



Exercise: Provision non-relational Azure data services

10 minutes

Sandbox activated! Time remaining: **3 hr 8 min**

You have used 2 of 10 sandboxes for today. More sandboxes will be available tomorrow.

In the sample scenario, you've decided to create the following data stores:

- A Cosmos DB for holding information about the volume of items in stock. You need to store current and historic information about volume levels, so you can track how levels vary over time. The data is recorded daily.
- A Data Lake store for holding production and quality data.
- A blob container for holding images of the products the company manufactures.
- File storage for sharing reports.

In this exercise, you'll provision and configure the Cosmos DB account, and test it by creating a database, a container, and a sample document. You'll also provision an Azure Storage account that can provide blob, file, and Data Lake storage.

You'll perform this exercise using the Azure portal.

ⓘ Note

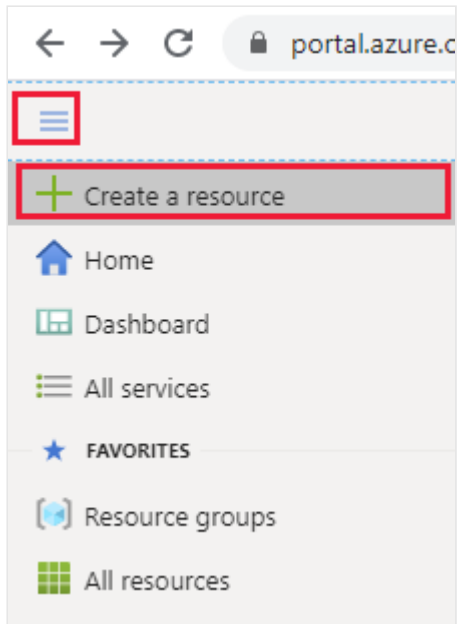
Azure can take as little as 5 minutes or as long as 20 minutes to create the Azure Cosmos DB account.

Provision and configure a Cosmos DB database and container

Create a Cosmos DB account

1. Sign in to the [Azure portal](#).

2. From the left-hand navigation menu in the Azure portal, select **Create a resource**.



3. On the **New** page, select **Azure Cosmos DB**.

The screenshot shows the Microsoft Azure portal's 'New' page. The browser address bar displays 'portal.azure.com/#create/hub'. The page header includes the Microsoft Azure logo and a search bar. Below the header, there's a 'Home > New' breadcrumb. A search bar for the Marketplace is present. The main content area is divided into two columns: 'Azure Marketplace' and 'Popular'. The 'Azure Marketplace' column lists various categories like 'Get started', 'Recently created', 'AI + Machine Learning', etc. The 'Popular' column lists specific services with icons and links to 'Quickstarts + tutorials'. The 'Azure Cosmos DB' service is highlighted with a red rectangular box. Below the 'Popular' list, there is a link to 'Show recently created items'.

Azure Marketplace	Popular
Get started	Windows Server 2016 Datacenter Quickstarts + tutorials
Recently created	Ubuntu Server 18.04 LTS Learn more
AI + Machine Learning	Web App Quickstarts + tutorials
Analytics	SQL Database Quickstarts + tutorials
Blockchain	Function App Quickstarts + tutorials
Compute	Azure Cosmos DB Quickstarts + tutorials
Containers	Kubernetes Service Quickstarts + tutorials
Databases	DevOps Project Quickstarts + tutorials
Developer Tools	Storage account - blob, file, table, queue Quickstarts + tutorials
DevOps	Show recently created items
Identity	
Integration	
Internet of Things	
Media	
Mixed Reality	
IT & Management Tools	
Networking	
Software as a Service (SaaS)	
Security	
Storage	
Web	

4. On the **Select API** option page, select **Core (SQL) - Recommended**

[Dashboard](#) > [Create a resource](#) >

Select API option ...

Which API best suits your workload?

Azure Cosmos DB is a fully managed NoSQL database service for building scalable, high performance applications. [Learn more](#)

To start, select the API to create a new account. The API selection cannot be changed after account creation.

Core (SQL) - Recommended

Azure Cosmos DB's core, or native API for working with documents. Supports fast, flexible development with familiar SQL query language and client libraries for .NET, JavaScript, Python, and Java.

[Create](#) [Learn more](#)

Azure Cosmos DB API for MongoDB

Fully managed database service for apps written for MongoDB. Recommended if you have existing MongoDB workloads that you plan to migrate to Azure Cosmos DB.

[Create](#) [Learn more](#)

Azure Table

Fully managed database service for apps written for Azure Table storage. Recommended if you have existing Azure Table storage workloads that you plan to migrate to Azure Cosmos DB, but do not want to re-write your application to use the SQL API.

[Create](#) [Learn more](#)

Gremlin (Graph)

Fully managed graph database service using the Gremlin query language, based on Apache TinkerPop project. Recommended for new workloads that need to store relationships between data.

[Create](#) [Learn more](#)

5. On the **Create Azure Cosmos DB Account** page, on the **Basics** tabs, enter the details of the account using the values in the following table, and then select **Review + create**:

Field	Value
Subscription	Concierge Subscription
Resource Group	learn-3bc1cfc6-1125-46d6-81f4-573ebb88be76 (This resource group will have been created for you in the sandbox. Click on the Resource Group field's drop-down arrow to select.)
Account Name	Enter a unique name, such as your initials, the date (in numeric format), and the text <i>cosmosdbaccount</i> . For example, <i>jpws01012020cosmosdbaccount</i>
Location	Accept the default location
Capacity mode	Provisioned throughput
Apply Free Tier Discount	Do Not Apply

6. Wait while your settings are validated. If there's a problem, it will be reported at this stage, and you can go back and correct the issue.
7. Select **Create**. It can take 10 or 15 minutes to create the account.

Create Azure Cosmos DB Account - Core (SQL) ...

