

Better TV & Broadband with Kafka & Spark

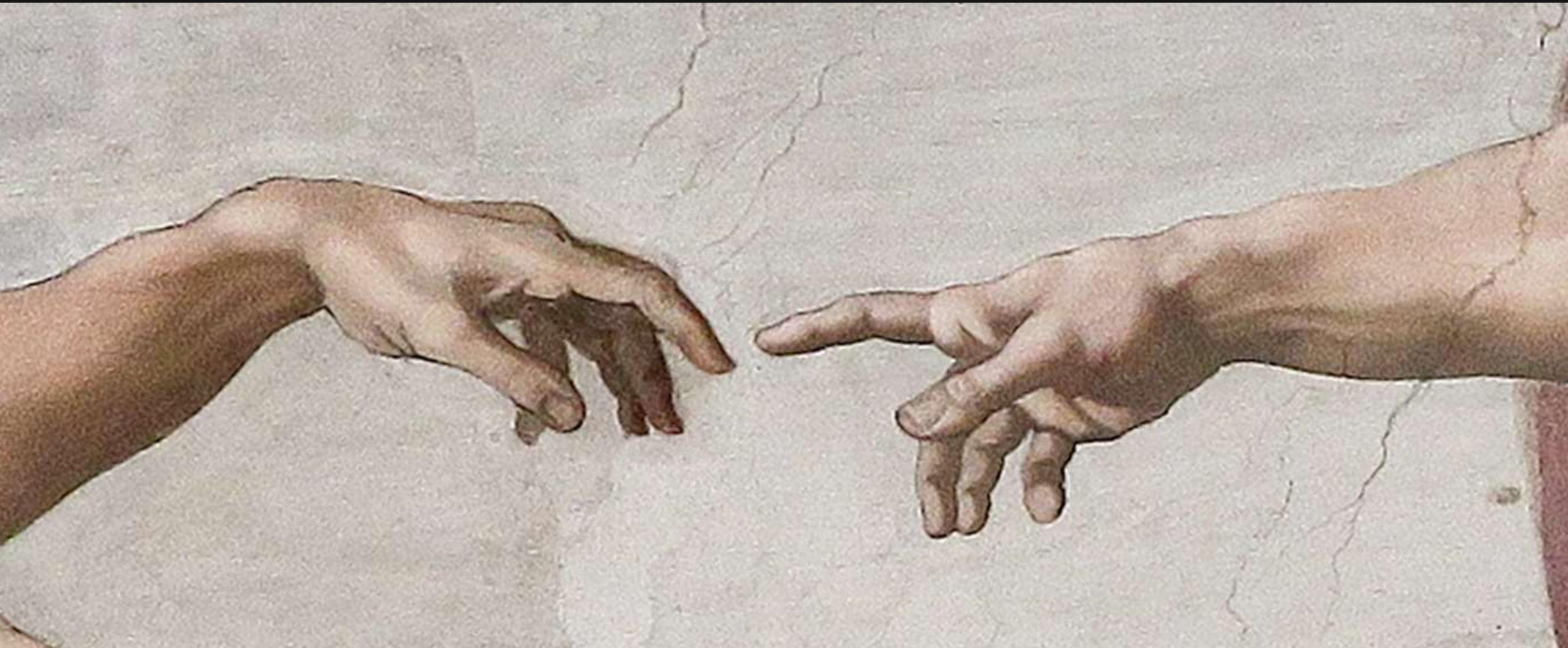
Phill Radley

Chief Data Architect

British Telecommunications plc

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In the beginning (2012)





