IoT Device Simulation Demo

Sridhar Kothalanka (CSA)

Mar 2020

Connected Factory

By Microsoft

Accelerate your journey to Industrie 4.0 - connect, monitor and control industrial devices for insights using OPC UA to drive operational productivity and profitability.

Remote Monitoring

By Microsoft

Connect and monitor your devices to analyze untapped data and improve business outcomes by automating processes.

Device Simulation

By Microsoft

Streamline your IoT solution development by using simulated IoT devices to both build and test your solution throughout the software development lifecycle.

Predictive Maintenance

By Microsoft

Anticipate maintenance needs and avoid unscheduled downtime by connecting and monitoring your devices for predictive maintenance.

Microsoft IoT solution Accelerators

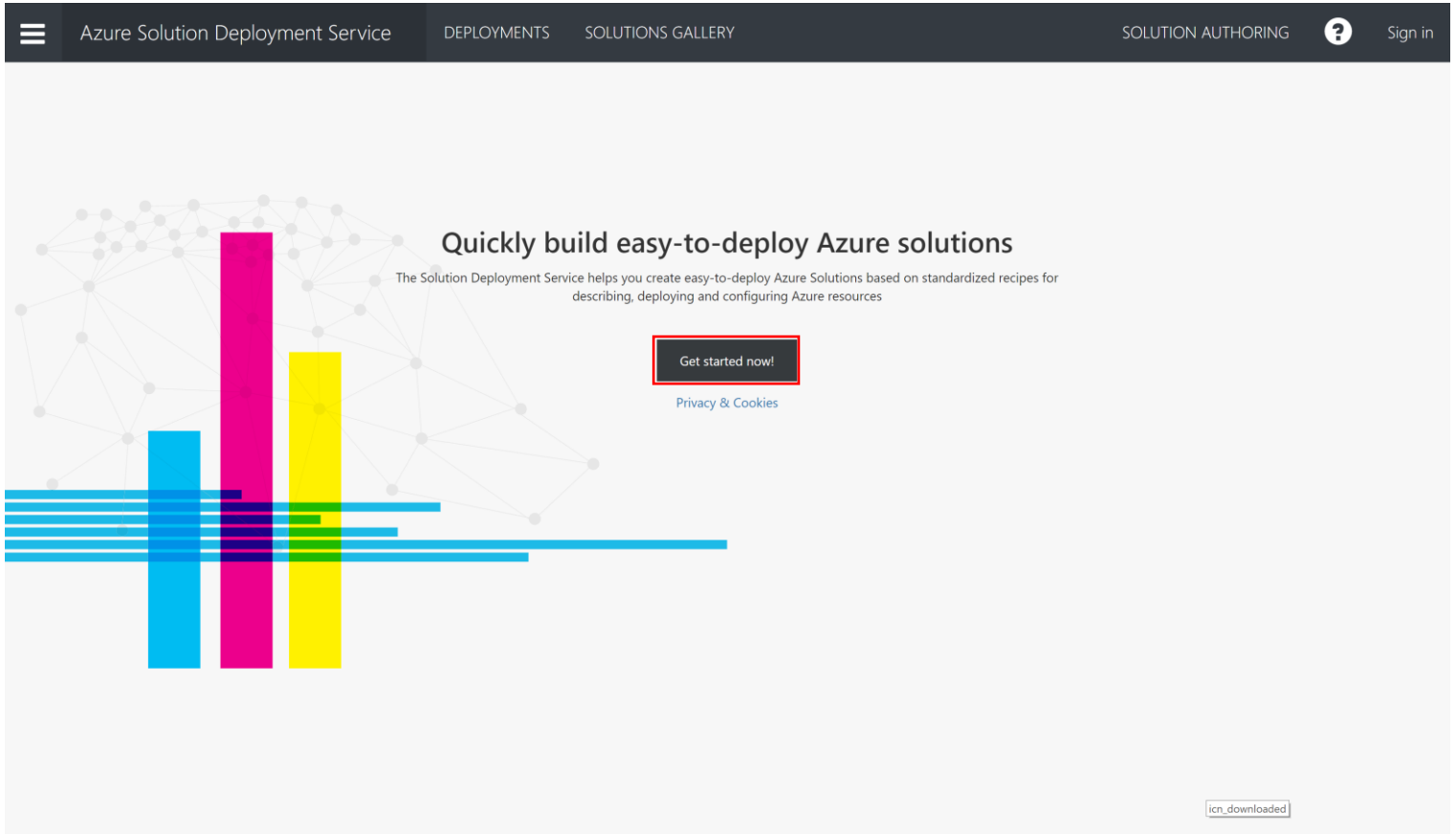
Device Simulation Benefits

- Quickly get a prototype up and running and iterate by adjusting simulated device behavior on the fly
- Validate the solution works as expected from device to solution by simulating real-world device behavior
- Scale test your solution by simulating normal, peak and beyond peak load conditions

Demo

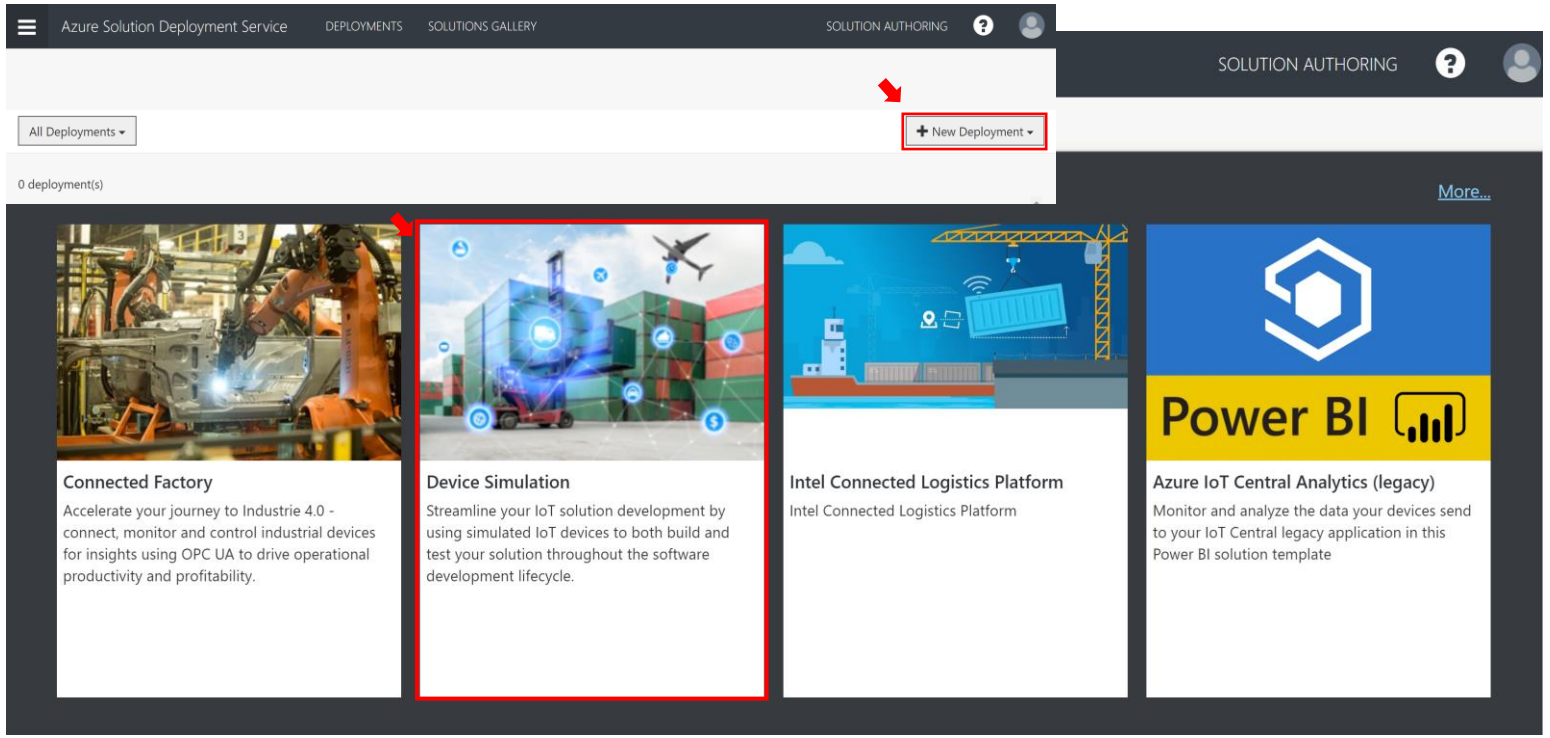
1. Login to Azure Solution Deployment Service
2. Select the “Device Simulation” accelerator option
3. Create device simulator
4. Automatic resources provisioning
5. Verify deployment of resources in Azure portal
6. Launch the solution
7. Note the default device models
8. Select the “Sample Simple Simulation”
9. Run the simulation