✓ Validation Success

Basics Global Distribution Networking Backup Policy Encryption Tags Review + create

Creation Time

Estimated Account Creation Time (in minutes) 15

i The estimated creation time is calculated based on the location you have selected

Basics

Subscription	Concierge Subscription
Resource Group	learn-
Location	West US
Account Name	(new) rc6321
API	Core (SQL)
Capacity mode	Provisioned throughput
Geo-Redundancy	Disable
Multi-region Writes	Disable

Backup Policy

Create

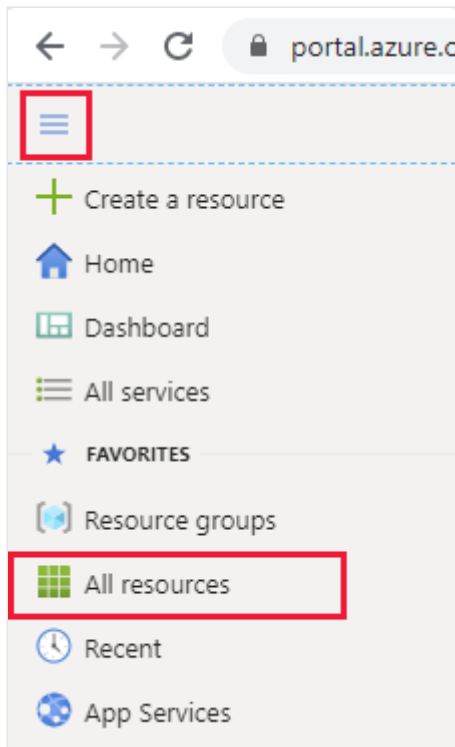
Previous

Next

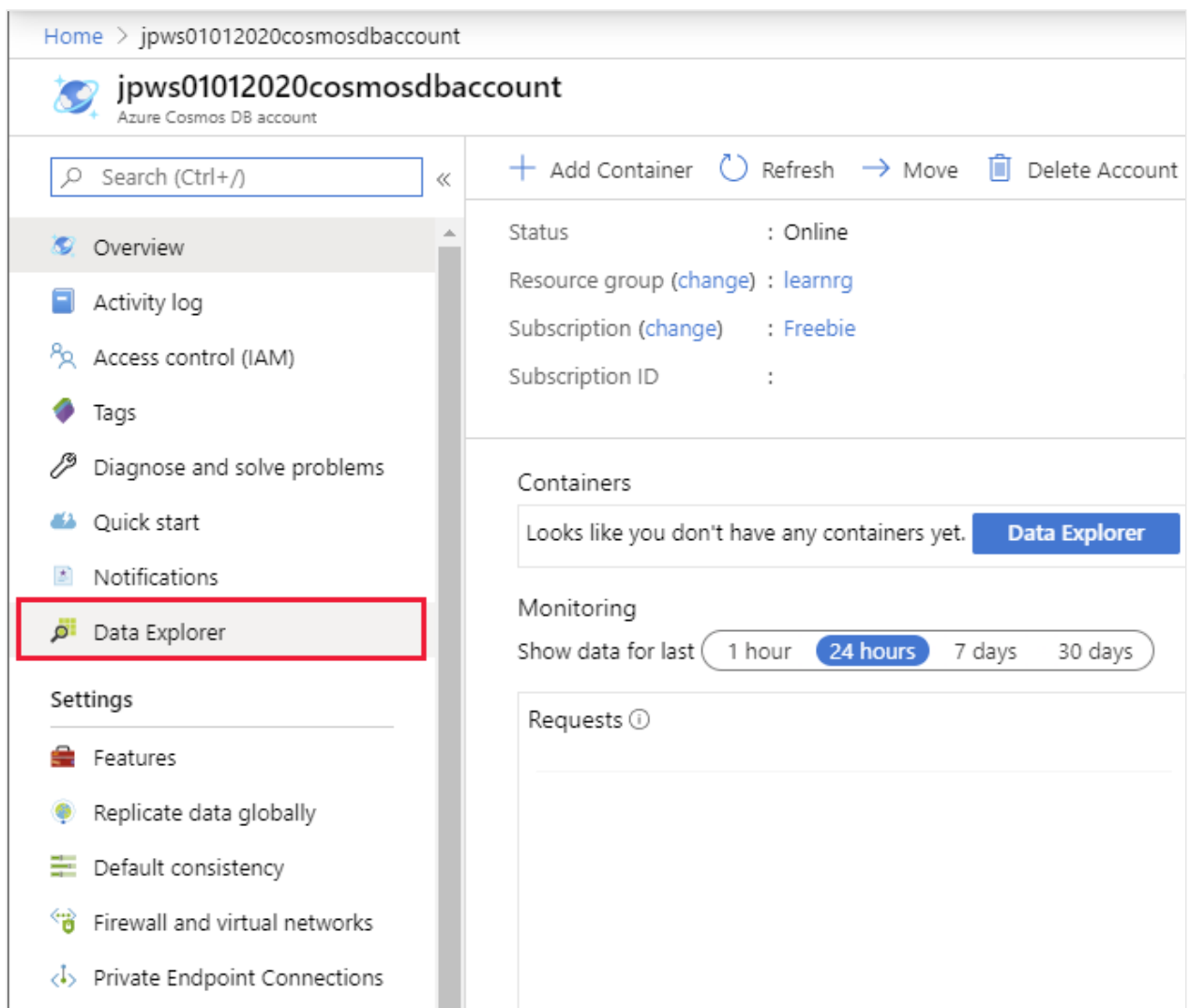
[Download a template for automation](#)

Create a database and a container

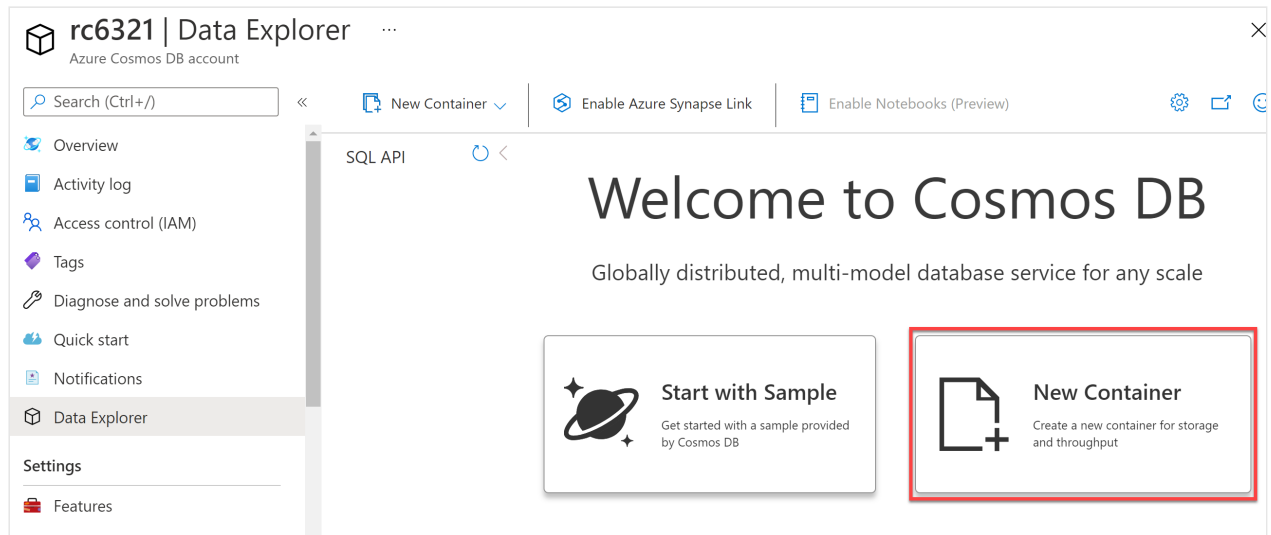
1. In the Azure portal, in the left-hand navigation menu, select **All resources**, and then select your Cosmos DB account.