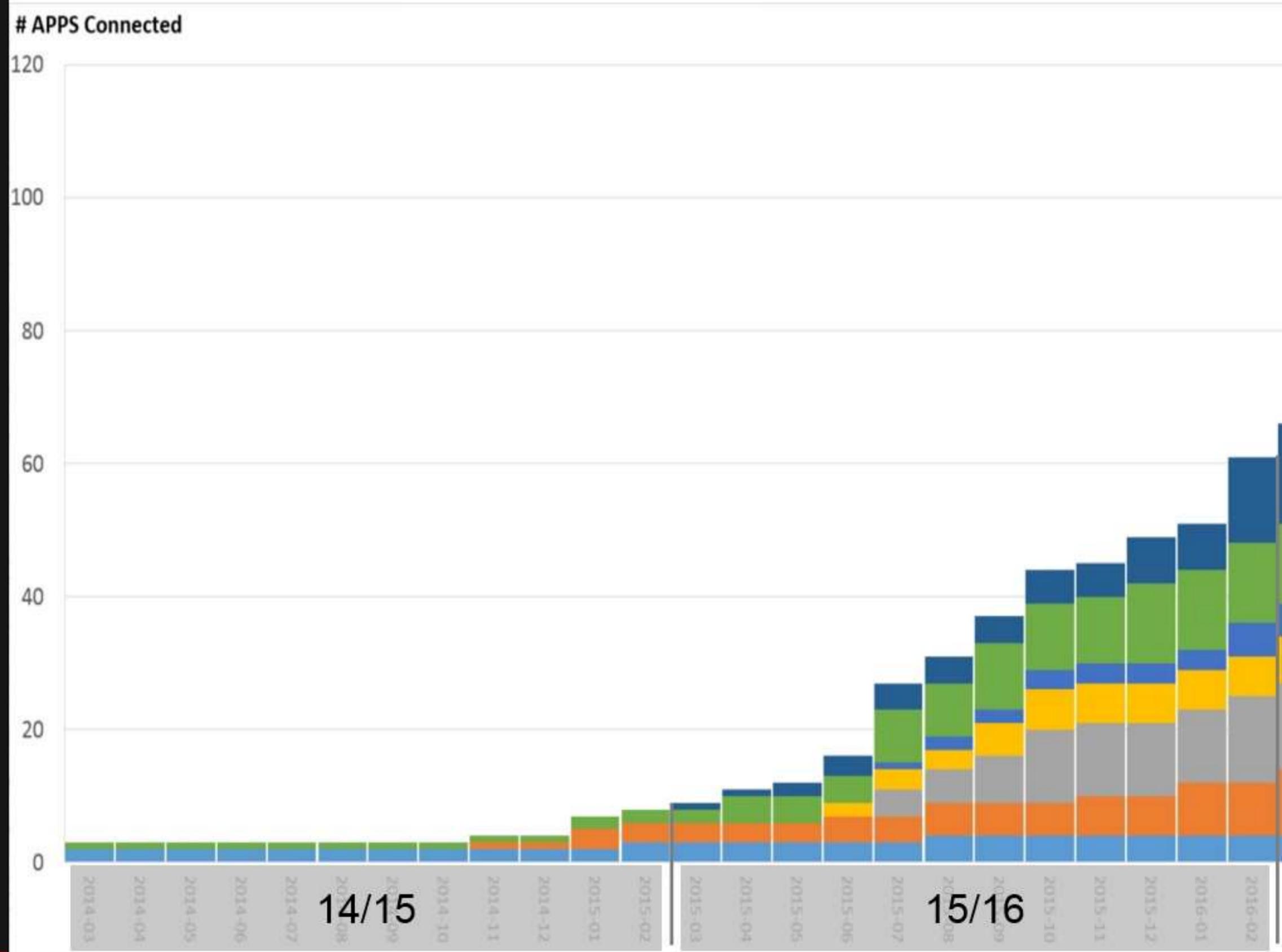
Hadoop as a Service



Admin Group



Early adoption



“Spark will replace map/reduce as
the standard execution for Hadoop”

