

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>



戴敏育 副教授

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戴敏育 博士

(Min-Yuh Day, Ph.D.)



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

Program Co-Chair, IEEE International Workshop on Empirical Methods for Recognizing Inference in TExt (IEEE EM-RITE 2012-)

Publications Chair, The IEEE International Conference on Information Reuse and Integration for Data Science (IEEE IRI)



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National Taipei University



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



Analytics



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



AWS Database



Database

Amazon Aurora

High Performance Managed Relational Database

Amazon DynamoDB

Managed NoSQL Database

Amazon DocumentDB (with MongoDB compatibility)

Fully managed document database

Amazon ElastiCache

In-memory Caching System

Amazon Neptune

Fully Managed Graph Database Service

Amazon Quantum Ledger Database (QLDB)

Fully managed ledger database

Amazon Managed Apache Cassandra Service

Managed Cassandra-compatible database

Amazon RDS on VMware

Automate on-premises database management

Amazon Redshift

Fast, Simple, Cost-effective Data Warehousing

Amazon RDS

Managed Relational Database Service for MySQL, PostgreSQL, Oracle, SQL Server, and MariaDB

Amazon Timestream

Fully managed time series database

AWS Database Migration Service

Migrate Databases with Minimal Downtime



AWS RDS: Lab 10

Creating an Amazon RDS Database Instance

AWS Academy Introduction to Cloud: Semester 1 [18745]

AWS AICv1Sem1EN

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

The screenshot shows the AWS Academy course page for "AICv1Sem1EN-18745". The left sidebar has a dark theme with icons for Account, Dashboard, Courses, Calendar, Inbox, History, and Help. The main content area shows the course title "AWS Academy Introduction to Cloud: Semester 1 [18745]" highlighted with a red border. Below it is a decorative graphic of a cloud with a circuit board pattern underneath. To the right are three buttons: "View Course Stream", "View Course Calendar", and "View Course Notifications". The "To Do" section indicates "Nothing for now". The "Recent Feedback" section also indicates "Nothing for now".

AWS Academy Introduction to Cloud: Semester 1 [18745]



AWS Academy Introduction to Cloud: Semester 1 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

AWS Academy Introduction to Cloud: Semester 1 [18745]

Module 10 Databases: Lab 10 - RDS

The screenshot shows the AWS Academy course interface for the Introduction to Cloud: Semester 1 [18745]. The main content area displays the "Module 10 Databases" section, which includes a "Student Guide" (Viewed), "Lab 10 - RDS" (Viewed), and a "Module 10 Knowledge Check" (100 pts | Score at least 80.0). A red box highlights this section. Below it are two more sections: "Module 11 - Load Balancers and Caching" and "Module 12 - Elastic Beanstalk and CloudFormation", each with their own "Student Guide", "Lab", and "Knowledge Check". A sidebar on the left provides navigation links for Home, Modules, Discussions, Grades, Courses, Calendar, Inbox, History, and Help.

- 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**
 - Student Guide**
 - Lab 12 - Elastic Beanstalk and CloudFormation**
View
 - Module 12 Knowledge Check**
100 pts | Score at least 80.0

Amazon Databases

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Amazon Aurora Serverless v2 is Now Available | Scale instantly to hundreds of thousands of transactions in seconds »

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

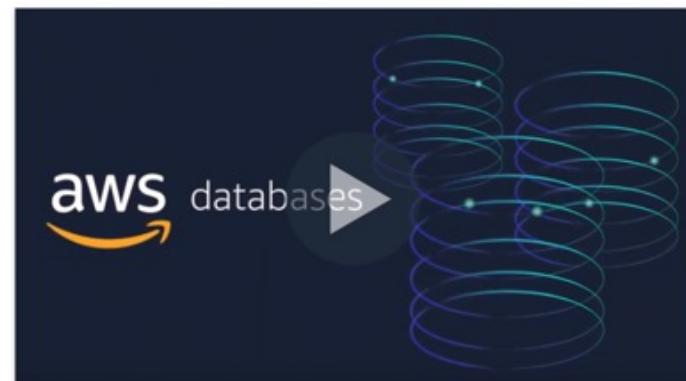
Start small and scale as your applications grow with relational databases that are 3-5X faster than popular alternatives, or non-relational databases that give you microsecond to sub-millisecond latency. Match your

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



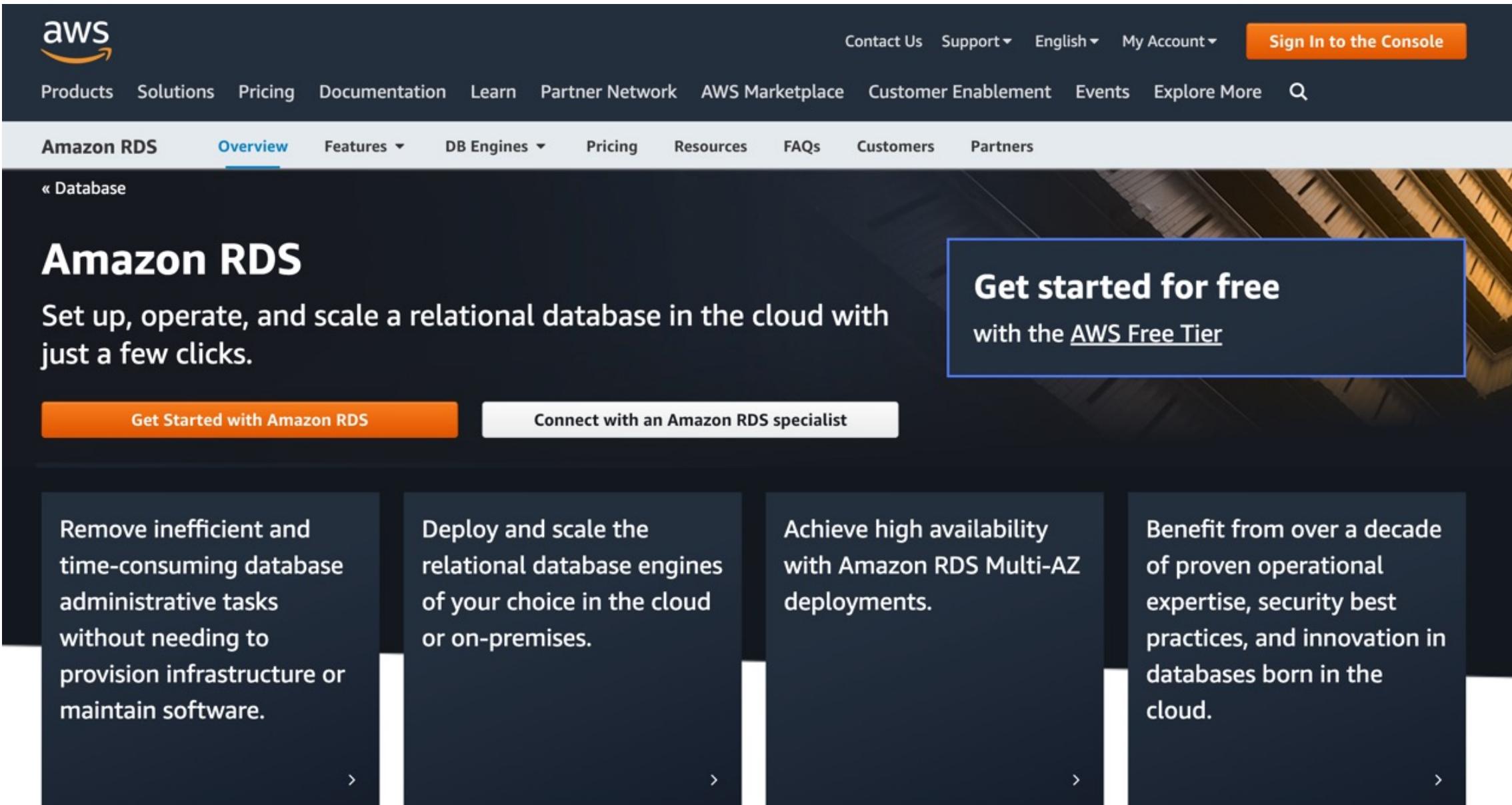
AWS Databases: Break Free to Save, Grow, and Innovate Faster (2:02)

Amazon Databases

Database services

Database type	Use cases	AWS service
Relational	Traditional applications, enterprise resource planning (ERP), customer relationship management (CRM), ecommerce	 Amazon Aurora  Amazon RDS  Amazon Redshift
Key-value	High-traffic web applications, ecommerce systems, gaming applications	 Amazon DynamoDB
In-memory	Caching, session management, gaming leaderboards, geospatial applications	 Amazon ElastiCache  Amazon MemoryDB for Redis
Document	Content management, catalogs, user profiles	 Amazon DocumentDB (with MongoDB compatibility)
Wide column	High-scale industrial apps for equipment maintenance, fleet management, and route optimization	 * Amazon Keyspaces
Graph	Fraud detection, social networking, recommendation engines	 Amazon Neptune
Time series	Internet of Things (IoT) applications, DevOps, industrial telemetry	 Amazon Timestream
Ledger	Systems of record, supply chain, registrations, banking transactions	 Amazon Ledger Database Services (QLDB)

Amazon Relational Database Service (RDS)



The screenshot shows the Amazon RDS Overview page. At the top, there's a navigation bar with links for Contact Us, Support, English, My Account, Sign In to the Console, Products, Solutions, Pricing, Documentation, Learn, Partner Network, AWS Marketplace, Customer Enablement, Events, Explore More, and a search icon. Below the navigation is a secondary navigation bar with links for Amazon RDS, Overview (which is underlined), Features, DB Engines, Pricing, Resources, FAQs, Customers, and Partners. A breadcrumb trail shows '« Database'. The main content area features a large heading 'Amazon RDS' and a sub-headline 'Set up, operate, and scale a relational database in the cloud with just a few clicks.' To the right, a blue call-to-action box contains the text 'Get started for free with the [AWS Free Tier](#)'. Below this are four dark blue boxes with white text: 'Get Started with Amazon RDS' (orange button), 'Connect with an Amazon RDS specialist' (white button), '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.', and '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)



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)**.

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**.

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).

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).

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.

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**.

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.

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.

AWS Academy Introduction to Cloud: Semester 1 [18745]

Module 10 Databases: Lab 10 - RDS

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

AWS Academy Introduction to Cloud: Semester 1 [18745]

AWS AICv1Sem1EN

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AWS Academy Introduction to Cloud: Semester 1 [18745]

Module 10 Databases: Lab 10 - RDS

The screenshot shows the AWS Academy course interface. On the left is a dark sidebar with icons for Home, Modules, Discussions, Grades, Courses, Calendar, Inbox, History, Help, and a back arrow. The main content area has a red border around the first section.

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**
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Module 12 - Elastic Beanstalk and CloudFormation

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AWS Academy Introduction to Cloud: Semester 1 [18745]

Module 10 Databases: Lab 10 - RDS

<https://awsacademy.instructure.com/courses/18745/modules/items/1536201>

The screenshot shows the AWS Academy interface for a lab titled "Module 10 Lab: Creating an Amazon RDS Database Instance". The page is framed by a red border.

Left Sidebar:

- aws logo
- Account
- Dashboard
- Courses (selected)
- Calendar
- Inbox
- History
- Help

Top Navigation:

- ☰ AICv1Sem1EN-... > Modules > Module 10: Dat... > Lab 10 - RDS
- ▶ Start Lab
- End Lab
- AWS Details
- Readme
- X

Content Area:

ddd_v1_w_4SV_1204855@runweb55552: [REDACTED]
EN-US -

Module 10 Lab: Creating an Amazon RDS Database Instance

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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.

Access the AWS Management

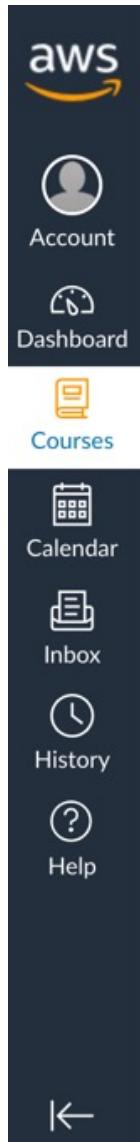
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AWS Academy Introduction to Cloud: Semester 1 [18745]

Module 10 Databases: Lab 10 - RDS

<https://awsacademy.instructure.com/courses/18745/modules/items/1536201>



AICv1Sem1EN... > Modules > Module 10: Dat... > Lab 10 - RDS

AWS ● ▶ Start Lab ■ End Lab i AWS Details i Readme ×

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

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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.

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.

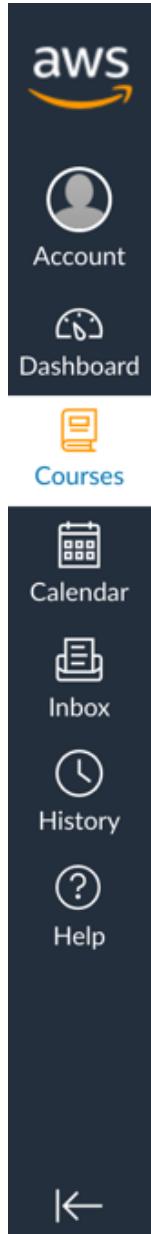
2. To return to these instructions, choose the **Readme** link in the upper-right corner.

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.

AWS Academy Introduction to Cloud: Semester 1

Module 10 Databases: Lab 10 - RDS



AICv1Sem1EN... > Modules > Module 10: Dat... > Lab 10 - RDS

AWS ●

1

▶ Start Lab

■ End Lab

ℹ AWS Details

ℹ Readme



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Access the AWS Management Console

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AWS Academy Introduction to Cloud: Semester 1

Module 10 Databases: Lab 10 - RDS

-  AWS
-  Account
-  Dashboard
-  Courses
-  Calendar
-  Inbox
-  History
-  Help



EN-US -

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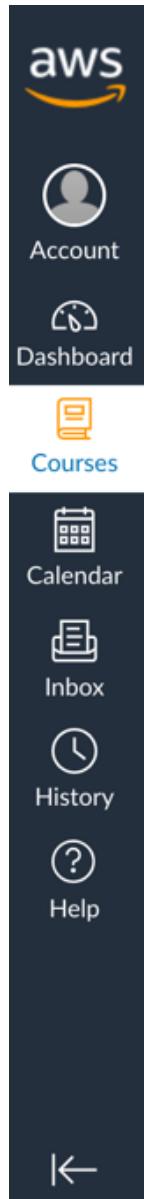
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AWS Academy Introduction to Cloud: Semester 1

Module 10 Databases: Lab 10 - RDS



AICv1Sem1EN... > Modules > Module 10: Dat... > Lab 10 - RDS

2

AWS

01:57

► Start Lab

■ End Lab

AWS Details

Readme

X

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Access the AWS Management Console

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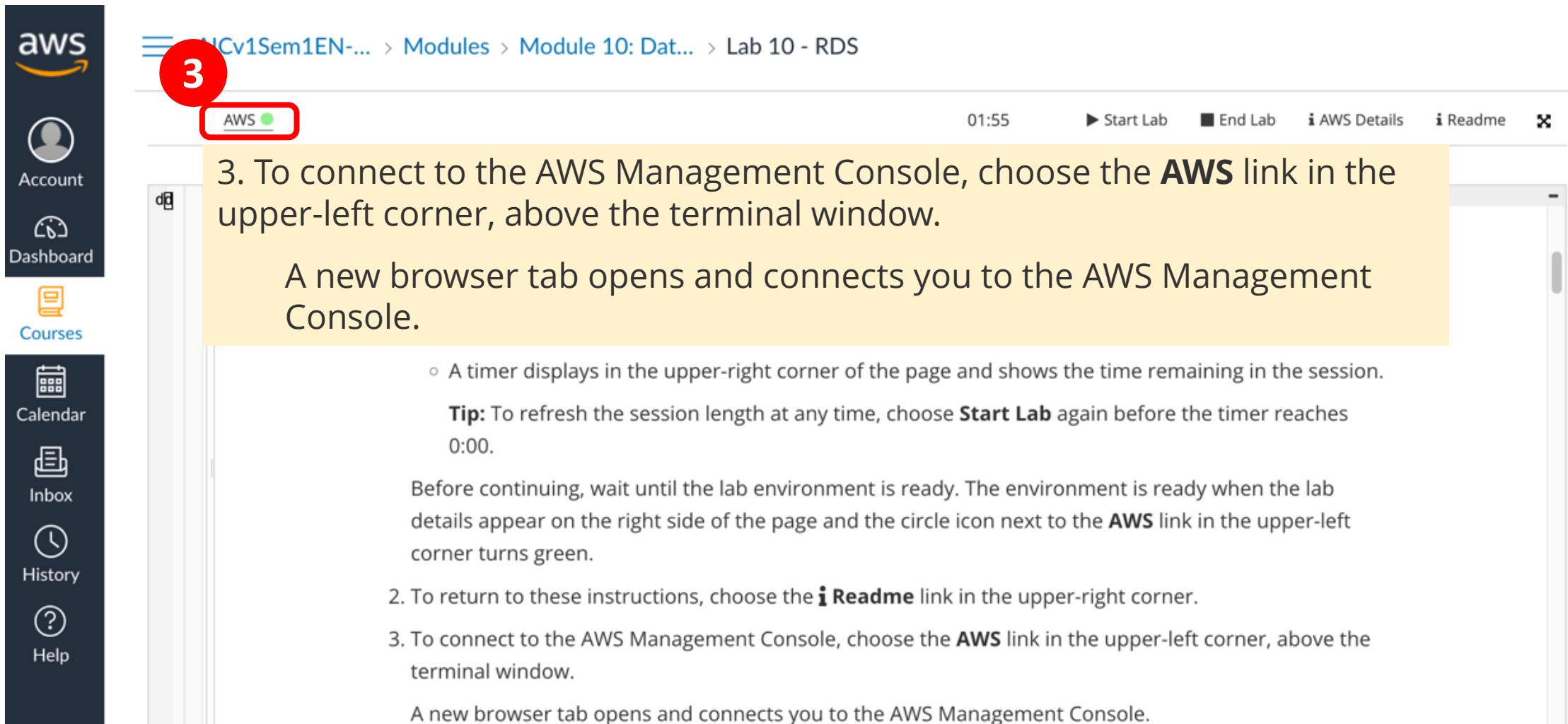
A new browser tab opens and connects you to the AWS Management Console.

