

Publishing and Sharing, Reports

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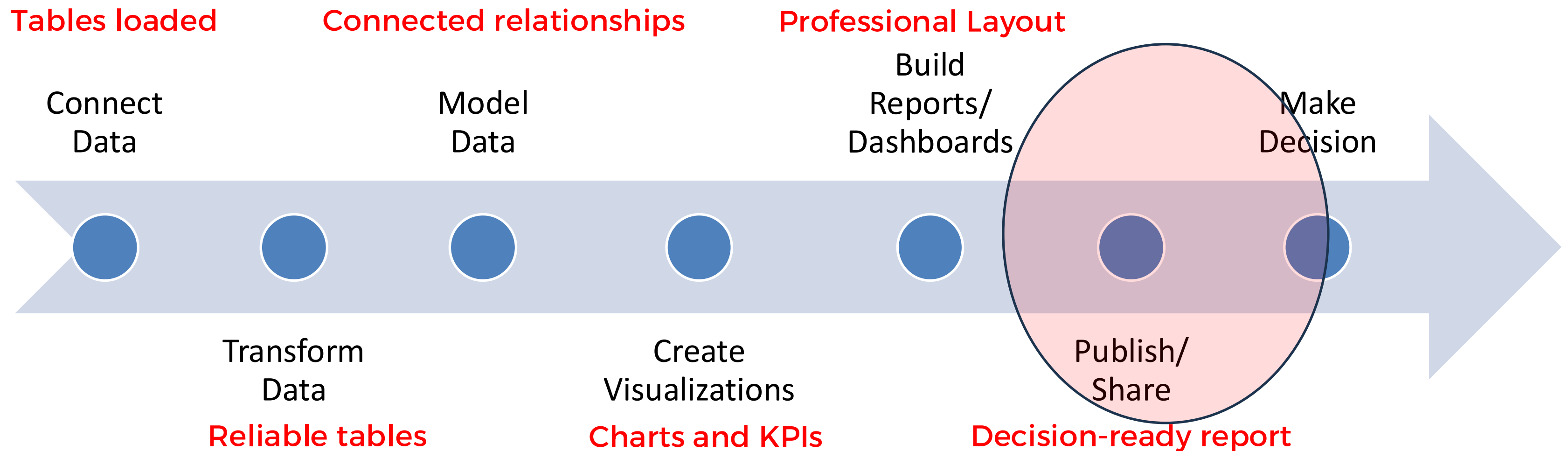
Course: From Data to Decisions using Power BI

Lecture 09



Lecture
09

Power BI Workflow (The Analytics Journey)



Each stage adds value — skip one and the chain breaks

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What we will cover

1. Publishing Reports to Cloud
2. Dashboards & Enterprise Sharing
3. Data Connections & Refresh Automation

Lecture

09

1. Publishing Reports to Cloud



Why Publish Reports?



Collaboration

Break down data silos. Workspaces enable multi-author development and centralized analytics for team members.



Access interactive reports

Access interactive reports anytime, anywhere via web browsers, Microsoft Teams embeds, and native iOS/Android apps.



Automated Pipelines

Eliminate manual file emailing. Cloud scheduled refreshes keep semantic models automatically synchronized with database updates.

