Zenoss Resource Manager
Upgrade Guide

Release 5.0.x

Zenoss, Inc.

www.zenoss.com

Zenoss Resource Manager Upgrade Guide

Contents

Preface

Zenoss Resource Manager Upgrade Guide provides detailed instructions for upgrading Zenoss Resource Manager (Resource Manager) from one minor or micro version to a more recent version.

Related publications

Title	Description
Zenoss Resource Manager Administration Guide	Provides an overview of Resource Manager architecture and features, as well as procedures and examples to help use the system.
Zenoss Resource Manager Installation Guide	Provides detailed information and procedures for installing and upgrading Resource Manager.
Zenoss Resource Manager Release Notes	Describes known issues, fixed issues, and late-breaking information not already provided in the published documentation set.

Additional information and comments

If you have technical questions about this product that are not answered in this guide, visit the *Zenoss Support* site.

Zenoss welcomes your comments and suggestions regarding our documentation. To share your comments, please send an email to docs@zenoss.com. In the email, include the document title and part number. The part number appears at the end of the list of trademarks, at the front of this guide.

Supported software and upgrade paths

<div style="text-align: right; font-size: 2em;">**1**</div>

Beginning with version 5.0.0, distributions of Resource Manager include an additional component, Control Center. Each component is developed and maintained separately, and each has its own version number. This chapter identifies the combinations of component versions that Zenoss supports, and the supported upgrade paths between the combinations.

Supported combinations

The following table shows the Resource Manager and Control Center release dates and the corresponding version combination for that release:

Release Date	Control Center	Resource Manager
10 Jul 2015	1.0.4	5.0.4
27 May 2015	1.0.3	5.0.3
20 Apr 2015	1.0.2	5.0.2
03 Apr 2015	1.0.1	5.0.1
24 Feb 2015	1.0.0	5.0.0

Supported upgrade paths

Note   To upgrade to Control Center 1.0.4 and Resource Manager 5.0.4, you must be currently running Control Center 1.0.3 and Resource Manager 5.0.3. If you are running an earlier version of Control Center and Resource Manager, you must first upgrade to 1.0.3 / 5.0.3.

For questions or assistance with performing an upgrade, please contact Zenoss Support.

Upgrade to 1.0.4 / 5.0.4

From combination	To combination
Control Center 1.0.3 and Resource Manager 5.0.3	Control Center 1.0.4 and Resource Manager 5.0.4

Upgrade to 1.0.3 / 5.0.3

From combination	To combination
Control Center 1.0.0 and Resource Manager 5.0.0	Control Center 1.0.3 and Resource Manager 5.0.3
Control Center 1.0.1 and Resource Manager 5.0.1	Control Center 1.0.3 and Resource Manager 5.0.3
Control Center 1.0.2 and Resource Manager 5.0.2	Control Center 1.0.3 and Resource Manager 5.0.3

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Upgrading to 1.0.4 / 5.0.4

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This chapter describes how to upgrade the Zenoss platform components shown in the following table.

From combination	To combination
Control Center 1.0.3 and Resource Manager 5.0.3	Control Center 1.0.4 and Resource Manager 5.0.4

For information about upgrading other combinations of components, see *Supported upgrade paths* on page 5.

Upgrade scripts

During the upgrade, you will use scripts to perform the following tasks:

- To allow performance tuning of event processing, Zenoss has replaced the single MariaDB instance with two separate instances; one for the Zen Object database (zodb) and the other for the Zenoss Events Processor database (zep).
- Zenoss provides an upgrade script for Resource Manager named `upgrade-resmgr-5.0.x.sh`. The upgrade script performs the underlying tasks required to upgrade the application binary and is provided as part of the new application images. When you pull the new Resource Manager image from Docker hub, the script is automatically extracted and placed in the `root` directory of the master host.

  If you have Service Impact installed, you will run the `upgrade-impact-5.0.x.sh` script to upgrade both products.