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AWS Academy Introduction to Cloud: Semester 1

Module 10 Databases: Lab 10 - RDS



The screenshot shows the AWS Academy interface. On the left is a sidebar with icons for Account, Dashboard, Courses, Calendar, Inbox, History, and Help. The main area shows a navigation path: NCv1Sem1EN... > Modules > Module 10: Dat... > Lab 10 - RDS. A red circle with the number 3 is overlaid on the 'AWS' link in the upper-left corner of the main content area. The content area contains the following text:

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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AWS Academy Introduction to Cloud: Semester 1

Module 10 Databases: Lab 10 - RDS

The new AWS Console Home will replace your existing experience soon
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Region: us-east-1
Lab ID: arn:aws:cloudformation:us-east-1:547970237064:stack/c53687a865001I2152087t1w547970237064/1eaf4fc0-d7de-11ec-90bd-0e4b09deb6f5
Creation Time: 2022-05-19T18:42:34-0700

Start session at: 2022-05-19T18:42:34-0700
Remaining session time: 02:00:00(120 minutes)

Feedback Looking for language selection? Find it in the new Unified Settings [\[i\]](#)

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AWS Academy Introduction to Cloud: Semester 1

Module 10 Databases: Lab 10 - RDS

us-east-1.console.aws.amazon.com/console/home?region=us-east-1#

N. Virginia voclabs/user1323818=Min-Yuh_Day @ 3119-0255-7606

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AWS Management Console

AWS services

Recently visited services: CloudFront, EC2, S3, RDS, CloudShell

All services

Build a solution
Get started with simple wizards and automated workflows.

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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 user later in this lab.
11. To close the pop-up window, choose **Close**.

AWS Academy Introduction to Cloud: Semester 1

Module 10 Databases: Lab 10 - RDS

The screenshot shows the AWS Management Console sidebar with the 'Services' menu open. A red box highlights the 'Database' category, and a red number '4' is in a circle at the top left of the sidebar. Another red box highlights the 'RDS' service item under the Database category.

Recently visited
Favorites
All services

Analytics
Application Integration
AR & VR
AWS Cost Management
Blockchain
Business Applications
Compute
Containers
Customer Enablement

Database

Amazon DocumentDB
Fully-managed MongoDB-compatible database service

DynamoDB
Managed NoSQL Database

ElastiCache
In-Memory Cache

Amazon Keyspaces
Serverless Cassandra-compatible database

Amazon MemoryDB for Redis
Fully managed, Redis-compatible, in-memory database service

Neptune
Fast, reliable graph database built for the cloud

Amazon QLDB
Fully managed ledger database

RDS
Managed Relational Database Service

Switch now

Task 1. Set up an RDS DB instance

WS resources

4. Choose the **Services** menu, locate the **Database** category, and then choose **RDS**.

AWS Academy Introduction to Cloud: Semester 1

Module 10 Databases: Lab 10 - RDS

AWS Services Search for services, features, blogs, docs, and more [Option+S] N. Virginia voclabs/user1323818=Min-Yuh_Day @ 3119-0255-7606

Amazon RDS

- Dashboard
- Databases
- Query Editor
- Performance insights
- Snapshots
- Automated backups
- Reserved instances
- Proxies

- Subnet groups
- Parameter groups
- Option groups
- Custom engine versions

- Events
- Event subscriptions

Try the new Amazon RDS Multi-AZ deployment option for MySQL and PostgreSQL
For your Amazon RDS for MySQL and PostgreSQL workloads, improve transactional commit latencies by 2x, experience faster failover typically less than 35 seconds and, get read scalability with two readable standby DB instances by deploying the Multi-AZ DB cluster [Learn more](#)

5 [Create database](#)

Or, [Restore Multi-AZ DB Cluster from Snapshot](#)

5. Choose Create database.

Resources	
DB Instances (0/40)	Parameter groups (0)
Allocated storage (0 TB/100 TB)	Default (0)
Click here to increase DB instances limit	Custom (0/100)
DB Clusters (0/40)	Option groups (0)
Reserved instances (0/40)	Default (0)
Snapshots (0)	Custom (0/20)
Manual (0/100)	Subnet groups (0/50)
Automated (0)	Supported platforms VPC
Recent events (0)	Default network vpc-0de25d1eaefec70ec

Recommended for you

Test Your DR Strategy in Minutes
Amazon Aurora Global Database now supports planned managed failover, making disaster recovery drills a breeze. [Learn more](#)

Build RDS Operational Tasks
Watch how to enable users to perform common tasks such as snapshots or restart DB instances in Amazon RDS. [Learn more](#)

Migrate SSRS to RDS for SQL Server
Learn how you can migrate existing

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AWS Academy Introduction to Cloud: Semester 1

Module 10 Databases: Lab 10 - RDS

RDS > Create database

Create database

Choose a database creation method Info

Standard create
You set all of the configuration options, including ones for availability, security, backups, and maintenance.

Easy create
Use recommended best-practice configurations. Some configuration options can be changed after the database is created.

Configuration

Engine type Info

Amazon Aurora 

MySQL 

MariaDB 

PostgreSQL 

Oracle 

Microsoft SQL Server 

6. In the **Choose a database creation method section, choose **Easy create**.**

Feedback

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Module 10 Databases: Lab 10 - RDS

Screenshot of the AWS RDS Configuration page. A red box highlights the 'Configuration' section. A red circle with the number 7 points to the 'Microsoft SQL Server' option under 'Engine type'. Another red circle with the number 7 points to the 'Free tier' option under 'DB instance size'.

Configuration

Engine type [Info](#)

- Amazon Aurora
- MySQL
- MariaDB
- PostgreSQL
- Oracle
- Microsoft SQL Server

DB instance size

- Production
 - db.r5.xlarge
 - 4 vCPUs
 - 32 GiB RAM
 - 500 GiB
 - 3.198 USD/hour
- Dev/Test
 - db.m5.large
 - 2 vCPUs
 - 8 GiB RAM
 - 100 GiB
 - 0.993 USD/hour
- Free tier
 - db.t2.micro
 - 1 vCPUs
 - 1 GiB RAM
 - 20 GiB
 - 0.025 USD/hour

DB instance identifier
Type a name for your DB instance. The name must be unique across all DB instances owned by your AWS account in the current AWS Region.

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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**.

AWS Academy Introduction to Cloud: Semester 1

Module 10 Databases: Lab 10 - RDS

The screenshot shows the 'Create DB Instance' wizard on the AWS RDS console. Step 7 is highlighted with a red circle containing the number 7.

DB instance size:

- Production: db.r5.xlarge, 4 vCPUs, 32 GiB RAM, 500 GiB, 3.198 USD/hour
- Dev/Test: db.m5.large, 2 vCPUs, 8 GiB RAM, 100 GiB, 0.993 USD/hour
- Free tier: db.t2.micro, 1 vCPUs, 1 GiB RAM, 20 GiB, 0.025 USD/hour

DB instance identifier: database-1

Master username: admin

Auto generate a password:

Configuration:

- Engine type:** Microsoft SQL Server (highlighted with a red box)
- DB instance size:** Free tier (highlighted with a red box)
- Password generation:** Auto generate a password (highlighted with a red box)

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**.

AWS Academy Introduction to Cloud: Semester 1

Module 10 Databases: Lab 10 - RDS

S | Services | Search for services, features, blogs, docs, and more | [Option+S] | X | ? | N. Virginia | vclabs/user1323818=Min-Yuh_Day @ 3119-0255-7606

DB instance identifier
Type a name for your DB instance. The name must be unique across all DB instances owned by your AWS account in the current AWS Region.

database-1

The DB instance identifier is case-insensitive, but is stored as all lowercase (as in "mydbinstance"). Constraints: 1 to 60 alphanumeric characters or hyphens. First character must be a letter. Can't contain two consecutive hyphens. Can't end with a hyphen.

Master username [Info](#)
Type a login ID for the master user of your DB instance.

admin

1 to 16 alphanumeric characters. First character must be a letter.

Auto generate a password
Amazon RDS can generate a password for you, or you can specify your own password.

► View default settings for Easy create
Easy create sets the following configurations to their default values, some of which can be changed later. If you want to change any of these settings now, use [Standard Create](#).

ⓘ You are responsible for ensuring that you have all of the necessary rights for any third-party products or services that you use with AWS services.

8

Cancel **Create database**

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

8. Choose **Create database**. Your new database displays in the list of databases. The status is *Creating*.

AWS Academy Introduction to Cloud: Semester 1

Module 10 Databases: Lab 10 - RDS

The screenshot shows the AWS RDS 'Databases' page. On the left, a sidebar lists various options like Dashboard, Databases, Query Editor, etc. The main area shows a banner for creating a database named 'database-1'. Below the banner is a table listing the database details:

DB identifier	Role	Engine	Region & AZ
database-1	Instance	SQL Server Express Edition	us-east-1f

A red circle with the number '9' is positioned at the top right of the banner. A red box highlights the 'View credential details' button. A yellow callout box contains the following text:

9. In the banner at the top of the page, choose **View credential details**. Your login credentials display.

AWS Academy Introduction to Cloud: Semester 1

Module 10 Databases: Lab 10 - RDS

The screenshot shows the AWS Amazon RDS 'Creating database' wizard. At the top, a banner says 'Creating database database-1' with the note 'Your database might take a few minutes to launch. We have generated your database master password'. A red circle with the number '9' is overlaid on the 'View credential details' button, which is highlighted with a red border. The main window is titled 'Password for your database database-1' and contains instructions: 'This is the only time you will be able to view this password. Copy and save the password for your reference, otherwise you will need to modify the database to change it.' It shows a 'Master username' of 'admin' and a 'Master password' of '9Uhbt2PslOoLT6fcIzI3' with a 'Copy' link. Below the main window, there's a 'Restore from S3' button and a 'Create database' button. To the right, there are dropdown menus for 'Engine' (set to 'MySQL') and 'Region & AZ' (set to 'us-east-1f'). On the left, a sidebar menu lists 'Amazon RDS' and various service options like 'Dashboard', 'Databases' (which is selected), 'Query Editor', etc.

9. In the banner at the top of the page, choose **View credential details**. Your login credentials display.

AWS Academy Introduction to Cloud: Semester 1

Module 10 Databases: Lab 10 - RDS

This is the only time you will be able to view this password. Copy and save the password for your reference, otherwise you will need to modify the database to change it.

Master username
admin

Master password
9Uhbt2Psl0oLT6fcIzl3

Copy

View credential details

10

11

10. Save the credential information to a text editor to user later in this lab.

11. To close the pop-up window, choose **Close**.

Amazon RDS

Databases

Query Editor

Performance insights

Snapshots

Automated backups

Reserved instances

Proxies

Subnet groups

Parameter groups

Option groups

Custom engine version

Events

Event subscriptions

Creating database database-1

N. Virginia

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

12

13

14

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 Academy Introduction to Cloud: Semester 1

Module 10 Databases: Lab 10 - RDS

The screenshot shows a web browser window displaying a course page from AWS Academy. The left sidebar contains navigation links: Account, Dashboard, Courses (which is selected), Calendar, Inbox, History, and Help. The main content area has a title 'AWS Windows Workstation Configuration with SQL Server Management Studio'. Below the title is a paragraph about using a deployed Windows workstation. It then instructs users to follow assignment instructions under 'Accessing the AWS Management Console'. A 'Steps:' section lists five items: 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, and Identify your workstation's Public IP address. A 'Locate the IP address' section provides four steps: Return to the lab window, choose the AWS Details dropdown menu, locate WindowsWorkstation, and save the IP address. A note at the bottom states: 'Note: You will use this IP address in the lab when configuing your Security Group Rule.'

AWS Academy Introduction to Cloud: Semester 1

Module 10 Databases: Lab 10 - RDS

aws-tc-largeobjects.s3-us-west-2.amazonaws.com/CUR-TF-100-ACCAIC-1/lab-06-RDS/readme_windows_ec2.html

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 configuing your Security Group Rule.

AWS Academy Introduction to Cloud: Semester 1

Module 10 Databases: Lab 10 - RDS

https://aws-tc-largeobjects.s3-us-west-2.amazonaws.com/CUR-TF-100-ACCAIC-1/lab-06-RDS/readme_windows_ec2.html



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 (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.

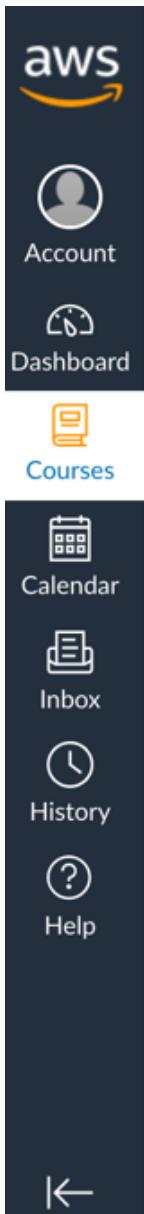
Locate the IP address

- 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.

AWS Academy Introduction to Cloud: Semester 1

Module 10 Databases: Lab 10 - RDS



AICv1Sem1EN... > Modules > Module 10: Dat... > Lab 10 - RDS

1

01:55

► Start Lab

■ End Lab

i AWS Details

i Readme



2

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, click the Start Lab button again. The timer starts at 0:00.

Before continuing, wait until the lab ends. When the lab ends, session details appear on the right side of the page. The Start Lab button in the upper-right corner turns green.
2. To return to these instructions, choose the back arrow in the top-left 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.

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.

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Next ▶

AWS Academy Introduction to Cloud: Semester 1

Module 10 Databases: Lab 10 - RDS



AICv1Sem1EN... > Modules > Module 10: Dat... > Lab 10 - RDS

AWS

01:41

► Start Lab

■ End Lab

AWS Details

Readme

X

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.

Cloud Access

AWS CLI: Show

Cloud Labs

Remaining session time: 01:40:44(101 minutes)
Session started at: 2022-05-19T18:42:34-0700
Session to end at: 2022-05-19T20:42:34-0700

Accumulated lab time: 04:19:26 (260 minutes)

ips -- public:54.196.8.114, private:10.0.1.157

SSH key Show Download PEM Download PPK

AWS SSO Download URL

AWSAccountId	547970237064
WindowsWorkstation	54.196.8.114
Region	us-east-1
AWSAccountId	547970237064
WindowsWorkstation	54.196.8.114
Region	us-east-1

3

4



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Module 10 Databases: Lab 10 - RDS

Connect to the workstation

Depending on your Operating System, you will start one of the following applications:

Operating System	Application
Windows	Remote Desktop Connection
Chrome	Chrome Remote Desktop
Mac	Microsoft Remote Desktop

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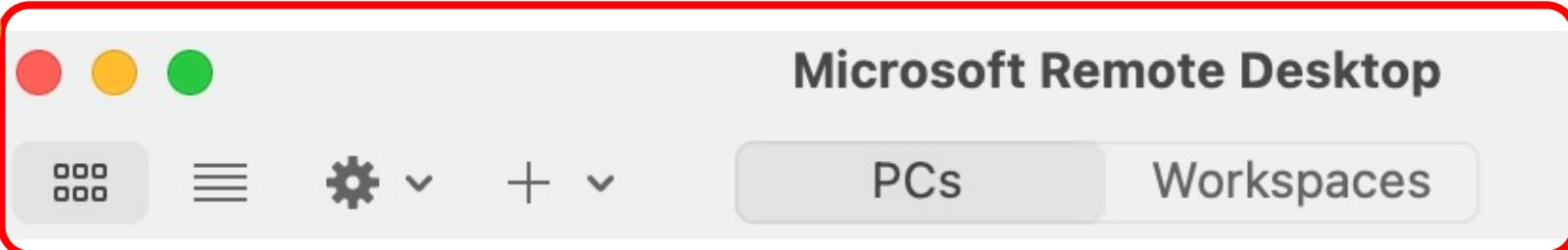
Module 10 Databases: Lab 10 - RDS

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**.

