



# **Managing backup and restore operations**

## **Active IQ Unified Manager 9.8**

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# Table of Contents

- Managing backup and restore operations . . . . . 1
  - Virtual appliance backup and restore process . . . . . 1
  - Backup and restore using a MySQL database dump. . . . . 2
  - Backup and restore using NetApp Snapshots . . . . . 7
  - Description of backup windows and dialog boxes . . . . . 11

# Managing backup and restore operations

You can create backups of Unified Manager and use the restore feature to restore the backup to the same (local) system or a new (remote) system in case of a system failure or data loss.

There are three backup and restore methods depending on the operating system on which you have installed Unified Manager, and based on the number of clusters and nodes being managed:

Operating System	Size of Deployment	Recommended Backup Method
VMware vSphere	Any	VMware snapshot of the Unified Manager virtual appliance
Red Hat Enterprise Linux or CentOS Linux	Small	Unified Manager MySQL database dump
	Large	NetApp Snapshot of Unified Manager database
Microsoft Windows	Any	Unified Manager MySQL database dump

These different methods are described in the sections that follow.

## Virtual appliance backup and restore process

The backup and restore model for Unified Manager when installed on a virtual appliance is to capture and restore an image of the full virtual application.

The following tasks enable you to complete a backup of the virtual appliance:

1. Power off the VM and take a VMware snapshot of the Unified Manager virtual appliance.
2. Make a NetApp Snapshot copy on the datastore to capture the VMware snapshot.

If the datastore is not hosted on a system running ONTAP software, follow the storage vendor guidelines to create a backup of the VMware snapshot.

3. Replicate the NetApp Snapshot copy, or snapshot equivalent, to alternate storage.
4. Delete the VMware snapshot.

You should implement a backup schedule using these tasks to ensure that the Unified Manager virtual appliance is protected if issues arise.

To restore the VM, you can use the VMware snapshot you created to restore the VM to the backup point-in-time state.

# Backup and restore using a MySQL database dump

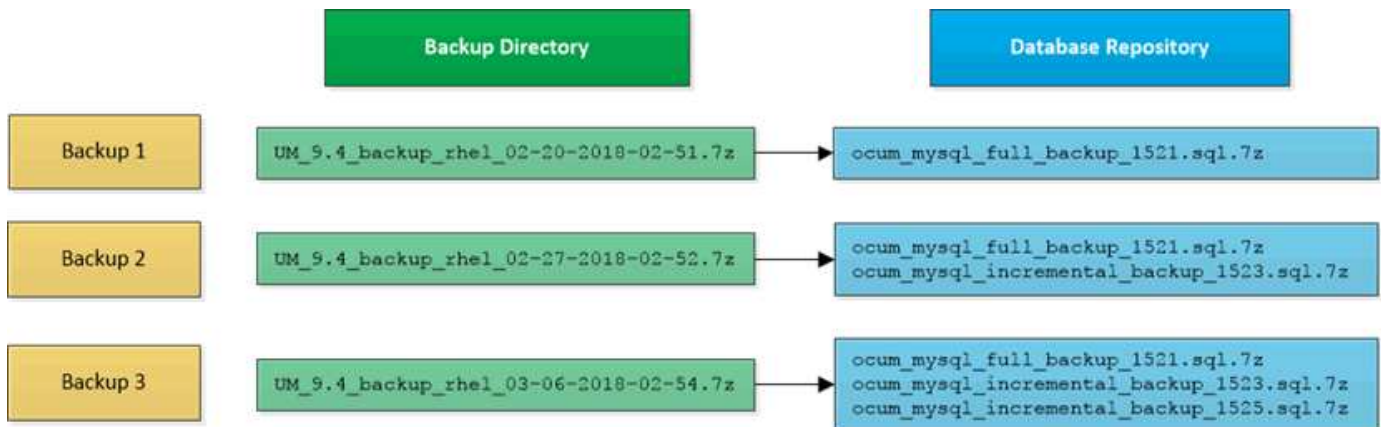
A MySQL database dump backup is a copy of the Unified Manager database and configuration files that you can use in case of a system failure or data loss. You can schedule a backup to be written to a local destination or to a remote destination. It is highly recommended that you define a remote location that is external to the Unified Manager host system.



MySQL database dump is the default backup mechanism when Unified Manager is installed on a Linux and Windows server. For Red Hat Enterprise Linux or CentOS Linux systems, you can use the NetApp Snapshot backup method if Unified Manager is managing a large number of cluster and nodes, or if your MySQL backups are taking many hours to complete.