Power BI Desktop vs Service

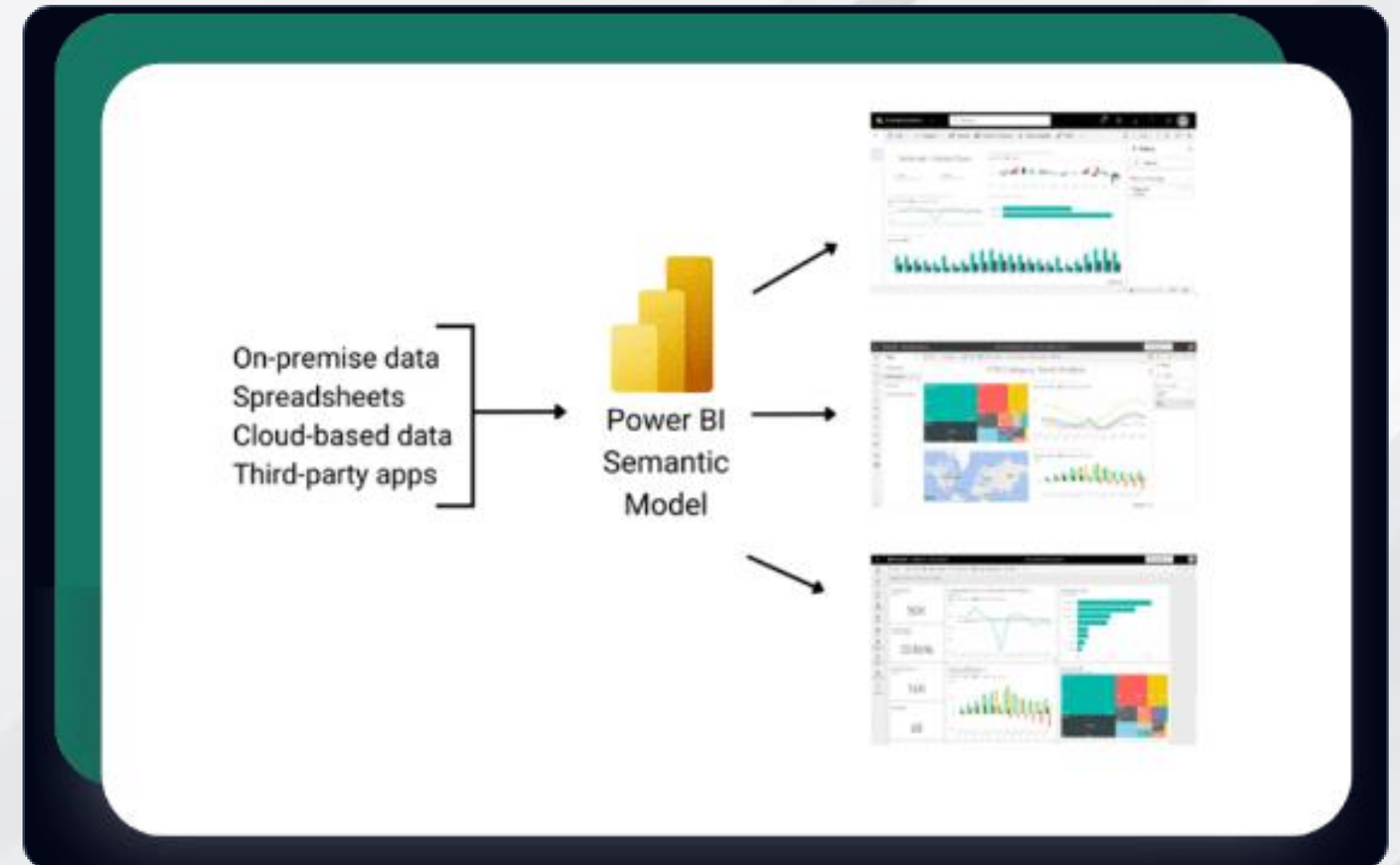
Capability / Feature	Power BI Desktop (Client)	Power BI Service (Cloud SaaS)
Primary Function	Report Authoring & Data Modeling	Report Consumption & Distribution
Data Transformations	Full Power Query M engine	Dataflows & Datamarts (Cloud ETL)
DAX Calculations	Create Calculated Columns & Measures	Measures only (Quick Measures)
Dashboards & Sharing	Not Supported (Saved as .pbix)	Pin Tiles, Apps, Share Links, RLS
Data Sync	Manual Refresh click	Scheduled Gateway Automated Refresh

What is a Workspace?

Centralized Collaboration Hub

A Workspace is a cloud container in Power BI Service used to collaborate on and manage organizational analytics assets.

Workspace (Production) | Semantic Model (Data + DAX)
| Reports (Multi-page Visuals) | Dashboards (KPI Overview)
| Dataflows (Reusable ETL)