AWS Academy Introduction to Cloud: Semester 1

Module 10 Databases: Lab 10 - RDS

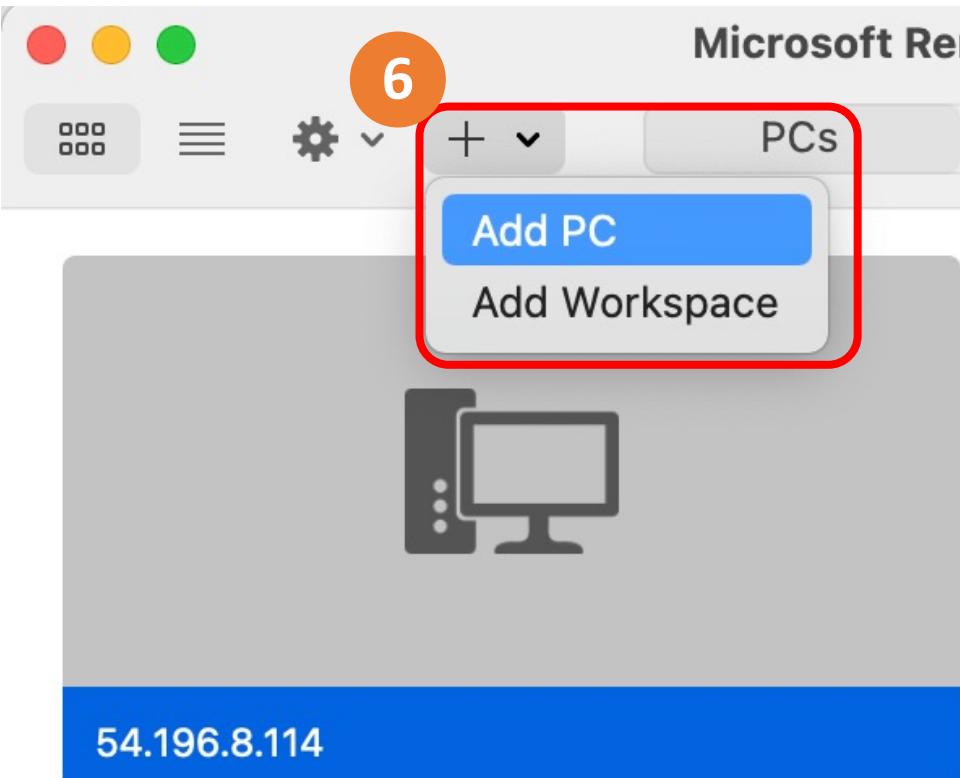
5



Microsoft Remote Desktop

PCs Workspaces

6



Microsoft Rem

PCs

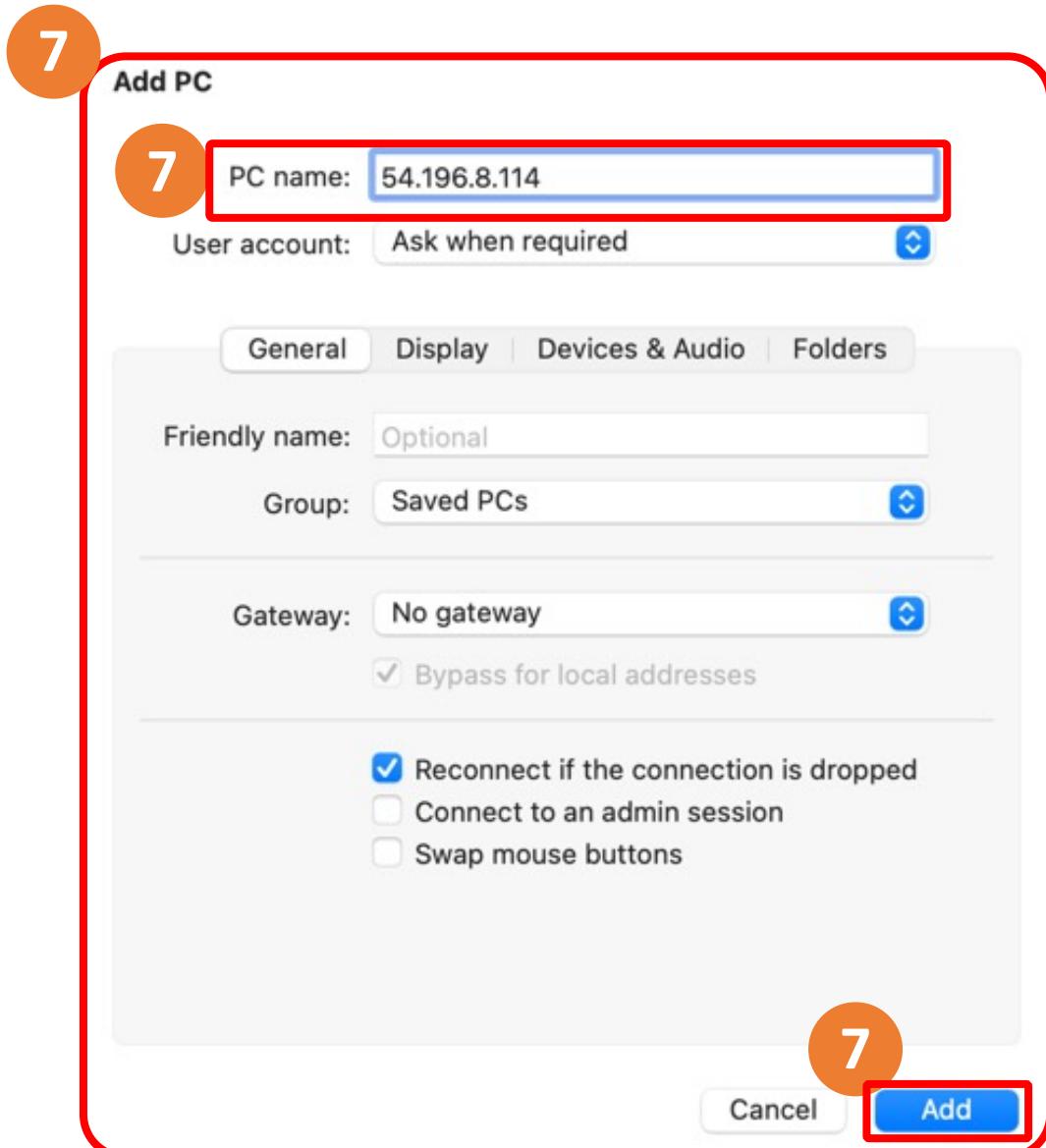
+ Add PC Add Workspace

54.196.8.114

5. Start the remote desktop application.
6. Use the plus symbol to add a new connection.
Note: Do not choose the Workspace option.

AWS Academy Introduction to Cloud: Semester 1

Module 10 Databases: Lab 10 - RDS



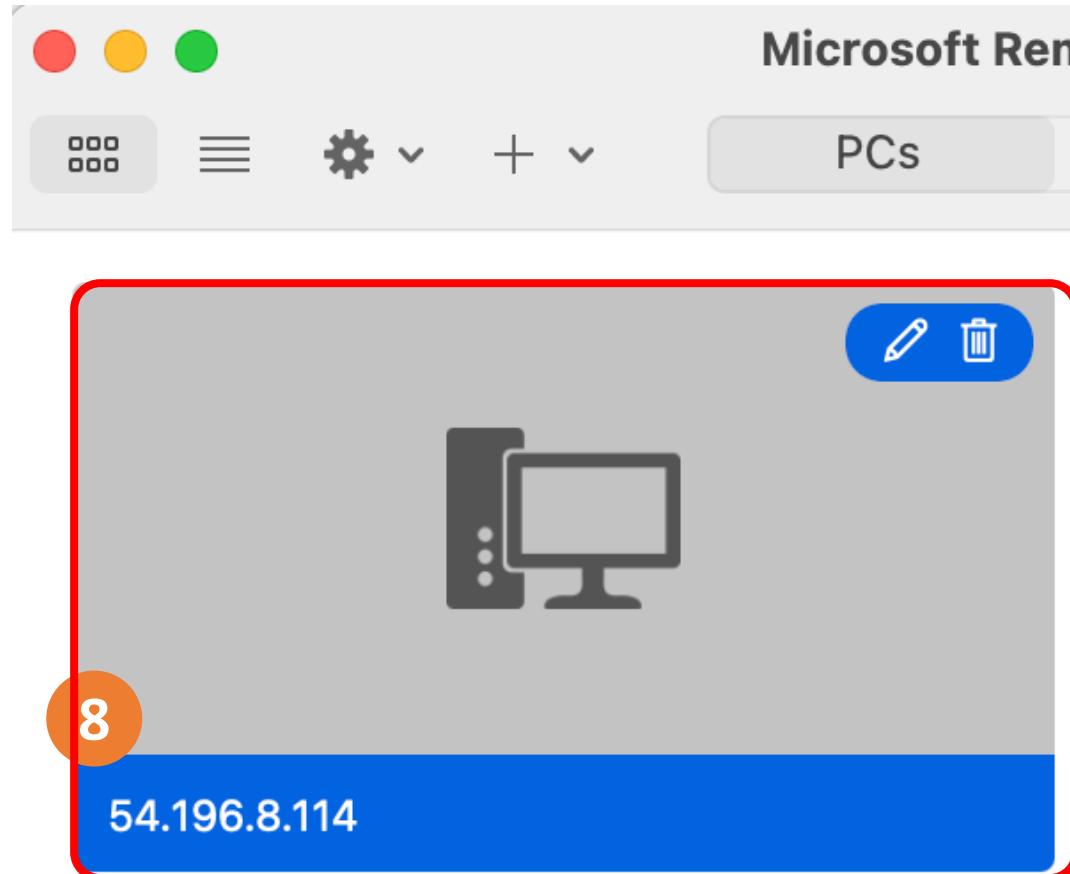
7. When prompted, enter the **WindowsWorkstation** IP address, and choose **Add**.

AWSAccountId	547970237064
WindowsWorkstation	54.196.8.114
Region	us-east-1

AWS Academy Introduction to Cloud: Semester 1

Module 10 Databases: Lab 10 - RDS

8. Doubleclick on the connection you just created.



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Enter Your User Account

This user account will be used to connect to 54.196.8.114 (remote PC).

9

Username: Administrator

Password: Welcome1

Show password

10

Cancel

Continue

9. When prompted, enter the following values:

Username: Administrator

Password: Welcome1

10. Choose **Continue**.

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Module 10 Databases: Lab 10 - RDS



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?

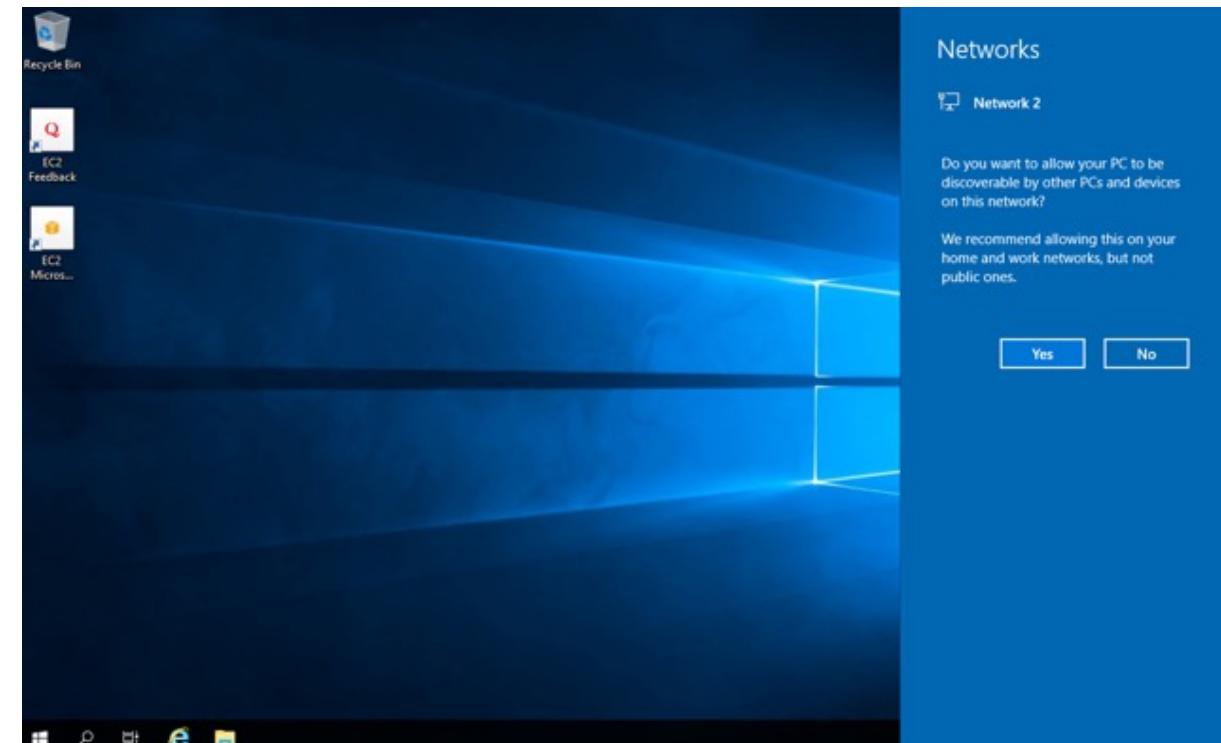


Show Certificate

10

Cancel

Continue

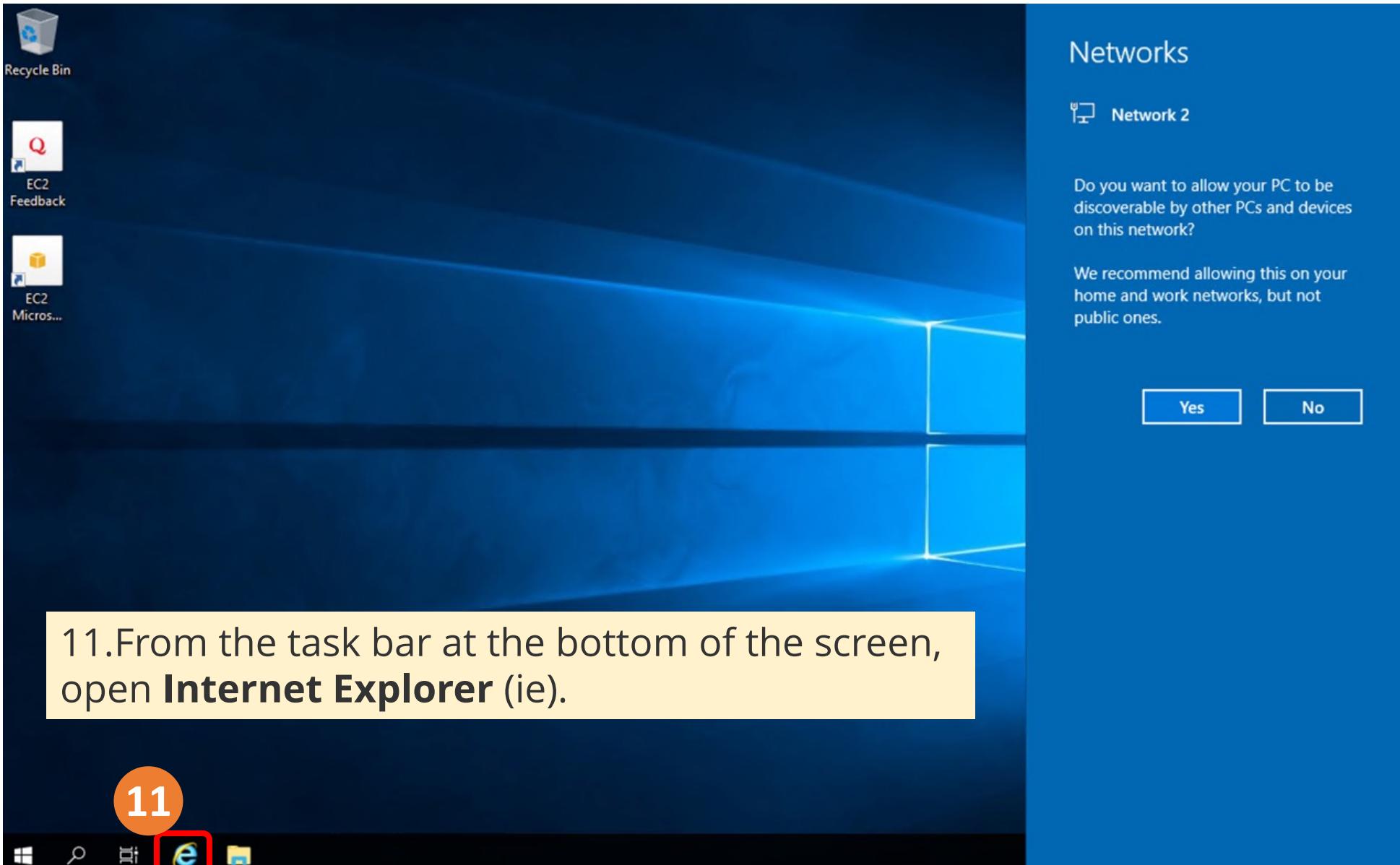


Configure the browser

- 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**.
- 19.Choose **Add**.
- 20.In the same text box, enter **https://*.azure.com**.
- 21.Choose **Add**.
- 22.Choose **Close**
- 23.Choose **Ok**.

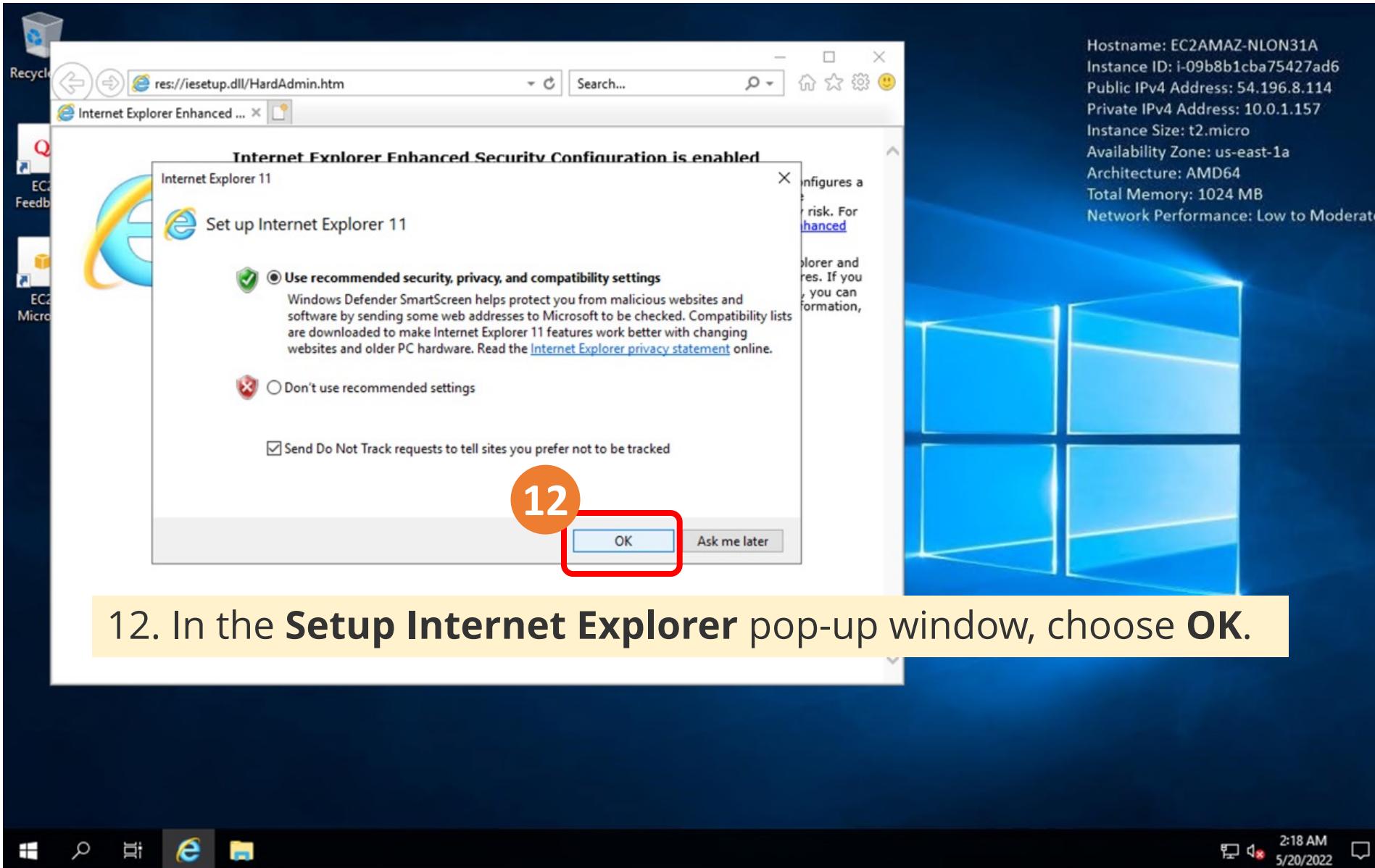
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Module 10 Databases: Lab 10 - RDS



