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Guardians of the lake: securing your data with OneLake

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Meet the speaker

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#Traveler, #DynamicsNerd, #ProblemSolver #DiveMaster,

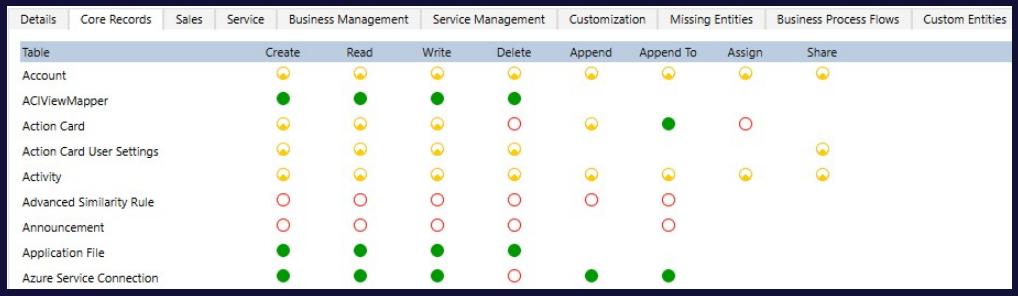
#BloggerInTrainingWheels #FabricNerd

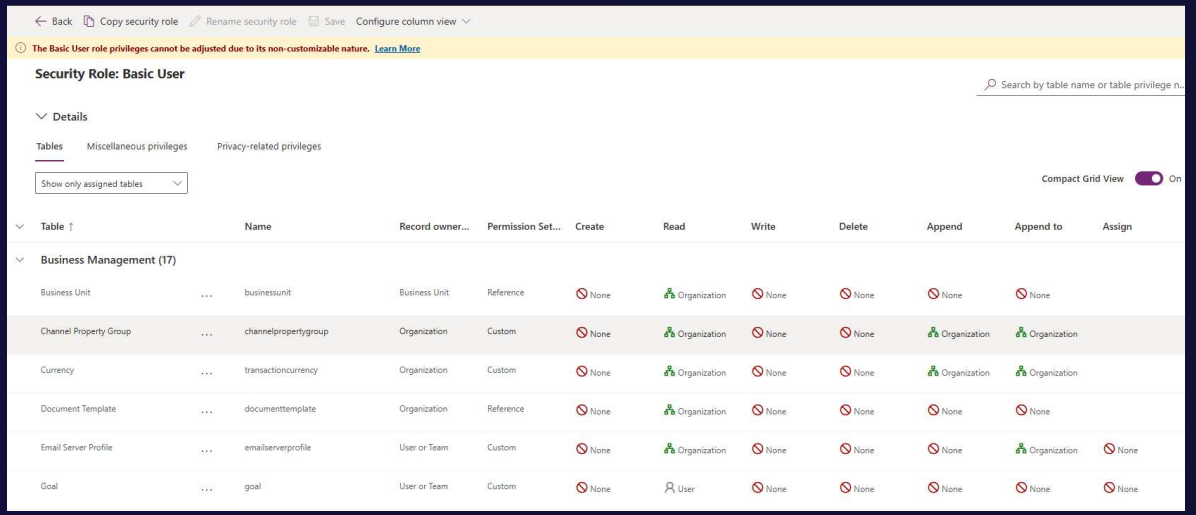
Show of hands

- Who is currently using Dataverse or Dynamics 365 and is familiar with the security model?
- Who is using Microsoft Fabric today?
- Who is using Fabric Link with Dataverse or Dynamics 365?
- Who is using OneLake security?

