Creating Microsoft Azure

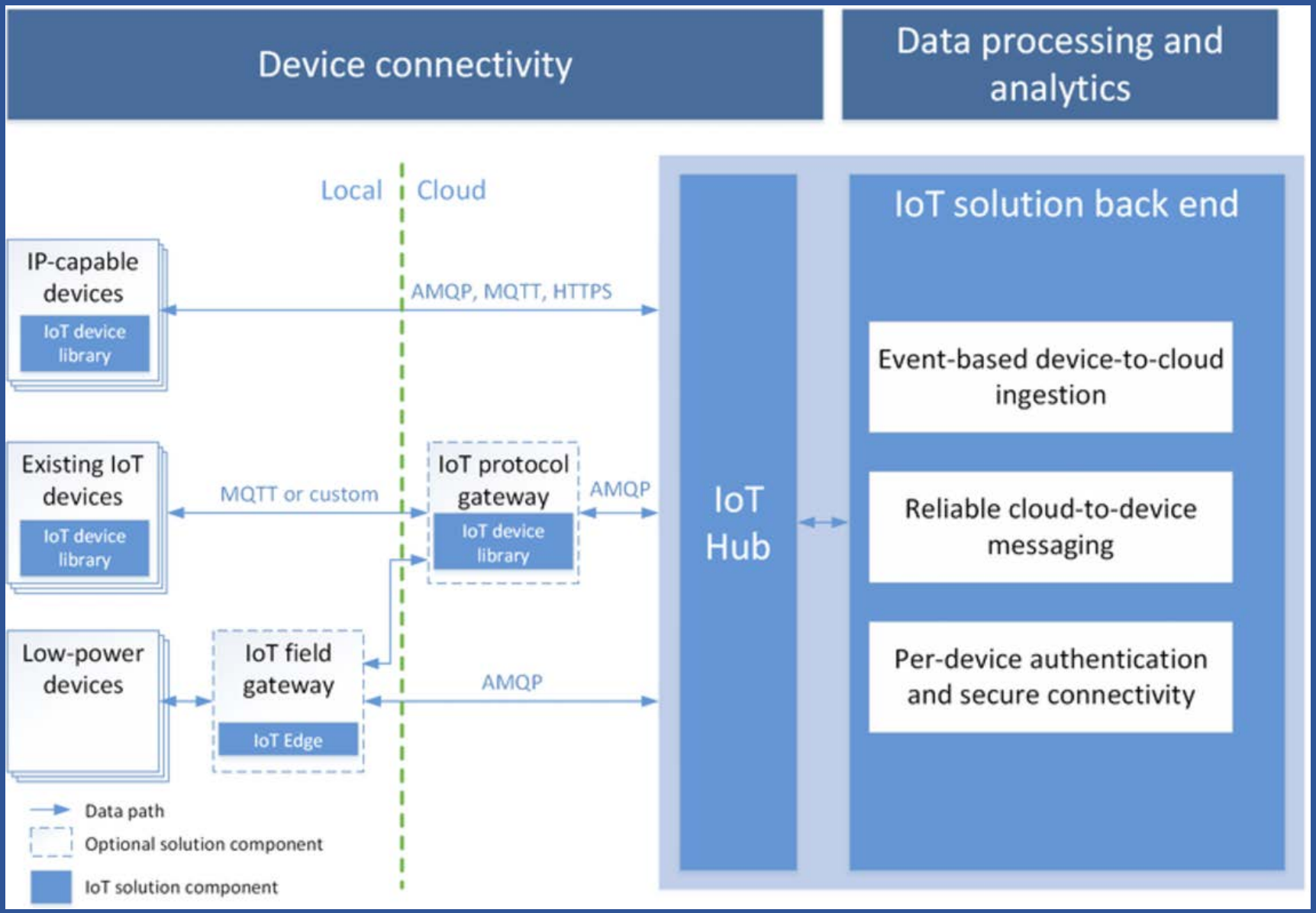
IoT hub

In this Session

- Use the Azure portal to create an IoT hub.
- Create a device identity in your IoT hub.
- Create a simulated device that sends telemetry to your cloud back end, and receives commands from your cloud back end.

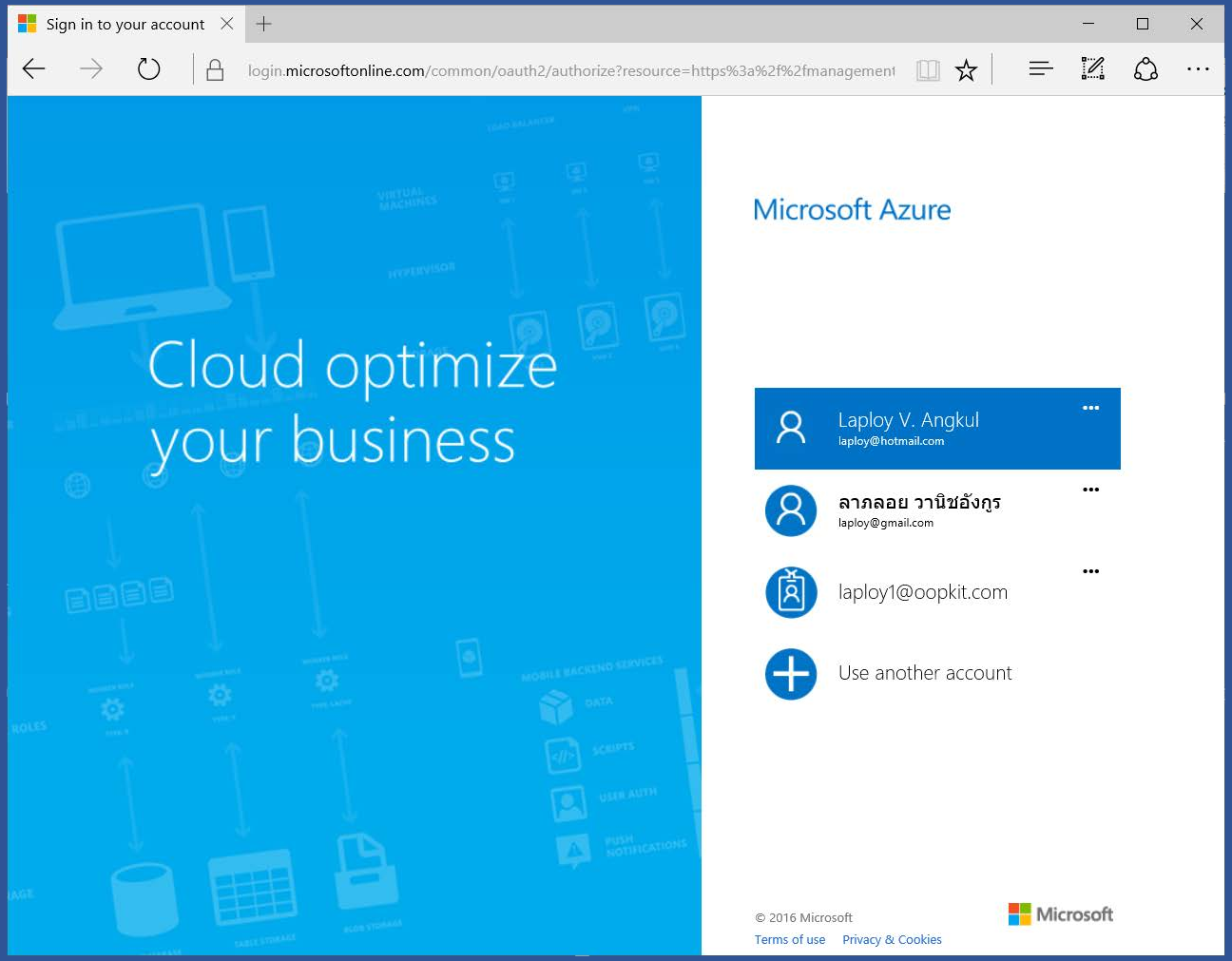
Azure IoT Hub

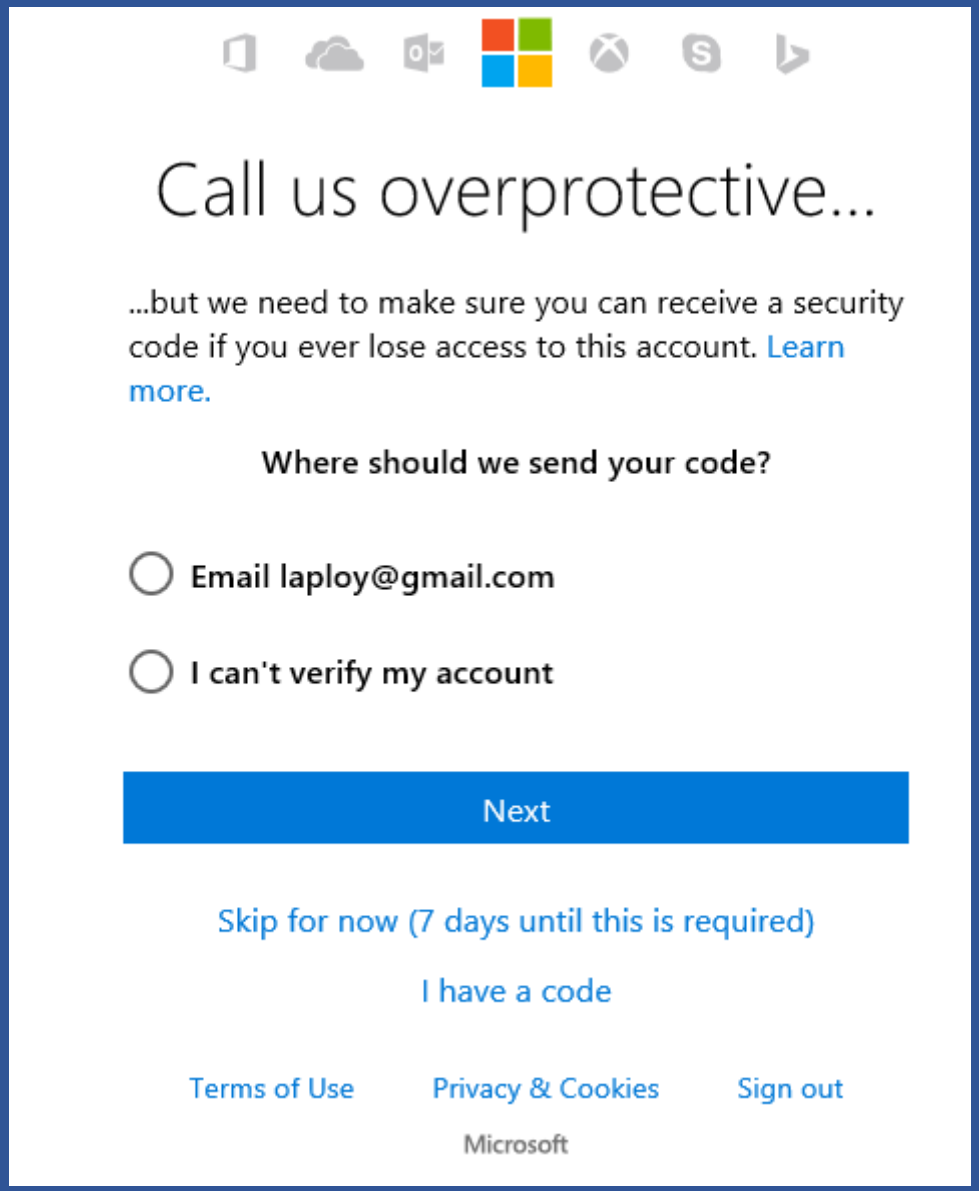
- is a fully managed service that enables reliable and secure bi-directional communications between millions of Internet of Things (IoT) devices and a solution back.
- Offers reliable device-to-cloud and cloud-to-device hyper-scale messaging.
- Enables secure communications using per-device security credentials and access control.
- Includes device libraries for the most popular languages and platforms.


