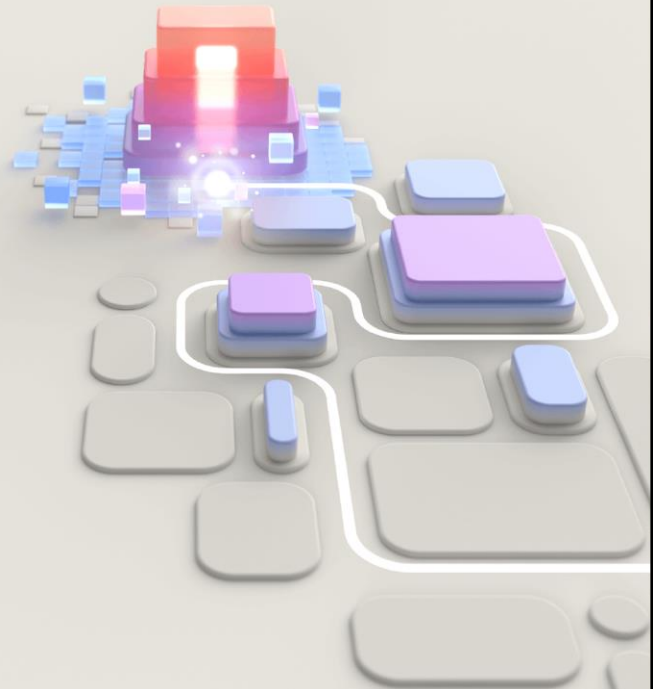




Implement Real Time Intelligence with Microsoft Fabric



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Date

1

Course schedule

Early morning • Get started with Real-Time Intelligence in Microsoft Fabric

Break

Late morning • Use real-time eventstreams in Microsoft Fabric

Lunch

Early afternoon • Work with real-time data in a Microsoft Fabric eventhouse

Break

Late afternoon • Create Real-Time Dashboards with Microsoft Fabric

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2

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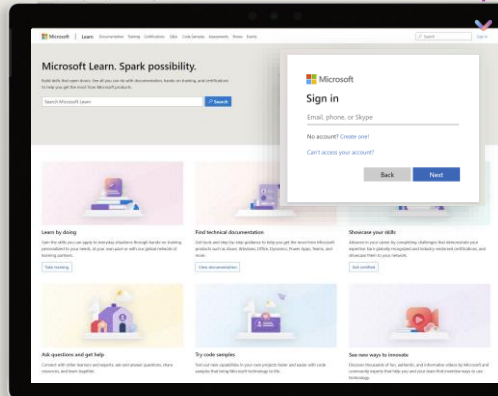
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All course content is available on Microsoft Learn

[Implement Real-Time Intelligence with Microsoft Fabric - Training | Microsoft Learn](#)

- We'll go through this content together and as the course progresses, I will advise you on which modules to review.
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This course includes labs:

- Detailed lab instructions are included in your lab environment.