Reflection of the past

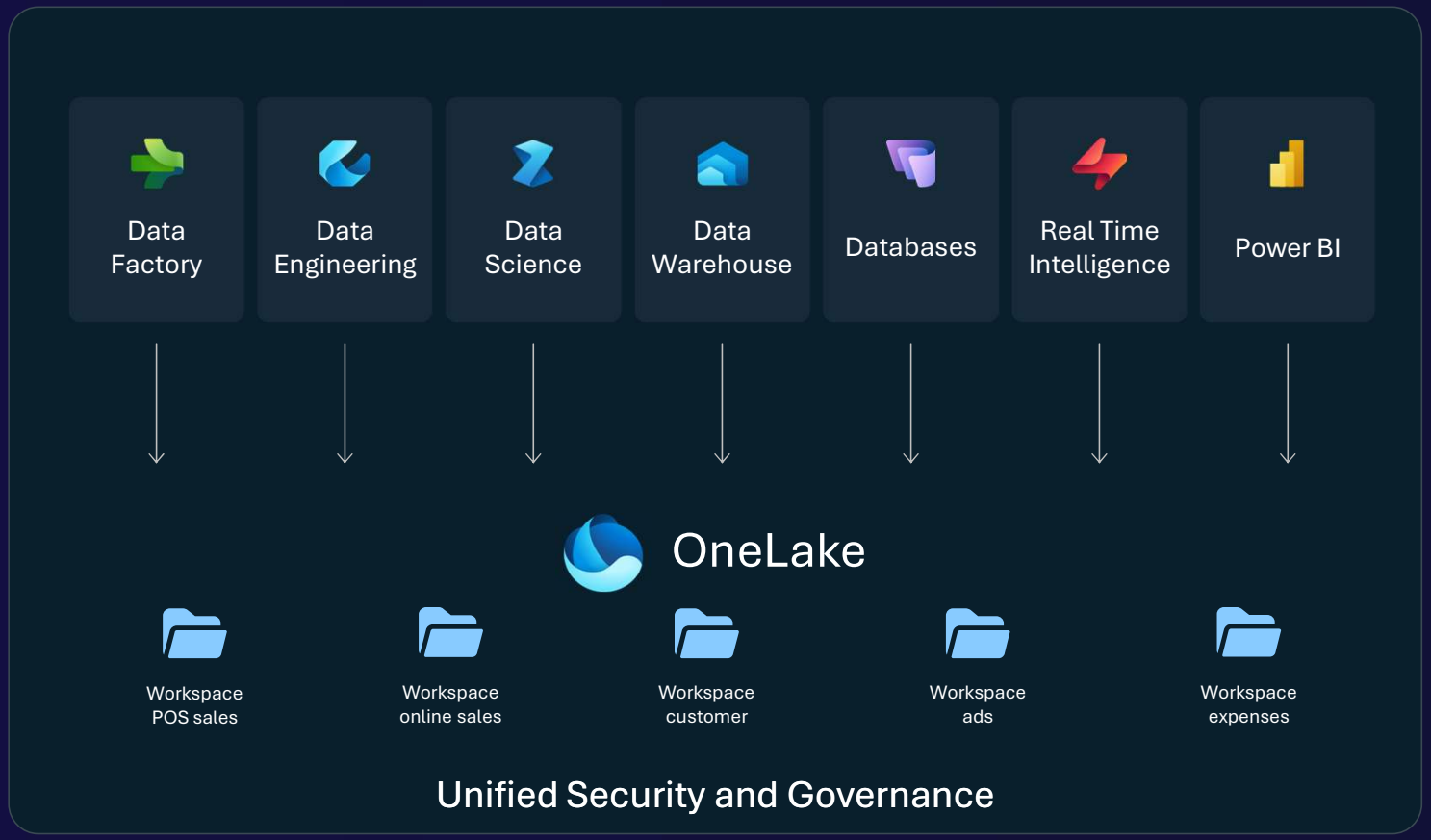
- Business unit
- Enhanced business units
- Security Roles
  - Org
  - Parent Child BU
  - BU
  - User
- Field Security Profiles





A single unified SaaS data lake

"No Silos"