  The upgrade script performs the following actions:

  - Pulls the latest application images from Docker hub.
  - Preserves your custom data on the DFS.
  - Re-installs all currently installed Zenpacks.
  - Checks your deployment for any removed files, and if necessary, removes the corresponding file in the upgraded application.
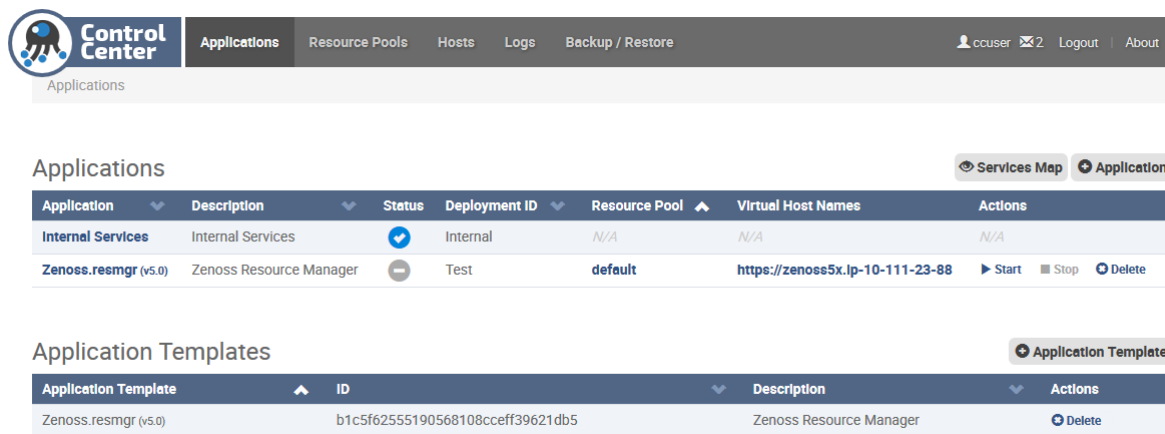 - Checks for any locally installed patches and re-installs them.

Upgrading Control Center

This information describes how to upgrade Control Center (`serviced`).

To upgrade Control Center (`serviced`), you will use the web interface to stop all applications that are currently running. Then depending on your operating system environment, you will either use `yum` or `apt-get` to install the latest package from the Zenoss `apt` or `yum` repository to the master host. Once the package is installed, you will open Control Center and restart the stopped applications.

Perform the following steps to upgrade Control Center to the latest version:

1 Log in to the Control Center web interface.

2 In the **Applications** table, identify the name of the Resource Manager instance.

3 Stop the instance, and wait until all subservices are stopped.

  a In the **Actions** column of the **Applications** table, click **Stop**.
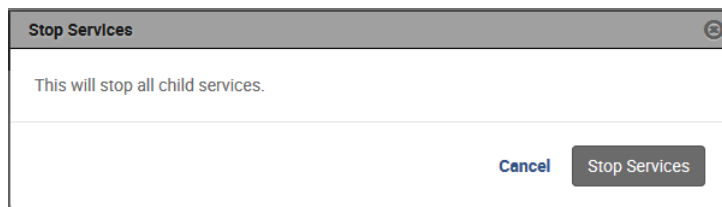

  b In the **Stop Services** dialog, click **Stop Services**.

  c Display the child services of Resource Manager.

  In the **Application** column of the **Applications** table, click Resource Manager, and then scroll down to the **Services** table. Stopped services have a grey circle icon in the **Status** column. Do not proceed until all services are stopped.

4 Log in to the Control Center master host as a user with `sudo` privileges and install the latest Control Center (`serviced`) package.

Note   If you are upgrading a multi-host installation, install the package on each remote host *before* you install the package on the master host.

  ▪ RHEL:

```
sudo yum --enablerepo=zenoss-stable install -y serviced-1.0.*
```

  ▪ Ubuntu:

```
sudo apt-get update && sudo apt-get install -y serviced=1.0.*
```

The Control Center web interface and `serviced` binary are updated.

5   If you are upgrading another application, refer to the upgrade steps for that product. Otherwise, open the Control Center web interface, click **Start** in the **Actions** column of the **Applications** table to restart Resource Manager.

