

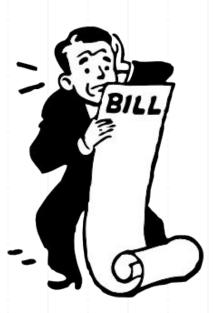


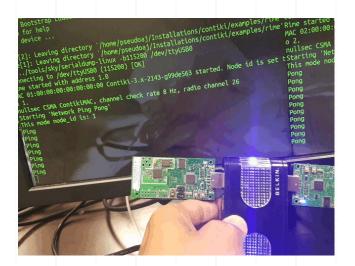
Analytics of Utility Things

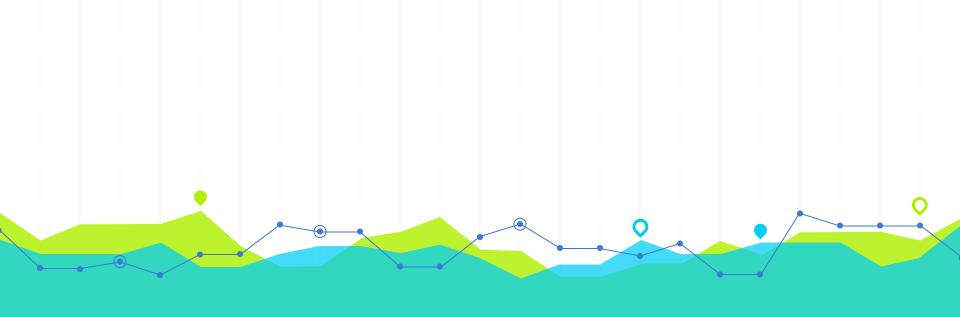
Ajay Kavuri

Insight Data Engineering, New York









Business Problem

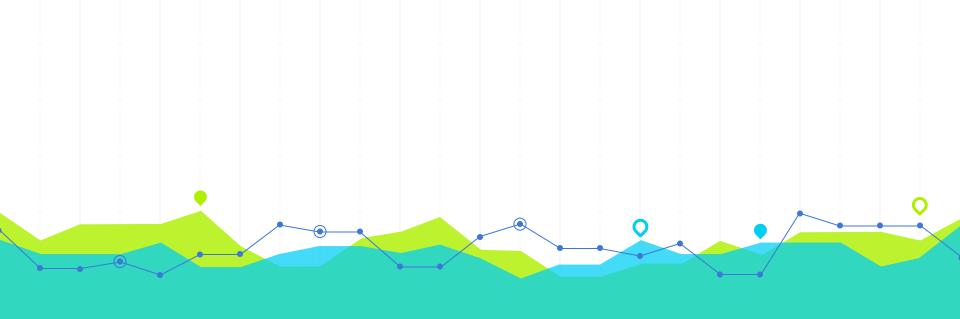
Key challenges

Business Problem?

- Current utility systems rely on meter readings that are recorded every month or couple of months
- Utility systems are increasingly getting connected and existing systems are used for monitoring at energy companies.