Device connectivity
Data processing and analytics
Local
Cloud
IP-capable devices
IoT device library
AMQP, MQTT, HTTPS
Existing IoT devices
IoT device library
MQTT or custom
IoT protocol gateway
IoT device library
AMQP
Low-power devices
IoT field gateway
IoT Edge
AMQP
IoT Hub
IoT solution back end
Event-based device-to-cloud ingestion
Reliable cloud-to-device messaging
Per-device authentication and secure connectivity
Data path
Optional solution component
IoT solution component

Create an IoT hub

Go to the Azure portal. https://portal.azure.com




Call us overprotective...
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Next
Skip for now (7 days until this is required)
I have a code
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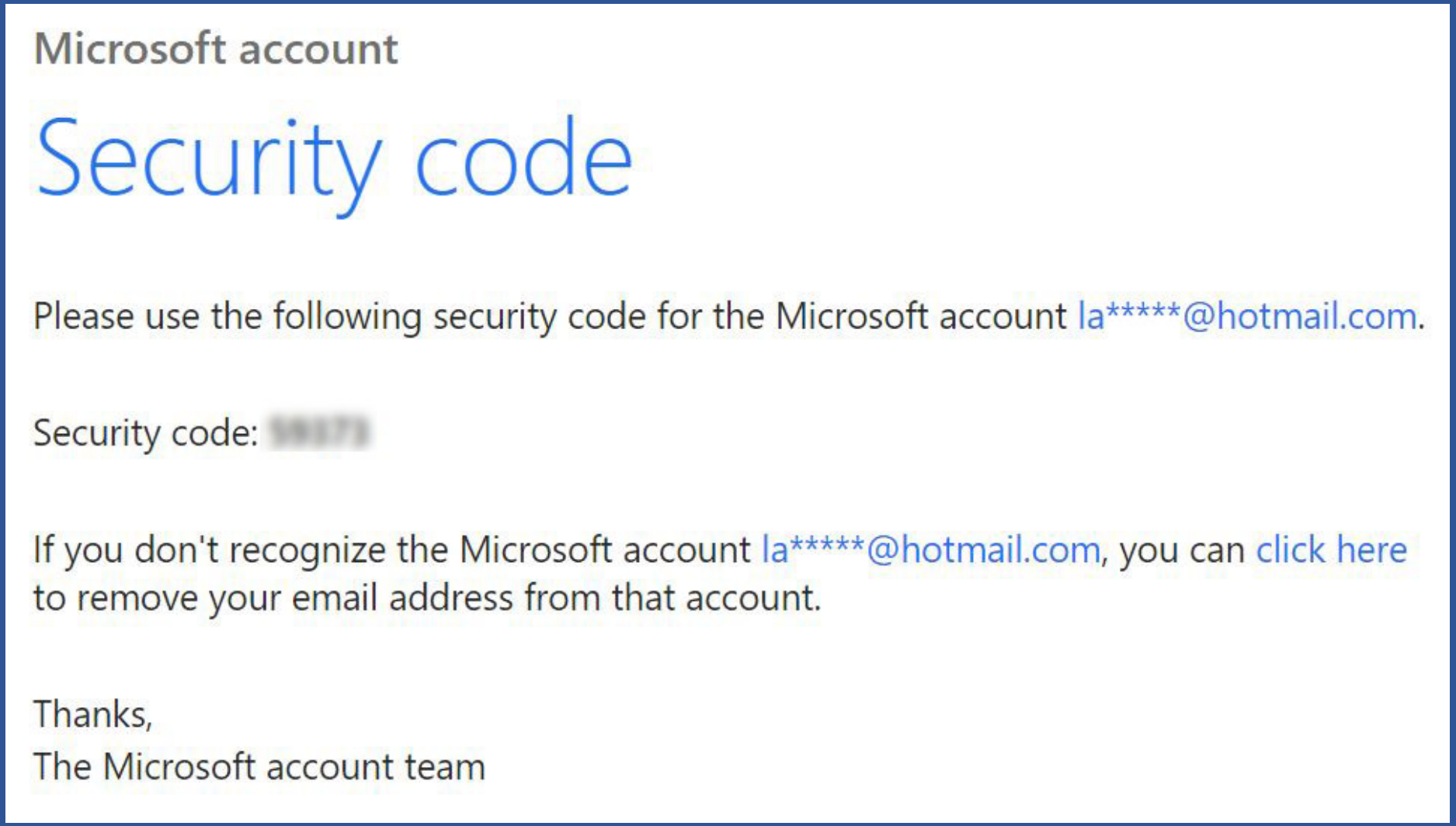


Microsoft account

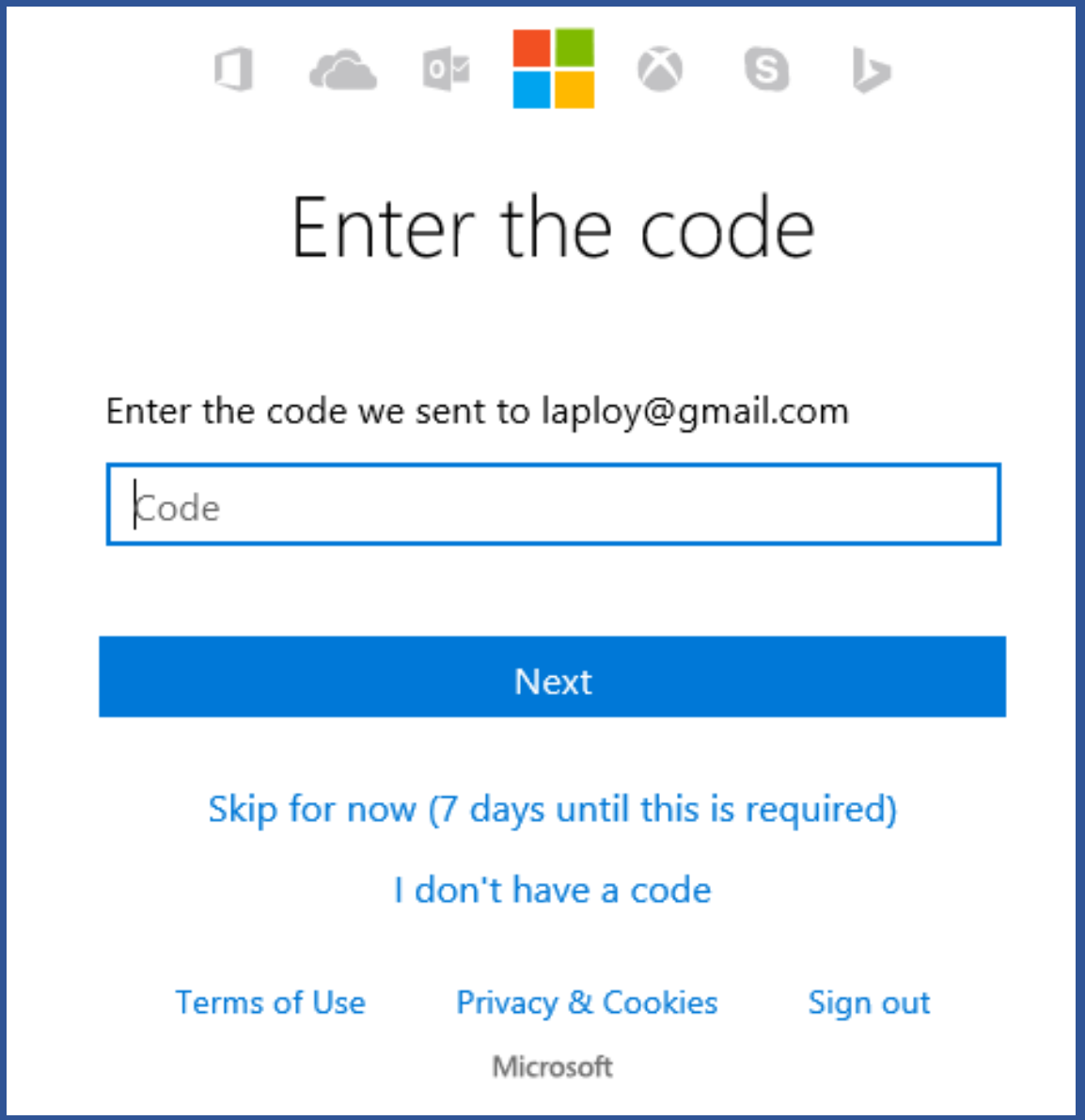
Security code

Please use the following security code for the Microsoft account la*****@hotmail.com.

Security code: [illegible]

If you don't recognize the Microsoft account la*****@hotmail.com, you can click here to remove your email address from that account.

Thanks,
The Microsoft account team


Enter the code
Enter the code we sent to laploy@gmail.com
Code
Next
Skip for now (7 days until this is required)
I don't have a code
Terms of Use
Privacy & Cookies
Sign out
Microsoft

Sign in

Because you're accessing sensitive info, you need to verify your password.