2. On the page for your Cosmos DB account, select **Data Explorer**.



3. On the **Data Explorer** page, select **New Container**.



4. In the **Add Container** dialog box, create a new container with the following values, and then select **OK**:

Field	Value
Database ID	Select Create new , and enter contosodb
Share throughput accross containers	Check
Throughput	Select Manual , and specify 400 RU/s (the default)
Container ID	productvolumes
Partition key	/productid (Each product will have a new level recorded each day. Partitioning by product ID enables you to quickly report how the levels for a product vary over time.)
My partition key is larger than 100 bytes	Leave unchecked

New Container

* Database id ⓘ

☒ Create new ☐ Use existing

Type a new database id

☒ Share throughput across containers ⓘ

* Database throughput (autoscale) ⓘ

☒ Autoscale ☐ Manual

Estimate your required RU/s with [capacity calculator](#).

Database Max RU/s ⓘ

4000

*

Your database throughput will automatically scale from **400 RU/s** (10% of max RU/s) - **4000 RU/s** based on usage.

* Container id ⓘ

e.g., Container1

* Partition key ⓘ

e.g., /address/zipCode

Unique keys ⓘ

+ Add unique key

▼ Advanced

☐ My partition key is larger than 100 bytes

Analytical store ⓘ

☐ On ☒ Off

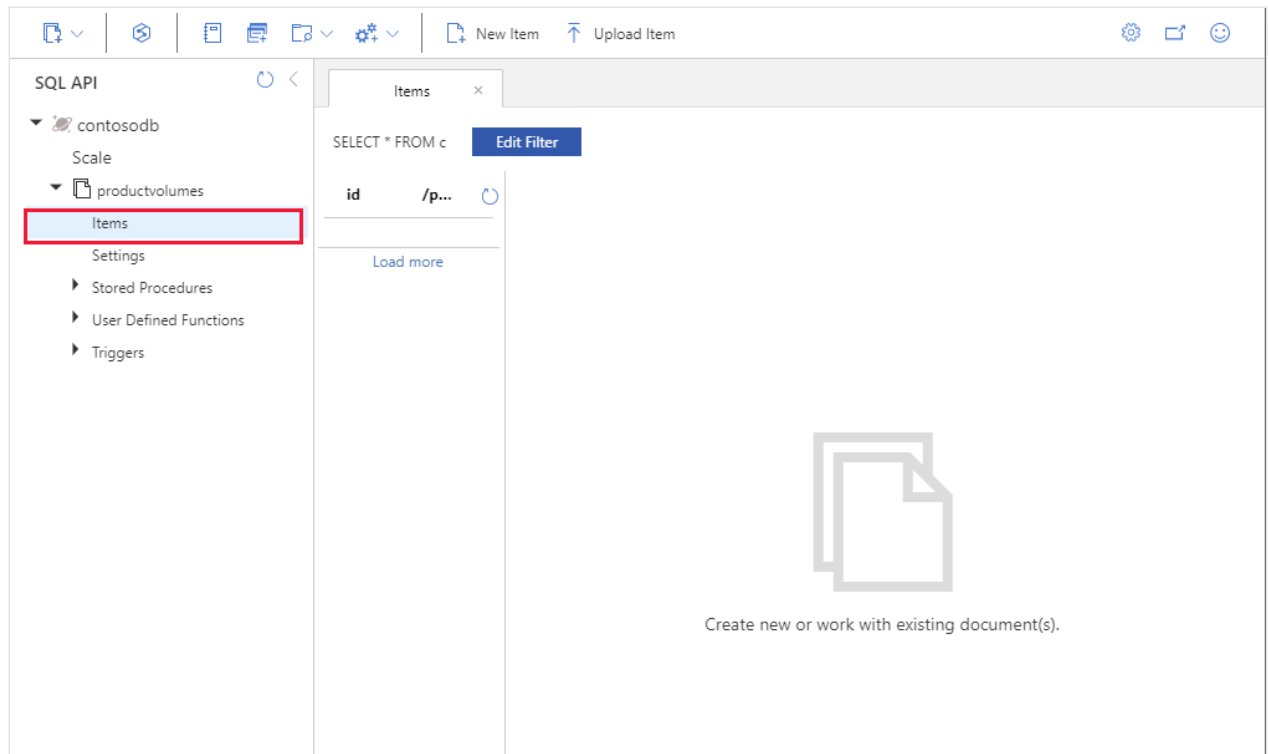
Azure Synapse Link is required for creating an analytical store container. Enable Synapse Link for this Cosmos DB account. [Learn more](#)