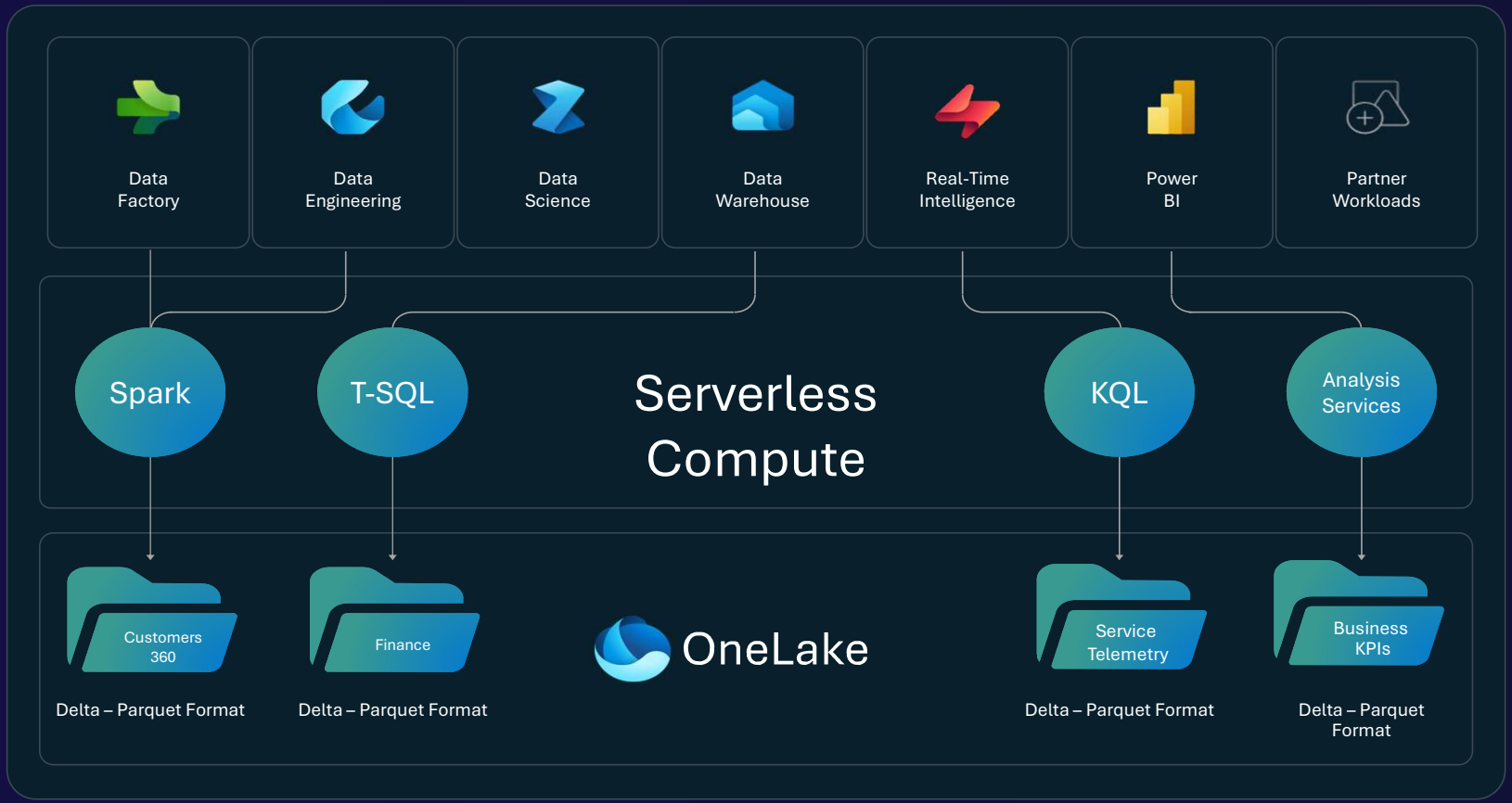
Provisioned automatically with the tenant.

Any data in OneLake works with out-of-the-box governance such as data lineage, data protection, certification, catalog integration, etc. All data is ultimately under the control of a tenant admin.

OneLake enables distributed ownership. Different workspaces allow different parts of the organization to work independently while still contributing to the same data lake. Each workspace can have its own administrator, access control, region and capacity for billing.

One copy for all computes

Real separation of compute and storage



All the compute engines store their data automatically in OneLake as data items.

The data is stored in a single common format.

Delta, an open standards format, and it is the storage format for all tabular data in Fabric.

All the compute engines have been fully optimized to work with Delta Parquet as their native format.

Current Workspace Security

- Admin – Full control, including adding/removing members and deleting items
- Member – Can reshare items and add Contributors or Viewers
- Contributor – Builds reports and dashboards
- Viewer – Read-only access; can run T-SQL queries

How do we provide better security to Lakehouse

OneLake Security

Defined once, enforced everywhere

Define security roles in OneLake using powerful features like table, row, or column level security.

Data is secured consistently across experiences inside and outside of Fabric.

