



SECTION 05

Direct Lake Semantic
Models

The Best of
Both Worlds

Direct Lake

The Best of Both Worlds

"Import speed. DirectQuery freshness. No compromise."



The CFO's Frustration

"It's Monday 9 AM. I know the supplier sent new prices. Why does my report show last week's data?"

The Conversation

- "When does this refresh?"
- "Noon."
- "Noon?! I need this at 10 AM!"
- "Well, the refresh takes 45 minutes..."

The Classic Tradeoff

The classic Power BI tradeoff.
Until now.



Demo: The Report That Refreshes Itself

What We'll Cover

1	The CFO's frustration
2	The storage mode trilemma
3	Create a Direct Lake model
4	Change data, see it instantly
5	Understand the mechanics

~40 minutes, live demo

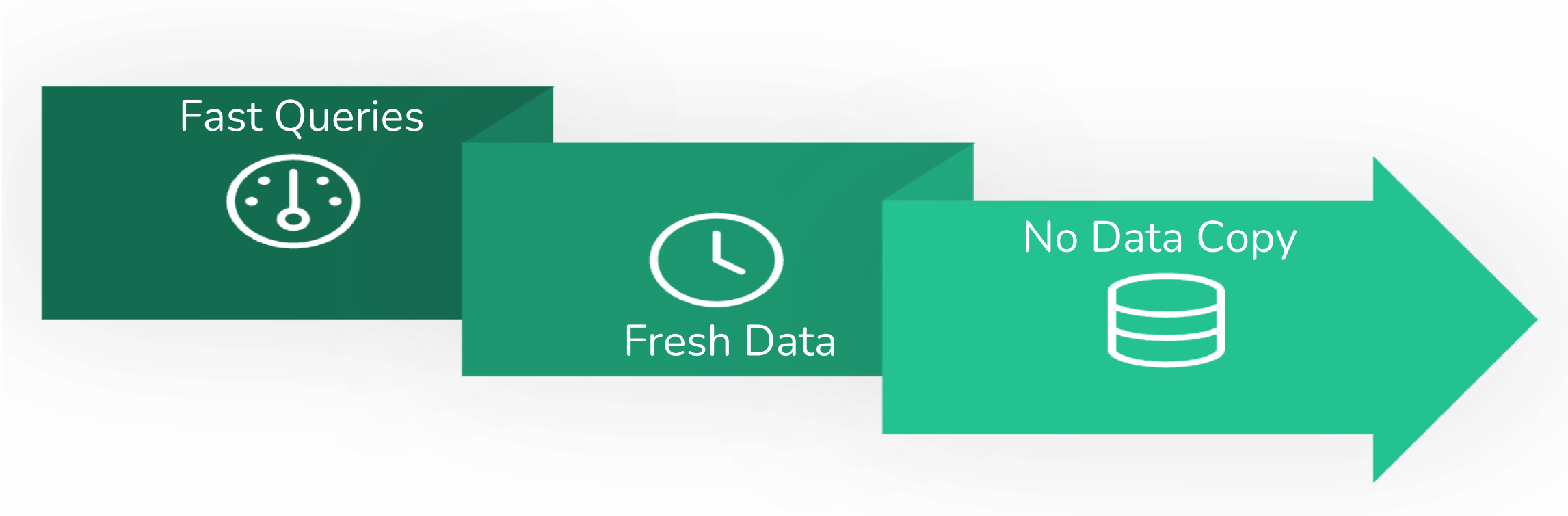


DEMO

Live demonstration

The Trilemma (Before Direct Lake)

Pick Two. You Can't Have All Three.



Import	✓	✗	✗
DirectQuery	✗	✓	✓
Direct Lake	✓	✓	✓

What Is Direct Lake?

A New Storage Mode

Reads from
Delta tables in OneLake

Query engine
VertiPaq (same as Import)

Refresh
Metadata only (seconds)

Data copy
None—stays in OneLake

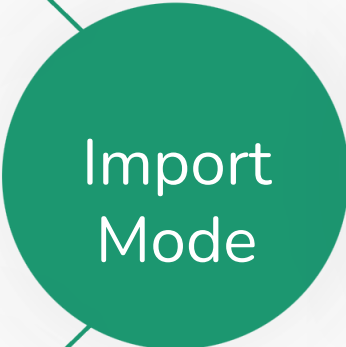
Same query speed as Import. Same freshness as DirectQuery.