Enable

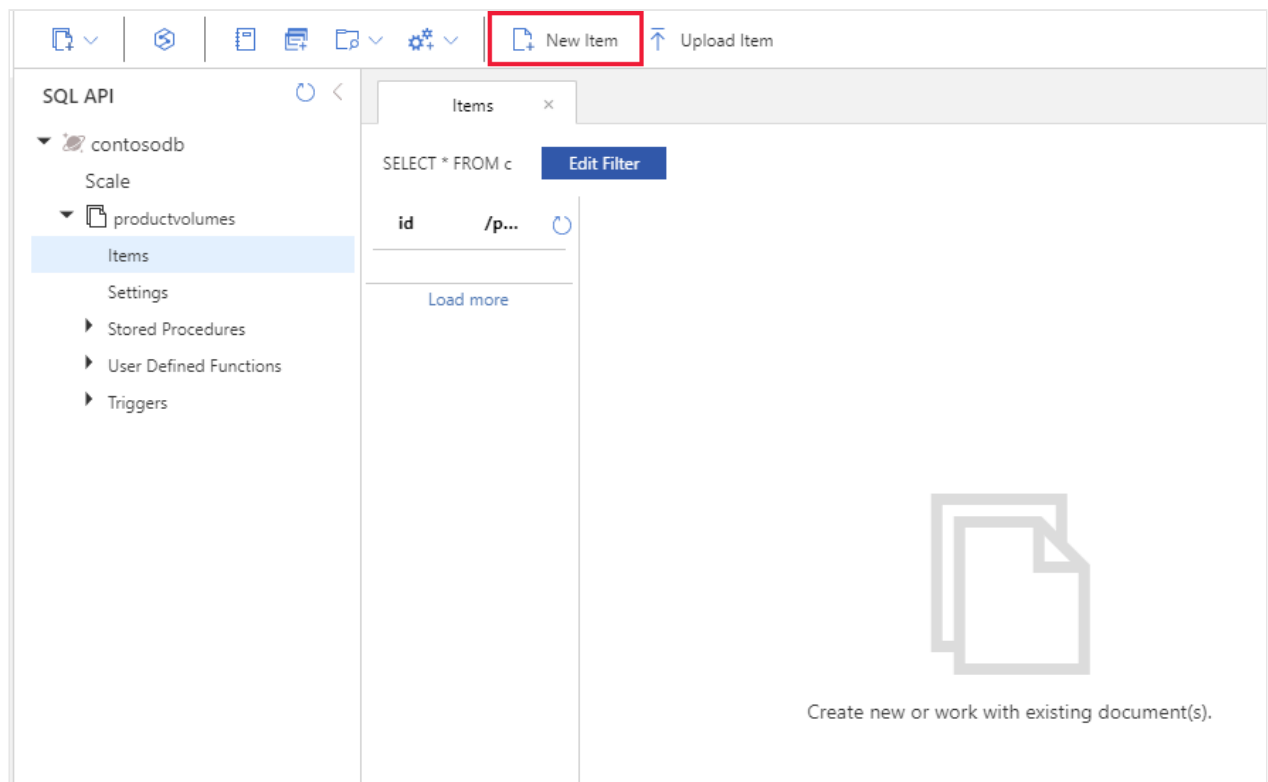
OK

5. In the **Data Explorer** window. Expand **contosodb**, expand **productvolumes**, and then click **Items**. The container should currently be empty.

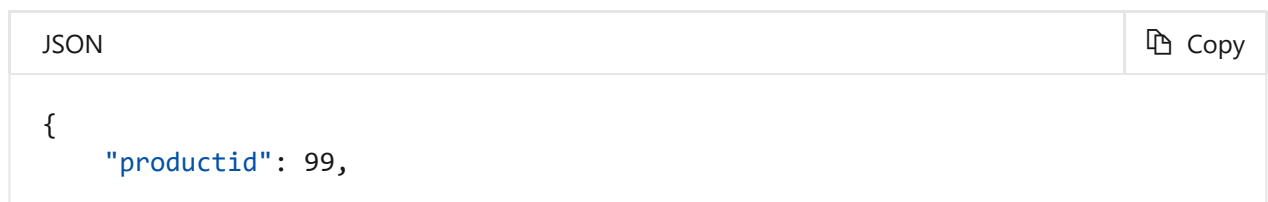
<https://docs.microsoft.com/en-us/learn/modules/explore-provision-deploy-non-relational-data-services-azure/7-exercise-provision-non-relational-...> 8/21



6. Select **New Item** to create a new document.



7. Replace the text that appears in the document window with the following JSON document. This is an example document showing the amount of product 99 in stock on 01/01/2020.

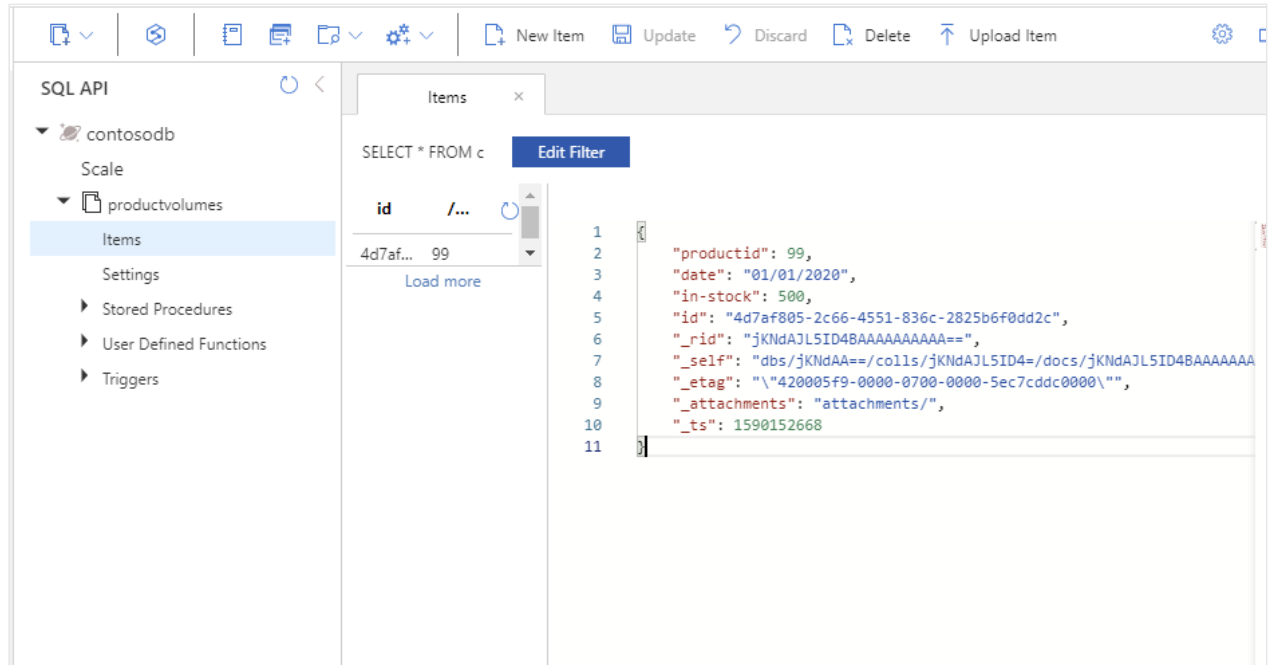


```

    "date": "01/01/2020",
    "in-stock": 500
  }

```

8. Select **Save**. The document will be added to the container. The new document will have some additional fields that Cosmos DB uses to track and manage the document. You can ignore these fields for now.



