installed or upgraded. No other packages, such as PostgreSQL or Red Hat Enterprise Linux, are updated. The appliance may be rebooted automatically during this process.

4.2. UPDATING ALL PACKAGES ON THE APPLIANCE

You can apply updates to the appliance using the yum command or Red Hat Satellite. This updates all RPMs on the appliance, not just the CloudForms packages. Yum can be used at any time to update any single package or the entire appliance to any new or updated packages available on the subscription.



WARNING

Updates to the operating system, CloudForms application or dependent packages may introduce incompatibilities in customized environments. Before applying updates to the appliance, back up the appliance or take a snapshot so that changes can be reverted in production environments if needed.



IMPORTANT

Scheduled downtime is required while updating system packages for the following reasons:

- Some updates may interrupt CloudForms operations.
- Updates for the PostgreSQL database server suspend CloudForms operations.
- System updates may require a reboot of the CloudForms appliance.

To update all packages on the appliance using **yum**, follow the procedure below. To update packages on the appliance using Red Hat Satellite, see [Viewing and Applying Errata](#) and [Configuring and Running Remote Commands](#) in the Red Hat Satellite 6 documentation for more information.

1. Log into each appliance console as the root user and perform the following steps:
 - a. Stop the CloudForms application (the evmserved process) with the following command:

```
# systemctl stop evmserved
```

- b. Apply the software updates:

```
# yum update
```



IMPORTANT

Do not reboot or restart yet.

2. Log into each server containing an internal database and perform the following steps:

- a. Stop the database with the following command:

```
# systemctl stop $APPLIANCE_PG_SERVICE
```

- b. Apply the software updates:

```
# yum update
```

- c. Reboot the server unless the errata or the command **needs-restarting** advises a restart is safe:

```
# systemctl restart $APPLIANCE_PG_SERVICE
```

3. Log into the appliance console on each appliance as the root user and perform the following steps:

- a. Reboot the server unless the errata or the command **needs-restarting** advises a restart is safe:

```
# reboot
```