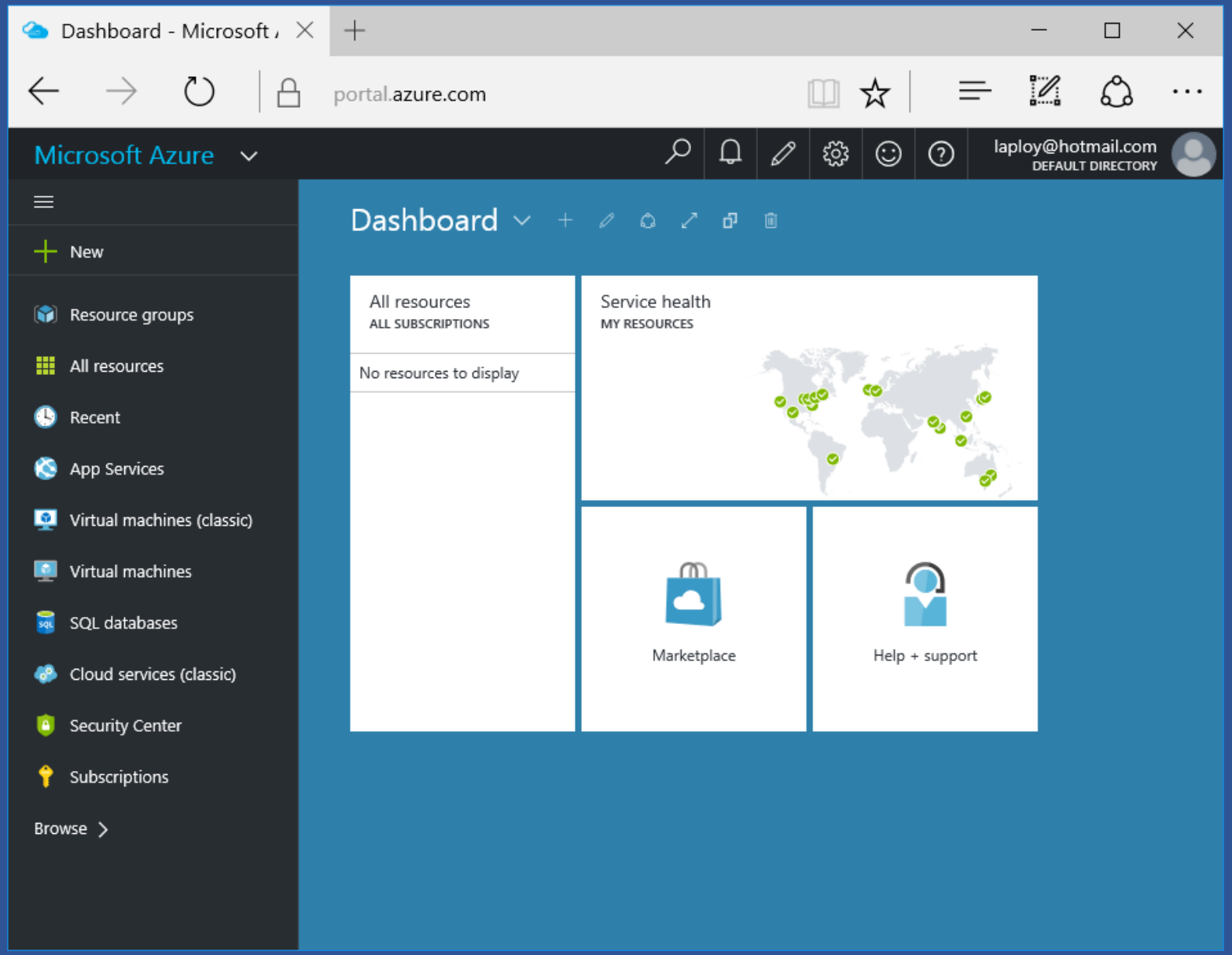
laploy@hotmail.com

Password

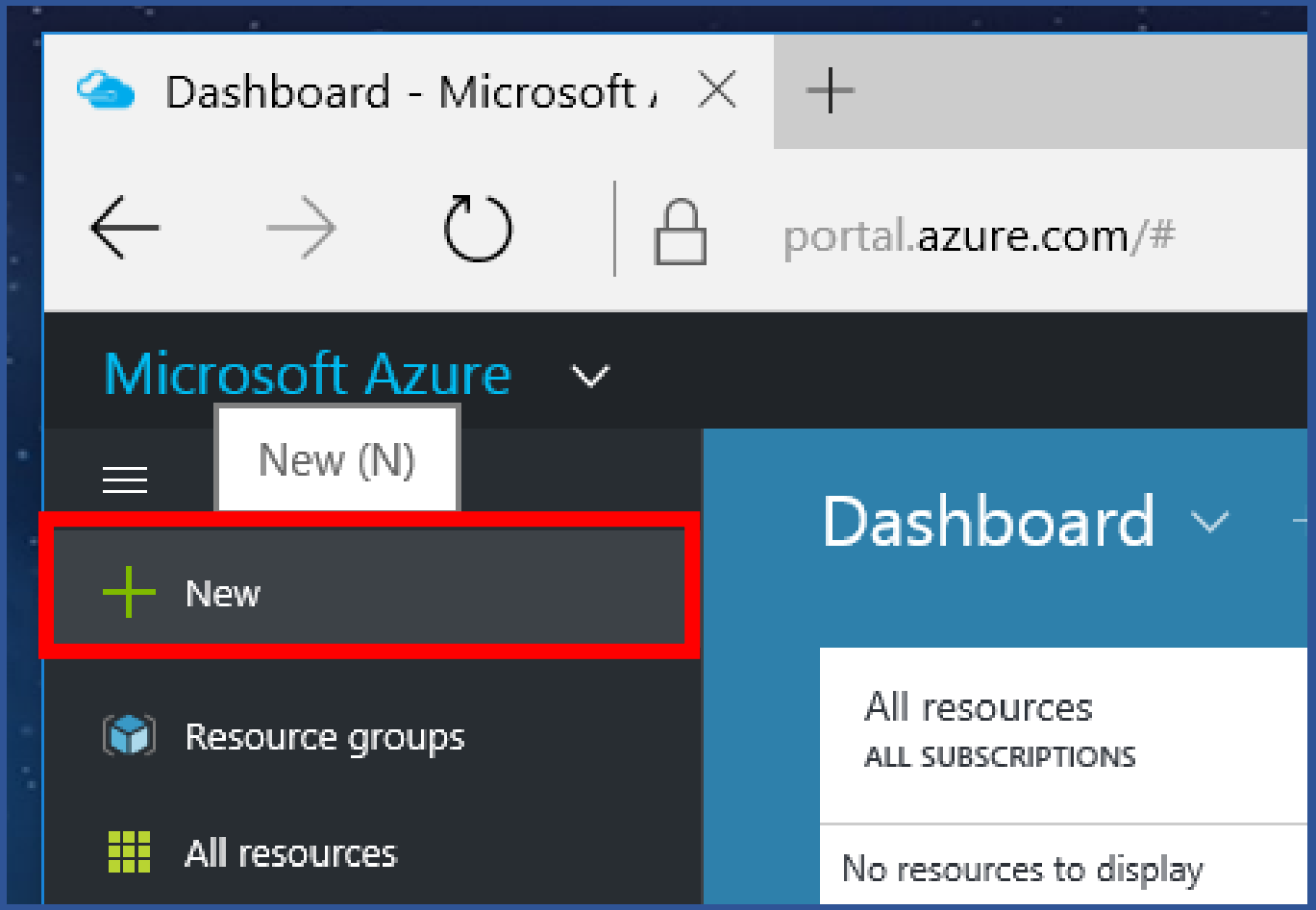
Sign in

Can't access your account?

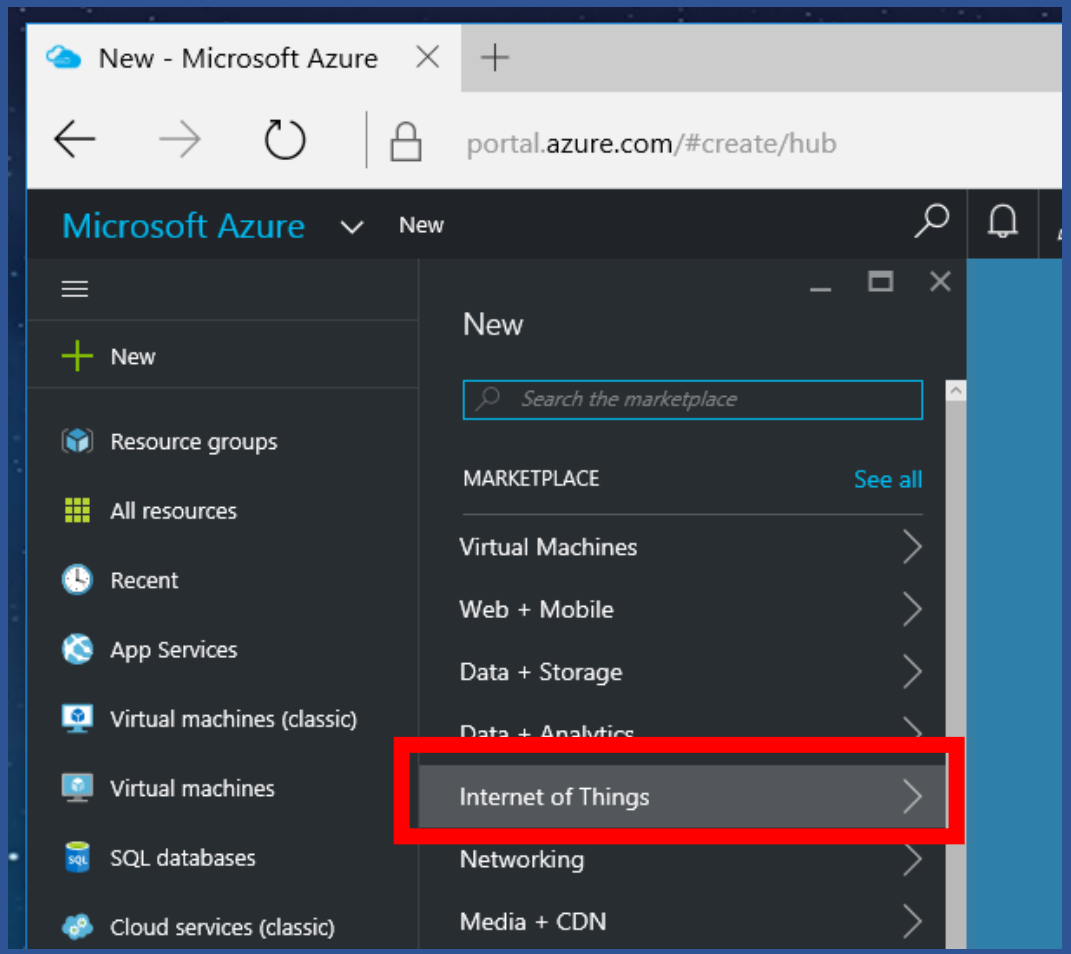
Sign in with a different Microsoft account


Dashboard - Microsoft
portal.azure.com
Microsoft Azure
laploy@hotmail.com
DEFAULT DIRECTORY
New
Resource groups
All resources
Recent
App Services
Virtual machines (classic)
Virtual machines
SQL databases
Cloud services (classic)
Security Center
Subscriptions
Browse
Dashboard
All resources
ALL SUBSCRIPTIONS
No resources to display
Service health
MY RESOURCES
Marketplace
Help + support

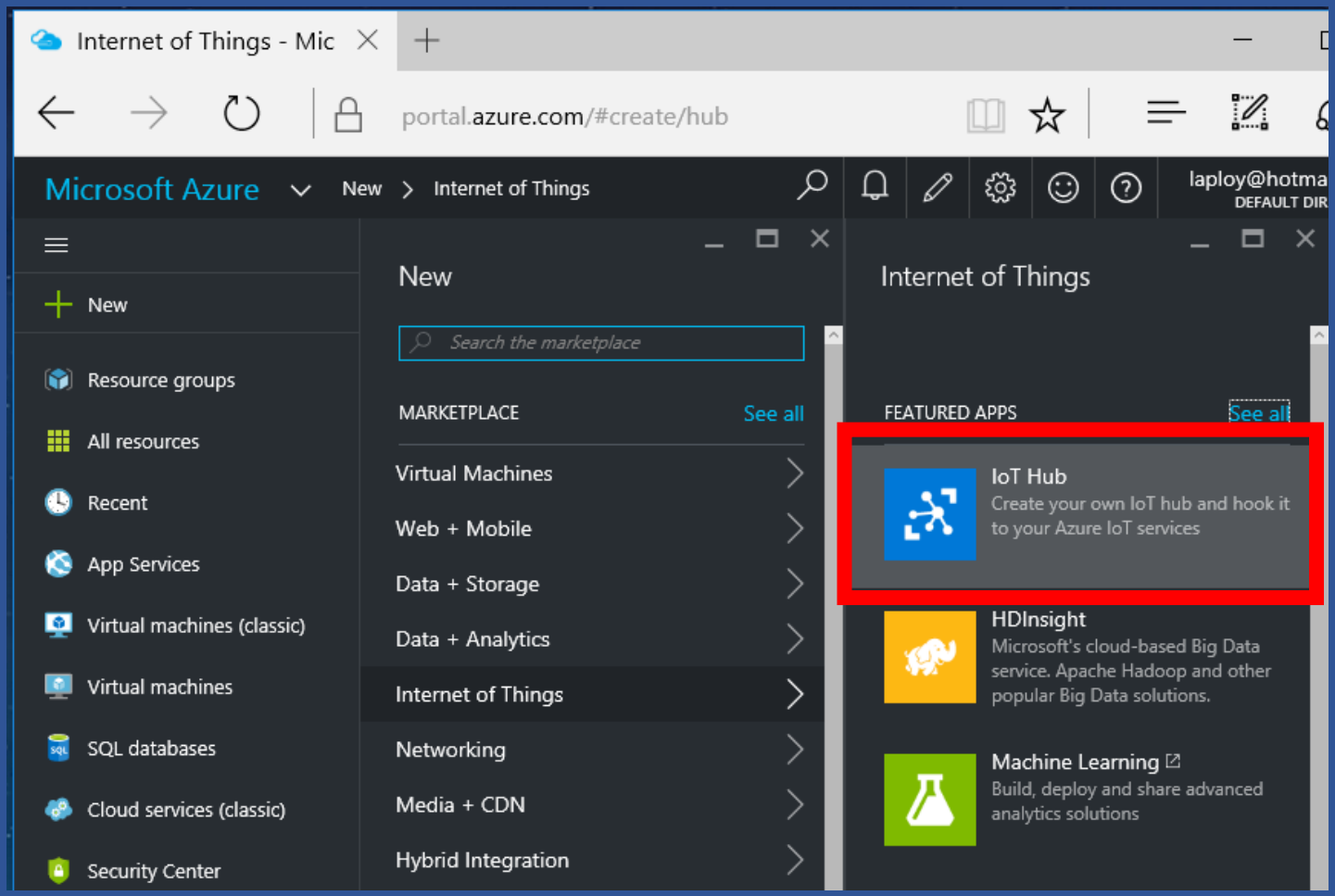
In the Jumpbar, click >New



>Internet of Things

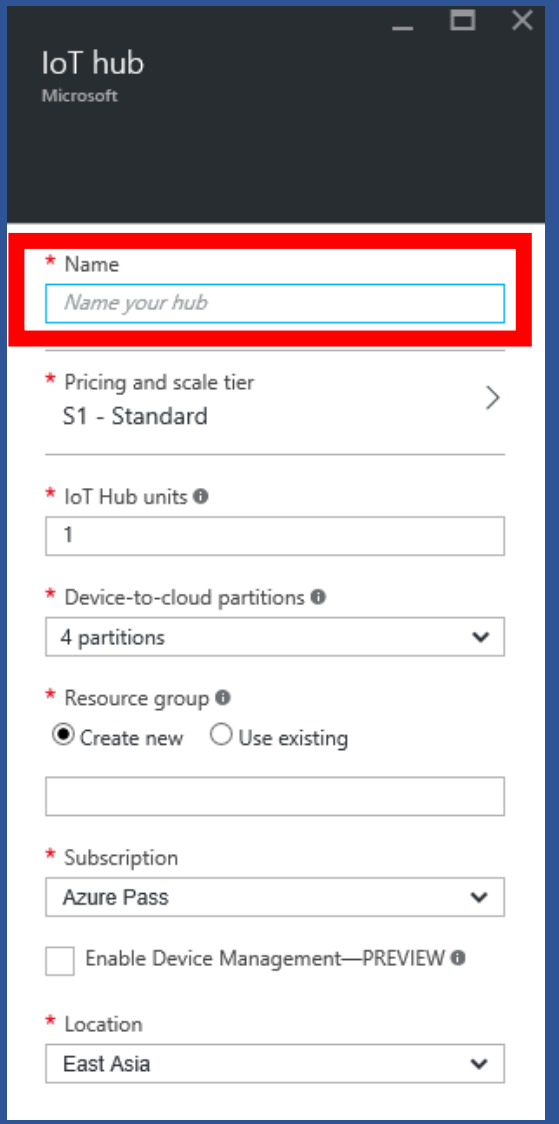


>Azure IoT Hub.