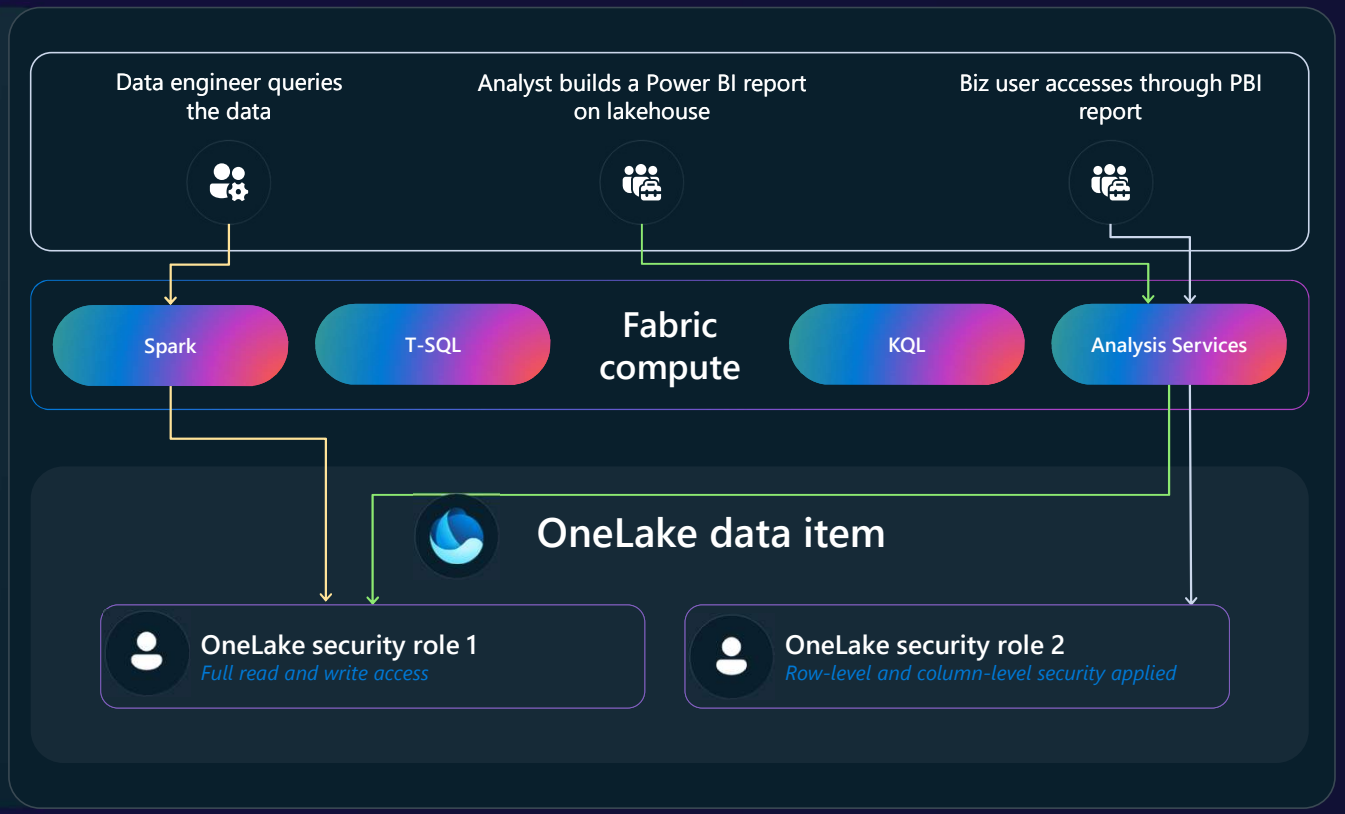
OneLake security roles can be managed in a single place, providing end to end coverage for data access for your entire data estate.

OneLake Security

03 Users access data through different Fabric engines

02 The permissions are checked when specific users are accessing data from the data item

01 Data owner sets up roles with defined permissions and assigns user groups to each role



OneLake Security Principles

Defined once, enforced everywhere

Security lives with the data

Enforce permissions safely

OneLake Security Details

Concept and overview

- Roles
  - The core concept of permissions management in OneLake. Roles represent a set of permissions, applied to a scope, for a given set of members.
- Permissions
  - A set of actions that users are allowed to taken on a specified scope. Permissions are things like Read, ReadWrite, etc.
- Scope
  - A scope is the set of items you are granting permissions to. It can be a table, folders, or an artifact. It can also have constraints that restrict access to specific rows or columns.
- Members
  - Members are the users or identities that are accessing data. Members are given the permissions of a role by being assigned to that role. Members can be groups or non-user identities such as service principals.

