
Amazon DynamoDB

Create and Query a NoSQL Table

Topic : DynamoDB (cloud NoSQL DB)

Lennox Thompson
Amazon Web Services (AWS)
Training Content

Tutorial

1 Introduction

In this tutorial, you will learn how to create a simple table, add data, scan and query the data by using the DynamoDB console. DynamoDB is a fully managed NoSQL database that supports both document and key-value store models. Its flexible data model, reliable performance, and automatic scaling of throughput capacity make it a great fit for mobile, web, gaming, ad tech, IoT, and many other applications.

1.1 Create a NoSQL Table

In the DynamoDB console, choose Create table.

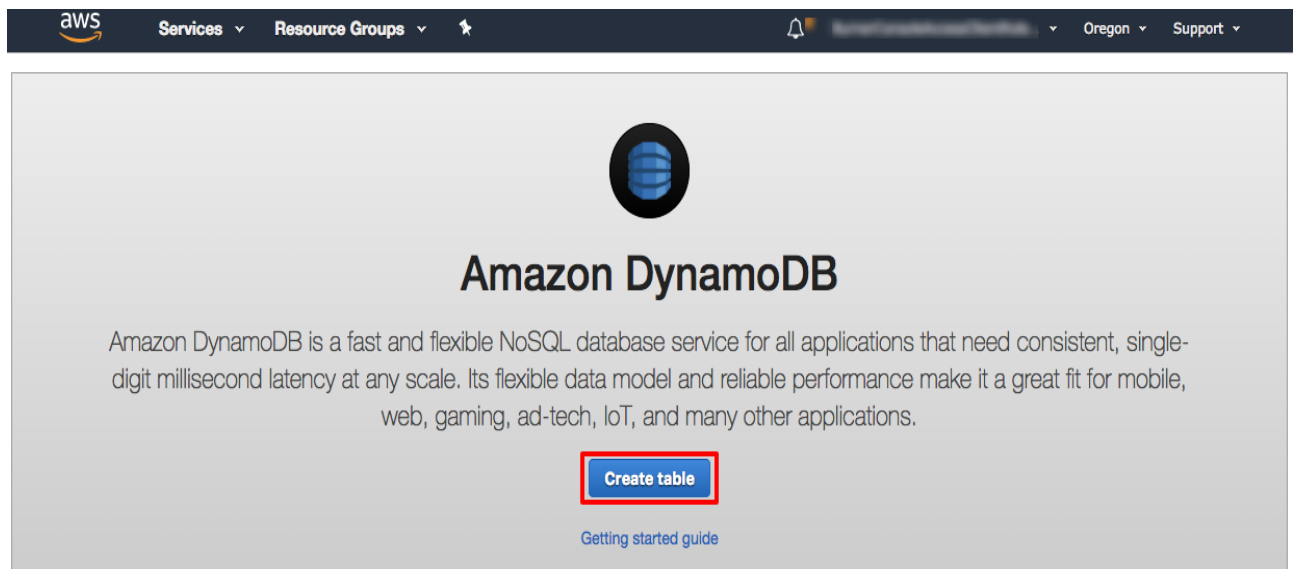


Figure 1: Create NoSQL table

We will use a music library as our use case for this tutorial. In the Table name box, type Music.

aws Services Resource Groups

Create DynamoDB table

DynamoDB is a schema-less database that only requires a table name and primary key. The table's primary key is made up of one or two attributes that uniquely identify items, partition the data, and sort data within each partition.

Table name* Music

Primary key* Partition key

String

☐ Add sort key

Table settings

Default settings provide the fastest way to get started with your table. You can modify these default settings now or after your table has been created.

☒ Use default settings

- No secondary indexes.
- Provisioned capacity set to 5 reads and 5 writes.
- Basic alarms with 80% upper threshold using SNS topic 'dynamodb'.
- On-Demand Backup and Restore Enabled **NEW**

i You do not have the required role to enable Auto Scaling by default. Please refer to [documentation](#).

Additional charges may apply if you exceed the AWS Free Tier levels for CloudWatch or Simple Notification Service. Advanced alarm settings are available in the CloudWatch management console.

Figure 2: Specify the table name

The partition key is used to spread data across partitions for scalability. It's important to choose an attribute with a wide range of values and that is likely to have evenly distributed access patterns. Type Artist in the Partition key box.

aws Services Resource Groups

Create DynamoDB table

DynamoDB is a schema-less database that only requires a table name and primary key. The table's primary key is made up of one or two attributes that uniquely identify items, partition the data, and sort data within each partition.

Table name* Music

Primary key* Partition key

Artist String

☐ Add sort key

Table settings

Default settings provide the fastest way to get started with your table. You can modify these default settings now or after your table has been created.

