AWS Relational Database Service (RDS): Lab 10
Creating an Amazon RDS Database Instance

Time: 2022/5/20 (Friday) 18:30-20:30
Place: 電資406室, 國立臺北大學 (NTPU)

https://meet.google.com/efw-mxft-jav

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https://web.ntpu.edu.tw/~myday

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Publications Co-Chairs, IEEE/ACM International Conference on Advances in Social Networks Analysis and Mining (ASONAM 2013- )

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Outline

• AWS RDS: Lab 10
  Creating an Amazon RDS Database Instance
  • AWS Academy Introduction to Cloud: Semester 1
  • Module 10: Databases
  • Lab 10 - RDS
    • Module 10 Lab: Creating an Amazon RDS Database Instance
AWS Products and Services

Applications

Application Integration
AR & VR
AWS Cost Management
Blockchain

Business Applications
Compute
Customer Engagement
Database
Developer Tools

End User Computing
Game Tech
Internet of Things
Machine Learning
Management & Governance

Media Services
Migration & Transfer
Mobile
Networking & Content Delivery
Quantum Technologies

Robotics
Satellite
Security, Identity & Compliance
Storage

Source: https://aws.amazon.com/
## AWS Database

<table>
<thead>
<tr>
<th>Service</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Amazon Aurora</td>
<td>High Performance Managed Relational Database</td>
</tr>
<tr>
<td>Amazon ElastiCache</td>
<td>In-memory Caching System</td>
</tr>
<tr>
<td>Amazon Quantum Ledger Database (QLDB)</td>
<td>Fully managed ledger database</td>
</tr>
<tr>
<td>Amazon Redshift</td>
<td>Fast, Simple, Cost-effective Data Warehousing</td>
</tr>
<tr>
<td>Amazon DynamoDB</td>
<td>Managed NoSQL Database</td>
</tr>
<tr>
<td>Amazon Managed Apache Cassandra Service</td>
<td>Managed Cassandra-compatible database</td>
</tr>
<tr>
<td>Amazon RDS</td>
<td>Managed Relational Database Service for MySQL, PostgreSQL, Oracle, SQL Server, and MariaDB</td>
</tr>
<tr>
<td>Amazon DocumentDB (with MongoDB compatibility)</td>
<td>Fully managed document database</td>
</tr>
<tr>
<td>Amazon Neptune</td>
<td>Fully Managed Graph Database Service</td>
</tr>
<tr>
<td>Amazon RDS on VMware</td>
<td>Automate on-premises database management</td>
</tr>
<tr>
<td>AWS Database Migration Service</td>
<td>Migrate Databases with Minimal Downtime</td>
</tr>
</tbody>
</table>

Source: [https://aws.amazon.com/](https://aws.amazon.com/)
AWS RDS: Lab 10
Creating an Amazon RDS Database Instance
AWS Academy Introduction to Cloud: Semester 1 [18745] is an exploration of cloud computing. In this course, students explore cloud computing services, applications, and use cases. Students dive into cloud computing best practices and learn how cloud computing helps users develop a global infrastructure to support use cases at scale while also developing and inventing innovative technologies.

This course provides students with classroom instruction that introduces cloud computing skills and accelerates students toward the next steps in their educational journey. The content of this course is aligned to the K–12 Computer Science Framework Practices including computational thinking. The seven core practices of computer science describe the behaviors and ways of thinking that computationally
Module 10: Databases

- **Student Guide**

Lab 10 - RDS

- **Module 10 Knowledge Check**
  - 100 pts | Score at least 80.0

Module 11 - Load Balancers and Caching

- **Student Guide**

Lab 11 - Load Balancing

- **Module 11 Knowledge Check**
  - 100 pts | Score at least 80.0

Module 12 - Elastic Beanstalk and CloudFormation

- **Complete All Items**
Amazon Databases

AWS Cloud Databases
Modernize your data infrastructure with fully managed, purpose-built databases

Choose the right purpose-built engine

Build use case-driven, highly scalable, distributed applications suited to your specific needs. AWS offers 15+ purpose-built engines to support diverse data models, including relational, key-value, document, in-memory, graph, time series, wide column, and ledger databases.

Achieve performance at scale

Start small and scale as your applications grow with relational databases that are 3-5X faster than popular alternatives, or non-relational databases that give you microsecond to sub-millisecond latency. Match your

Run fully managed databases

Free your teams from time-consuming database tasks like server provisioning, patching, and backups. AWS fully managed database services provide continuous monitoring, self-healing storage, and automated scaling to help you focus on application development.

