

LESSON 20

1. How does Power BI handle large datasets in the Online Service, and what is the role of Premium Capacity in this?

- **Handling Large Datasets:**
 - Power BI Service stores imported datasets in **compressed in-memory format** using the VertiPaq engine.
 - Default **dataset size limits** in Power BI Pro are **1 GB per dataset**, and refresh frequency is limited (8 times/day).
 - **Premium Capacity Role:**
 - Provides **dedicated compute and memory resources** for high performance.
 - **Larger dataset limits** (up to 400 GB per dataset).
 - Allows **more frequent refreshes** (up to 48/day).
 - Unlocks features like **XMLA endpoints**, **paginated reports**, **AI features**, and **Multi-Geo support**.
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2. Differences between Import mode, DirectQuery, and Live Connection in Power BI Service

Feature	Import Mode	DirectQuery	Live Connection
Data Storage	Data is imported into Power BI	Data stays in source	Data stays in source
Performance	Very fast (in-memory)	Slower (query source every time)	Depends on SSAS source
Size Limit	Limited by dataset size (1 GB Pro / 400 GB Premium)	No size limit (depends on source)	No size limit
Refresh	Scheduled refresh needed	No refresh (real-time query)	No refresh
Sources	Most databases, files	SQL, Oracle, SAP, etc.	SSAS (Tabular/Cube)

3. Explain deployment pipelines in Power BI Online. What stages do they include?

- Deployment pipelines help **manage BI content lifecycle** across environments.
 - **Stages:**
 1. **Development** – Build and test reports.
 2. **Test** – Validate with test users, QA checks.
 3. **Production** – Final version for business users.
 - **Features:**
 - Compare differences between stages.
 - Deploy datasets, reports, dashboards in a controlled way.
 - Version control-like behavior for BI content.
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4. How can Power BI Service integrate with Microsoft Teams or SharePoint for collaboration?

- **Microsoft Teams:**
 - Embed Power BI reports in Teams channels using **Power BI app for Teams**.
 - Collaborate on data insights within Teams chats.
 - **SharePoint:**
 - Embed Power BI reports using **SharePoint Online web part**.
 - Secure embedding with organizational authentication.
 - **Benefits:** Real-time collaboration, no switching between apps.
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5. What is the XMLA endpoint in Premium and how does it benefit developers or enterprise BI teams?

- **XMLA Endpoint:** A **connection interface** that allows external tools (e.g., SQL Server Management Studio, Tabular Editor) to connect to Power BI datasets in Premium workspaces.
 - **Benefits:**
 - **Advanced modeling** beyond Power BI Desktop.
 - **Automation** for dataset deployment and schema updates.
 - Enables **integration with enterprise BI tools**.
 - Supports **SSAS Tabular compatibility**.
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6. Describe how usage metrics and audit logs work in Power BI Service.

- **Usage Metrics:**
 - Built-in report that shows:
 - Who is viewing reports.
 - Report performance (views, shares, time spent).
 - **Audit Logs (via Microsoft 365):**
 - Capture user activities like:
 - Report view, share, export.
 - Data refresh.
 - Useful for compliance and security monitoring.
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7. How do you manage workspace access and permissions for different users?

- **Access Levels in Power BI Workspace:**
 - **Admin** – Full control.
 - **Member** – Edit content.
 - **Contributor** – Add content but no publish apps.
 - **Viewer** – Read-only access.
- **Management Options:**
 - Assign roles in **workspace settings**.
 - Use **Azure AD security groups** for bulk management.

- Use **sensitivity labels** for data classification.
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8. How can data governance be enforced in Power BI Service?

- **Methods:**
 - **Sensitivity labels** for classification (integrated with Microsoft Information Protection).
 - **Data loss prevention (DLP) policies** for controlling data export.
 - **Row-Level Security (RLS)** for restricting access at row level.
 - **Audit logs** for monitoring.
 - **Certified datasets and endorsed content** for trusted data sources.
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9. What are the limitations of Row-Level Security when using DirectQuery or Live Connection?

- **DirectQuery:**
 - Performance can degrade because security filters are applied at source query.
 - Limited support for complex security logic.
 - **Live Connection (SSAS):**
 - RLS must be implemented in SSAS, **not in Power BI**.
 - **Other limitations:**
 - Cannot apply RLS on **composite models** if some sources don't support it.
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10. Explain how you can refresh a dataset via Power Automate or REST API.

- **Power Automate:**
 - Use **Power BI connector** → Action: *Refresh a dataset*.
 - Can schedule or trigger refresh on events.
- **REST API:**
 - POST
`https://api.powerbi.com/v1.0/myorg/datasets/{datasetId}/refreshes`
 - Requires **service principal or user token**.
- **Benefits:**
 - Automates refresh outside Power BI Service.
 - Enables integration with workflows (e.g., after ETL pipeline completes).