A database dump backup consists of a single file in the backup directory and one or more files in the database repository directory. The file in the backup directory is very small because it contains only a pointer to the files located in the database repository directory that are required to recreate the backup.

The first time you generate a database backup a single file is created in the backup directory and a full backup file is created in the database repository directory. The next time you generate a backup a single file is created in the backup directory and an incremental backup file is created in the database repository directory that contains the differences from the full backup file. This process continues as you create additional backups, up to the maximum retention setting, as shown in the following figure.



Do not rename or remove any of the backup files in these two directories or any subsequent restore operation will fail.

If you write your backup files to the local system, you should initiate a process to copy the backup files to a remote location so they will be available in case you have a system issue that requires a complete restore.

Before beginning a backup operation, Unified Manager performs an integrity check to verify that all the required backup files and backup directories exist and are writable. It also checks that there is enough space on the system to create the backup file.

Note that you can restore a backup only on the same version of Unified Manager. For example, if you created a backup on Unified Manager 9.7, the backup can be restored only on Unified Manager 9.7 systems.

## Configuring the destination and schedule for database dump backups

You can configure the Unified Manager database dump backup settings to set the database backup path, retention count, and backup schedule. You can enable daily or weekly scheduled backups. By default, scheduled backups are disabled, but you should set a backup schedule.

### Before you begin

- You must have the Operator, Application Administrator, or Storage Administrator role.
- You must have a minimum of 150 GB of space available in the location you define as the backup path.

It is recommended that you use a remote location that is external to the Unified Manager host system.

- When Unified Manager is installed on a Linux system, verify that the “jboss” user has write permissions to the backup directory.
- You should not schedule backup operations to occur immediately after a new cluster has been added while Unified Manager is collecting 15 days of historical performance data.

### About this task

More time is required the first time a backup is performed than for subsequent backups because the first backup is a full backup. A full backup can be over 1 GB and can take three to four hours. Subsequent backups are incremental and require less time.



If you find that the number of incremental backup files is getting too large for the space you have allocated for backups, you can create a new full backup periodically to replace the old full backup and all of its' child incremental files. As another option, you may want to start using the NetApp Snapshot backup method if Unified Manager is installed on a Linux system.

### Steps

1. In the left navigation pane, click **General > Database Backup**.
2. In the **Database Backup** page, click **Backup Settings**.
3. Configure the appropriate values for a backup path, retention count, and schedule.

The default value for retention count is 10; you can use 0 for creating unlimited backups.

4. Select the **Scheduled Daily** or **Scheduled Weekly** button, and then specify the schedule details.
5. Click **Apply**.

### Results

Database dump backup files are created based on the schedule. You can see the available backup files in the Database Backup page.

### Related information

[Database Backup page](#)

[How to start a new Incremental Backup chain within Active IQ Unified Manager](#)

## What a database restore is

A MySQL database restore is the process of restoring an existing Unified Manager backup file to the same or a different Unified Manager server. You perform the restore operation from the Unified Manager maintenance console.

If you are performing a restore operation on the same (local) system, and the backup files are all stored locally, you can run the restore option using the default location. If you are performing a restore operation on a different Unified Manager system (a remote system), you must copy the backup file, or files, from secondary storage to the local disk before running the restore option.

During the restore process, you are logged out of Unified Manager. You can log in to the system after the restore process is complete.

The restore feature is version-specific and platform-specific. You can restore a Unified Manager MySQL backup only on the same version of Unified Manager. Unified Manager supports backup and restore in the following platform scenarios:

- Virtual appliance backup to Red Hat Enterprise Linux or CentOS
- Red Hat or CentOS Linux backup to Red Hat Enterprise Linux or CentOS
- Windows backup to Windows

If you are restoring the backup image to a new server, after the restore operation completes you need to generate a new HTTPS security certificate and restart the Unified Manager server. You will also need to reconfigure SAML authentication settings, if they are required, when restoring the backup image to a new server.



Old backup files cannot be used to restore an image after Unified Manager has been upgraded to a newer version of software. To save space, all old backup files, except the newest file, are removed automatically when you upgrade Unified Manager.

## Restoring a MySQL database backup on a Linux system

If data loss or data corruption occurs, you can restore Unified Manager to the previous stable state with minimum loss of data. You can restore the Unified Manager database to a local or remote Red Hat Enterprise Linux or CentOS system by using the Unified Manager maintenance console.

