



ESPRESSIF

TRAINING _ Day 2

ESP Jumpstart



ESP Jumpstart Overview



Part 5: Cloud: Remote Control

Part 6: OTA Upgrade

Demo Show



Agenda

内容	时间	时长	内容
Remote Control	9:30-10:30	1h	<ol style="list-style-type: none">1. 云平台介绍2. TLS 介绍3. 嵌入文件介绍4. AWS IOT 平台介绍5. 远程控制
OTA	10:45-12:15	1.5h	<ol style="list-style-type: none">1. 什么是 OTA、为什么要 OTA2. 什么是分区表、为什么要分区表(一个 flash 包含多种不同类型的数据)、分区表结构、OTA 分区表结构3. 固件升级流程



Part 5 : Cloud: Remote Control



Background:

什么是物联网平台？

https://help.aliyun.com/document_detail/30522.html?spm=a2c4g.11174283.6.542.3a8b1668cUQqp0#h2-url-1

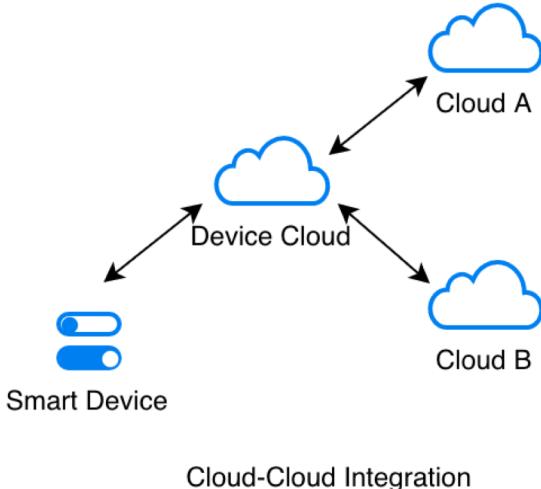
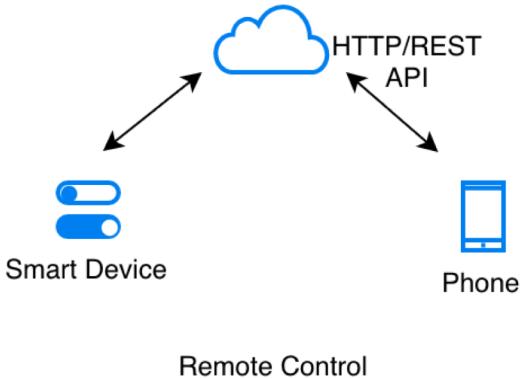
什么是 AWS IoT？

https://docs.aws.amazon.com/zh_cn/iot/latest/developerguide/what-is-aws-iot.html



Cloud

在本章中，我们将智能插座连接到云平台，来实现对设备的远程控制和监测。通常，我们可以通过图中所示的任一场景来实现对设备的远程控制和监测。



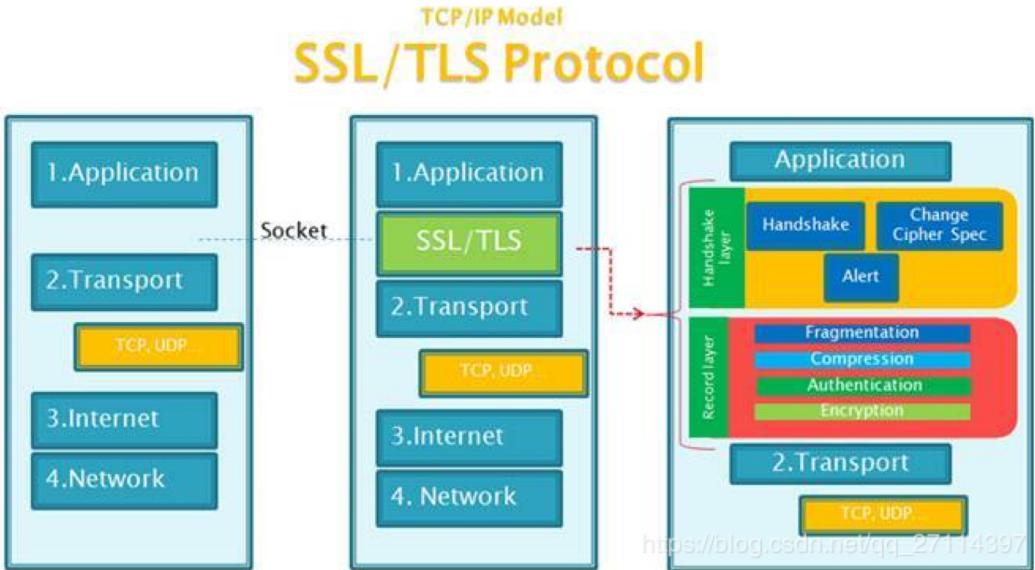


Objective

- Cloud communication:
 - Update local state of the device
 - Fetch commands : control the device
 - Security:
 - Cloud CA Certificate
 - Device's authentication Certificates
 - Example Cloud: AWS



