

Microsoft DP-600

Implementing Analytics Solutions Using Microsoft Fabric

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DP-600: Implementing Analytics Solutions Using Microsoft Fabric

Fabric Analytics Engineer Associate Practice Guide

VENDOR

Microsoft

EXAM CODE

DP-600

CERTIFICATION TRACK

Fabric Analytics Engineer Associate

CONTENT STATUS

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Question 1

SINGLE CHOICE

Your organization is ingesting raw customer transaction data from multiple sources into a Fabric lakehouse. The data arrives in CSV format with inconsistent schemas, missing values, and duplicate records. You need to prepare this data for analytical consumption.

Which combination of actions should you prioritize to ensure data quality and readiness for downstream semantic models?

A. Load all raw data into the lakehouse delta tables as-is, then apply transformations in Power BI using measures and DAX calculations during semantic model development.

B. Create a data transformation pipeline using Apache Spark notebooks and/or Fabric Data Factory to normalize schemas, handle nulls, and deduplicate records before materialization into curated delta tables.

C. Implement row-level security (RLS) rules at the lakehouse level to filter out duplicate and null values before they reach the semantic model.

D. Use only Python data engineering scripts without Apache Spark to process data, as it provides better performance than Spark for large-scale deduplications.

E. Skip data cleaning in the lakehouse and implement all quality checks in the semantic model using calculated columns to preserve raw data lineage.

Answer: B

EXPLANATION:

Preparing data in the lakehouse using Apache Spark notebooks and/or Fabric Data Factory pipelines allows you to transform raw data (normalize schemas, handle missing values, deduplicate) and persist the cleaned results as curated delta tables. This is the foundational DP-600 approach for the data preparation phase. The curated layer then feeds semantic models with high-quality, consistent data.

Why the other options are incorrect:

- **A:** Loading raw, inconsistent data directly and deferring all transformations to the semantic model violates best practices. Data quality should be addressed early in the lakehouse, not in visualization/BI layers. Power BI measures cannot reliably deduplicate or reconcile schema mismatches.
- **C:** RLS is a security/governance feature, not a data quality mechanism. It cannot handle schema normalization or deduplication.
- **D:** Apache Spark is optimized for distributed large-scale data processing in Fabric and is strongly recommended over Python-only approaches for enterprise datasets.
- **E:** Pushing all quality logic into calculated columns is inefficient, difficult to maintain, and compromises model performance. Data preparation belongs in the lakehouse transformation layer.

Question 2

SINGLE CHOICE

You are building a semantic model in Fabric for a multi-tenant SaaS platform. The model contains customer, order, and product tables. You need to implement row-level security (RLS) so that each tenant sees only their data. You also want to optimize query performance for large volumes of historical orders without slowing down real-time analytical queries.

What is the most appropriate approach to manage semantic model efficiency and security in this scenario?

- A.** Define RLS rules on the customer table using a DAX expression that filters by tenant ID, then materialize all historical orders in the same partition as real-time data to ensure consistency.
- B.** Implement role-based RLS filters on the fact table using the tenant ID column, partition the semantic model to separate hot (recent) and cold (historical) data, and use incremental refresh to optimize loading of new orders only.
- C.** Apply RLS only at the Power BI report level using slicers and filters rather than in the semantic model, since slicers are easier to maintain and provide equivalent security.
- D.** Create a single materialized view containing all customer and order data, then apply uniform RLS to all users with a generic filter to reduce semantic model size.
- E.** Implement dynamic row-level security using only Python-based filtering in Fabric notebooks before data enters the semantic model to avoid any RLS processing overhead.

Answer: B**EXPLANATION:**

In a multi-tenant scenario, RLS is correctly implemented on the fact table (orders) using tenant ID columns. Partitioning the semantic model to separate hot data (recent, frequently queried) from cold data (historical, less frequently accessed) enables targeted incremental refresh and query optimization. This combination ensures security at the semantic layer while optimizing performance for mixed workloads.

QUESTION 2 EXPLANATION (CONTINUED):**Why the other options are incorrect:**

- **A:** While RLS on the customer table can support tenant filtering, mixing historical and real-time data in a single partition severely degrades query performance and refresh times. Partitioning is essential for this scenario.
- **C:** Report-level slicers are not a substitute for semantic model RLS. They are user-controlled, can be bypassed, and do not provide true security. RLS enforcement at the semantic layer is mandatory for compliance.
- **D:** A single materialized view with uniform generic filters does not enforce tenant isolation. Each tenant must have a distinct, role-specific filter. Additionally, this approach does not address performance optimization.
- **E:** Pre-filtering in notebooks removes the benefits of dynamic RLS in Power BI and adds unnecessary data pipeline complexity. RLS processing in the semantic model is efficient and provides user-aware filtering in real time.

Question 3**SINGLE CHOICE**

Your team has deployed a Fabric analytics solution used by 200+ business users across multiple departments. Recently, you discovered that a critical SQL query in a Spark notebook is running inefficiently, consuming excessive cluster resources and causing delays for other users sharing the same workspace. You need to diagnose and optimize this workload while maintaining the current analytics delivery schedule.

Which diagnostic and remediation steps should you take first?

- A.** Immediately increase the cluster size to dedicate more resources to the problematic notebook, then schedule a formal optimization review after the peak usage period ends.
- B.** Review the Spark query execution plan and storage format (ensure data is in optimal delta format), check for missing statistics or inefficient joins, then refactor the query logic and implement query caching where appropriate.
- C.** Migrate the Spark notebook to a separate, isolated workspace to eliminate resource contention and ensure uninterrupted performance for other users.
- D.** Disable the notebook temporarily while you rewrite it entirely in SQL using warehouse queries, as SQL-based analytics always outperform Spark in Fabric environments.
- E.** Request the business users to run the notebook only during off-peak hours and implement query throttling to limit resource consumption across all notebooks equally.