### Before you begin

- You must have the root user credentials for the Linux host on which Unified Manager is installed.
- You must have a user ID and password authorized to log in to the maintenance console of the Unified Manager server.
- You must have copied the Unified Manager backup file and the contents of the database repository directory to the system on which you will perform the restore operation.

It is recommended that you copy the backup file to the default directory `/data/ocum-backup`. The database repository files must be copied to the `/database-dumps-repo` subdirectory under the `/ocum-backup` directory.

- The backup files must be of .7z type.

## About this task

The restore feature is platform-specific and version-specific. You can restore a Unified Manager backup only on the same version of Unified Manager. You can restore a Linux backup file or a virtual appliance backup file to a Red Hat Enterprise Linux or CentOS system.



If the backup folder name contains a space, you must include the absolute path or relative path in double quotation marks.

## Steps

1. If you are performing a restore onto a new server, after installing Unified Manager do not launch the UI or configure any clusters, users, or authentication settings when the installation is complete. The backup file populates this information during the restore process.
2. Using Secure Shell, connect to the IP address or fully qualified domain name of the Unified Manager system.
3. Log in to the system with the maintenance user (umadmin) name and password.
4. Enter the command `maintenance_console` and press Enter.
5. In the maintenance console **Main Menu**, enter the number for the **Backup Restore** option.
6. Enter the number for the **Restore MySQL Backup**.
7. When prompted, enter the absolute path of the backup file.

```
Bundle to restore from: /data/ocum-  
backup/UM_9.8.N151113.1348_backup_rhel_02-20-2020-04-45.7z
```

After the restore operation is complete, you can log in to Unified Manager.

## After you finish

After you restore the backup, if the OnCommand Workflow Automation server does not work, perform the following steps:

1. On the Workflow Automation server, change the IP address of the Unified Manager server to point to the latest machine.
2. On the Unified Manager server, reset the database password if the acquisition fails in step 1.

## Restoring a MySQL database backup on Windows

In case of data loss or data corruption, you can use the restore feature to restore Unified Manager to the previous stable state with minimal loss. You can restore the Unified Manager MySQL database to a local Windows system or a remote Windows system by using the Unified Manager maintenance console.

## Before you begin

- You must have Windows administrator privileges.
- You must have copied the Unified Manager backup file and the contents of the database repository directory to the system on which you will perform the restore operation.

It is recommended that you copy the backup file to the default directory

`\ProgramData\NetApp\OnCommandAppData\ocum\backup`. The database repository files must be copied to the `\database_dumps_repo` subdirectory under the `\backup` directory.

- The backup files must be of `.7z` type.

## About this task

The restore feature is platform-specific and version-specific. You can restore a Unified Manager MySQL backup only on the same version of Unified Manager, and a Windows backup can be restored only on a Windows platform.



If the folder names contain a space, you must include the absolute path or relative path of the backup file in double quotation marks.

## Steps

1. If you are performing a restore onto a new server, after installing Unified Manager do not launch the UI or configure any clusters, users, or authentication settings when the installation is complete. The backup file populates this information during the restore process.
2. Log in to the Unified Manager system with administrator credentials.
3. Launch PowerShell as a Windows administrator.
4. Enter the command `maintenance_console` and press Enter.
5. In the maintenance console **Main Menu**, enter the number for the **Backup Restore** option.
6. Enter the number for the **Restore MySQL Backup**.
7. When prompted, enter the absolute path of the backup file.

Bundle to restore from:

```
\ProgramData\NetApp\OnCommandAppData\ocum\backup\UM_9.8.N151118.2300_backup_windows_02-20-2020-02-51.7z
```

After the restore operation is complete, you can log in to Unified Manager.

## After you finish

After you restore the backup, if the OnCommand Workflow Automation server does not work, perform the following steps:

1. On the Workflow Automation server, change the IP address of the Unified Manager server to point to the latest machine.
2. On the Unified Manager server, reset the database password if the acquisition fails in step 1.



# Backup and restore using NetApp Snapshots

A NetApp Snapshot backup creates a point-in-time image of the Unified Manager database and configuration files that you can use to restore in case of a system failure or data loss. You schedule a Snapshot backup to be written to a volume on one of your ONTAP clusters periodically so that you always have a current copy.



This functionality is available only when Unified Manager is installed on a Red Hat Enterprise Linux or CentOS Linux server.