Rely on high availability and security

Support multi-region, multi-primary replication, and provide full data oversight with multiple levels of security, including network isolation and end-to-end encryption. AWS databases deliver the high availability, reliability, and

https://aws.amazon.com/products/databases/
# Amazon Databases

## Database services

<table>
<thead>
<tr>
<th>Database type</th>
<th>Use cases</th>
<th>AWS service</th>
</tr>
</thead>
<tbody>
<tr>
<td>Relational</td>
<td>Traditional applications, enterprise resource planning (ERP), customer relationship management (CRM), ecommerce</td>
<td><img src="https://aws.amazon.com/products/databases/logo-amazon-aurora" alt="Amazon Aurora" />, <img src="https://aws.amazon.com/products/databases/logo-amazon-rds" alt="Amazon RDS" />, <img src="https://aws.amazon.com/products/databases/logo-amazon-redshift" alt="Amazon Redshift" /></td>
</tr>
<tr>
<td>Key-value</td>
<td>High-traffic web applications, ecommerce systems, gaming applications</td>
<td><img src="https://aws.amazon.com/products/databases/logo-amazon-dynamodb" alt="Amazon DynamoDB" /></td>
</tr>
<tr>
<td>In-memory</td>
<td>Caching, session management, gaming leaderboards, geospatial applications</td>
<td>![Amazon ElastiCache](<a href="https://aws.amazon.com/products/databases/logo-amazon-">https://aws.amazon.com/products/databases/logo-amazon-</a> elasticache), <img src="https://aws.amazon.com/products/databases/logo-amazon-memorydb-redis" alt="Amazon MemoryDB for Redis" /></td>
</tr>
<tr>
<td>Document</td>
<td>Content management, catalogs, user profiles</td>
<td><img src="https://aws.amazon.com/products/databases/logo-amazon-documentdb-mongodb" alt="Amazon DocumentDB (with MongoDB compatibility)" /></td>
</tr>
<tr>
<td>Wide column</td>
<td>High-scale industrial apps for equipment maintenance, fleet management, and route optimization</td>
<td><img src="https://aws.amazon.com/products/databases/logo-amazon-keyspaces" alt="Amazon Keyspaces" /></td>
</tr>
<tr>
<td>Graph</td>
<td>Fraud detection, social networking, recommendation engines</td>
<td><img src="https://aws.amazon.com/products/databases/logo-amazon-neptune" alt="Amazon Neptune" /></td>
</tr>
<tr>
<td>Time series</td>
<td>Internet of Things (IoT) applications, DevOps, industrial telemetry</td>
<td><img src="https://aws.amazon.com/products/databases/logo-amazon-timestream" alt="Amazon Timestream" /></td>
</tr>
<tr>
<td>Ledger</td>
<td>Systems of record, supply chain, registrations, banking transactions</td>
<td><img src="https://aws.amazon.com/products/databases/logo-amazon-ledger" alt="Amazon Ledger Database Services (QLDB)" /></td>
</tr>
</tbody>
</table>

Amazon Relational Database Service (RDS)

Set up, operate, and scale a relational database in the cloud with just a few clicks.

Remove inefficient and time-consuming database administrative tasks without needing to provision infrastructure or maintain software.

Deploy and scale the relational database engines of your choice in the cloud or on-premises.

Achieve high availability with Amazon RDS Multi-AZ deployments.

Benefit from over a decade of proven operational expertise, security best practices, and innovation in databases born in the cloud.

https://aws.amazon.com/rds/
Amazon Relational Database Service (RDS)

Connect your app to any of the 7 Amazon RDS engines

Amazon Relational Database Service
Set up, operate, and scale a relational database in the cloud with just a few clicks

Amazon RDS managed features
- Security and compliance
- Performance and scalability
- Automated patching and upgrades
- Data durability and redundancy
- Monitoring and alerting
- Backup and recovery

Focus on innovation
- Migrate without rearchitecting apps
- Less time managing databases
- Improve database and infrastructure efficiency
- Decrease capital and operational expenses

https://aws.amazon.com/rds/
Module 10: Databases

• In this module, you will learn about the Amazon Relational Database Service (Amazon RDS), Amazon DynamoDB, and data warehousing with Amazon Redshift.