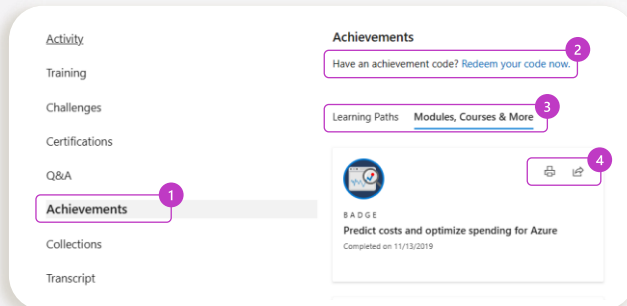
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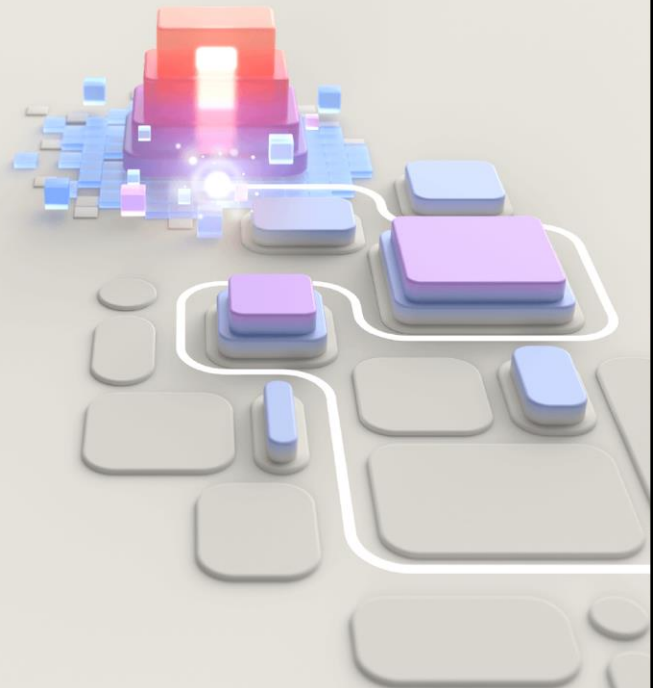
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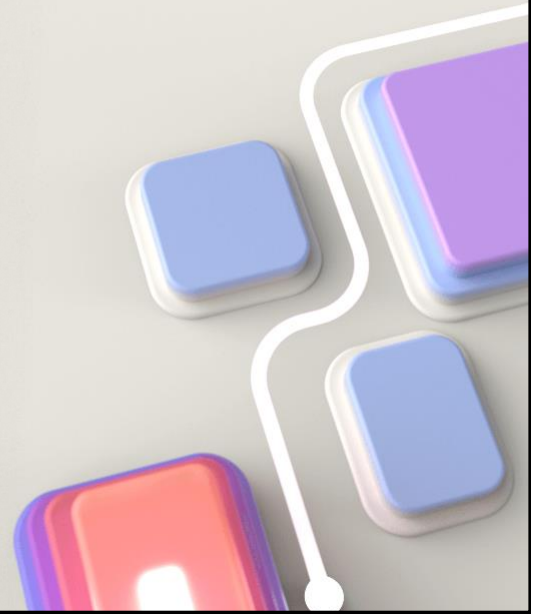


Implement Real-Time Intelligence with Microsoft Fabric



6

Explore end-to-end analytics with Microsoft Fabric



7

Microsoft Fabric



- **Data Factory:** Data integration combining Power Query with the scale of Azure Data Factory to move and transform data.
- **Data Engineering:** Data engineering with a Spark platform for data transformation at scale.
- **Data Warehouse:** Data warehousing with industry-leading SQL performance and scale to support data use.
- **Data Science:** Data science with Azure Machine Learning and Spark for model training and execution tracking in a scalable environment.
- **Real-Time Intelligence:** Real-time Intelligence to query and analyze large volumes of data in real-time.
- **Power BI:** Business intelligence for translating data to decisions.

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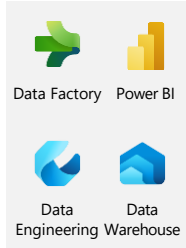
Data teams and Fabric

Fabric's unified management and governance make it easier for data professionals to work together.

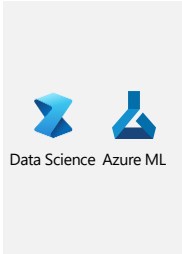
Data Engineers



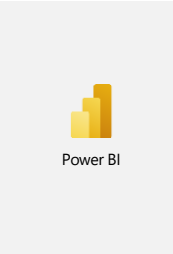
Analytics Engineers



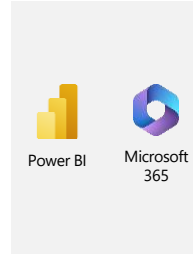
Data Scientists



Data Analysts



Decision Makers



Data Stewards

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Enable and use Microsoft Fabric

Fabric must be enabled in your tenant by either:

- Fabric admin (formerly known as Power BI admin)
- Power Platform admin
- Microsoft 365 admin

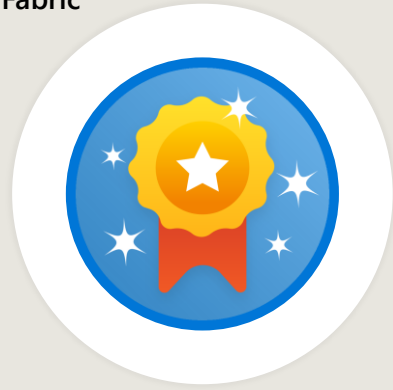
Workspaces must then be assigned to Premium per capacity or Fabric license mode.

