SyncConnect Azure Virtual Machine/ IoT Edge Module Installation Guide

www.kalkitech.com

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1. Introduction

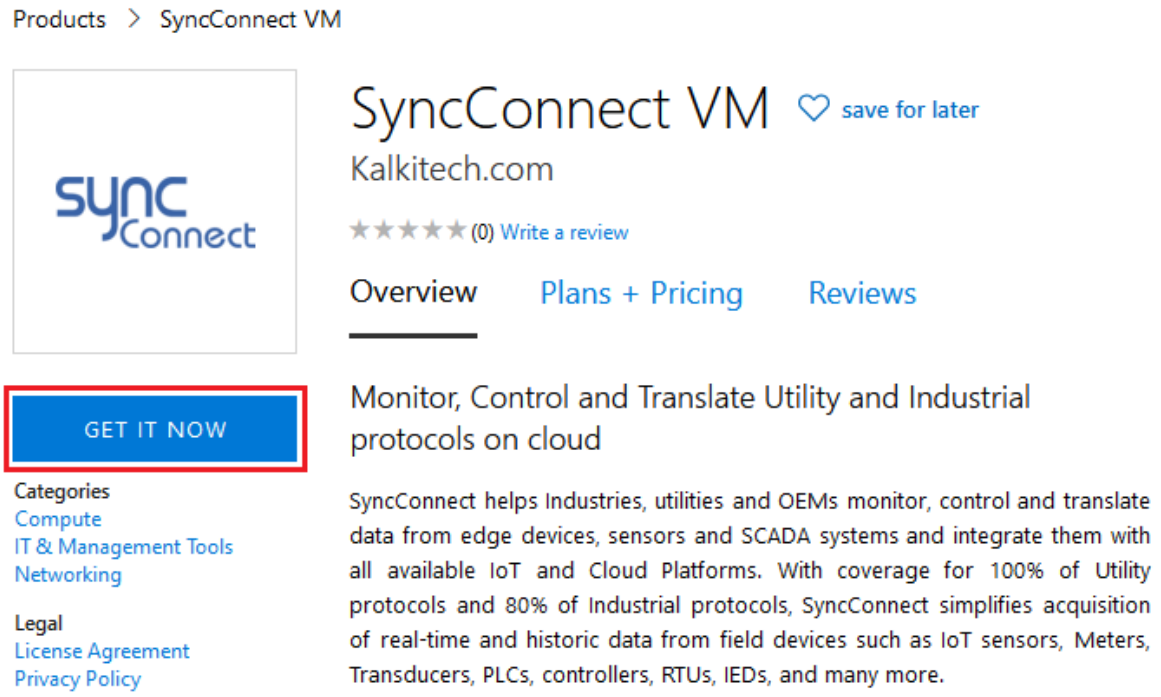
SyncConnect is a protocol conversion engine with capability to collect data over many legacy and standard protocols and make data available for other protocols. SyncConnect on Azure brings capability to collect field device data directly to Azure and use other cloud infrastructure to process this data.

This document guides to use SyncConnect on Azure Virtual Machines and IoT Edge Modules. 2. SyncConnect Virtual Machine Provisioning and 3. Installing SyncConnect IoT Edge Module describes provisioning SyncConnect on Virtual Machine and Azure IoT Edge Modules respectively. You can directly refer to section that is relevant for your use case. 4. Kalki.io Sign up and SyncConnect Licensing describes procedure to license SyncConnect. This section is common for all the installations. Once installation is complete you can obtain evaluation or production license from Kalkitech to use this software.

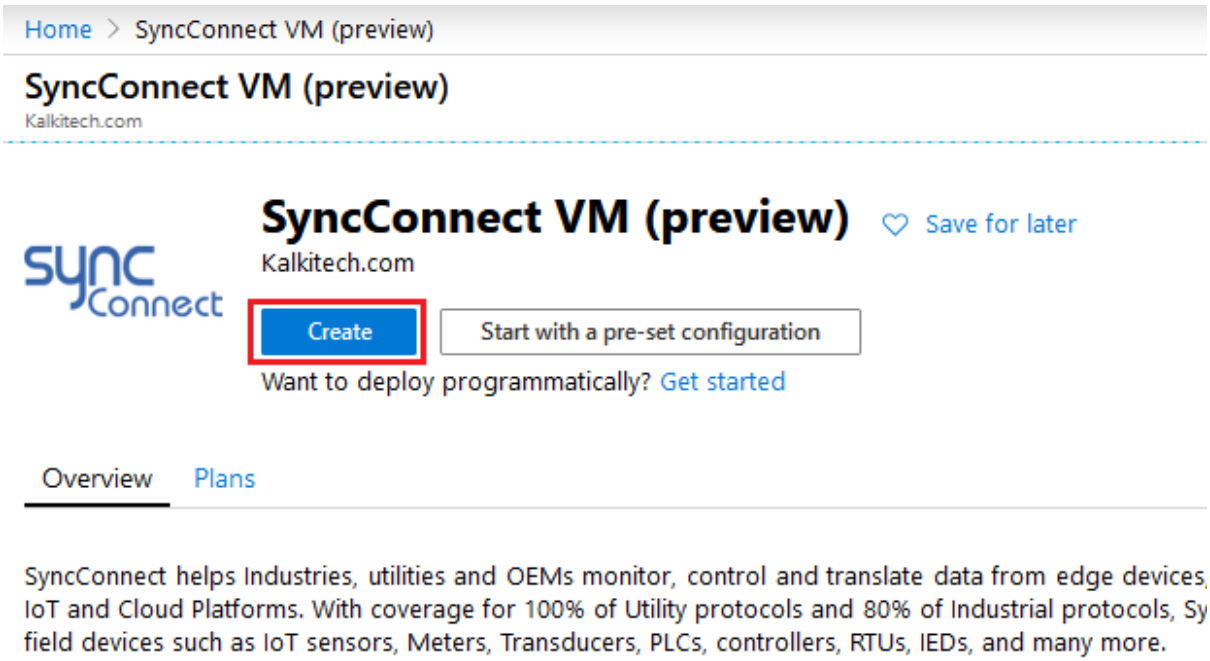
2. SyncConnect Virtual Machine Provisioning

This Section explains provisioning of SyncConnect Virtual Machine in Microsoft Azure. You can learn more about Azure Virtual Machine provisioning here. Follow these steps to set up SyncConnect Virtual Machine.

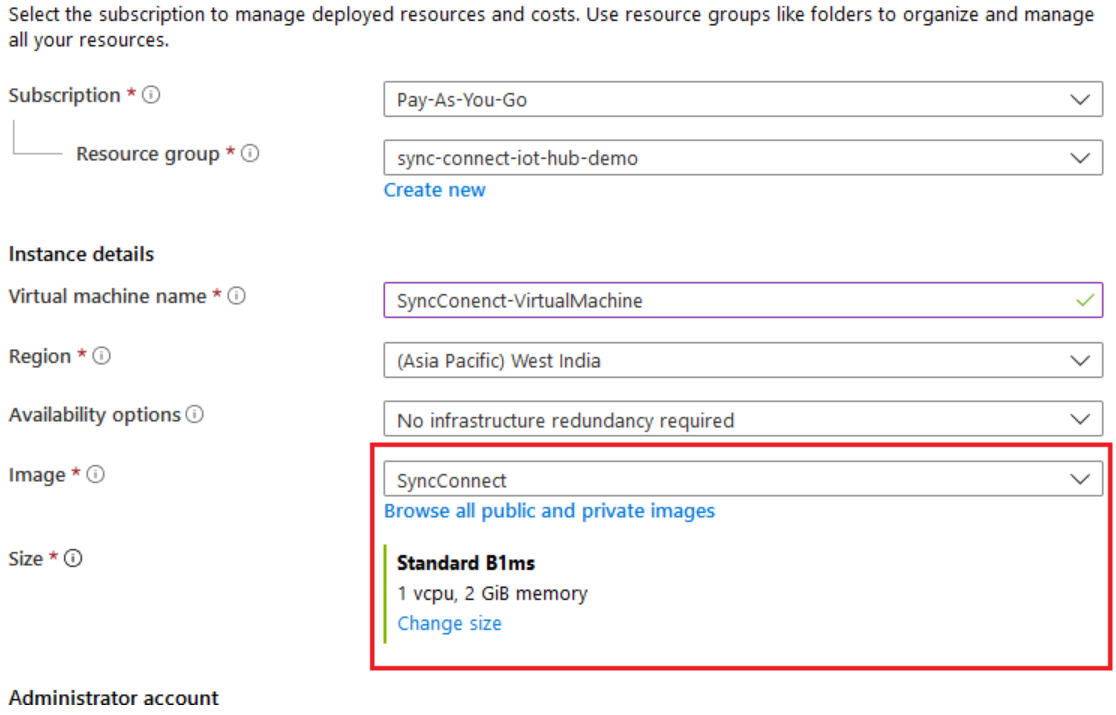
1. Find SyncConnect Virtual Machine on Azure marketplace on this link. Click on GET IT NOW to subscribe



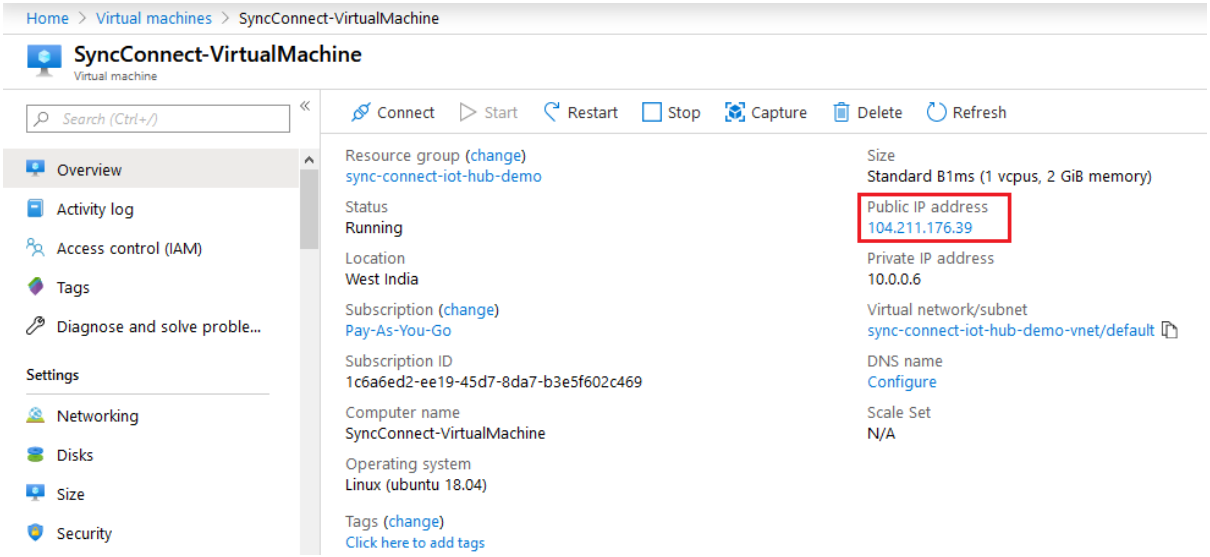
2. Read and Accept Terms. You should reach following page. Click on create to provision SyncConnect Virtual Machine.