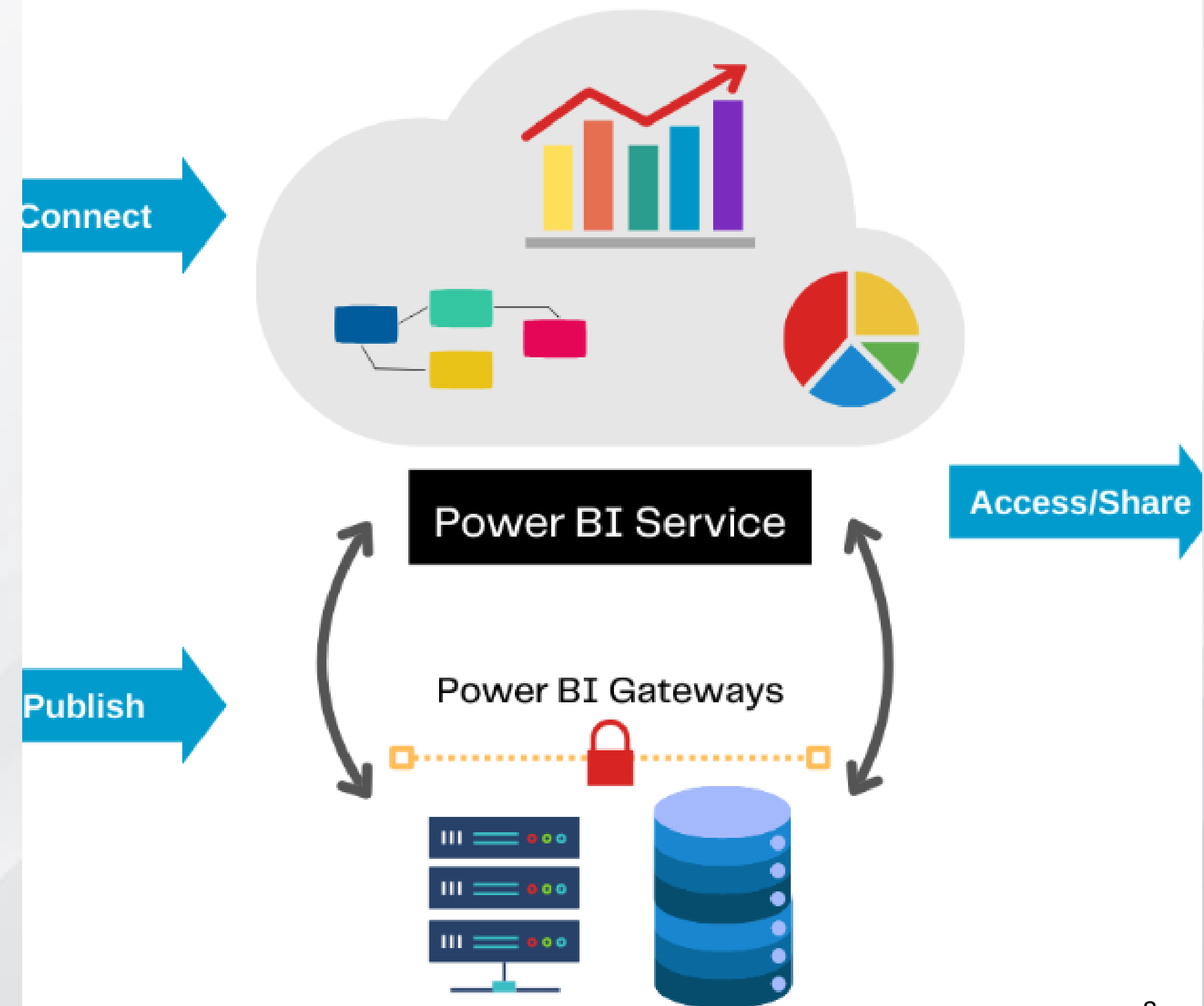


Publishing Workflow

End-to-End Enterprise Flow

- Data moves systematically from source systems into client Desktop authoring, then uploads into cloud Workspaces.
- Once published, the dataset becomes a reusable Semantic Model, powering interactive reports, executive dashboards, and automated consumer alerts.

Power BI Architecture



Publishing Steps

1

Save Local .PBIX File

Ensure all Power Query transformations are applied and DAX measures test successfully without syntax errors.

2

Authenticate Organizational Account

Click "Sign In" in the top-right corner of Desktop using your Microsoft Entra ID (Azure AD) work account.

3

Click "Publish" on Home Ribbon

Select your destination cloud Workspace (e.g., "Sales Analytics - Production") and initiate the upload.

Understanding Semantic Models

Report ≠ Semantic Model

Power BI cleanly separates the **data layer** (Semantic Model) from the **presentation layer** (Report).

This decoupling enables a single unified dataset to serve as the single source of truth across the enterprise.

One Model → Many Reports

Multiple team members can build separate specialized reports (e.g., Sales, Finance, HR) connected to one central Semantic Model.

Prevents duplicate DAX logic and inconsistent business metrics.

What Gets Published?



Semantic Model

Tables, imported data rows, relationships, hierarchies, DAX measures, and connection strings.



Report Visuals

Visual canvas layouts, pages, slicers, custom color palettes, bookmarks, and mobile view definitions.



Metadata & RLS

Row-Level Security role definitions, dataset descriptions, and sensitivity classification tags.

Navigating Power BI Service



Home: Quick access to top KPIs, frequent reports, and company announcements.



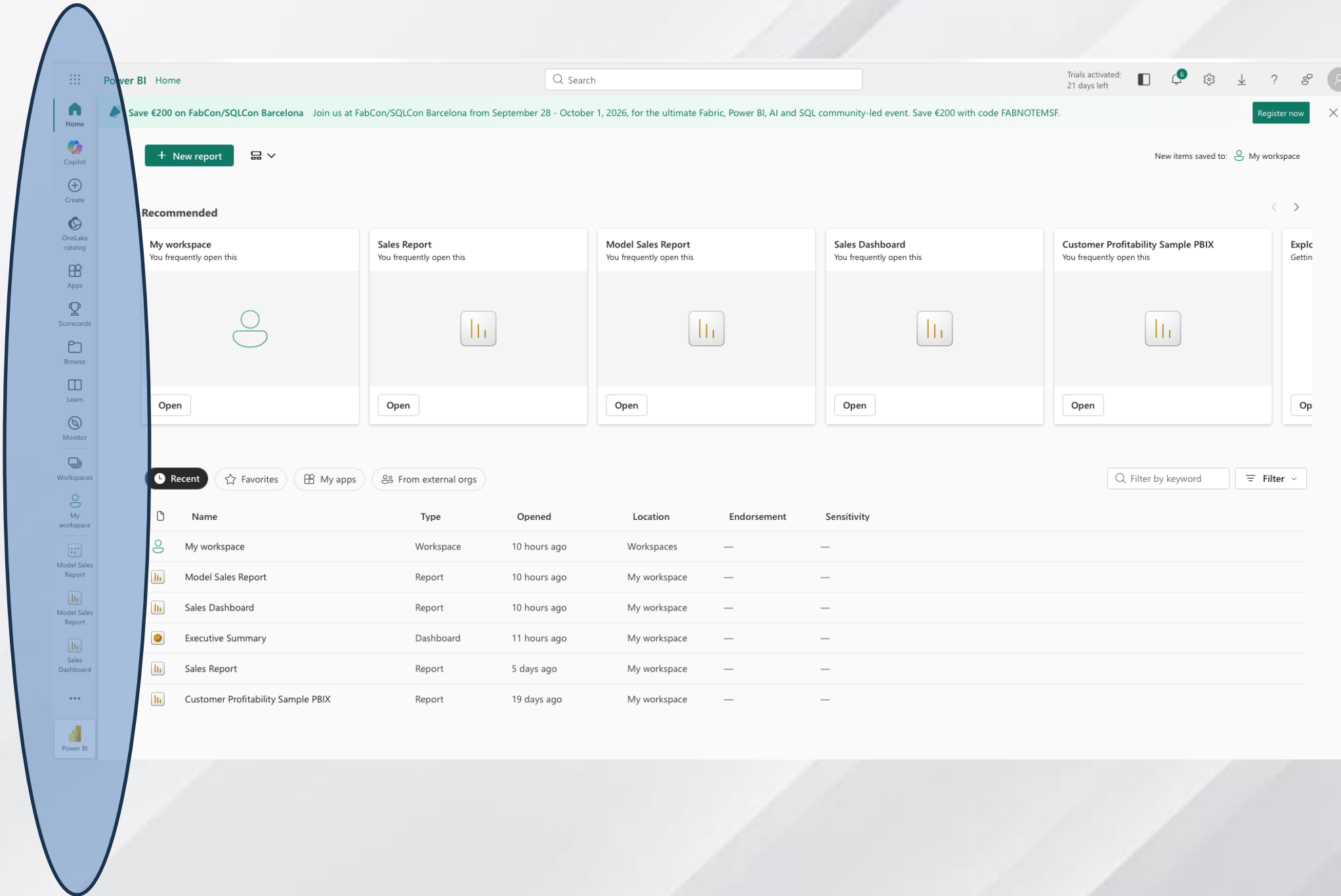
Workspaces: Folder containers holding team reports and datasets.