Upgrading Resource Manager

This section contains the steps to upgrade the Resource Manager application.

Optional: Reducing the downtime maintenance window

To minimize downtime and verify that you have adequate disk space, you can `pull` the required images manually, prior to your planned maintenance window. If you choose not to perform these steps ahead of time, the upgrade script performs these actions for you but increases the overall maintenance window.

The following table provides approximate pull times and the Resource Manager sync time:

Image	Approximate time to pull
Resource Manager	10 - 20 minutes
Internal Services	7 - 15 minutes
Hbase	5 - 10 minutes
OpenTSDB	7 - 15 minutes
Resource Manager sync operation	5 - 10 minutes

1   Log in to the master host as a user with `serviced` privileges.

2   Pull the most recent Resource Manager image to the local master and copy the upgrade and migration scripts to the root directory:

> Note   Replace *n* with the micro version number for this release. Do not replace `x` in the `rysnc` command that follows. This command indirectly causes a pull of the Resource Manager, which may take 10 to 20 minutes.

```
sudo docker run -it --rm -v \
   /root:/mnt/root zenoss/resmgr_5.0:5.0.n \
   rsync -a /root/5.0.x /mnt/root
```

3   Download the remaining images.

```
sudo /root/5.0.x/pull-docker-images.sh
```

Upgrading the Resource Manager application

This procedure describes how to upgrade Resource Manager with or without Service Impact.

1   If Resource Manager is currently running, log in to the Control Center web interface and click **Stop** in the **Actions** column of the **Applications** table.

2   Display the child services of Resource Manager.

In the **Application** column of the **Applications** table, click Resource Manager, and then scroll down to the **Services** table. Stopped services have a grey circle icon in the **Status** column. Do not to proceed until all services are stopped.

3   Log in to the Control Center master host as a user with `serviced` privileges.

4   Pull the most recent Resource Manager images to the local master and copy the upgrade and migration scripts to the `root` directory.

> Note   Replace *n* with the micro version number for this release. However, do not replace the x in `rysnc` command that follows. This command indirectly causes a pull of the Resource Manager, which may take 10 to 20 minutes.

```
sudo docker run -it --rm -v \
   /root:/mnt/root zenoss/resmgr_5.0:5.0.n \
   rsync -a /root/5.0.x /mnt/root
```

5   Run the upgrade script.

For Resource Manager with Service Impact:

```
/root/5.0.x/upgrade-impact-5.0.x.sh
```

For Resource Manager alone:

```
/root/5.0.x/upgrade-resmgr-5.0.x.sh
```

6   Log in to the Control Center web interface and click **Start** in the **Actions** column of the **Applications** table to start Resource Manager.

Overview of converting the Docker storage driver

The procedures in this section allow you to convert the Docker storage driver of a Control Center deployment from `aufs` or `btrfs` to `devicemapper`. As of this release, the `aufs` and `btrfs` storage drivers are no longer supported.

> Note   Perform the procedures in this section only after upgrading your deployment to Control Center 1.0.4 and Resource Manager 5.0.4.

Each host in a Control Center deployment must use the `devicemapper` storage driver for Docker.

Preparing to convert the Docker storage driver

Follow these steps to

- Verify that the Docker storage driver needs to be changed
- Determine whether a new, separate file system needs to be created for `/var/lib/docker`, or an existing file system may be converted

1   Log in to a Control Center host as `root`, or as a user with superuser privileges.
2   Determine whether the storage driver needs to be changed.
   a   Determine which storage driver Docker is using.

   - If the operating system is RHEL or CentOS, enter the following command:

     ```
     grep DOCKER_OPTS /etc/sysconfig/docker
     ```

   - If the operating system is Ubuntu, enter the following command:

     ```
     grep DOCKER_OPTS /etc/default/docker
     ```

   b   Interpret the text returned by `grep`.

- If the text includes `-s aufs`, the storage driver is `aufs`. Continue this procedure.
- If the text includes `-s btrfs`, the storage driver is `btrfs`. Continue with this procedure.
- If the text does not include the `-s` flag and the operating system is Ubuntu, the storage driver is `aufs`. Continue this procedure.
- If the text includes `-s devicemapper`, the storage driver is `devicemapper`. Discontinue this procedure. No changes are required on this host.