Step 1

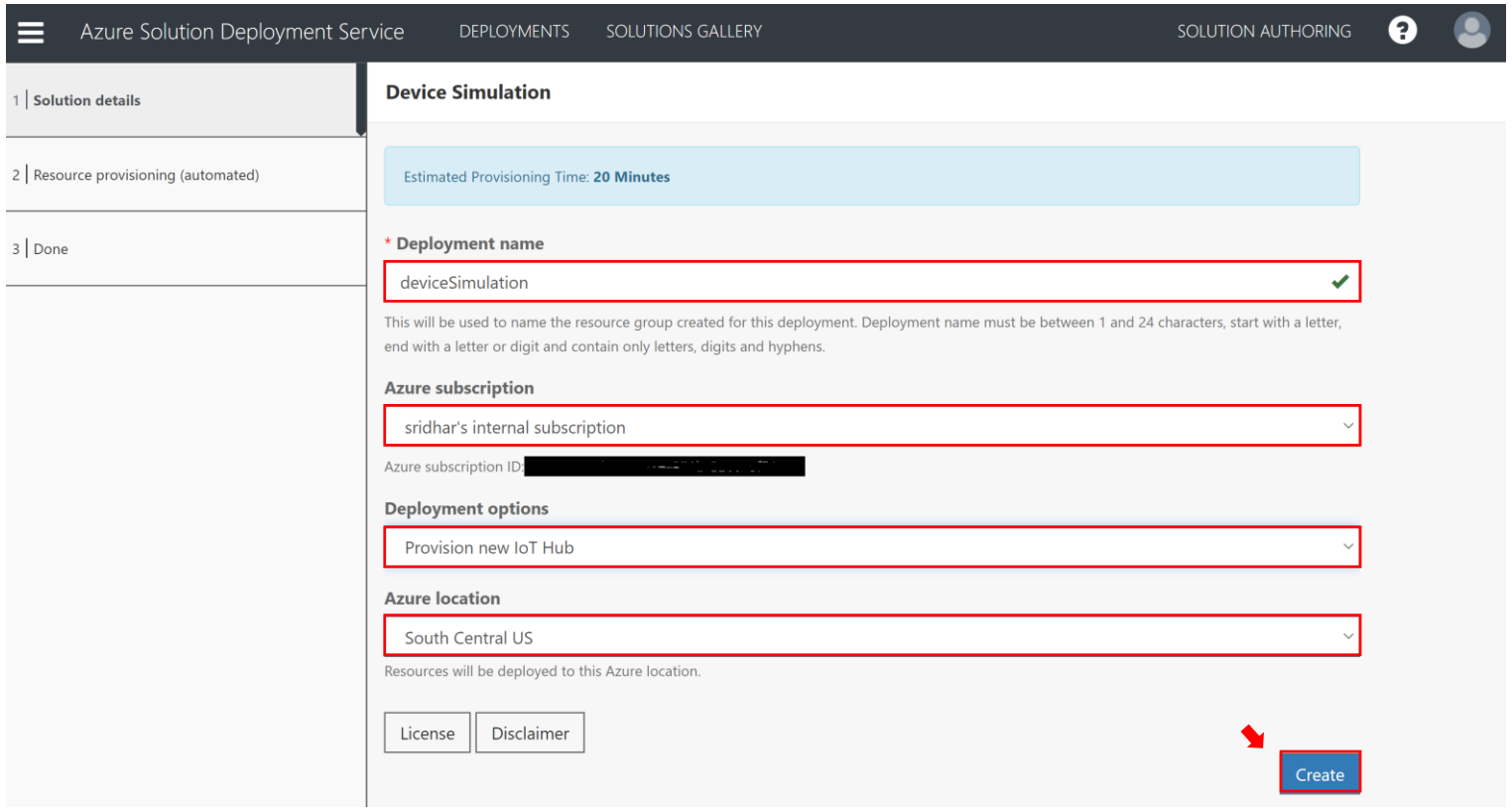


https://sds.azureiotsolutions.com/

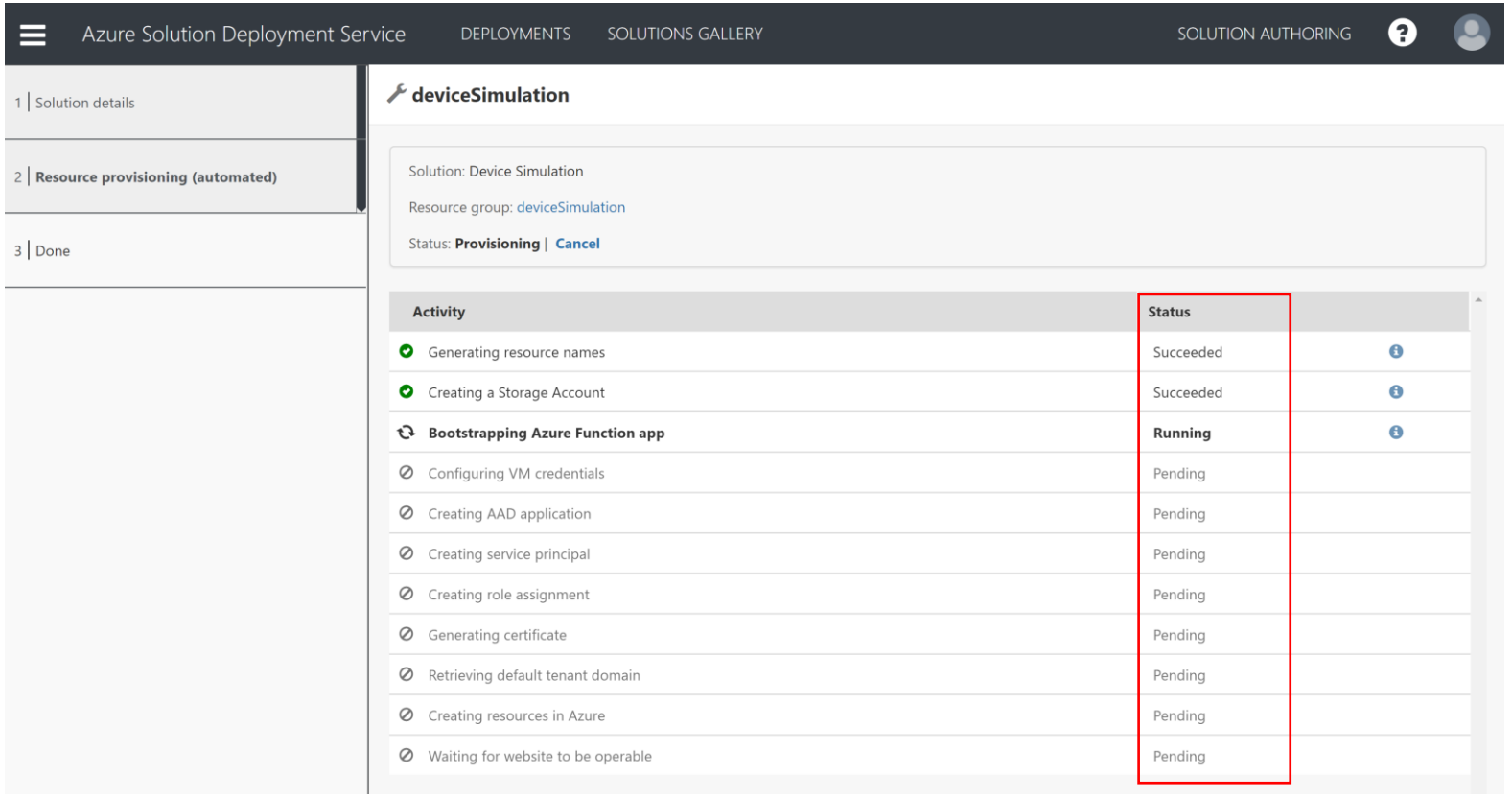
Step 2


Azure Solution Deployment Service
DEPLOYMENTS
SOLUTIONS GALLERY
SOLUTION AUTHORING
All Deployments
+ New Deployment
0 deployment(s)
More...
Connected Factory
Accelerate your journey to Industrie 4.0 - connect, monitor and control industrial devices for insights using OPC UA to drive operational productivity and profitability.
Device Simulation
Streamline your IoT solution development by using simulated IoT devices to both build and test your solution throughout the software development lifecycle.
Intel Connected Logistics Platform
Intel Connected Logistics Platform
Power BI
Azure IoT Central Analytics (legacy)
Monitor and analyze the data your devices send to your IoT Central legacy application in this Power BI solution template