Apps: Packaged, read-only analytics distribution bundles for end-users.



Recent & Favorites: One-click access to starred or recently viewed items.



Republishing & Overwriting

Overwriting Prompt

Publishing a report with the exact same name as an existing cloud report triggers a replace warning dialog.

Replacing updates both the visual layouts and underlying DAX measures in the cloud workspace.

Important Cautions



Protect Cloud Credentials:

Overwriting a semantic model resets dataset credentials in Service. You must re-verify cloud connection settings post-overwrite.

Publishing Best Practices



Standardized Names

Use clear, consistent naming conventions (e.g., [Dept]_[Subject]_[Env] like FIN_Revenue_PROD).



Separate Workspaces

Isolate Development, Staging, and Production environments across different workspaces.



Dataset Metadata

Add descriptive tags, owner contacts, and column definitions in the dataset settings tab.

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09

2. Dashboards & Enterprise Sharing



Power BI Report vs Dashboard

Feature	Power BI Report	Power BI Dashboard
Page Count	Multi-page detailed canvases	Single-page executive screen
Data Sources	Bound to 1 Semantic Model	Pins tiles from MULTIPLE reports & models
Interactivity	Slicers, cross-highlighting, drill-down	Static tile snapshots (Click tile → Opens Report)
Exclusive Features	Visual tooltips, page navigation	Data Alerts, Q&A natural language, mobile tiles