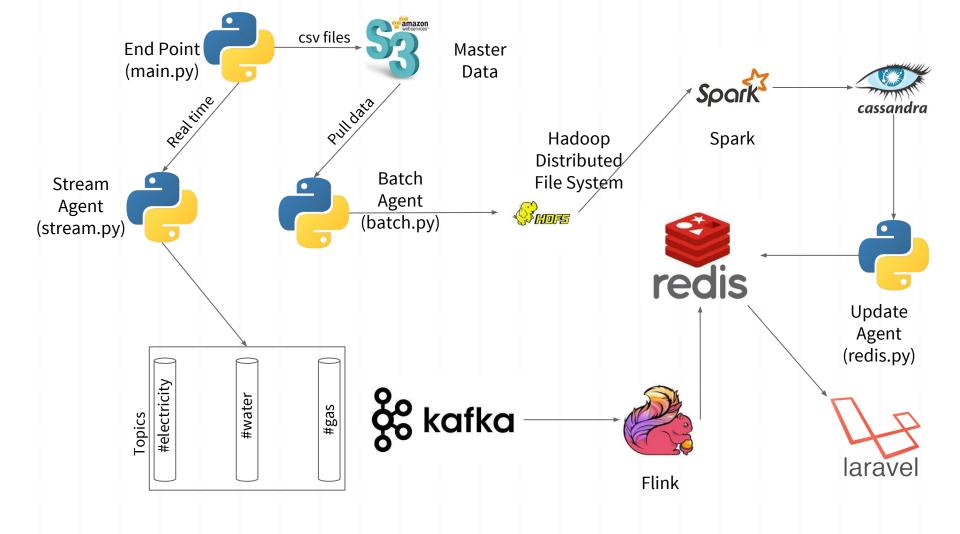
Use Cases

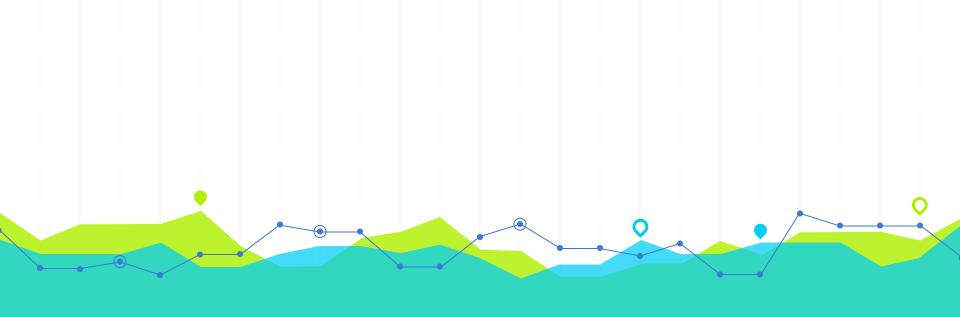
- Real-time monitoring and managing current usage
- City wide analytics for consumption of different utility systems
- Reactive triggers to notify anomalies in consumption patterns



