

Portfolio Project:

Securing Data Access in Microsoft Fabric

Project Overview

This project focused on securing data access in Microsoft Fabric through a multi-layer security model that manages user permissions and access controls. The goal is to create a secure environment for data management by implementing workspace roles, item access controls, and OneLake data access roles, ensuring that users can access only the data they are authorized to view.

Objectives:

- 1. Create a Workspace:**
 - Set up a workspace with Fabric trial enabled.
- 2. Create a Data Warehouse**
 - Establish a data warehouse within the workspace.
- 3. Create a Lakehouse**
 - Set up a lakehouse and populate it with sample data.
- 4. Apply Workspace Access Controls**
 - Manage user roles and permissions within the workspace.
- 5. Apply Item Access Control**
 - Control access to individual items within the workspace.
- 6. Apply OneLake Data Access Roles**
 - Create custom roles for data access in a lakehouse.

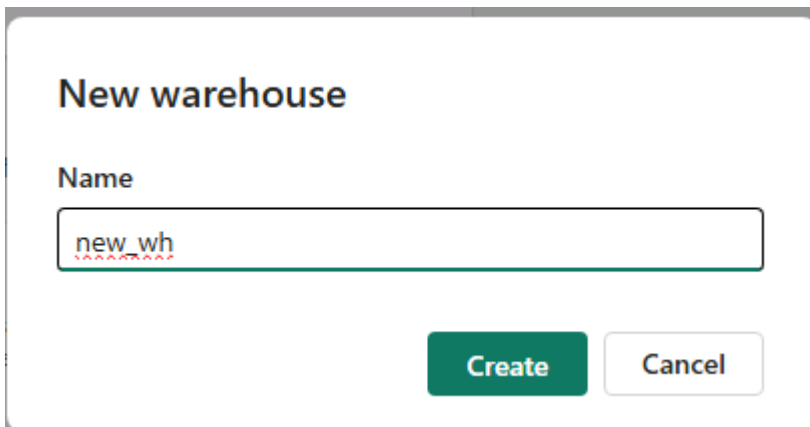
Experience

Create a Workspace

- Navigated to Microsoft Fabric Home and signed in.
- Selected Workspaces and created a new workspace with a name.

Create a Data Warehouse

- Clicked + New Item.
- Under the Store Data section, selected Sample warehouse.
- Created a new data warehouse.
- Waited for the warehouse to be created.



New warehouse

Name

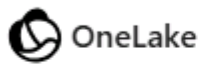
new_wh

Create Cancel

Create a Lakehouse

- In the workspace, selected + New Item and then selected Lakehouse.
- Created a new lakehouse.
- Selected the Start with sample data tile and chose the Public holidays sample to populate the lakehouse with data.

Select data to add to your role



▼ new_lh

▼ ☐ Tables



☒  publicholidays

> ☐ Files



Apply Workspace Access Controls



- Opened two browsers: one as a Workspace Admin and the other as a less privileged user.
- In the Workspace Admin browser:
 - Selected Manage access at the top of the screen.
 - Added the second user to the Workspace Viewer role.
- In the second user's browser:
 - Refreshed the session to see the workspace items.
 - Accessed the warehouse and lakehouse data.



ADMIN WORKSPACE

 **Add people** 

thato_wks

 Admins, members, and contributors have edit and view access. Viewers only have view access. [Learn more](#) 

 User2-53439504 

 Viewer ▼ 

Manage access

thato_wks



+ Add people or groups

Search within workspace



User1-53439504



Admin



User2-53439504



Viewer

VIEWER WORKSPACE

thato_wks

Filter by keyword

No tasks have been defined
Workspace administrators, editors and contributors can create and modify task flows.

Name	Type	Task	Owner	Refreshed	Next refresh	Endorsement	Sensitivity
new_lh	Lakehouse	—	User1-53439504	—	—	—	—
new_lh	SQL analytics en...	—	User1-53439504	—	—	—	—
new_wh	Warehouse	—	User1-53439504	—	—	—	—

Profile

User2-53439504
User2-53439504@LODS-PROD-MCA...