You've now provisioned a new Cosmos DB account, and created a database and container.

Provision Azure Storage

Create an Azure Storage account for Data Lake Storage

1. On the left-hand navigation menu in the Azure portal, select **Create a resource**.
2. On the **New** page, select **Storage account**.

[Dashboard](#) >

Create a resource

Get started










Recently created

Categories

- AI + Machine Learning
- Analytics
- Blockchain
- Compute
- Containers
- Databases
- Developer Tools
- DevOps
- Identity
- Integration
- Internet of Things
- IT & Management Tools
- Media
- Migration
- Mixed Reality
- Monitoring & Diagnostics
- Networking
- Security
- Software as a Service (SaaS)

Search services and marketplace

Popular offers [See more in Marketplace](#)

-  **Windows Server 2019 Datacenter**
[Create](#) | [Learn more](#)
-  **Ubuntu Server 20.04 LTS**
[Create](#) | [Learn more](#)
-  **Web App**
[Create](#) | [Docs](#) | [MS Learn](#)
-  **SQL Database**
[Create](#) | [Docs](#) | [MS Learn](#)
-  **Function App**
[Create](#) | [Docs](#)
-  **Azure Cosmos DB**
[Create](#) | [Docs](#) | [MS Learn](#)
-  **Kubernetes Service**
[Create](#) | [Docs](#) | [MS Learn](#)
-  **DevOps Starter**
[Create](#) | [Docs](#) | [MS Learn](#)
-  **Storage account**
[Create](#) | [Docs](#) | [MS Learn](#)

3. On the **Create storage account** page, on the **Basics** tabs, enter the details of the account using the values in the following table:

Field	Value
Subscription	Concierge Subscription

Field	Value
Resource Group	[sandbox resource group]
Storage account Name	Enter a unique name, such as your initials, the date (in numeric format), and the text <i>storage</i> . For example, <i>jpws01012020storage</i>
Performance	Standard
Redundancy	Geo-redundant storage (GRS)

4. Select **Advanced**. On the **Advanced** page, in the **Data Lake Storage Gen2** section, select **Enabled**, and then select **Review + create**.

[Dashboard](#) > [Create a resource](#) >

Create a storage account

Basics Advanced Networking Data protection Tags Review + create

Security

Configure security settings that impact your storage account.

Require secure transfer for REST API operations ☒ [i](#)

Enable infrastructure encryption ☐ [i](#)

Enable blob public access ☒ [i](#)

Enable storage account key access ☒ [i](#)

Minimum TLS version [i](#)

Data Lake Storage Gen2

The Data Lake Storage Gen2 hierarchical namespace accelerates big data analytics workloads and enables file-level access control lists (ACLs). [Learn more](#)

Enable hierarchical namespace ☒

Blob storage

Enable network file share v3 ☐ [i](#)

i To enable NFS v3 'hierarchical namespace' must be enabled, and on the networking tab, 'public endpoint (selected networks)' must be configured with one or more subnets, or 'private endpoint' must be selected and configured with a private endpoint. [Learn more about NFS v3](#)

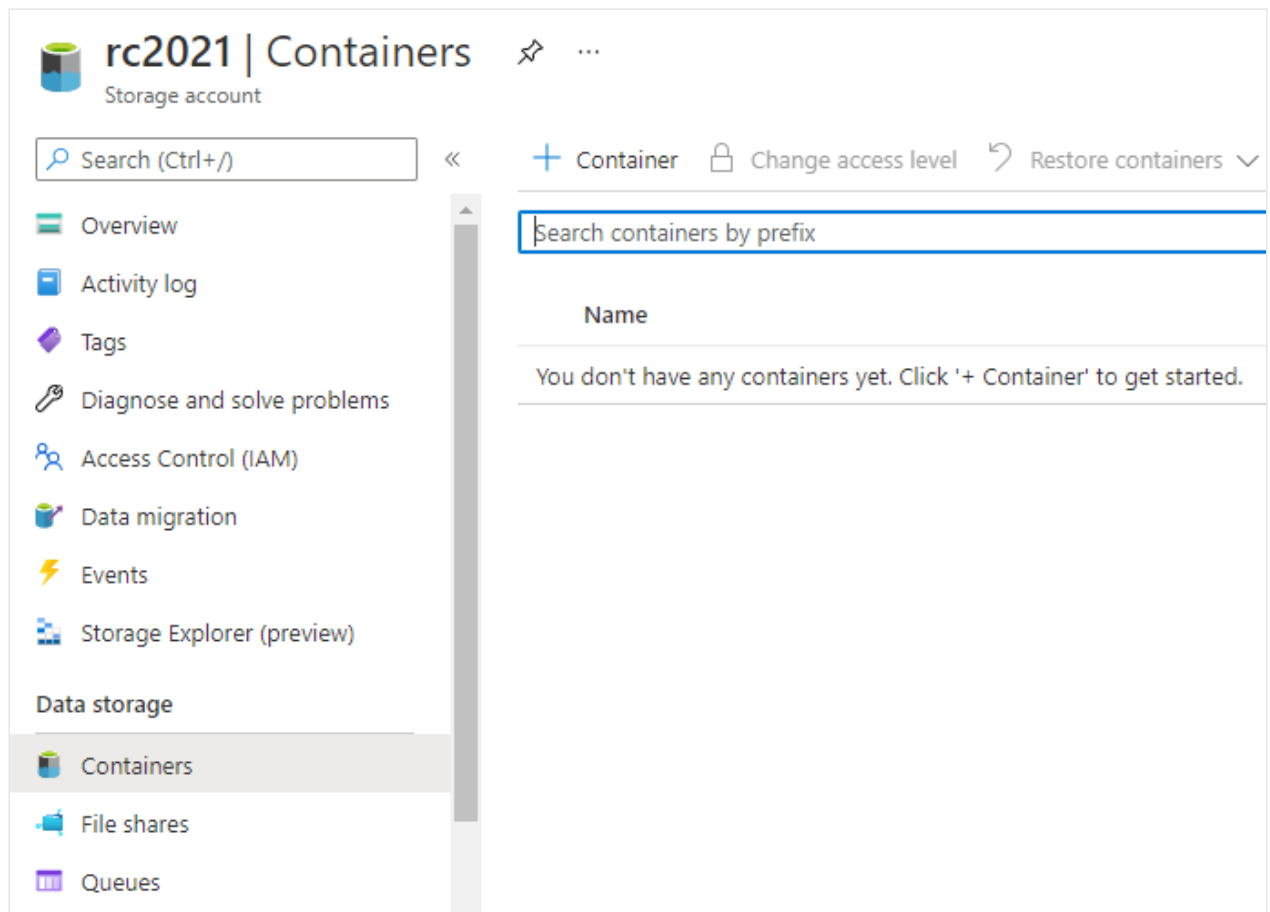
[Review + create](#) [< Previous](#) [Next : Networking >](#)