Answer: B

QUESTION 3 EXPLANATION:

The DP-600 exam emphasizes root-cause analysis and performance optimization of analytics solutions. Reviewing the Spark query execution plan, verifying delta table format, analyzing join efficiency, checking table statistics, and implementing optimizations such as query caching are standard practices for diagnosing and fixing slow queries. This approach resolves the underlying issue rather than applying band-aid solutions.

Why the other options are incorrect:

- **A:** Increasing cluster size without diagnosing the root cause is wasteful and does not address inefficient query logic. This defers the real problem and increases costs.
- **C:** Isolating a workspace adds infrastructure overhead and does not solve the actual query performance problem. The bottleneck will persist in the new workspace.
- **D:** While SQL is powerful, Spark is highly optimized for distributed analytics in Fabric. The issue is likely the query structure, not the engine. Rewriting the entire notebook based on an assumption is risky and time-consuming.
- **E:** Throttling and off-peak scheduling are operational workarounds, not solutions. They do not fix the inefficient query and degrade user experience without addressing the root cause.

Question 4**SINGLE CHOICE**

You are designing a semantic model for a retail company that has warehouses in multiple geographic regions. The raw sales data is partitioned by date and region in the lakehouse. The business requires the ability to analyze sales trends across all regions, but also needs region-level row-level security so that regional managers see only their data. The model must be optimized for monthly reporting and ad-hoc queries.

When designing the relationships and structure of the semantic model, which of the following design decisions will best support these requirements?

A. Create separate independent semantic models for each region with identical table structures, then use Power BI composite models to federate queries across all models during reporting.

B. Design a single semantic model with a star schema containing a fact table linked to dimension tables for region, product, and time; implement RLS on the region dimension using the region column; use DirectQuery mode for real-time data access to minimize model size.

C. Design a single semantic model with a star schema containing a fact table and related dimension tables; create a role-based RLS rule that filters the fact table by the user's assigned region; use import mode with incremental refresh on the fact table partitioned by date and region for efficient updates.

D. Create a flat denormalized fact table containing all dimensions embedded as columns, apply RLS to each denormalized column, and store all data in a single non-partitioned table for simplicity.

E. Use only dimension tables without a fact table, storing all sales metrics as calculated columns in the region dimension to avoid redundant data storage.

Answer: C

QUESTION 4 EXPLANATION:

A properly normalized star schema with a fact table and related dimensions supports both enterprise-scale analytics and region-level security. Implementing RLS on the region dimension filters the fact table by user role. Import mode with incremental refresh partitioned by date and region enables efficient monthly loads and optimizes query performance for both scheduled reports and ad-hoc queries, which aligns with the business requirement.

Why the other options are incorrect:

- **A:** Multiple independent regional models eliminate cross-region analysis and create maintenance overhead. Composite models add latency and complexity.
- **B:** DirectQuery mode is appropriate for real-time scenarios but introduces query latency and cannot be scheduled or cached efficiently for monthly reporting. Import mode with incremental refresh is better aligned with the mixed reporting schedule.
- **D:** Denormalized flat tables are inefficient, difficult to maintain, and prone to data anomalies. RLS on multiple embedded columns is also error-prone and performs poorly compared to dimension-based filtering.
- **E:** A model without a fact table cannot properly aggregate metrics and violates fundamental star schema principles. Calculated columns cannot serve as a substitute for fact tables in enterprise semantic models.

Question 5

SINGLE CHOICE

Your organization is moving its analytics solution to Fabric. The solution includes several legacy ETL pipelines written in SQL Server Integration Services (SSIS) that load data into a data warehouse. You need to migrate these pipelines to Fabric while ensuring data lineage is tracked, governance policies are enforced, and the solution remains maintainable.

What is the recommended approach to execute this migration?

A. Rewrite all SSIS packages as Python scripts in Fabric notebooks to ensure native execution; bypass any governance frameworks during migration to accelerate the timeline.

B. Recreate the ETL logic using Fabric Data Factory pipelines and map SSIS transformations to corresponding Spark notebooks or SQL queries; enable Fabric's built-in lineage and governance features such as data catalog integration and purview connections.

C. Lift-and-shift the SSIS packages into Fabric as-is by running them on an on-premises Integration Runtime, then gradually refactor components one at a time.

D. Consolidate all SSIS packages into a single mega-pipeline using SQL stored procedures in a Fabric warehouse for simplicity and performance.

E. Migrate only the most critical SSIS packages to Fabric and continue running the remaining legacy packages in SQL Server to reduce migration risk.

Answer: B

QUESTION 5 EXPLANATION:

The DP-600 exam emphasizes modernizing analytics solutions on Fabric while maintaining governance and lineage. Recreating ETL logic in Fabric Data Factory pipelines using Spark notebooks and SQL queries is the cloud-native approach. Leveraging Fabric's native lineage tracking, data governance, and purview integration ensures compliance and auditability throughout the development lifecycle. This approach aligns with the 'Maintain a data analytics solution' objective.

Why the other options are incorrect:

- **A:** While rewriting in Python is valid, bypassing governance frameworks undermines compliance and creates technical debt. Governance must be enabled from the start.
- **C:** Lift-and-shift with on-premises Integration Runtime does not leverage Fabric's native capabilities and leaves the solution partially on-premises, negating the benefits of cloud migration. Legacy SSIS does not integrate with Fabric's governance or lineage.
- **D:** Consolidating all packages into a single mega-pipeline is architecturally unsound and difficult to maintain. Modular pipelines with appropriate dependencies are a best practice.
- **E:** A hybrid approach with split workloads increases complexity and operational overhead. A full migration enables unified governance, monitoring, and cost optimization.

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