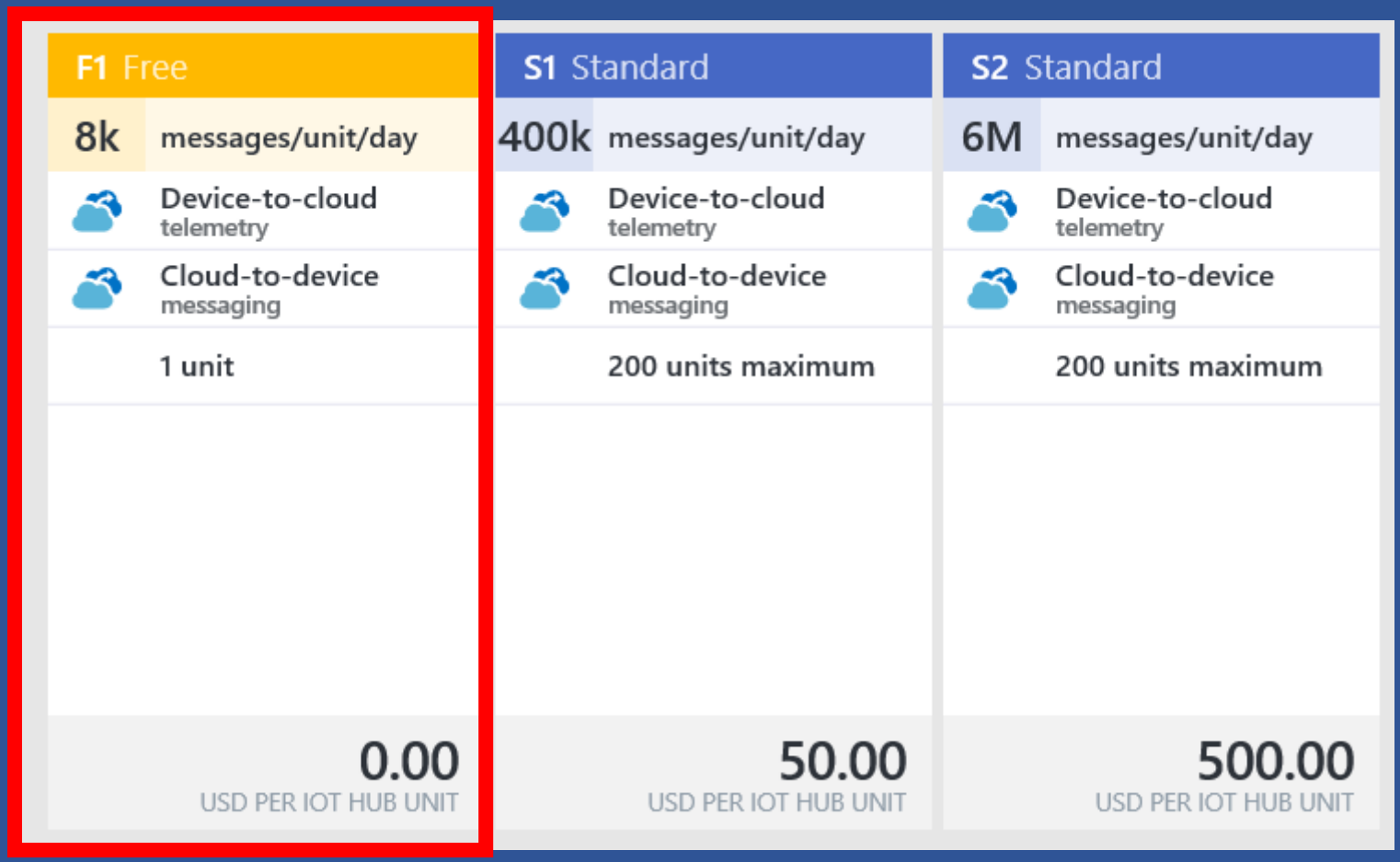


In the IoT hub blade, choose the configuration for your IoT hub

In the **Name box**, enter a name for your IoT hub. If the Name is valid and available, a green check mark appears in the Name box.

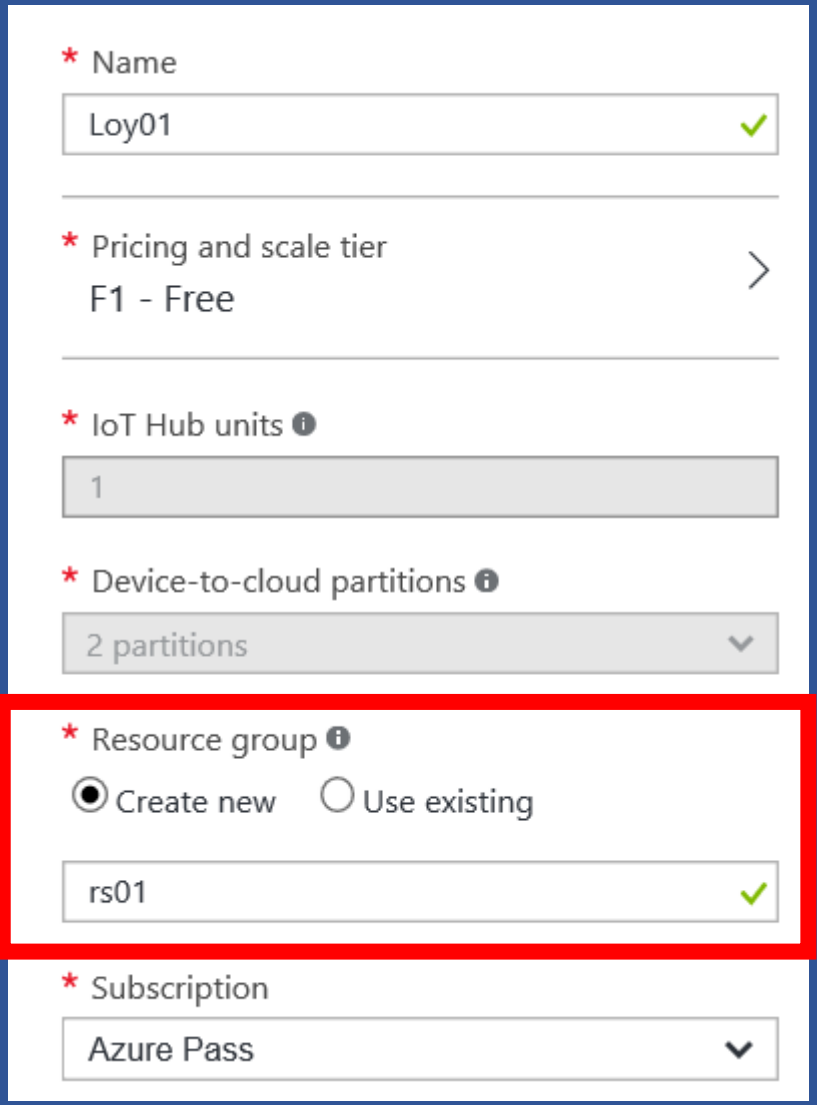


Select a **pricing and scale tier.** This tutorial does not require a specific tier. For this tutorial, use the free F1 tier.