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Further reading

Introduction to end-to-end analytics using Microsoft Fabric

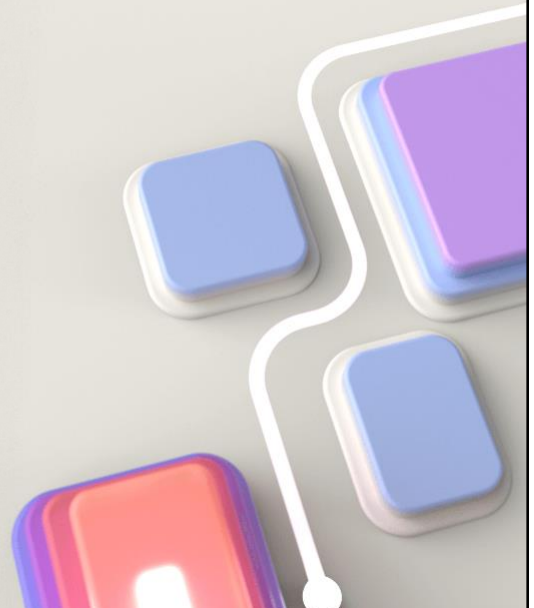
<https://aka.ms/fabric-intro>



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Get started with Real-Time Intelligence in Microsoft Fabric

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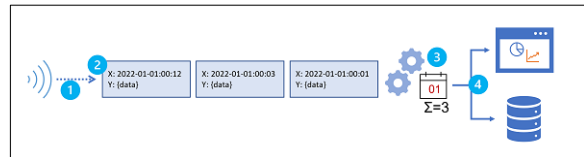
12

What is real-time analytics?

Ingestion and processing of a perpetual data *stream*

Common goals for real-time analytics include:

- Continuously analyzing data to report issues or trends
- Understanding component or system behavior under various conditions to help plan future enhancements
- Triggering specific actions or alerts when certain events occur or thresholds are exceeded

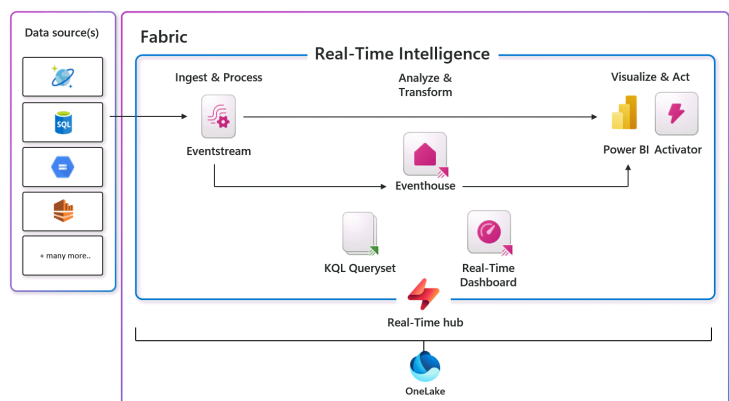


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Real-Time Intelligence in Microsoft Fabric

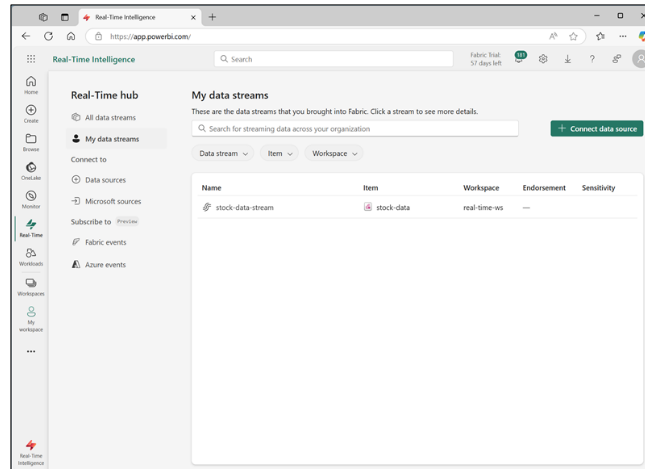
- **Eventstream:** Real-time data stream ingestion and transformation
- **Eventhouse:** Scalable storage and querying of real-time data
- **KQL Queryset:** A tool for creating and running queries in the KQL databases within an eventhouse
- **Real-Time Dashboard:** Interactive visualization and exploration of real-time data
- **Activator:** Automated actions triggered by real-time events



