DAT247x

Managing Database Operations

Lab 01 | Automating SQL Server Management

Estimated time to complete this lab is 60 minutes

Overview

You are a database administrator (DBA) at Adventure Works Cycles, with responsibility for databases on an instance of SQL Server. Routine tasks that must be performed on this instance have previously been performed manually, but you now plan to automate these tasks using SQL Server Agent.

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: Create a SQL Server Agent Job

The **AdventureWorks** database must be backed up every day. Additionally, after the backup has been created, the backup file must be copied to a folder, which is automatically replicated to a cloud service for offsite storage of various backup files.

The main tasks for this exercise are as follows:

1. Configure SQL Server Agent
2. Create a backup job

Configure SQL Server Agent

1. Create the **C:\Backups** and **C:\Labs** folders.
2. In Windows Explorer, click **Local Disk (c:)**, right-click the **Labs** folder and click **Properties**.
3. Click the **Security** tab.
4. Click **Edit**.
5. Click **Add**.
6. Type **Everyone** and click **OK**.
7. Select **Allow** for **Modify**, **Read & execute**, **List folder contents**, **Read**, and **Write** and click **OK** and click **OK** again.
8. Right-click the **Backups** folder and click **Properties**.
9. Click the **Security** tab.
10. Click **Edit**.
11. Click **Add**.
12. Type **Everyone** and click **OK**.
13. Select **Allow** for **Modify**, **Read & execute**, **List folder contents**, **Read**, and **Write** and click **OK**.
14. Click **OK** and close Windows Explorer.
15. Start SQL Operations Studio and connect to the **(localhost)** instance of SQL Server.
16. Open a new query window and execute the following Transact-SQL to ensure that Agent XPs are enabled:

```
EXEC SP_CONFIGURE 'show advanced options',1
GO
RECONFIGURE
GO
EXEC SP_CONFIGURE 'Agent XPs',1
GO
RECONFIGURE
GO
```

17. Start SQL Server Management Studio and connect to the **(localhost)** instance of SQL Server.
18. In Object Explorer, right-click **SQL Server Agent**, and click **Properties**.
19. On the **General** page, ensure that **Auto restart SQL Server Agent if it stops unexpectedly** is selected and click **OK**.

If SQL Server Agent is not running, right-click **SQL Server Agent**, click **Start**, and, on the **Microsoft SQL Server Management Studio** dialog box, click **Yes**.

Create a Backup Job

1. In SQL Operations Studio, run the following Transact-SQL to add a new job called **Backup AdventureWorks**:

```
USE msdb ;
GO
EXEC dbo.sp_add_job @job_name = N'Backup AdventureWorks',
@enabled=1,
@owner_login_name=N'sa' ;
GO
```

2. Assign the job to a target server:

```
EXEC dbo.sp_add_jobserver
   @job_name = N'Backup AdventureWorks',
   @server_name = N'Insert Server Name Here';
GO

NOTE: If you do not know the server name, run the command
SELECT @@SERVERNAME
```

3. Add a job step to perform the backup command:

```
USE msdb ;
   GO
   EXEC msdb.dbo.sp_add_jobstep @job_name=N'Backup
   AdventureWorks', @step_name=N'1',

      @step_id=1,

      @cmdexec_success_code=0,

      @on_success_action=1,

      @on_fail_action=2,

      @retry_attempts=0,

      @retry_interval=0,

      @os_run_priority=0, @subsystem=N'TSQL',

      @command=N'BACKUP DATABASE [AdventureWorks2016] TO  DISK =
   N''C:\Backups/AdventureWorks.bak'' WITH NOFORMAT, NOINIT,
   NAME = N''AdventureWorks2016-Full Database Backup'', SKIP,
   NOREWIND, NOUNLOAD,  STATS = 10

   GO',
```

```
        @database_name=N'master',
        @flags=0
GO
EXEC msdb.dbo.sp_update_job @job_name=N'Backup AdventureWorks',
        @enabled=1
GO
```

Test the Backup Job

1. Run the following Transact-SQL to run the job:

```
USE msdb;
GO
EXEC dbo.sp_start_job N'Backup AdventureWorks';
GO
```

Exercise 3: Schedule a Job

Add a Schedule to the Job

1. Run the following Transact-SQL to add a daily schedule to the job:

```
USE msdb;
GO
EXEC msdb.dbo.sp_add_jobschedule @job_name=N'Backup AdventureWorks',
@name=N'Daily Backup',
      @enabled=1,
      @freq_type=4,
      @freq_interval=1,
      @freq_subday_type=1,
      @freq_subday_interval=0,
      @freq_relative_interval=0,
      @freq_recurrence_factor=1,
      @active_start_date=20180510,
      @active_end_date=99991231,
      @active_start_time=0,
      @active_end_time=235959
```

Verify Scheduled Job Execution

1. Run the following Transact-SQL to view job information:

```
USE msdb;
GO
EXEC dbo.sp_help_jobactivity;
GO
```

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

Lab 01 ► Automating SQL Server Management

Which field reports the next time that the job will run?