3 Determine whether `/var/lib/docker` is mounted on a separate Btrfs file system.

```
mount -t btrfs | awk '{ print $1 "  " $3 }'
```

The following example shows valid results of the previous commands:

```
/dev/sda3   /opt/serviced/var/volumes
/dev/sda3   /var/lib/docker
```

The first field shows the same device name, and one of the second fields contains `/var/lib/docker`. Therefore, `/var/lib/docker` is not mounted on its own file system, and you must create a partition for a new file system. For more information, refer to the host's operating system documentation.

Converting the storage driver of the master host

1 Log in to the Control Center master host as `root`, or as a user with superuser privileges.
2 Stop Resource Manager.

```
serviced service stop Zenoss.resmgr
```

3 **Note**   Perform this step only if the master host does not have internet access.

Optional: Create a backup of the Control Center internal services image.

The following command requires approximately 600MB in `/tmp`.

```
docker save zenoss/serviced-isvcs:v27.1 | gzip -9 > /tmp/isvcs.hold
```

4 Stop the Control Center and Docker services.

- If the operating system is RHEL or CentOS, enter the following commands:

```
systemctl stop serviced && systemctl stop docker
```

- If the operating system is Ubuntu, enter the following commands:

```
stop serviced && stop docker
```

5 Unmount `/var/lib/docker`.

```
umount /var/lib/docker
```

6 Create a new file system for `/var/lib/docker`.

- If `/var/lib/docker` was mounted on its own partition, replace *Device-Name* with the device identified previously.
- If you created a new partition for `/var/lib/docker`, replace *Device-Name* with the new partition's device.

RHEL/CentOS systems:

```
mkfs -t xfs -f Device-Name
```

Ubuntu systems:

```
mkfs.ext4 Device-Name
```

7 Comment the existing entry for `/var/lib/docker` in the file system table.

Replace *Device-Name* with the value used in the previous step.

```
sed -i -e '\|/var/lib/docker| s|^|#|' /etc/fstab
```

8 Add the new file system for `/var/lib/docker` to the file system table.

Replace *Device-Name* with the value used in the previous step.

RHEL/CentOS systems:

```
echo "${Device-Name} /var/lib/docker xfs defaults 1 2" >> /etc/fstab
```

Ubuntu systems:

```
echo "${Device-Name} /var/lib/docker ext4 defaults 1 2" >> /etc/fstab
```

9 Mount `/var/lib/docker`.

```
mount /var/lib/docker
```

10 Change the Docker storage driver.

- If the operating system is RHEL or CentOS, enter the following command:

  ```
  sed -i -e '/DOCKER_OPTS/ s/btrfs/devicemapper/' \
      /etc/sysconfig/docker
  ```

- If the operating system is Ubuntu, open `/etc/default/docker` with a text editor, and then add `-s devicemapper` to the DOCKER_OPTS variable declaration.

11 Start the Docker service.

- If the operating system is RHEL or CentOS, enter the following command:

  ```
  systemctl start docker
  ```

- If the operating system is Ubuntu, enter the following command:

  ```
  start docker
  ```

12 **Note** Perform this step only if the master host does not have internet access, and you created a backup of the the Control Center internal services image in a previous step.

Optional: Restore the backup of the Control Center internal services image.

```
cat /tmp/isvcs.hold | gunzip - | docker load
```

- If your deployment includes resource pool hosts, proceed to
- If your deployment does not include resource pool hosts, proceed to

Converting the storage driver of a resource pool host

Convert the storage driver of the master host before converting the storage driver of resource pool hosts. For more information, see

Perform this procedure on each resource pool host in your Control Center deployment.

1 Log in to a Control Center resource poool host as `root`, or as a user with superuser privileges.
2 Stop the Control Center and Docker services.