• You will also compare relational and nonrelational databases and online transaction processing (OLTP) and online analytic processing (OLAP).

Source: AWS Academy Introduction to Cloud: Semester 1, https://awsacademy.instructure.com/courses/18745
Module 10: Databases
Module description

• In this module, you will recommend a relational or nonrelational database depending on a given scenario.
• You will create an RDS DB instance.
• You will also learn about and discuss appropriate usage of relational and nonrelational database systems.

Source: AWS Academy Introduction to Cloud: Semester 1, https://awsacademy.instructure.com/courses/18745
OLTP and OLAP

• Many different types of databases are available.

• To decide which type of database you need, it is important to know how the data will be processed.

• There are two types of data processing: online transaction processing (OLTP) and online analytic processing (OLAP).

Source: AWS Academy Introduction to Cloud: Semester 1, https://awsacademy.instructure.com/courses/18745
AWS database services

• Amazon RDS is the classic relational database that uses SQL, Oracle, Aurora, or other similar database systems.
  • Think of this as a gradebook in which each student is a row and all students are attached to the same number of assignments (columns).
  • Businesses can use code to search for specific data based on the information in the rows and columns.
  • Amazon RDS is useful for companies that are storing a moderate amount of data that is uniform in structure, meaning each unique ID (such as student name) is attached to the same number of data points (grades).

Source: AWS Academy Introduction to Cloud: Semester 1, https://awsacademy.instructure.com/courses/18745
Amazon Relational Database Service (Amazon RDS)

• Amazon RDS is primarily used for OLTP because it has better methods for maintaining the integrity and consistency of the database when processing data.

Source: AWS Academy Introduction to Cloud: Semester 1, https://awsacademy.instructure.com/courses/18745
DynamoDB

• **DynamoDB** is a *nonrelational database*, meaning that you can’t use traditional systems such as SQL or Aurora.

• Each item in the database is stored as a *key-value pair* or a *JavaScript Object Notation (JSON)* file.

• This means that each row can have a different number of columns.

• The entries do not all have to be matched in the same way.

• This permits flexibility in processing that works well for blogging, gaming, and advertising.

Source: AWS Academy Introduction to Cloud: Semester 1, [https://awsacademy.instructure.com/courses/18745](https://awsacademy.instructure.com/courses/18745)
Aurora

- **Aurora** is a relational database engine that is specifically made to work with the AWS Cloud.

- Aurora is up to five times faster than standard MySQL databases and three times faster than standard PostgreSQL databases.

- It is designed to provide the security, availability, and reliability of commercial databases at one-tenth the cost.

- **Aurora** is fully managed by Amazon RDS, which automates time-consuming administrative tasks such as hardware provisioning, database setup, patching, and backups.

Source: AWS Academy Introduction to Cloud: Semester 1, https://awsacademy.instructure.com/courses/18745
Amazon Redshift

• Amazon Redshift is a fast, fully managed data warehouse that makes it efficient and cost effective to analyze all your data using standard SQL and your existing BI tools.

Source: AWS Academy Introduction to Cloud: Semester 1, https://awsacademy.instructure.com/courses/18745
Module 10 Lab: Creating an Amazon RDS Database Instance

Lab overview

Follow these steps to create an Amazon Relational Database Service (Amazon RDS) database (DB) instance that maintains data used by a web application.

Duration

This lab requires approximately 20 minutes to complete.
Module 10 Lab:
Creating an Amazon RDS Database Instance

• Access the AWS Management Console
• Task 1. Set up an RDS DB instance
• Task 2. Download and install SQL Server Management Studio
• Task 3. Make your database publicly accessible
• Task 4. Update your VPC security group
• Task 5. Connect to your DB instance
• Task 6. Explore the structure of the relational database
• Lab complete

Source: AWS Academy Introduction to Cloud: Semester 1, https://awsacademy.instructure.com/courses/18745
AWS Academy Introduction to Cloud: Semester 1 [18745]

AWS AICv1Sem1EN

https://awsacademy.instructure.com/courses/18745

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## Module 10: Databases

**Student Guide**

**Lab 10 - RDS**
- Viewed

**Module 10 Knowledge Check**
- 100 pts | Score at least 80.0

## Module 11 - Load Balancers and Caching

**Student Guide**

**Lab 11 - Load Balancing**
- View

**Module 11 Knowledge Check**
- 100 pts | Score at least 80.0

## Module 12 - Elastic Beanstalk and CloudFormation

Source: AWS Academy Introduction to Cloud: Semester 1, [https://awsacademy.instructure.com/courses/18745](https://awsacademy.instructure.com/courses/18745)
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Access the AWS Management Console

1. To start the lab session, choose Start Lab in the upper-right corner of the page.
Access the AWS Management Console

1. To start the lab session, choose **Start Lab** in the upper-right corner of the page.
   
The lab session starts.
   