OneLake Security types

OneLake security supports three primary types of security.

- Folder
  - The base security type in OneLake, define permissions for a Folder in OneLake. Permissions inherit to subfolders for easy management.
  - Folders in the Tables path of a Fabric artifact contain tabular data and can be assigned additional permissions.
- Row
  - Limit access to specific rows of data in a table. Users specify SQL predicates that are used to restrict access.
- Column
  - Restrict access to data in certain columns using column level security. Define specific permissions on individual columns to hide sensitive data. Data masking is also an option as part of column level security.

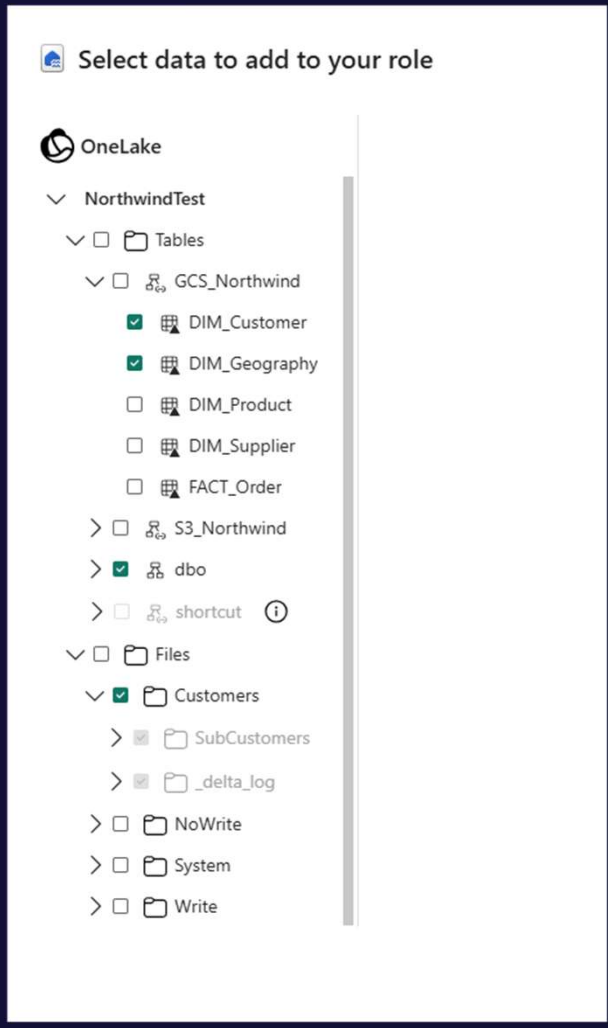
OneLake – object level security

Folder level security allows you to set permissions on a folder or folders in OneLake.

Security is based on Windows and SharePoint access models, as opposed to POSIX style ACLs.

Permissions inherit automatically to any sub folders.

Tables are a subset of folder security that can also have more granular permission types applied to them.