12. In the **Setup Internet Explorer** pop-up window, choose **OK**.

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Module 10 Databases: Lab 10 - RDS

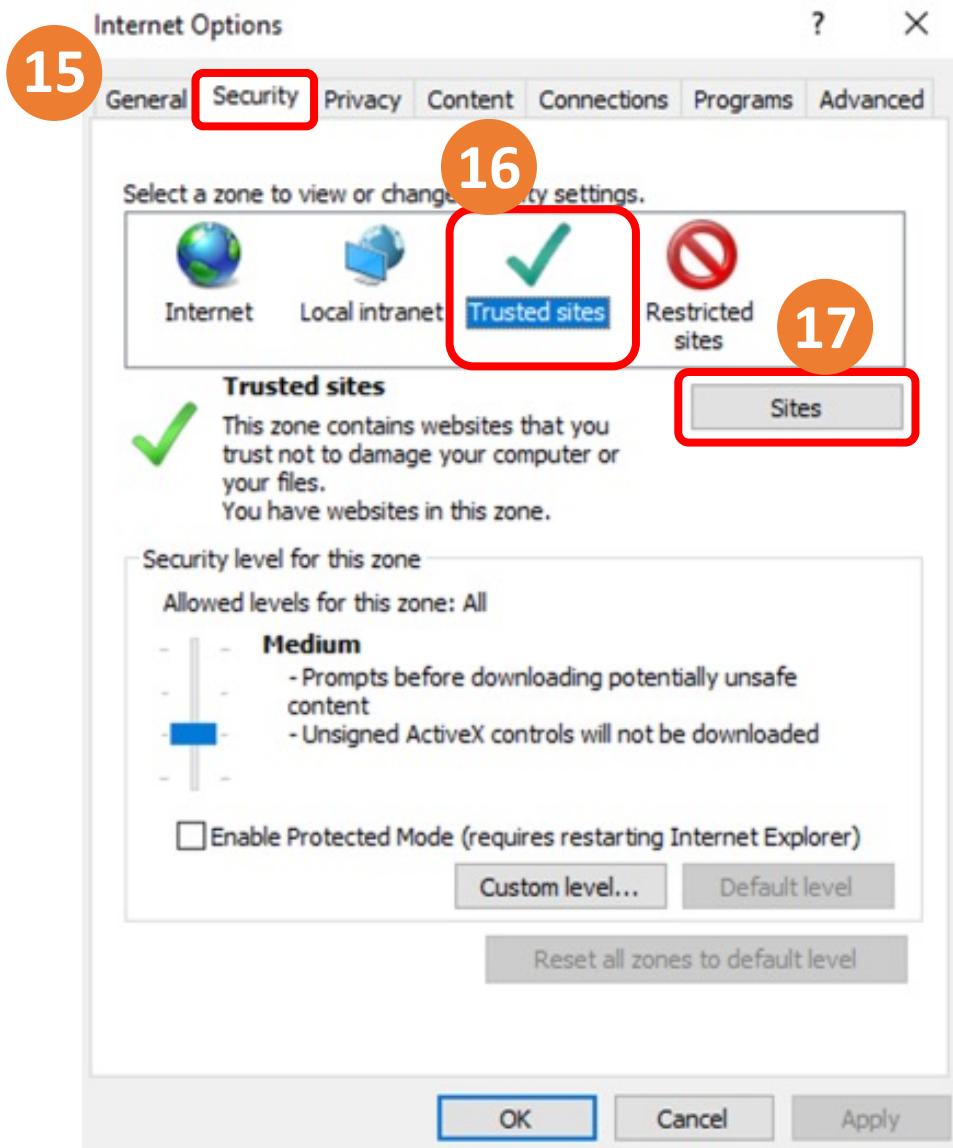
The screenshot shows two Internet Explorer windows. The top window displays the 'Internet Explorer Enhanced Security Configuration' settings, indicating that Enhanced Security is enabled. The bottom window shows the same settings with a larger view of the configuration details. Both windows have their title bars and toolbars visible. A red circle with the number '13' is overlaid on the top right corner of the top window, pointing to the gear-shaped icon in its toolbar. A red circle with the number '14' is overlaid on the bottom right corner of the bottom window, pointing to the 'Internet options' item in the context menu that has been opened by clicking the gear-shaped icon.

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**.

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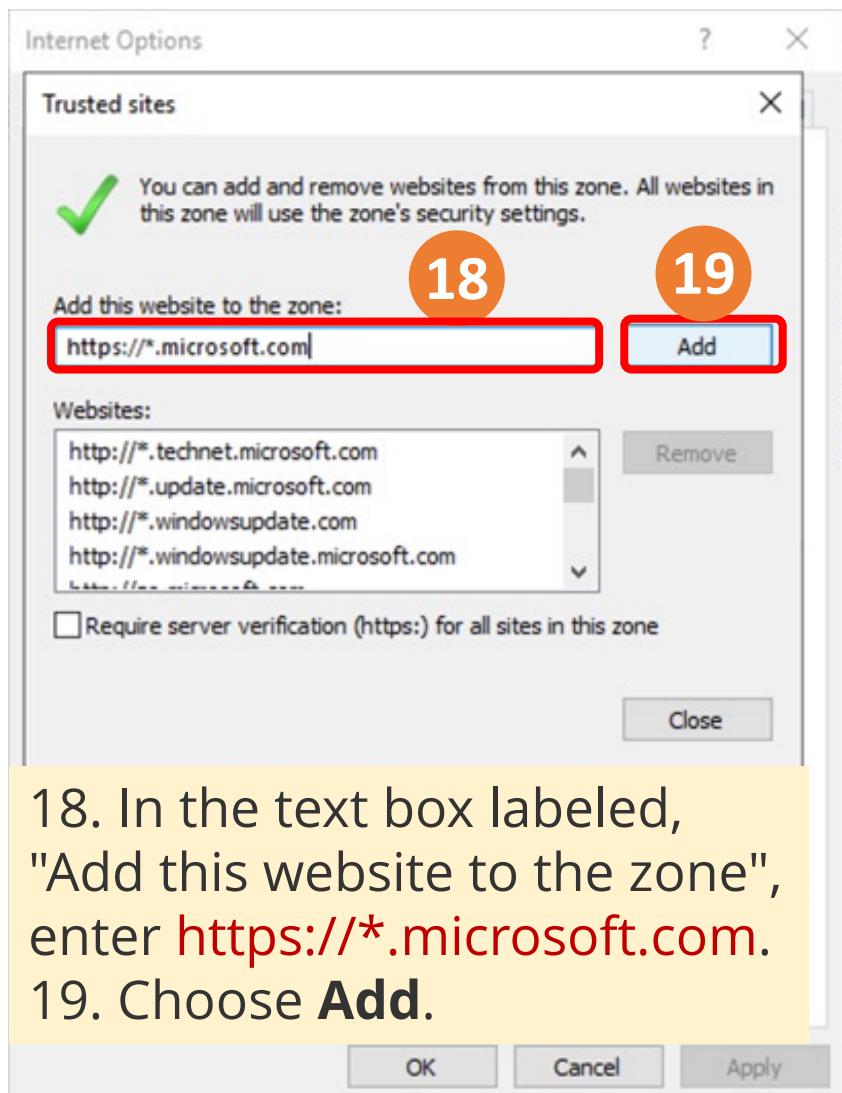
Module 10 Databases: Lab 10 - RDS



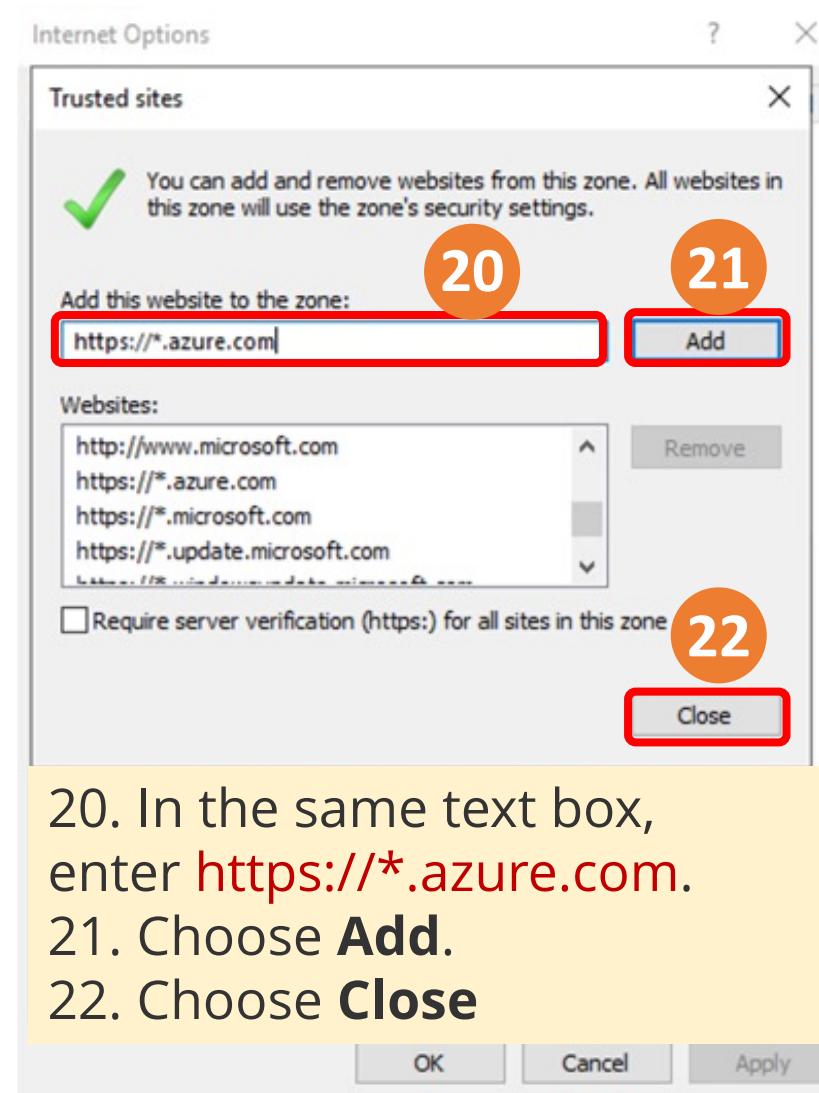
15. Select the **Security** tab.
16. In the box labeled "Select a zone to view or change security settings", select **Trusted Sites** .
17. Choose the **Sites** button.

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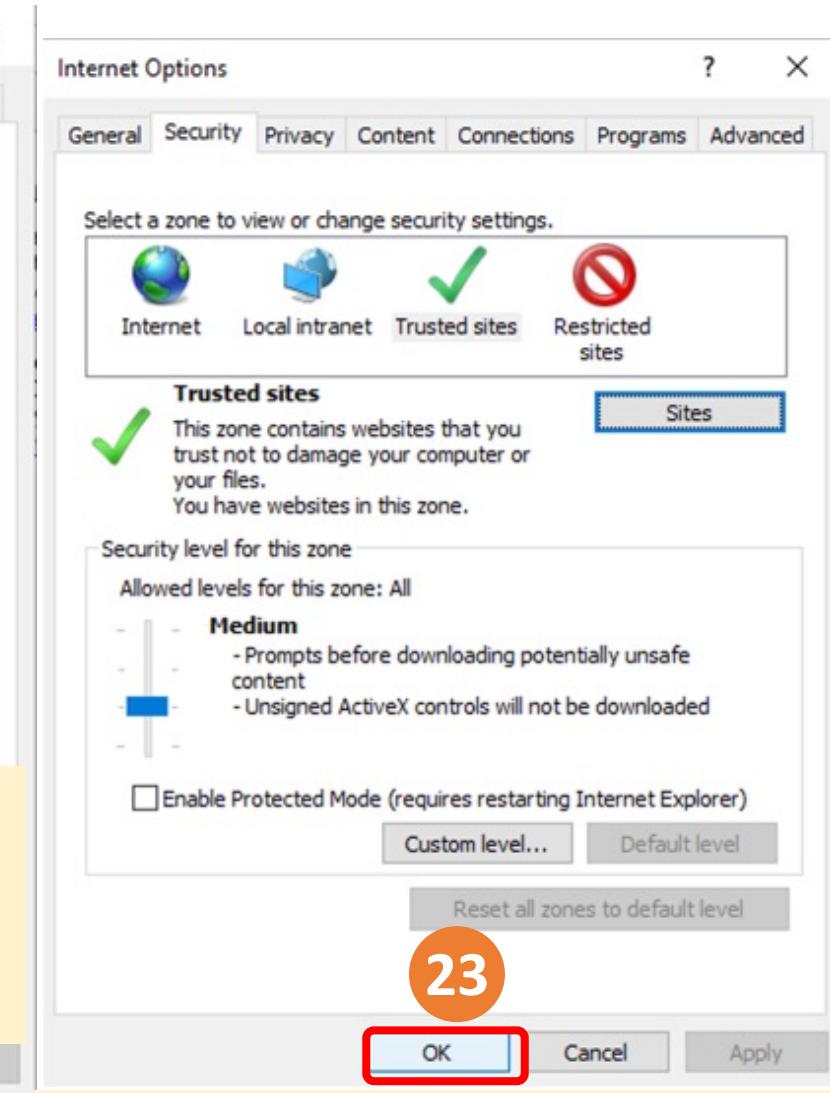
Module 10 Databases: Lab 10 - RDS



18. In the text box labeled, "Add this website to the zone", enter **https://*.microsoft.com**.
19. Choose **Add**.



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



23. Choose **Ok**.

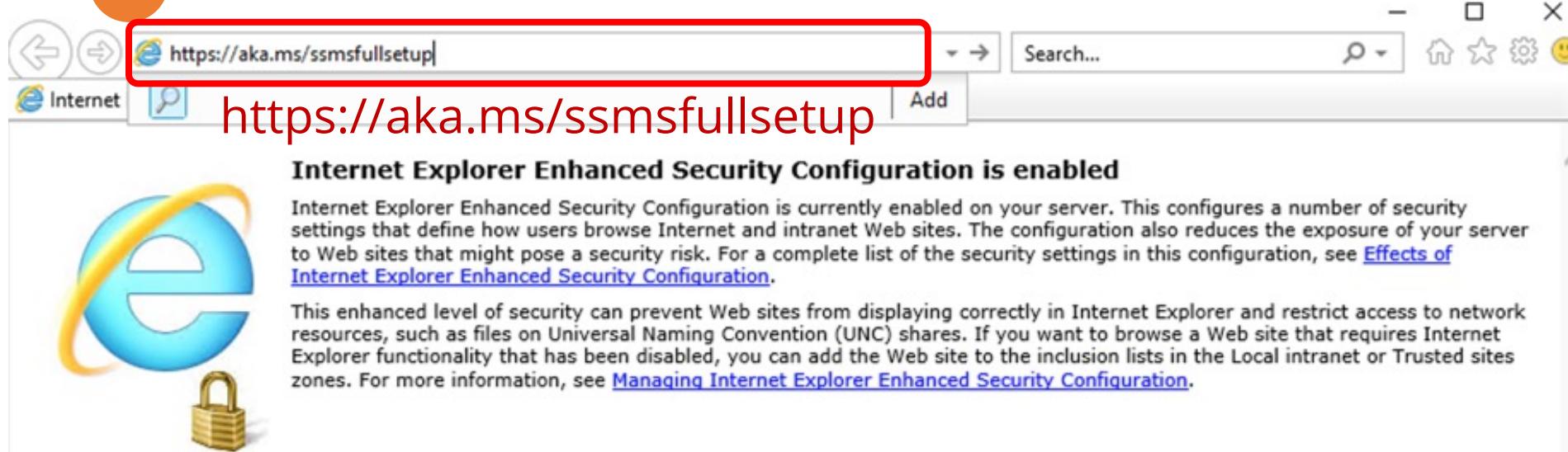
Download SQL Server Management Studio

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.

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Module 10 Databases: Lab 10 - RDS

24

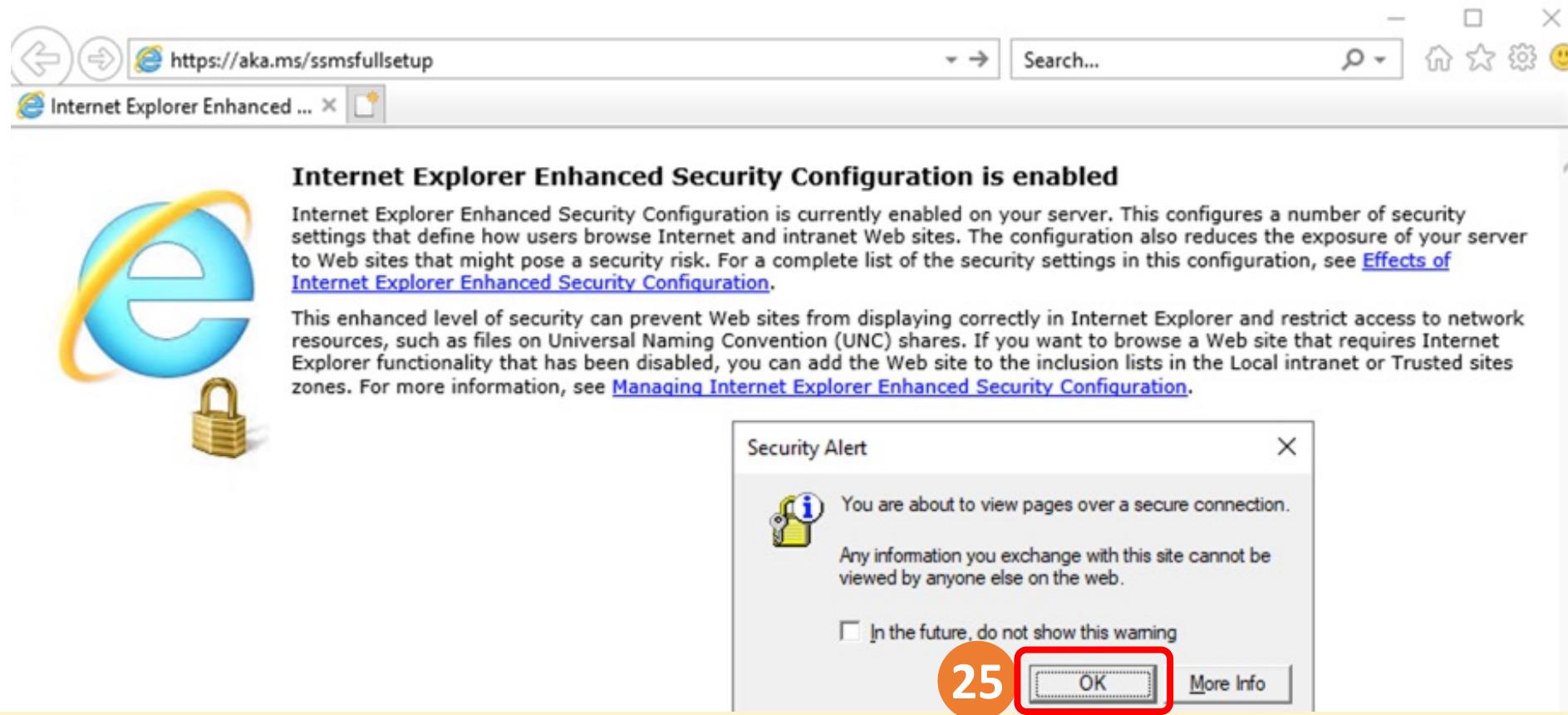


Download SQL Server Management Studio

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

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Module 10 Databases: Lab 10 - RDS



The screenshot shows the Internet Explorer Enhanced Security Configuration page. The title is "Internet Explorer Enhanced Security Configuration is enabled". It includes a large blue "e" icon with a yellow swoosh and a gold padlock icon. The text explains that enhanced security is enabled, defining how users browse Internet and intranet Web sites and reducing exposure to security risks. It also provides links to "Effects of Internet Explorer Enhanced Security Configuration" and "Managing Internet Explorer Enhanced Security Configuration". Below this is a "Security Alert" dialog box with the number "25" in an orange circle. The dialog says: "You are about to view pages over a secure connection. Any information you exchange with this site cannot be viewed by anyone else on the web." There is a checkbox for "In the future, do not show this warning" and two buttons: "OK" and "More Info". The "OK" button is highlighted with a red oval.

