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IOT314

Managing industrial data at the edge with AWS IoT SiteWise

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Overview

- Use cases for edge data processing
- AWS IoT SiteWise Edge
- Custom data processing
- Demo



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Use cases – Data processing at the edge

- Process and visualize data at the edge
- Get data from more protocols than provided out of the box
- Build protocol adapters
- Consume / store data at the factory level
- Visualize data at the edge

AWS IoT SiteWise





Ingest data from industrial equipment, data servers, and historian databases



AWS IoT SiteWise

Collect, organize, and analyze industrial data at scale



Collect

Read data from onsite equipment using industrial protocols such as OPC-UA, Modbus and EtherNet/IP



Model

Create virtual representations of physical assets, process equipment data streams, and compute industrial performance metrics



Monitor

Create fully managed web applications to visualize real time and historical equipment data, with no coding

AWS IoT SiteWise Edge

Software that runs on-premises on an industrial gateway to collect, process, and monitor equipment data locally – even when not connected to the Internet



Predictive quality



Asset condition monitoring



Predictive maintenance

Consume asset data to create local or cloud applications that optimize factory output quality, maximize asset utilization and identify equipment maintenance issues

AWS IoT SiteWise Edge (public preview)

New!

- You can use AWS IoT SiteWise Edge to collect, organize, process, and monitor equipment data locally
- Process your data locally and send it to AWS IoT SiteWise
- Load local data into on-premises applications
- AWS IoT SiteWise Edge also provides a local version of AWS IoT SiteWise Monitor

Services / components for edge processing

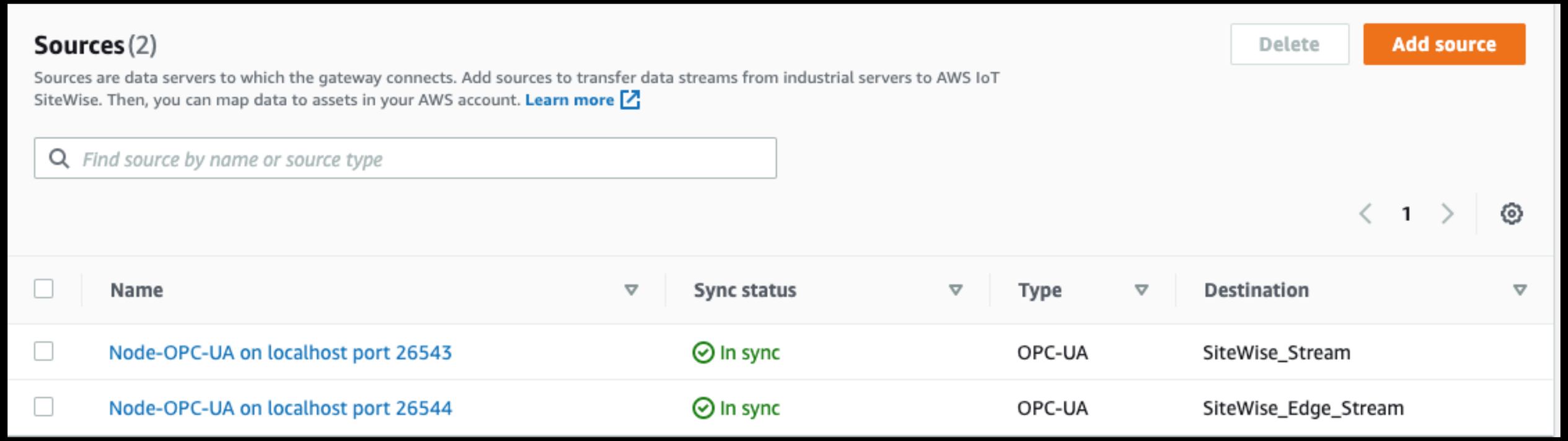
- Data sources like industrial protocols
- AWS IoT Greengrass v1 and AWS IoT Core
- AWS IoT Greengrass stream manager enabled
- AWS Lambda
- AWS IoT SiteWise connector
- AWS IoT SiteWise Data Processor connector

Setting up edge capabilities

- On your device running AWS IoT Greengrass
  - Java 8
  - Python 3.7
  - Docker and docker-compose
- Add the IoT SiteWise Data Processor connector to your AWS IoT Greengrass group
- Configure your source destination to AWS IoT SiteWise
- Configure your asset model for the edge