- If the operating system is RHEL or CentOS, enter the following commands:

```
systemctl stop serviced && systemctl stop docker
```

- If the operating system is Ubuntu, enter the following commands:

```
stop serviced && stop docker
```

3 Unmount `/var/lib/docker`.

```
umount /var/lib/docker
```

4 Create a new file system for `/var/lib/docker`.

- If `/var/lib/docker` was mounted on its own partition, replace *Device-Name* with the device identified previously.
- If you created a new partition for `/var/lib/docker`, replace *Device-Name* with the new partition's device.

RHEL/CentOS systems:

```
mkfs -t xfs -f Device-Name
```

Ubuntu systems:

```
mkfs.ext4 Device-Name
```

5 Comment the existing entry for `/var/lib/docker` in the file system table.
   Replace *Device-Name* with the value used in the previous step.

```
sed -i -e '\|/var/lib/docker| s|^|#|' /etc/fstab
```

6 Add the new file system for `/var/lib/docker` to the file system table.
   Replace *Device-Name* with the value used in the previous step.

RHEL/CentOS systems:

```
echo "${Device-Name} /var/lib/docker xfs defaults 1 2" >> /etc/fstab
```

Ubuntu systems:

```
echo "${Device-Name} /var/lib/docker ext4 defaults 1 2" >> /etc/fstab
```

7 Mount /var/lib/docker.

```
mount /var/lib/docker
```

8 Change the Docker storage driver.

- If the operating system is RHEL or CentOS, enter the following command:

```
sed -i -e '/DOCKER_OPTS/ s/btrfs/devicemapper/' \
   /etc/sysconfig/docker
```

- If the operating system is Ubuntu, open /etc/default/docker with a text editor, and then add -s devicemapper to the DOCKER_OPTS variable declaration.

9 Start the Docker service.

- If the operating system is RHEL or CentOS, enter the following command:

```
systemctl start docker
```

- If the operating system is Ubuntu, enter the following command:

```
start docker
```

- To perform this procedure on another resource pool, return to step 1.
- To start Resource Manager, proceed to *Starting Control Center and Resource Manager* on page 14.

Starting Control Center and Resource Manager

Perform this procedure after all hosts in your Control Center deployment are converted to the devicemapper storage driver.

1 Log in to the Control Center master host as root, or as a user with superuser privileges.

2 Start the Control Center service.

- If the operating system is RHEL or CentOS, enter the following command:

```
systemctl start serviced
```

- If the operating system is Ubuntu, enter the following command:

```
start serviced
```

3 Start Resource Manager.

```
serviced service start Zenoss.resmgr
```

Upgrading to 1.0.3 / 5.0.3

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This chapter describes how to upgrade the Zenoss platform components shown in the following table.

From combination	To combination
Control Center 1.0.0 and Resource Manager 5.0.0	Control Center 1.0.3 and Resource Manager 5.0.3
Control Center 1.0.1 and Resource Manager 5.0.1	Control Center 1.0.3 and Resource Manager 5.0.3
Control Center 1.0.2 and Resource Manager 5.0.2	Control Center 1.0.3 and Resource Manager 5.0.3

For information about upgrading other combinations of components, see *Supported upgrade paths* on page 5.

Migration script

To allow performance tuning of event processing, Zenoss has replaced the single MariaDB instance with two separate instances; one for the Zen Object database (zodb) and the other for the Zenoss Events Processor database (zep).

Upgrade script

Zenoss provides an upgrade script for Resource Manager called *version*-`upgrade-resmgr.txt`, where *version* is the version that you are upgrading to. For example, if you are upgrading to version x.y.z, the file name would be `x.y.z-upgrade-resmgr.txt`.

The upgrade script performs the underlying tasks required to upgrade the application binary and is provided as part of the new application images. When you pull the new Resource Manager image from Docker hub, the script is automatically extracted and placed in the `root` directory of the master host.

The `version`-`upgrade-resmgr.tx` script performs the following actions:

- Pulls the latest application images from Docker hub.

Note   If maintenance downtime is an issue for your environment, you can perform this step manually to
reduce the downtime window. For more information, see *Optional: Reducing the downtime maintenance window* on page
17.

