Stream Processing

Stream processing means that the data is processed as soon as it arrives in the storage layer. It usually happens in sub-second timeframe so the end user will feel it as a real-time experience.

The 3 entity that plays important role in this use case:

1. Event Producer
2. Event Ingestor
3. Event Consumer

Event Producer

We will use a telco data generator to generate the phone call events.

The generator will generate phone calls data that also contains fraudulent calls which will be filtered using stream analytics later in the pipeline.

https://github.com/Azure/azure-stream-analytics/tree/master/Samples/TelcoGenerator

Event Ingestor

Fast data needs fast storage.

For real-time data, Azure Event Hub fits well for this use case as it can be used as an ingestion point and fast asynchronous storage layer to store our realtime event.
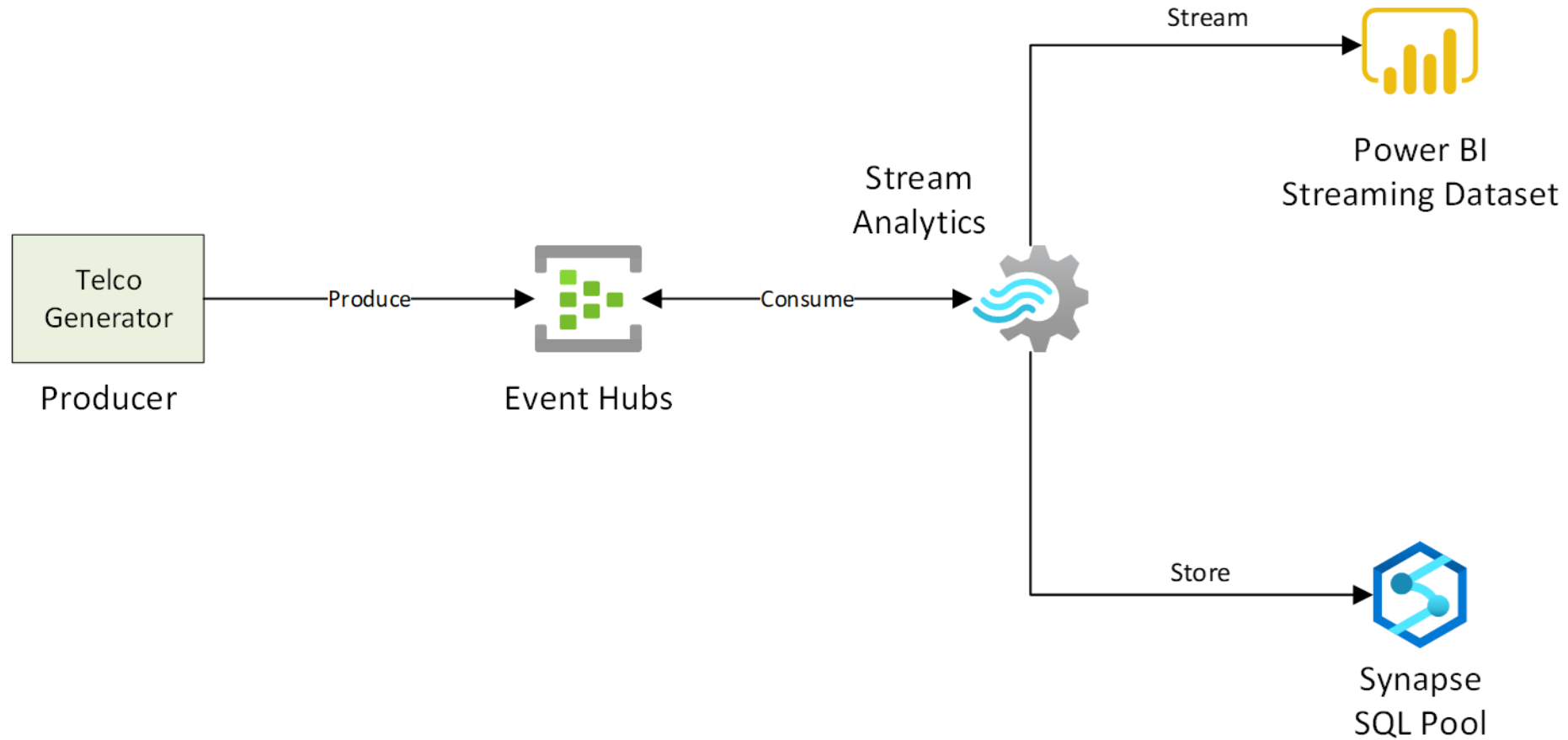
Event Consumer

Stream data needs stream processor.