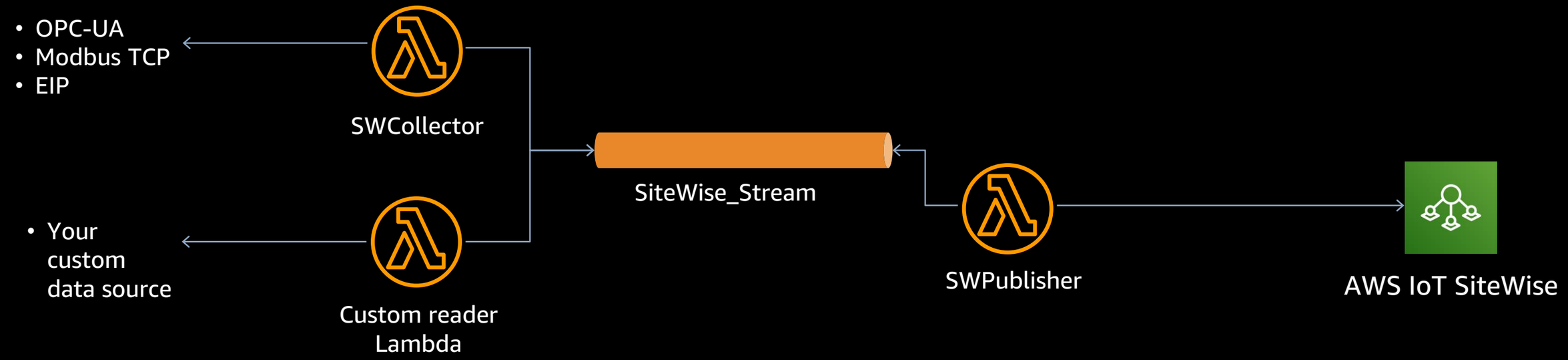
Edge processing and destinations

- A destination is an AWS IoT Greengrass stream
- Destinations let you control where to send your source's incoming data
- By default, data are sent to the stream “SiteWise_Stream”