5. If your settings are validated correctly, select **Create**.

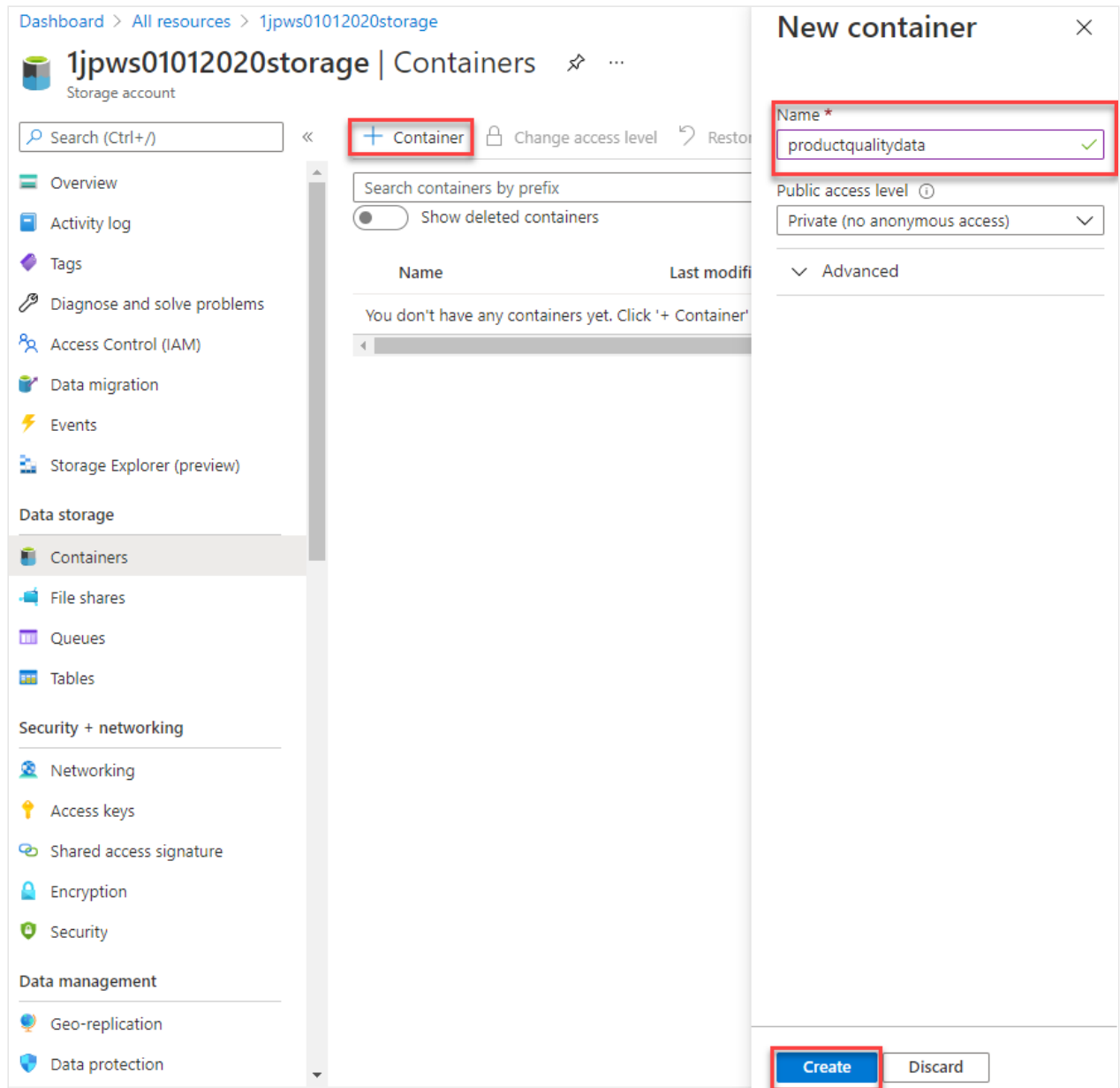
It takes approximately 15-20 seconds for the storage account to be provisioned.

Create a container for Data Lake storage

1. In the Azure portal, on the left-hand navigation menu, select **All resources**, and then select your storage account.
2. On the page for your storage account, under **Data Storage**, select **Containers**.

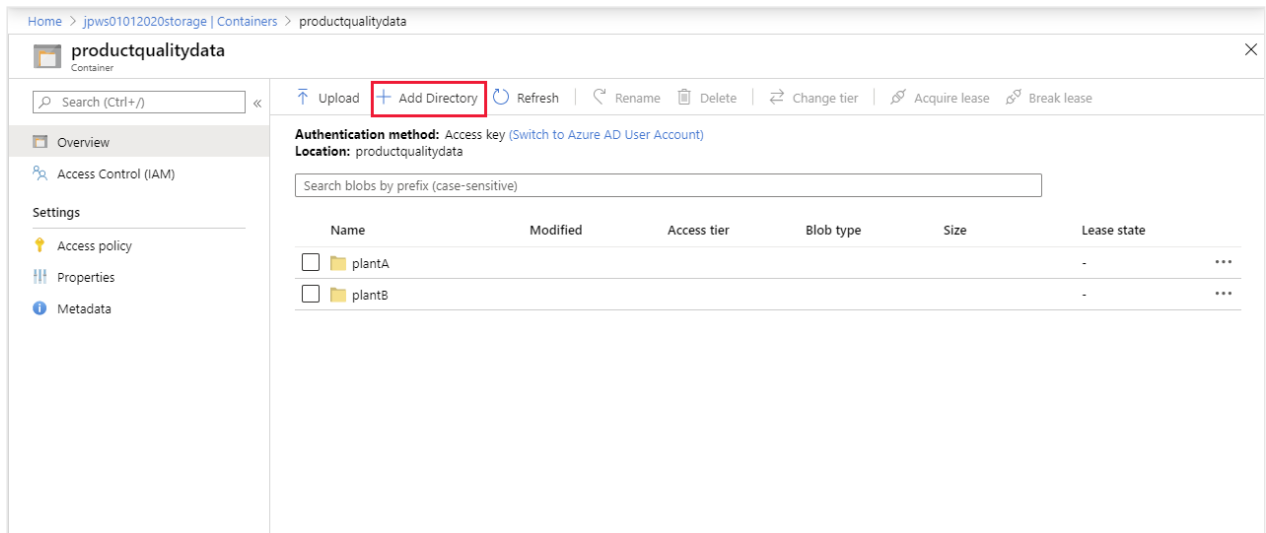


3. On the **Containers** page, select **+ Container**, and create a new container named **productqualitydata**. Leave the **Public access level** set to **Private (no anonymous access)**, and then click **Create**.



