

**Part 4: Evaluating TrendyThreads’ data architecture: Strengths and areas for improvement**

Conduct a detailed assessment of TrendyThreads’ enterprise data architecture by analyzing its core components. Identify strengths and areas for improvement to optimize performance, scalability, and security. Refer to *Part 4 in the lab instructions*.

1. Name of the enterprise: TrendyThreads

2. Strengths

Sr. No.	Strength	Description	Impact
1	Use of Cloud-Native Solutions	TrendyThreads utilizes scalable data warehouse technologies such as Amazon Redshift, Google BigQuery, and Snowflake, which are well-suited to scale horizontally and handle large volumes of data efficiently.	Enables flexible scaling to meet increasing data volumes and user demands, reducing the risk of system slowdowns during peak periods.
2	Comprehensive Integration Stack	The stack includes ETL tools (Talend, Apache NiFi), API gateways (AWS API Gateway, Kong), and real-time streaming platforms (Kafka, Kinesis), indicating robust capabilities for integrating and orchestrating data across systems.	Facilitates timely and consistent data movement across systems, supporting real-time operations and reducing manual reconciliation efforts.
3	Dedicated Governance Tools	Tools like Collibra and Alation suggest a strong commitment to managing data quality, lineage, and stewardship.	Promotes enterprise-wide data stewardship and trust in analytics through clear ownership and lineage of critical data assets.

3. Areas for improvement

Sr. No.	Area for improvement	Description	Impact
1	Elastic Auto-scaling Strategy Not Detailed	While the technologies are scalable, there’s no specific mention of automated scaling policies or performance monitoring mechanisms to dynamically adjust resources based on load.	Without automated resource allocation, there is a risk of performance degradation during traffic spikes or over-provisioning that increases costs.
2	End-to-End Orchestration Visibility	There’s no mention of workflow orchestration platforms (like Apache Airflow or Prefect) that would help	Increases the complexity of troubleshooting data pipeline

		provide visibility and control across all integration processes.	failures, leading to longer downtimes and delayed analytics.
<b>3</b>	Governance Policy Enforcement	While tools are in place, the document lacks detail on how governance policies are operationalized and enforced across departments.	Without strict enforcement, governance may remain theoretical, leading to inconsistent data quality and challenges in regulatory reporting.