Creating Dashboards

360-Degree Executive View

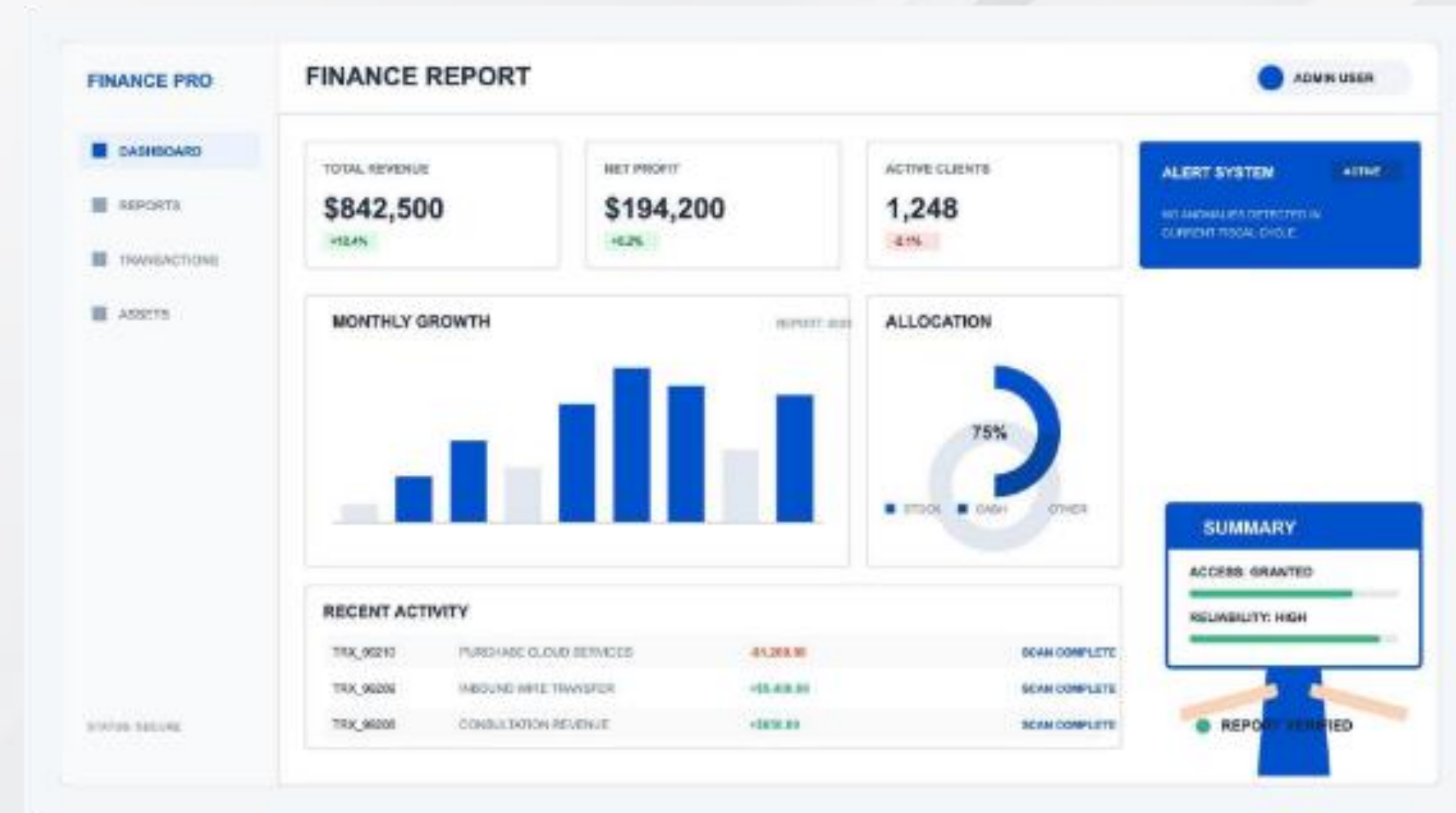
Dashboards aggregate key metrics into a single high-level screen for rapid executive decision-making.

📌 Hover over any visual in a report

+ Click the "Pin visual" pin icon

+ Select "Existing Dashboard" or "New Dashboard"

↔️ Resize and arrange tiles on the dashboard canvas



Pinning Options



Pinning Single Visual Tile

- Pins a single isolated chart or KPI card.
 - Fast loading time
 - Combines visuals from separate reports
 - Supports setting numeric Data Alerts

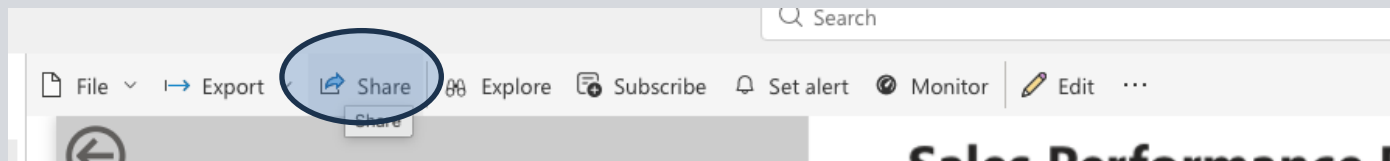


Pin Live Page

- Embeds an entire interactive report page into the dashboard.
 - Preserves interactive slicers on dashboard
 - Maintains exact page layout & colors
 - Does NOT support Data Alerts on tiles

Sharing Reports & Dashboards

Direct Link Sharing



Generate secure share links for targeted colleagues within your Microsoft Entra tenant.