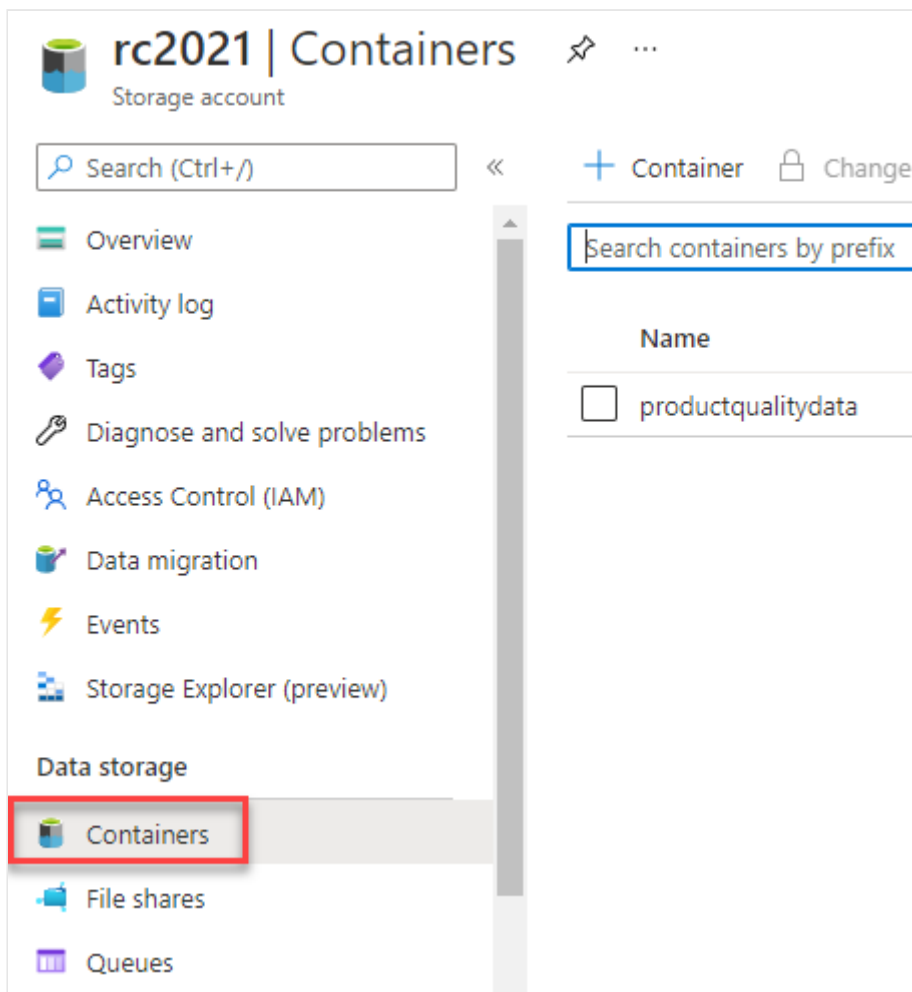
4. When the container has been created, double-click the **productqualitydata** container.
5. On the **productqualitydata** page, click + **Add Directory**, and add a directory named **plantA** and click **Save**.
6. Add a second directory named **plantB** and click **Save**.

Contoso has two manufacturing plants named *Plant A* and *Plant B*. Other applications will upload manufacturing data from each of these plants to the appropriate directory for later analysis.

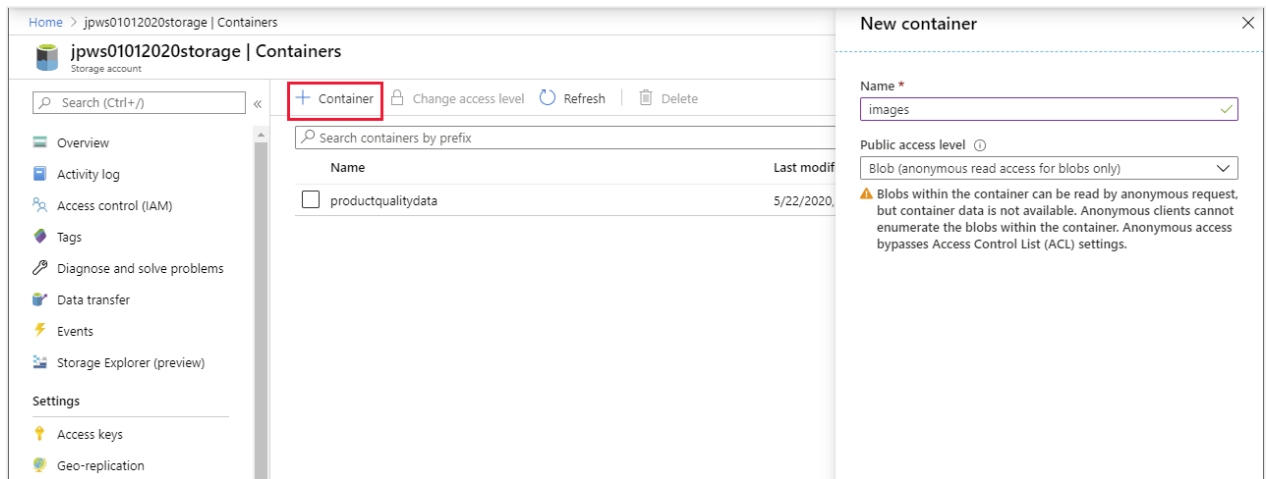


Create a container for Blob storage

1. In the Azure portal, on the left-hand navigation menu, select **All resources**, and then select your storage account.
2. On the **Overview** page, select **Containers**.



3. On the **Containers** page, select **+ Container**, and create a new container named **images**. Set the **Public access level** to **Blob (anonymous read access for blobs only)**.