Tenant Name:
LODS-Prod-MCA

Switch tenant

License type:
Free account

View account
Learn about Fabric trial
Buy Fabric now
Learn about Fabric subscription
Buy Pro now

Free trial
Your organization has disabled individual trials of Power BI and Fabric. Please contact your Fabric admin. [Learn more](#)

Sign out

Manage access



thato_wks

+ Add people or groups

🔍 Search within workspace



User1-53439504 ⓘ

Admin ▾



User2-53439504 ⓘ

Viewer ▾



Admin



Member



Contributor





Remove

Grant people access









new_wh

People you share this warehouse with can connect to it. To give additional permissions, select them from the list.

 User2-53439504 

|


Additional permissions

- ☐ Read all data using SQL (ReadData) 
- ☐ Read all OneLake data (ReadAll) and subscribe to events (SubscribeOneLakeEvents) 
- ☒ Build reports on the default semantic model (Build) 
- ☐ Monitor queries (Monitor) 
- ☐ Audit queries (Audit) - PREVIEW 
- ☐ Share granted permissions (Reshare) 

Notification Options

- ☒ Notify recipients by email

Add a message (optional)

 To define granular object-level security (OLS) for specific objects in the warehouse, use GRANT and DENY statements in T-SQL.

Grant

Back

new_wh

+

Add user

Successfully granted permissions

Microsoft Fabric

Filter by keyword

Filter

Close

Direct access

People and groups with access	Email Address	Role	Permissions
User1-53439504	User1-53439504@LODSPRODMCA.onmicro...	Workspace Admin	Read, Write, Reshare, ReadData, ReadAll, Audit, Monitor, Restore, SubscribeOnLakeEvents, CL...
User2-53439504	User2-53439504@LODSPRODMCA.onmicro...	Read	...

VIEWER WORKSPACE

Viewer cannot access the other workspace items but only the data warehouse.

Microsoft Fabric free - Sign up

Fabric

https://app.fabric.microsoft.com/groups/me/lakewarehouses/0bdff04d-de3a-441d-8a7d-54567091dc67?redirectedFromSignup=1&experience=fabric-developer&selectedNodePath=0bdff04d-de3a-441d-8a7d-54...

Fabric

My workspace

Search

Home

Help

New SQL query

Query activity

New semantic model

Download SQL database project

Open in

Copilot

publicholidays

Workspaces

Create catalog

Monitor

Real-Time

Workloads

My workspace

new_wh

new_wh

...

Profile

User2-53439504

User2-53439504@LODSPRODMCA...