Recipient needs Power BI Pro or Premium Per User (PPU) license



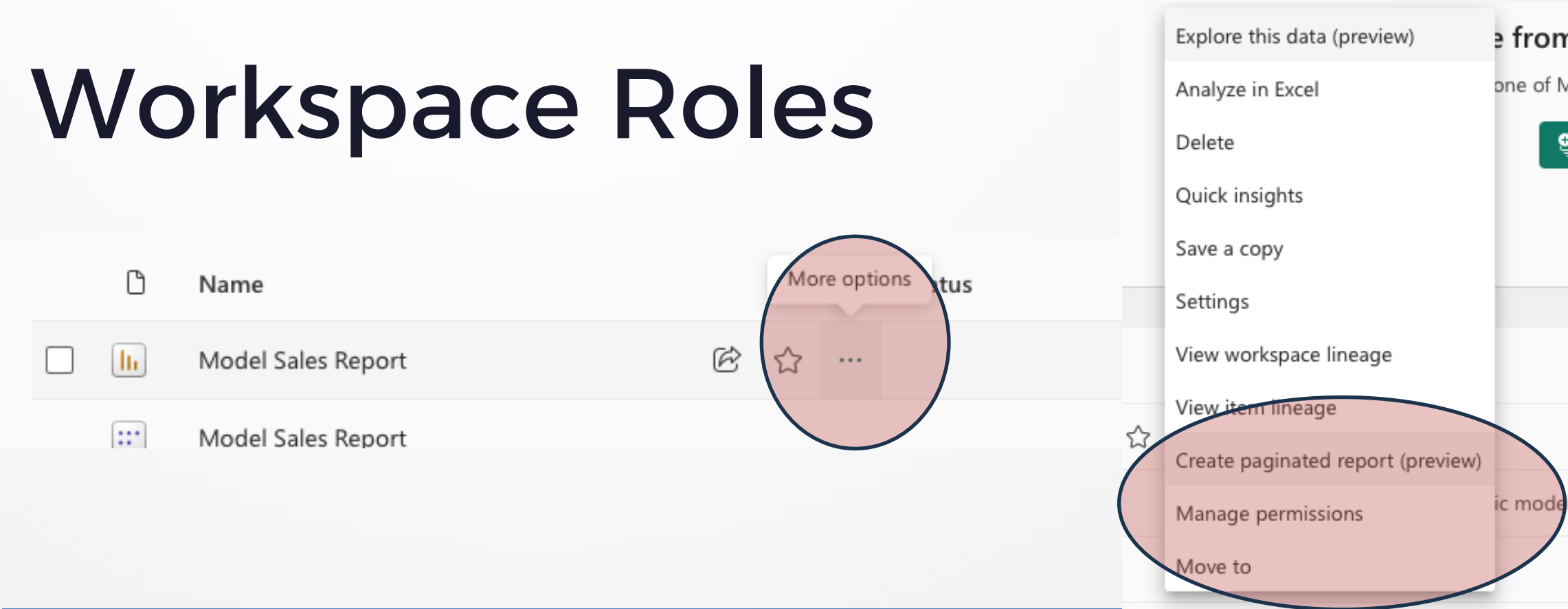
Option to allow/disallow re-sharing & building downstream reports

Licensing Requirements

Pro License (\$10/mo): Required for both content creators AND consumers viewing shared reports in standard capacity.

Premium Capacity (F64/P1): Allows free Power BI accounts to view published content.

Workspace Roles



Role	Publish & Edit	Manage Users	Reshare Content	View Content
Admin	Yes	Yes	Yes	Yes
Member	Yes	No	Yes	Yes
Contributor	Yes	No	No	Yes
Viewer	No	No	No	Yes

Power BI Apps Distribution

Gold Standard for Organizational Distribution

An ****App**** is a packaged bundle of finalized reports, dashboards, and links created from a single Workspace.



Clean, unified navigation menu for business users



Prevents consumers from altering workspace authoring assets



Staging benefit: Update reports in workspace privately, then click "Update App" to publish to consumers



Row-Level Security (RLS)

1. Authoring in Desktop

Create security roles using DAX filter expressions in Power BI Desktop under Modeling → Manage Roles.

[SalesRegion] = USERPRINCIPALNAME()

2. Assigning in Service

After publishing, go to Dataset Settings → Security in Power BI Service.

Map Microsoft Entra users or security groups to defined roles (e.g. assigning John to "US_Sales_Role").

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09

3. Data Connections & Refresh Automation



Why Refresh Data?



Data Synchronization

Business data changes constantly in databases and ERPs; published reports must reflect current records.



Decision Accuracy

Operational teams rely on up-to-date metrics for daily inventory, sales tracking, and financial reconciliation.



Automated Timeliness

Automated scheduled refreshes execute during off-peak hours without manual intervention from report authors.

Data Connection: 1. Import Mode

How It Works

Data is extracted from source systems and compressed into Power BI's in-memory engine.

- Blazing fast DAX calculation speed
- Supports all Power Query transformation functions
- Full DAX modeling flexibility

Refresh Requirement

Data in cloud is static until a data refresh occurs.

- 1 GB dataset size limit per model (Standard Pro)
- Requires scheduled refresh setup

Data Connection: 2. Direct Query

Zero Data Storage in Cloud

- Power BI stores NO data rows in the cloud semantic model.
- Visual interactions generate native SQL queries directly against the source database in real-time.

Best For Big Data

- Ideal for massive datasets (Terabytes/Petabytes) exceeding Import limits
- Guarantees strictly real-time reporting
- Performance is limited by source database speed

Data Connection: 3. Live Connection

Enterprise Centralized Model

Connects a Power BI report directly to an existing hosted tabular model or published Fabric/Power BI Semantic Model.

Report Layer Only

- The report contains visual layouts only. Modeling, calculated tables, and DAX measures are strictly managed in the centralized source dataset.

Comparing Connection Modes

Criterion	Import Mode	Direct Query	Live Connection
Data Location	Power BI Cloud Memory	Source Database	Analysis Services / Fabric
DAX Performance	Blazing Fast (In-Memory)	Depends on Source DB	Fast (Enterprise Server)
Data Freshness	Scheduled Sync	Real-time	Real-time / Near Real-time
Model Flexibility	Full (Data & DAX)	Limited DAX functions	Report layer visualizations only

Manual "Refresh Now"



Immediate On-Demand Sync: Located in the Semantic Model options menu in Power BI Service.



