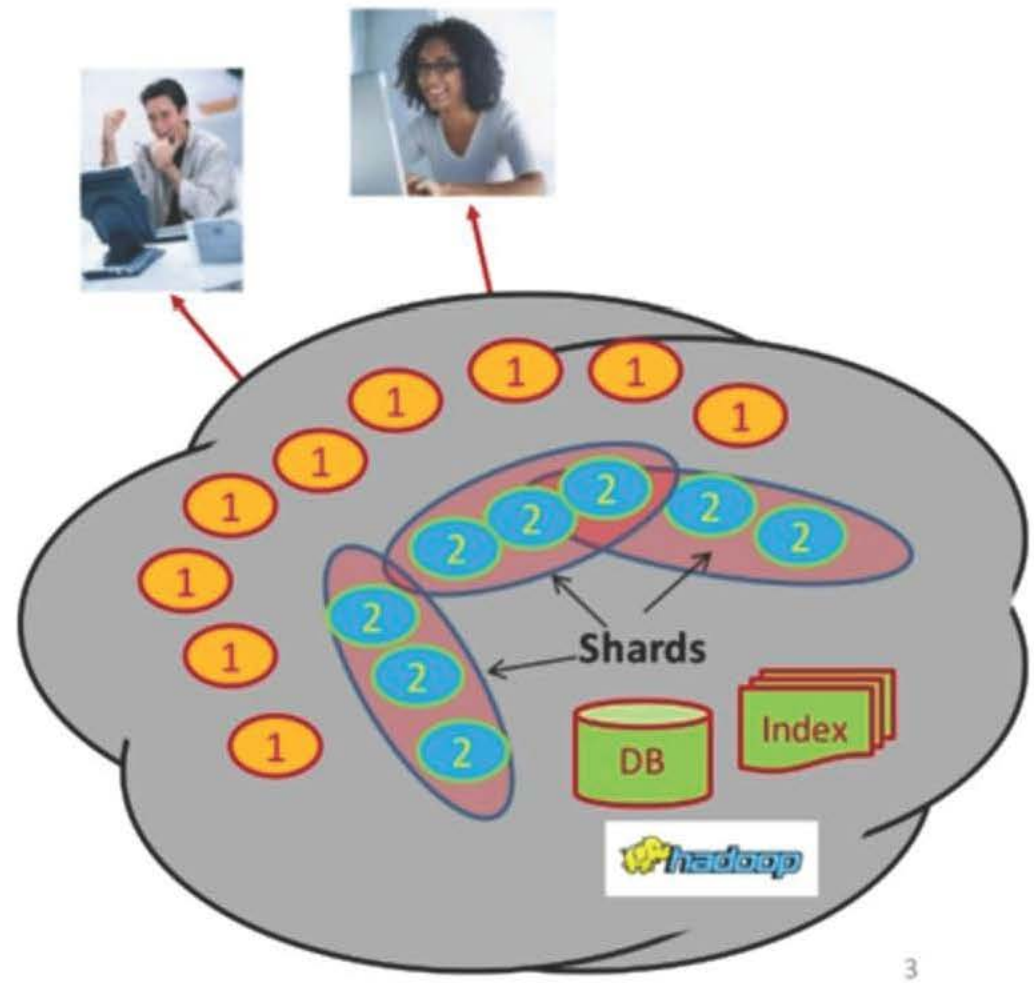
IoT: Cloud Services

Cloud Edge Services

IoT Apps talking to Cloud

- The modern cloud is comprised by a number of services called micro-services
  - many times in a multi-tiered architecture
- Client devices (IoT sensors, smartphones, etc) talk to the Edge of the Cloud
  - The **edge services** are simple, lightweight, and nimble



IoT Cloud Edge

- Cloud services for IoT must provide per-device authentication and access control.

- Cloud Edge must route messages to a microservice endpoint based on message properties.

- We will talk later about micro services and IoT messages.

- Routing rules give the flexibility to send messages where they need to go without the need to stand up additional services to process messages or to write additional code.

Edge services

- Near the edge of the cloud focus is on serving a vast number of clients in the fastest possible way
  - Caching content at different layers helps
  - Stateless

- Inside we find high volume services that operate in a pipelined manner, asynchronously

- Deep inside the cloud we see a world of virtual computer clusters that are scheduled to share resources and on which applications like MapReduce/Hadoop/Spark are very popular
  - Applications: A/B testing

- In the bottom of the Cloud is where the data are being stored

Cloud Edge evolution

- The Cloud API is the way the IoT services interact with the cloud. Hence background upgrades/updates should not affect the communication.
- This can be achieved with a common well-defined and extensible Cloud API
- A robust edge service must enable
  - rapid development
  - great flexibility
  - expansive insights
  - resiliency

Cloud Edge Features to support IoT

- Authentication
- Insights
- Stress Testing
- Canary Testing
- Dynamic Routing
- Load Shedding
- Security
- Static Response handling
- Multi-Region Resiliency

Cloud Edge Insights

- A service that allows us to shed and prioritize traffic when issues occur.

- Detailed information into network performance and errors, as well as handles software load balancing for even load distribution.

- Fine-grained metrics in real-time so that we can quickly observe and react to problems.

- Dynamically change properties