3. This will take you to Azure Virtual Machine provisioning page. Fill these parameters as seem fit for your use case. We recommend to use virtual machine with at least 1 GB of RAM. Virtual Machine must be provided public IP for configuring it. Following are basic configuration for Virtual Machine. Rest of the Sections can be used with their default values.



4. Once Virtual Machine is Provisioned get the IP of virtual Machine



5. take ssh to virtual machine and change directory to **/kalkitech**. Install SyncConnect debian package by executing **sudo dpkg -i SyncConnect.deb**.

```
kalkitech@SyncConnect-VirtualMachine:~$ cd /kalkitech/
kalkitech@SyncConnect-VirtualMachine:/kalkitech$ sudo dpkg -i SyncConnect.deb
Selecting previously unselected package syncconnect
```

6. Read and accept SyncConnect Licensing terms and complete the installation.

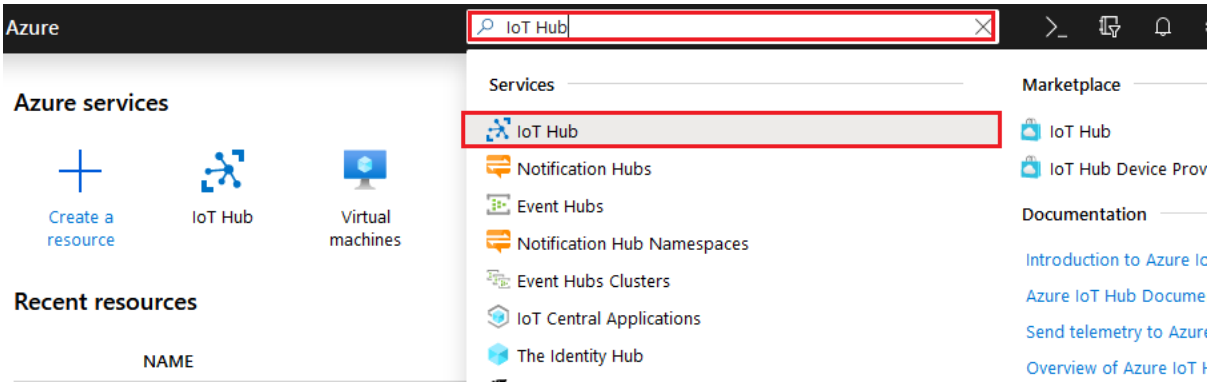
3. Installing SyncConnect IoT Edge Module

SyncConnect IoT Edge Module container can be installed on any device running IoT Edge runtime. Read more about Azure IoT Edge Module on the this link. This document will guide through installation of SyncConnect Edge Module container on any device supporting Azure IoT Edge Runtime. This installation procedure guides you through creating a virtual machine hosting IoT edge runtime. SyncConnect will be deployed on this virtual machine using IoT hub. Same procedure can be followed for installing on IoT Edge field devices.

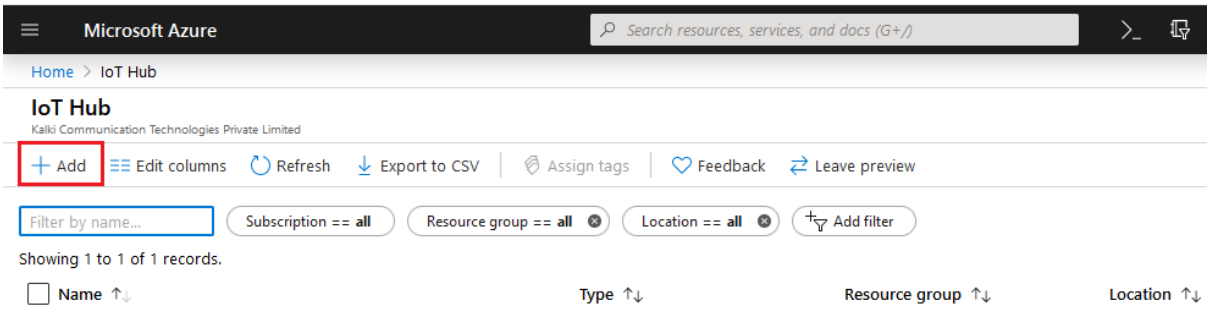
3.1 Setting up IoT Hub

IoT Hub is central entity for orchestration of IoT Edge Modules and IoT devices. In this section we will create a IoT Hub. This hub will be used for rest of this section for deploying SyncConnect Edge module container.

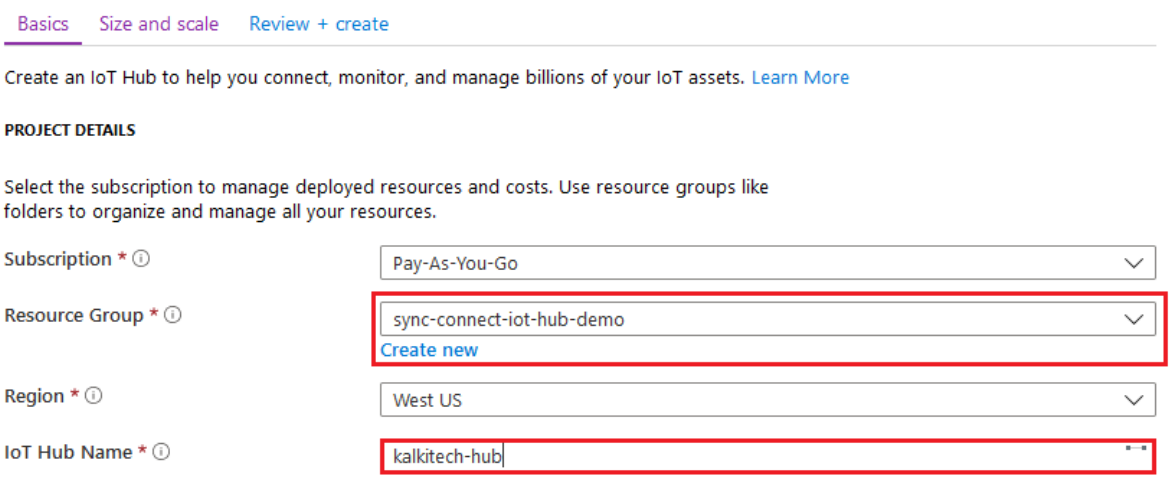
1. Log in to your Azure portal and search for IoT Hub in top search bar.



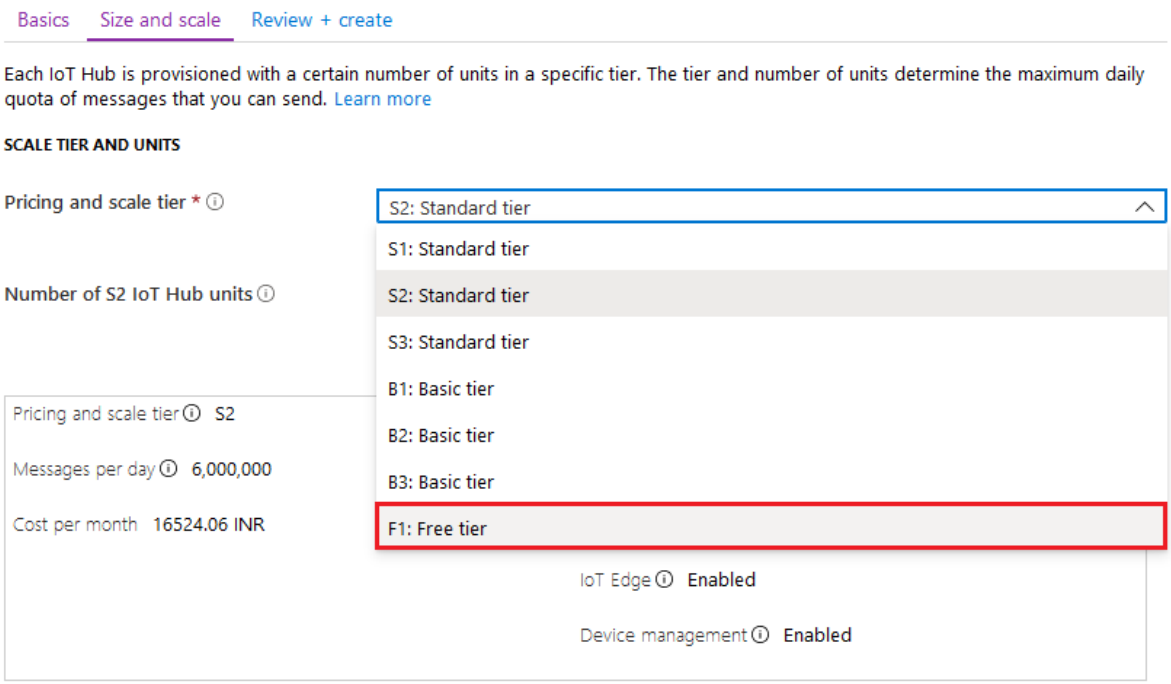
2. Create new IoT Hub by clicking on Add button on top left



3. In upcoming window fill parameter as you feel fit. It is recommended to create a new resource group and put all the resources described in this document in this resource group. We are creating a hub with name kalkitech-hub in resource group sync-connect-iot-hub-demo.