Step 3

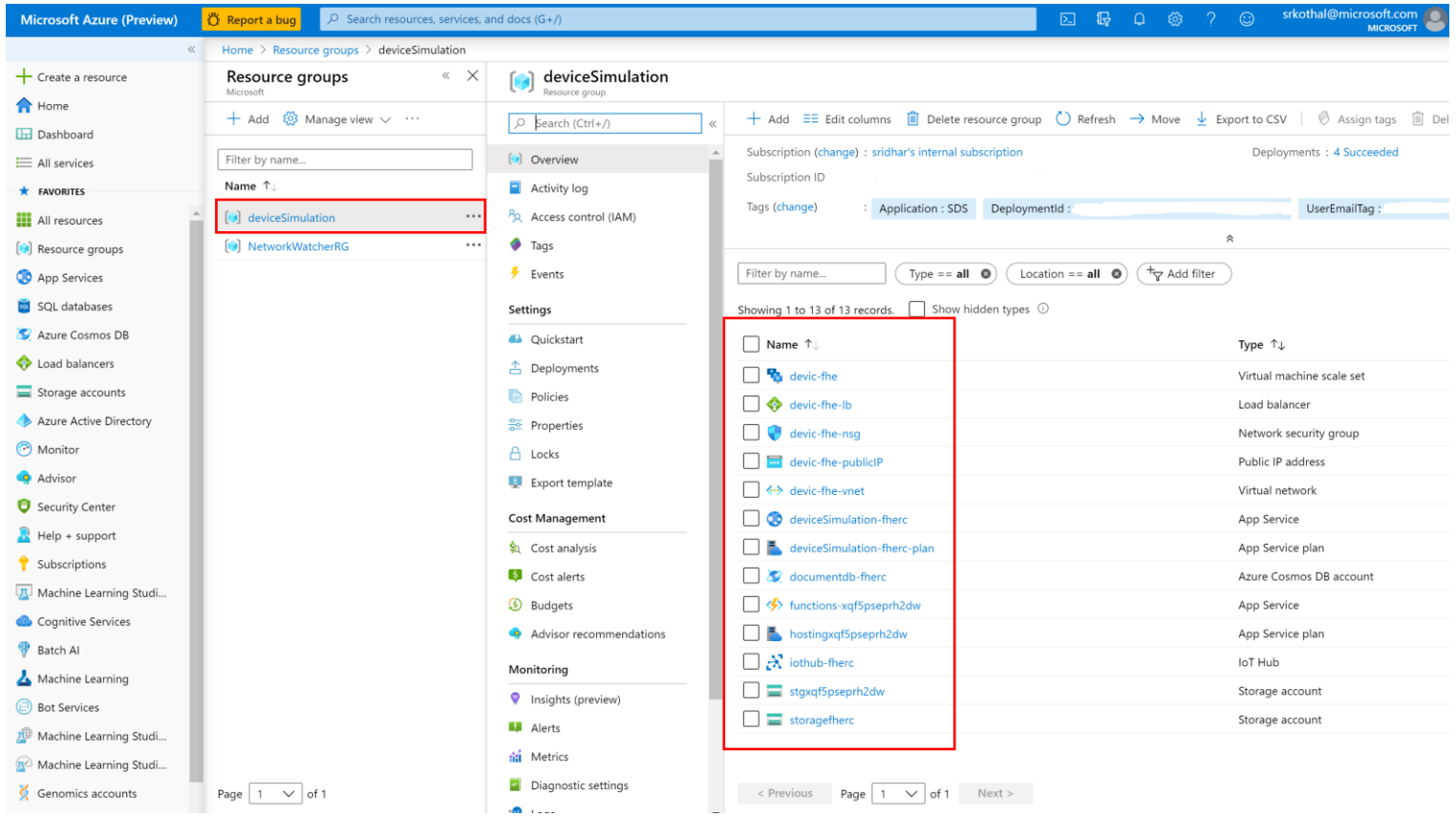

Azure Solution Deployment Service
DEPLOYMENTS
SOLUTIONS GALLERY
SOLUTION AUTHORING
1 | Solution details
2 | Resource provisioning (automated)
3 | Done
Device Simulation
Estimated Provisioning Time: 20 Minutes
* Deployment name
deviceSimulation
This will be used to name the resource group created for this deployment. Deployment name must be between 1 and 24 characters, start with a letter, end with a letter or digit and contain only letters, digits and hyphens.
Azure subscription
sridhar's internal subscription
Azure subscription ID:
Deployment options
Provision new IoT Hub
Azure location
South Central US
Resources will be deployed to this Azure location.
License
Disclaimer
Create