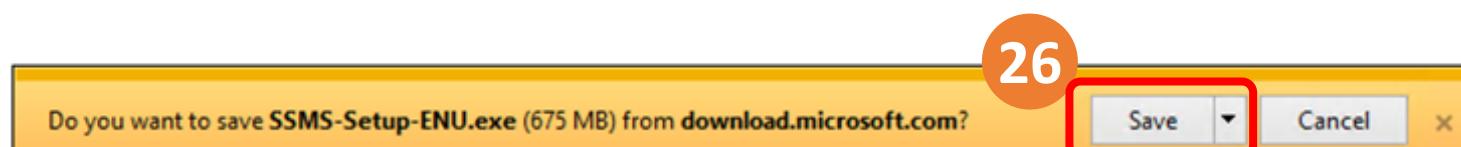
25. If you are prompted with pop-up windows, choose accept and close the windows.
26. You will see a warning at the bottom of the browser window similar to - *This type of file could harm your computer*. Choose **Save** to download the file.

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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.

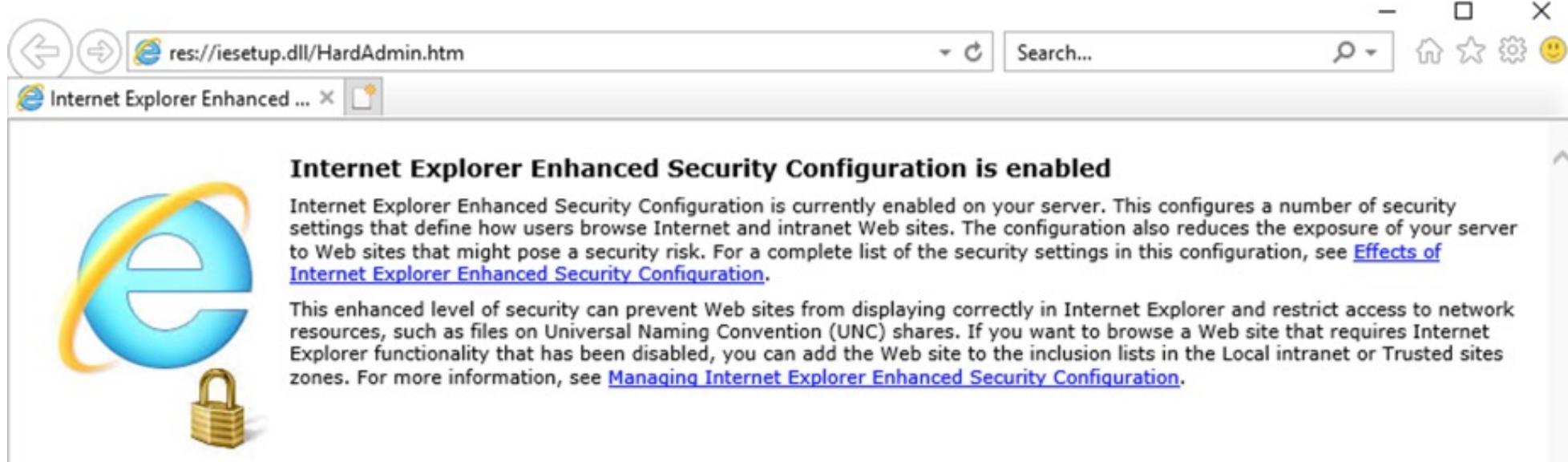


Install the software

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**.

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Module 10 Databases Lab 10 PPS



The screenshot shows a Microsoft Internet Explorer window with the title "Internet Explorer Enhanced Security Configuration is enabled". The page contains text explaining the configuration and its effects, along with a large blue "e" icon and a gold padlock.

Internet Explorer Enhanced Security Configuration is enabled

Internet Explorer Enhanced Security Configuration is currently enabled on your server. This configures a number of security settings that define how users browse Internet and intranet Web sites. The configuration also reduces the exposure of your server to Web sites that might pose a security risk. For a complete list of the security settings in this configuration, see [Effects of Internet Explorer Enhanced Security Configuration](#).

This enhanced level of security can prevent Web sites from displaying correctly in Internet Explorer and restrict access to network resources, such as files on Universal Naming Convention (UNC) shares. If you want to browse a Web site that requires Internet Explorer functionality that has been disabled, you can add the Web site to the inclusion lists in the Local intranet or Trusted sites zones. For more information, see [Managing Internet Explorer Enhanced Security Configuration](#).

Install the software

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



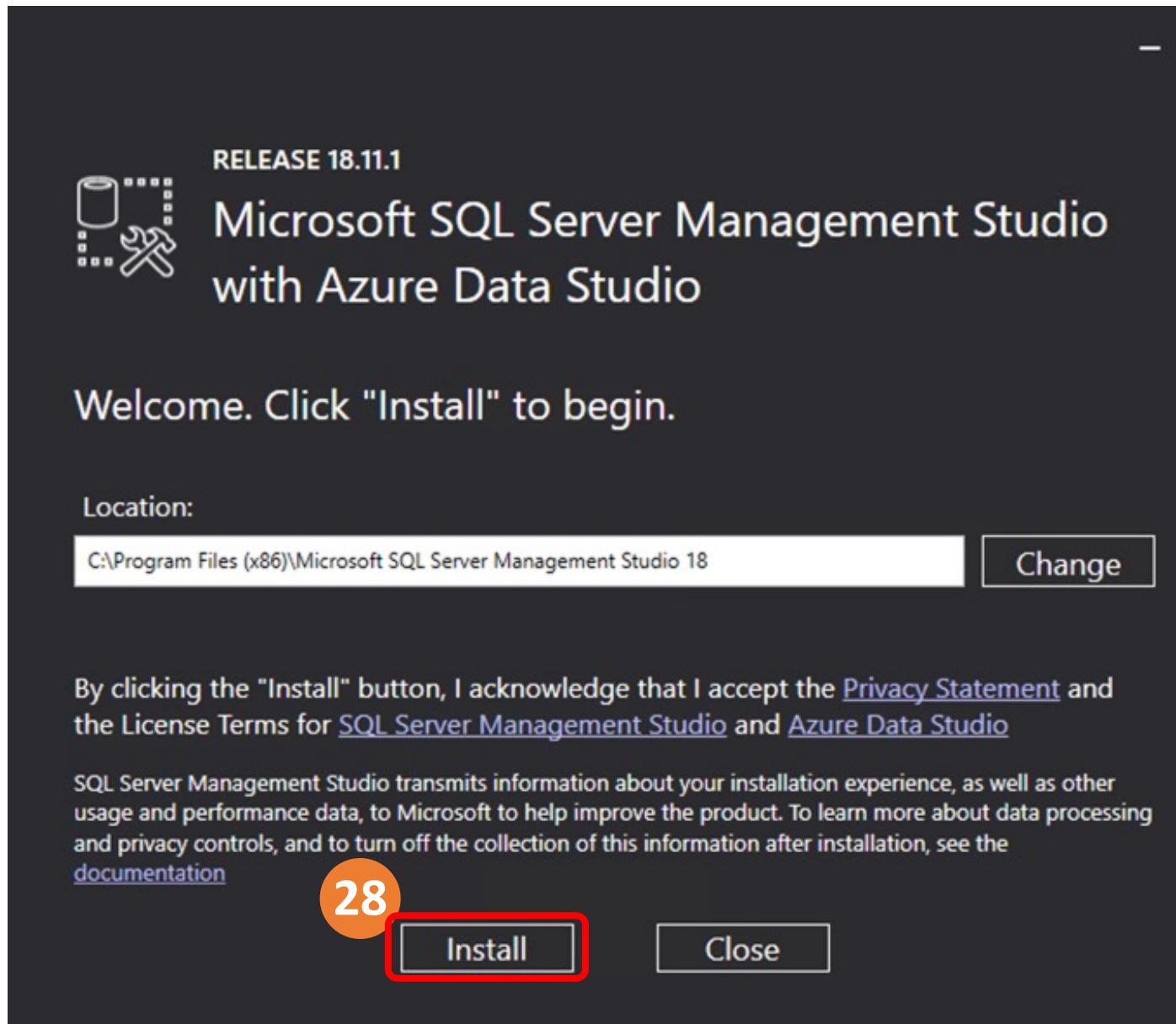
A taskbar notification window titled "Running security scan.." with a "View downloads" button.



A taskbar notification window titled "The SSMS-Setup-ENU.exe download has completed." with three buttons: "Run", "Open folder", and "View downloads". The "Run" button is highlighted with a red oval and the number "27" is overlaid on it.

AWS Academy Introduction to Cloud: Semester 1

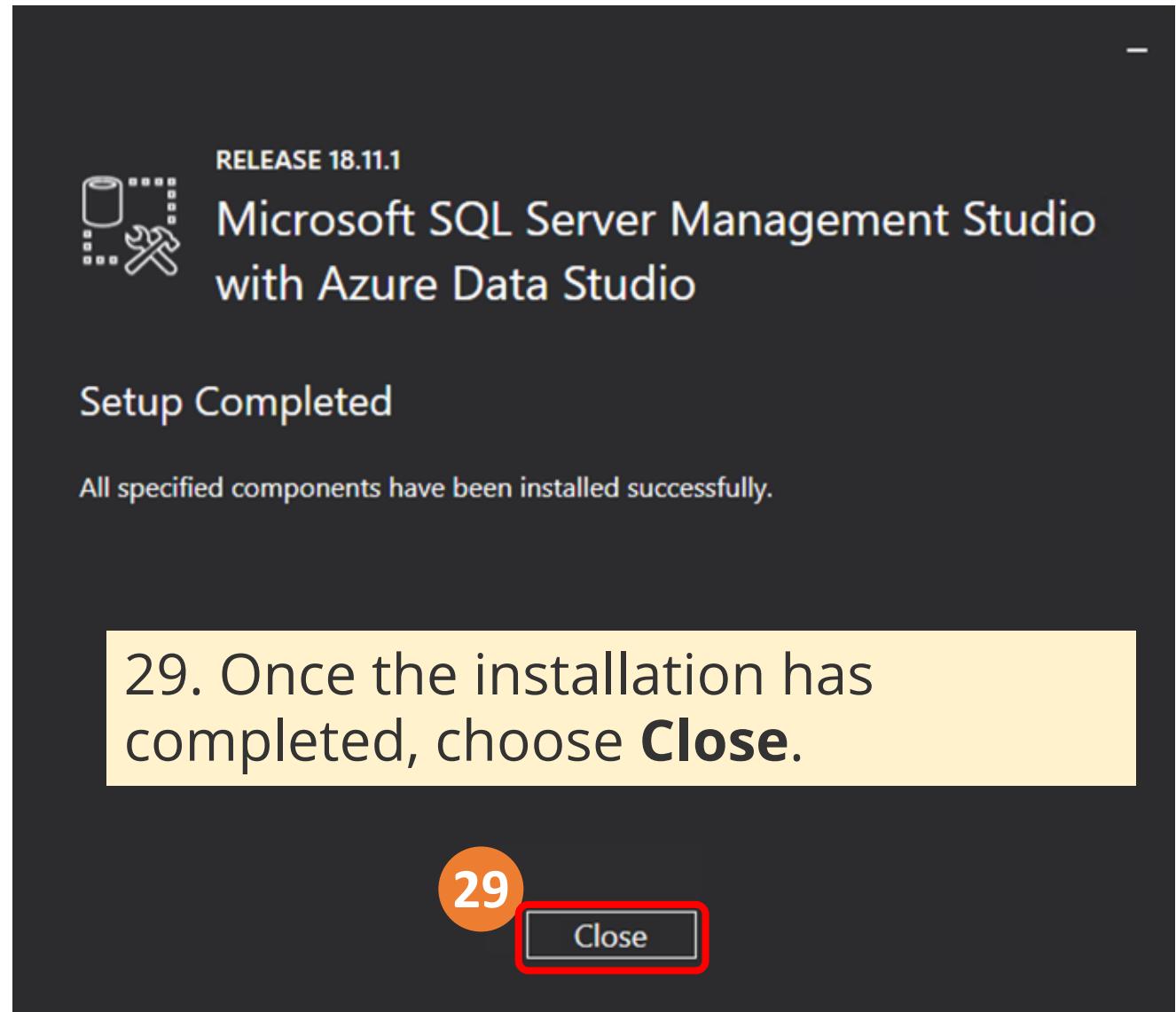
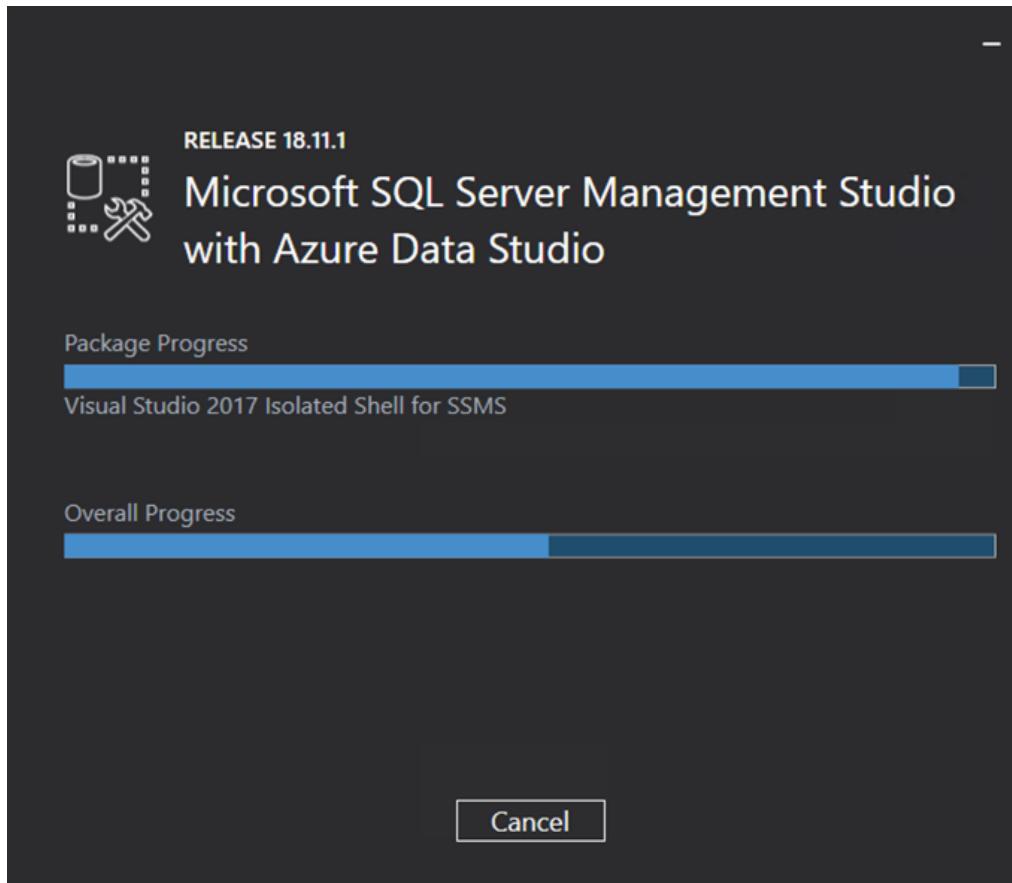
Module 10 Databases: Lab 10 - RDS



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

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Module 10 Databases: Lab 10 - RDS



AWS Academy Introduction to Cloud: Semester 1

Module 10 Databases: Lab 10 - RDS

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

The screenshot shows the AWS RDS (Amazon Relational Database Service) interface. The left sidebar has a red box around 'Amazon RDS' and another around 'Databases'. A red circle with the number '15' is overlaid on the first 'DB identifier' row. The main area shows a table of databases:

DB identifier	Instance	Engine	Region & AZ
database-1	SQL Server Express Edition	us-east-1f	
database-1	SQL Server Express Edition	us-east-1f	