4. Select the tier for your hub. Here we are selecting free tier for our hub.

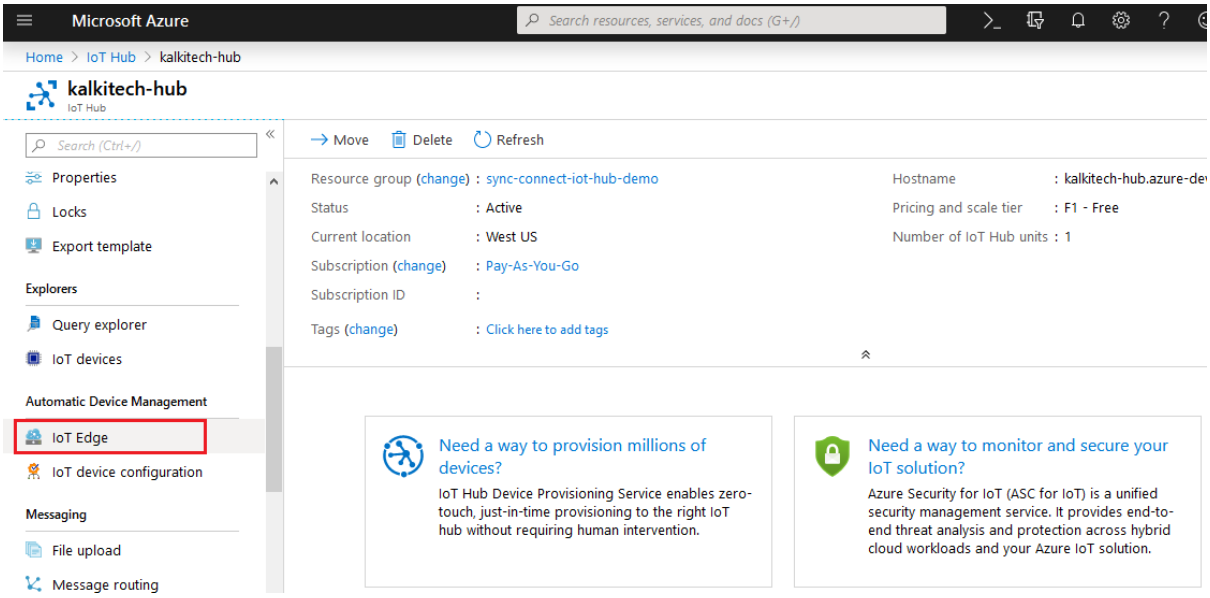


5. Click on review and create the hub.

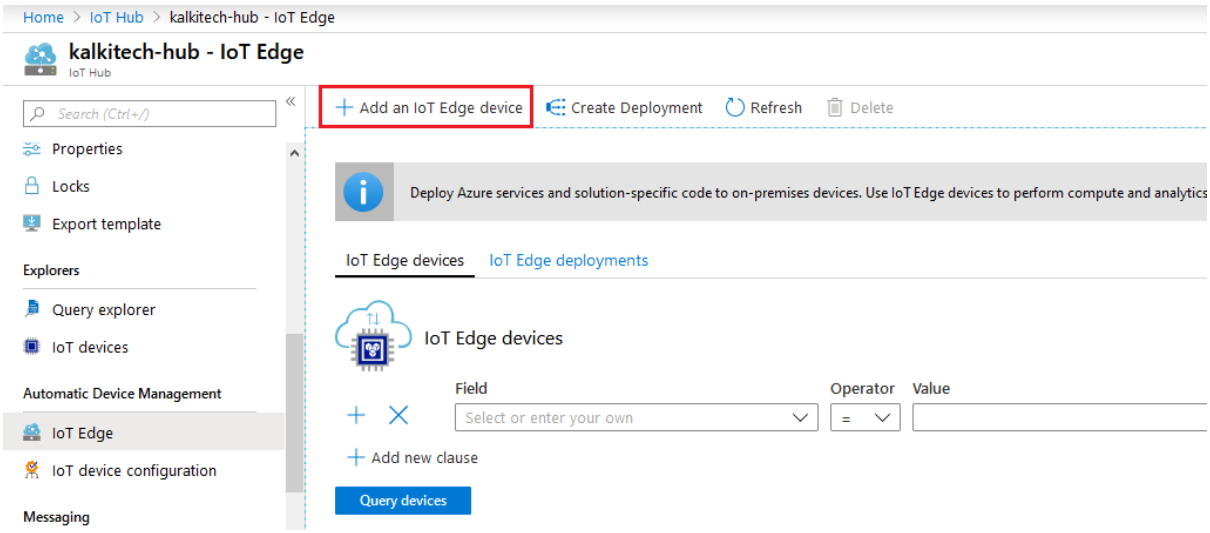
3.2 Adding IoT Edge Device to IoT Hub

One IoT hub can communicate with multiple IoT Edge devices. Following steps will explain how to create a IoT Edge device in IoT hub. You can refer this article to learn more about creating Edge device.

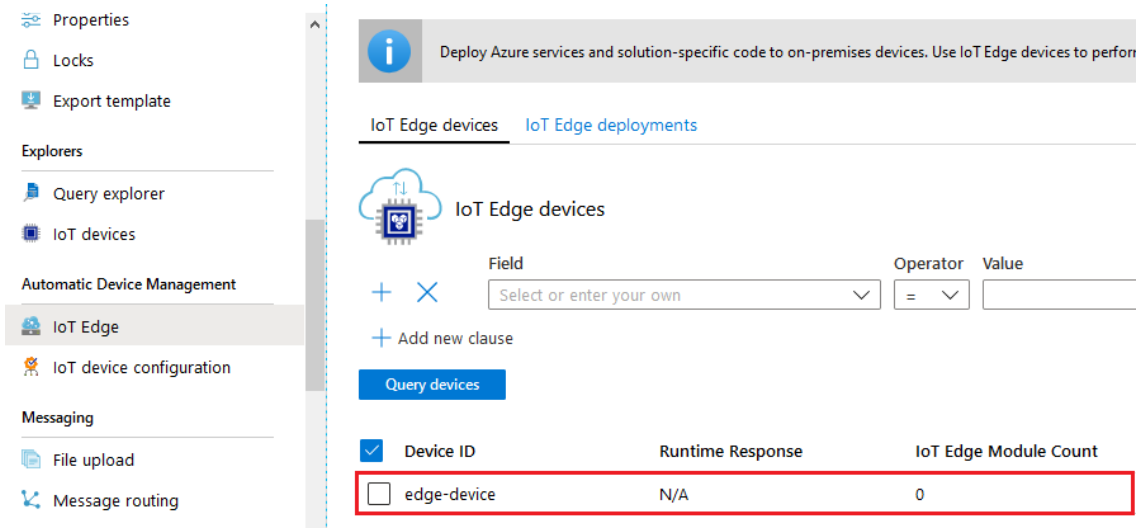
1. Go to your IoT Hub and find IoT Edge on right side of window.



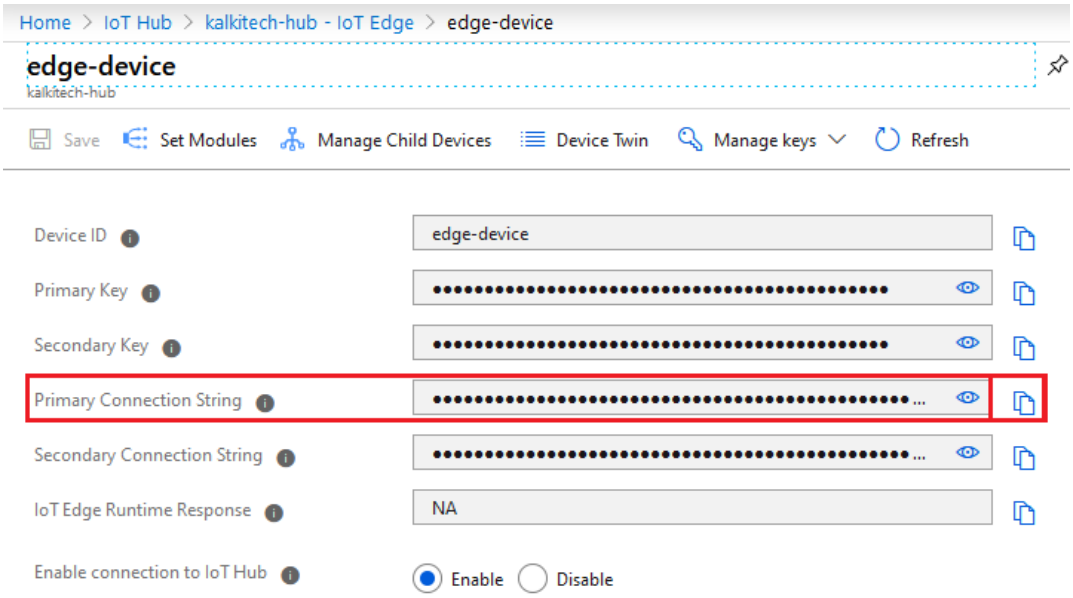
2. Create a new IoT Edge by clicking Add an IoT Edge device



3. Fill details for IoT Edge device. Click on save to create the new device. Go to IoT Edge Section of IoT Hub. You should see your newly create device here. Click on device to get device credentials



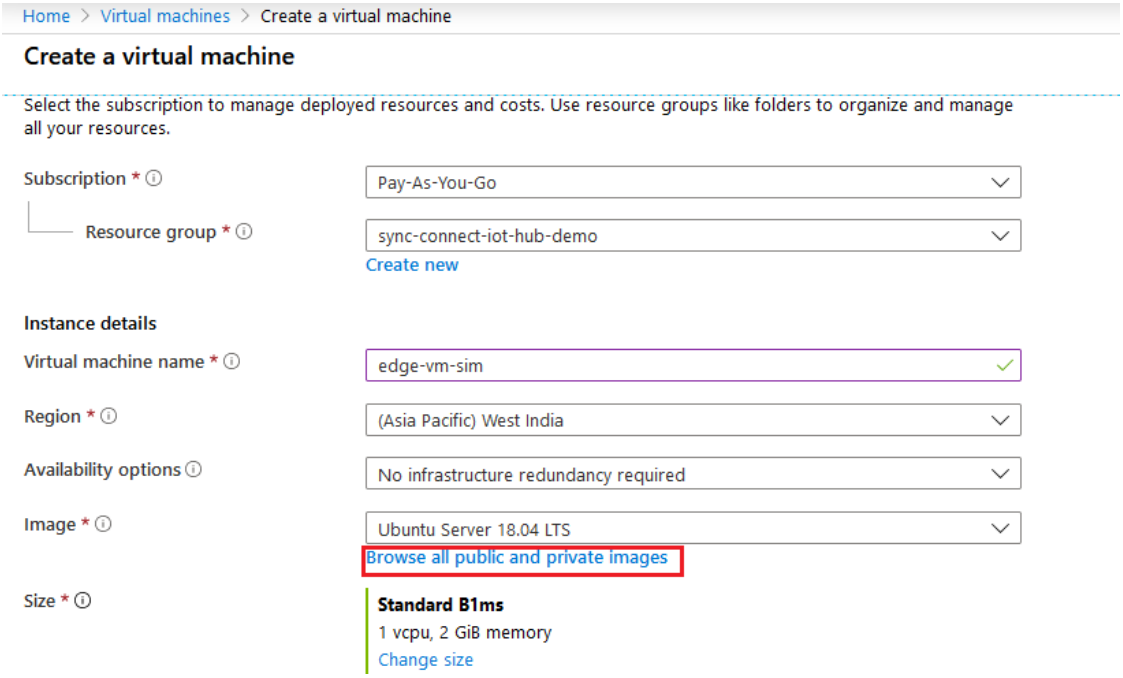
4. Copy **Primary Connection String**. This will be used by IoT Edge module runtime to connect with IoT Hub.

