

EdgeX Ready

EdgeX Foundry announces the availability of EdgeX Ready with the Ireland release (EdgeX 2.0).

What It Is

The EdgeX Ready program is about demonstrating the ability to work with EdgeX. You earn your EdgeX Ready designation by going through a self-assessment process. The process has you show your ability to work with EdgeX. Specifically, demonstrating that you can integrate your offerings in an EdgeX-based solution.

When you complete the process, you signal to other community members that you have EdgeX knowledge and experience. The EdgeX community highlights [EdgeX Ready members](#) on the EdgeX Foundry [website](#) with an EdgeX Ready badge next to their logo.

Future EdgeX Ready programs may highlight various levels of ability and experience. Today, the self-assessment process requires an EdgeX adopter to:

- Get and run an instance of EdgeX (and associated services)
- Create and validate a device profile
- Use the profile with an EdgeX device service to provision a device and send sensor data into EdgeX

EdgeX users can get and run an EdgeX instance in many ways. For convenience, EdgeX provides cloud templates to instantiate EdgeX on a cloud platform. You can also download and run EdgeX with community provided containers, Snaps, and the like.

[Note, the cloud templates only provide MQTT and REST device services. If you wish to show use of other device protocols and device types, you will need to use your own EdgeX instance.]

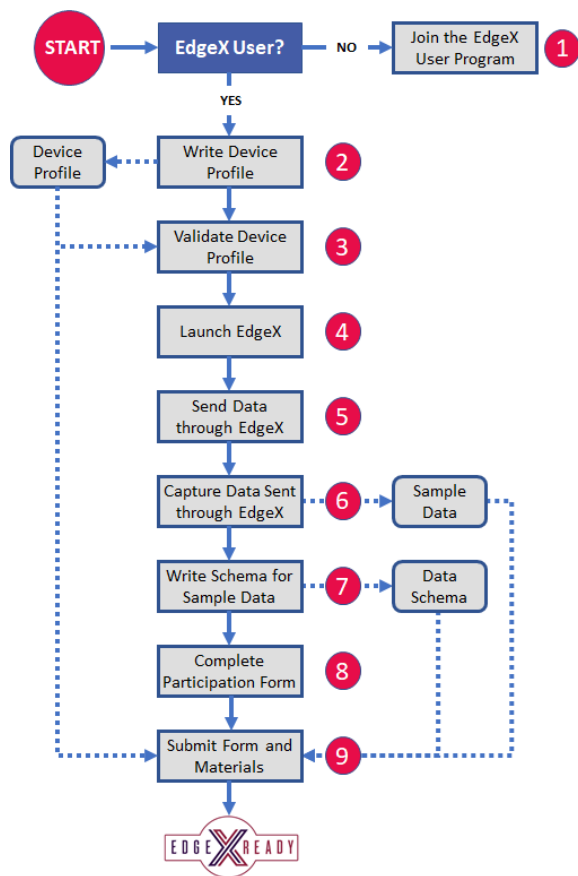
The key to understanding EdgeX lies in the ability to work with device services to get edge data into EdgeX. Thus the program focuses on creating a device profile and using the profile with a device service to ingest sensor data.

EdgeX Ready users must author a device profile, and use it to specify what data a device will send to EdgeX. With the profile provided to the device service, the final test of the users skills is to show data ingested by the device service.

EdgeX Ready Self-Assessment Workflow

To be EdgeX Ready, follow this workflow to submit your application for consideration.

1. Join the EdgeX Ready program. To be an EdgeX Ready user, you must be a member or [enroll in the EdgeX User program](#).
2. Write a device profile specifying the data exchange and communications with a sensor/device.
3. Validate the device profile.
4. Get an EdgeX instance up and running — with the device service for your sensor/device.
5. Provide your device profile to the device service, provision the device and send data through EdgeX.
6. Capture data sent through EdgeX (you'll need this in the application)
7. Describe the data (create a schema) for the data sent through EdgeX.
8. Complete the EdgeX Ready Participation Form (PDF).
9. Submit your participation form, profile, sample data, and schema to the EdgeX community.



Detailed Instructions and Assistance

The EdgeX Ready program is about demonstrating EdgeX knowledge. Beginners should read the project's [documentation](#) and follow the tutorials before applying. While getting EdgeX Ready is not onerous, the program is not for the uninitiated.

If you are not familiar with EdgeX, begin your education here: <https://docs.edgexfoundry.org>. Use the [Getting Started](#) and [Examples and Tutorials](#) sections to build a foundation toward getting EdgeX Ready.

Ready to earn your EdgeX Ready badge? Find detailed instructions below for each of the steps in the program. Join the EdgeX User Program

Before you can take part in the EdgeX Ready program, we require that you have already joined the [EdgeX User Ecosystem](#). The EdgeX User program is free! It lets others in the community know that your organization is using or working with EdgeX. It allows you to collaborate with other EdgeX adopters, and participate in community activities. Join [here](#). To learn more about the EdgeX User Ecosystem and see who's already in, see our member [showcase](#).