- Preserves your custom data on the DFS.
- Re-installs all currently installed Zenpacks.
- Checks your deployment for any removed files, and if necessary, removes the corresponding file in the upgraded
  application.
- Checks for any locally installed patches and re-installs them.

If you have Service Impact installed with Resource Manager, you will run the *version*`--upgrade-impact.txt`
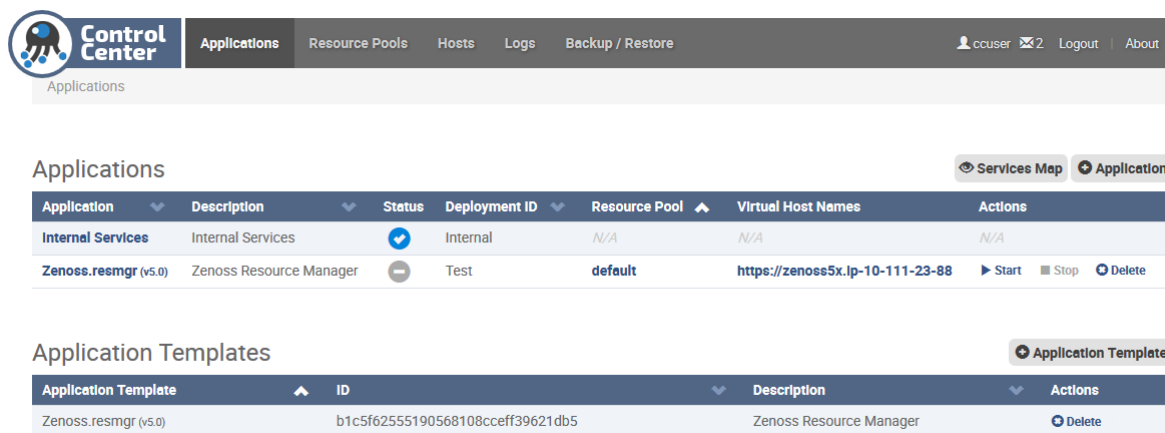script instead of *version*`-upgrade-resmgr.tx`.

Upgrading Control Center

This information describes how to upgrade Control Center (`serviced`).

To upgrade Control Center (`serviced`), you will use the web interface to stop all applications that are currently
running. Then depending on your operating system environment, you will either use `yum` or `apt-get` to install
the latest package from the Zenoss `apt` or `yum` repository to the master host. Once the package is installed, you
will open Control Center and restart the stopped applications.

Perform the following steps to upgrade Control Center to the latest version:

1 Log in to the Control Center web interface.
2 In the **Applications** table, identify the name of the Resource Manager instance.
3 Stop the instance, and wait until all subservices are stopped.
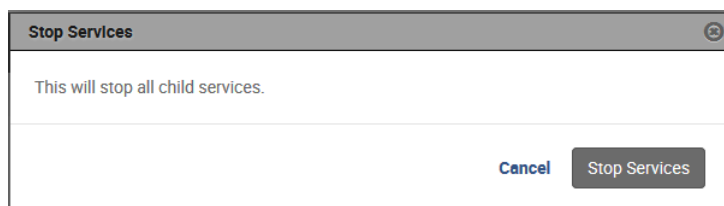   a In the **Actions** column of the **Applications** table, click **Stop**.

   b In the **Stop Services** dialog, click **Stop Services**.

   c Display the child services of Resource Manager.

In the **Application** column of the **Applications** table, click Resource Manager, and then scroll down to the **Services** table. Stopped services have a grey circle icon in the **Status** column. Do not proceed until all services are stopped.

4   Log in to the Control Center master host as a user with `sudo` privileges and install the latest Control Center (`serviced`) package.

Note   If you are upgrading a multi-host installation, install the package on each remote host *before* you install the package on the master host.

- RHEL:

```
sudo yum --enablerepo=zenoss-stable install -y serviced-1.0.*
```

- Ubuntu:

```
sudo apt-get update && sudo apt-get install -y serviced=1.0.*
```

The Control Center web interface and `serviced` binary are updated.