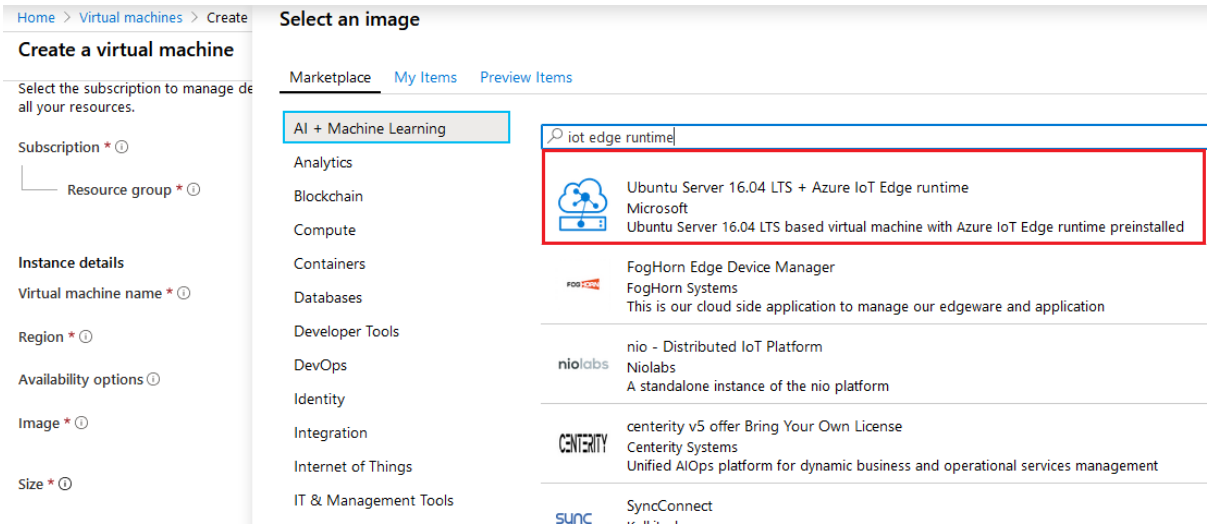


3.3 Creating Virtual Machine with IoT Edge Runtime

You can either use End device with IoT Edge runtime or create a Virtual Machine on Azure with Virtual Runtime installed on it. For the purpose of this tutorial we will create a Virtual Machine with Azure IoT Edge Runtime Installed on it.

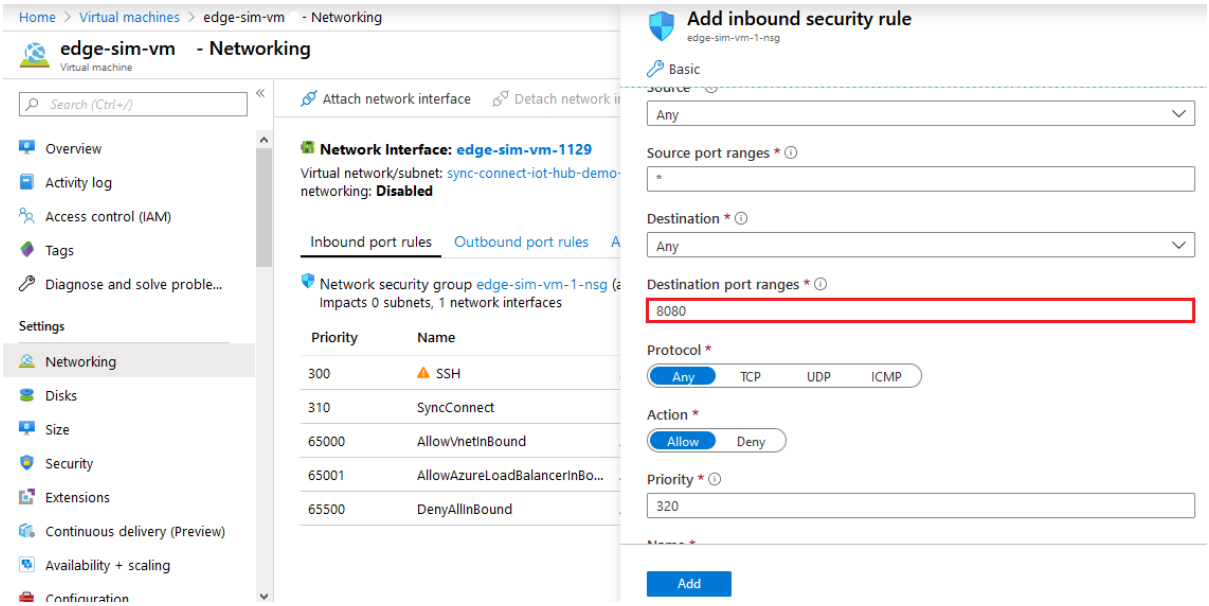
1. Go to Virtual Machine Section in Azure Portal. Create a new virtual machie.
2. Fill the Form to create virtual Machine. For Image you use **Ubuntu 16.04 LTS + IoT Edge Runtime**. by clicking Browse all public private image.



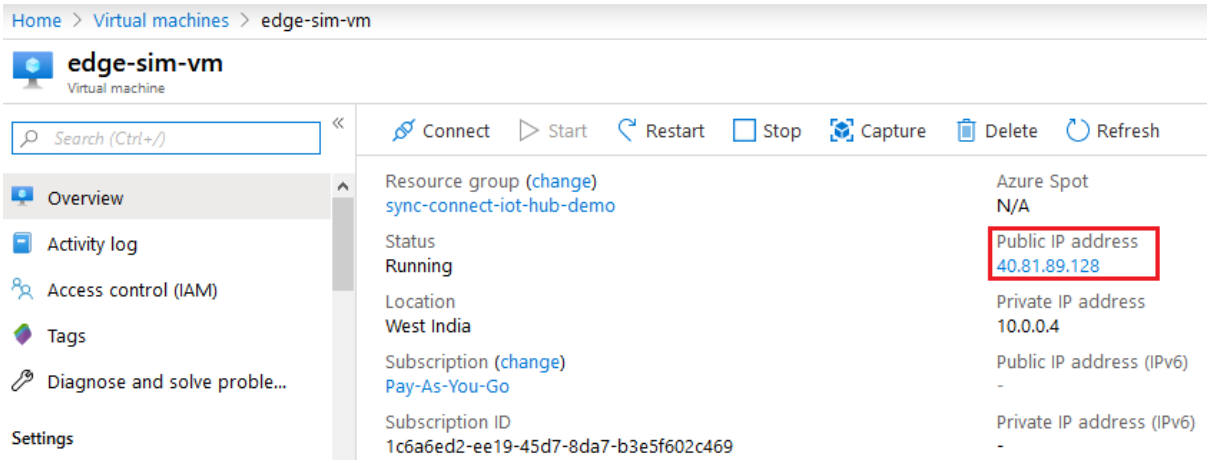


3. Use Virtual machine with 1GB + memory. Rest of the configuration for Virtual machine can be kept as default.
4. Once Virtual machine is Provisioned. You can find in Virtual Machines Section of Azure. TCP Port 1081, 8080 for Virtual Machine should be allowed for inbound connections. These ports are used by SyncConnect configuration tool(EasyConnect)

for configuring the Edge device. These inbound connections can be allowed in Networking Section of Virtual Machine. Following picture shows addition of TCP Port 8080 in allowed inbound port list.



5. Take Note of IP address in Overview Section. This IP will be used in next Section.



3.4 Connecting IoT Edge Device to IoT Hub

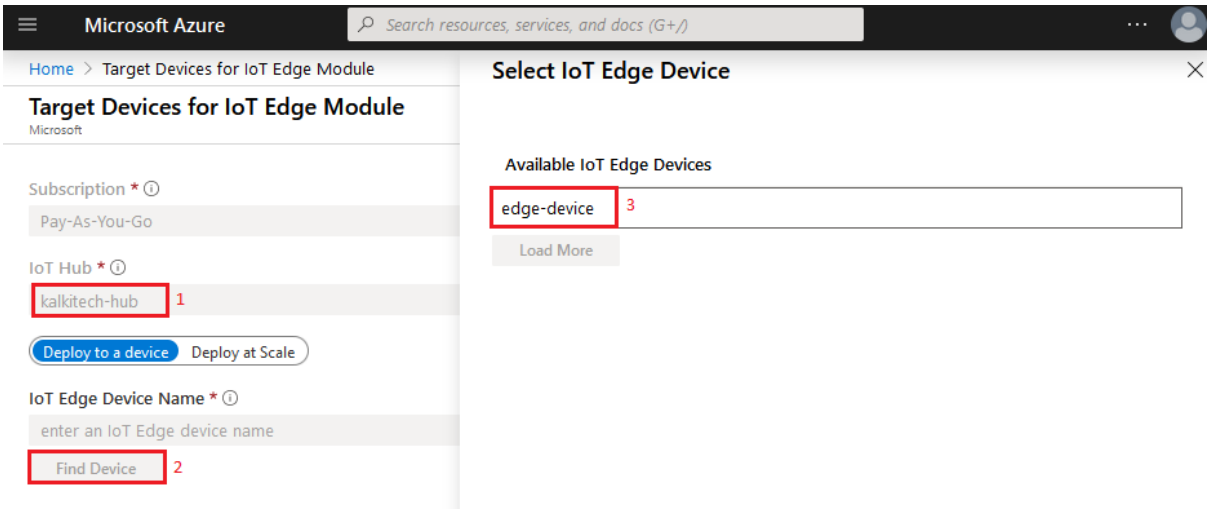
This Section will explain how to deploy SyncConnect IoT Edge Module Container of IoT Edge device(Virtual Machine set up in last Section).

1. Take ssh to your IoT edge device. This will be virtual machine created in Section 2.3.
2. Execute following command on shell. Replace Connection String by Connection string as copied in step 4 of 3.2 Adding IoT Edge Device to IoT Hub.

   sudo /etc/iotedge/configedge.sh '<Connection-String>'

3. Go to SyncConnect IoT Edge Module Container on Azure Marketplace. You can find SyncConnect IoT Edge Modules Container here. click on Get it Now

4. Read and Accept terms. Select IoT hub and edge device created in Previous Section. Click on create to move to next step.