Tenant Name: LODS-Prod-MCA

Switch tenant

License type: Free account

View account

Learn about Fabric trial

Buy Fabric now

Learn about Fabric subscription

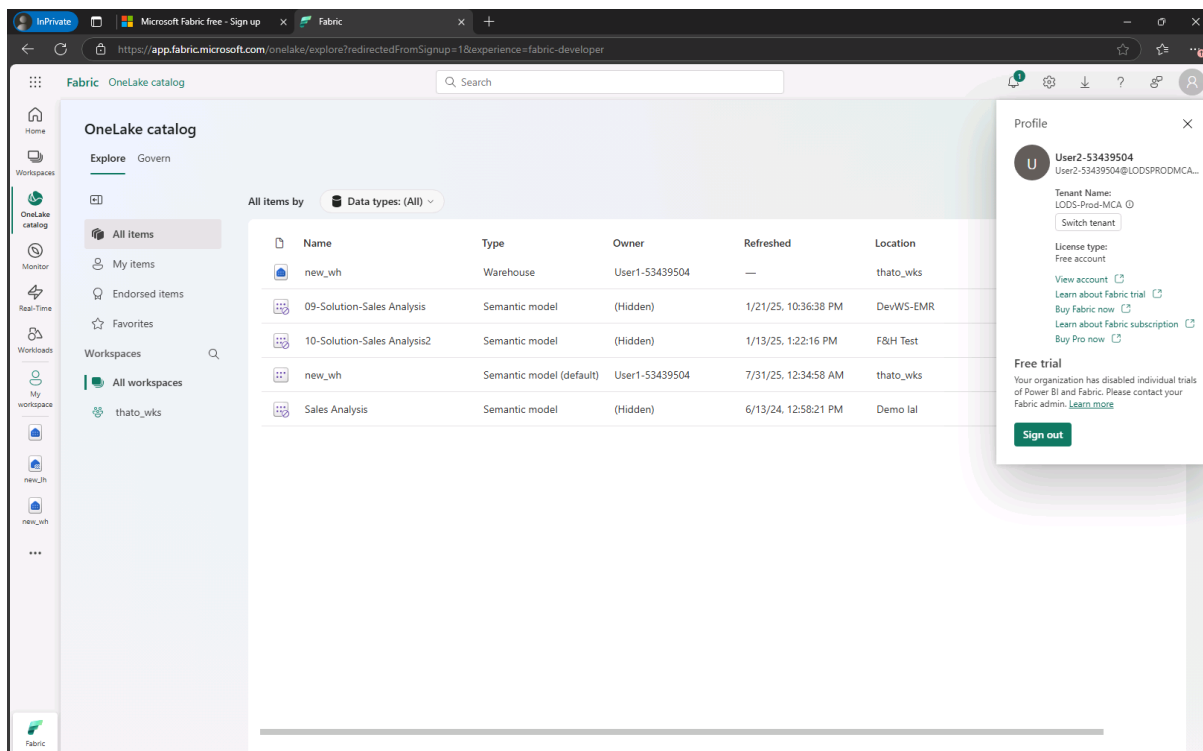
Buy Pro now

Free trial

Your organization has disabled individual trials of Power BI and Fabric. Please contact your Fabric admin. [Learn more](#)

Sign out

8



Apply OneLake Data Access Roles in a Lakehouse

- In the Workspace Admin browser:
 - Assigned the second user to the lakehouse without granting any permissions.
- In the second user's browser:
 - Refreshed and confirm that the lakehouse is not visible.
- In the Workspace Admin browser:
 - Created a new OneLake data access role called public holidays.
 - Assigned the role to the second user.
- In the second user's browser:
 - Refreshed and accessed the public holidays table.

ADMIN WORKSPACE

Grant people access

×

new_lh

People you share this Lakehouse with can open it and its SQL endpoint and read the default dataset. To allow them to read directly in the Lakehouse, grant additional permissions.

u

User2-53439504×

Additional permissions

☐ Read all SQL endpoint data ⓘ

☐ Read all Apache Spark and subscribe to events ⓘ

☐ Build reports on the default semantic model

Notification Options

☐ Notify recipients by email

Add a message (optional)

