Alan: Hi, I'm Alan Hawse. In the last video I introduced you to some of the IoT platforms from Cypress.

However, that's only half of the story. You can't have IoT without the "I" – that is, we need the Internet before we can have the Internet of Things – that is, the Cloud side.

Since this is a partnership, I thought I would turn things over to Michael from AWS to tell you about the AWS cloud.

This is Mike. See, it says AWS on his shirt. He's here to tell you about the cloud.

Michael: Thanks Alan. I'm Michael Schy and I'm a Partner Solutions Architect for AWS specializing in IoT. I'd like to take a few minutes to introduce you to Amazon Web Services and Amazon FreeRTOS, which runs on Cypress IoT devices.

Here are just a few of the solutions that customers are developing on the AWS cloud that use IoT and devices like Cypress' MCUs.

Smart Cities, Smart Buildings, and medical equipment, to name a few, need local monitoring and control. The customers are then leveraging the cloud to do the heavy lifting for Compute, Analytics, Machine Learning, Databases, and Storage to build their unique solutions.

The AWS Cloud is how AWS offers the on-demand delivery of IT resources via the Internet with pay-as-you-go pricing. As you can see, there are many different tools and services available to you.

Instead of buying, owning and maintaining your own data centers and servers, organizations can acquire technology such as compute power, storage, databases, and other services on an as-needed basis.

With cloud computing, AWS manages and maintains the technology infrastructure in a secure environment. Businesses access these resources via the Internet to develop and run their applications. Capacity can grow or shrink instantly, and businesses only pay for what they use. In addition, companies can focus their efforts on innovation instead of the overhead of maintaining their own infrastructure.

Here are some of the IoT services that AWS offers. For connecting devices to the AWS cloud, the IoT service is the gateway in – this is called the IoT Core.

IoT Core allows you to securely connect devices to the AWS cloud.

Once connected, devices can communicate by publishing and subscribing to MQTT topics via the MQTT Message Broker. There is a Rules Engine that allows the IoT Core to process and act upon MQTT messages from the devices or the Cloud.

The IoT Core also has a Shadow Service that lets you interact with devices, even if they're offline.

Once the data is processed, it can be further acted upon by other AWS services, such as Analytics, Machine Learning, and time series databases.

Connecting to the IoT Core has been greatly simplified with Amazon FreeRTOS and Cypress' MCUs with on-board Wi-Fi and Ethernet.

Amazon FreeRTOS is a microcontroller operating system that extends the popular FreeRTOS kernel to enable devices to securely connect to the AWS Cloud, while making them easy to manage, deploy, and update.

For example, a connected light bulb and a control unit, based on a Cypress MCU running Amazon FreeRTOS, are both connected to the Device Gateway. The control unit can publish commands into the Device Gateway, and the light bulb can subscribe and listen for relevant commands.

Data can be processed and evaluated with the Rules Engine. A rule can be created to look at commands published by the control unit.

If the command is "B", the rule transforms the message to "G" and relays "G" to the light bulb.

Another rule can determine if the command is "R". If it is, the rule delivers copies of the message to 3 endpoints -- a DynamoDB database table, a Lambda compute function, and Simple Notification Service (SNS) for push notifications to a mobile device.

Device state can be read and set with a Device Shadow. The physical light bulb has a virtual counterpart in the cloud that will remember the desired state even if the physical light bulb is not connected.

The light bulb can be controlled with an app that communicates with the device shadow to get or set the light bulb's state.

Amazon FreeRTOS provides libraries for local connectivity for devices running AWS Greengrass for Compute at the Edge, cloud connectivity to easily connect to IoT Core, secure connections and Over The Air Updates. These libraries are in addition to the FreeRTOS kernel.

That's a very brief look into what Amazon FreeRTOS and Cypress can do to help jumpstart your IoT designs. Now back to Alan.

Alan: Thanks. That's an excellent overview from Michael and he's done really good on the camera for his first time.

Alright. In the next few videos we'll get into the nuts and bolts of how to use Amazon FreeRTOS with Cypress.

As always, you can post your comments and questions in our developer community or you're welcome to email me a personal comment or question to alan_hawse@cypress.com or tweet me @askioexpert. Thank you to everybody out there and thanks again to Michael.