Contoso will use this container to hold product images.

Note

The container created for Data Lake Storage will also appear in the **Containers** page. You could store image data in a Data Lake Storage container, but Contoso want to keep the images separate from product quality data.

Create a file share

1. On the storage account page, under **File service** select **File shares**.

Home > jpws01012020storage | File shares

jpws01012020storage | File shares
Storage account

Search (Ctrl+ /) << + File share Refresh

Storage Explorer (preview)

Settings

- Access keys
- Geo-replication
- CORS
- Configuration
- Encryption
- Shared access signature
- Firewalls and virtual networks
- Private endpoint connections
- Advanced security
- Static website
- Properties
- Locks
- Export template

Data Lake Storage

- Containers
- Lifecycle Management

File service

- File shares**

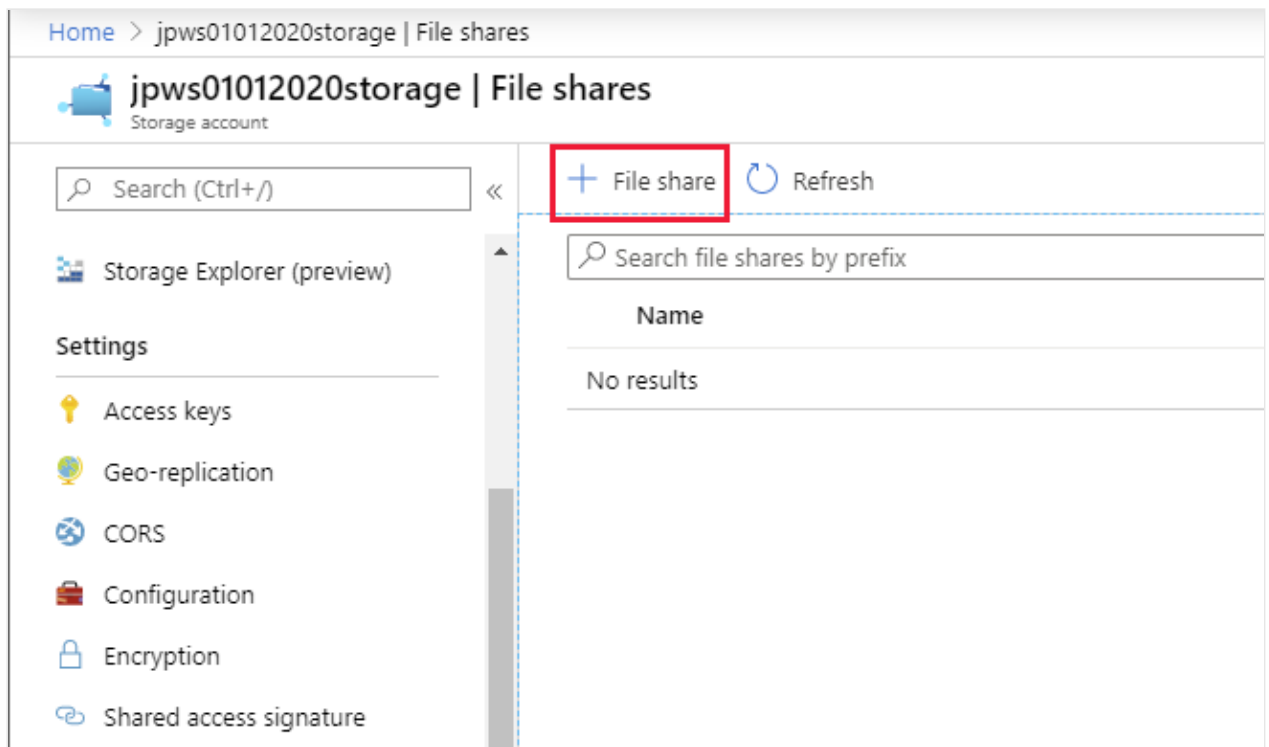
Table service

- Tables

Search file shares by prefix

Name
No results

2. On the **File shares** page, select **+ File share**.



3. Create a new file share named **reports**. Leave the **Quota** empty.

New file share ✕

Name *

reports ✓

Quota ?

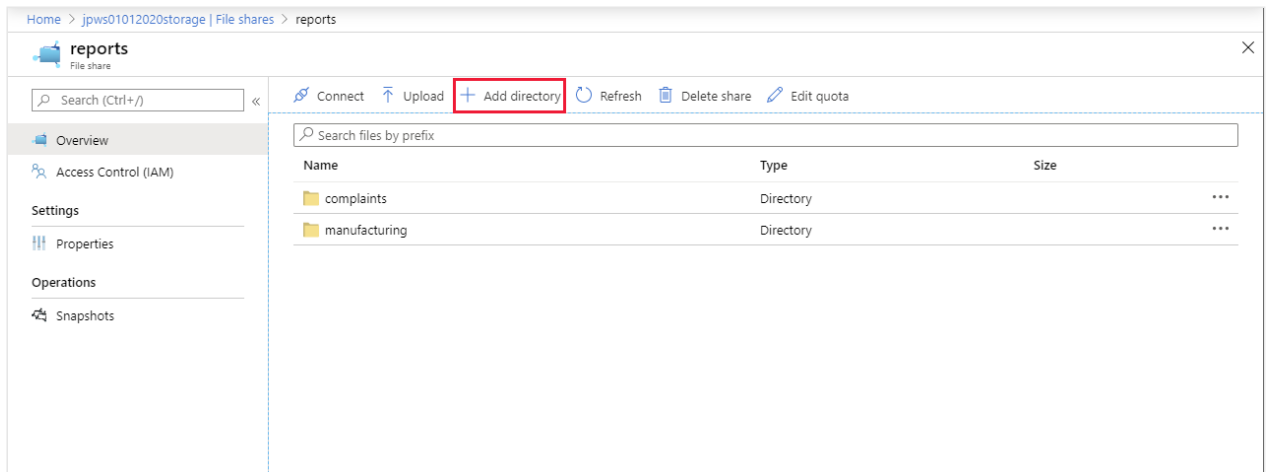
GiB

Create

Discard

4. On the **File shares** page, double-click the **reports** file share.

5. On the **reports** page, select **+ Add directory**, and add a directory named **manufacturing**.
6. Add a second directory named **complaints**.



Contoso will use these directories to hold documents relating to the manufacturing process and customers' complaints. A user that has been granted access to the **reports** file share can upload and download files from these directories.

Next unit: Knowledge check

[Continue >](#)