   A timer displays in the upper-right corner of the page and shows the time remaining in the session.

   **Tip:** To refresh the session length at any time, choose **Start Lab** again before the timer reaches 0:00.

   Before continuing, wait until the lab environment is ready. The environment is ready when the lab details appear on the right side of the page and the circle icon next to the **AWS** link in the upper-left corner turns green.

2. To return to these instructions, choose the **Readme** link in the upper-right corner.

3. To connect to the AWS Management Console, choose the **AWS** link in the upper-left corner, above the terminal window.
   
   A new browser tab opens and connects you to the AWS Management Console.
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A new browser tab opens and connects you to the AWS Management Console.
AWS Academy Introduction to Cloud: Semester 1
Module 10 Databases: Lab 10 - RDS

The new AWS Console Home will replace your existing experience soon.
Starting June 2022, the new AWS Console Home will replace your current experience. Switch now to customize your Console Home and view valuable insights. Learn more or let us know what you think.
Task 1. Set up an RDS DB instance

4. Choose the **Services** menu, locate the **Database** category, and then choose **RDS**.
5. Choose **Create database**.
6. In the **Choose a database creation method** section, choose **Easy create**.
7. In the **Configuration** section, configure:
   - For **Engine type**, choose **Microsoft SQL Server**.
   - For **DB instance size**, choose **Free tier**.
   - Check the box next to **Auto generate a password**.
8. Choose **Create database**.

Your new database displays in the list of databases. The status is **Creating**.
9. In the banner at the top of the page, choose **View credential details**.

Your login credentials display.
10. Save the credential information to a text editor to use later in this lab.
11. To close the pop-up window, choose **Close**.
Task 1. Set up an RDS DB instance

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9. In the banner at the top of the page, choose **View credential details**. Your login credentials display.
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10. Save the credential information to a text editor to use later in this lab.

11. To close the pop-up window, choose Close.
Task 2. Download and install SQL Server Management Studio

To connect to your RDS DB instance, you will need to download and install SQL Server Management Studio.

12. In a new browser tab or window, go to https://aka.ms/ssmsfullsetup.

13. Download the installation package to your computer.

14. When the download completes, open and run the installation program.

Note: If you are unable to install new software on your local machine, follow the instructions to use the Amazon Elastic Compute Cloud (Amazon EC2) instance that was launched in this lab environment.
AWS Windows Workstation Configuration with SQL Server Management Studio

If you are not allowed to install software on your local machine, you can use the Windows workstation that has been deployed to your lab environment.

Before using this guide, follow the assignment instructions under Accessing the AWS Management Console.

Steps:

- Locate the IP address for your workstation
- Use Remote Desktop to connect to your workstation
- Configure the workstation browser to allow downloads
- Install the required software on your workstation
- Identify your workstation’s Public IP address

Locate the IP address

1. Return to the window you used to start the lab.
2. At the top of the page, choose the AWS Details dropdown menu.
3. In the pop-up window, locate WindowsWorkstation.
4. Save the IP address for the workstation.

Note: You will use this IP address in the lab when configuring your Security Group Rule.
AWS Windows Workstation Configuration with SQL Server Management Studio

If you are not allowed to install software on your local machine, you can use the Windows workstation that has been deployed to your lab environment.

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3. In the pop-up window, locate WindowsWorkstation.
4. Save the IP address for the workstation.

Note: You will use this IP address in the lab when configuring your Security Group Rule.
AWS Windows Workstation Configuration with SQL Server Management Studio (SSMS)

If you are not allowed to install software on your local machine, you can use the Windows workstation that has been deployed to your lab environment.

Before using this guide, follow the assignment instructions under **Accessing the AWS Management Console**.

