Backup and restore using NetApp Snapshots

Active IQ Unified Manager

NetApp
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Backup and restore using NetApp Snapshots

Backup and restore using NetApp Snapshots in Active IQ Unified Manager

A NetApp Snapshot copy 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 copy to be written to a volume on one of your ONTAP clusters periodically so that you always have a current copy.

This functionality is not available for Active IQ Unified Manager installed on a virtual appliance.

Configure backup on Linux in Active IQ Unified Manager

If your Active IQ Unified Manager is installed on a Linux machine, then you can decide to configure your backup and restore using NetApp Snapshots.

Snapshot copies 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.

- You can restore a Snapshot copy only on the same version of Active IQ Unified Manager.

  For example, if you created a backup on Unified Manager 9.18, the backup can be restored only on Unified Manager 9.18 systems.

- If there is any change in the Snapshot configuration, it might cause the snapshot to be invalid.

Configure Snapshot copy location in Active IQ Unified Manager

You can configure the volume where Snapshot copies will be stored on one of your ONTAP clusters using ONTAP System Manager or using 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:

- The name switch and name mapping must be set to use “files”
- 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
- NFS for NetApp Snapshot for Linux
- NFSv4 must be enabled on the NFS server and NFSv4 ID domain specified on the client and storage VM
- 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.

- Volume requirements:
  - The volume should be at least double the size of the Unified Manager /opt/netapp/data directory
  - 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”

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

Specify the destination location for Snapshot copies in Active IQ Unified Manager

You should configure the destination location for Active IQ Unified Manager Snapshot copies on a volume that you have already configured in one of your ONTAP clusters. You should use maintenance console to define the location.

- You must have the root user credentials for the Linux host on which Active IQ 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 Active IQ Unified Manager host, and you must have the mount path.

Steps

1. Use Secure Shell to connect to the IP address or FQDN of the Active IQ 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 to configure 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, LUN name, 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 Active IQ Unified Manager database configuration files
   - Deletes the files from Active IQ Unified Manager and creates a symlink to the new database directory
   - Restarts all the services
10. Exit the maintenance console and launch the Active IQ Unified Manager interface to create a schedule for the Snapshot copy if you have not already done this.

Configure backup on Windows in Active IQ Unified Manager

Active IQ Unified Manager supports backup and restore using NetApp Snapshots on Windows operating system with the help of LUN using iSCSI protocol.

Snapshot based backup can be taken while all Unified Manager services are running. A consistent state of database is captured as part of the Snapshot as the backup puts a global read lock on the entire database that prevents any concurrent write. For your Unified Manager system installed on Windows OS to perform backup and restore using NetApp Snapshots, you should first configure Unified Manager backup to Snapshot based using the maintenance console.

Before you configure Unified Manager for creating Snapshot copies, you should perform the following configuration tasks.

- Configure ONTAP cluster
- Configure Windows host machine

Configure a backup location for Active IQ Unified Manager on Windows

You should configure the volume for storing Snapshot copies after backing up Unified Manager on Windows.

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 is monitored by Unified Manager
- Storage VM requirements:
  - iSCSI connectivity on ONTAP cluster
  - iSCSI protocol must be enabled for the configured machine

- You should have a dedicated volume and LUN for backup configuration. The selected volume should contain only one LUN and nothing else.
- The size of the LUN should be at least twice the data size expected to be handled in the 9.9 Active IQ Unified Manager.

  This sets the same size requirement on volume as well.

- Make sure All Read/Write access is selected
- Make sure that Superuser Access is set to “any” in the export policy

- Volume and LUN requirements:
  - The volume should be at least double the size of the Unified Manager MySQL data directory.
  - The security style must be set to Windows
  - 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”

Configure an ONTAP cluster for backup and restore in Active IQ Unified Manager

You need to perform few pre-configuration steps on ONTAP clusters before you can back up and restore Active IQ Unified Manager using Snapshot copy on Windows systems.

You can configure ONTAP cluster using either the command prompt or System Manager user interface. The configuration of ONTAP cluster involves configuring Data LIFs to be available to be assigned as iSCSI LIFs to the storage VM. The next step is to configure an iSCSI enabled storage VM using the System Manager user interface. You will need to configure a static network route for this storage VM to control how LIFs use the network for outbound traffic.

You should have a dedicated volume and a LUN for backup configuration. The selected volume should include only one LUN. The size of the LUN should be at least twice the data size expected to be handled by Active IQ Unified Manager.

You need to perform the following configuration:

Steps

1. Configure a iSCSI enabled storage VM or use an existing storage VM that has the same configuration.
2. Configure a network route for the configured storage VM.
3. Configure a volume of appropriate capacity and a single LUN inside ensuring that the volume is dedicated only for this LUN.

In a scenario when the LUN is created on System Manager, unmapping the LUN might delete the igroup, and restore might fail. To avoid this scenario, ensure that while creating a LUN, it is created explicitly and is not deleted when the LUN is unmapped.

4. Configure an initiator group in the storage VM.
5. Configure a port set.
6. Integrate the igroup with the portset.

7. Map the LUN to the igroup.

Configure a Windows host machine in Active IQ Unified Manager

You need to configure your Windows host machine before you can use NetApp Snapshot to back up and restore Active IQ Unified Manager. To start the Microsoft iSCSI initiator on a Windows host machine, type “iscsi” in the search bar and click **iSCSI Initiator**.

Before you begin

You should clean up any previous configurations on the host machine.