5   If you are upgrading another application, refer to the upgrade steps for that product. Otherwise, open the Control Center web interface, click **Start** in the **Actions** column of the **Applications** table to restart Resource Manager.

Upgrading Resource Manager

This section contains the steps to upgrade the Resource Manager application.

Optional: Reducing the downtime maintenance window

To minimize downtime and verify that you have adequate disk space, you can `pull` the required images manually, prior to your planned maintenance window. If you choose not to pull the images manually, the upgrade script performs these actions for you.

Note   Replace *Version* in the following commands with the appropriate version number. For version information, refer to the release notes.

---

1   Log in to the master host as a user with `serviced` privileges.
2   Pull the most recent Resource Manager image to the local master and copy the the upgrade and migration scripts to the root directory:

```
sudo docker run -it --rm -v /root:/mnt/root
  zenoss/resmgr_5.0:5.0.Version \
    rsync -a /root/5.0.x /mnt/root
```

The Resource Manager pull takes approximately 10 - 20 minutes.

3   Search the Resource Manager image for the name and version of the Hbase image:

```
image=$(sudo awk '/SVC_USE.*hbase/{print $NF}' \
  /root/5.0.x/5.0.Version-upgrade-resmgr.txt); echo $image
```

The returned value is `zenoss/hbase:v6`.

4   Pull the Hbase image.

```
sudo docker pull $image
```

The HBase `pull` takes approximately 5 - 10 minutes.

5   Search the Resource Manager image for the name and version of the OpenTSDB image:

```
image=$(sudo awk '/SVC_USE.*opentsdb/{print $NF}' \
   /root/5.0.x/5.0.Version-upgrade-resmgr.txt); echo $image
```

The returned value is `zenoss/opentsdb:v14`.

6   Pull the OpenTSDB image:

```
sudo docker pull $image
```

The OpenTSDB `pull` takes approximately 5 - 10 minutes.

7   Synchronize the image with the local `serviced` registry:

```
serviced docker sync
```

The sync for Resource Manager takes approximately 5 minutes, Hbase takes approximately 5 minutes and OpenTSDB takes approximately 8 minutes.

Upgrading the Resource Manager application

This procedure describes how to upgrade Resource Manager to 5.0.0, 5.0.1, or 5.0.2.

Note   Replace *Version* in the following commands with the appropriate version number. For version information, refer to the release notes.

---

1   If Resource Manager is currently running, log in to the Control Center web interface and click **Stop** in the **Actions** column of the **Applications** table.

2   Display the child services of Resource Manager.

In the **Application** column of the **Applications** table, click Resource Manager, and then scroll down to the **Services** table. Stopped services have a grey circle icon in the **Status** column. Do not to proceed until all services are stopped.

3   Log in to the Control Center master host as a user with `serviced` privileges.

4   Pull the most recent Resource Manager images to the local master and copy the upgrade and migration scripts to the `root` directory.

```
sudo docker run -it  --rm -v /root:/mnt/root
 zenoss/resmgr_5.0:5.0.Version \
  rsync -a /root/5.0.x /mnt/root
```

The Resource Manager `pull` takes approximately 10 - 20 minutes.

5   Run the migration script to replace the existing MariaDB with two separate instances; one for the Zenoss object database (zodb) and the other for the Zenoss events processing database (zep):

```
sudo bash /root/5.0.x/5.0.Version-migrate-from-5.0.0.sh master
```

The MariaDB services are migrated.

6   Run the upgrade script replacing *Version* in the examples below with the new micro version number. For the latest version information, see the release notes.

For Resource Manager with Service Impact:

```
serviced script run /root/5.0.x/5.0.Version-upgrade-impact.txt \
   --service Zenoss.resmgr
```

For Resource Manager alone:

```
serviced script run /root/5.0.x/5.0.Version-upgrade-resmgr.txt \
  --service Zenoss.resmgr
```

The Resource Manager application is upgraded and your custom data is preserved.

7 Log in to the Control Center web interface and click **Start** in the **Actions** column of the **Applications** table to start Resource Manager.