**Steps:**

- Locate the IP address for your workstation
- Use Remote Desktop to connect to your workstation
- Configure the workstation browser to allow downloads
- Install the required software on your workstation
- Identify your workstation's Public IP address
AWS Windows Workstation Configuration with SQL Server Management Studio (SSMS)

- Step 1. Locate the IP address
- Step 2. Connect to the workstation
- Step 3. Configure the browser
- Step 4. Download SQL Server Management Studio
- Step 5. Install the software
- Step 6. Return to the instructions for the lab assignment.
Locate the IP address

1. Return to the window you used to start the lab.
2. At the top of the page, choose the AWS Details dropdown menu.
3. In the pop-up window, locate **WindowsWorkstation**.
4. Save the IP address for the workstation.

**Note:** You will use this IP address in the lab when configuring your Security Group Rule.
Access the AWS Management Console

1. To start the lab session, choose **Start Lab** in the upper-right corner of the page.

   - The lab session starts.
   - A timer displays in the upper-right corner.

   **Tip:** To refresh the session length, press **0:00**.

Before continuing, wait until the lab environment details appear on the right side of the window, and the lower-right corner turns green.

2. To return to these instructions, choose **Stop Lab**.

3. To connect to the AWS Management Console, choose the **AWS link** in the upper-left corner, above the terminal window.

A new browser tab opens and connects you to the AWS Management Console.

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**Locate the IP address**

1. Return to the window you used to start the lab.

2. At the top of the page, choose the AWS Details dropdown menu.
3. In the pop-up window, locate **WindowsWorkstation**.

4. Save the IP address for the workstation.

**Note:** You will use this IP address in the lab when configuring your Security Group Rule.
**Connect to the workstation**
Depending on your Operating System, you will start one of the following applications:

<table>
<thead>
<tr>
<th>Operating System</th>
<th>Application</th>
</tr>
</thead>
<tbody>
<tr>
<td>Windows</td>
<td>Remote Desktop Connection</td>
</tr>
<tr>
<td>Chrome</td>
<td>Chrome Remote Desktop</td>
</tr>
<tr>
<td>Mac</td>
<td>Microsoft Remote Desktop</td>
</tr>
</tbody>
</table>

Source: AWS Academy Introduction to Cloud: Semester 1, [https://awsacademy.instructure.com/courses/18745](https://awsacademy.instructure.com/courses/18745)
5. Start the remote desktop application.
6. Use the plus symbol to add a new connection.
   **Note:** Do not choose the Workspace option.
7. When prompted, enter the **WindowsWorkstation** IP address, and choose **Add**.
8. Doubleclick on the connection you just created.
9. When prompted, enter the following values:
   - **Username:** Administrator
   - **Password:** Welcome1
10. Choose **Continue**.
5. Start the remote desktop application.
6. Use the plus symbol to add a new connection.

**Note:** Do not choose the Workspace option.
7. When prompted, enter the **WindowsWorkstation** IP address, and choose **Add**.

<table>
<thead>
<tr>
<th>Description</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>AWSAccountId</td>
<td>547970237064</td>
</tr>
<tr>
<td>WindowsWorkstation</td>
<td>54.196.8.114</td>
</tr>
<tr>
<td>Region</td>
<td>us-east-1</td>
</tr>
</tbody>
</table>
8. Doubleclick on the connection you just created.
9. When prompted, enter the following values:

- **Username:** Administrator
- **Password:** Welcome1

10. Choose **Continue**.
You are connecting to the RDP host "54.196.8.114". The certificate couldn't be verified back to a root certificate. Your connection may not be secure. Do you want to continue?
Configure the browser

11. From the task bar at the bottom of the screen, open Internet Explorer (ie).
12. In the Setup Internet Explorer pop-up window, choose OK.
13. In the top right corner of the ie window, choose the small gear-shaped icon.
14. From the drop down menu, select Internet Options.
15. Select the Security tab.
16. In the box labeled "Select a zone to view or change security settings", select Trusted Sites.
17. Choose the Sites button.
18. In the text box labeled, "Add this website to the zone", enter https://*.microsoft.com.
20. In the same text box, enter https://*.azure.com.
22. Choose Close
23. Choose Ok.
11. From the task bar at the bottom of the screen, open **Internet Explorer** (ie).
12. In the **Setup Internet Explorer** pop-up window, choose **OK**.
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15. Select the **Security** tab.
16. In the box labeled "Select a zone to view or change security settings", select **Trusted Sites**.
17. Choose the **Sites** button.
18. In the text box labeled, "Add this website to the zone", enter https://*.microsoft.com.