Step 4



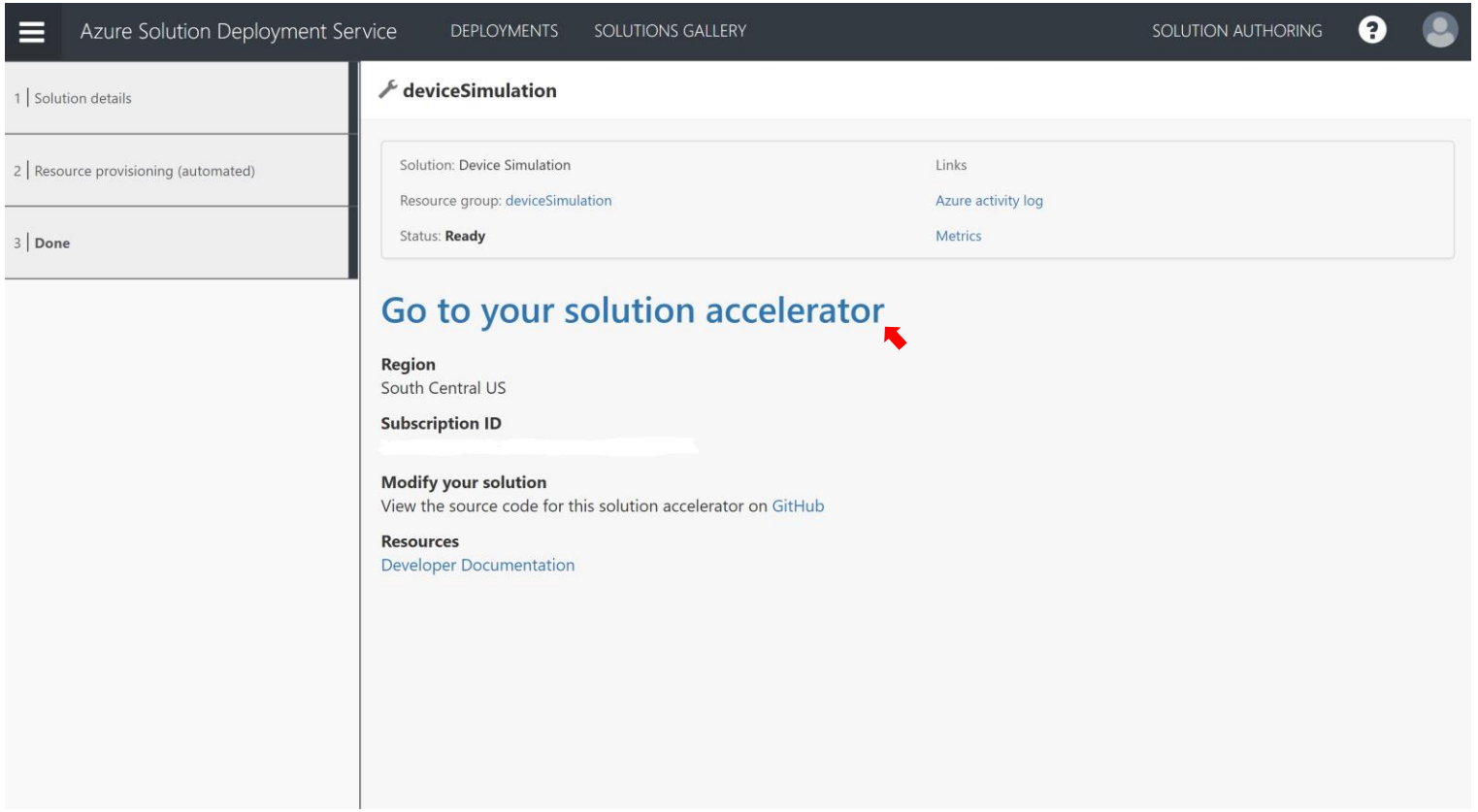
Wait for deployment to complete

Step 5

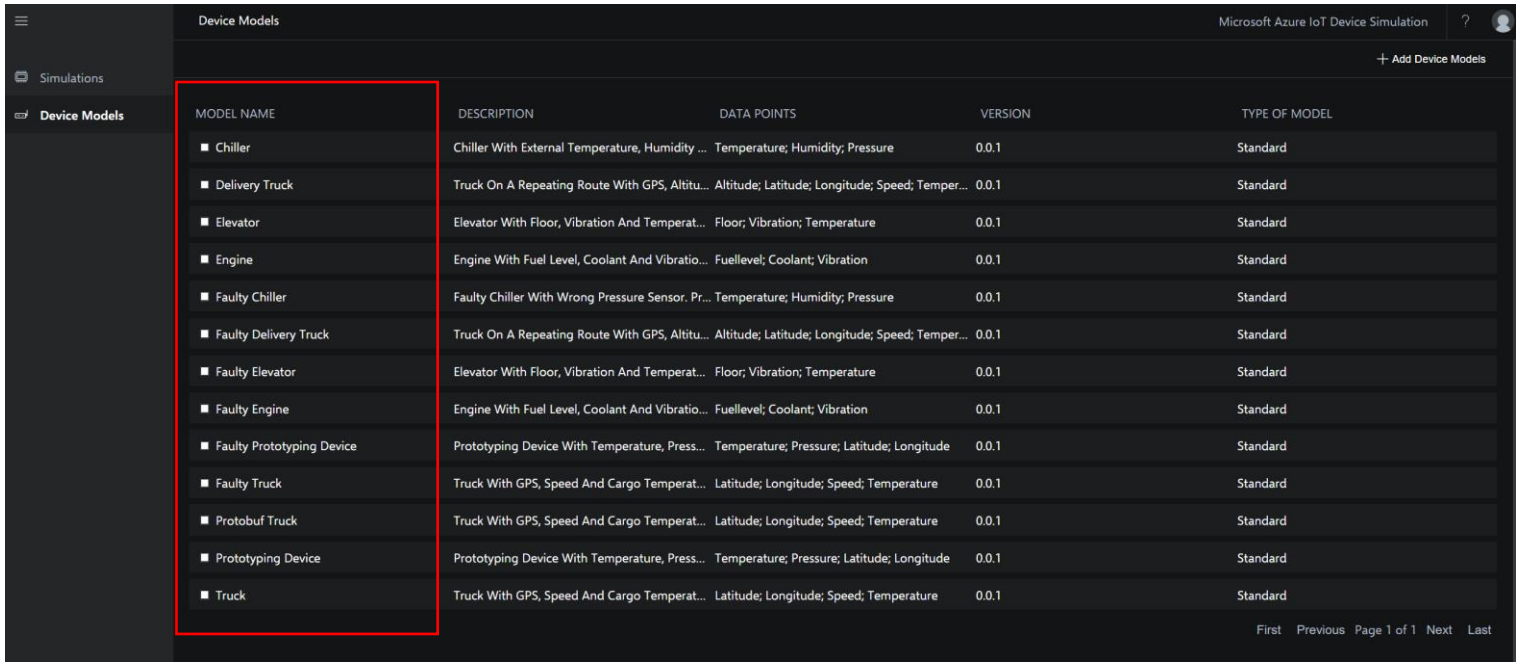


Note resources get deployed in your subscription

Step 6

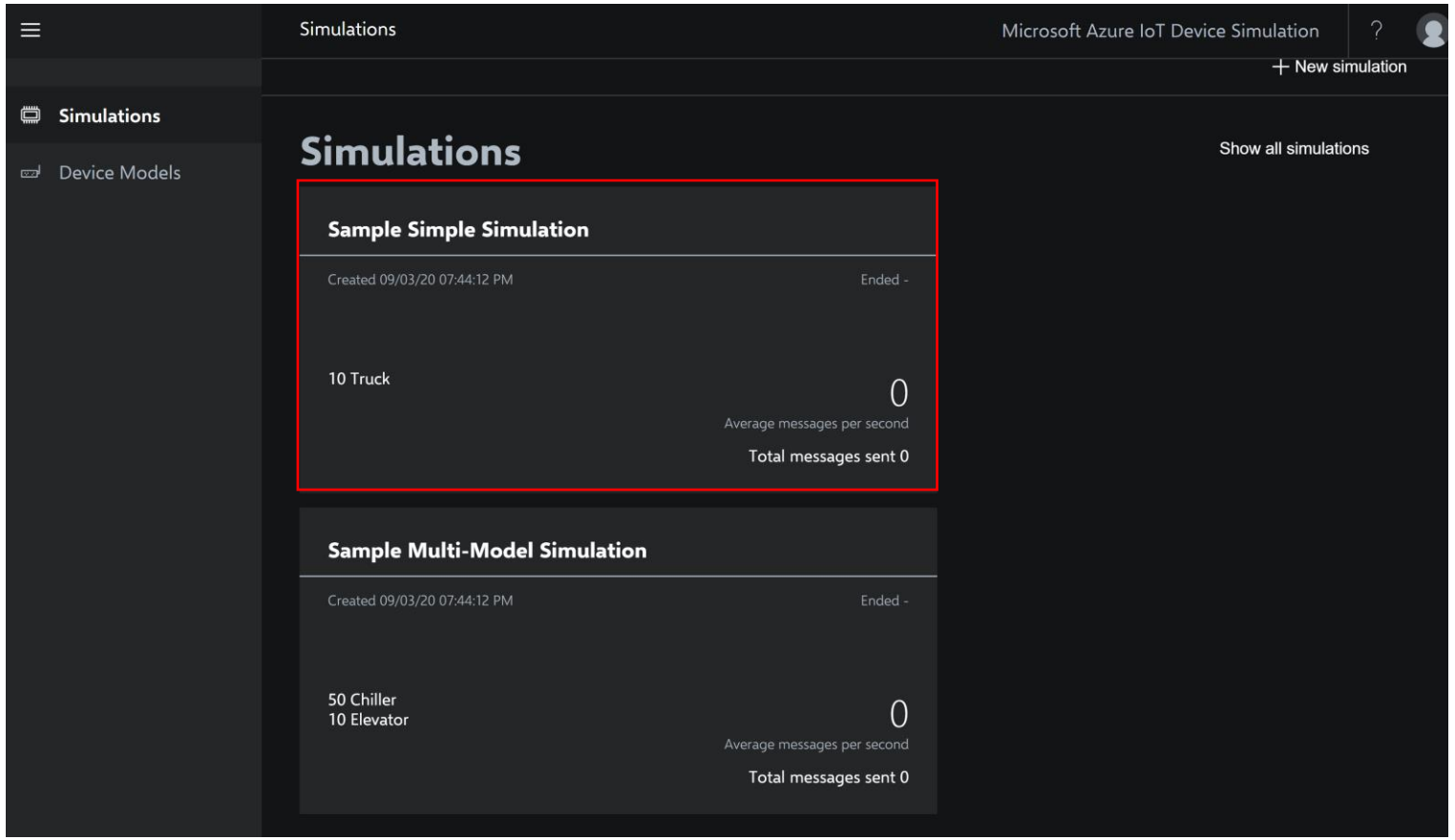

Azure Solution Deployment Service
DEPLOYMENTS
SOLUTIONS GALLERY
SOLUTION AUTHORING
1 | Solution details
2 | Resource provisioning (automated)
3 | Done
deviceSimulation
Solution: Device Simulation
Resource group: deviceSimulation
Status: Ready
Links
Azure activity log
Metrics
Go to your solution accelerator
Region
South Central US
Subscription ID
Modify your solution
View the source code for this solution accelerator on GitHub
Resources
Developer Documentation