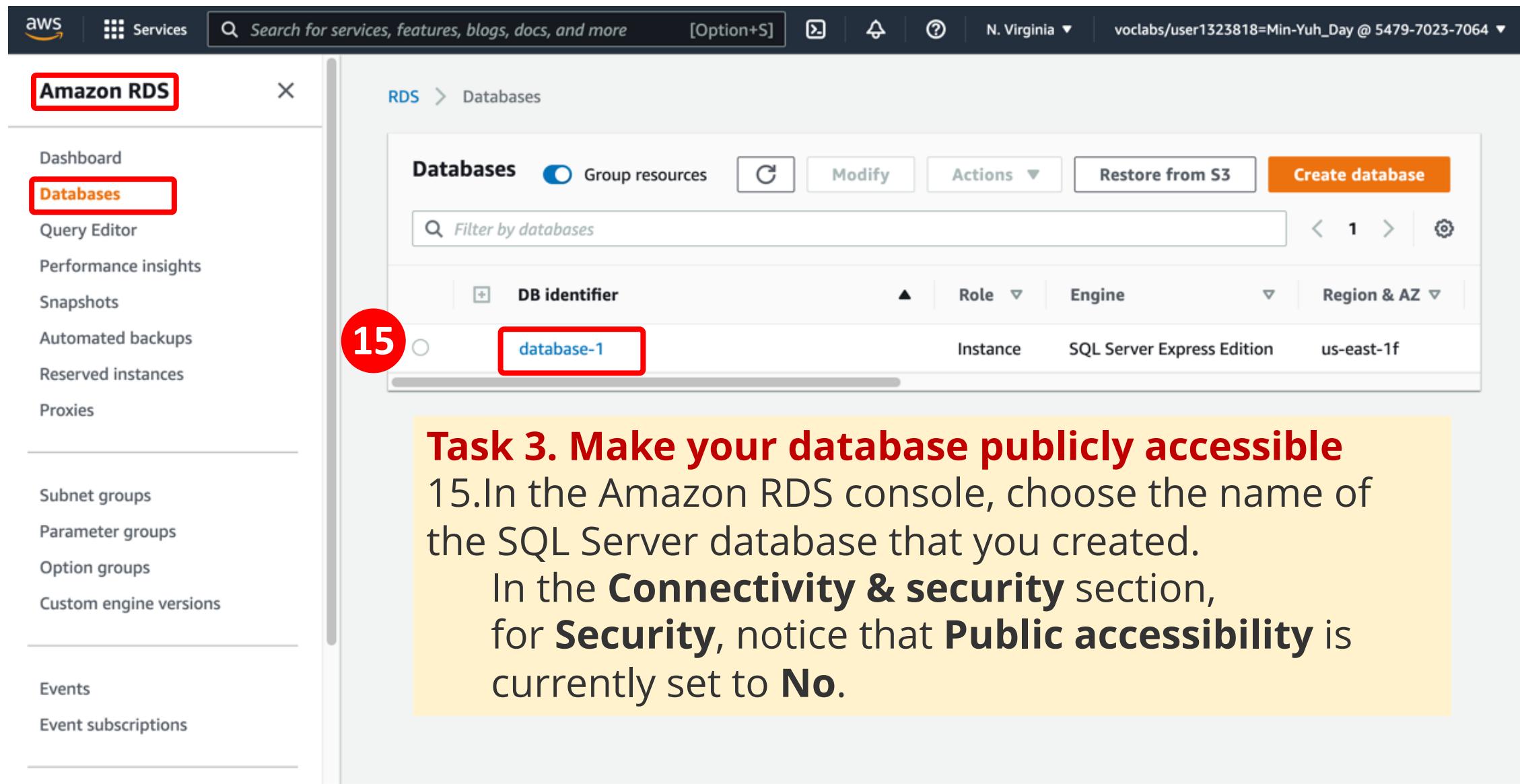
Below the table, there are sections for Size, Status, CPU, Current activity, Maintenance, and VPC. The first instance is backing up at 39.48% completion with 0 connections. The second instance is also backing up at 39.48% completion with 0 connections.

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Module 10 Databases: Lab 10 - RDS



The screenshot shows the AWS RDS console with the 'Databases' tab selected. The main area displays a table of databases. The first database listed is 'database-1', which is highlighted with a red box. The table columns include 'DB identifier', 'Role', 'Engine', and 'Region & AZ'. The 'Engine' column for 'database-1' shows 'SQL Server Express Edition' and the 'Region & AZ' column shows 'us-east-1f'.

DB identifier	Role	Engine	Region & AZ
database-1		SQL Server Express Edition	us-east-1f

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**.

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**.

The screenshot shows the AWS RDS console with the database-1 instance selected. The 'Summary' tab is active, displaying basic information like DB identifier, CPU usage, status, and engine. A red circle with the number '15' highlights the 'Connectivity & security' tab, which is also highlighted with a red border. In the 'Connectivity & security' section, a red box surrounds the 'Security' subsection, and another red circle with '15' highlights the 'Publicly accessible' setting, which is currently set to 'No'.

DB identifier	CPU	Status	Class
database-1	38.98%	Available	db.t2.micro
Role	Current activity	Engine	Region & AZ
Instance	0 Connections	SQL Server Express Edition	us-east-1f

Connectivity & security

Endpoint & port	Networking	Security
Endpoint database-1.csstehym9d6x.us-east-1.rds.amazonaws.com	Availability Zone us-east-1f	VPC security groups default (sg-0f4f184621b3ea35) Active
Port 1433	VPC vpc-058750b8b6dd45bd6	Publicly accessible No
	Subnet group 1f-Subnet-Group	Certificate authority

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

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Module 10 Databases: Lab 10 - RDS

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Amazon RDS X RDS > Databases > database-1

database-1

16 Modify Actions ▾

Summary

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

DB identifier database-1	CPU <div style="width: 38.98%;"> </div> 38.98%	Status Available	Class db.t2.micro
Role Instance	Current activity <div style="width: 0%;"> </div> 0 Connections	Engine SQL Server Express Edition	Region & AZ us-east-1f

Connectivity & security Monitoring Logs & events Configuration Maintenance & backups Tags

Connectivity & security

Endpoint & port	Networking	Security
Endpoint database-1.csstehym9d6x.us-east-1.rds.amazonaws.com	Availability Zone us-east-1f	VPC security groups default (sg-0f4f1f84621b3ea35)
Port 1433	VPC vpc-058750b8b6dd45bd6	Active
	Subnet group infra-1	Publicly accessible No
		Certificate authority

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AWS Academy Introduction to Cloud: Semester 1

Module 10 Databases: Lab 10 - RDS

RDS > Databases > Modify DB instance: database-1

Modify DB instance: database-1

Settings

License model
License type associated with the database engine
license-included

DB engine version
Version number of the database engine to be used for this database
14.00.3421.10.v1

DB instance identifier [Info](#)
Type a name for your DB instance. The name must be unique across all DB instances owned by your AWS account in the current AWS Region.
database-1

The DB instance identifier is case-insensitive, but is stored as all lowercase (as in "mydbinstance"). Constraints: 1 to 60 alphanumeric characters or hyphens. First character must be a letter. Can't contain two consecutive hyphens. Can't end with a hyphen.

New master password [Info](#)
Constraints: At least 8 printable ASCII characters. Can't contain any of the following: / (slash), '(single quote), "(double quote) and @ (at sign).

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

AWS Academy Introduction to Cloud: Semester 1

Module 10 Databases: Lab 10 - RDS

The screenshot shows the AWS RDS configuration interface. On the left, a sidebar lists various RDS management options like Dashboard, Databases, Query Editor, etc. The main area is titled 'Connectivity' and contains fields for Subnet group (set to 'default-vpc-058750b8b6dd45bd6'), Security group ('Choose security groups' dropdown), Certificate authority ('rds-ca-2019'), and Public access settings. A red box highlights the 'Connectivity' section, and a red callout bubble with the number '17' contains the instruction: '17. Scroll down to the **Connectivity** section, and expand **Additional configuration**'. A large red arrow points downwards towards the 'Additional configuration' section.

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

Amazon RDS

Dashboard

Databases

Query Editor

Performance insights

Snapshots

Automated backups

Reserved instances

Proxies

Subnet groups

Parameter groups

Option groups

Custom engine versions

Events

Event subscriptions

Subnet group

default-vpc-058750b8b6dd45bd6

Security group

List of DB security groups to associate with this DB instance.

Choose security groups

default

Certificate authority

rds-ca-2019

▼ Additional configuration

Public access

Publicly accessible

EC2 instances and devices outside the VPC can connect to the instance. You define the security groups for supported devices and instances.

Not publicly accessible

No IP address is assigned to the DB instance. EC2 instances and devices outside the VPC can't connect.

Database port

Specify the TCP/IP port that the DB instance will use for application connections. The application connection string must specify the port number. The DB security group and your firewall must allow connections to the port. [Learn more](#)

1433

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Module 10 Databases: Lab 10 - RDS

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Amazon RDS

Databases

Dashboard, Query Editor, Performance insights, Snapshots, Automated backups, Reserved instances, Proxies

Subnet groups, Parameter groups, Option groups, Custom engine versions

Events, Event subscriptions

Connectivity

Subnet group: default-vpc-058750b8b6dd45bd6

Security group: Choose security groups, default

Certificate authority: rds-ca-2019

Additional configuration

Public access

Publicly accessible
EC2 instances and devices outside the VPC can connect to the instance. You define the security groups for supported devices and instances.

Not publicly accessible
No IP address is assigned to the DB instance. EC2 instances and devices outside the VPC can't connect.

Database port
Specify the TCP/IP port that the DB instance will use for application connections. The application connection string must specify the port number. The DB security group and your firewall must allow connections to the port. [Learn more](#)

1433

18. For Public access, choose Publicly accessible.

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AWS Academy Introduction to Cloud: Semester 1

Module 10 Databases: Lab 10 - RDS

IAM role
The following service-linked role is used for publishing logs to CloudWatch Logs.

RDS service-linked role

Performance Insights [Info](#)
 Turn on Performance Insights [Info](#)

Maintenance
Auto minor version upgrade [Info](#)
 Enable auto minor version upgrade
Enabling auto minor version upgrade will automatically upgrade to new minor versions as they are released. The automatic upgrades occur during the maintenance window for the database.

DB instance maintenance window
The weekly time range during which system maintenance can occur.

Start day	Start time	Duration
Saturday	09 : 39 UTC	0.5 hours

Deletion protection
 Enable deletion protection
Protects the database from being deleted accidentally. While this option is enabled, you can't delete the database.

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

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Module 10 Databases: Lab 10 - RDS

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Amazon RDS X

Dashboard

Databases

Query Editor

Performance insights

Snapshots

Automated backups

Reserved instances

Proxies

Subnet groups

Parameter groups

Option groups

Custom engine versions

Events

Event subscriptions

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When to apply modifications

Apply during the next scheduled maintenance window
Current maintenance window: May 21, 2022 17:39 - 18:09 UTC+8

Apply immediately
The modifications in this request and any pending modifications will be asynchronously applied as soon as possible, regardless of the maintenance window setting for this database instance.

21

Cancel Back **Modify DB instance**

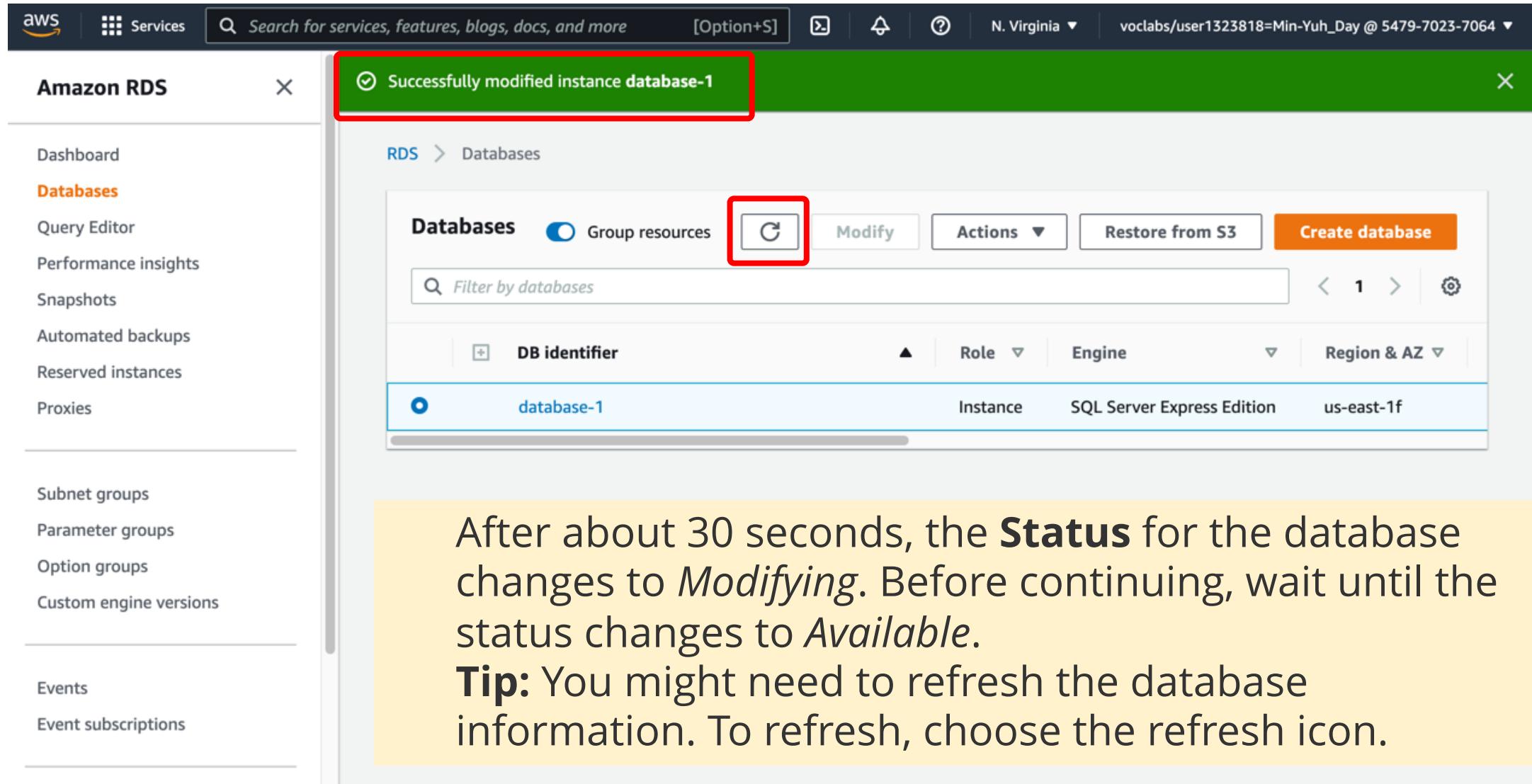
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Module 10 Databases: Lab 10 - RDS



The screenshot shows the AWS RDS Databases page. A success message 'Successfully modified instance database-1' is displayed at the top. A red box highlights the 'refresh' icon (a circular arrow) in the toolbar above the table. Another red box highlights the 'DB identifier' column header. The database table lists 'database-1' with details: Instance, SQL Server Express Edition, and us-east-1f.

DB identifier	Instance	Engine	Region & AZ
database-1	SQL Server Express Edition	us-east-1f	

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

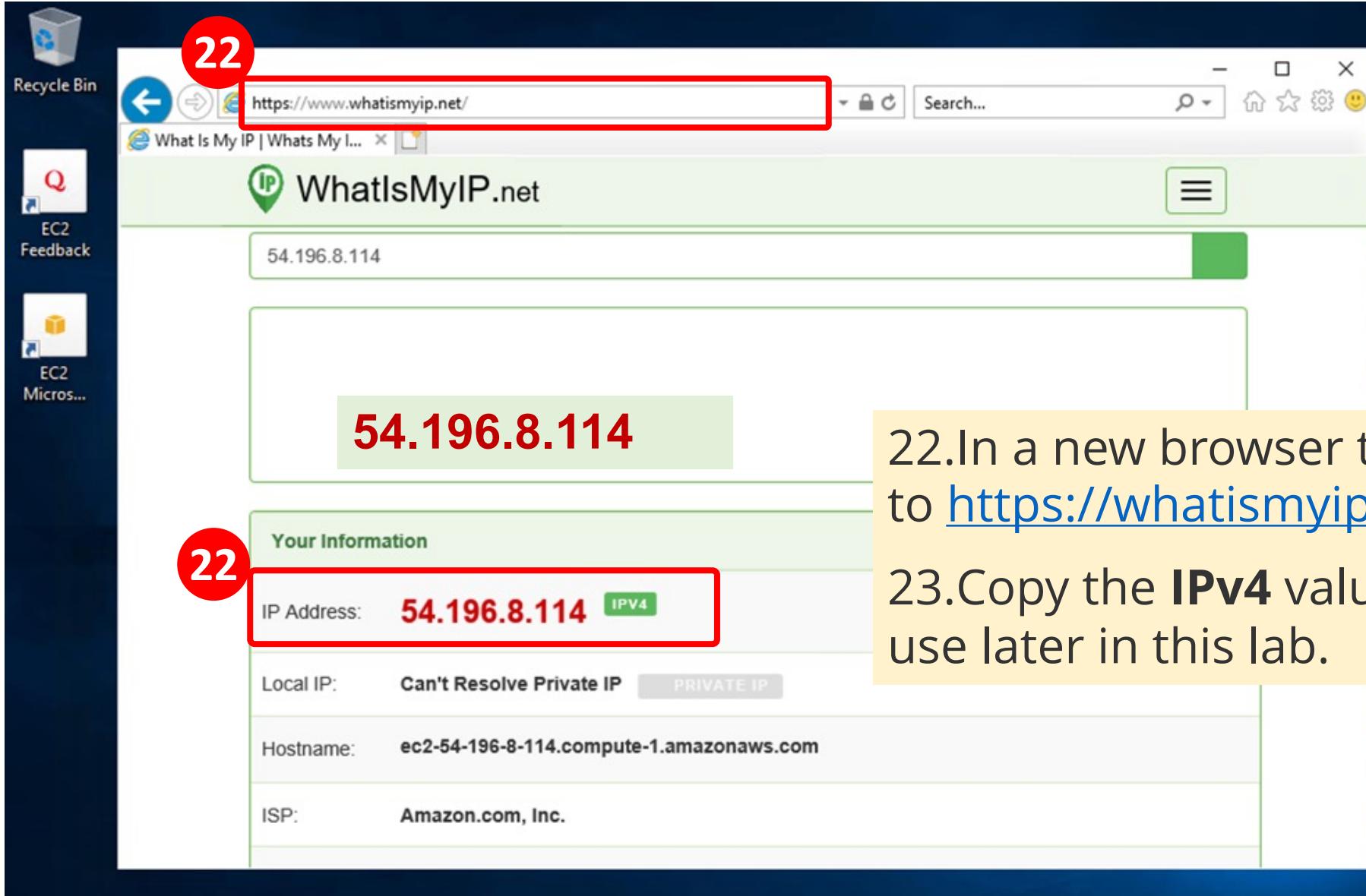
24. Return to the browser tab that is open to the AWS console. Ensure that you are on the **RDS > Databases** page.
25. Choose the name of the database you created.
26. In the **Connectivity & security** section, under **VPC security groups**, choose the name of the security group.