20. In the same text box, enter https://*.azure.com.
22. Choose Close

23. Choose Ok.
Download SQL Server Management Studio

24. In the ie window, enter the following URL: https://aka.ms/ssmsfullsetup and press enter.

25. If you are prompted with pop-up windows, choose accept and close the windows.

26. You will see a warning at the bottom of the browser window similar to - This type of file could harm your computer. Choose Save to download the file.
Download SQL Server Management Studio

24. In the ie window, enter the following URL: https://aka.ms/ssmsfullsetup and press enter.
25. If you are prompted with pop-up windows, choose accept and close the windows.

26. You will see a warning at the bottom of the browser window similar to - *This type of file could harm your computer*. Choose **Save** to download the file.
26. You will see a warning at the bottom of the browser window similar to - *This type of file could harm your computer*. Choose **Save** to download the file.
Install the software

27. Once you receive the message confirming that the download has completed, choose the **Run** button.

28. You will be prompted to **Click "install" to begin.** Choose the **Install** button.

29. Once the installation has completed, choose **Close**.
Install the software

27. Once you receive the message confirming that the download has completed, choose the **Run** button.
28. You will be prompted to Click "install" to begin. Choose the Install button.
29. Once the installation has completed, choose **Close**.
Return to the instructions for the lab assignment.

When you are instructed to perform tasks on your local machine, you can now use the AWS workstation instead.
AWS Windows Workstation Configuration with SQL Server Management Studio (SSMS)

- Step 1. Locate the IP address
- Step 2. Connect to the workstation
- Step 3. Configure the browser
- Step 4. Download SQL Server Management Studio
- Step 5. Install the software
- Step 6. Return to the instructions for the lab assignment.
**Task 3. Make your database publicly accessible**

15. In the Amazon RDS console, choose the name of the SQL Server database that you created.

   In the **Connectivity & security** section, for **Security**, notice that **Public accessibility** is currently set to **No**.

16. To change this setting, choose **Modify** at the top of the page.

17. Scroll down to the **Connectivity** section, and expand **Additional configuration**.

18. For **Public access**, choose **Publicly accessible**.

19. Scroll to the bottom of the page, and choose **Continue**.

20. In the **Scheduling of modifications** section, for **When to apply modifications**, choose **Apply immediately**.

21. Choose **Modify DB Instance**.

   After about 30 seconds, the **Status** for the database changes to **Modifying**. Before continuing, wait until the status changes to **Available**.

**Tip:** You might need to refresh the database information. To refresh, choose the refresh icon.
AWS Academy Introduction to Cloud: Semester 1
Module 10 Databases: Lab 10 - RDS
Task 3. Make your database publicly accessible

15. In the Amazon RDS console, choose the name of the SQL Server database that you created. In the **Connectivity & security** section, for **Security**, notice that **Public accessibility** is currently set to **No**.
Task 3. Make your database publicly accessible
15. In the Amazon RDS console, choose the name of the SQL Server database that you created.
   In the Connectivity & security section, for Security, notice that Public accessibility is currently set to No.
16. To change this setting, choose **Modify** at the top of the page.
17. Scroll down to the **Connectivity** section, and expand **Additional configuration**.
17. Scroll down to the **Connectivity** section, and expand **Additional configuration**.
18. For **Public access**, choose **Publicly accessible**.
19. Scroll to the bottom of the page, and choose **Continue**.
20. In the **Scheduling of modifications** section, for **When to apply modifications**, choose **Apply immediately**.

21. Choose **Modify DB Instance**.

After about 30 seconds, the **Status** for the database changes to **Modifying**. Before continuing, wait until the status changes to **Available**.

**Tip:** You might need to refresh the database information. To refresh, choose the refresh icon.
After about 30 seconds, the **Status** for the database changes to **Modifying**. Before continuing, wait until the status changes to **Available**.

**Tip:** You might need to refresh the database information. To refresh, choose the refresh icon.
Task 4. Update your VPC security group

By default, the virtual private cloud (VPC) default security group does not permit inbound SQL Server traffic from external sources. In this task, you will turn on inbound SQL Server connections from your IP address.

Note: If you are using the EC2 instance, you will use the WindowsWorkstation IP address that you saved earlier. In this case, skip the next few steps to get your IP address.

First, get your IP address.

