DAT244x

SQL Server Disaster Recovery

Lab 02 | Backing Up SQL Server Databases

Estimated time to complete this lab is 60 minutes

Overview

As a database administrator for Adventure Works Cycles, you are responsible for the **AdventureWorks** regional, national, and data archive databases. You must implement a backup solution for these databases, based on the backup requirements that have been provided.

The labs in this course are accumulative. You cannot complete the following labs if this lab has not been successfully completed.

What You'll Need

To complete this lab, you will need the following:

- High-speed and reliable internet connectivity (for remote connections to the VM)
- A second monitor is recommended (for the Remote Desktop connection)
- A Microsoft account (such as one used for outlook.com, Hotmail, or other Microsoft services)
- A Microsoft Azure subscription
- To have completed the previous labs in this course.

Exercise 1: Performing a full Database Backup

As a database administrator for Adventure Works Cycles, you are responsible for the **AdventureWorks** regional, national, and data archive databases. You must implement a backup solution for these databases, based on the backup requirements that have been provided.

The main tasks for this exercise are as follows:

1. Set the Recovery Model
2. Perform a Full Database Backup

Set the Recovery Model

1. Based on the proposed backup strategy for the **AdventureWorks2016** database, determine the appropriate recovery model for the database.
2. Use SQL Server Management Studio to check the current recovery model of the database and change it if necessary.

Perform a Full Database Backup

1. Create the C:\Backups folder.
2. Back up the **AdventureWorks2016** database to C:\Backups\AdventureWorks.bak.
    a. Use a full backup.
    b. Create a new media set with the name "AdventureWorks-Full Database Backup".
    c. Compress the backup.
3. Verify that the backup file has been created and note its size.

Lab Check – *You will need these answers for the module quiz – write them down!*

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Approximately what size is the backup file?

_____

Exercise 2: Performing Database, Differential and Transaction Log Backups

The backup strategy for the national **AdventureWorks** database uses a combination of full, differential, and transaction log backups.

The main tasks for this exercise are as follows:

1. Set the Recovery Model
2. Perform a Full Database Backup
3. Modify Data in the Database
4. Perform a Transaction Log Backup
5. Modify Data in the Database
6. Perform a Differential Backup
7. Modify Data in the Database
8. Perform Another Transaction Log Backup
9. Verify Backup Media

Set the Recovery Model

1. Based on the proposed backup strategy for the **AdventureWorks2016** database, determine the appropriate recovery model for the database.
2. Use SQL Server Management Studio to check the current recovery model of the database, and change it if necessary.

Perform a Full Database Backup

1. Back up the AdventureWorks2016 database to C:\Backups\AWNational.bak.
    a. Use a full backup.
    b. Create a new media set with the name "AdventureWorks Backup".
    c. Compress the backup.
2. Verify that the backup file has been created, and note its size.

Modify Data in the Database

1. Update the **Employee** table in the **AdventureWorks** database using the following Transact-SQL code:

```
UPDATE HumanResources.Employee
SET VacationHours = VacationHours + 10 WHERE SickLeaveHours < 30;
```

Perform a Transaction Log Backup

1. Back up the **AdventureWorks** database to D:\Backups\AWNational.bak.
    a. Use a transaction log backup.
    b. Back up the log to the existing media set, and append the backup to the existing backup sets.
    c. Compress the backup.
2. Verify that the size of the backup file has increased.

Modify Data in the Database

Update the **Employee** table in the **AdventureWorks** database using the following Transact-SQL code:

```
UPDATE HumanResources.Employee
SET VacationHours = VacationHours + 10;
```

Perform a Differential Backup

1. Back up the **AdventureWorks** database to D:\Backups\AWNational.bak.
    a. Use a differential backup.
    b. Back up the log to the existing media set and append the backup to the existing backup sets.
    c. Compress the backup.
2. Verify that the size of the backup file has increased.

Lab Check – *You will need these answers for the module quiz – write them down!*

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Approximately what size is the backup file?

_____

Modify Data in the Database

Update the **Employee** table in the **AdventureWorks** database using the following Transact-SQL code:

```
UPDATE Production.Product
SET ListPrice = ListPrice + 10;
```

Perform Another Transaction Log Backup

1. Back up the AdventureWorks database to D:\Backups\AWNational.bak.
    a. Use a transaction log backup.
    b. Back up the log to the existing media set, and append the backup to the existing backup sets.
    c. Compress the backup.
2. Verify that the size of the backup file has increased.

Verify Backup Media

1. Use the following query to verify that the backups you performed in this exercise are all on the backup device:

```
RESTORE HEADERONLY
FROM DISK = 'C:\Backups\AWNational.bak';
GO
```

Lab Check – *You will need these answers for the module quiz – write them down!*

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What is the Backup Type of a transaction log backup (positions 2 and 4)?