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**.

AWS Academy Introduction to Cloud: Semester 1

Module 10 Databases: Lab 10 - RDS



Hostname: EC2AMAZ-NLON31A
Instance ID: i-09b8b1cba75427ad6
Public IPv4 Address: 54.196.8.114
Private IPv4 Address: 10.0.1.157
Instance Size: t2.micro
Availability Zone: us-east-1a
Architecture: AMD64
Total Memory: 1024 MB
Network Performance: Low to Moderate

22

22

22

54.196.8.114

Your Information

IP Address: 54.196.8.114 IPv4

Local IP: Can't Resolve Private IP PRIVATE IP

Hostname: ec2-54-196-8-114.compute-1.amazonaws.com

ISP: Amazon.com, Inc.

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.

AWS Academy Introduction to Cloud: Semester 1

Module 10 Databases: Lab 10 - RDS

The screenshot shows the AWS RDS Databases page. A green success message at the top states "Successfully modified instance database-1". The main table lists one database entry:

DB identifier	Instance	Engine	Region & AZ
database-1		SQL Server Express Edition	us-east-1f

The left sidebar has a red box around the "Databases" link, which is highlighted with a red circle containing the number 24. Another red circle containing the number 25 highlights the "database-1" entry in the table.

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.

AWS Academy Introduction to Cloud: Semester 1

Module 10 Databases: Lab 10 - RDS

Screenshot of the AWS RDS console showing the database-1 summary page. The left sidebar shows various RDS management options. The main content area displays the database-1 summary, including its DB identifier (database-1) and role (Instance). A yellow callout box contains the following instructions:

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)**

The screenshot highlights the "Connectivity & security" tab with a red border. The "Security" section, which lists the VPC security group "default (sg-0f4f1f84621b3ea35)" as active, is also highlighted with a red box. A red circle with the number 26 is overlaid on the "Security" section.

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AWS Academy Introduction to Cloud: Semester 1

Module 10 Databases: Lab 10 - RDS

The screenshot shows the AWS EC2 Security Groups page. A red box highlights the title "Security Groups (1/1)" at the top left. Below it is a search bar containing "search: sg-0f4f1f84621b3ea35" and a "Clear filters" button. The main table lists one security group: "sg-0f4f1f84621b3ea35" (Name), "default" (Security group name), "vpc-058750b8b6dd45bd6" (VPC ID), and "default VPC" (Description). The "Inbound rules" tab is highlighted with a red box and a red circle containing the number 27. A yellow callout box contains the text: "27. On the **Security Groups** page, choose the **Inbound rules** tab." At the bottom, there's a "Details" section and a note: "You can now check network connectivity with Reachability Analyzer" with a "Run Reachability Analyzer" button.

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

Details

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Module 10 Databases: Lab 10 - RDS

The screenshot shows the AWS EC2 Security Groups page. On the left, there's a sidebar with various EC2-related options like Instances, AMIs, and Images. The main area shows a table of security groups, with one row selected: sg-0f4f1f84621b3ea35, which is the default group for the current VPC. Below the table, there are tabs for Details, Inbound rules, Outbound rules, and Tags. The Inbound rules tab is active, highlighted with a red border and a red number 27. A callout box with a yellow background and black text says: "27. On the **Security Groups** page, choose the **Inbound rules** tab." At the bottom of the Inbound rules section, there's a button labeled "Edit inbound rules" with a red border and a red number 28. Another callout box with a yellow background and black text says: "28. Choose **Edit inbound rules**, and choose **Add rule**."

Security Groups (1/1) [Info](#)

Filter security groups

search: sg-0f4f1f84621b3ea35 [X](#) [Clear filters](#)

<input checked="" type="checkbox"/>	Name	Security group ID	Security group name	VPC ID	Description
<input checked="" type="checkbox"/>	-	sg-0f4f1f84621b3ea35	default	vpc-058750b8b6dd45bd6 ...	default VPC

sg-0f4f1f84621b3ea35 - default

Details **Inbound rules** Outbound rules Tags

(1/1)

Filter security group rules

Name Security group rule... IP version

Run Reachability Analyzer [X](#)

27

28

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

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

<https://us-east-1.console.aws.amazon.com/ec2/v2/home?region=us-east-1#SecurityGroups>

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Module 10 Databases: Lab 10 - RDS

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EC2 > Security Groups > sg-0f4f1f84621b3ea35 - default > Edit inbound rules

Edit inbound rules Info

Inbound rules control the incoming traffic that's allowed to reach the instance.

Inbound rules Info

Security group rule ID	Type <small>Info</small>	Protocol <small>Info</small>	Port range <small>Info</small>	Source <small>Info</small>	Description - optional <small>Info</small>
sgr-046940b821793ddd3	All traffic	All	All	Custom	<input type="text"/> <small>X</small>

28

Add rule

sg-0f4f1f84621b3ea35

Cancel Preview changes Save rules

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

AWS Academy Introduction to Cloud: Semester 1

Module 10 Databases: Lab 10 - RDS

EC2 > Security Groups > sg-0f4f1f84621b3ea35 - default > Edit inbound rules

Edit inbound rules Info

Inbound rules control the incoming traffic that's allowed to reach the instance.

Inbound rules <small>Info</small>					
Security group rule ID	Type <small>Info</small>	Protocol <small>Info</small>	Port range <small>Info</small>	Source <small>Info</small>	Description - optional <small>Info</small>
sgr-046940b821793ddd3	All traffic	All	All	Custom	sg-0f4f1f84621b3ea35
-	MSSQL	TCP	1433	Custom	

29. For Type, choose MSSQL.

Add rule Cancel Preview changes Save rules

AWS Academy Introduction to Cloud: Semester 1

Module 10 Databases: Lab 10 - RDS



Edit inbound rules Info

Inbound rules control the incoming traffic that's allowed to reach the instance.

Inbound rules Info

Security group rule ID	Type <small>Info</small>	Protocol <small>Info</small>	Port range <small>Info</small>	Source <small>Info</small>	Description - optional <small>Info</small>
------------------------	--------------------------	------------------------------	--------------------------------	----------------------------	--

sgr-
046940b821793ddd3

All traffic

All

All

Custom

sg-
0f4f1f84621b
3ea35

Del
ete

-

MSSQL

TCP

1433

Custom

54.196.8.114/

32

Del
ete

30

31

32. Choose **Save rules**.

32

Save rules

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**

Feedback

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Module 10 Databases: Lab 10 - RDS

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RDS

New EC2 Experience X

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EC2 Dashboard

EC2 Global View

Events

Tags

Limits

Instances

Instances New

Instance Types

Launch Templates

Spot Requests

Savings Plans

Reserved Instances New

Dedicated Hosts

Scheduled Instances

Capacity Reservations

Images

AMIs

Inbound security group rules successfully modified on security group (sg-0f4f1f84621b3ea35 | default)

Details

Security Groups (1/3) Info

C Actions ▾ Export security groups to CSV ▾ Create security group

Filter security groups

Name Security group ID Security group name VPC ID Description

<input type="checkbox"/>	Bastion-SG	sg-0bd8f110b1349573b	Bastion-SG	vpc-0dd8a282d45fae406	Enable acc
--------------------------	------------	----------------------	------------	-----------------------	------------

You can now check network connectivity with Re达ability Analyzer

Run Re达ability Analyzer

Inbound rules (2)

C Manage tags Edit inbound rules

Filter security group rules

Name Security group rule... IP version Type Protocol

<input type="checkbox"/>	-	sgr-046940b821793d...	-	All traffic	All
<input type="checkbox"/>	-	sgr-09bcb0015ba8974...	IPv4	MSSQL	TCP

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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**.

AWS Academy Introduction to Cloud: Semester 1

Module 10 Databases: Lab 10 - RDS

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

The screenshot shows the AWS Academy interface for a lab session. On the left is a dark sidebar with icons for Account, Dashboard, Courses, Calendar, Inbox, History, Help, and a back arrow. The main area has a breadcrumb navigation: AICv1Sem1EN... > Modules > Module 10: Dat... > Lab 10 - RDS. At the top right are buttons for AWS Details, Readme, and a close icon. The central part shows a 'Cloud Access' section with AWS CLI, Cloud Labs session details, accumulated lab time, and SSH key download options. Below this is a table of environment variables:

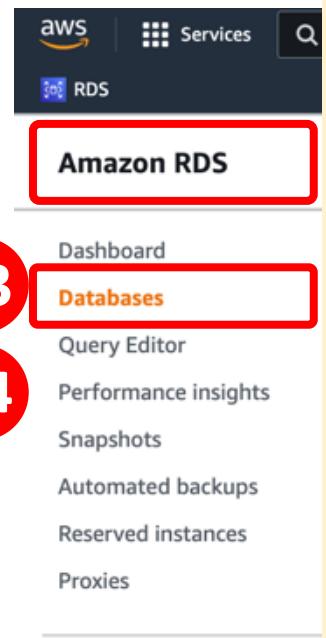
AWSAccountId	547970237064
WindowsWorkstation	54.196.8.114
Region	us-east-1
AWSAccountId	547970237064
WindowsWorkstation	54.196.8.114
Region	us-east-1

At the bottom are 'Previous' and 'Next' navigation buttons.

AWS Account: 547970237064
Windows Workstation IP: **54.196.8.114**
Region: us-east-1

AWS Academy Introduction to Cloud: Semester 1

Module 10 Databases: Lab 10 - RDS



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.

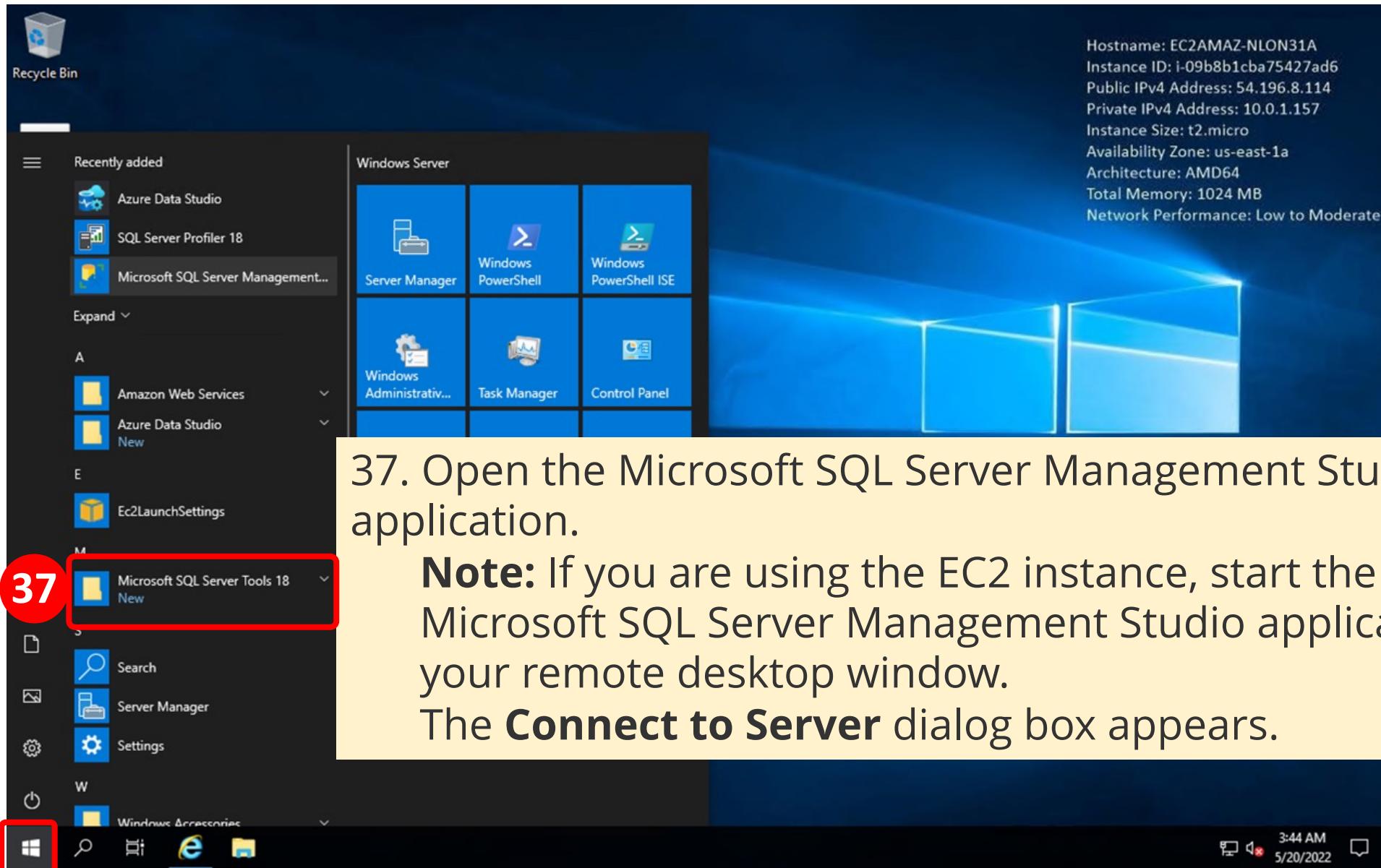
The default port for SQL Server is 1433.

If your port number is different, copy that value to your text editor.

The screenshot shows the 'Connectivity & security' tab for an RDS database instance. The tab is highlighted with a red box and circled with a red number '35'. Other tabs include 'Monitoring', 'Logs & events', 'Configuration', 'Maintenance & backups', and 'Tags'. The 'Endpoint & port' section is also highlighted with a red box and circled with a red number '35'. It shows the 'Endpoint' value: **database-1.csstehym9d6x.us-east-1.rds.amazonaws.com**. Below it, the 'Port' value is listed as **1433**. To the right, the 'Networking' section shows the 'Availability Zone' as **us-east-1f**, 'VPC' as **vpc-058750b8b6dd45bd6**, and 'Subnet group'. The 'Security' section shows 'VPC security groups' as **default (sg-0f4f1f84621b3ea35)** with a checked 'Active' checkbox. The 'Publicly accessible' setting is set to **Yes**.

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Connect to Server X

SQL Server

38. For **Server type**, choose **Database Engine**.

38 Server type: Database Engine

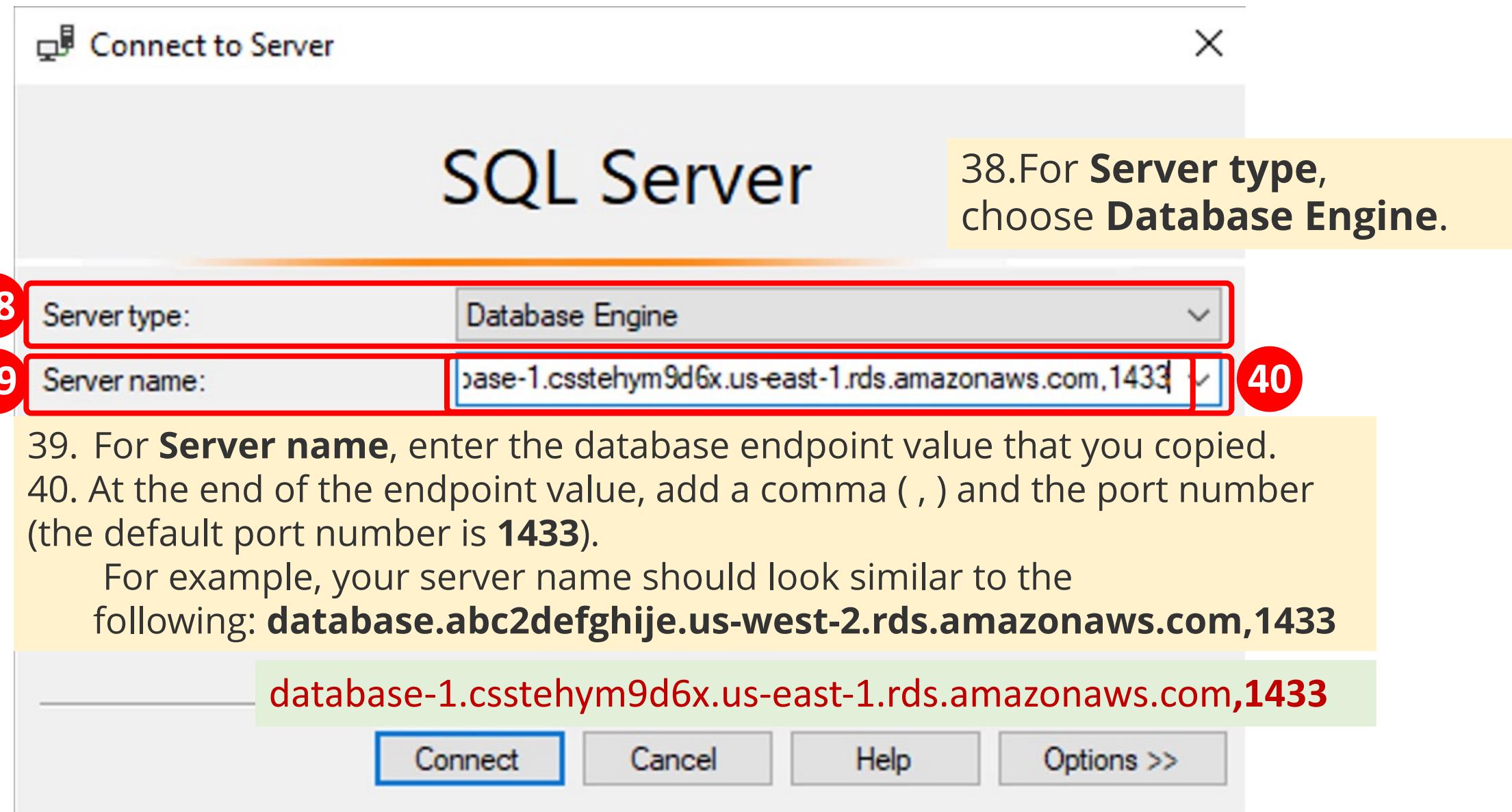
39 Server name: database-1.csstehym9d6x.us-east-1.rds.amazonaws.com,1433