☒ Use default settings

- No secondary indexes.
- Provisioned capacity set to 5 reads and 5 writes.
- Basic alarms with 80% upper threshold using SNS topic 'dynamodb'.
- On-Demand Backup and Restore Enabled **NEW**

i You do not have the required role to enable Auto Scaling by default. Please refer to [documentation](#).

Additional charges may apply if you exceed the AWS Free Tier levels for CloudWatch or Simple Notification Service. Advanced alarm settings are available in the CloudWatch management console.

Figure 3: Specifying the partition key

Because each artist may write many songs, you can enable easy sorting with a sort key. Select the Add sort key check box. Type songTitle in the Add sort key box.

Create DynamoDB table

DynamoDB is a schema-less database that only requires a table name and primary key. The table's primary key is made up of one or two attributes that uniquely identify items, partition the data, and sort data within each partition.

Table name* Music

Primary key* Partition key

Artist String

☒ Add sort key

SongTitle String

Table settings

Default settings provide the fastest way to get started with your table. You can modify these default settings now or after your table has been created.

☒ Use default settings

- No secondary indexes.
- Provisioned capacity set to 5 reads and 5 writes.
- Basic alarms with 80% upper threshold using SNS topic "dynamodb".
- On-Demand Backup and Restore Enabled **NEW**

You do not have the required role to enable Auto Scaling by default.
Please refer to documentation.

Additional charges may apply if you exceed the AWS Free Tier levels for CloudWatch or Simple Notification Service. Advanced alarm settings are available in the CloudWatch management console.

Cancel Create

Figure 4: Adding a sort key

Next, you will enable DynamoDB auto scaling for your table.

DynamoDB auto scaling will change the read and write capacity of your table based on request volume. Using an AWS Identity and Access Management (AWS IAM) role called `DynamoDBAutoScaleRole`, DynamoDB will manage the auto scaling process on your behalf. DynamoDB creates this role for you the first time you enable auto scaling in an account.

Instruct DynamoDB to create the role by clearing the Use default settings check box.

Create DynamoDB table

DynamoDB is a schema-less database that only requires a table name and primary key. The table's primary key is made up of one or two attributes that uniquely identify items, partition the data, and sort data within each partition.

Table name* Music

Primary key* Partition key

Artist String

☒ Add sort key

SongTitle String

Table settings

Default settings provide the fastest way to get started with your table. You can modify these default settings now or after your table has been created.

☒ Use default settings

- No secondary indexes.
- Provisioned capacity set to 5 reads and 5 writes.
- Basic alarms with 80% upper threshold using SNS topic "dynamodb".
- On-Demand Backup and Restore Enabled **NEW**

Information: You do not have the required role to enable Auto Scaling by default. Please refer to documentation.

Additional charges may apply if you exceed the AWS Free Tier levels for CloudWatch or Simple Notification Service. Advanced alarm settings are available in the CloudWatch management console.

Cancel Create

Figure 5: Default settings for autoscaling

Scroll down the screen past Secondary indexes, Provisioned capacity, and Auto Scaling to the Create button. We won't change these settings for the tutorial.

In the Auto Scaling section, notice that DynamoDB will create the DynamoDBAutoScaleRole role for you.

Now choose Create.

Table 5

Read capacity units 5

Write capacity units 5

Estimated cost \$2.91 / month (Capacity calculator)

Auto Scaling

☒ Read capacity

☒ Write capacity

☐ Same settings as read

Target utilization 70 %

Minimum provisioned capacity 5 units

Maximum provisioned capacity 10000 units

☒ Apply same settings to global secondary indexes

☒ Apply same settings to global secondary indexes

Information: Please check your IAM permissions to create new service role for enabling Auto Scaling. See permissions.

IAM Role I authorize DynamoDB to scale capacity using the following role:

☒ New role: DynamoDBAutoScaleRole

☐ Existing role with pre-defined policies [Instructions]

Role Name*

Additional charges may apply if you exceed the AWS Free Tier levels for CloudWatch or Simple Notification Service. Advanced alarm settings are available in the CloudWatch management console.

Cancel Create

Figure 6: Create NoSQL Database

2 Add Data to the NoSQL Table

Select the Items tab. On the Items tab, choose Create item .