Snapshot backups take very little time, usually just a few minutes, and the Unified Manager database is locked for a very short timeframe, so there is very little disruption to your installation. The image consumes minimal storage space and incurs negligible performance overhead because it records only changes to files since the last Snapshot copy was made. Because the Snapshot is created on an ONTAP cluster, you can take advantage of other NetApp features such as SnapMirror to create secondary protection, if needed.

Before beginning a backup operation, Unified Manager performs an integrity check to verify that the destination system is available.

Note that you can restore a Snapshot backup only on the same version of Unified Manager. For example, if you created a backup on Unified Manager 9.8, the backup can be restored only on Unified Manager 9.8 systems.

## Creating the volume where backups are stored

You can create the volume where Snapshot backups will be stored on one of your ONTAP clusters from ONTAP System Manager or from the ONTAP CLI.

### Before you begin

The cluster, storage VM, and volume must meet the following requirements:

- Cluster requirements:
  - ONTAP 9.3 or greater must be installed
  - It should be geographically close to the Unified Manager server
  - It can be monitored by Unified Manager, but it is not required
- Storage VM requirements:
  - CIFS/SMB or NFS services must be enabled
  - The name switch and name mapping must be set to use “files”
  - NFSv4 must be enabled on the NFS server and NFSv4 iddomain specified on the client and storage VM
  - Local users created to correspond with client-side users
  - Make sure All Read/Write access is selected
  - Make sure that Superuser Access is set to “any” in the export policy
- Volume requirements:
  - The volume should be at least double the size of the Unified Manager /opt/netapp/data directory

Use the command `du -sh /opt/netapp/data/` to check the current size.

- The security style must be set to UNIX
- The local snapshot policy must be disabled
- Volume autosize should be enabled
- The performance service level should be set to a policy with high IOPS and low latency, such as “Extreme”

### About this task

For detailed steps to create the NFS volume, see [How to configure NFSv4 in ONTAP 9](#) and the [ONTAP 9 NFS Configuration Express Guide](#).

## Specifying the destination location for Snapshot backups

You configure the destination location for Unified Manager Snapshot backups on a volume you have already configured in one of your ONTAP clusters. You define the location from the Unified Manager maintenance console.

### Before you begin

- You must have the root user credentials for the Linux host on which Unified Manager is installed.
- You must have a user ID and password authorized to log in to the maintenance console of the Unified Manager server.
- You must have the Cluster Management IP address, the name of the storage VM, the name of the volume, and the storage system user name and password.
- You must have mounted the volume to the Unified Manager host, and you must have the mount path.

### Steps

1. Using Secure Shell, connect to the IP address or fully qualified domain name of the Unified Manager system.
2. Log in to the system with the maintenance user (umadmin) name and password.
3. Enter the command `maintenance_console` and press Enter.
4. In the maintenance console **Main Menu**, enter the number for the **Backup Restore** option.
5. Enter the number for **Configure NetApp Snapshot Backup**.
6. Enter the number for **Configuration for NFS**.
7. Review the information that you will need to provide and then enter the number for **Enter Backup Configuration Details**.
8. To identify the volume where the Snapshot will be written, enter the IP address of the Cluster Management interface, the name of the storage VM, the name of the volume, the storage system user name and password, and the mount path.
9. Verify this information and enter `y`.

The system performs the following tasks:

- Establishes the connection to the cluster
- Stops all the services
- Creates a new directory in the volume and copies the Unified Manager database configuration files
- Deletes the files from Unified Manager and creates a symlink to the new database directory
- Restarts all the services

10. Exit the maintenance console and launch the Unified Manager interface to create the Snapshot backup schedule if you have not already done this.

## Defining a schedule for Snapshot backups

You can configure the schedule at which Unified Manager Snapshot backups are created by using the Unified Manager UI.

### Before you begin

- You must have the Operator, Application Administrator, or Storage Administrator role.
- You must have configured the NetApp Snapshot backup settings from the maintenance console to identify the destination where the snapshots will be created.
- You should not schedule backup operations to occur immediately after a new cluster has been added while Unified Manager is collecting 15 days of historical performance data.

### About this task

Snapshot backups are created in just a few minutes and the Unified Manager database is locked only for few seconds.

### Steps

1. In the left navigation pane, click **General > Database Backup**.
2. In the **Database Backup** page, click **Backup Settings**.
3. Enter the maximum number of Snapshot copies that you want to retain in the **Retention Count** field.