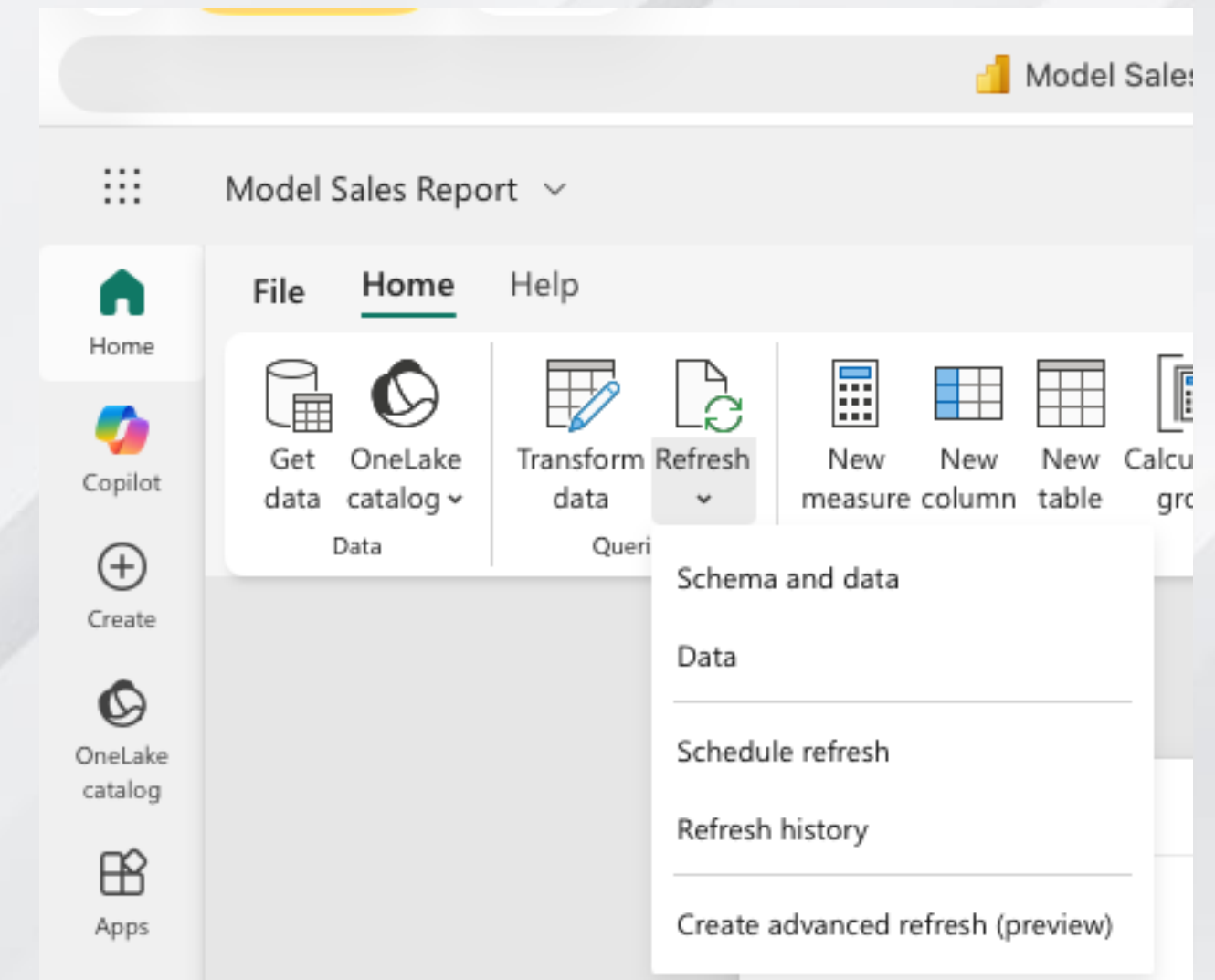
Testing & Validation: Use "Refresh Now" immediately after publishing to test database connectivity and credentials.



Apps: Packaged, read-only Ad-Hoc Updates: Ideal for triggering off-schedule updates when stakeholders demand instant figures before a big meeting.



Rate Limits: On-demand refreshes count against your daily refresh limit (8/day for Pro, 48/day for Premium).

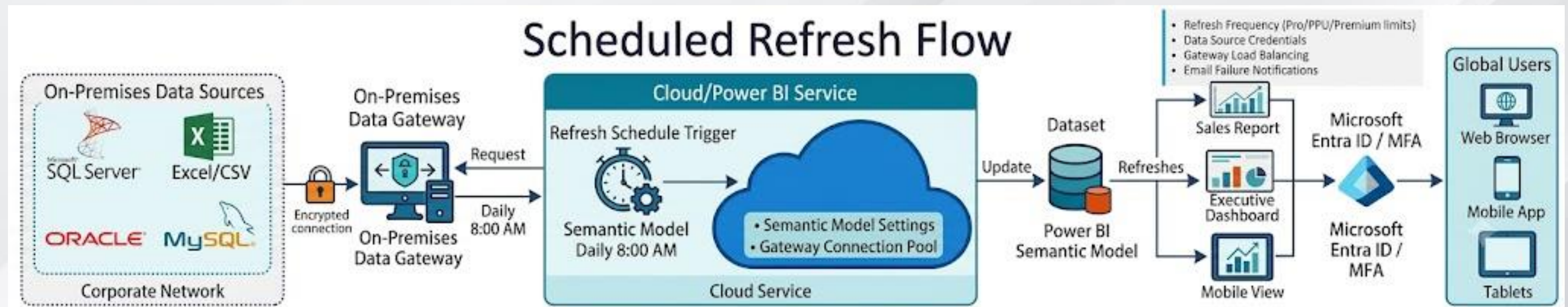


Scheduled Refresh Flow

Cloud-to-On-Premises Refresh Pipeline

Power BI Service triggers scheduled refreshes according to user-defined time slots.