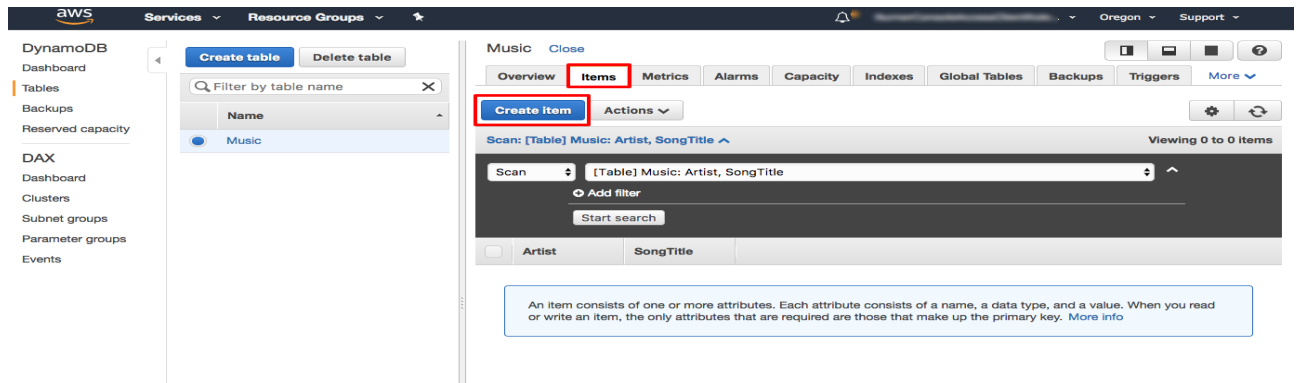


Figure 7: Add items to NoSQL table

In the data entry window, type the following:

For the Artist attribute, type No One You Know. For the songTitle attribute, type Call Me Today. Choose Save to save the item.

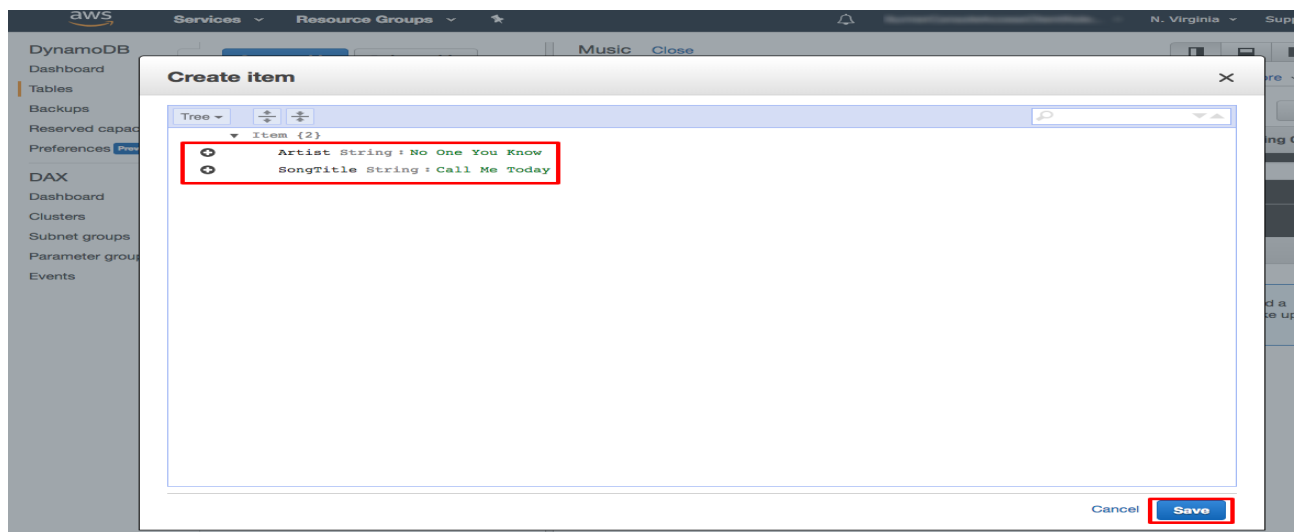


Figure 8: Adding data items

Repeat the process to add a few more items to your Music table:

