# Chapter 7a: Application Layer Protocols for Cloud Connectivity

## Objective

7A is about giving you the experience of the whole product of a cloud vendor

We are going to show you more than just how to hook up to the cloud via WICED

We will only talk in detail about one of the protocols

The plan is to finish 7c, d , e (7c - http will be done soon) ... anyone willing to write 7d, 7e?

### The “Cloud”

Probably a bad idea to make your own Cloud… you need to have 99.99% uptime and that takes tons of people and money. There is a reason why Amazon makes all their money with Cloud services.

5 guys to do 1 job that is 24x7 … takes 6-7-8-9 jobs to run a cloud…

There are a bunch of Cloud Providers:

* Amazon
* IBM
* Microsoft
* HP
* Ali (Alibaba)
* Samsung

Unfortunately, the world didn’t pick a winner application protocol.

### Application Layer Protocols

All these protocols run on top of TCP and TLS

HTTP

* Most prominent because of all the existing infrastructure
* Simple text based:
  + Open a socket
  + Send a text based header + some bytes
  + A text based header + some bytes will come back
  + Most commonly JSON (not HTML)
* Review the HTTP GET example from example.com

MQTT (Amazon AWS and IBM Bluemix)

* An old protocol
* Explain the fundamental concepts
  + Message broker
  + Messages, Topics
  + Subscribe
  + Publish
  + QOS – at most once, at least once, exactly once

COAP (Samsung ARTIK)– not much else to say.

AMQP (Microsoft Windows Azure, VMWare, Redhat) – not much else to say.

JSON

* Lingua franca for IoT - the most common format for transmitting the data
* Simple, text based
* Not space or newline picky
* Show the data types
* Talk though the example