Data Pipeline

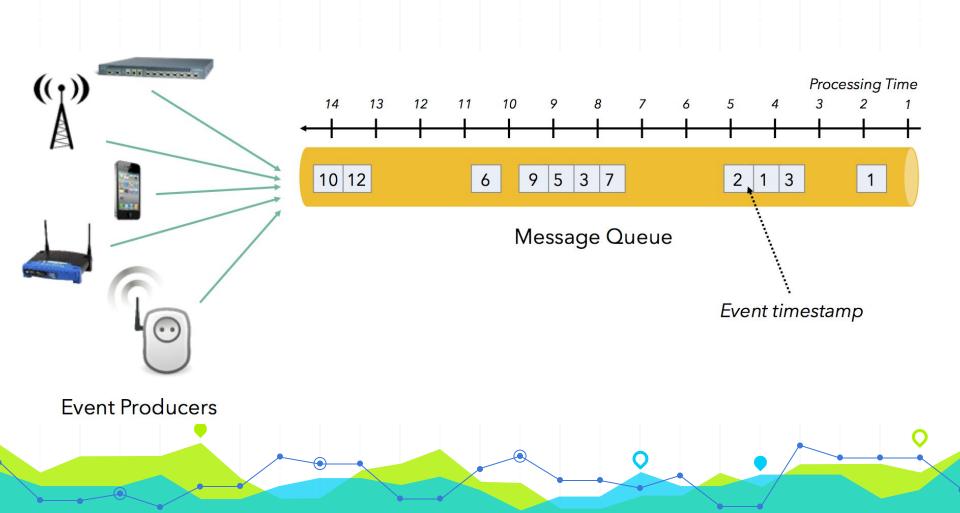
Blueprint of the system

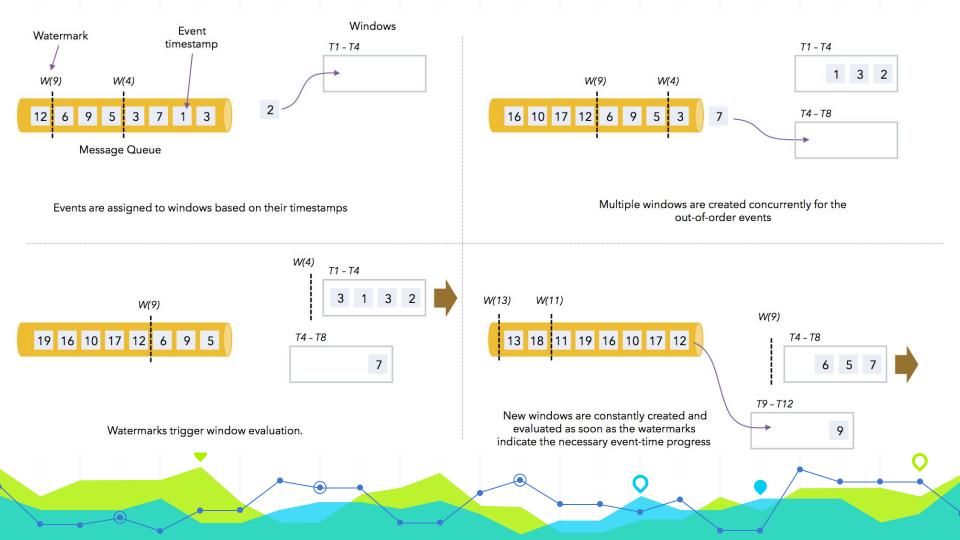




Challenges Encountered

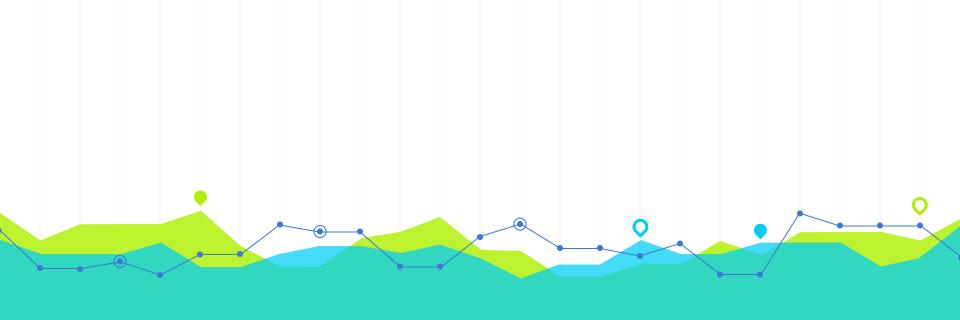
Engineering inside out





Additional Challenges

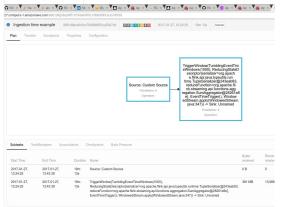
- Stateful processing with allowed latency for the in between values
- Optimizing Kafka for avoiding back pressure on Flink
- Scaling infrastructure and dividing the streaming and batch jobs



Demo

Now I will never have to pay extra money





Producer (stream.py)

Flink Dashboard (streamMyTopic.java)



Combined Metrics

Rate	Mean	1 min	5 min	15 min
Messages in /sec	0.1k	0.9k	0.8k	0.6k
Bytes in /sec	23k	155k	147k	108k
Bytes out /sec	27k	155k	147k	108k
Bytes rejected /sec	0.00	0.00	0.00	0.00
Failed fetch request /sec	0.00	0.00	0.00	0.00
Failed produce request /sec	0.00	0.00	0.00	0.00

Kafka Metrics (topic: electricity)



Redis (topic: electricity)

(1483333204, 69abba44-6e80-422f-8abe-35d037e90d06, 0. 20979635906811578) (1483333204, 6034534f-1dbf-4d4d-a9ba-8eb0c36f46c8, 0. 1364413446929295) (1483333204, a4f67508-62a5-4f71-b4af-ce2d40ca8c4b, 0. 1360892035777322) (1483333201, 2dd33e0c-ee3c-409b-a4f9-4524c1c2e60f, 0. 12872630501236026) (1483333203, cclaea63-3991-4396-a04e-df1355350665, 0. 04655059185617417) (1483333203, 83476f87-3f92-4eaf-bd43-266c462fbe1c, 0. 2438328646644843) (1483333201, bffa9d9f-dad6-44fb-ab77-62c484a2967b, 0. 21046854862986925) (1483333204, abbc5628-6272-4848-93dd-6519a09b4251, 0. 05314063710988428) (1483333204, 158adca71-1fbf-425a-986e-c5df5ff36195, 0. 13493817762857457) (1483333204, 14fe9796-b92a-4da6-ba0f-7fb99757b109, 0. 25689553619149835) (1483333204, a8683c6-fcff-4d58-97c3-06373687e6b6, 0. 16133011390565347)



About me

Coder. Crawler. Happy soul.