Write a (or use an existing) Device Profile

Device profiles define general characteristics about devices, the data they provide, and how to command them. Think of a device profile as a template of a type or classification of device. A device profile for a thermostat would specify characteristics for temperature and humidity data the thermostat generates.

It would also define which types of commands or actions EdgeX can send to the thermostat. Examples might include actions that set the cooling or heating point. We specify device profiles in a YAML file. Typically, upload profiles to EdgeX via Core Metadata. Find more information about device profiles in our [documentation](#).

You can write your own device profile to tell EdgeX about a device or sensor you work want to work with. Or, you can use (and customize) a device profile that already exists. You can find existing example profiles in device service repositories. Find example profiles for the REST device service [here](#).

If you do wish to create your own device profile from scratch, we recommend you use a YAML editor to check syntax. Alternately, you can use IoTech Systems [Device Configuration Tool](#) (DCT). The DCT provides a GUI wizard that steps you through creating each section of the profile. The DCT requires you create an account (its free). When you create your profile, you can download/export it, or save it in the tool and refer to the saved profile in your application process.

Validate Device Profile Syntax

Device profiles can be involved depending on the complexity of the sensor. Therefore, we prefer that you validate your device profile before sending the profile as part of your submission.

You can use the DCT tool mentioned above to validate your profile. If you create the profile in the tool, it will validate as you create it. If you create your own profile, you can upload your profile into the tool and it will validate on upload.

Again, using IOTech's DCT tool is free but requires creating an account. In the future, the EdgeX community hopes to have other tools to assist users create and validate profiles.

Alternately, if you do not want to use DCT and validate the profile, you can send in your profile, note that it is not validated in the submission form (see below). The EdgeX Certification Group will validate the profile on submission. Processing your submission may take a bit longer to complete this part of the process.

Stand Up EdgeX

To test your profile, send data into EdgeX and then show the community your data, you need to stand up an EdgeX instance.

If you are already very familiar with EdgeX and how to get, start it and use it, use your normal instance. For more information on how to get and run EdgeX, visit the [Quick Start Guide](#) or [User Guides](#). Alternately, for convenience of the EdgeX Ready program, you can use our cloud-specific templates.

Our cloud templates allow you to setup EdgeX in either Azure or Amazon Web Services clouds. The cloud templates may help if you don't have the resources to run EdgeX. These also help to minimize domain knowledge required outside of the immediate device service, protocol and data. [Git repositories](#) contain how-to-guides for instantiating a instance of EdgeX in either cloud.

Send Data to EdgeX

With EdgeX up, and your device connected and provisioned, allow your device to send data into your EdgeX instance. If you are not familiar with how to connect and provision a device to EdgeX, see the [Device Service guide](#).

Verify that sensor/device data is making its way through the system. You can do this by calling on core data to see that Events/Readings containing sensor data are being stored in the database. Use the Event API to get the latest Events/Readings for your device from core data. For example, use `http://<host>:48080/api/v1/event/device/<device name>/10` to get the last 10 Events/Readings for your device. Replace the <host> and <device name> placeholders with the address of your EdgeX machine and the name of your device.

```
{
  "id": "014c0396-666c-4656-9d57-d94159989776",
  "device": "temperature-probe",
  "created": 1622597076536,
  "origin": 1622597076532527600,
  "readings": [
    {
      "id": "e4b08893-ab97-4a1d-8a32-ed954227b891",
      "created": 1622597076536,
      "origin": 1622597076532072200,
      "device": "temperature-probe",
      "name": "ProbeTemperature",
      "value": 724,
      "valueType": "Int16"
    }
  ]
},
{
  "id": "015112f8-7e2e-4b40-9847-899bd852777a",
  "pushed": 1622765099611,
  "device": "GPIOMoisture",
  "created": 1622765099600,
  "modified": 1622765099613,
  "origin": 1622765099590317000,
  "readings": [
    {
      "id": "0e0d759e-a934-4af4-9aa9-b66496c2dc2b",
      "created": 1622765099600
    }
  ]
}
```

Make sure the data you see is representative of the data (and schema) you are submitting with your EdgeX Ready submission.

Capture Data Sent to EdgeX

You must provide a sample of data set sent by your sensor/device. This sample helps members within the community understand how your device behaves and how it interacts with EdgeX. Provide the sample data in JSON format.

You can get the sample data by either:

- capturing the data sent by the device service to core data
- by performing a query of Event/Readings in core data (as shown above) and capturing the JSON response from the query.