-  Power BI Service: Initiates refresh schedule
-  Azure Service Bus: Encrypted relay tunnel
-  On-Premises Gateway: Queries local SQL/Files
-  Semantic Model: Updates in-memory compressed rows



Configuring Refresh Steps

Enable Scheduled Refresh Toggle

- Set refresh frequency (Daily/Hourly), time zone, and target execution times (e.g., 6:00 AM daily).

Open Dataset Settings

- In Power BI Service workspace, locate your Semantic Model → Settings → Gateway & Cloud Connections.

Configure Data Source Credentials

- Enter database credentials (e.g., OAuth2, Windows Authentication, or Database SQL user login).

Refresh Frequency & Limits

Power BI Pro Capacity 8 Refreshes / Day

Scheduled in 30-minute time increments.

Best for daily or multi-shift operational updates.

Premium / Fabric Capacity 48 Refreshes / Day

Allows half-hourly refresh schedules

Monitoring Refresh History

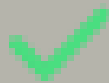


Inspecting Execution Logs

Click Dataset Settings → Refresh History to view past execution statuses.



Start and end execution duration



Completed vs Failed status



Failure Notifications

Power BI Service automatically sends email notifications to the dataset owner upon refresh failure.

Troubleshooting Refresh Errors

Common Root Cause	Error Symptom	Remediation Action
Expired Credentials	InvalidCredentialsException	Re-enter database password in Dataset Settings
Gateway Offline	GatewayUnreachableException	Verify gateway host server status & Windows service
Database Schema Changes	Column 'X' not found	Fix Power Query step or update source table columns
File Moved / Deleted	Could not find file path	Relocate local Excel file to SharePoint / OneDrive cloud URL

Lecture

09

Demo on Power BI



Examples for some free Power BI Courses on YouTube

Duration Level	English Course	Arabic Course
Quick Overview (~20–30 mins)	[Power BI Tutorial for Beginners] • Focus: Service navigation, dashboard basic setup, and cloud publishing walkthrough.	شرح Power BI في 35 دقيقة • Focus: Fast-paced overview from data load to report creation and cloud publishing.
Crash Course (~1–2 hours)	Learn Power BI - Tutorial for Beginners • Focus: End-to-end dashboard creation, Power Query basics, and Power BI Service deployment.	كورس Power BI شامل للمبتدئين • Focus: Core concepts, Power Query data cleaning, data modeling, and basic visualization.
Comprehensive Deep-Dive (~6–8 hours)	Power BI for Data Analytics - Full Course • Focus: Structured ETL, DAX, relational data modeling, interactive dashboards, and cloud sharing.	كورس بلور بي أي من الصفر حتى الاحتراف Power BI Full Playlist Best For: A detailed step-by-step series that builds real-world dashboards, explores DAX functions, and demonstrates Power BI Service sharing features.
Masterclass / Bootcamp (8+ hours)	Power BI Full Course Tutorial (8+ Hours) • Creator: Learnit Anytime • Focus: Advanced DAX, data modeling optimization, workspace administration, gateway setup, and governance.	دورة احتراف Power BI وتحليل البيانات الشاملة Best For: In-depth professional training covering complex data modeling, Time Intelligence DAX, gatekeeper management, and enterprise governance.

Exercise: Publishing and Sharing

Using the reports you have already created from previous lectures:

1. From Power BI Desktop:
 - Publish the report to your workspace
2. From Power BI Service:
 - Schedule refreshes to once/day
 - Share the report (get the share link)
 - Add user permissions to the report
 - Create a dashboard containing only 2 visuals from your report



Lecture
09

Exercise

Lecture
08**Key Points**

Decoupled Architecture: Publishing separates your project into a central Semantic Model and a Report so one dataset can securely power multiple enterprise solutions.

Reports vs. Dashboards: Multi-page Reports provide detailed interactive analysis, while single-page Dashboards aggregate high-level KPI tiles pinned across multiple reports.

Data Refresh Pipeline: Import Mode relies on Scheduled Refresh and On-Premises Data Gateways to update data, whereas DirectQuery queries source databases in real time.

Governance & Distribution: Enterprise access is secured through Workspace Roles (Admin, Member, Contributor, Viewer), Row-Level Security (RLS), and packaged Power BI Apps.

Monitoring & Mobility: Automated Data Alerts, scheduled Subscriptions, and mobile-optimized layouts ensure stakeholders stay informed securely across all modern devices.

Lecture 10:

- Capstone Project (End to End Case for a real dataset)



Lecture
09

Next Lecture

Thank You