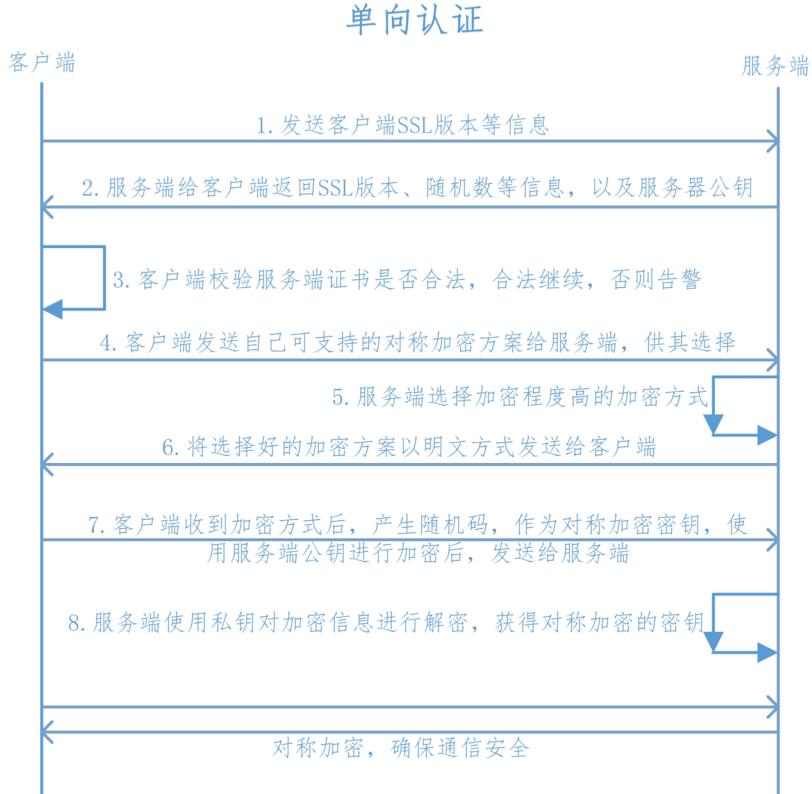
TLS/SSL





TLS/SSL

单向认证





TLS/SSL

双向认证





Embedding Files in the Firmware

- Update your component.mk

```
COMPONENT_EMBED_TXTFILES := certs/aws-root-ca.pem \
                           certs/certificate.pem.crt \
                           certs/private.pem.key
```

- Access in your code

```
extern const uint8_t aws_root_ca_pem_start[]  
asm("_binary_aws_root_ca_pem_start");  
extern const uint8_t aws_root_ca_pem_end[]  
      asm("_binary_aws_root_ca_pem_end");
```



Part 6: OTA Upgrade



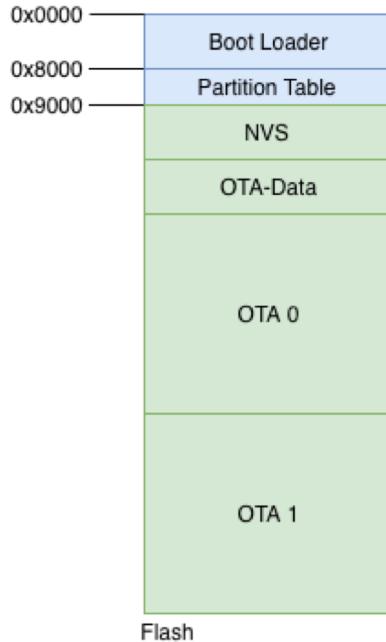
Objective

- Over the Air Firmware Update



OTA Flash Partitions

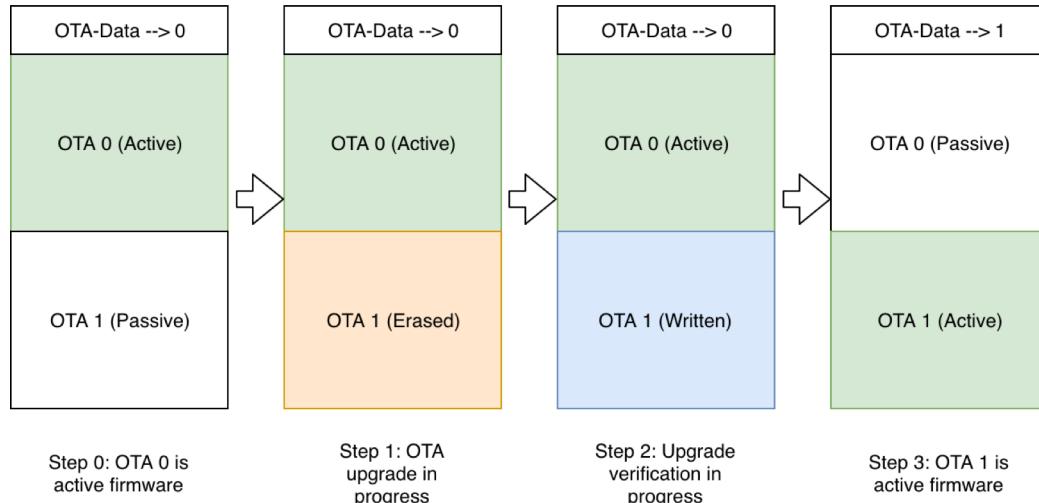
- Active-Passive Firmware Partitions
- Two flash partitions are reserved for the 'firmware' component, as shown in the figure.
- The OTA Data partition remembers which of these is the active partition.





Firmware Upgrade Flow

The typical state changes that happen across the OTA firmware upgrade workflow are as shown in the figure.





Typical Considerations

- It is critical to ensure the validation of the CA certificate.
 - The firmware upgrade command is typically different from the remote-control commands discussed in the earlier section.



Test Upgrade URL

- <https://raw.githubusercontent.com/kedars/drawer/master/hello-world.bin>



Product Ready!

- Now we have a complete end-product:
 - Control GPIO output
 - Network Configuration
 - Remote control through cloud
 - OTA Upgrades
 - Reset to Factory



Thank You!