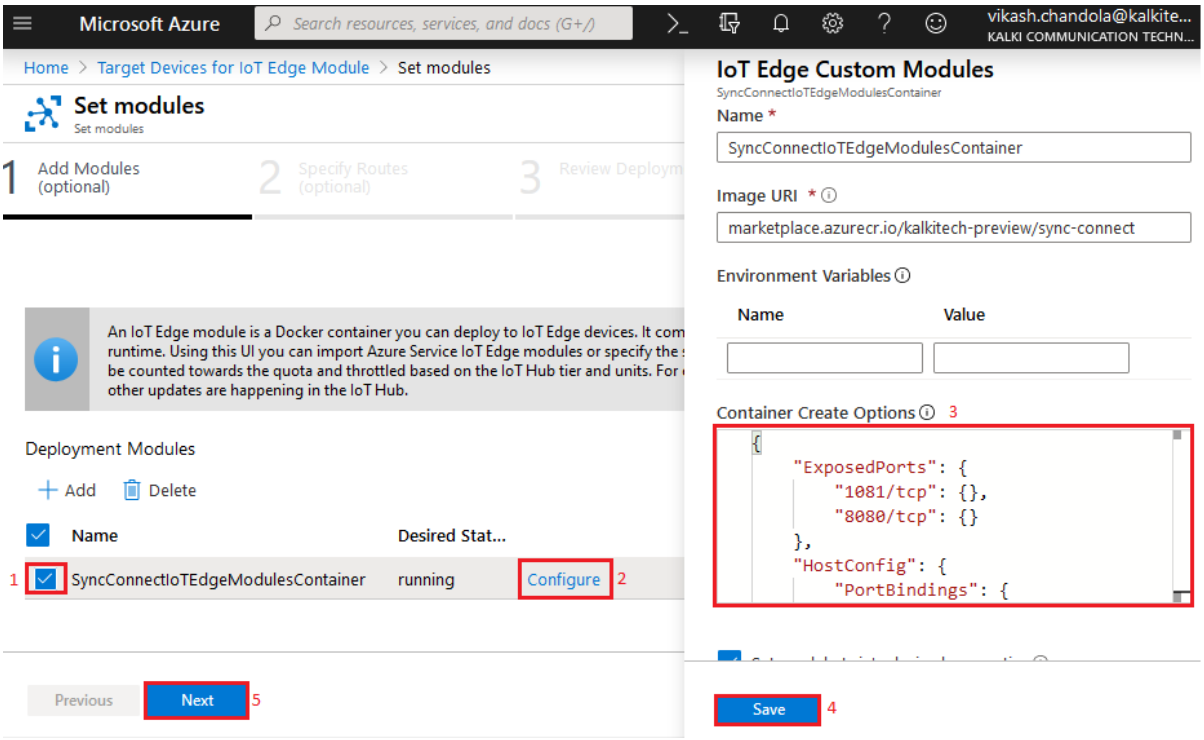


5. Select Container image and click on configure to configure SyncConnect container. TCP Port 1081 and 8080 should be mapped to host for it to configure. TCP Port 1081 and 8080 will be used by EasyConnect and REST Interface to configure

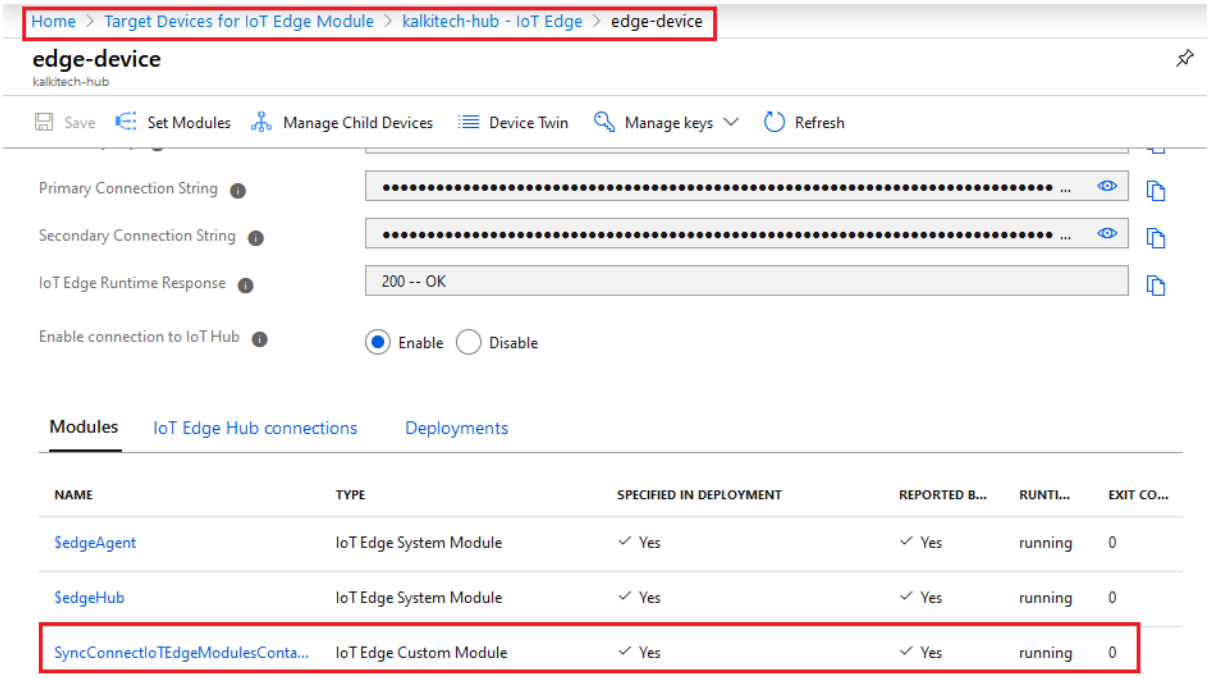
SyncConnect. You may want to allow more ports in allowed inbound ports list as Server/Slave protocols are configured in SyncConnect. Following configuration can be used for basic use case

```
{
        "ExposedPorts": {
                "1081/tcp": {},
                "8080/tcp": {}
        },
        "HostConfig": {
                "PortBindings": {
                        "1081/tcp": [{
                                "HostPort": "1081"
                        }],
                        "8080/tcp": [{
                                "HostPort": "8080"
                        }]

                }
        }
}
```



6. Rest of the parameters can be kept to their default values. You should be able to see deployment in IoT edge configured in IoT hub. It may take couple of minutes for IoT edge device to fetch and start running SyncConnect container. Once deployment is completed. SyncConnect status can be checked as show below.



7. ssh to Virtual Machine running IoT Edge runtime. Use IP address as noted in last steps of previous section. Check for running containers inside device by executing following command in bash

   sudo docker ps --format "table {{.ID}}\t{{.Names}}\t{{.Ports}}"

   You should see SyncCoonectIoTEdgeModulesContainer as one of the entry with TCP Port 1081 and 8080 mapped to host. Following picture shows running container on Virtual Machine. Verify for SyncConnect container and mapped TCP ports. This confirms successful installation of SyncConnect IoT Edge Module Container.

```
kalkitech@edge-sim-vm-1:~$ sudo docker ps --format "table {{.ID}}\t{{.Names}}\t{{.Ports}}"
CONTAINER ID        NAMES                              PORTS
b73b434c7be5        edgeHub                            0.0.0.0:443->443/tcp, 0.0.0.0:5671->5671/tcp, 0.0.0.0:8883->8883/tcp
f161d4519828        SyncConnectIoTEdgeModulesContainer   0.0.0.0:1081->1081/tcp, 0.0.0.0:8080->8080/tcp
ed279bd32364        edgeAgent
```

4. Kalki.io Sign up and SyncConnect Licensing

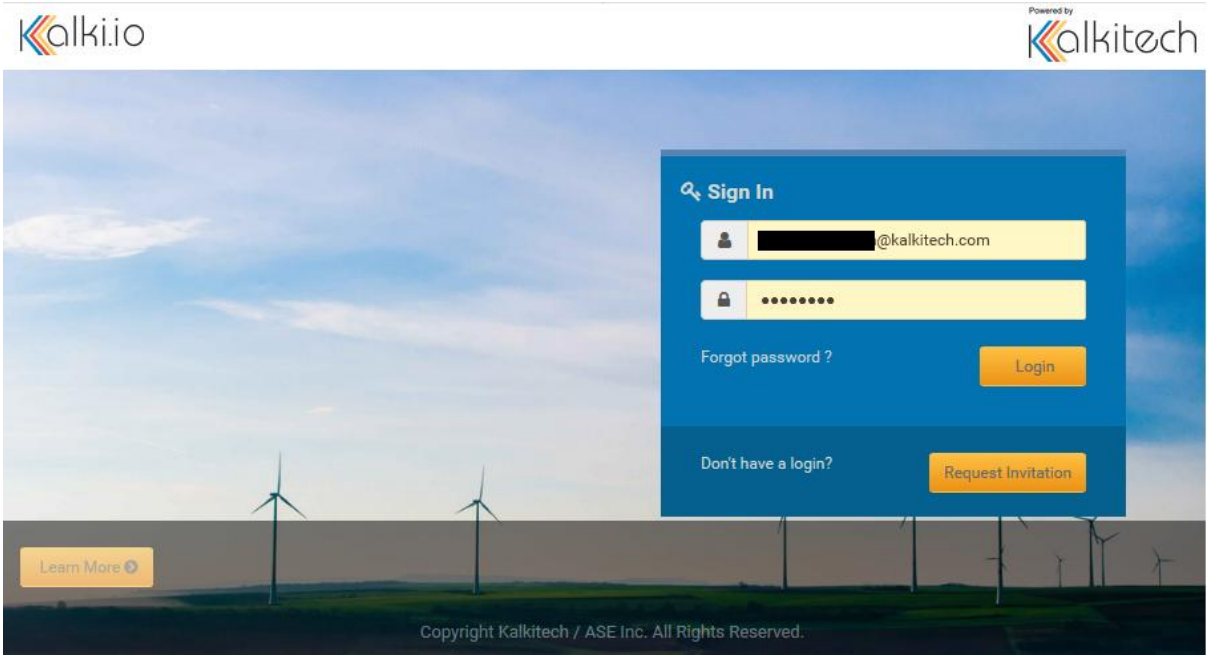
Once SyncConnect is provisioned you will require SyncConnect Evaluation License to use SyncConnect. Sign up on following link to get an evaluation license for SyncConnect. You will get log in credentials on completion of sign up.

```
https://store.kalki.io/io/ui/signup?contentId=SYNCCONNECT
```