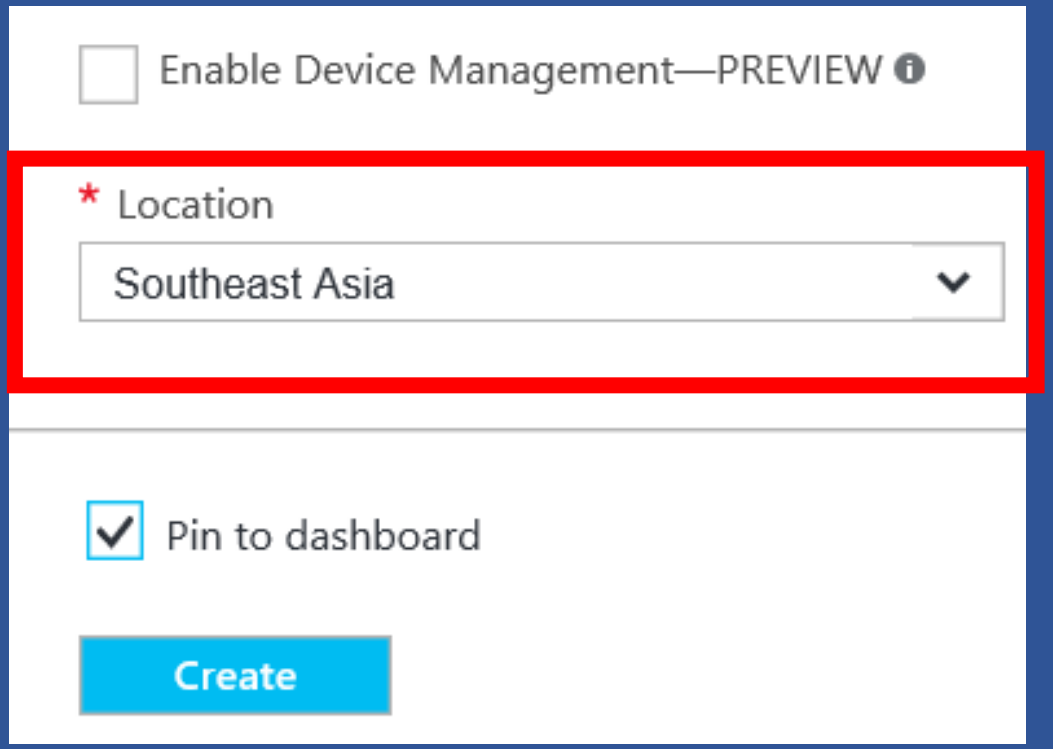


In **Resource group**, create a new resource group

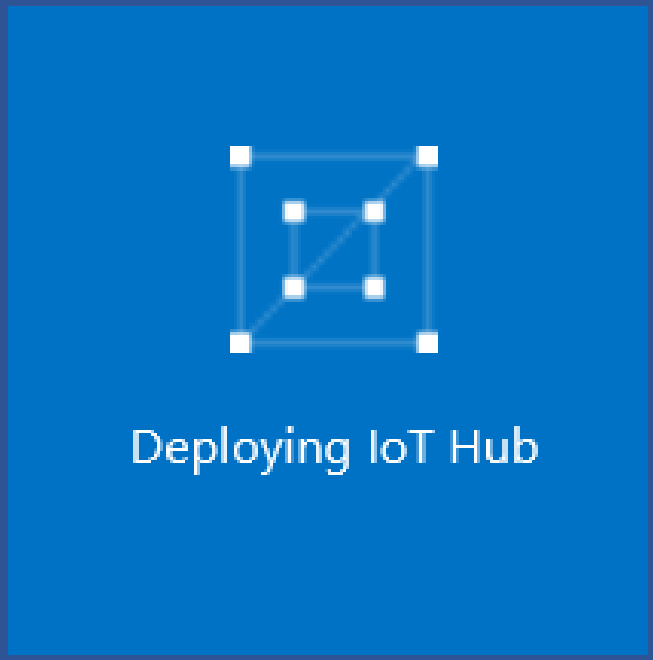
Resource group name = rs01



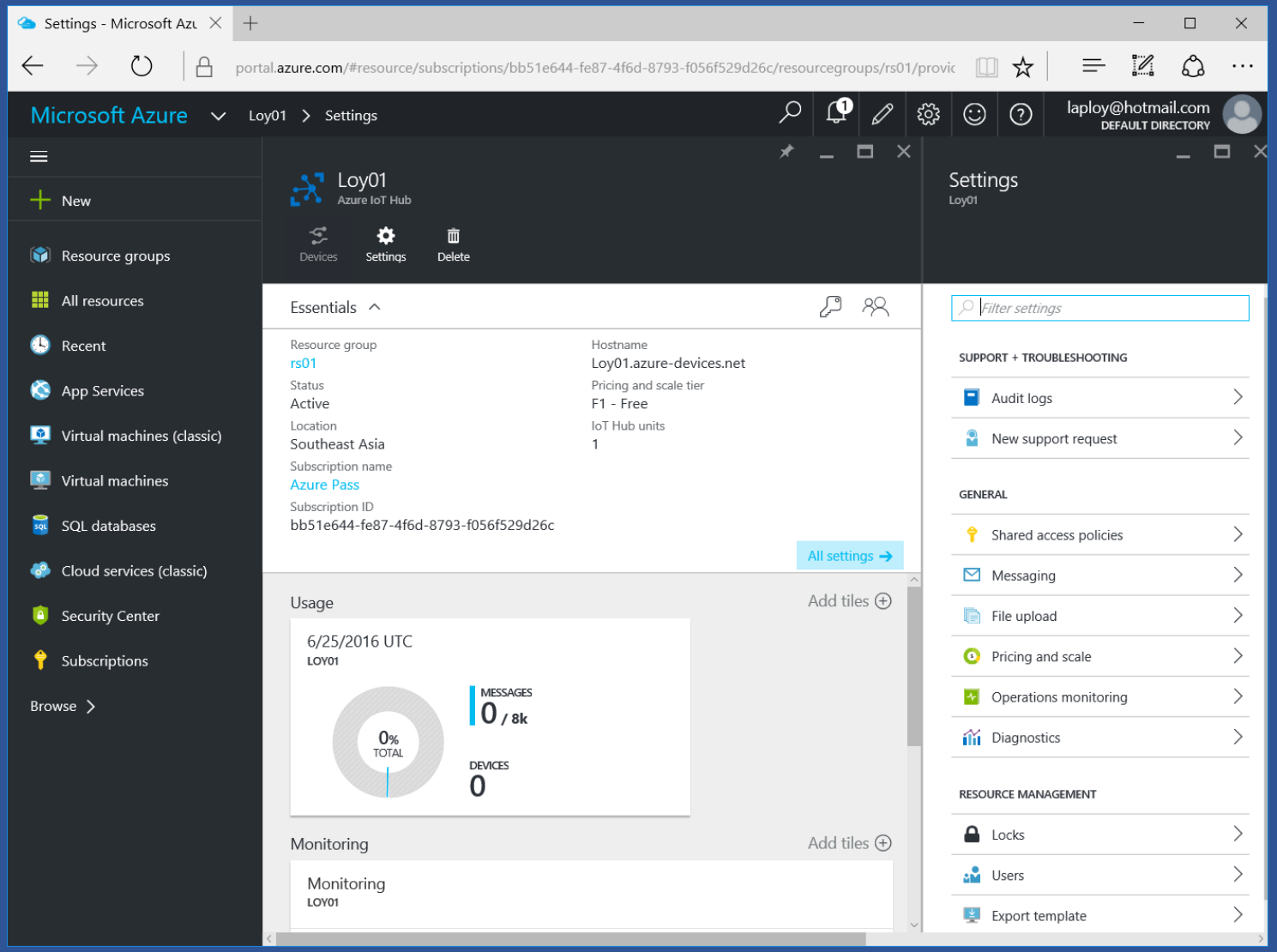
In Location, select the location to host your IoT hub. For this tutorial, choose **Southeast Asia**



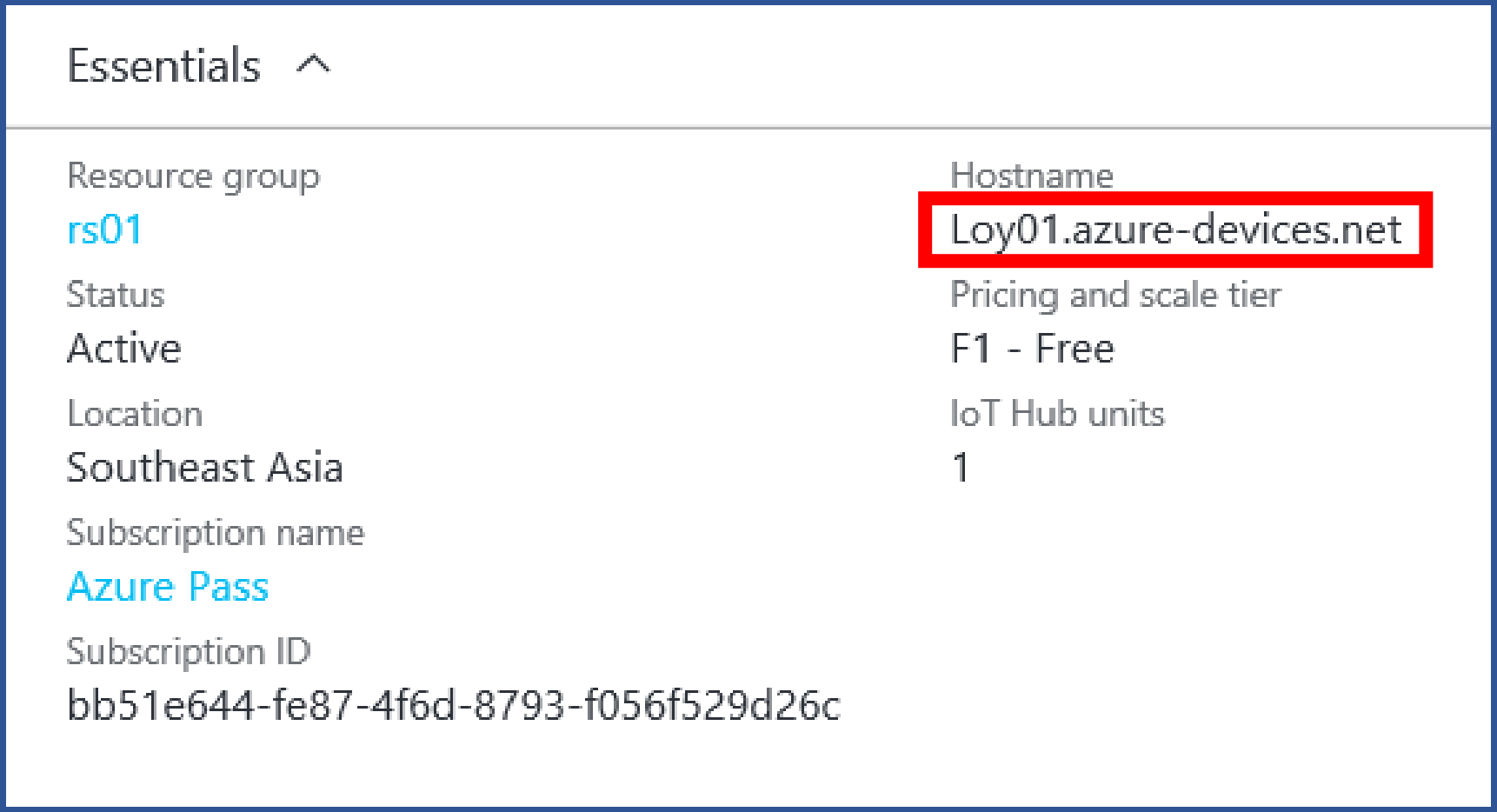
Click **Create** and wait for deployment