22. In a new browser tab or window, go to https://whatismyipaddress.com/.

23. Copy the IPv4 value to a text editor to use later in this lab.

Now, modify the security group to permit inbound SQL Server connections from your computer or the WindowsWorkstation instance.
**Task 4. Update your VPC security group**

24. Return to the browser tab that is open to the AWS console. Ensure that you are on the RDS > Databases page.

25. Choose the name of the database you created.

26. In the **Connectivity & security** section, under **VPC security groups**, choose the name of the security group.

   The security group name looks similar to the following: **default (sg-a12345b6)**

27. On the **Security Groups** page, choose the **Inbound rules** tab.

28. Choose **Edit inbound rules**, and choose **Add rule**.

29. For **Type**, choose **MSSQL**.

30. For **Source**, choose **Custom**, and enter your IP address or the IP address of the WindowsWorkstation instance in the text box.

31. Add /32 at the end of the IP address. The full text should look similar to the following: **123.12.123.23/32**

32. Choose **Save rules**.
22. In a new browser tab or window, go to https://whatismyipaddress.com/.

23. Copy the IPv4 value to a text editor to use later in this lab.
24. Return to the browser tab that is open to the AWS console.
Ensure that you are on the **RDS > Databases** page.
25. Choose the name of the database you created.
26. In the **Connectivity & security** section, under **VPC security groups**, choose the name of the security group. The security group name looks similar to the following: **default (sg-a12345b6)**
27. On the **Security Groups** page, choose the **Inbound rules** tab.
27. On the **Security Groups** page, choose the **Inbound rules** tab.

28. Choose **Edit inbound rules**, and choose **Add rule**.
28. Choose **Edit inbound rules**, and choose **Add rule**.
29. For **Type**, choose **MSSQL**.
30. For **Source**, choose **Custom**, and enter your IP address or the IP address of the WindowsWorkstation instance in the text box.

31. Add /32 at the end of the IP address. The full text should look similar to the following: `123.12.123.23/32`

32. Choose **Save rules**.
Inbound security group rules successfully modified on security group (sg-0f4f1f84621b3ea35 | default)

**Security Groups (1/3)**

- **Inbound rules (2)**
  - Name: sgr-046940b821793d...
    - IP version: Any
    - Type: All
    - Protocol: All
  - Name: sgr-09eb80015ba8974...
    - IP version: IPv4
    - Type: MSSQL
    - Protocol: TCP

Source: AWS Academy Introduction to Cloud: Semester 1, [https://awsacademy.instructure.com/courses/18745](https://awsacademy.instructure.com/courses/18745)
Task 5. Connect to your DB instance
First, you will need to find the Domain Name System (DNS) endpoint and port number for your DB instance.
33. Return to the RDS > Databases page.
34. Choose the name of the database you created.
35. On the Connectivity & security tab, copy the Endpoint value to a text editor.
   The endpoint looks similar to the following: `sample-instance.abc2defghijef.us-west-2.rds.amazonaws.com`
36. Notice the Port number.
   The default port for SQL Server is 1433.
   If your port number is different, copy that value to your text editor.
37. Open the Microsoft SQL Server Management Studio application.
   **Note:** If you are using the EC2 instance, start the Microsoft SQL Server Management Studio application in your remote desktop window.
   The Connect to Server dialog box appears.
38. For Server type, choose Database Engine.
Task 5. Connect to your DB instance
39. For **Server name**, enter the database endpoint value that you copied.
40. At the end of the endpoint value, add a comma (,) and the port number (the default port number is 1433).
   For example, your server name should look similar to the following: `database.abc2defghije.us-west-2.rds.amazonaws.com,1433`
41. For **Authentication**, choose **SQL Server Authentication**.
42. For **Login**, enter the username for your DB instance.
   This is also known as the administrator username. The default is `admin`.
43. For **Password**, enter the password that you copied for your DB instance.
   This is also known as the administrator user password.
44. Choose **Connect**.
   After a few moments, you are connected to your database.
   If the connection does not succeed, repeat Task 4 to update the default security group.
   When you add the inbound rule, for **Source**, choose **Anywhere** instead of **My IP**.
   *(Note: Only select **Anywhere** for the purpose of this lab. This selection presents a security risk in the real world.)*
AWS Academy Introduction to Cloud: Semester 1
Module 10 Databases: Lab 10 - RDS

AWSAccountId 547970237064
WindowsWorkstation 54.196.8.114
Region us-east-1
Task 5. Connect to your DB instance

First, you will need to find the Domain Name System (DNS) endpoint and port number for your DB instance.