If you are trying to start the iSCSI initiator on a fresh installation of Windows, you are prompted for confirmation, and on your confirmation, the iSCSI Properties dialog box is displayed. If it is an existing Windows installation, then the iSCSI Properties dialog box displayed with a target that is either inactive or trying to connect. So, you will need to ensure that all the previous configurations on the Windows host are removed.

Steps

1. Clean up any previous configurations on the host machine.
2. Discover the target portal.
3. Connect to the target portal.
4. Connect using multipath to the target portal.
5. Discover both the LIFs.
6. Discover the LUN configured in the Windows machine as a device.
7. Configure the discovered LUN as a new volume drive in Windows.

Specify the destination location for Snapshot copies on Windows in Active IQ Unified Manager

You should configure the destination location for Active IQ Unified Manager Snapshot copies on a volume that you have already configured in one of your ONTAP clusters. You should use maintenance console to define the location.

- You must have the administrator privilege for Windows host on which Active IQ 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, LUN name, and the storage system user name and password.
- You must have mounted the volume as a network drive to the Active IQ Unified Manager host, and you must have the mount drive.

Steps

1. Using Power Shell, connect to the IP address or fully qualified domain name of the Active IQ 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 to configure iSCSI.
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, LUN name, the storage system user name and password, and the mount drive.
9. Verify this information and enter `y`.

   The system performs the following tasks:

   - Storage VM is validated
   - Volume is validated
   - Mount drive and status is validated
   - LUN existence and status
   - Network drive existence
   - Existence of recommend space (more than twice of mysql data directory) at mounted volume is validated
   - LUN path corresponding to the dedicated LUN in the volume
   - igroup name
   - GUID of the volume where the network drive is mounted
   - iSCSI initiator used to communicate with ONTAP
10. Exit the maintenance console and launch the Active IQ Unified Manager interface to create a schedule for Snapshot copies.

Configure a Snapshot backup from the maintenance console in Active IQ Unified Manager

To take Active IQ Unified Manager backup by using Snapshot copy, you should perform a few configuration steps from the maintenance console.

Before you begin

You should have the following details for your system:

- Cluster IP address
- Storage VM name
- Volume name
- LUN name
- Mount path
- Storage system credentials

Steps

1. Access the maintenance console of Unified Manager.
2. Enter 4 to select **Backup Restore**.
3. Enter 2 to select **Backup and Restore using NetApp Snapshot**.

   If you want to change the backup configuration, then enter 3 for selecting **Update NetApp Snapshot Backup Configuration**. You can only update the password.

4. From the menu, enter 1 to select the **Configure NetApp Snapshot Backup**.
5. Enter 1 to provide the required information.
6. Provide the username and password for the maintenance console, and then provide the confirmation that LUN is mounted on host.

   The process then verifies that the data directory, LUN path, storage VM, volumes, space availability, drive, and so on provided by you are correct. The operations that proceed in the background are:

   - Services are stopped
   - Database directory is moved to mounted storage
   - Database directory is deleted and symlinks are established
   - Services are restarted After the configuration completes in the Active IQ Unified Manager interface, the backup type is modified to NetApp Snapshot and reflects in the user interface as Database backup (Snapshot based).

Before beginning a backup operation, you must check whether there is any change in the Snapshot configuration because it might cause the snapshot to be invalid. Suppose you configured backup in G drive and Snapshot taken. You later reconfigured the backup to E drive and data is saved to E drive as per the new configuration. If you try to restore Snapshot taken while it was in G drive, it fails with error that G drive does not exist.

Define a backup schedule for Linux and Windows in Active IQ Unified Manager

You can configure the schedule at which Unified Manager Snapshot copies 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 settings for creating Snapshot copies from the maintenance console to identify the destination where the snapshots will be created.

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

Backup taken during initial 15 days of a new cluster addition might not be accurate enough to get the historical performance data.

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. 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**.

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

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 copies.

You configure alerts in the Alert Setup page.

Restore Active IQ Unified Manager by using Snapshot copies

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 operating system by using the Unified Manager maintenance console.

Before you begin

- You must have the root user credentials for the Linux host and administrative privileges for Windows host machine 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.

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. Connect to the IP address or fully qualified domain name of the Unified Manager system.
   - Linux: Secure Shell
   - Windows: Power Shell

2. Log in to the system with the root user credentials.
3. Enter the command `maintenance_console` and press Enter.
4. In the maintenance console **Main Menu**, enter 4 for the **Backup Restore** option.
5. Enter 2 for selecting **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 1 for selecting **Configure NetApp Snapshot Backup** and configure the settings for Snapshot copies as they are on the original system.

6. Enter 3 for selecting **Restore using NetApp Snapshot**.
7. Select the Snapshot copy from which you want to restore Unified Manager. Press **Enter**.
8. After the restore process is complete, log in to the Unified Manager user interface.

After you restore the backup, if the 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.

Modify the backup type in Active IQ Unified Manager

If you want to change the type of backup for your Active IQ Unified Manager system, then you can use the maintenance console options. The **Unconfigure NetApp Snapshot Backup** option enables you to fall back to the MySQL based backup.

Before you begin

You must have a user ID and password authorized to log in to the maintenance console of the Unified Manager server.

Steps

1. Access the maintenance console.
2. Select 4 from the **Main Menu** for backup and restore.
3. Select 2 from the **Backup and Restore Menu**.
4. Select 4 for **Unconfigure NetApp Snapshot Backup**.

   The actions that are performed are displayed which are, stop the services, break the symlink, move the data from storage to directory, and then start the services again.

   After the backup method is modified, the backup mechanism is changed from Snapshot copy to default MySQL backup. This change appears in the Database Backup section of the General settings.

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