_____

You have now completed the lab.

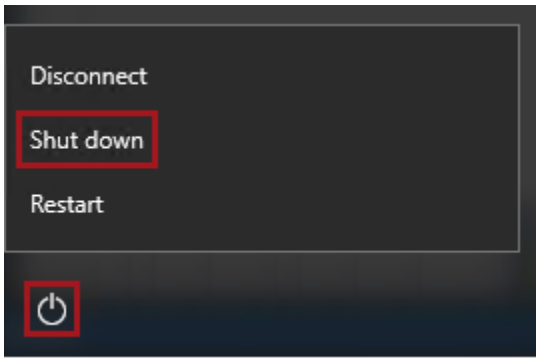
If you are not immediately continuing with the next lab, you should complete the ***Finishing Up*** *exercise to shut down and stop the VM.*

Finishing Up

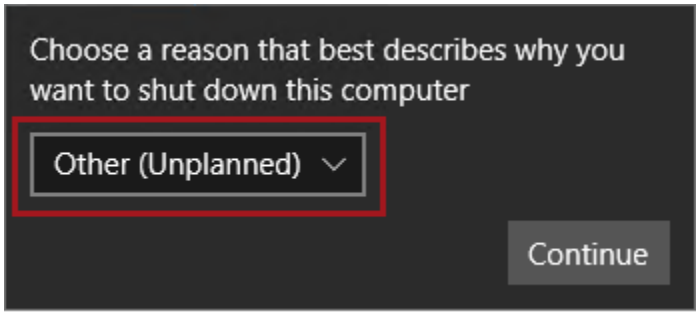
In this exercise, you will shut down and stop the VM.

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**.

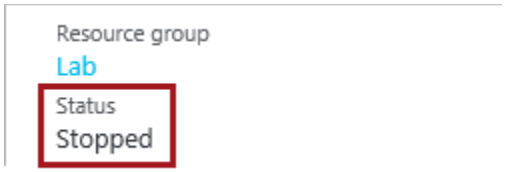


3. When prompted to choose a reason, to accept the default.



4. Click **Continue**.

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

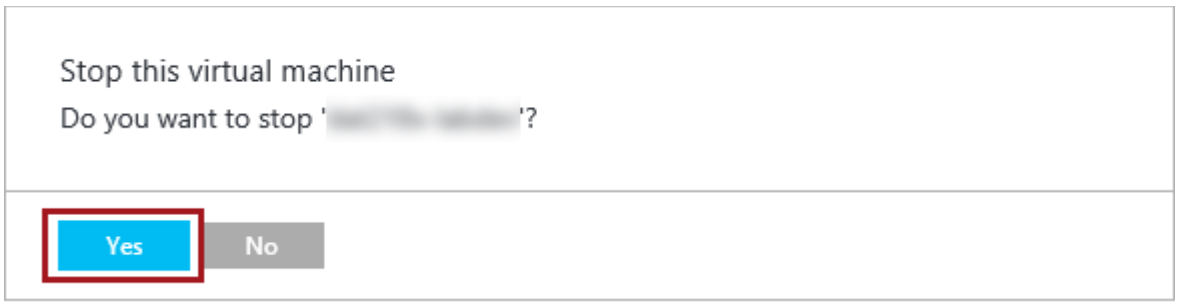


In this state, however, the VM is still billable.

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

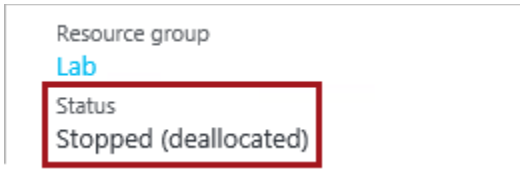
   Deallocation will take some minutes to complete, and also extends the time required to restart the VM. Consider deallocating the VM if you want to reduce costs, or if you choose to complete the next lab after an extended period.

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**.