Step 7

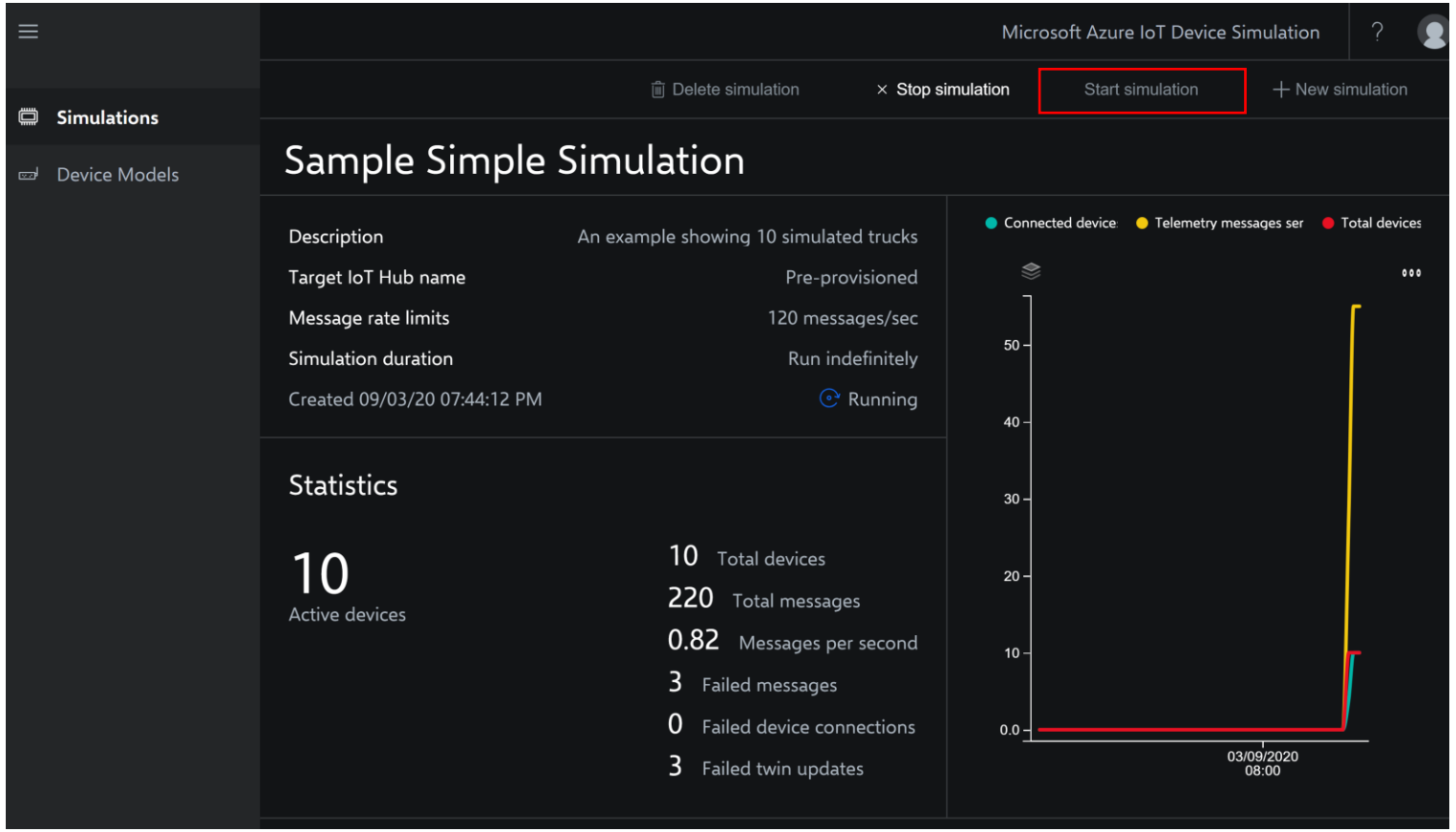


Default device models

Step 8

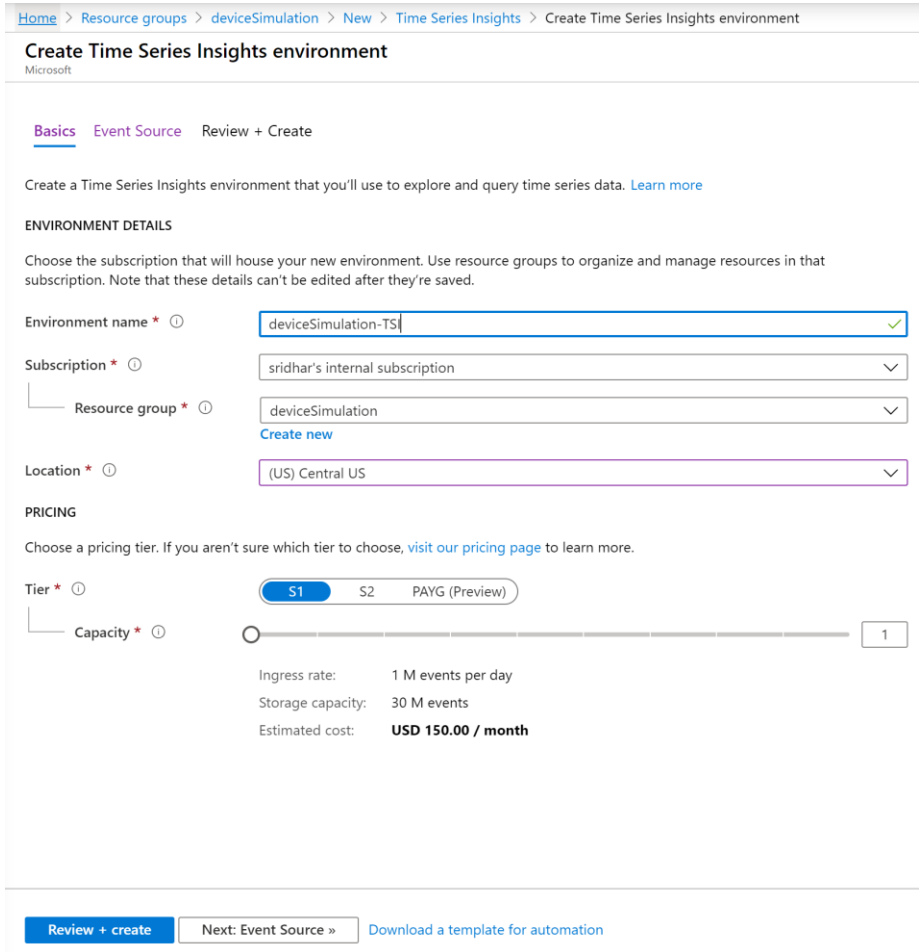

Simulations
Microsoft Azure IoT Device Simulation
New simulation
Simulations
Device Models
Simulations
Show all simulations
Sample Simple Simulation
Created 09/03/20 07:44:12 PM
Ended -
10 Truck
0
Average messages per second
Total messages sent 0
Sample Multi-Model Simulation
Created 09/03/20 07:44:12 PM
Ended -
50 Chiller
10 Elevator
0
Average messages per second
Total messages sent 0

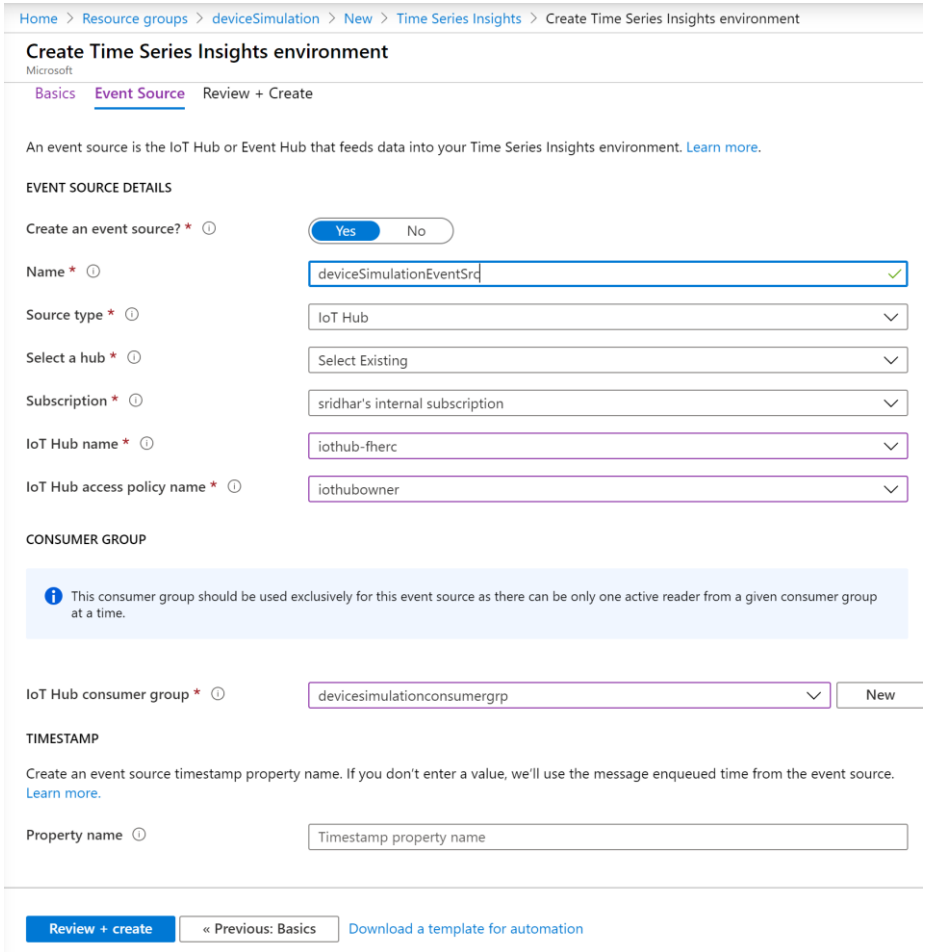
Step 9


Microsoft Azure IoT Device Simulation
Simulations
Device Models
Delete simulation
Stop simulation
Start simulation
New simulation
Sample Simple Simulation
Description
An example showing 10 simulated trucks
Target IoT Hub name
Pre-provisioned
Message rate limits
120 messages/sec
Simulation duration
Run indefinitely
Created 09/03/20 07:44:12 PM
Running
Statistics
10
Active devices
10 Total devices
220 Total messages
0.82 Messages per second
3 Failed messages
0 Failed device connections
3 Failed twin updates
Connected device
Telemetry messages ser
Total devices
50
40
30
20
10
0.0
03/09/2020
08:00