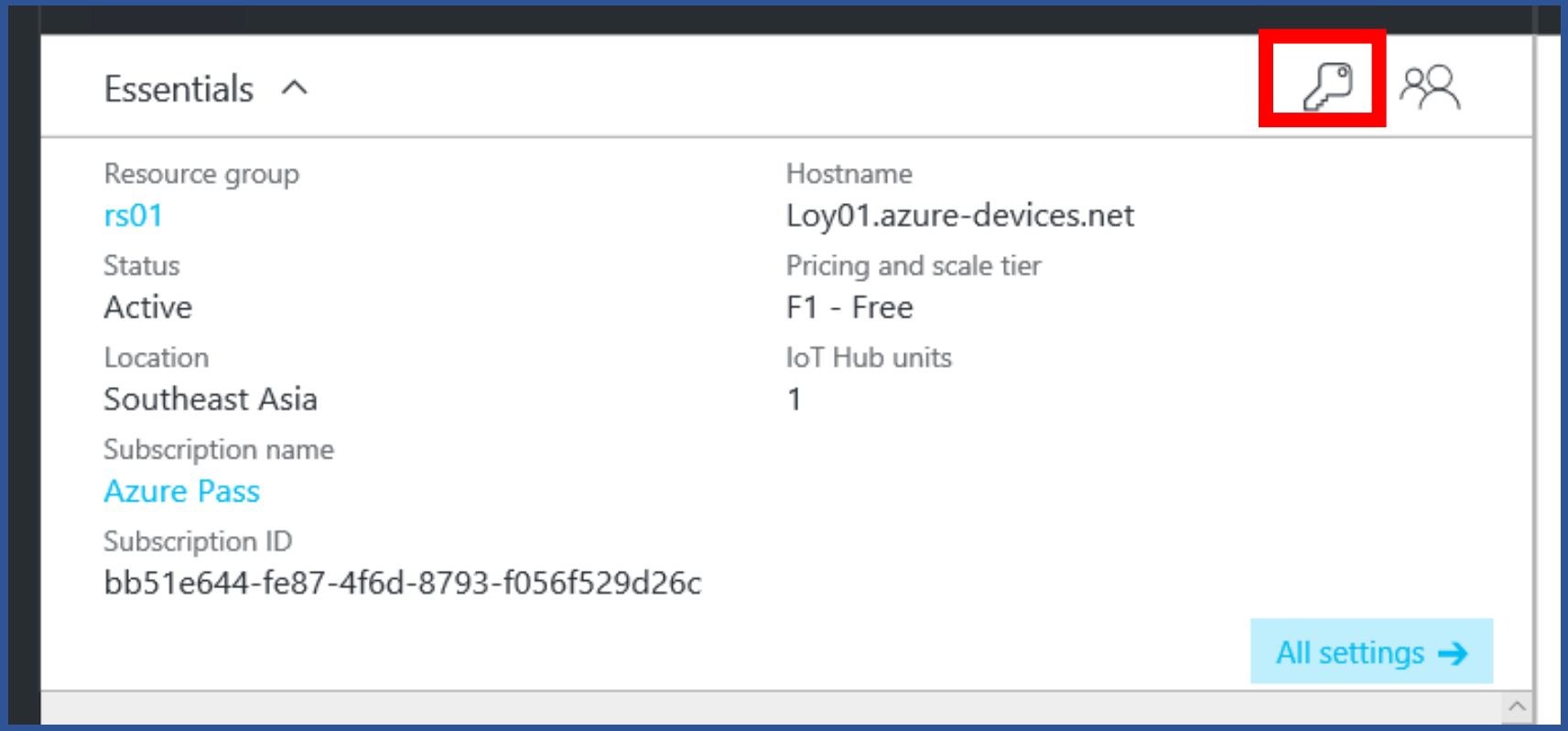
Deployment Complete



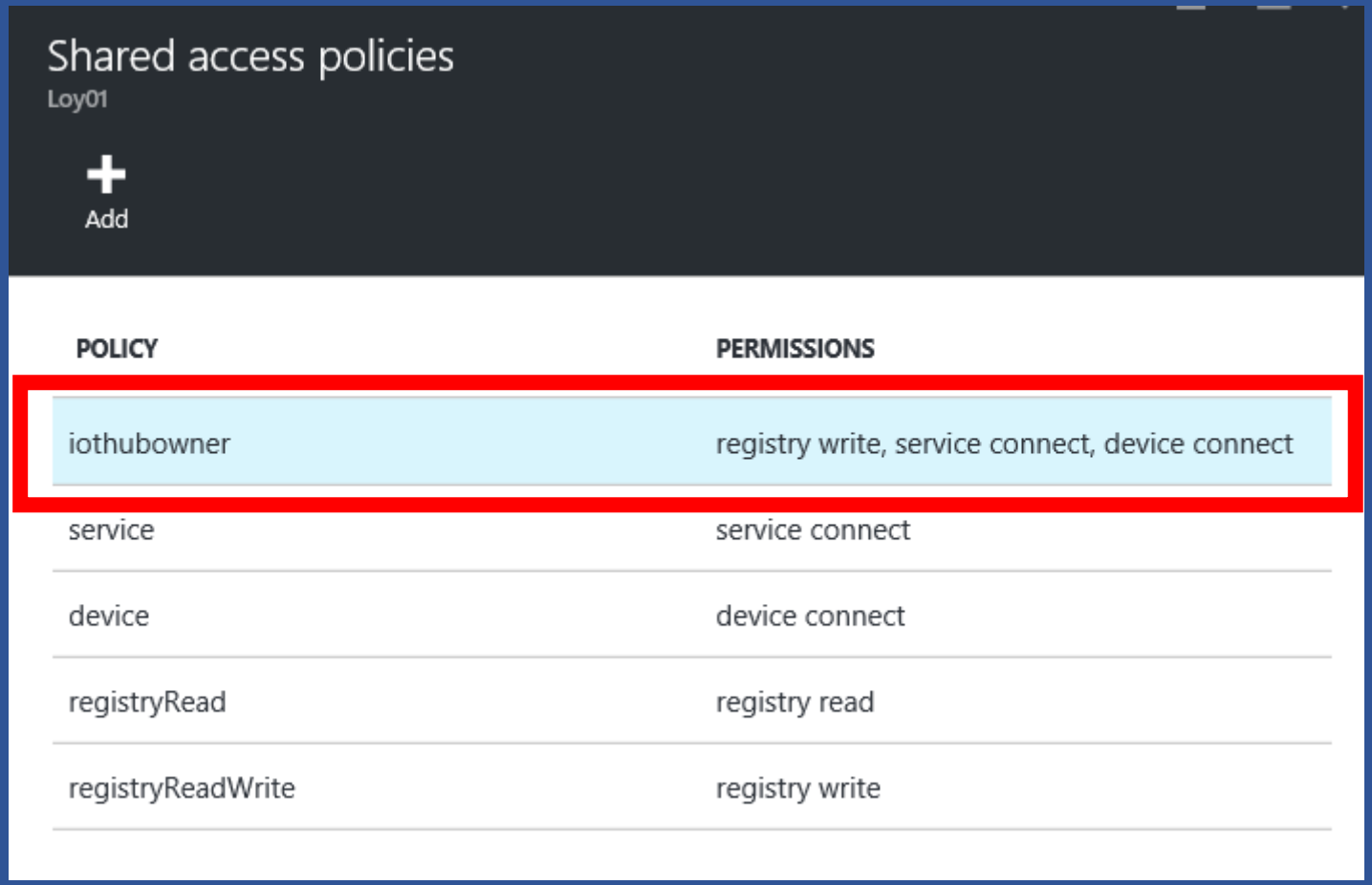
Make note of the **Hostname**



click the Keys icon

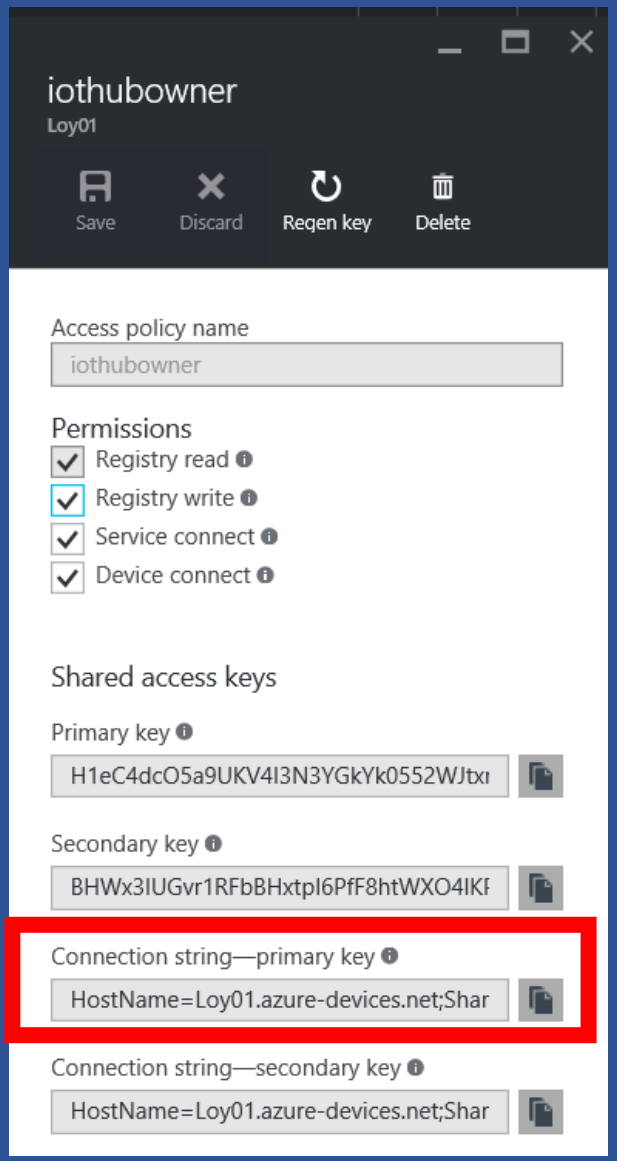


In the Shared access policies blade, click the iothubowner policy



copy and make note of the connection string in the iothubowner blade

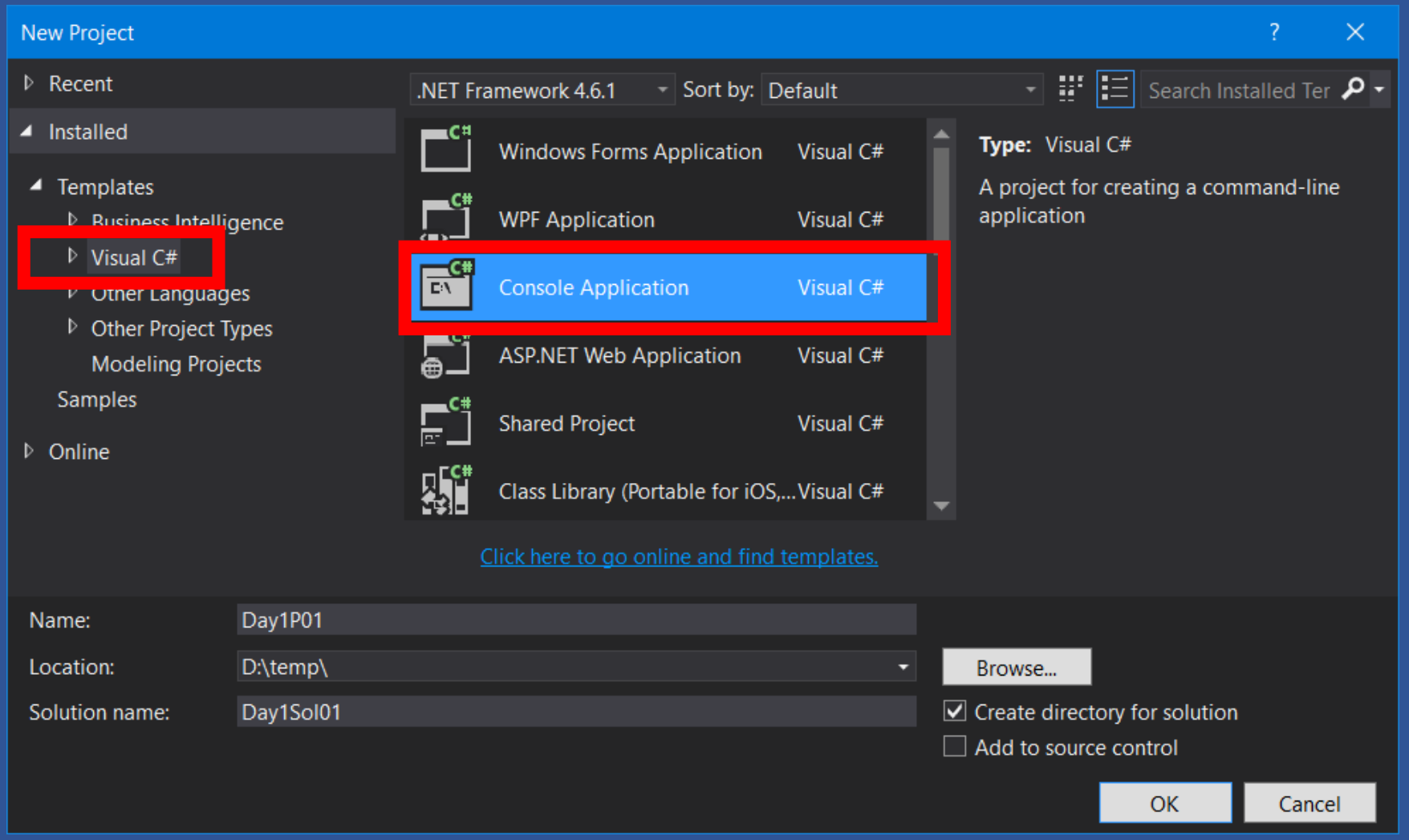
HostName=Loy01.azure-devices.net;
SharedAccessKeyName=iothubowner;
SharedAccessKey=H1eC4dcO5a9UKV4I3N3Y
GkYk0552WJtxmSpGeqKYtGA=

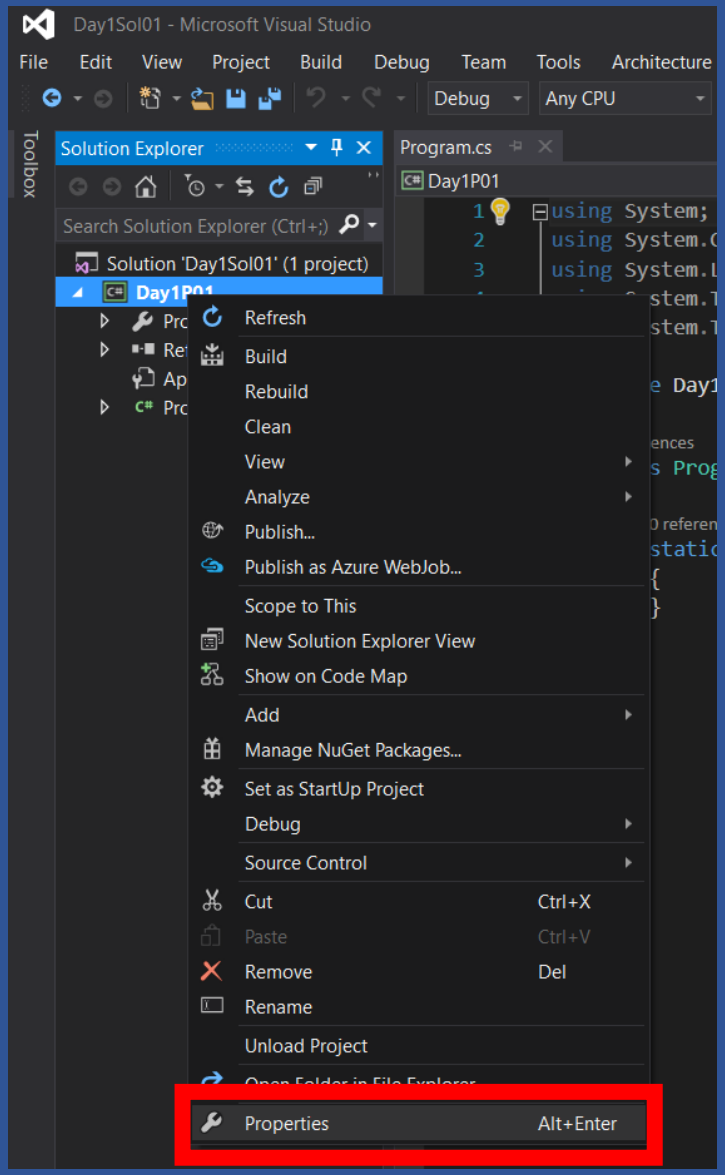


Create a device identity

- A device cannot connect to IoT hub unless it has an entry in the device identity registry.
- Create a Windows console app that creates a new device identity in the identity registry in your IoT hub
- This console app generates a **unique device ID** and **key** that your device can use to identify itself when it sends device-to-cloud messages to IoT Hub.