Azure Stream analytics is built on the top of Microsoft Trill that is designed to provide realtime analytics and complex event processing.
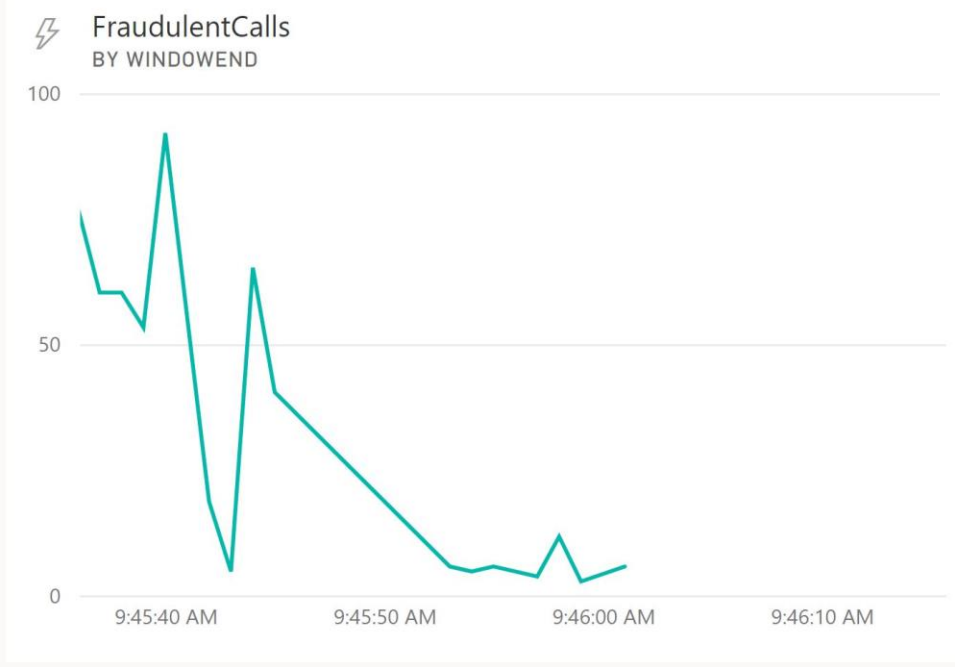
https://www.microsoft.com/en-us/research/project/trill/

Pipeline Architecture

Microsoft

DEMO

Conclusion

```
1   select TOP 10 CallRecTime, SwitchNum, CallingIMSI, CallingNum, CalledNum from dbo.SensorLog2;
```

Results   Messages

View   [Table   Chart]   ⤷ Export results ∨

🔍 Search

CallRecTime	SwitchNum	CallingIMSI	CallingNum	CalledNum
2021-02-01T02:56:32Z	China	466923300236137	012362986	678993000
0001-01-01T00:00:00	Germany	466922202546859	NULL	NULL
2021-02-01T02:56:36Z	US	466922002560205	456774112	678968422
2021-02-01T02:56:39Z	Australia	466922202679249	345608198	678951780
2021-02-01T02:56:29Z	Germany	466920403025604	567875389	012308513
2021-02-01T02:56:32Z	Germany	466922201102759	789004287	789051350

Power BI Realtime Dataset

⚡ FraudulentCalls
BY WINDOWEND

Synapse Output

References

- Microsoft Docs
    - [Tutorial - Analyze fraudulent call data with Azure Stream Analytics and visualize results in Power BI dashboard | Microsoft Docs](#)
    - [Use Azure Stream Analytics in dedicated SQL pool - Azure Synapse Analytics | Microsoft Docs](#)
- Microsoft Learn
    - Data Engineer: https://docs.microsoft.com/learn/roles/data-engineer
    - Data Analyst: https://docs.microsoft.com/learn/roles/data-analyst
- Indonesia Belajar Microsoft Cloud
    - https://belajarmscloud.com

Thank you

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