The default value for retention count is 10. The maximum number of Snapshot copies is determined by the version of ONTAP software on the cluster: 1020 for ONTAP 9.4 and greater, and 250 for ONTAP 9.3 and earlier. You can leave this field blank to implement the maximum value regardless of ONTAP version.

4. Select the **Scheduled Daily** or **Scheduled Weekly** button, and then specify the schedule details.
5. Click **Apply**.

### Results

Snapshot backup files are created based on the schedule. You can see the available backup files in the Database Backup page.

### After you finish

Because of the importance of this volume and the snapshots, you may want to create one or two alerts for this volume so you are notified when either:

- The volume space is 90% full. Use the event **Volume Space Full** to set up the alert.

You can add capacity to the volume using ONTAP System Manager or the ONTAP CLI so that the Unified Manager database does not run out of space.

- The number of snapshots is close to reaching the maximum number. Use the event **Too Many Snapshot Copies** to set up the alert.

You can delete older snapshots using ONTAP System Manager or the ONTAP CLI so that there is always room for new snapshot backups.

You configure alerts in the Alert Setup page.

## Restoring a Snapshot backup

If data loss or data corruption occurs, you can restore Unified Manager to the previous stable state with minimum loss of data. You can restore the Unified Manager Snapshot database to a local or remote Red Hat Enterprise Linux or CentOS system by using the Unified Manager maintenance console.

### Before you begin

- You must have the root user credentials for the Linux host on which Unified Manager is installed.
- You must have a user ID and password authorized to log in to the maintenance console of the Unified Manager server.

### About this task

The restore feature is platform-specific and version-specific. You can restore a Unified Manager backup only on the same version of Unified Manager.

### Steps

1. Using Secure Shell, connect to the IP address or fully qualified domain name of the Unified Manager system.
2. Log in to the system with the maintenance user (umadmin) name and password.
3. Enter the command `maintenance_console` and press Enter.
4. In the maintenance console **Main Menu**, enter the number for the **Backup Restore** option.
5. Enter the number for **Backup and Restore using NetApp Snapshot**.

If you are performing a restore onto a new server, after installing Unified Manager do not launch the UI or configure any clusters, users, or authentication settings when the installation is complete. Enter the number for **Configure NetApp Snapshot Backup** and configure the Snapshot backup settings as they were configured on the original system.

6. Enter the number for **Restore using NetApp Snapshot**.
7. Select the Snapshot backup file that you want to restore and press Enter.
8. After the restore process is complete, log in to the Unified Manager user interface.

## After you finish

After you restore the backup, if the OnCommand Workflow Automation server does not work, perform the following steps:

1. On the Workflow Automation server, change the IP address of the Unified Manager server to point to the latest machine.
2. On the Unified Manager server, reset the database password if the acquisition fails in step 1.

## Description of backup windows and dialog boxes

You can view the list of backups from the backup page in Unified Manager. You can view the backup name, size, and creation time for the backups listed in this page. You can modify the database backup settings from the Database Backup Settings page.

### Database Backup page

The Database Backup page displays a list of backups created by Unified Manager and provides information about the backup name, size, and creation time.

You must have the Application Administrator or Storage Administrator role.

#### List View

The list view displays information about the available backup files.

- **Name**

Name of the backup.

- **Size**

Size of the backup.

- **Creation Time**

Creation date and time of the backup.

#### Command buttons

- **Backup Settings**

Displays the Backup Settings dialog box, which enables you to specify a backup path, retention count, and backup schedule.

### Backup Settings dialog box

Define the backup schedule, the retention count, and when using MySQL database dump backup method, the backup path for a selected Unified Manager instance.

You can change the following database backup settings:

- **Path**

When you are using the MySQL database dump backup method, this field specifies the path to the location where you store the backup files. When using the Snapshot backup method, this location shows the cluster, storage VM, and volume on which the backup will be stored.

The following table specifies the backup path format, and default locations, for different operating systems:

Host operating system	Backup path format
Virtual appliance	/opt/netapp/data/ocum-backup
Red Hat Enterprise Linux or CentOS Linux	/data/ocum-backup
Microsoft Windows	C:\ProgramData\NetApp\OnCommandAppData\ocum\backup\

- **Retention Count**

Specifies the maximum number of backups to be retained by Unified Manager. The default value is 10.

- **Scheduled Daily**

Specifies the daily backup schedule with the time.

- **Scheduled Weekly**

Specifies the weekly backup schedule with the day and time.

- **None**

Specifies that no backups will be created.

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