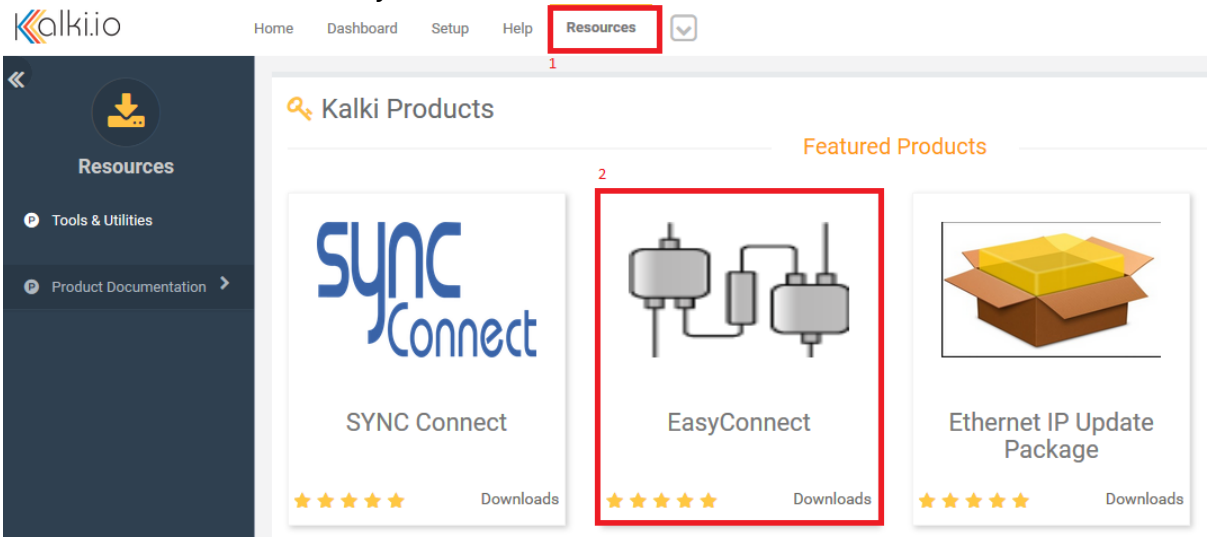
SyncConnect host in this Section refers to host on which SyncConnect is running. This host can be an any device a VM or IoT Edge Module.

4.1 Downloading EasyConnect(SyncConnect Configuration Utility)

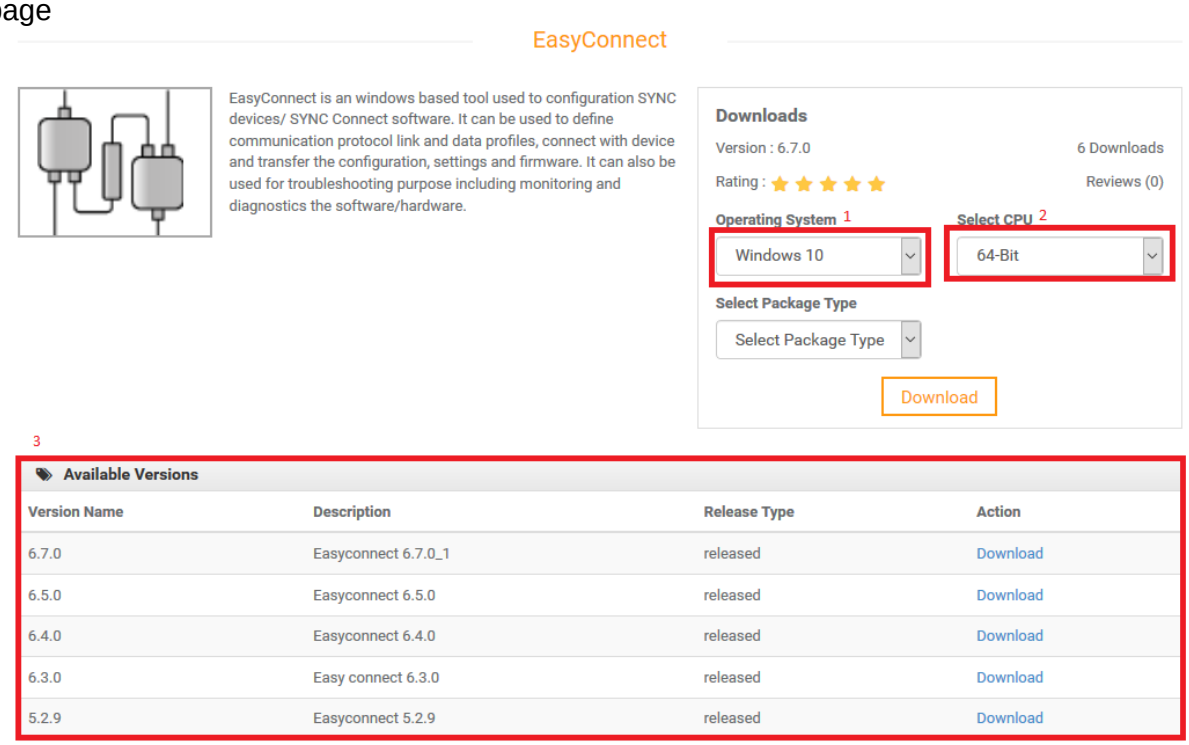
1. Go to your kalki.io instance. You will see a log in prompt as shown below. Enter and your username and password.



2. Click on Resources then EasyConnect as shown below

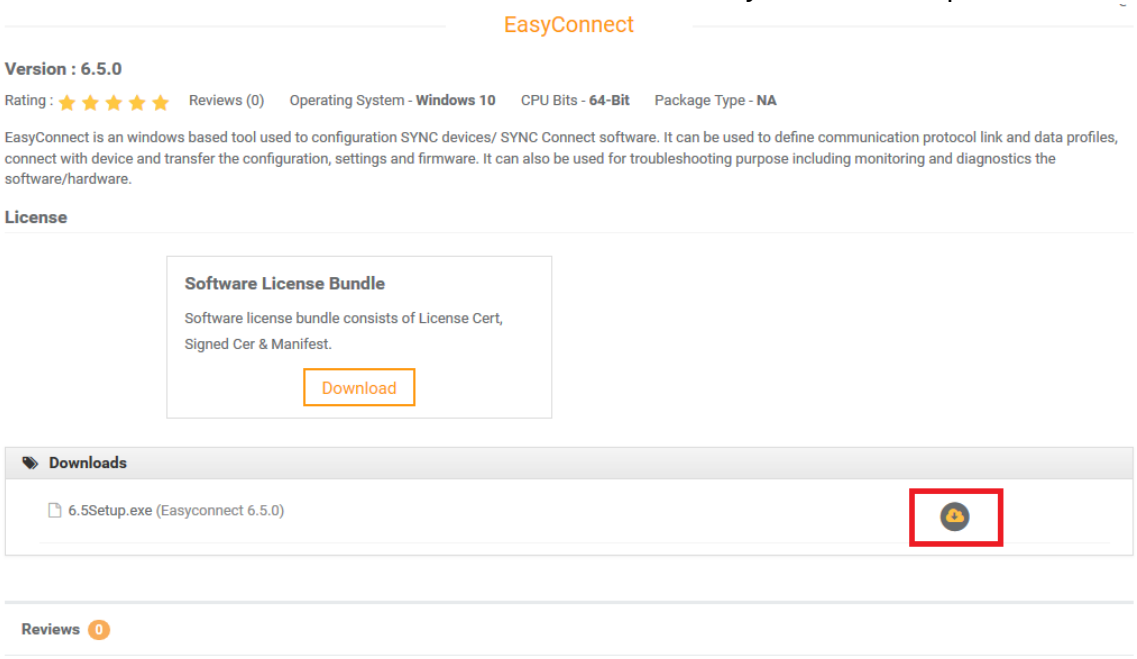


3. You will see a page as shown below. Select your Operating System, System Architecture(64 Bit/ 32 Bit). A list of Easy Connect set ups will come in lower half of page



4. Click on Download Action for EasyConnect Compatible for your SyncConnect. EasyConnect version should be 2.0 + SyncConnect version. For example If you are using SyncConnect 4.5.0 then EasyConnect version should be 6.5.0. If not sure you can download EasyConnect V6.5.0.