Setup Time Series Insights

Add a Time Series Insights resource to the same resource group and configure it like below

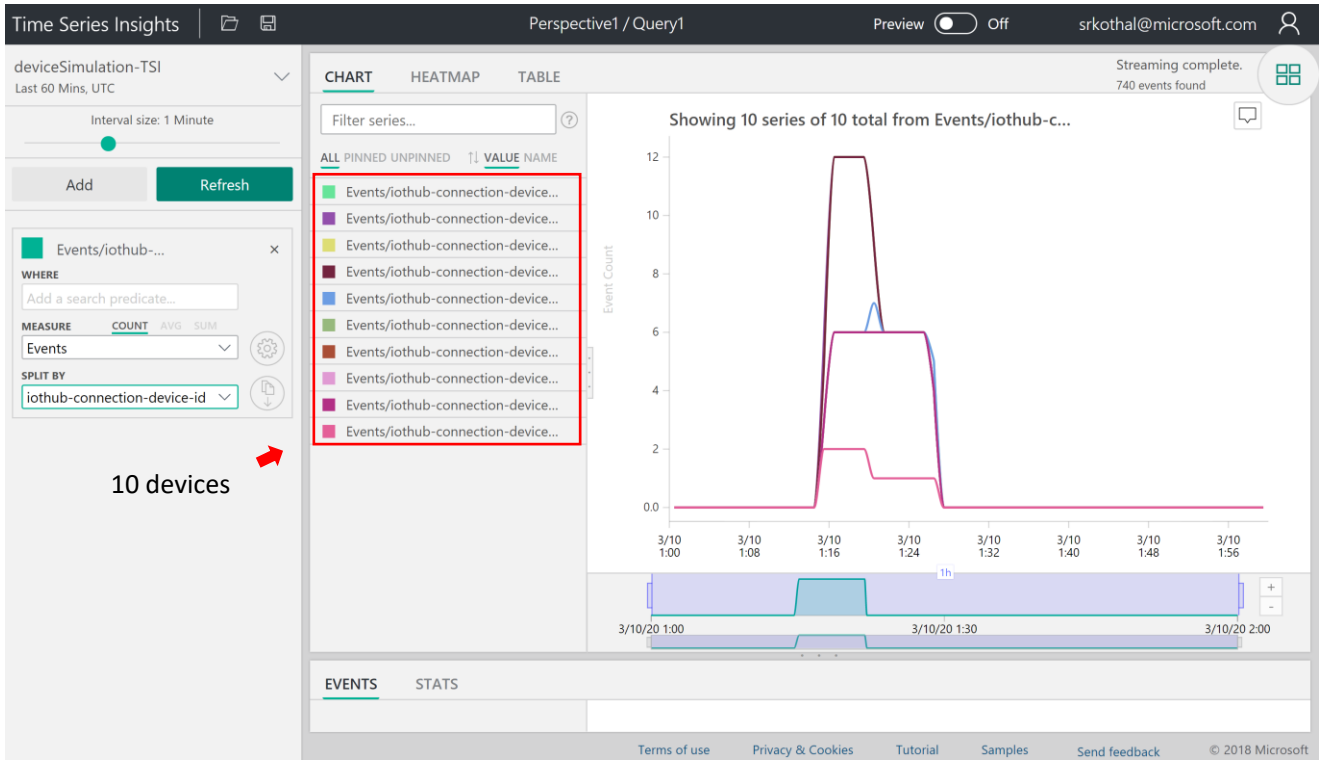




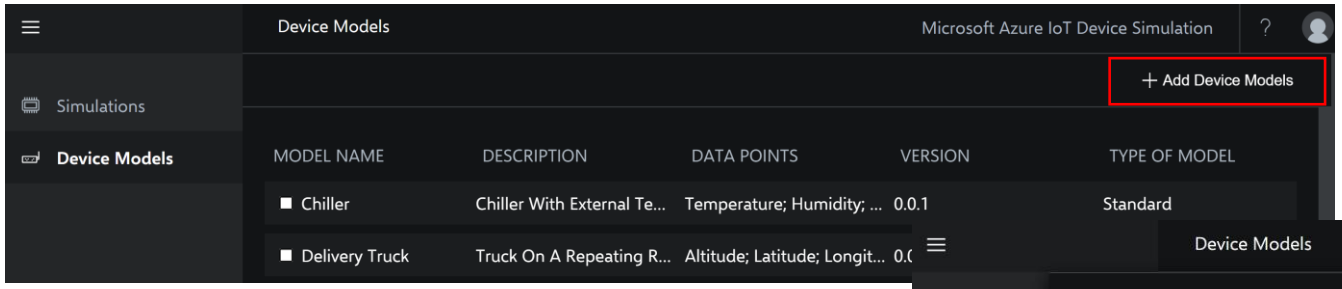
Setup Time Series Analytics

Steps:

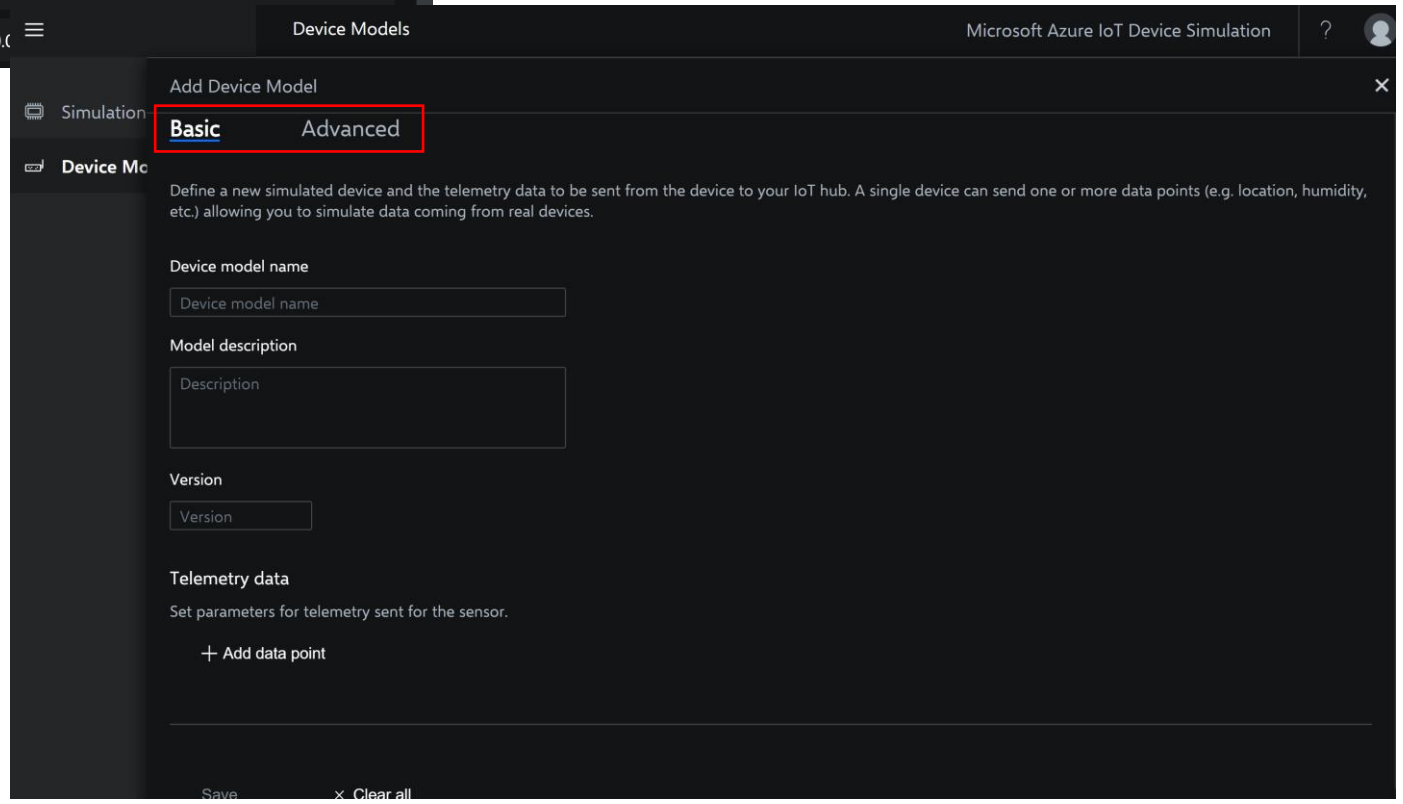
- Create an instance of Time Series Insights
- Point it to the iotHub
- View the events from the devices