33. Return to the RDS > Databases page.
34. Choose the name of the database you created.
35. On the Connectivity & security tab, copy the Endpoint value to a text editor. The endpoint looks similar to the following:
   `sample-instance.abc2defghije.us-west-2.rds.amazonaws.com`
36. Notice the Port number.
   The default port for SQL Server is 1433.
   If your port number is different, copy that value to your text editor.
37. Open the Microsoft SQL Server Management Studio application.

**Note:** If you are using the EC2 instance, start the Microsoft SQL Server Management Studio application in your remote desktop window. The **Connect to Server** dialog box appears.
38. For **Server type**, choose **Database Engine**.

39. For **Server name**, enter the database endpoint value that you copied.

40. At the end of the endpoint value, add a comma (,) and the port number (the default port number is **1433**).

   For example, your server name should look similar to the following: `database.abc2defghije.us-west-2.rds.amazonaws.com,1433`

   `database-1.csstehym9d6x.us-east-1.rds.amazonaws.com,1433`
41. For Authentication, choose SQL Server Authentication.
42. For **Login**, enter the username for your DB instance. This is also known as the administrator username. The default is **admin**.

43. For **Password**, enter the password that you copied for your DB instance. This is also known as the administrator user password.

**Master username**: admin  
**Master password**: 9Uht2Psl0LT6fclzI3
44. Choose **Connect**.
After a few moments, you are connected to your database.
If the connection does not succeed, repeat Task 4 to update the default security group. When you add the inbound rule, for **Source**, choose **Anywhere** instead of **My IP**. (**Note:** Only select **Anywhere** for the purpose of this lab. This selection presents a security risk in the real world.)
Task 6. Explore the structure of the relational database

Great work! You can explore the structure of the relational database by expanding the areas in the **Object Explorer** pane.

You will see that the SQL Server has built-in system databases such as model, msdb, and tempdb. You can even create a new database if you would like to experiment more.
Task 6. Explore the structure of the relational database

Great work! You can explore the structure of the relational database by expanding the areas in the Object Explorer pane.

You will see that the SQL Server has built-in system databases such as model, msdb, and tempdb. You can even create a new database if you would like to experiment more.
Lab complete

Congratulations! You have completed the lab.

45. Log out of the AWS Management Console.
   In the upper-right corner of the page, choose your user name. Your user name begins with *voclabs/user*.
   Choose **Sign Out**.

46. Choose **End Lab** at the top of this page, and then select **Yes** to confirm that you want to end the lab.
You will see that the SQL Server has built-in system databases such as model, msdb, and tempdb. You can even create a new database if you would like to experiment more.

**Lab complete**

Congratulations! You have completed the lab.

45. Log out of the AWS Management Console.
   - In the upper-right corner of the page, choose your user name. Your user name begins with `voclabs/user`.
   - Choose **Sign Out**.

46. Choose **End Lab** at the top of this page, and then select **Yes** to confirm that you want to end the lab.
Module 10 Lab: Creating an Amazon RDS Database Instance

• Access the AWS Management Console
• Task 1. **Set up an RDS DB instance**
• Task 2. Download and install **SQL Server Management Studio**
• Task 3. Make your database **publicly accessible**
• Task 4. Update your **VPC security group**
• Task 5. **Connect to your DB instance**
• Task 6. **Explore the structure of the relational database**
• Lab complete

Source: AWS Academy Introduction to Cloud: Semester 1, [https://awsacademy.instructure.com/courses/18745](https://awsacademy.instructure.com/courses/18745)
Summary

- AWS RDS: Lab 10
  Creating an Amazon RDS Database Instance
  - AWS Academy Introduction to Cloud: Semester 1
  - Module 10: Databases
  - Lab 10 - RDS
    - Module 10 Lab: Creating an Amazon RDS Database Instance
References

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• AWS Certified Solutions Architect – Associate
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• Architecting on AWS
  • https://aws.amazon.com/training/course-descriptions/architect/
AWS Relational Database Service (RDS): Lab 10
Creating an Amazon RDS Database Instance

Time: 2022/5/20 (Friday) 18:30-20:30
Place: 電資406室, 國立臺北大學 (NTPU)
https://meet.google.com/efw-mxft-jav

Min-Yuh Day, Ph.D, Associate Professor
Institute of Information Management, National Taipei University
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2022-05-20