5. Click on Download button as shown below to Download EasyConnect Set up.

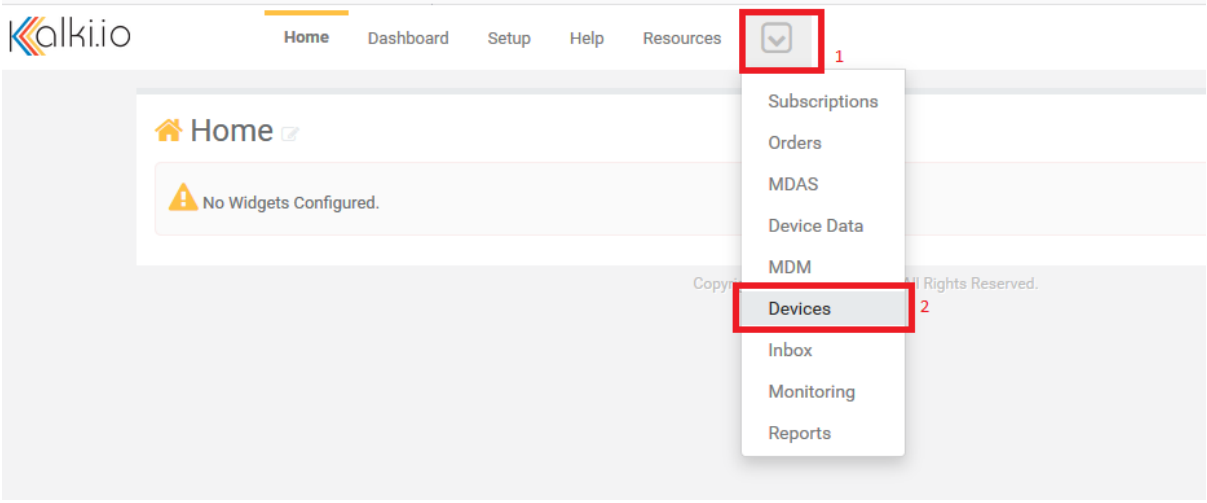


6. Install EasyConnect on a Windows Machine. This machine will be used for configuring SyncConnect.

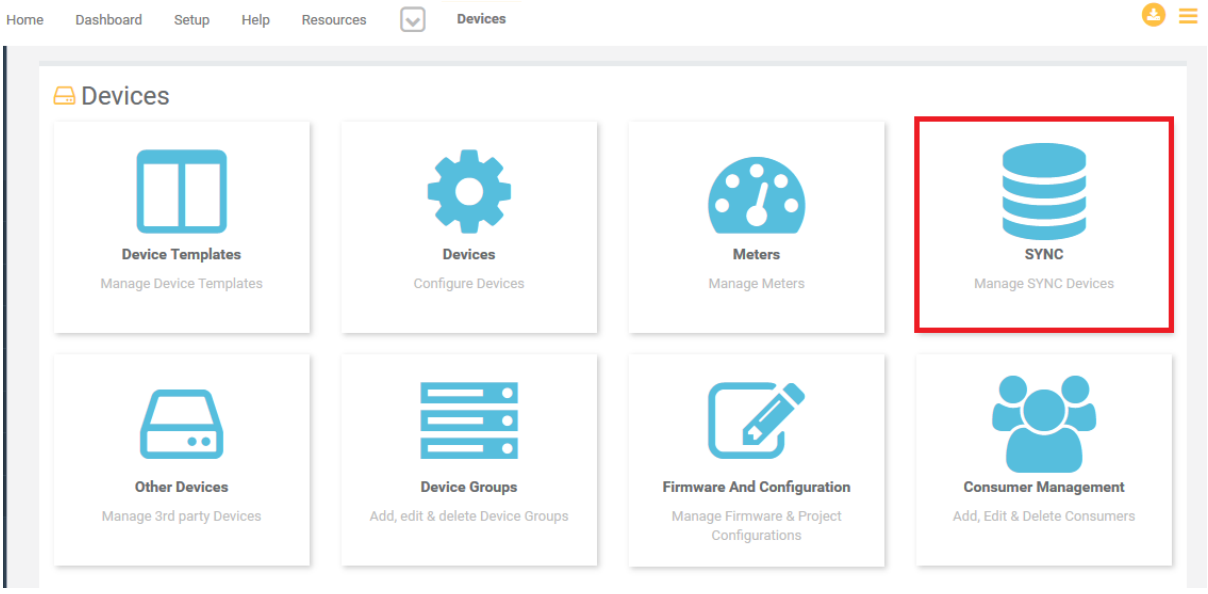
4.2 Downloading SyncConnect Device License

SyncConnect Licenses can be downloaded from kalki.io. Follow these steps to download SyncConnect Licenses.

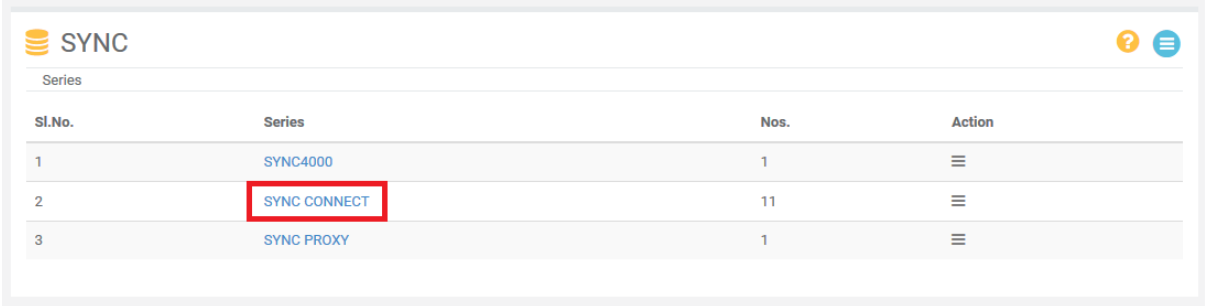
1. Log in to your kalki.io account.
2. Go to Devices Section. You may need to expand the top bar.



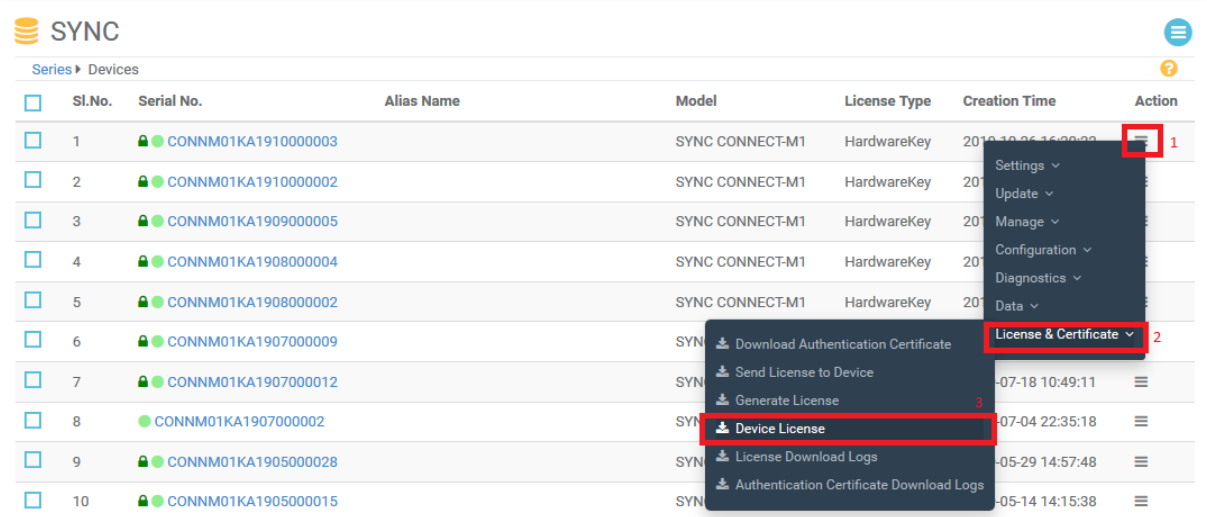
3. Go to SYNC(Manage SYNC Devices) Section as shown below



4. Select SYNC Connect



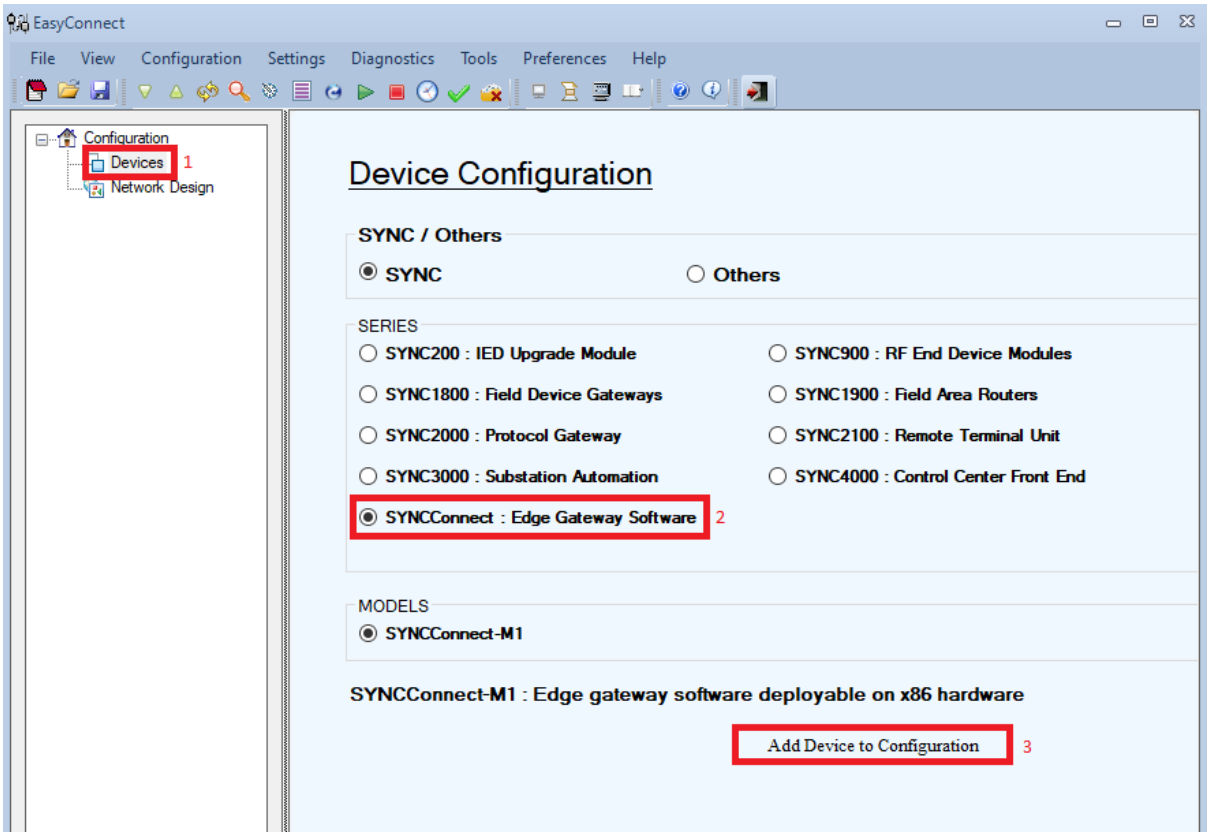
5. You will see a list of SYNC Connect devices available in your account. Click on actions -> License & Certificate -> Device License. Enter password for you certificate and save the license. This password will be used later while installing licenses to device.