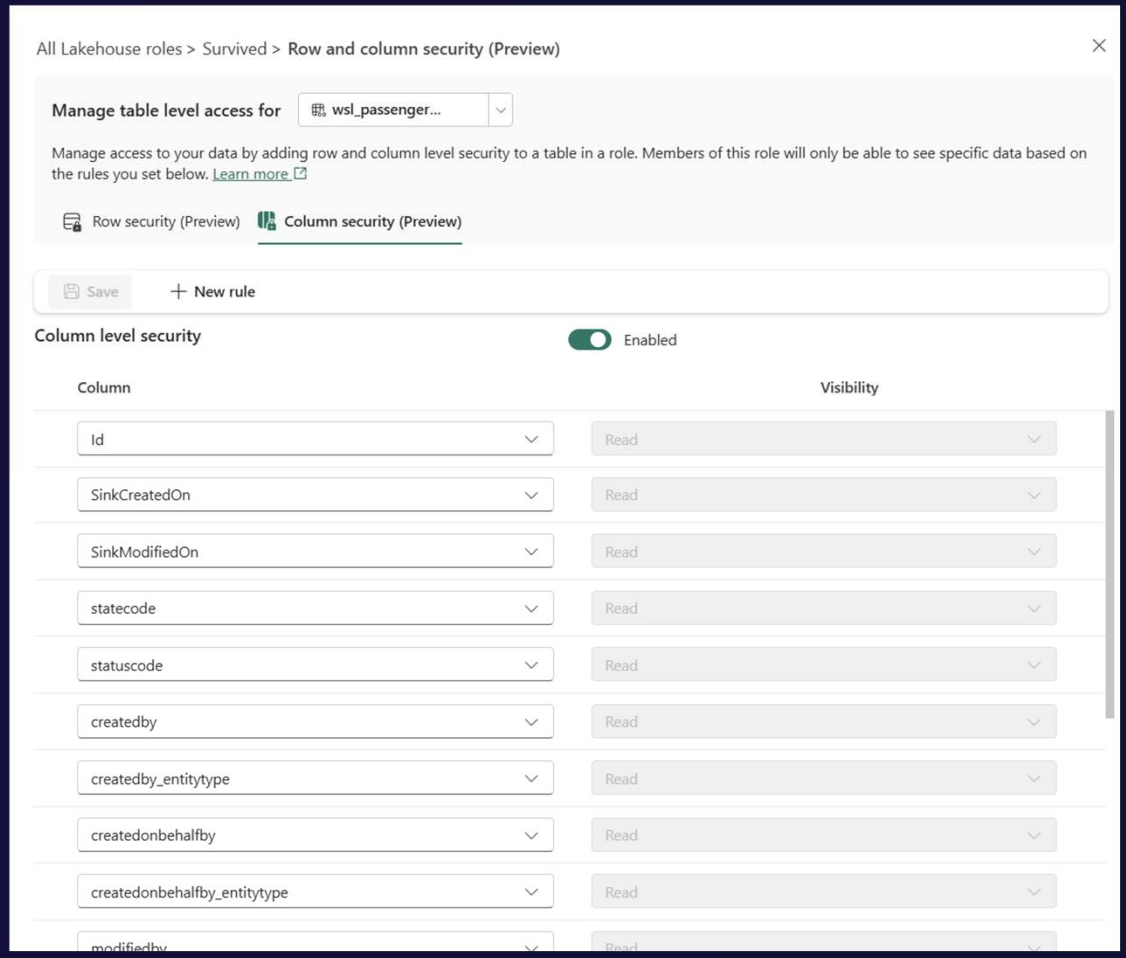
OneLake – column level security

Column level security allows for limiting access to specific columns in a table.

Access to columns can be left to default or columns can be removed, preventing users from seeing the column.

Hidden columns will be removed automatically when querying in Spark and Power BI. SQL requires excluding the columns from a query.

Data masking is not available yet.