Artist: No One You Know; songTitle: My Dog Spot

Artist: No One You Know; songTitle: Somewhere Down The Road

Artist: The Acme Band; songTitle: Still in Love

Artist: The Acme Band; songTitle: Look Out, World

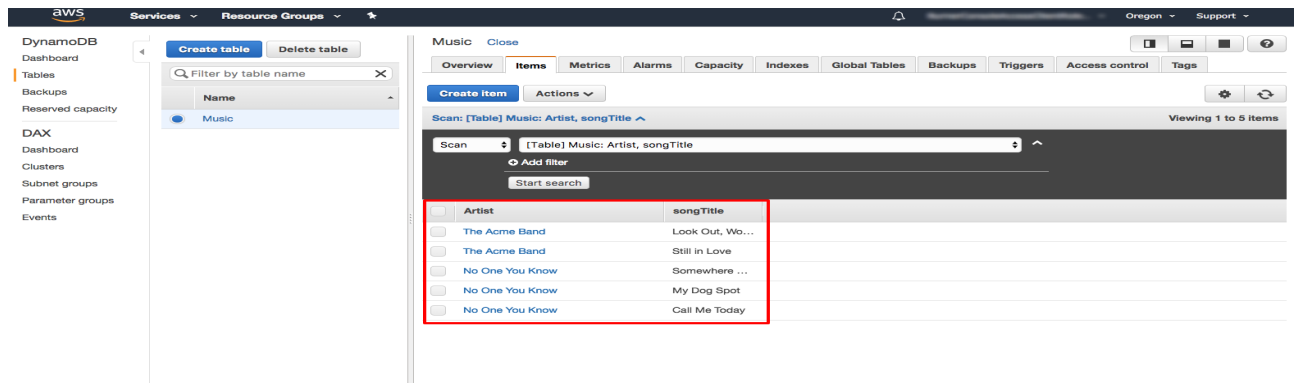


Figure 9: Repeat the process to add data

3 Query the NoSQL Table

In the drop-down list in the dark gray banner above the items, change Scan to Query.

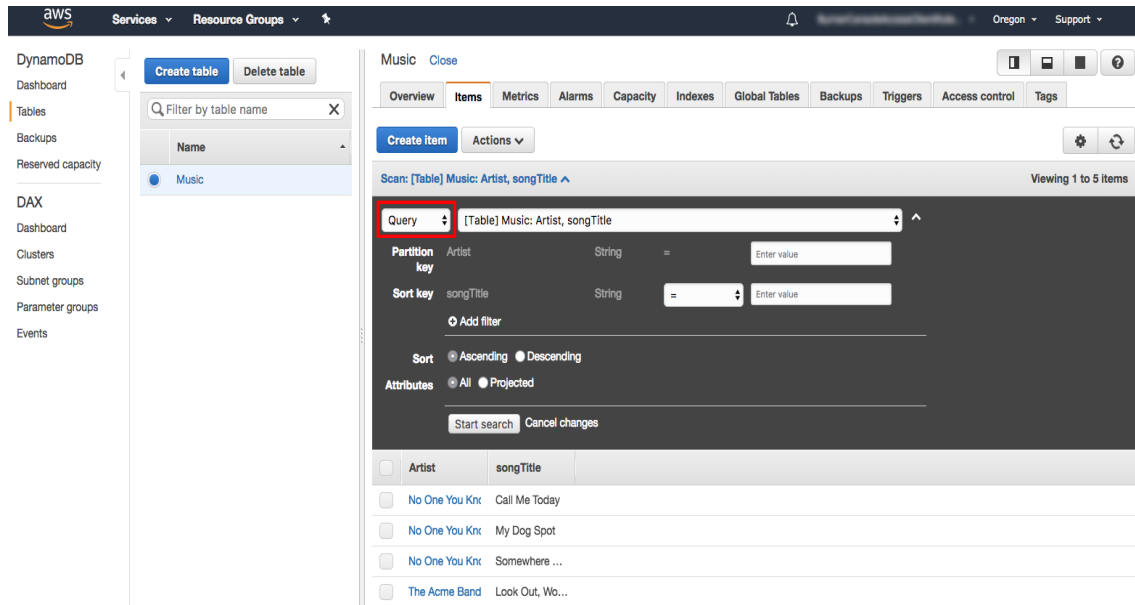


Figure 10: Query the NoSQL table

You can use the console to query the Music table in various ways. For your first query, do the following:

In the Artist box, type No One You Know, and choose Start search. All songs performed by No One You Know are displayed.

Try another query:

In the Artist box, type The Acme Band, and choose Start search. All songs performed by The Acme Band are displayed.

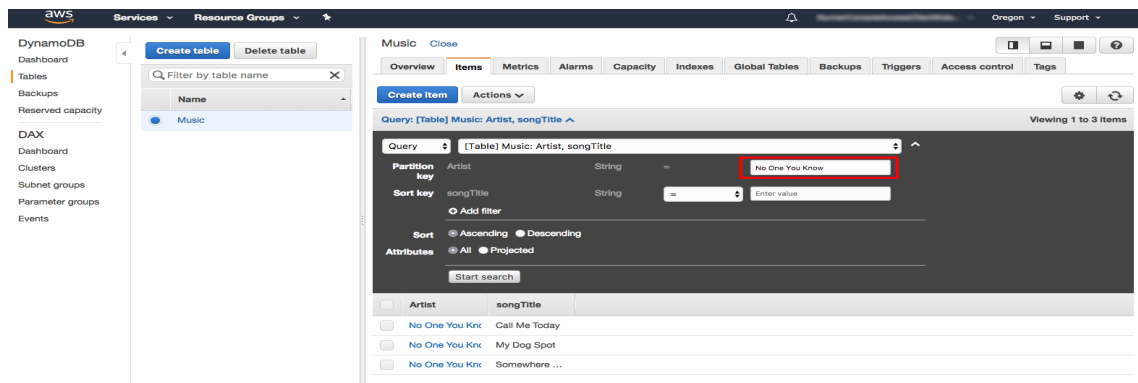


Figure 11: Query the table