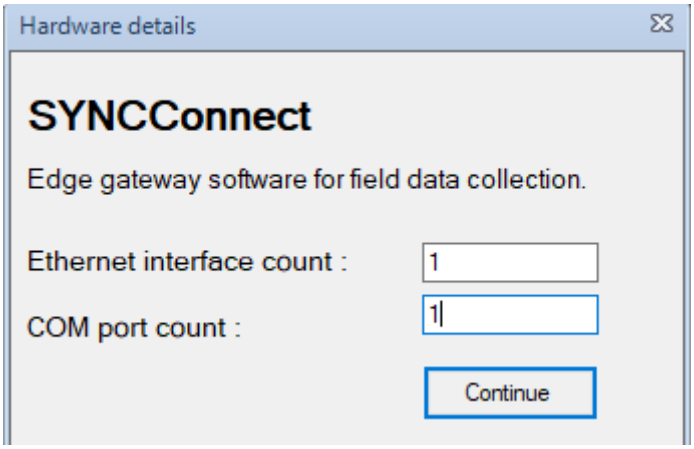


4.3 Installing SyncConnect Licenses

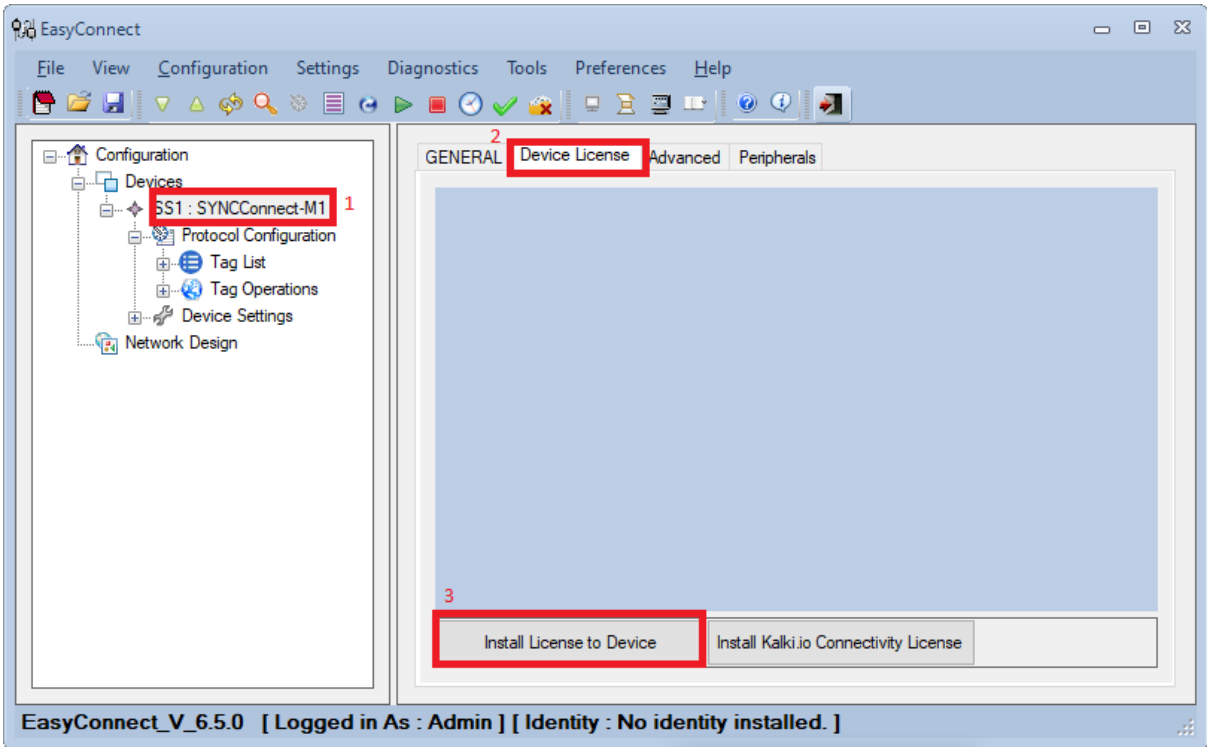
This section will explain how to install SyncConnect licenses and verify SyncConnect.

1. Launch EasyConnect.
2. Click on Devices, Select **SyncConnect - Edge Gateway Software** and click on **Add device to Configuration** as shown in following figure. This will bring a pop up asking for Ethernet and Serial port interface count. Provide Serial Port and Ethernet port count on the device/Virtual Machine. If unsure both of Serial Port and Ethernet port count can be given as 1.

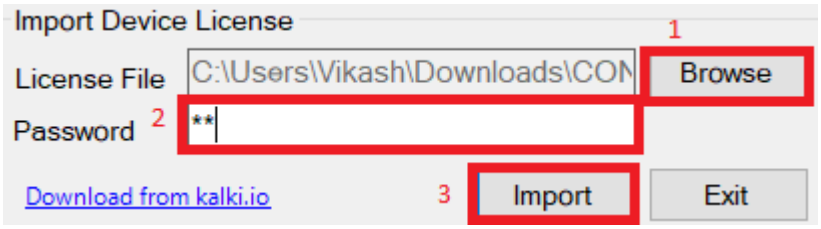




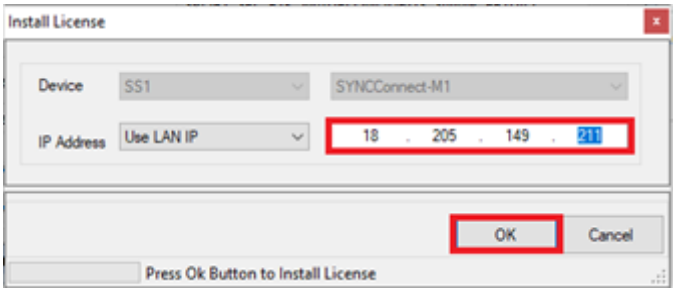
3. This will add **SyncConnect - M1** device in left Pane's device tree. Select this device. Go to **Device License**. Click on **Install License to Device**.



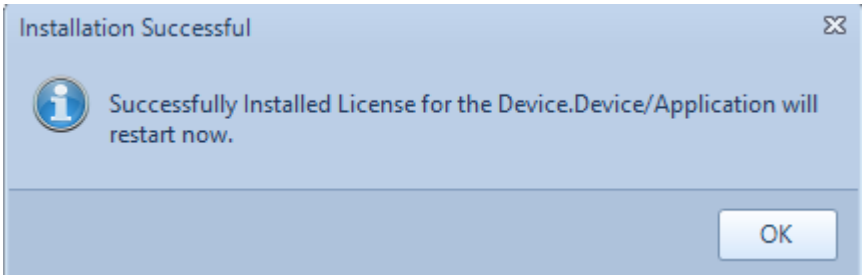
4. Browse the license as downloaded in Section 4.2.



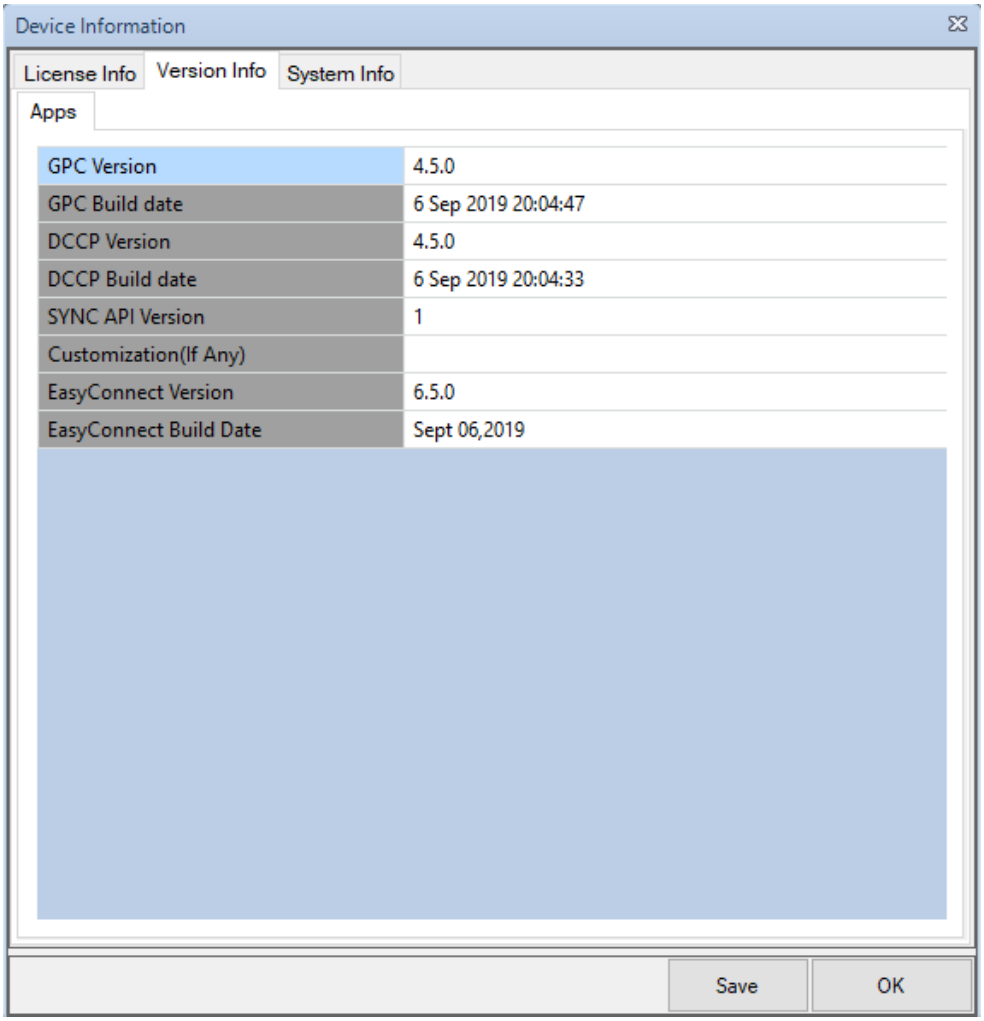
5. You will see License information. Click on OK to move to next step. Following prompt will appear for IP address of SyncConnect. Here provide IP address of SyncConnect host.



6. You should get following prompt. SyncConnect will restart after this operation. Wait for a minute and move to next step.



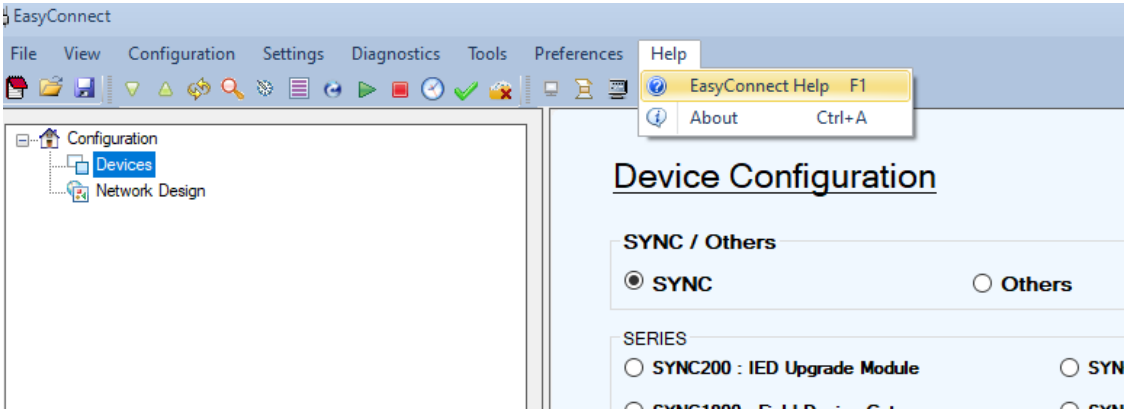
7. This step verifies SyncConnect version. In EasyConnect toolbar go to **Settings -> Version Information**. Provide IP for SyncConnect host and press OK. If you get version for both GPC and DCCP in **Version Info** tab, this confirms successful installation of SyncConnect Licenses. You can get more information about licensed protocols in **License Info** tab. Here you can see version of GPC and DCCP. EasyConnect version should be 2.0 higher than this version. If this is not the case then you should download correct EasyConnect version.



5. Configuring SyncConnect

You can find information on configuring SyncConnect on following resources

- Video tutorial can be found here.
- Detailed Description of each component can be found by going to help -> EasyConenct or pressing F1 on EasyConnect Application.



For further help you can contact kalkitech support over email on support@kalkitech.com.