Destinations – Default option

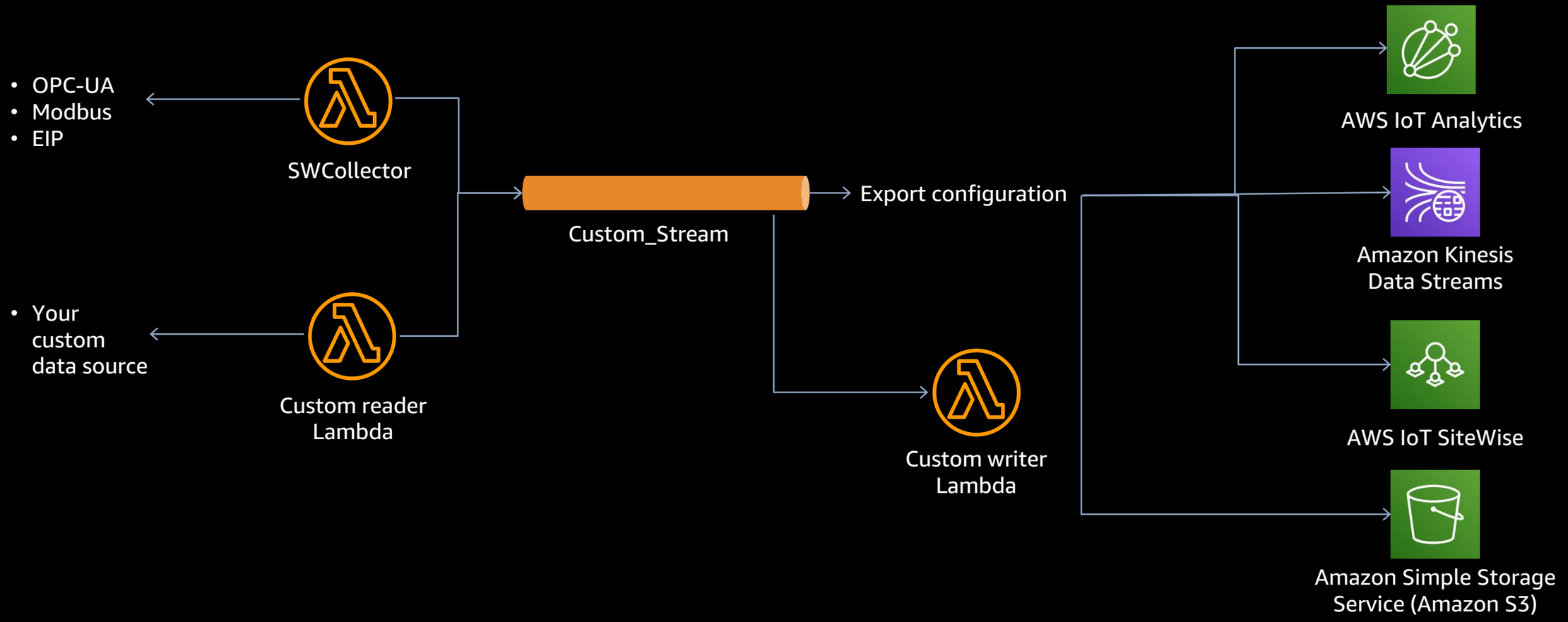
- Default destination SiteWise_Stream



Destinations – Custom option

New!

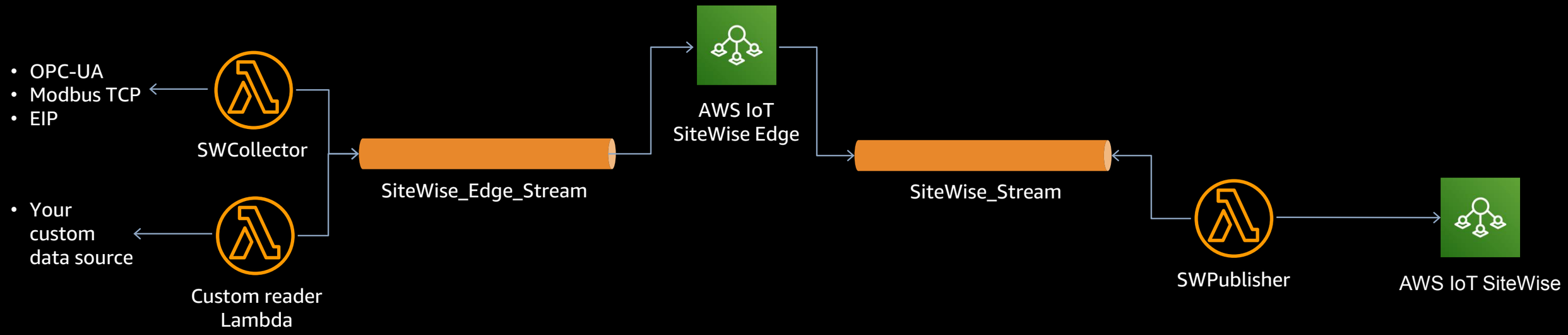
- Define a destination per data source
- Transfer data to on-premises applications or AWS services



Destinations and AWS IoT SiteWise Edge

New!

- A custom destination is used to route data to AWS IoT SiteWise Edge



Interaction with streams

- AWS IoT SiteWise stream – message structure

```
{
   "alias": "tag/name",
   "messages": [
        {
           "name": "tag/name",
           "value": 1234,
           "timestamp": 1591224515916,
           "quality": "GOOD"
        },
        {
           "name": "tag/name",
           "value": 5678,
           "timestamp": 1591224515990,
           "quality": "GOOD"
        },
       ...
    ]
}
```

- Example alias: /machine/sensor/3/temperature
- Value must be one of boolean|double|integer|string
- Timestamp in milliseconds
- Quality GOOD|BAD|UNCERTAIN

Conclusion

- You have learned
  - Which AWS services to use for edge processing
  - How to set up edge processing
  - To monitor and consume data at the edge

Getting started

- To learn more about processing data at the edge, take a look at the AWS IoT SiteWise resources at https://aws.amazon.com/iot-sitewise/
- Start to set up your edge processing at the AWS Management Console
- Contact us if you have any questions at https://aws.amazon.com/contact-us/

Thank you!



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