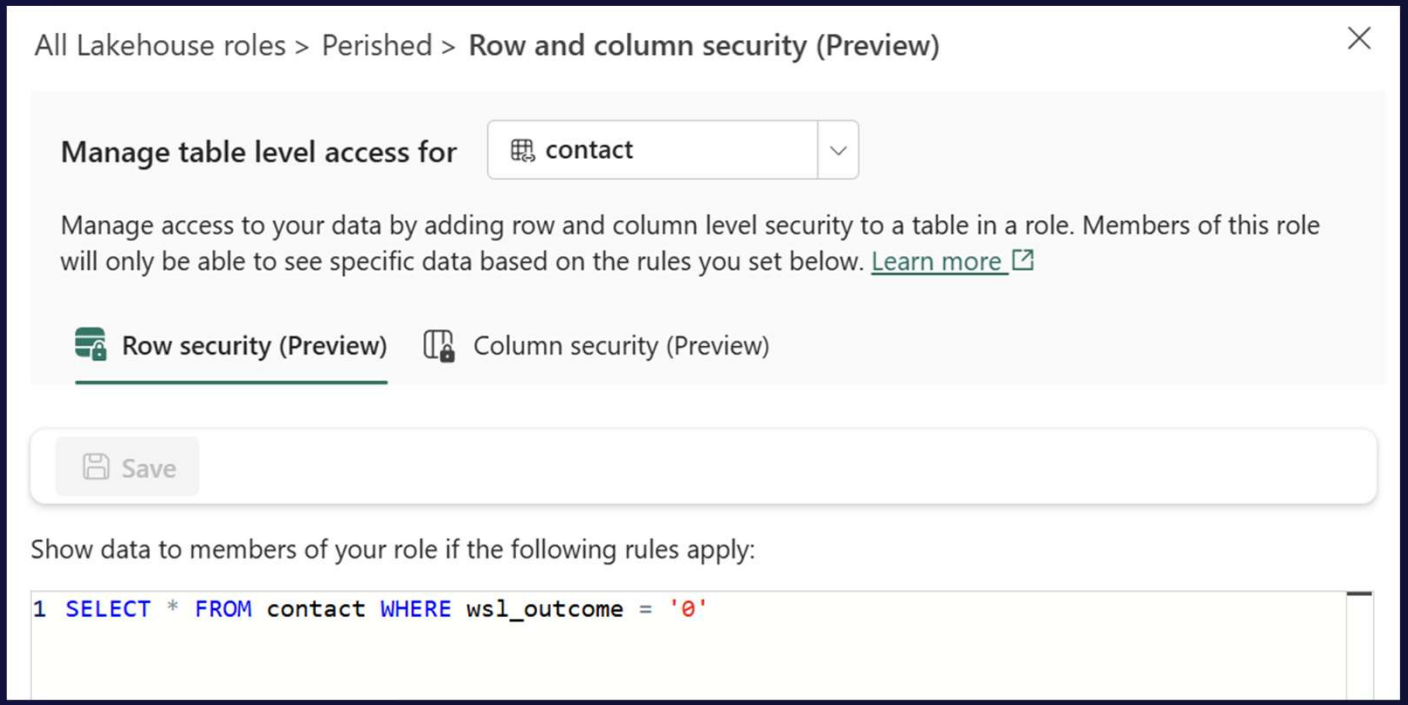


OneLake – row level security

Row level security allows for defining security predicates to govern access to select rows within a table.

Predicates use T-SQL syntax for definition and allow for multiple conditions to be set.

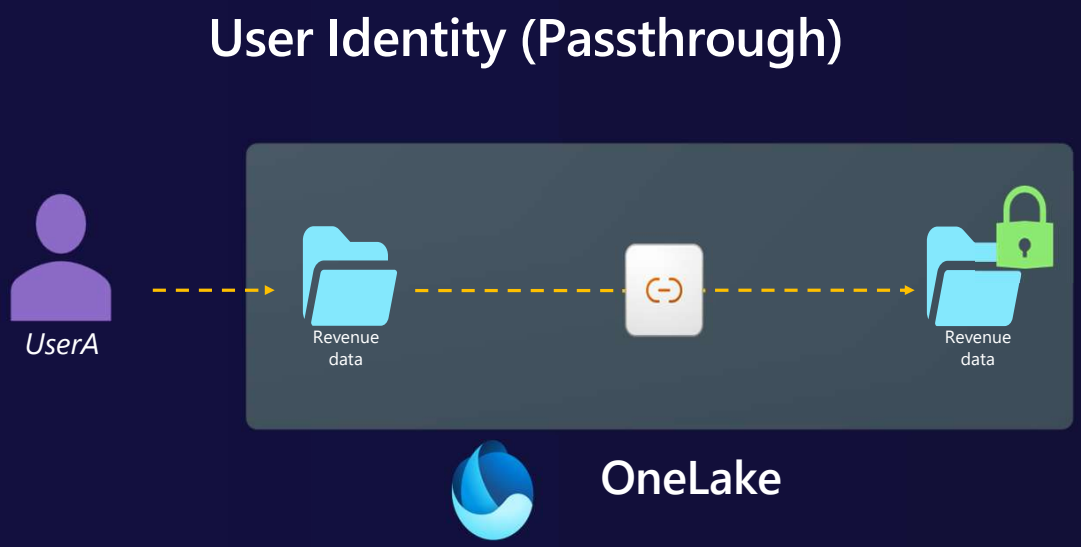
RLS can be dynamic per user or lookup data across multiple tables. (coming soon)