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Real-Time Hub



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Ingest and transform real-time data

Data Sources:

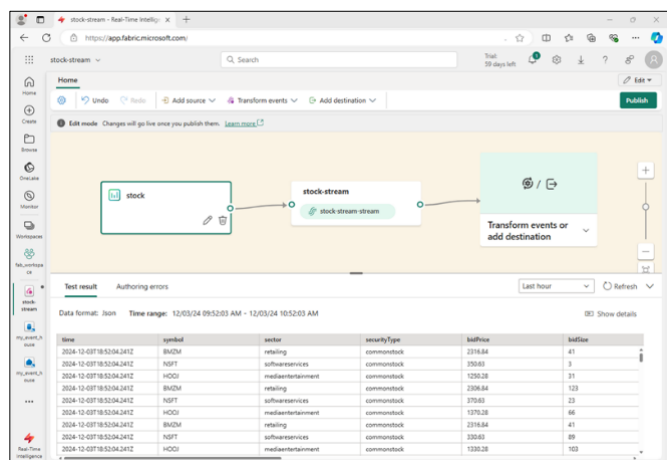
- External services
- Fabric events
- Sample data

Data Transformations:

- Filter and manage fields
- Aggregate and Group
- Union and Join

Data Destinations:

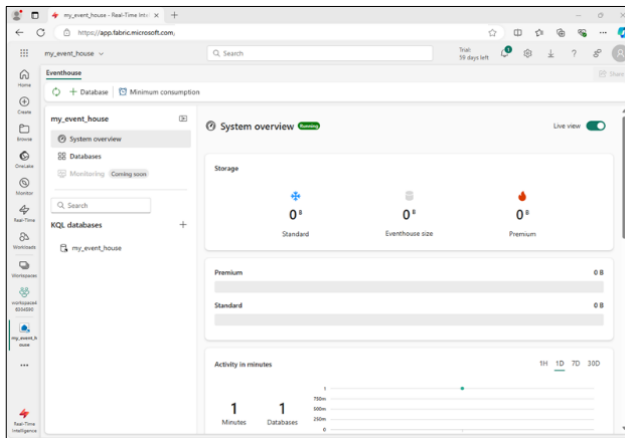
- Eventhouse
- Lakehouse
- Derived stream
- Fabric activator
- Custom endpoint



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Store and query real-time data



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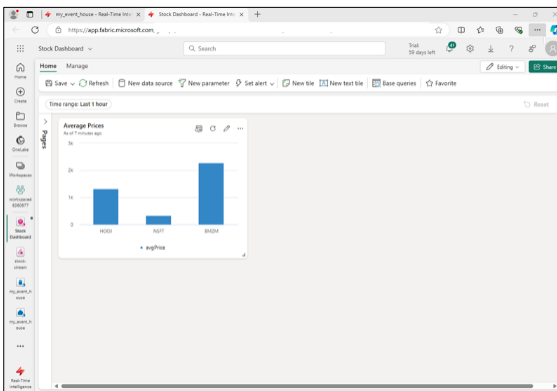
Eventhouse:

Scalable storage and querying for real-time data in:

- **KQL Databases:**
- Data stores built on the Kusto database engine, optimized for time-based data.
- Queried using Kusto Query Language (KQL), with queries managed in:
 - **KQL Querysets:**
 - Collections of KQL and SQL queries

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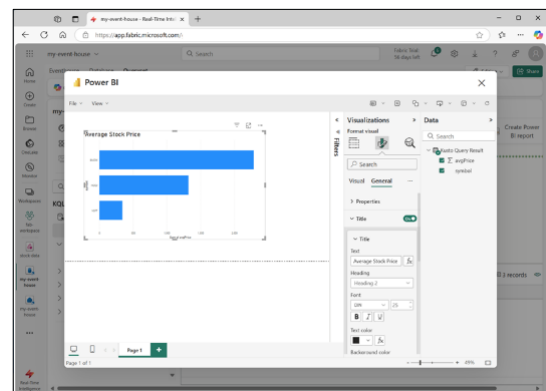
Visualize real-time data