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You have now completed the lab.

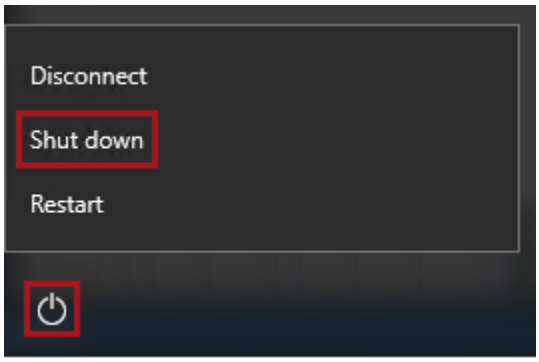
If you are not immediately continuing with the next lab, you should complete the ***Finishing Up*** *exercise to shut down and stop the VM.*

Finishing Up

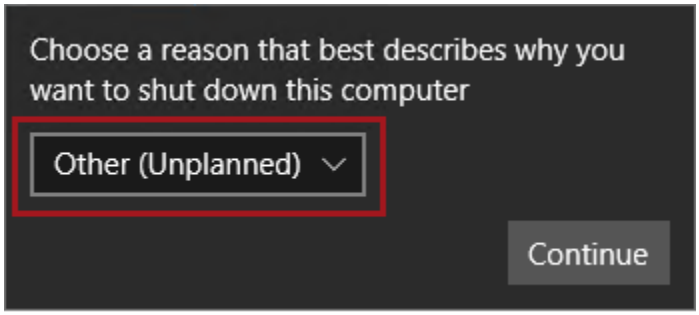
In this exercise, you will shut down and stop the VM.

1. Close all open applications.

2. Press the **Windows** key, and then in the **Start** page, located at the bottom-left, click the **Power** button, and then select **Shut Down**.

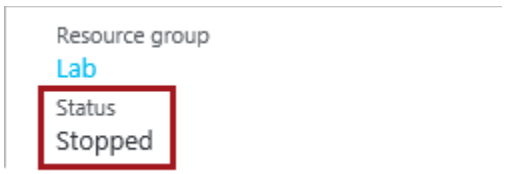


3. When prompted to choose a reason, to accept the default.



4. Click **Continue**.

5. In the **Azure Portal** Web browser page, wait until the status of the VM updates to **Stopped**.

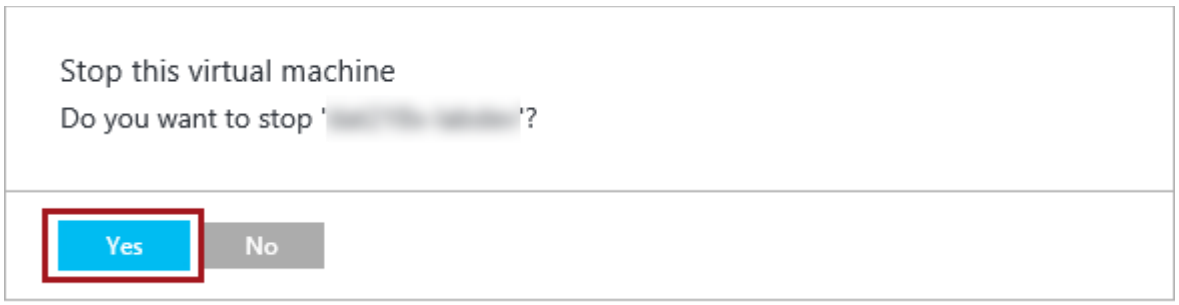


In this state, however, the VM is still billable.

6. Optionally, to deallocate the VM, click **Stop**.

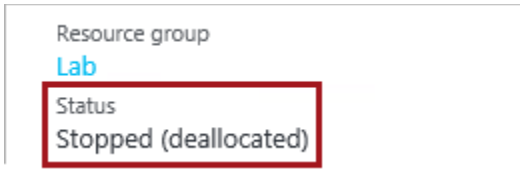
   Deallocation will take some minutes to complete, and also extends the time required to restart the VM. Consider deallocating the VM if you want to reduce costs, or if you choose to complete the next lab after an extended period.

7. When prompted to stop the VM, click **Yes**.



   The deallocation can take several minutes to complete.

8. Verify that the VM status updates to **Stopped (Deallocated)**.



   In this state, the VM is now not billable—except for a relatively smaller storage cost.

   Note that a deallocated VM will likely acquire a different IP address the next time it is started.

9. Sign out of the **Azure Portal**.