Here is a example of sample data.

```
{
  "id": "e2ecb132-bca1-4455-800a-315d8c7beaea",
  "device": "temperature-probe",
  "created": 1622429451777,
  "origin": 1622429451774303867,
  "readings": [
    {
      "id": "9606aaca-a3dd-4bcf-bee9-c2b5a7d5201e",
      "origin": 1622429451773834908,
      "device": "temperature-probe",
      "name": "ProbeTemperature",
      "value": 718,
      "valueType": "Int16"
    }
  ]
}
```

```
{
  "id": "39e8a927-98c5-4957-b009-5603a5d89348",
  "device": "temperature-probe",
  "created": 1622429461810,
  "origin": 1622429461808089295,
  "readings": [
    {
      "id": "627d61ba-f92e-4026-ac24-3a48cd76a39b",
      "origin": 1622429461807732848,
      "device": "temperature-probe",
      "name": "ProbeTemperature",
      "value": 725,
      "valueType": "Int16"
    }
  ]
}
```

Write Schema for Sample Data

You need to describe the sample data sent by your device. In a simple text document - provide a description for each of the JSON elements in your sample data. You can use the sample data to help provide context to your descriptions. Below is an example.

- "id": "e2ecb132-bca1-4455-800a-315d8c7beaea" - The EdgeX Event or reading id
- "device": "temperature-probe" - The device name that originated the data - assigned when the device gets provisioned
- "created": 1622429451777 - The unix timestamp of when the data was created in the database (specified in milliseconds)
- "origin": 1622429451774303867 - The unix timestamp of when the data was created by the temperature probe sensor (in nanoseconds)
- "name": "ProbeTemperature" - The device resource name associated to the reading
- "value": 718 - The temperature value in Fahrenheit * 10. Divide the integer by 10 to get the actual temp in Fahrenheit - in this case 71.8
- "valueType": "Int16" - the type of the value - integer, 16 bit

Provide as much information as you can to assist community members in understanding your data.

Complete and Sign the EdgeX Ready Participation Form

Download the [EdgeX Ready Participation Form](#). Complete and sign the form. Save the form for your records. These are our [Terms and Conditions](#) of the EdgeX Ready program. By signing and submitting your form, you are agreeing to the program's terms and conditions.

Submit your Materials to EdgeX Foundry Certification Group

After completing the steps above, you are ready to submit your application. Submit your application to the EdgeX Foundry Certification Group through the [on-line form](#).

When you complete the form and submit, you need the following materials:

- Device Profile – YAML (.yaml)
 - Alternately, you can provide the UUID of your device profile created and saved to the public library using IOTech's DCT website. A special field in the form is provided for this information.
- Sample sensor data – JSON (.json)
- Sample data schema – text file describing the sample data
- EdgeX Ready Participation Form – PDF (.pdf)
- Company name, your name, and your email in order to complete the online form.
- Any comments about your submission

Contributions

We at the EdgeX Foundry are very much interested in providing the EdgeX community with multiple options for validating device profiles for the EdgeX Ready Program. If you have your own EdgeX validator and would like to contribute the implementation as open-source or share the service with the EdgeX community and the EdgeX Ready program specifically, we are interested in hearing from you! Please reach out to us on Slack at #edgex-ready, email us at edgex-ready@edgexfoundry.org, or contact the Certification Team WG Chair directly at rodneym@beechwoods.com and we can discuss next steps.

FAQ

What does it cost to join the EdgeX Ready program?

Nothing; it is a free program.

Do I need to have real sensors or devices to become EdgeX Ready?

No. You need to be able to show that you can get device-specific data into EdgeX as the sensor or device would. The data can come from an actual sensor/device, a simulator, or you can manually inject device-accurate data samples into EdgeX. Please note that the community may use your sample data set as test data, system demonstration data, or in future system requirements. So accurate sample data will lead to successful community collaboration.

Do I have to create my own device profile?

Yes. Start with a device with which you have familiarity, extend a profile from an existing device service (excluding device-virtual), or extend one of the profiles found in IOTech's DCT tool's public library. The important part is that you must be able show that you can use the device profile with EdgeX to get device/sensor data into and through EdgeX following the device profile's specification.

Do I have to use the EdgeX cloud instance templates and a cloud system to run EdgeX when getting EdgeX Ready?

No. The cloud templates are provided for convenience when you do not have ready access to be able to run an EdgeX instance.

Who will be able to see my submission?

Your EdgeX Ready application and all associated materials (profile, sample data, schema, etc.) will be sent to the EdgeX Foundry Certification Group for review and processing. Only the Certification Group will see your application. However, per the terms and conditions of the program, all materials submitted are considered contributions to the EdgeX Foundry project under Apache License, version 2.0. Therefore, the materials may be made publicly available under that license by the EdgeX community.

When can I tell everyone that my organization is EdgeX Ready?

The Certification Group will review your submission and email you results which you can share as per the terms and conditions agreement.