# Chapter 7c: Cloud Connectivity using HTTP

## Objective

At this end of Chapter 7c you will understand

* The HTTP protocol
* How to create an HTTPS connection using TLS
* How to use HTTP(s) to read & write data to the Cloud using RESTful APIs
* How to create a JSON message and send it using HTTP(s)
* Using other WEBAPIs

## Time: 4 Hours

## Fundamentals

### HTTP

URL

Options

Header

Operation

HTTP 1.1 & HTTP 2.0

WICED HTTP Libraries

### MIME Types

### REST & RESTful APIs

Representational State Transform (REST)

REST-compliant Web services allow requesting systems to access and manipulate textual representations of Web resources using a uniform and predefined set of stateless operations.

https://en.wikipedia.org/wiki/Representational\_state\_transfer

http://www.ics.uci.edu/~fielding/pubs/dissertation/rest\_arch\_style.htm

http://www.restapitutorial.com/lessons/whatisrest.html

Use and HTTP action (GET, POST, PUT, DELETE, PATCH) to a URI (URL)

#### RESTful APIs

Uniform interface

HTTP actions (Get, Put, Post, Delete)

URIs are resource names

Stateless

Each message is self descriptive… the server doesn’t maintain client state … implies state is kept on client and the requests are complete

Cacheable

Server responses are cacheable (implicitly, explicitly or negotiated)

Client-Server

Assume that the system is disconnected

HTTP is the interface between the client and server

Layered System

Client can’t assume direct connection (can be multiple layers between)

Scalability

Code on Demand (optional)

Logic can be transferred to the client

Web API Directory

<https://www.programmableweb.com/category/all/apis>

<https://www.wunderground.com/weather/api>

Twitter

Google cloud platform & google translate <https://cloud.google.com/translate/docs/translating-text>

URL options

Document options

API key

HTTPS

### SOAP

### JSON

## XML

## Initialstate

## AWS

## Exercise(s)

### Use webapi to convert board temperature from C to F using JSON

1. <http://webservices.daehosting.com/services/TemperatureConversions.wso?op=CelsiusToFahrenheit>

### Example.com

### Httpbin.org

## Related Example “Apps”

|  |  |
| --- | --- |
| **App Name** | **Function** |
| http\_sever\_sent\_events | starts, pings gateway, then starts AP |
| httpbin\_org | Use HTTPS to get data from httpbin.org |
| https\_client | Use HTTPS to get data from google HTTPS server and print it to the screen |
| http\_server | WICED Station with an HTTP Server running |

## Known Errata + Enhancements + Comments