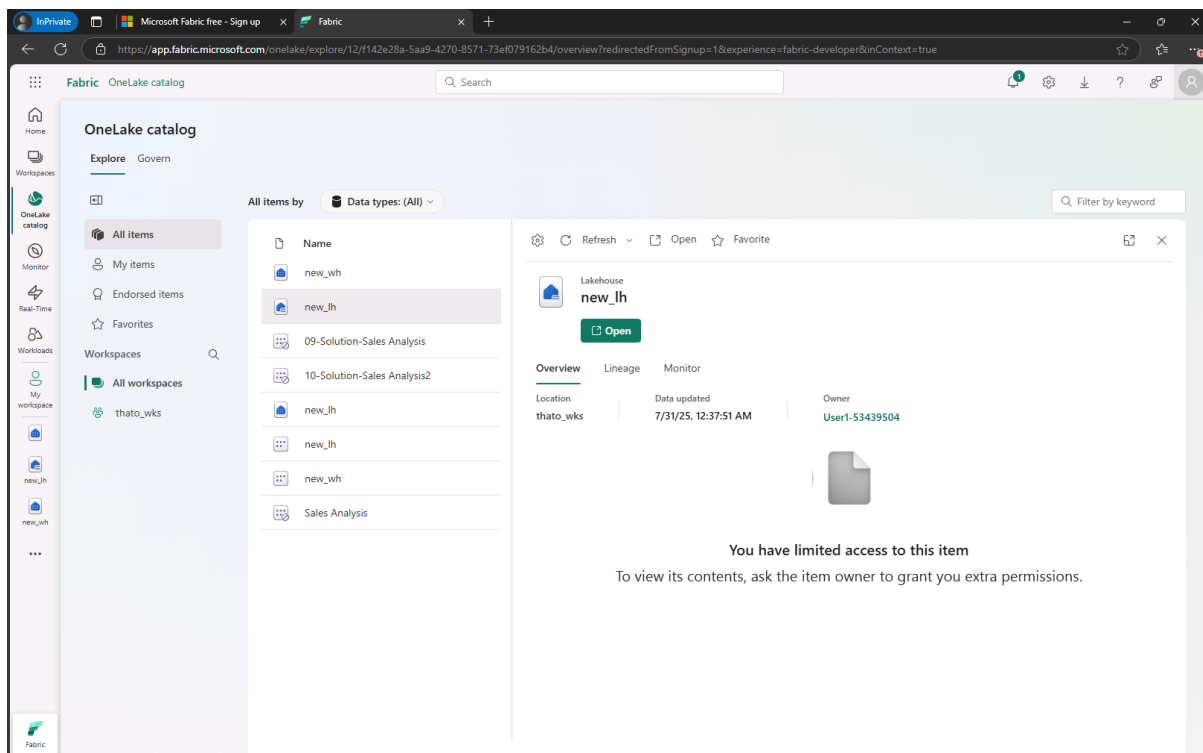
ⓘ

 Depending on which additional permissions you select, recipients will have different access to the SQL endpoint, default dataset, and data in the lakehouse. For details, view lakehouse permissions documentation.

Grant


Back

VIEWER WORKSPACE



ADMIN WORKSPACE

Turn on OneLake security (preview)

You are about to turn on OneLake security (preview) for this item. You can learn more about the feature [here](#) 

Continue

Cancel



New role

Create roles to grant specific groups of users access to selected data in your Lakehouse. [Learn more](#)

Role name *

publicholidays

Add data to your role *

☐ All data *

☒ Selected data *

Browse Lakehouse →

Add members to your role

You can add users or groups to roles using their name, email, or a link.

User2-53439504@LODSPRODMCA.onmicrosoft.com



Advanced Configuration

Preview role

Confirm your selection of data and members below before creating your role.

Data preview

Members preview

Data

Type

Permissions

Tables



publicholidays

Table


Read

Create role

Cancel

All Lakehouse roles > publicholidays



publicholidays 



Data in role



Members in role

+ Add members

Filter by keywo...

Add members to your role

You can add users or groups to roles using their name, email, or a link.

User2-53439504@LODSPRODMCA.onmicrosoft.com





Permission groups configuration (optional)

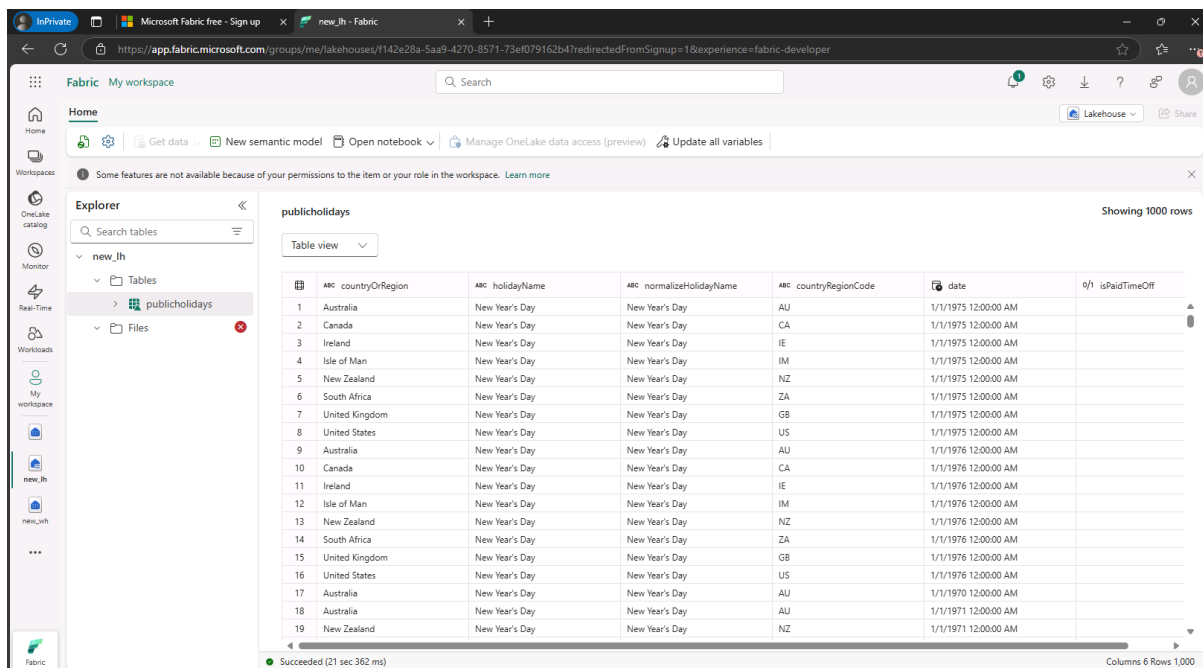
 Edit

Lakehouse permissions

Read

Members	Type	Added Using
 User2-53439504	User	Permission group-Read
 User1-53439504	User	Permission group-Read