Real-Time Dashboard

- A component on Fabric Real-Time Intelligence
- Interactive data visualization tiles based on KQL queries

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Power BI

- A core component of the Fabric platform
- Create Power BI reports from a KQL Database

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Exercise

30 minutes



Explore Real-Time Intelligence in Fabric

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Further reading

Get started with Real-Time Intelligence in Microsoft Fabric

<https://aka.ms/fabric-real-time>



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Use Real-Time Eventstreams in Microsoft Fabric

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Components of eventstreams

Sources:

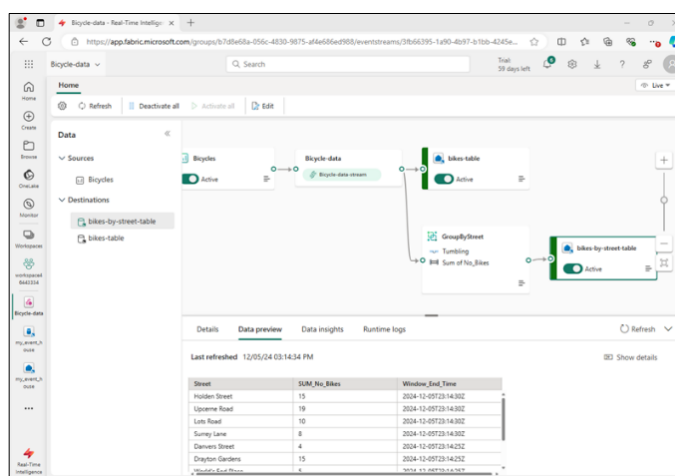
- Where the streaming data comes from
- Includes external sources, Fabric events, and sample data

Transformations:

- Operations that filter or aggregate the data as is processed from the stream
- Includes temporal windowing functions that enable you to analyze data events within discrete time periods

Destinations:

- Where your transformed event data is sent
- Can include eventhouse, lakehouse, another eventstream, or an activator



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Eventstream sources and destinations

Sources	Destinations
Azure Event Hub	Eventhouse
Azure IoT Hub	Lakehouse
Azure SQL Database Change Data Capture (CDC)	Custom endpoint
PostgreSQL Database CDC:	Derived Stream
MySQL Database CDC	Fabric Activator
Azure Cosmos DB CDC	
Google Cloud Pub/Sub	
Amazon Kinesis Data Streams	
Confluent Cloud Kafka	
Fabric workspace events	
Azure blob storage events	
Custom endpoint	
Sample data	

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Eventstream transformations

Transformations

- Filter
- Aggregate
- Group by
- Union
- Expand
- Join

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Exercise

30 minutes



Ingest real-time data with Eventstreams in Microsoft Fabric

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Further reading

Use real-time eventstreams in Microsoft Fabric

<https://aka.ms/mslearn-eventstreams-fabric>



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Work with real-time data in a Microsoft Fabric eventhouse

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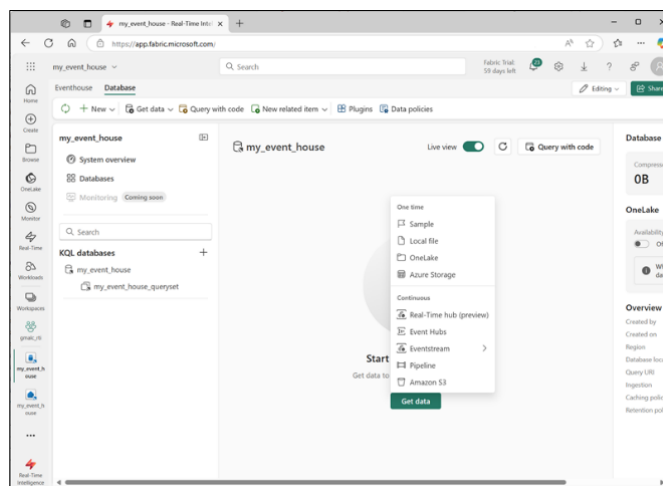
Get started with an eventhouse

- An eventhouse contains one or more KQL Databases
- Import data into tables from static or streaming data sources
- Query tables using KQL:

```
Automotive
| where fare_amount > 20
| project trip_id, pickup_datetime, fare_amount
| sort by pickup_datetime desc
```