40

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**

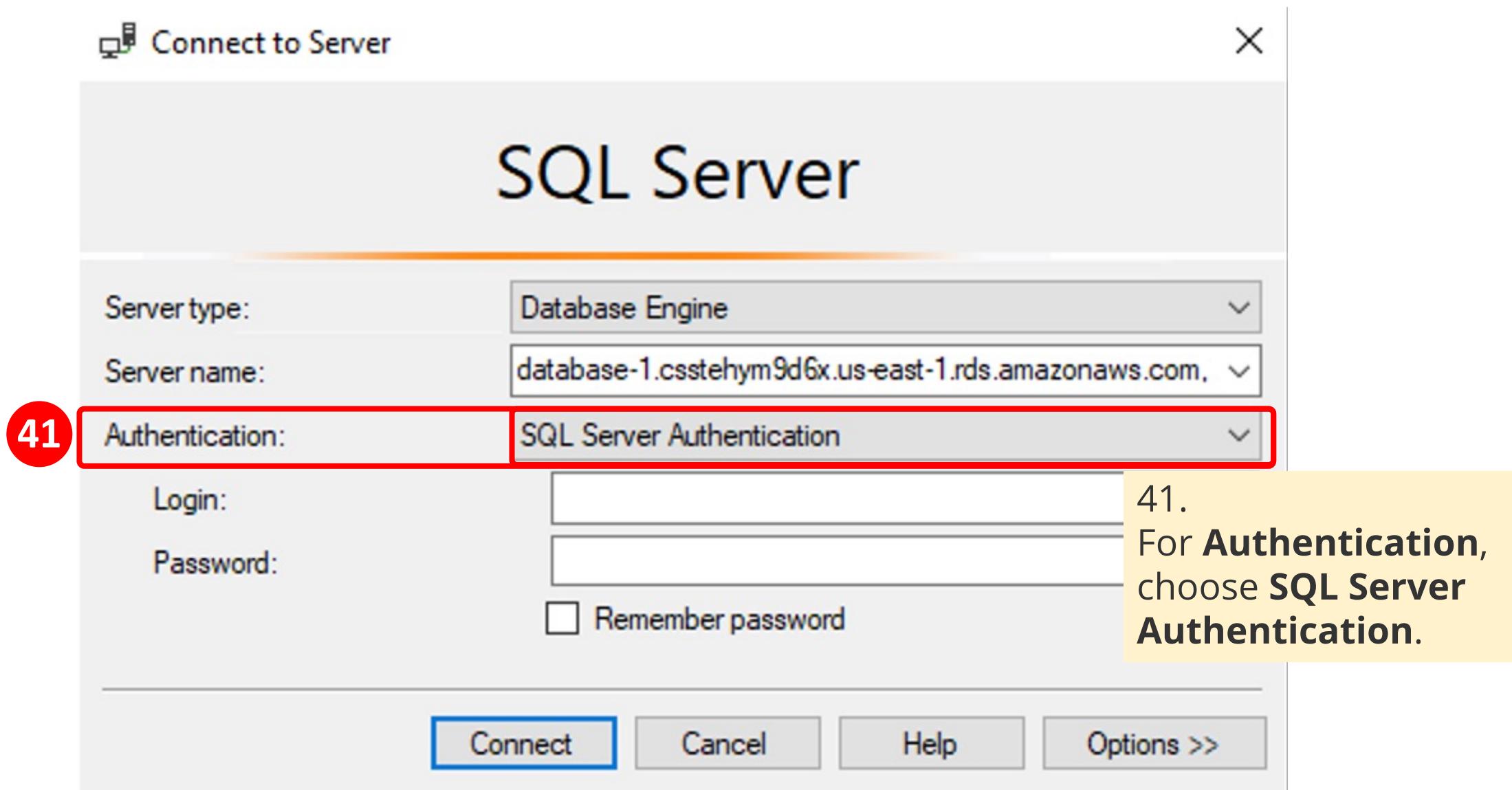
database-1.csstehym9d6x.us-east-1.rds.amazonaws.com,1433

Connect Cancel Help Options >



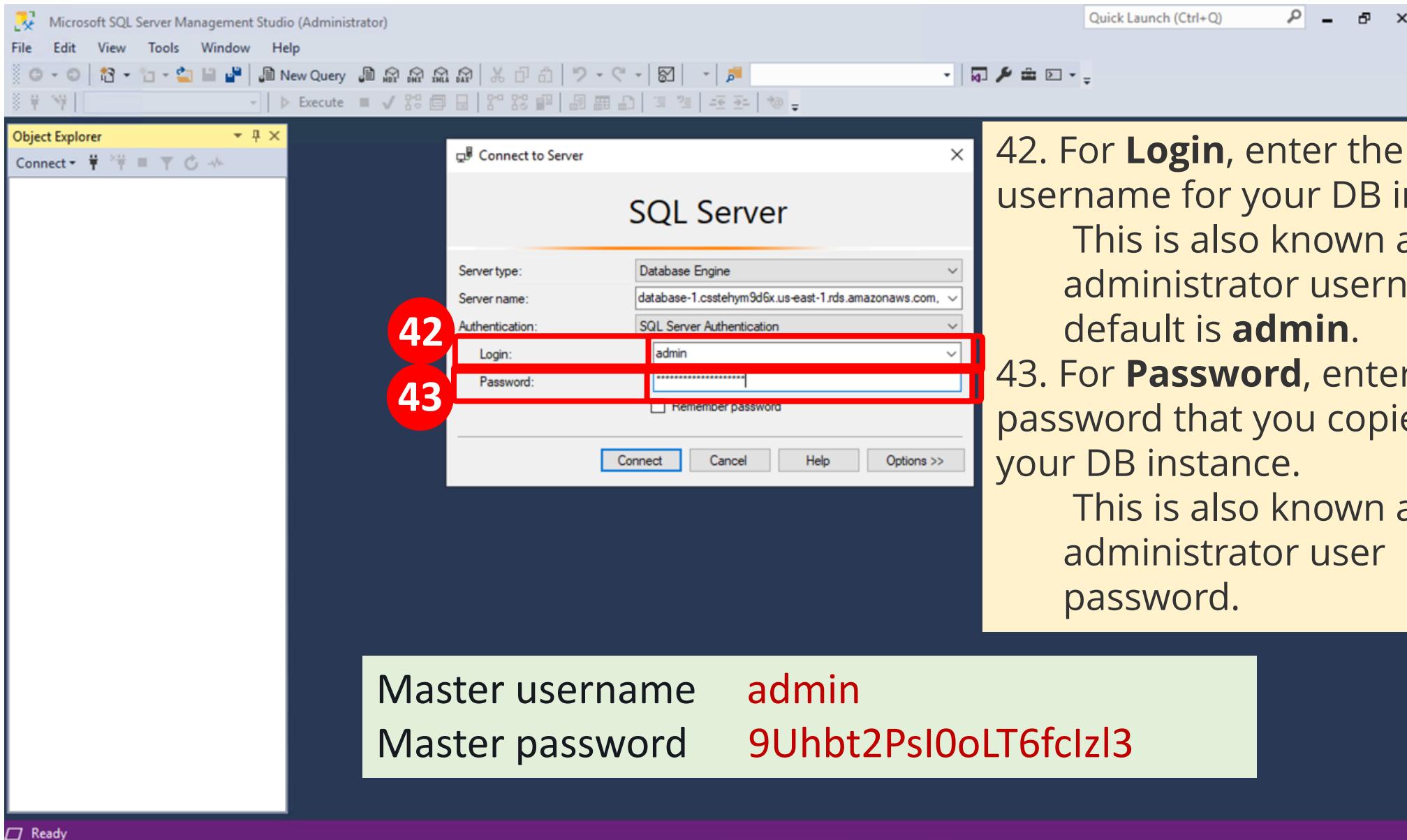
AWS Academy Introduction to Cloud: Semester 1

Module 10 Databases: Lab 10 - RDS



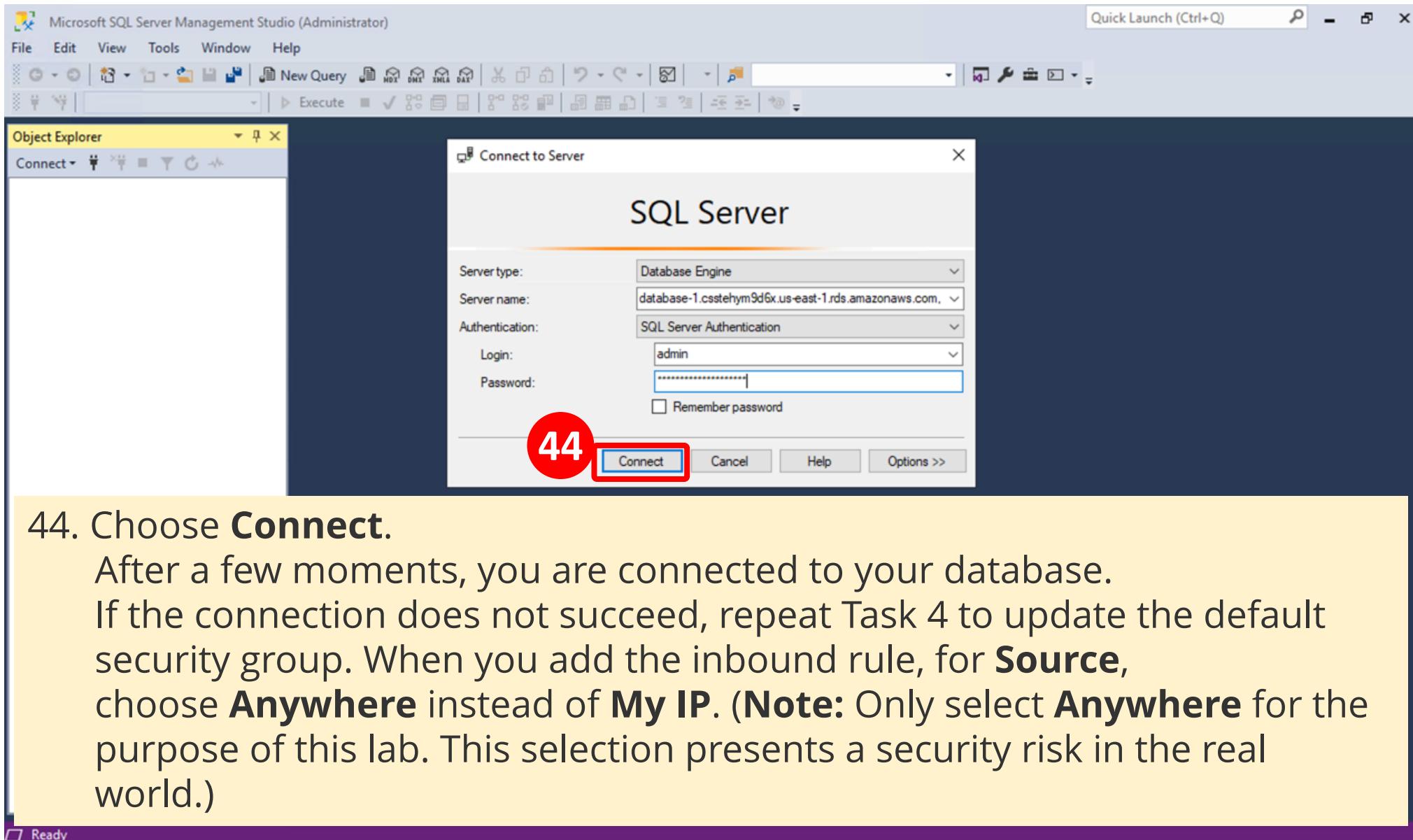
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Module 10 Databases: Lab 10 - RDS

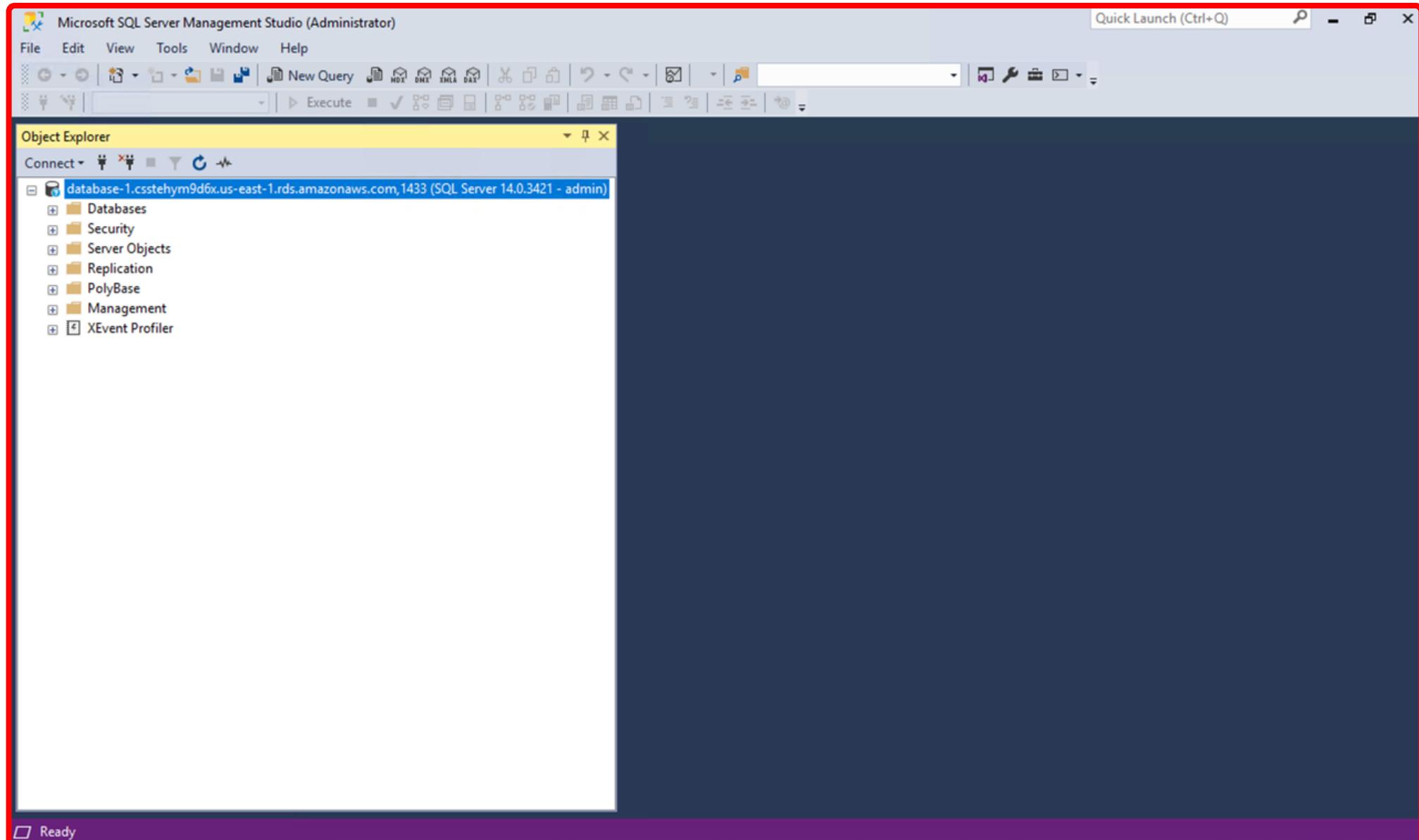


44. Choose **Connect**.

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.)

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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.

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The screenshot shows the Microsoft SQL Server Management Studio (Administrator) interface. The Object Explorer pane on the left is highlighted with a red border. It displays the database structure of a relational database on an AWS RDS instance. The tree view includes nodes for system databases like master, model, msdb, and tempdb, along with security, server objects, replication, and management components. The msdb database is expanded to show its internal tables, views, synonyms, programmability, service broker, storage, and security components.

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.

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Module 10 Databases: Lab 10 - RDS

The screenshot shows the AWS RDS (Amazon Relational Database Service) console interface. The left sidebar is titled "Amazon RDS" and includes links for Dashboard, Databases (which is selected), Query Editor, Performance insights, Snapshots, Automated backups, Reserved instances, Proxies, Subnet groups, Parameter groups, Option groups, Custom engine versions, Events, Event subscriptions, Recommendations (0), and Certificate update.

The main content area shows the "database-1" instance under the "Databases" section. The breadcrumb navigation indicates "RDS > Databases > database-1". The instance name "database-1" is displayed prominently. On the right, there are "Modify" and "Actions" buttons.

The "Summary" section provides key metrics:

DB identifier	CPU	Status	Class
database-1	44.50%	Available	db.t2.micro
Role	Current activity	Engine	Region & AZ
Instance	0 Connections	SQL Server Express Edition	us-east-1f

The "Configuration" tab is selected, showing the instance configuration details:

Configuration	Instance class	Storage
DB instance ID	Instance class db.t2.micro	Encryption Not enabled
Engine version	vCPU 1	Storage type General Purpose SSD (gp2)
14.00.3421.10.v1		

Below the configuration table, there are tabs for Connectivity & security, Monitoring, Logs & events, Configuration (selected), Maintenance & backups, and Tags.

At the bottom, there are links for Feedback, Unified Settings, Copyright notice (© 2022, Amazon Web Services, Inc. or its affiliates.), Privacy, Terms, and Cookie preferences.

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AWS 

AICv1Sem1EN... > Modules > Module 10: Dat... > Lab 10 - RDS

00:00   AWS Details  

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.

Launch Term

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

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

- <https://aws.amazon.com/certification/>
- <https://www.aws.training/>
- <https://aws.amazon.com/training/awsacademy/>
- <https://aws.amazon.com/education/awseducate/>
- **AWS Academy Introduction to Cloud: Semester 1**
 - <https://awsacademy.instructure.com/courses/18745>
- **AWS Certified Cloud Practitioner**
 - <https://aws.amazon.com/certification/certified-cloud-practitioner/>
- **AWS Certified Solutions Architect – Associate**
 - <https://aws.amazon.com/certification/certified-solutions-architect-associate/>
- **AWS Cloud Practitioner Essentials (Second Edition)**
 - <https://aws.amazon.com/training/course-descriptions/cloud-practitioner-essentials/>
- **Architecting on AWS**
 - <https://aws.amazon.com/training/course-descriptions/architect/>

Q & A

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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