Create New a new Visual C# Console Application

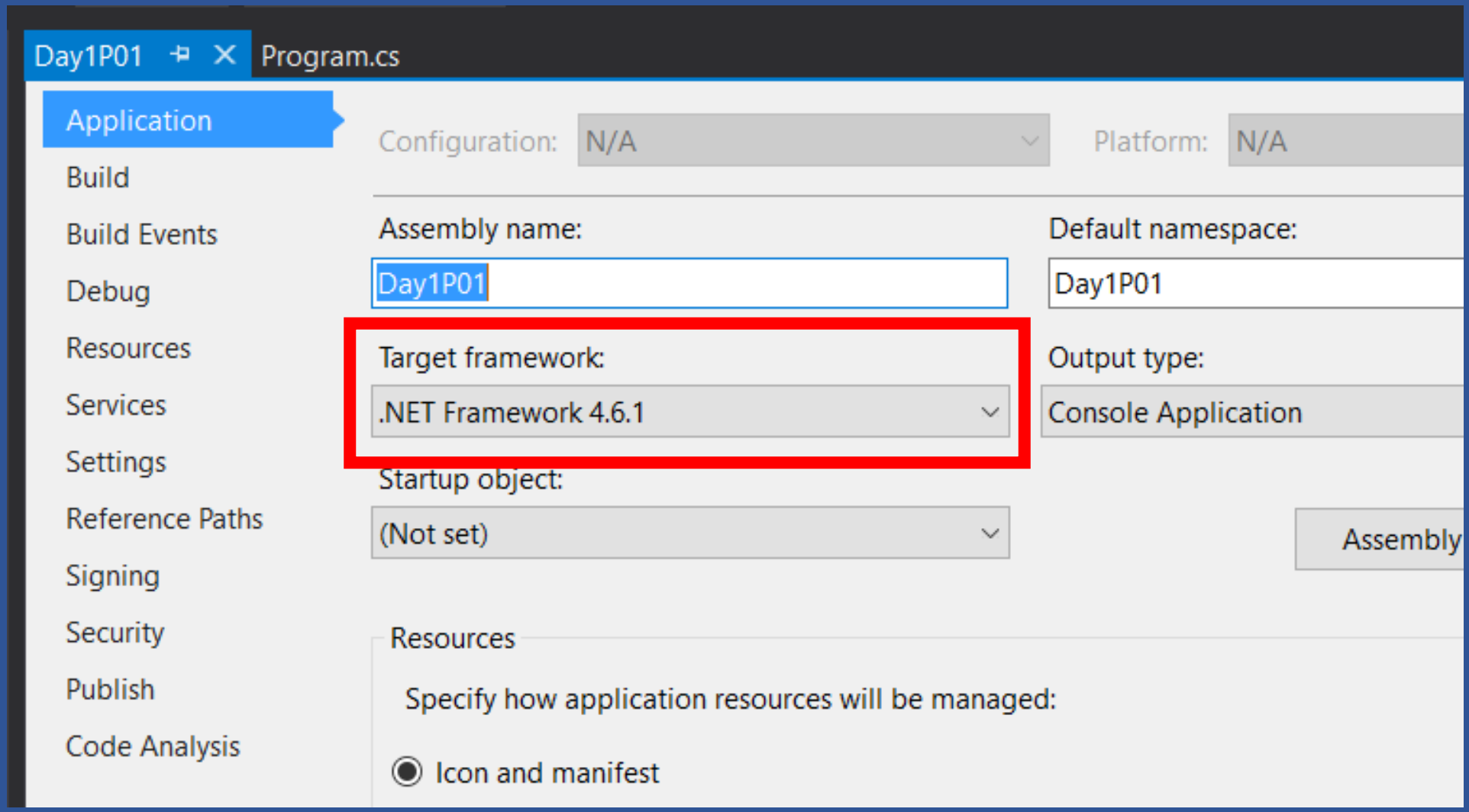




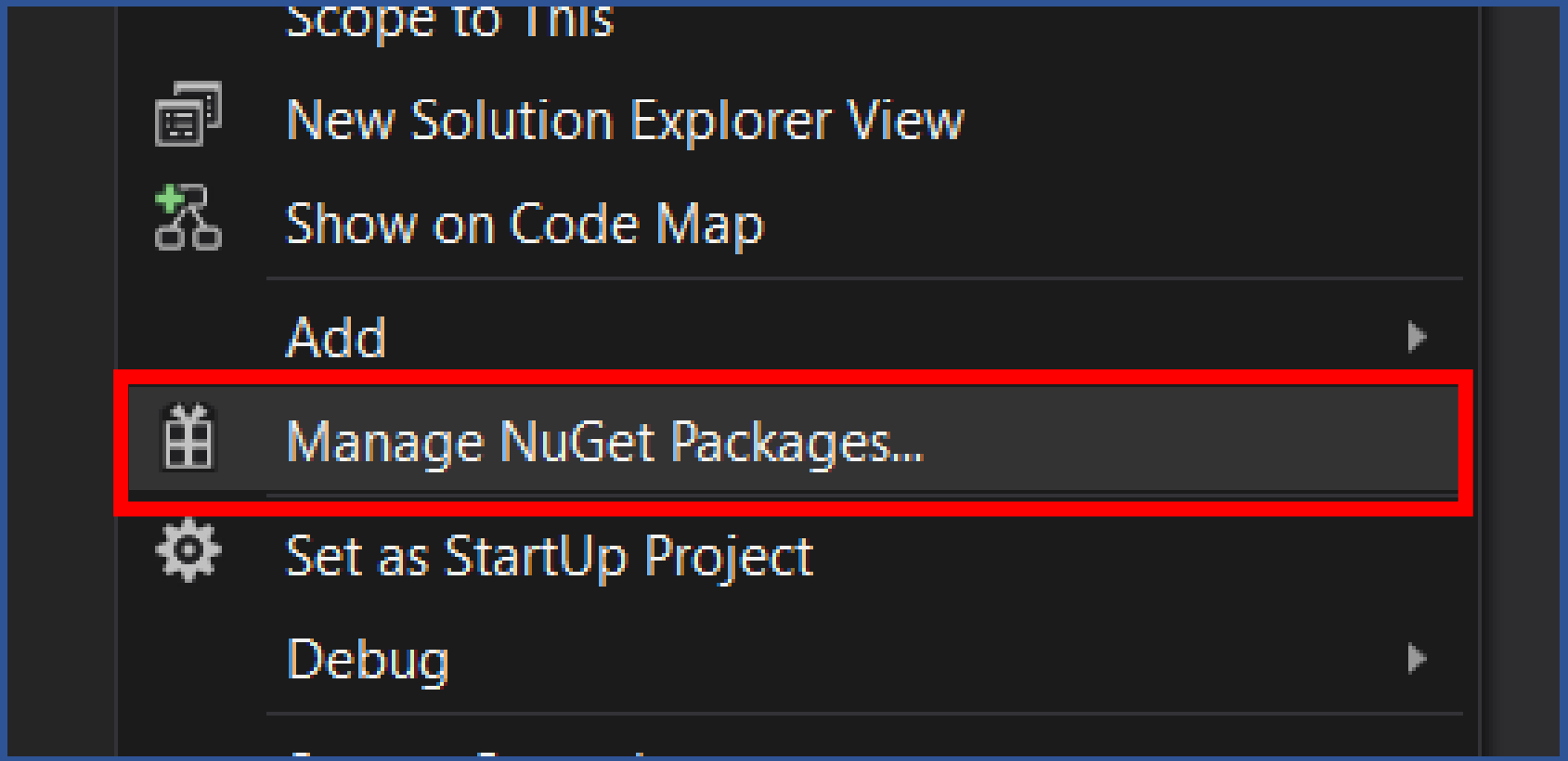
Right Click at the Project name

Select Properties

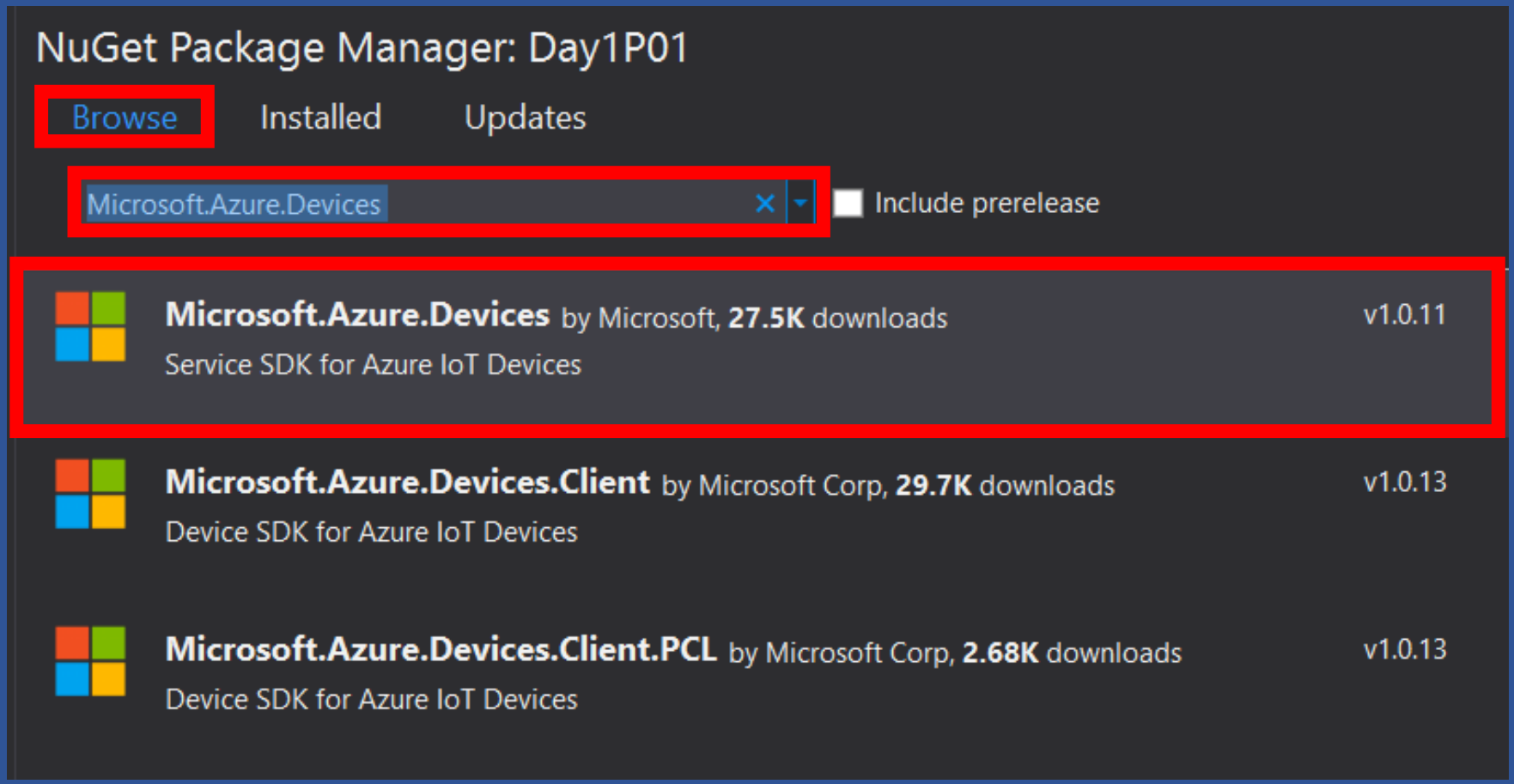
Make sure the .NET Framework version is 4.5.1 or later.