Doug Cutting – Sep 2015

HaaS 2.0

Denser Nodes

doubled #cores

trebled RAM

Same node count 😊





TV



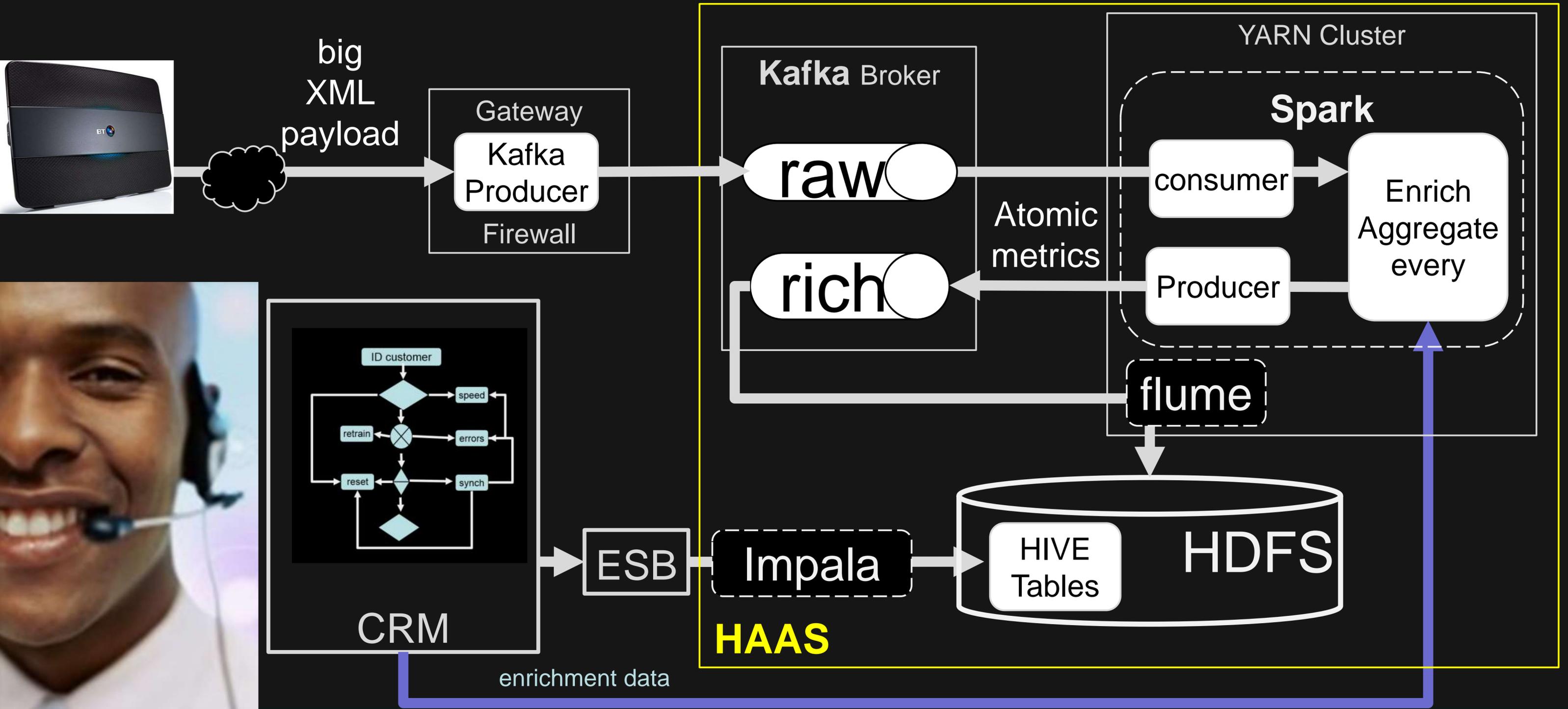
Set Top Box



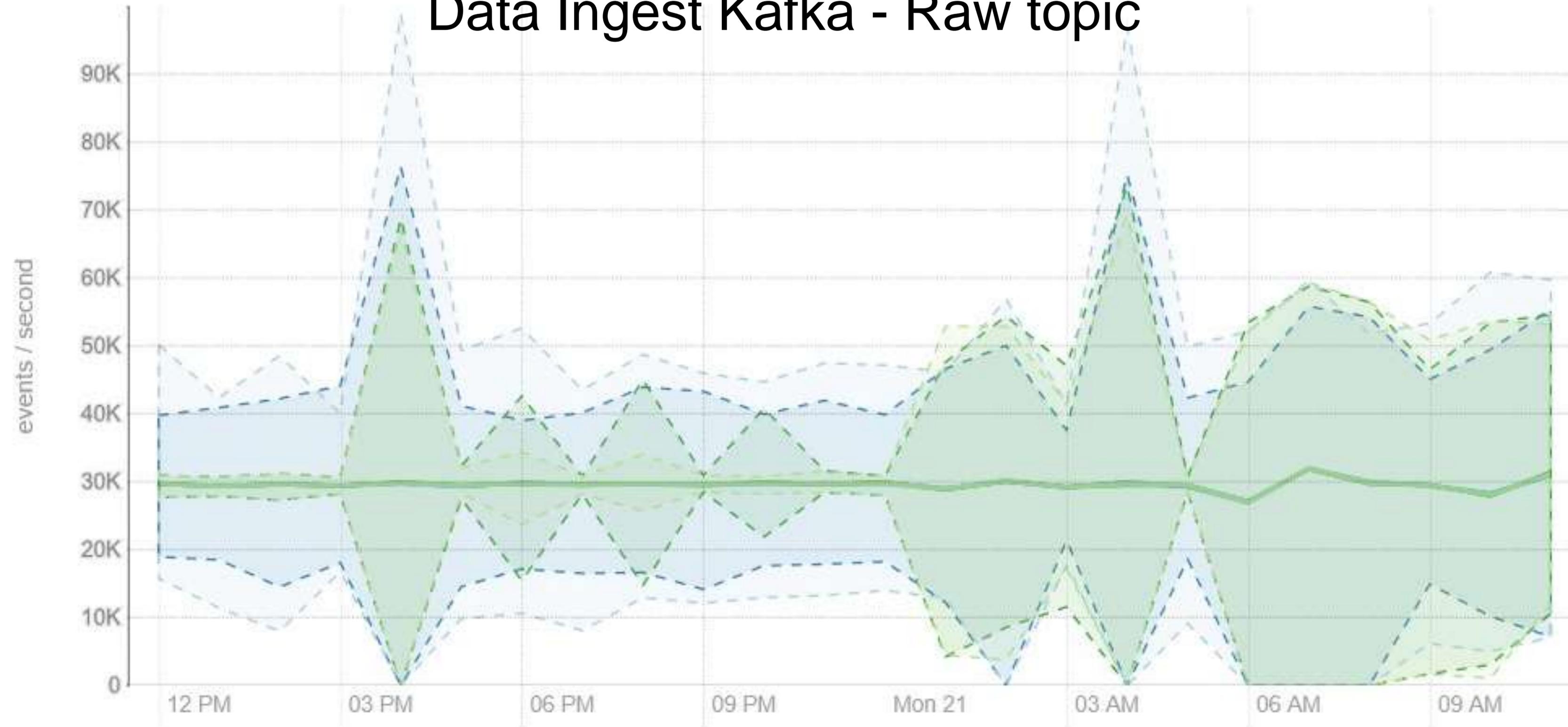
Broadband Home Hub



TV & BB Data Pipeline Overview



Data Ingest Kafka - Raw topic



Data Serving – Impala Concurrency

Impala 1A - Running Queries by Pool



Schema Design ... on read ... DEVOPS approach

- Flat (De-Normalised) Tables, table per query
- Queried with *SELECT * FROM WHERE ...*
- Table Dimensions (rows & columns)
- Table File formats optimised for table query pattern (up to 10 x difference)
 1. AVRO for tables being queried row oriented queries
 2. Parquet – default time series
 3. Parquet with snappy compression for deep time queries

Impala Tuning...

- There's lots of options, the default will not be good enough
 - (it's not as mature as an Oracle DB ;-)
- Isolate operational tenant loads with their own Dedicated Impala Resource Pool
 - "Dedicated SQL Queue" added to platform service portfolio
 - Chargeable platform feature (as its dedicated resource)
- Tuning Impala Daemons
 - Query Executor & Scanner Threads for MAX concurrency, shortest que
- HDFS Caching
 - Currently in test, expecting a 2-5x speed up, more importantly eliminates unnecessary physical I/O (these are hot tables keep them in memory)

Conclusions after months in production....

- Spark 1.6 very stable
- Impala requires a lot of tuning & table design to get working
- High demand to use the data for other customer experience work
- This solution runs on a multi-tenant cluster running hundreds of batch loads, and dozens of ad-hoc self-service analytics and data science users
 - i.e. the isolation using cgroups seems to work (mostly)
- Next Steps
 - Another similar data pipeline from internal network
 - Multi-tenant Kafka (Topic as a Service) to service more clients
 - Second Data centre Site with dual ingest for high availability

How BT delivers better broadband and TV using Spark and Kafka

Phillip Radley (BT)

12:05-12:45 Wednesday, 23 May 2018

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Thank you 😊

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