- Or SQL:

```
SELECT trip_id, pickup_datetime, fare_amount
FROM Automotive
WHERE fare_amount > 20
ORDER BY pickup_datetime DESC
```



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Use KQL effectively

Filter columns

```
Automotive
| project trip_id, vendor_id, pickup_datetime, fare_amount
```

Filter rows

```
Automotive
| where pickup_datetime > ago(30min)
| project trip_id, vendor_id, pickup_datetime, fare_amount
```

Summarize data

```
Automotive
| where ingestion_time() > ago(1d)
| summarize average_fare = avg(fare_amount) by vendor_id, pickup_hour = hourofday(pickup_datetime)
| project pickup_hour, vendor_id, average_fare
| sort by pickup_hour
```

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Materialized views and stored functions

Materialized views

```
.create async materialized-view with (backfill=true) TripsByVendor on table Automotive
{ Automotive
  | summarize trips = count() by vendor_id, pickup_date = format_datetime(pickup_datetime, "yyyy-MM-dd")
}
```

```
TripsByVendor
| project pickup_date, vendor_id, trips
| sort by pickup_date desc
```

Stored functions

```
.create-or-alter function trips_by_min_passenger_count(num_passengers:long)
{ Automotive
  | where passenger_count >= num_passengers
  | project trip_id, pickup_datetime
}
```

```
trips_by_min_passenger_count (3)
| take 10
```

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Exercise

30 minutes



Work with data in a Microsoft Fabric eventhouse

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Further reading

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Create real-time dashboards with Microsoft Fabric

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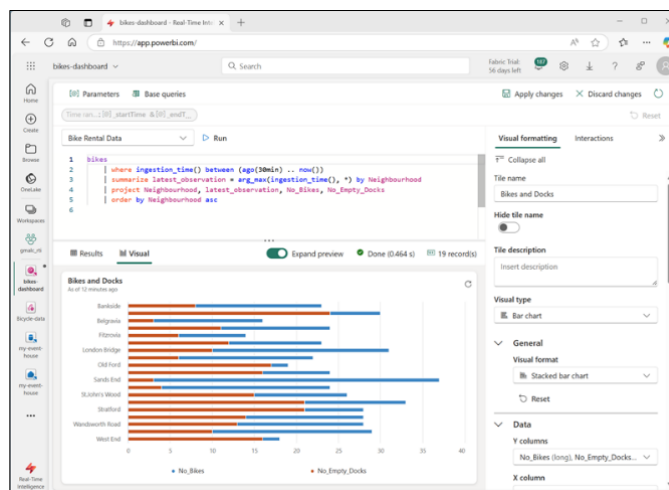
Get started with real-time dashboards

A real-time dashboard is based on a streaming *data source*

- Two options for data access permissions:
 - Pass-through identity
 - Dashboard editor's identity.

Data is visualized in *tiles* based on *KQL queries*

- Write and test the KQL query in the tile editor
- Choose from a wide range of data visuals



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Advanced features

Base queries

- Create a base query to retrieve general data that can be used in multiple tiles
- Use the base query as a source table for tile-specific queries

Pages

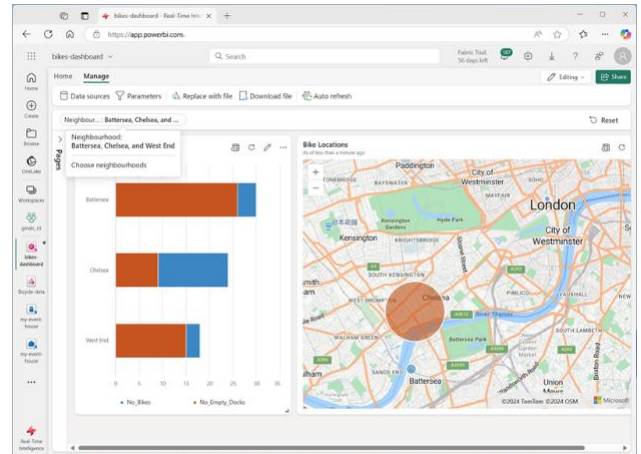
- Add multiple pages to a dashboard to create a more comprehensive view of the data

Parameters

- Define parameters to enable users to filter dashboards interactively

Auto refresh

- Configure auto refresh to ensure the dashboard displays fresh data



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Exercise



30 minutes

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