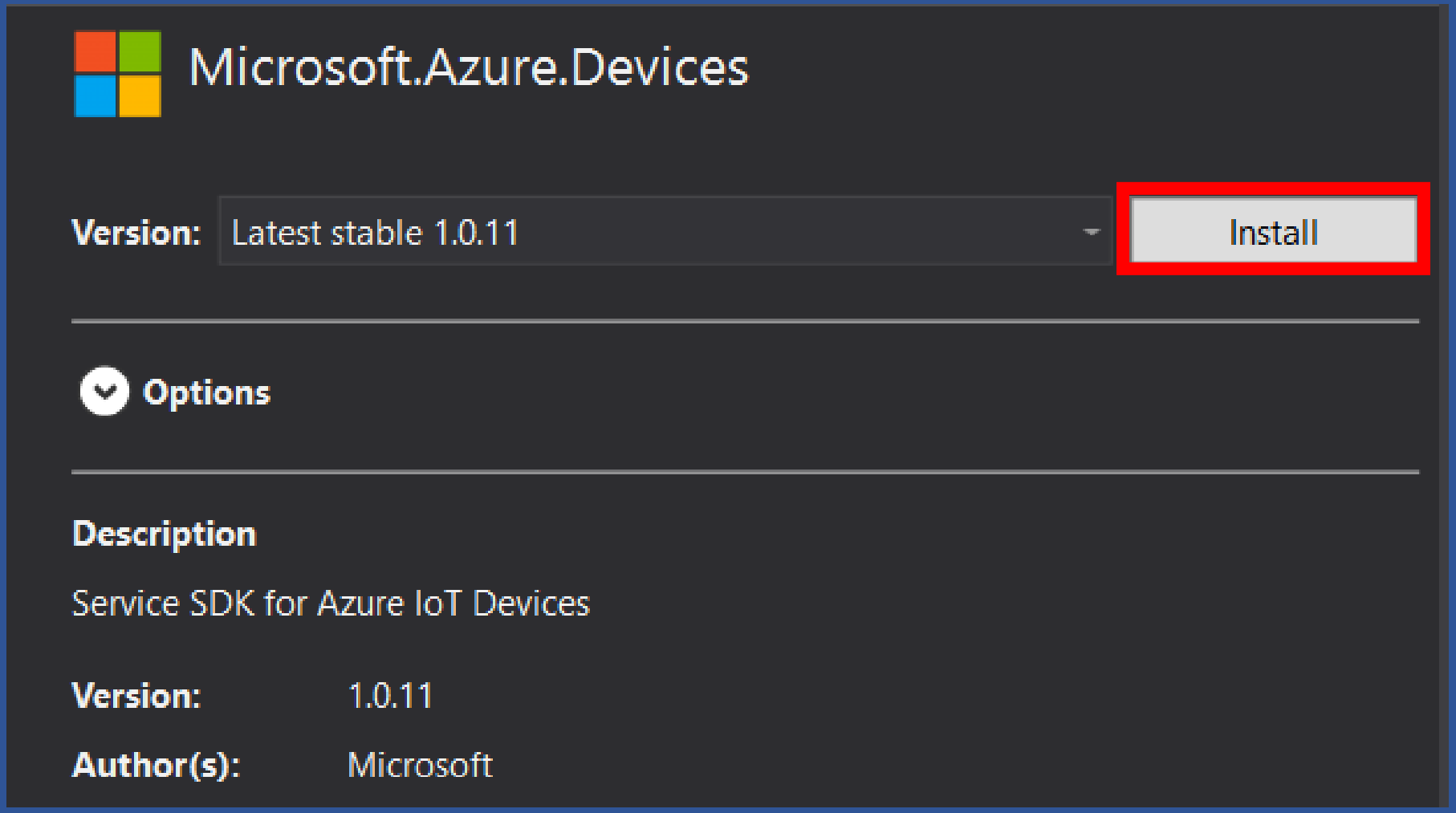
In Solution Explorer, right-click the project, and then click Manage NuGet Packages.



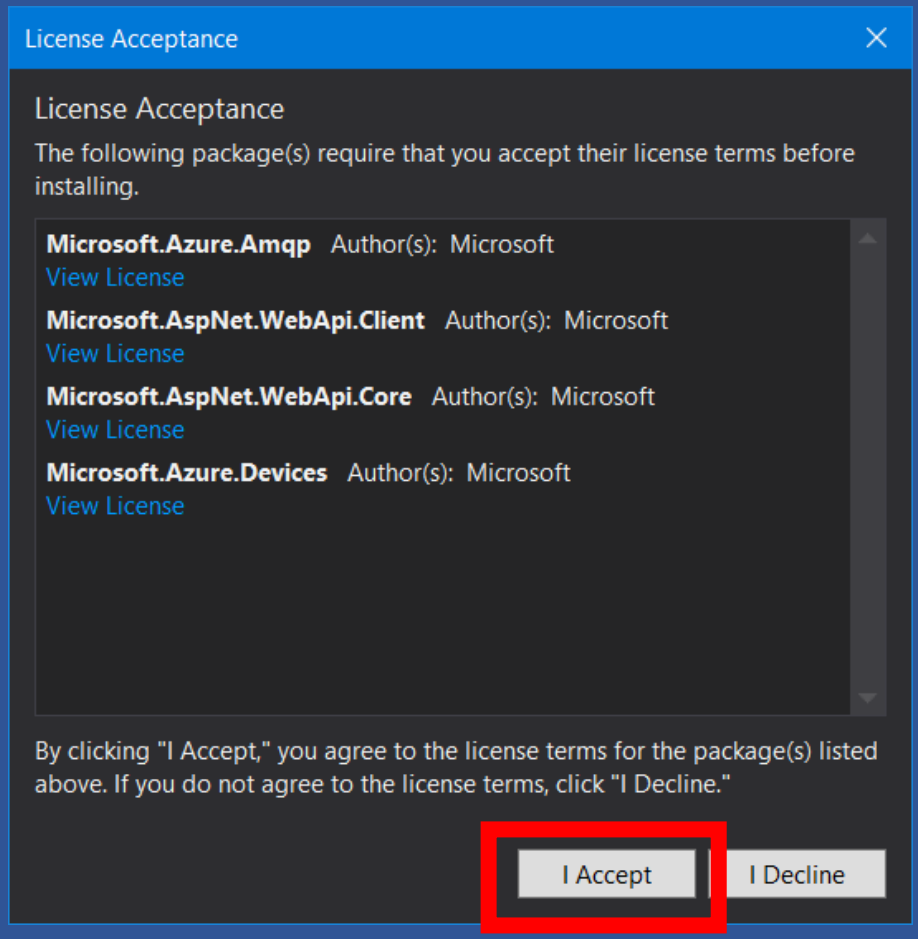
In the NuGet Package Manager window, select Browse, search for microsoft.azure.devices



- Select Install to install the Microsoft.Azure.Devices package,



- and accept the terms of use.
- This downloads, installs, and adds a reference to the Microsoft Azure IoT Service SDK NuGet package and its dependencies.



Add the following using statements at the top of the Program.cs file

```
using System;
using System.Collections.Generic;
using System.Linq;
using System.Text;
using System.Threading.Tasks;

using Microsoft.Azure.Devices;
using Microsoft.Azure.Devices.Common.Exceptions;
```

Add the following fields to the Program class. Replace the placeholder value with the connection string for the IoT hub that you created in the previous section.

```
namespace Day1P01
{
    0 references
    class Program
    {
        static RegistryManager registryManager;
        static string connectionString = "{iothub connection string}";
        0 references
        static void Main(string[] args)
        {
        }
    }
}
```

Add the following method to the Program class

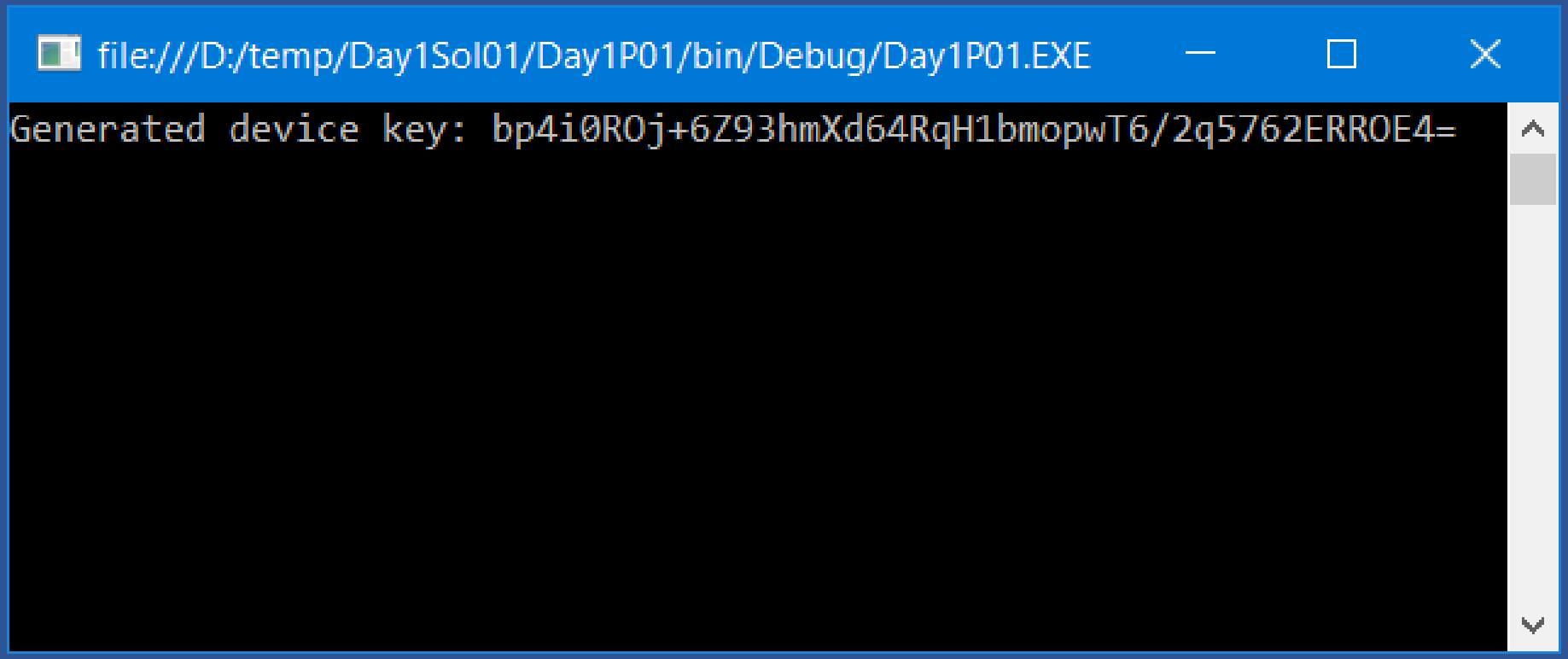
```
private static async Task AddDeviceAsync()
{
    string deviceId = "myFirstDevice";
    Device device;
    try
    {
        device = await registryManager.AddDeviceAsync(new Device(deviceId));
    }
    catch (DeviceAlreadyExistsException)
    {
        device = await registryManager.GetDeviceAsync(deviceId);
    }
    Console.WriteLine("Generated device key: {0}", device.Authentication.SymmetricKey.PrimaryKey);
}
```

- This method creates a new device myFirstDevice.
- If that device ID already exists in the registry, the code simply retrieves the existing device information.
- The app then displays the primary key for that identity.
- You will use this key in the simulated device to connect to your IoT hub.

Finally, add the following lines to the Main method:

```
static void Main(string[] args)
{
    registryManager = RegistryManager.CreateFromConnectionString(connectionString);
    AddDeviceAsync().Wait();
    Console.ReadLine();
}
```

Run this application, and make a note of the device key.



More information on Creating device

Connect your device to Azure IoT Hub

https://azure.microsoft.com/en-us/develop/iot/get-started/