Shortcut
User vs Delegation

OneLake security – User Identity (Passthrough)

Shortcuts are either passthrough or delegated

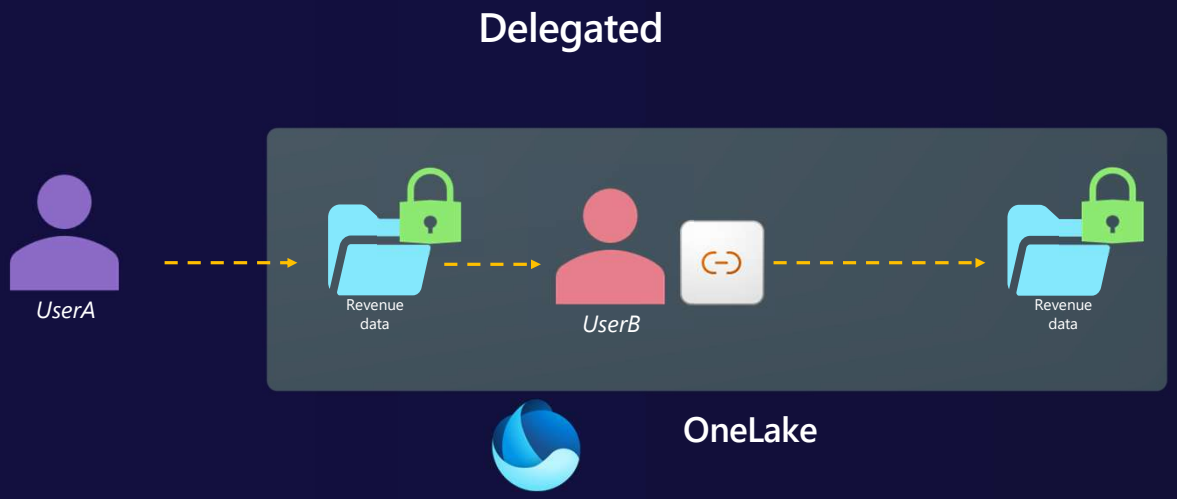


Shortcuts in OneLake that are passthrough:

- OneLake shortcuts

OneLake security - Delegated

Shortcuts are either passthrough or delegated



Shortcuts in OneLake that are delegated:

- AWS S3
- GCS
- ADLS Gen2
- S3 Compatible

Demo

OneLake security – API

Interacting with OneLake security programmatically

- **GET/PUT dataAccessRoles**

- GET/PUT https://api.fabric.microsoft.com/v1/workspaces/{workspaceId}/items/{itemId}/dataAccessRoles

- This is a bulk API. The existing role payload in the item gets replaced by the new one being sent.

Lesson learned

- Adopt CI/CD practices early in the implementation
- Treat OneLake security as a foundational design decision
- Use user-level pass-through wherever possible
- Align semantic models with Direct Lake mode
- Groups / Users used in OneLake should be added to the Lake house level.
- OneLake Security for SQL analytics endpoints (Preview) - Microsoft Fabric | Microsoft

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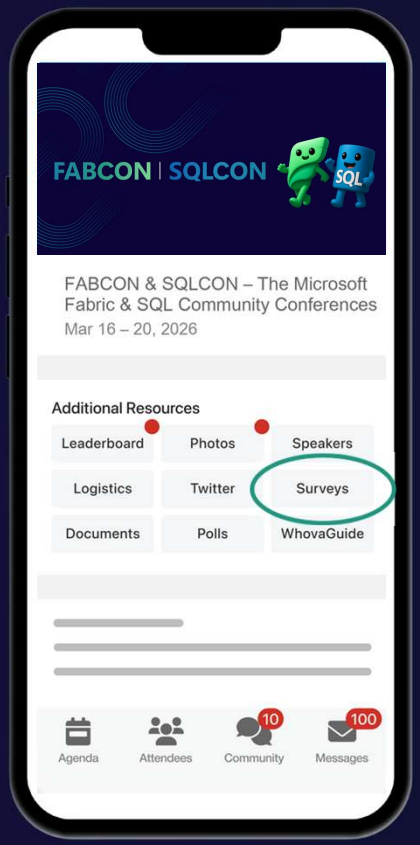

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