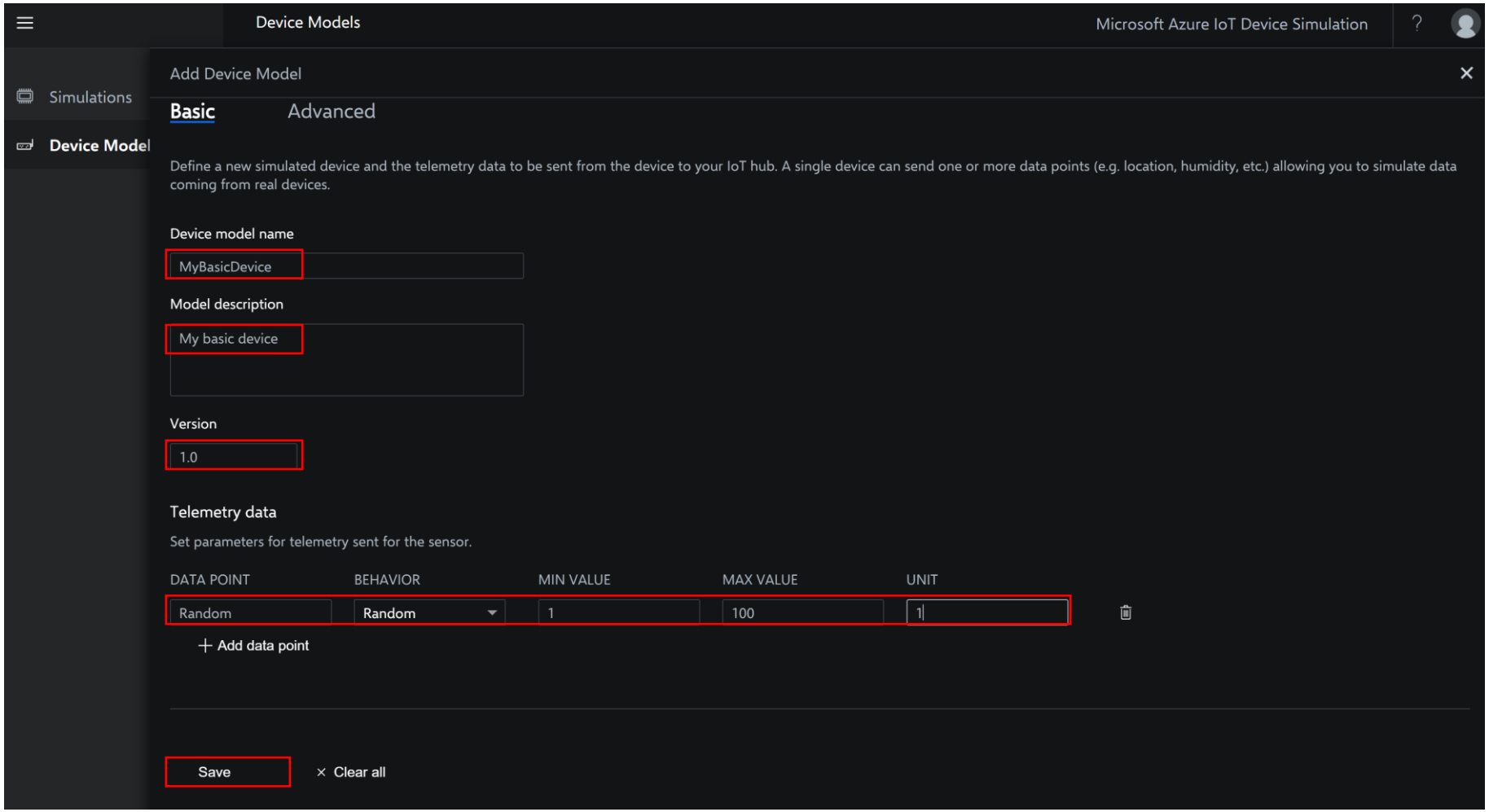
Add Device Models

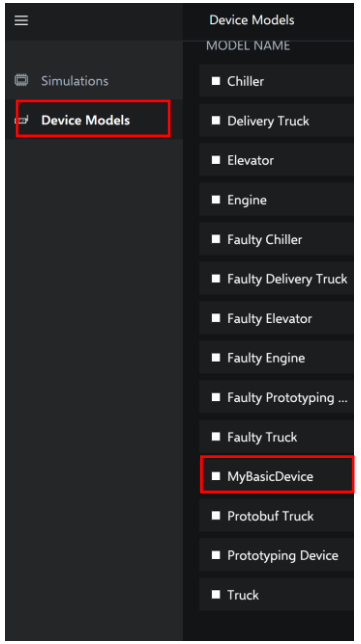


Two options “Basic” and “Advanced” available

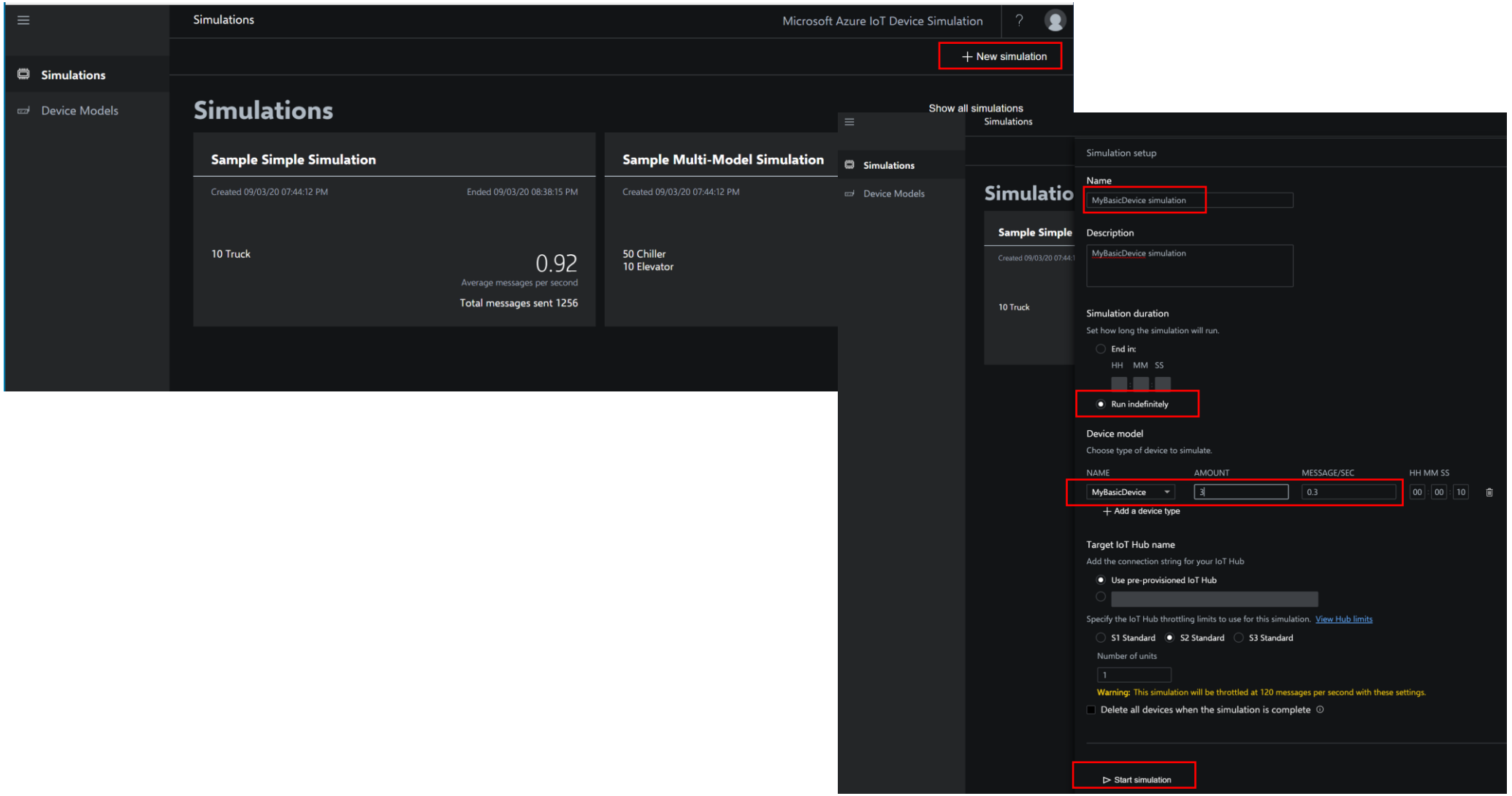


Add “Basic” Device Model

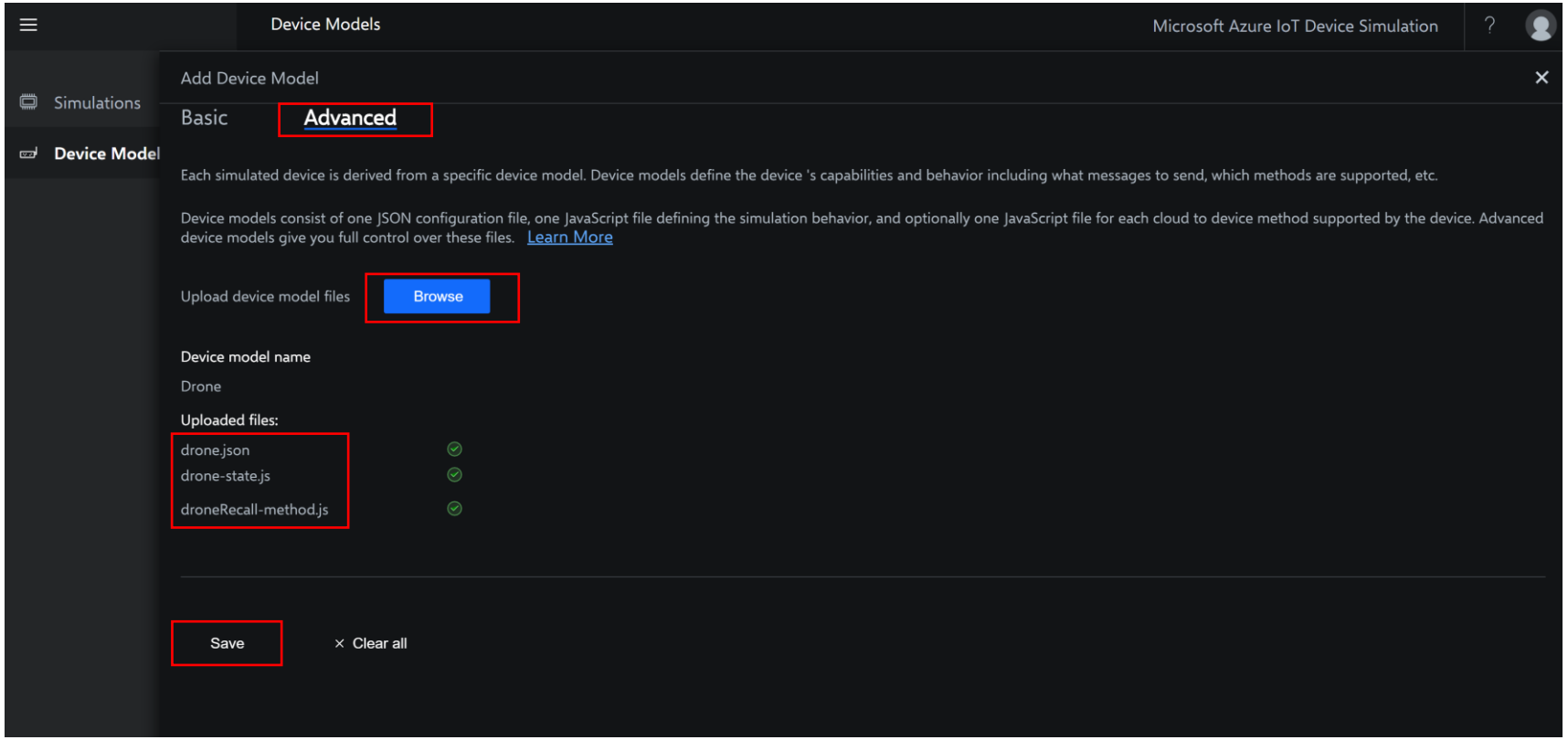


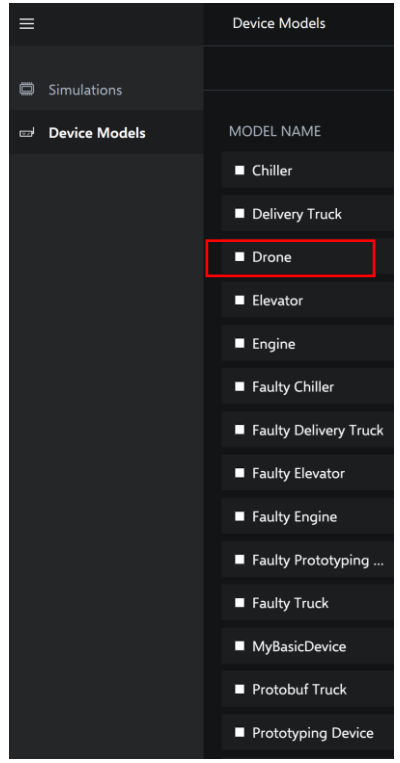


