

Cloud-based **IoT Server** for energy savings

W205-3 | Matthew Burke, Jan Forslow, Vyas Swaminathan, Xiao Wu

Current Industry Status and Main Goal of Project

Legacy Smart Meter systems were developed 7+ years ago

Optimized for once-a-day reading of Smart Meter data for billing purposes

The use of Cloud-based IoT Server opens up for new possibilities:

- Infinitely scalable
- Handling of real-time streaming data

This opens up for new ways for energy savings and power grid control:

- Voltage optimization, community energy sharing/sales, etc.

Potential Data Sources

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DATA.SPARKFUN.COM

Smart Meter values

Reading out my smart meter values

Manage

Export to Analog.io

JSON

CSV

MySQL

PostgreSQL

Atom

TAGS home

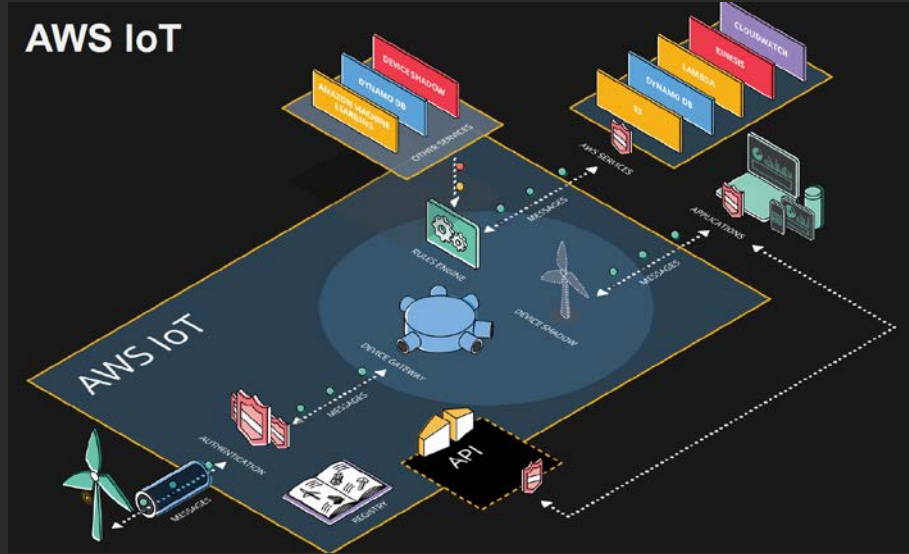
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00.342	00.000	0	001967.276	000799.063	000608.596	001375.315	0001	2016-10-05T00:57:00.214Z	
00.341	00.000)	001967.275	000799.063	000608.596	001375.315	0001	2016-10-05T00:56:50.173Z	
00.345	0/XXM5	0	001967.273	000799.063	000608.596	001375.315	0001	2016-10-05T00:56:40.390Z	
00.343	00.000	-	001967.271	000799.063	000608.596	001375.315	0001	2016-10-05T00:56:11.028Z	
00.344	00.000	-	001967.270	000799.063	000608.596	001375.315	0001	2016-10-05T00:56:01.096Z	
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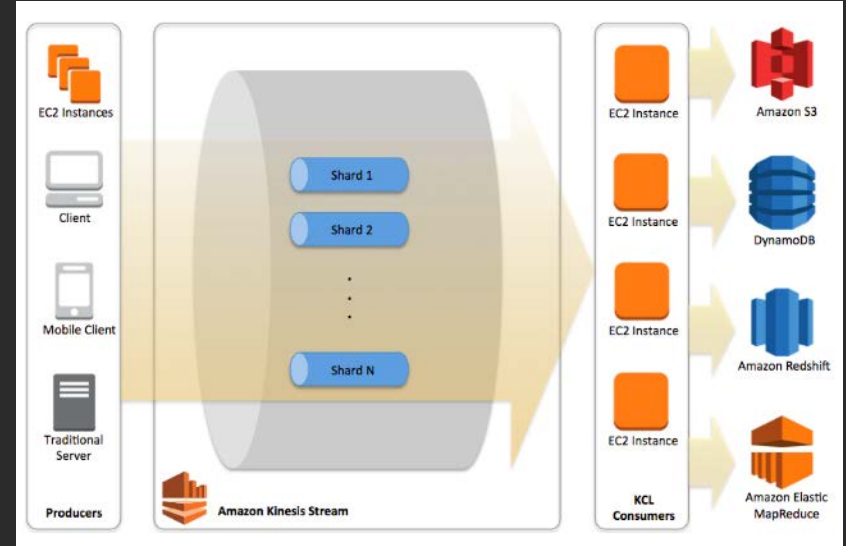
Example Data from Private Firms

Public Streamed Data

Potential Architecture



AWS IoT



Amazon Kinesis

AWS Lambda

Looking Forward

Challenges:

We may have to use static log data to simulate real-time streamed traffic at scale

Difficulties ensuring simulations to be as realistic as possible

Initial Plan:

Develop data simulation algorithm

Create high-level architecture (components, DAGs etc)

Testing and scale out

MapReduce and analytics