VIEWER WORKSPACE



The screenshot shows the Microsoft Fabric Viewer Workspace interface. The top navigation bar includes the Fabric logo, a search bar, and a 'Lakehouse' dropdown menu. The main content area displays a table titled 'publicholidays' with 19 rows and 7 columns. The table is filtered to show 1000 rows. The columns are: ABC countryOrRegion, ABC holidayName, ABC normalizeHolidayName, ABC countryRegionCode, date, and 0/1 isPaidTimeOff. The table data shows various public holidays for different countries and regions, including Australia, Canada, Ireland, Isle of Man, New Zealand, South Africa, United Kingdom, and United States.

ABC countryOrRegion	ABC holidayName	ABC normalizeHolidayName	ABC countryRegionCode	date	0/1 isPaidTimeOff
1 Australia	New Year's Day	New Year's Day	AU	1/1/1975 12:00:00 AM	
2 Canada	New Year's Day	New Year's Day	CA	1/1/1975 12:00:00 AM	
3 Ireland	New Year's Day	New Year's Day	IE	1/1/1975 12:00:00 AM	
4 Isle of Man	New Year's Day	New Year's Day	IM	1/1/1975 12:00:00 AM	
5 New Zealand	New Year's Day	New Year's Day	NZ	1/1/1975 12:00:00 AM	
6 South Africa	New Year's Day	New Year's Day	ZA	1/1/1975 12:00:00 AM	
7 United Kingdom	New Year's Day	New Year's Day	GB	1/1/1975 12:00:00 AM	
8 United States	New Year's Day	New Year's Day	US	1/1/1975 12:00:00 AM	
9 Australia	New Year's Day	New Year's Day	AU	1/1/1976 12:00:00 AM	
10 Canada	New Year's Day	New Year's Day	CA	1/1/1976 12:00:00 AM	
11 Ireland	New Year's Day	New Year's Day	IE	1/1/1976 12:00:00 AM	
12 Isle of Man	New Year's Day	New Year's Day	IM	1/1/1976 12:00:00 AM	
13 New Zealand	New Year's Day	New Year's Day	NZ	1/1/1976 12:00:00 AM	
14 South Africa	New Year's Day	New Year's Day	ZA	1/1/1976 12:00:00 AM	
15 United Kingdom	New Year's Day	New Year's Day	GB	1/1/1976 12:00:00 AM	
16 United States	New Year's Day	New Year's Day	US	1/1/1976 12:00:00 AM	
17 Australia	New Year's Day	New Year's Day	AU	1/1/1970 12:00:00 AM	
18 Australia	New Year's Day	New Year's Day	AU	1/1/1971 12:00:00 AM	
19 New Zealand	New Year's Day	New Year's Day	NZ	1/1/1971 12:00:00 AM	

Succeeded (21 sec 362 ms) Columns 6 Rows 1,000

Results

- ✓ Successfully created a Microsoft Fabric workspace, data warehouse, and lakehouse.
- ✓ Implemented workspace access controls, allowing for the assignment of user roles and permissions.
- ✓ Demonstrated the ability to manage item-level permissions, restricting access to specific data items.
- ✓ Created and assigned OneLake data access roles, enabling custom access to folders within the lakehouse.
- ✓ Validated the effectiveness of security measures by testing access with different user roles, ensuring that data access was appropriately restricted and managed.

Conclusion

This project successfully demonstrated how to secure data access in Microsoft Fabric using workspace access controls, item access controls, and OneLake data access roles.

Resources

GitHub: <https://github.com/ThatoMTNG/Microsoft-Fabric-Analytics-Engineer-DP-600->

Mentions

Project Author: Thato Metsing (<https://www.linkedin.com/in/thatometsing/>)

Project Mentor: Maureen Direro (<https://www.linkedin.com/in/maureen-direro-46a6b220/>)