New simulation with “Basic” device model



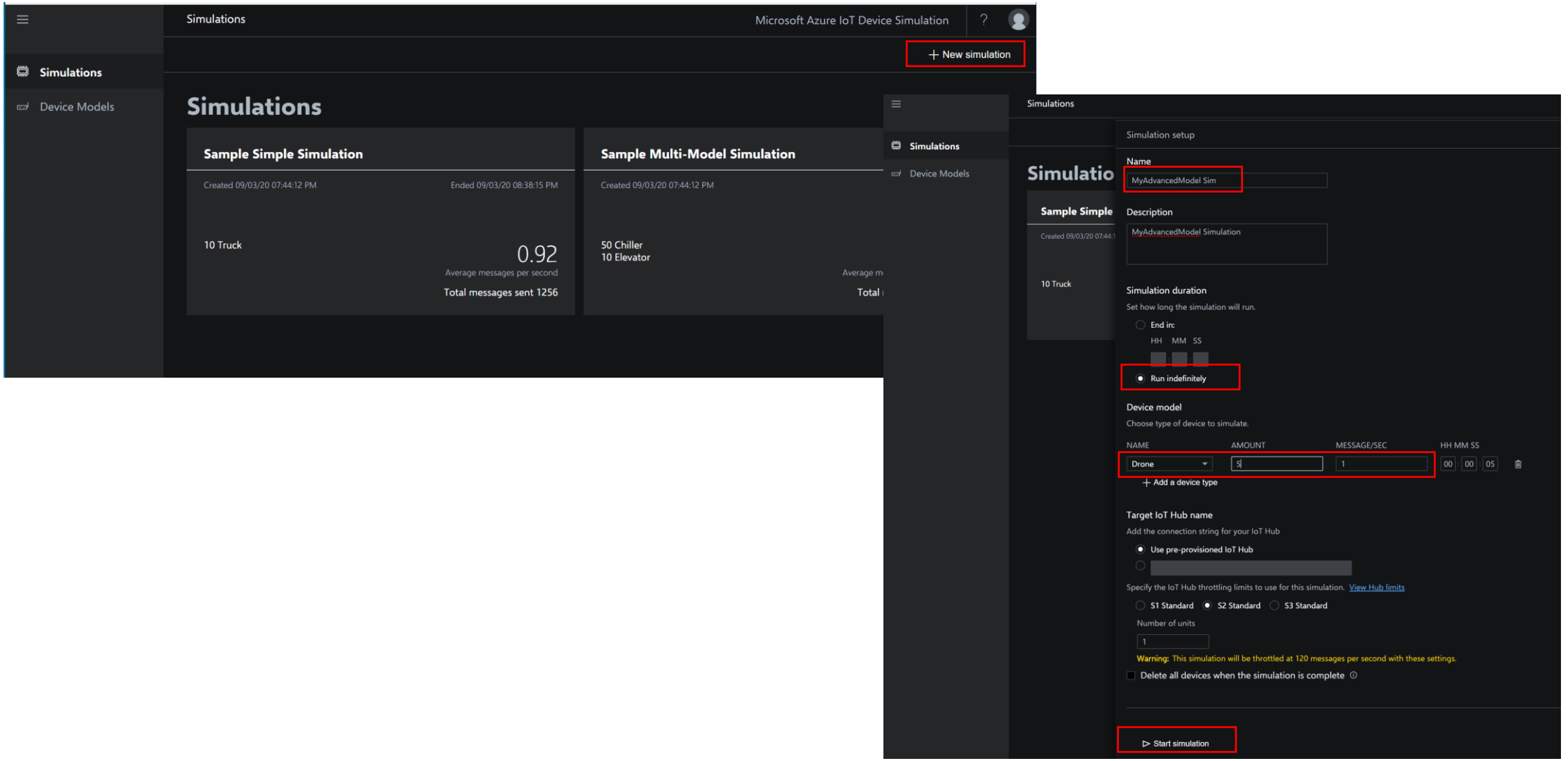
Add “Advanced” device model





Download the drone device model files from
https://github.com/dhanow/iot-solution-accelerators/tree/master/scripts/device-simulation

New simulation with “Advanced” device model



Q&A