How Direct Lake Works

Framing, Not Refreshing

Copies all source data



Import
Mode

Takes 45 minutes



Direct Lake



Reads Delta metadata only



Updates model in 3 seconds

Framing

Updating pointers to Parquet files

Transcoding

Loading columns on-demand when queried

It's the Default!

You Might Already Have It

When you create a **Lakehouse** in Fabric:

01

That model is **Direct Lake** automatically

02

Tables point to Delta tables in OneLake

03

No configuration required

📄 And....You can build these models directly in the WEB!

The Magic Moment

See It In Action

1

Step 1

Report shows: Total Sales = \$1,234,567

2

Step 2

You add \$5,000 in sales via SQL endpoint

3

Step 3

Refresh the report visual

4

Step 4

Report shows: Total Sales = \$1,239,567

No semantic model refresh scheduled.

No waiting for data pipelines.

Just... updated.

Automatic Updates

Stay Synced Automatically

Enabled (default)

Changes in Delta tables appear automatically



Disabled

You control when data updates via manual framing



When to disable:

- During long ETL windows
- When you need point-in-time consistency
- For testing/development environments
- For testing/development environments

Import vs Direct Lake

Side-by-Side Comparison

	<u>IMPORT</u>	<u>DIRECT QUERY</u>
Data location	Copied into model	Stays in OneLake
Refresh time	Minutes to hours	Seconds
Query engine	VertiPaq	VertiPaq
Query speed	✓ Fast	✓ Fast
Data freshness	Stale until refresh	Near real-time
Calculated columns	✓ Supported	✓ Do in Lakehouse
Requires	Pro or Premium	Fabric capacity

Capacity Guardrails

Know Your Limits

F2-F8	1 billion	300	1,000
F16-F32	1 billion	300-1,500	1,000
F64+	5 billion	1,500	5,000-10,000

If exceeded:

Queries fall back to DirectQuery mode
(slower but still works)

Pro tip:

Optimize your Delta tables to stay within
guardrails

Key Gotchas

Watch Out For



No calculated columns

Define them in Lakehouse/Dataflow instead



Complex data types

Binary, GUID must be strings



SQL endpoint RLS

Can trigger DirectQuery fallback



Cross-region

Lakehouse and semantic model must be same region



Fabric capacity required

Won't work on Pro-only

When to Use What

Decision Guide

Large data, need freshness	Direct Lake
Self-service, quick prototyping	Import
Must hit source system directly	DirectQuery
Data already in Lakehouse	Direct Lake
Need calculated columns in model	Import (or calc in Lakehouse)
Composite model needed	Mix them

Your Action Items

Getting Started with Direct Lake

01

Check your Lakehouse and build Semantic Model in Web

02

Verify it's Direct Lake (check storage mode)

03


Build a report and test query speed

04

Modify data in Lakehouse, watch it appear

05

Move calculated columns to Lakehouse if needed

 **Key insight:** You get Import-speed queries without Import-time refreshes.

Resources:

- MS Learn: "Direct Lake overview"
- MS Learn: "Manage Direct Lake semantic models"

The CFO's Problem, Solved

Before and After

Before (Import)

- Refresh at noon
- 45-minute refresh
- Stale data in meetings
- Frustrated CFO



After (Direct Lake)

- Data ready by 6:01 AM
- 3-second framing
- Real-time insights
- Happy CFO



"When the data updates, the report updates. That's Direct Lake."

Coming Up Next

But Wait... Who Can See This Data?

Direct Lake is fast. Direct Lake is fresh. But...

“

"Can anyone see our confidential supplier costs?"

”

“

"Can the regional managers see each other's numbers?"

”

Next up: Security in Fabric

- Semantic model RLS (what you know)
- OneLake Security (what's new)
- Define once, enforce everywhere



End of Section 05

DIRECT LAKE SEMANTIC MODELS